**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

Date: November 14, 2001

Federal Communications Commission
Via: Electronic Filing

Attention: Authorization & Evaluation Division

Applicant: Nokia Inc.
Equipment: Model 6360, Type NPW-2NX
FCC ID: GMLNPW-2NX
FCC Rules: 22H, 24E, Confidentiality

Gentlemen:

On behalf of the Applicant, enclosed please find Application Form 731, Engineering Test Report and all pertinent documentation, the whole for approval of the referenced equipment as shown.

Filing fees are attached.

We trust the same is in order. Should you need any further information, kindly contact the writer who is authorized to act as agent.

Sincerely yours,

Morton Flom, P. Eng.

enclosure(s)
cc: Applicant
MF/cvr

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

APPLICANT: Nokia Inc.

FCC ID: GMLNPW-2NX

BY APPLICANT:

| | |
|---|---|
| 1. LETTER OF AUTHORIZATION | x |
| 2. IDENTIFICATION DRAWINGS, 2.1033(c)(11) | |
| x LABEL | |
| x 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 |
| PARTS LIST | x |
| ACTIVE DEVICES | x |
| 6. ATTESTATION: ESN: Section 22.919 | x |
| 7. ATTESTATION: OET: Section 22.933 | x |
| 8. ATTESTATION: 47 CFR Section 22.921 | x |
| 9. SAR REPORT By Nokia Finland | x |

BY M.F.A. INC.

A. TESTIMONIAL & STATEMENT OF CERTIFICATION

B. STATEMENT OF QUALIFICATIONS

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: GMLNPW-2NX
MODEL: Model 6360, Type NPW-2NX

to

FEDERAL COMMUNICATIONS COMMISSION

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

DATE OF REPORT: November 14, 2001

ON THE BEHALF OF THE APPLICANT:

Nokia Inc.

AT THE REQUEST OF: P.O. T39-4325531

Nokia Mobile Phones
6000 Connection Drive
Irving, TX 75039

Attention of: (972) 894-5000; Fax: -5698
Michael J. Mobley, Lead Type Approvals
(972) 894-4917; FAX: -5698
Cellphone: (214) 668-9465
michael.mobley@nokia.com

SUPERVISED BY: Morton Flom, P. Eng.

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.

# TABLE OF CONTENTS

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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: d01b0028

d) Client: Nokia Mobile Phones
6000 Connection Drive
Irving, TX 75039

e) Identification: Model 6360, Type NPW-2NX
FCC ID: GMLNPW-2NX
Description: Dual Band, Tri Mode Cellular Telephone

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

g) Report Date: November 14, 2001
EUT Received: September 24, 2001

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.

PAGE NO. 2 of 72.

LIST OF GENERAL INFORMATION REQUIRED FOR CERTIFICATION

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

22H, 24E, Confidentiality

Sub-part 2.1033

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

Nokia Inc.
6000 Connection Drive
Irving, TX 75039

MANUFACTURER:

Mexico

(c)(2): FCC ID: GMLNPW-2NX

MODEL NO: Model 6360, Type NPW-2NX

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

PLEASE SEE ATTACHED EXHIBITS

(c)(4): TYPE OF EMISSION: 40K0F1D, 40K0F8W, 30K0DXW

(c)(5): FREQUENCY RANGE, MHz: 824 to 849
1850 to 1909

(c)(6): POWER RATING, Watts: 0.578 AMPS ERP
0.561 TDMA800 ERP
0.687 TDMA1900 EIRP

___ Switchable x Variable ___ 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

PAGE NO. 3 of 72.

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 = 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

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

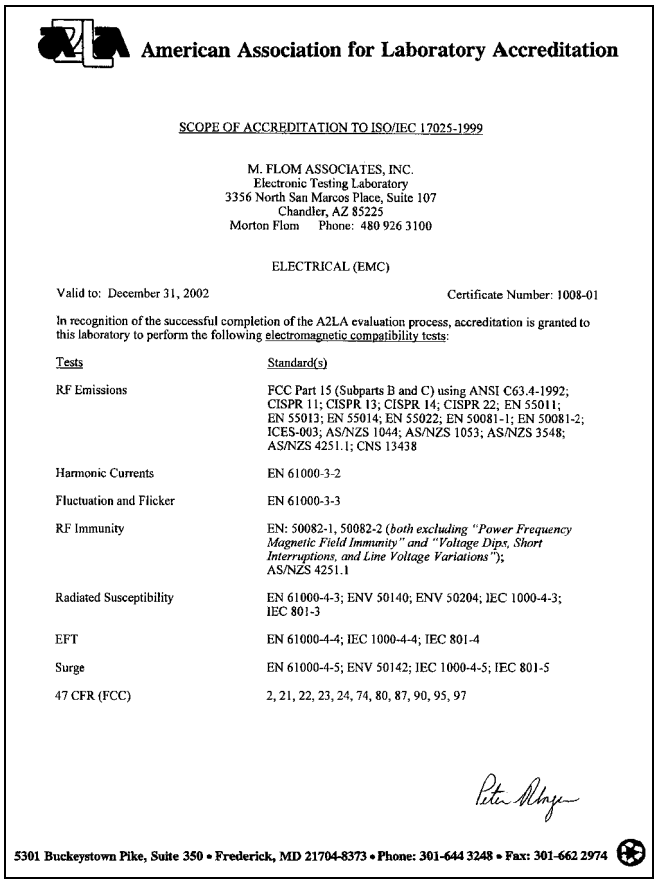
**Electrical (EMC) Testing**

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 C63.4-1992; 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 (*both excluding "Power Frequency Magnetic Field Immunity" and "Voltage Dips, Short Interruptions, and Line Voltage Variations"*); AS/NZS 4251.1 |
| 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 |
| 47 CFR (FCC) | 2, 21, 22, 23, 24, 74, 80, 87, 90, 95, 97 |

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.

PAGE NO. 5 of 72.

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
_x_ 22 Subpart H - Cellular Radiotelephone Service
____ 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) VOICE
   - [x] (b) WIDEBAND DATA
   - [x] (c) SAT
   - [x] (d) ST
   - [x] (e) SAT + VOICE
   - [x] (f) SAT + DTMF
   - [ ] (g) CDMA
   - [x] (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 NO. 8 of 72.

NAME OF TEST: Carrier Output Power (Conducted)

SPECIFICATION: 47 CFR 2.1046(a)

TEST EQUIPMENT: As per attached page

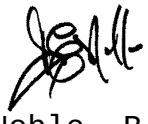
## MEASUREMENT PROCEDURE

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 |
|---|---|---|
| AMPS MODE: | | |
| 824.040 | 991 | 26.79 |
| 836.400 | 380 | 26.55 |
| 848.970 | 799 | 26.48 |
| TDMA800 MODE: | | |
| 825.290 | 991 | 27.28 |
| 836.400 | 380 | 27.01 |
| 847.720 | 799 | 27.16 |
| TDMA1900 MODE: | | |
| 1850.04 | 02 | 27.00 |
| 1879.98 | 1000 | 27.32 |
| 1909.02 | 1998 | 27.16 |



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

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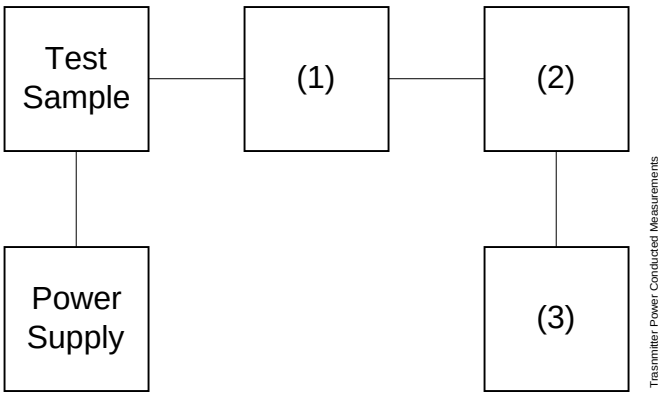
# TRANSMITTER POWER CONDUCTED MEASUREMENTS

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




Trasnmitter Power Conducted Measurements

| 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 |

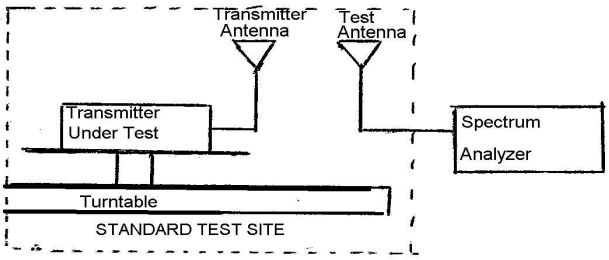
PAGE NO. 10 of 72.

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 = $10 \log_{10} \Sigma\, 10(\text{LVL} - \text{LOSS})/10$ (dBm)

RESULTS

| | 848.97 MHZ LVL, dbm | 836.40 MHz LVL, dbm | Path Loss, db | 1879.98 MHz LVL, dbm | Path Loss, db |
|---|---|---|---|---|---|
| 0˚ | 26.6 | 26.5 | 1.1 | 26.9 | 1.4 |
| 45˚ | 26.5 | 26.4 | 1.1 | 26.8 | 1.4 |
| 90˚ | 26.2 | 26.3 | 1.1 | 26.6 | 1.4 |
| 135˚ | 26.0 | 26.1 | 1.1 | 26.2 | 1.4 |
| 180˚ | 26.0 | 26.2 | 1.1 | 26.1 | 1.4 |
| 225˚ | 26.3 | 26.1 | 1.1 | 26.1 | 1.4 |
| 270˚ | 26.1 | 26.2 | 1.1 | 26.4 | 1.4 |
| 315˚ | 26.1 | 26.2 | 1.1 | 26.8 | 1.4 |

| | 848.97 MHZ | 836.40 MHz | 1879.98 MHz |
|---|---|---|---|
| Av. Radiated Power: | 27.3 dbm | 27.4 dbm | 27.9 dbm |

PAGE NO. 11 of 72.

NAME OF TEST: Audio Frequency Response

SPECIFICATION: 47 CFR 2.1047(a)

TEST EQUIPMENT: As per previous page

MEASUREMENT PROCEDURE

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

2. The audio signal generator was connected to the audio input circuit/microphone of the EUT.

3. The audio signal input was adjusted to obtain 20% modulation at 1 kHz, and this point was taken as the 0 dB reference level.

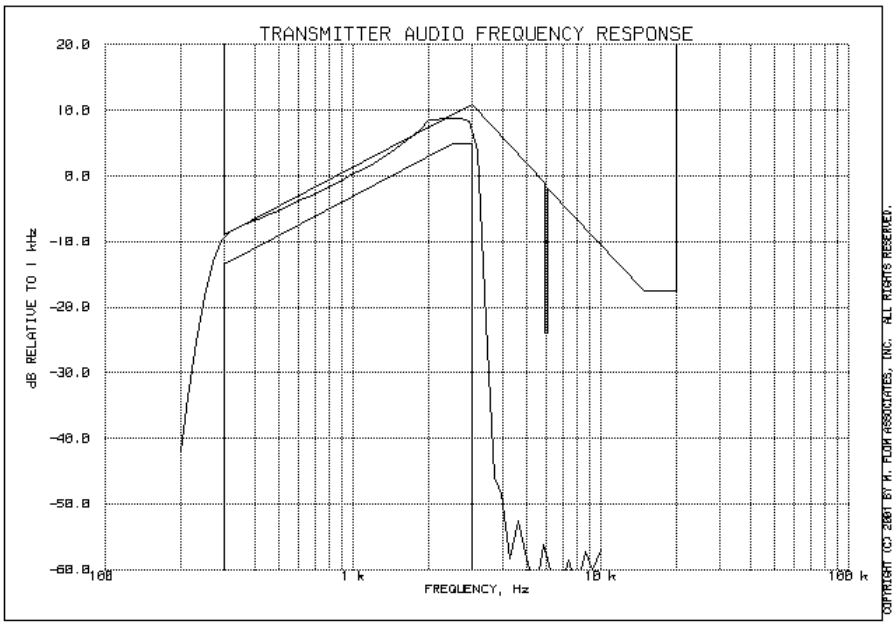
4. With input levels held constant and below limiting at all frequencies, the audio signal generator was varied from 100 Hz to 50 kHz.

5. The response in dB relative to 1 kHz was then measured, using the HP 8901A Modulation Analyzer.

6. MEASUREMENT RESULTS: ATTACHED

PAGE NO. 12 of 72.

NAME OF TEST: Audio Frequency Response
g0190070: 2001-Sep-24 Mon 14:55:00
STATE: 0:General




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

PAGE NO. 13 of 72.

NAME OF TEST: Audio Low Pass Filter (Voice Input)

SPECIFICATION: 47 CFR 2.1047(a)

TEST EQUIPMENT: As per attached page

MEASUREMENT PROCEDURE

1. The EUT and test equipment were set up such that the audio input was connected at the input to the modulation limiter, and the modulated stage.

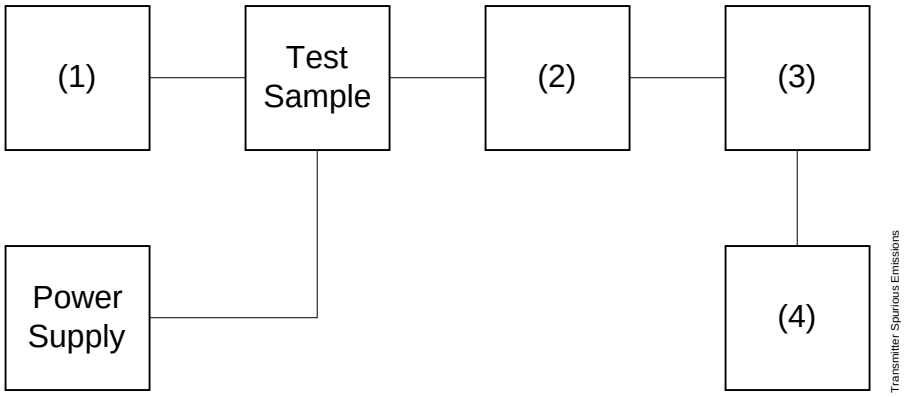
2. The audio output was connected at the output to the modulated stage.

3. MEASUREMENT RESULTS: ATTACHED

PAGE NO. 14 of 72.

## TRANSMITTER SPURIOUS EMISSION

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

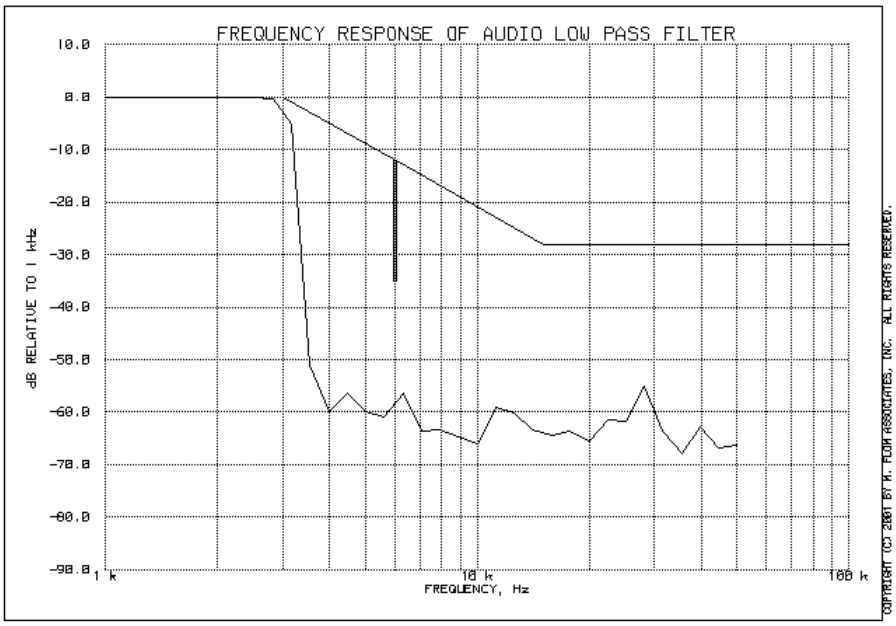



Transmitter Spurious Emissions

| 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 |

PAGE NO. 15 of 72.

NAME OF TEST: Audio Low Pass Filter (Voice Input)
g0190071: 2001-Sep-24 Mon 15:14:00
STATE: 0:General




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

PAGE NO. 16 of 72.

NAME OF TEST: Modulation Limiting

SPECIFICATION: 47 CFR 2.1047(b)

TEST EQUIPMENT: As per previous page

MEASUREMENT PROCEDURE

1. The audio signal generator was connected to the audio input circuit/microphone of the EUT as for Frequency Response of the Audio Modulating Circuit.

2. The modulation response was measured for each of three tones (one of which was the frequency of maximum response), and the input voltage was varied and was observed on an HP 8901A Modulation Analyzer.

3. The audio input level was varied from 30% modulation (±3.6 kHz deviation) to at least 20 dB higher than the saturation point.

4. Measurements were performed for both negative and positive modulation and the respective results were recorded.

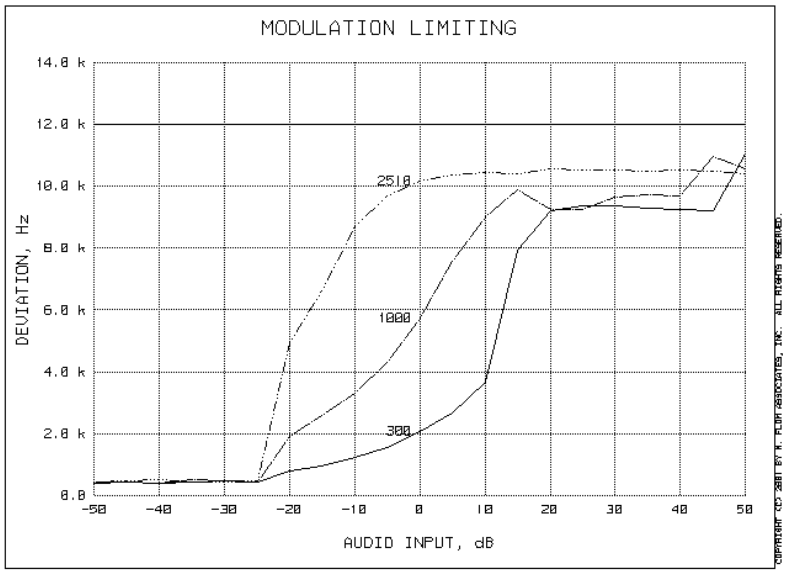
5. MEASUREMENT RESULTS ATTACHED FOR:

COMPANDER ON:
_x_ VOICE
_x_ VOICE + SAT

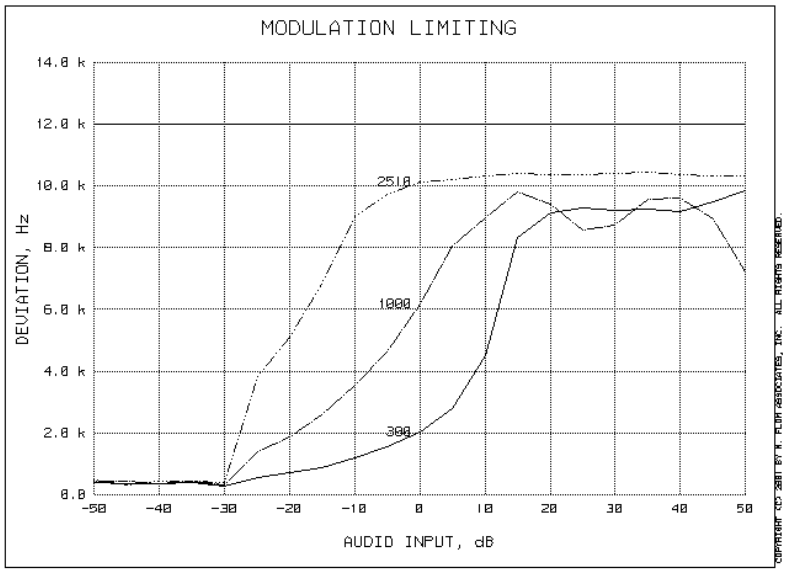
PAGE NO. 17 of 72.

NAME OF TEST: Modulation Limiting
g0190072: 2001-Sep-24 Mon 15:19:00
STATE: 0:General VOICE ONLY

Positive Peaks:




Negative Peaks:

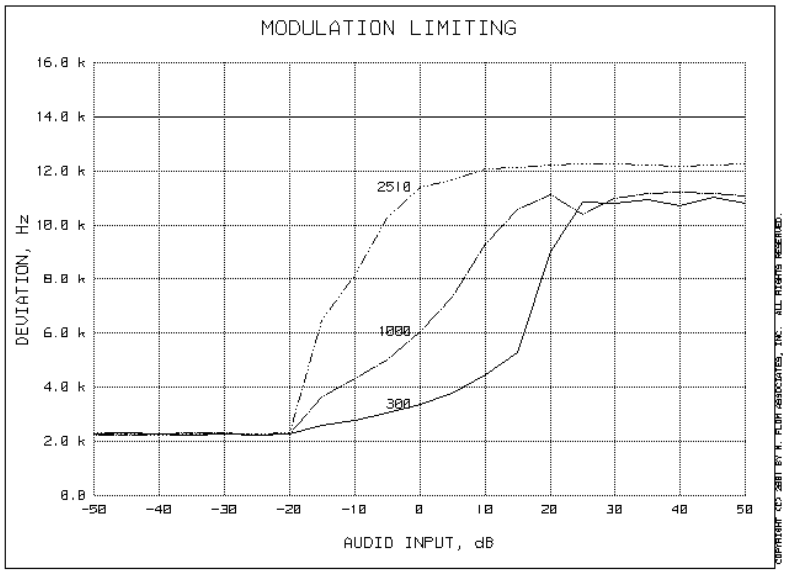



PERFORMED BY: Doug Noble, B.A.S. E.E.T.

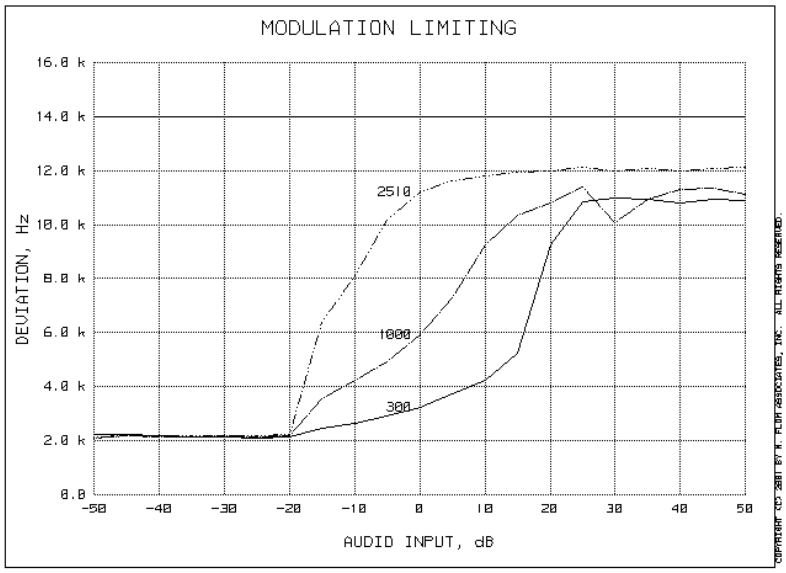
PAGE NO. 18 of 72.

NAME OF TEST: Modulation Limiting
g0190073: 2001-Sep-24 Mon 15:24:00
STATE: 0:General VOICE + SAT

Positive Peaks:




Negative Peaks:




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

PAGE NO. 19 of 72.

NAME OF TEST: Measurement Of Maximum Deviation

TEST EQUIPMENT: As per attached page

## MEASUREMENT PROCEDURE

1. The presentation of tones was obtained by attaching the HP 8903A Oscilloscope to the Modulation Output of the HP 8901 Modulation Analyzer.

2. The EUT was modulated by an HP 8903 Audio Analyzer and/or internally generated signals.

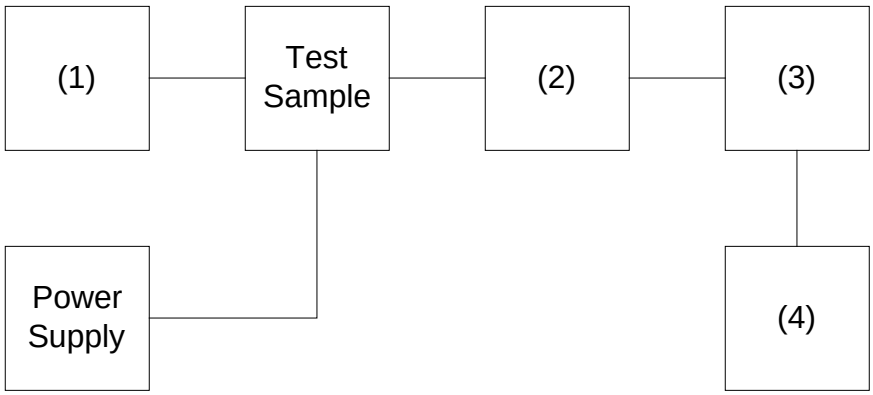
3. Maximum deviation measurements were recorded for the various configurations.

4. MEASUREMENT RESULTS: ATTACHED SUMMARY FOR DEVIATION

PAGE NO. 20 of 72.

## TRANSMITTER TEST SET-UP

TEST A. MODULATION CAPABILITY/DISTORTION
TEST B. AUDIO FREQUENCY RESPONSE
TEST C. HUM AND NOISE LEVEL
TEST D. RESPONSE OF LOW PASS FILTER
TEST E. MODULATION LIMITING




Transmitter Test Set Up

| Asset | Description (as applicable) | s/n |
|---|---|---|
| (1) | Audio Oscillator | |
| i00010 | HP 204D | 1105A04683 |
| i00017 | HP 8903A | 2216A01753 |
| i00118 | HP 33120A | US36002064 |
| (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) | MODULATION ANALYZER | |
| i00020 | HP 8901A | 2105A01087 |
| (4) | AUDIO ANALYZER | |
| i00017 | HP 8903A | 2216A01753 |

PAGE NO. 21 of 72.

MEASUREMENT SUMMARY: Measurement Of Maximum Deviation

| MODULATION | LIMIT, kHz | DEVIATION, MHz |
|---|---|---|
| (a) Voice | ≥ 10.8 & ≤ 13.2 | 10.9 |
| (b) Wideband Data | ≥ 7.2 & ≤ 8.8 | 8.0 |
| (c) SAT | ≥ 1.8 & ≤ 2.2 | 2.5 |
| (d) ST | ≥ 7.2 & ≤ 8.8 | 8.4 |
| (e) SAT + VOICE | N/A | 11.3 |
| (f) SAT + DTMF | N/A | 11.1 |
| (i) NAMPS VOICE | N/A | N/A |
| (j) NAMPS DSAT | N/A | N/A |
| (k) NAMPS ST | N/A | N/A |
| (l) NAMPS VOICE | N/A | N/A |

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

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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

MEASUREMENT SUMMARY: Emission Masks (Occupied Bandwidth)

| MODULATION | MEASURED DEVIATION ±kHz (HP 8901A) | LIMIT ±kHz | B/W @-26 dB PLOTS, kHz |
|---|---|---|---|
| NONE | 0.0 | 0.0 | 0.0 |
| VOICE | 10.9 | ≥ 10.8 & ≤ 13.2 | 26 |
| WIDEBAND DATA | 8.0 | ≥ 7.2 & ≤ 8.8 | 30 |
| SAT + VOICE | 11.3 | N/A | 28 |
| SAT + DTMF | 11.1 | N/A | 22 |
| CDMA | N/A | N/A | N/A |
| TDMA | N/A | N/A | 28 |
| NAMPS | N/A | N/A | N/A |

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

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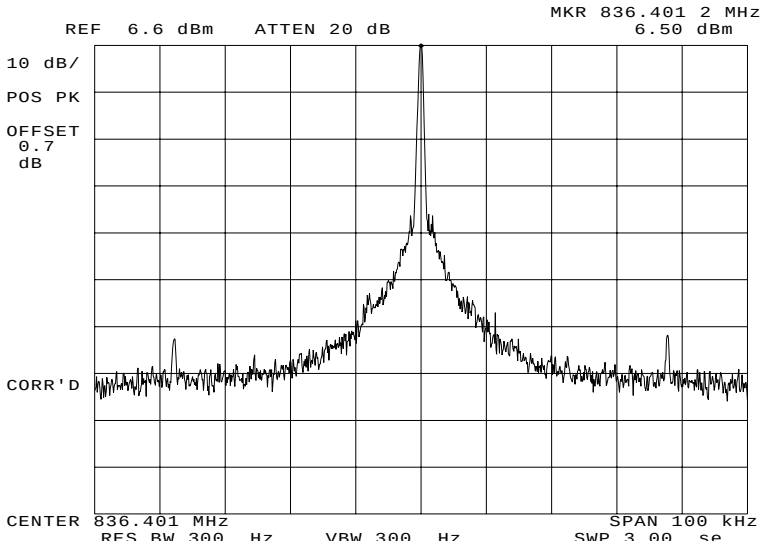
NAME OF TEST: Emission Masks (Occupied Bandwidth)
g0190097: 2001-Sep-25 Tue 10:19:00
STATE: 1:Low Power

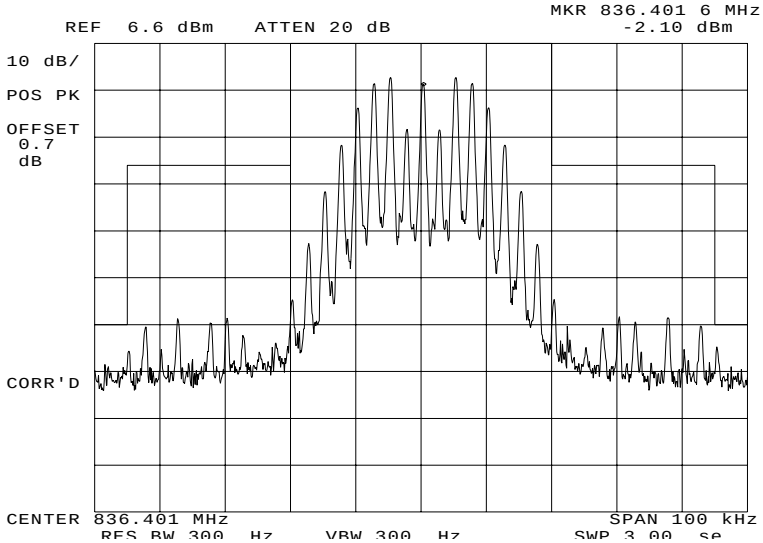



POWER: LOW
MODULATION: NONE

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

PAGE NO. 25 of 72.

NAME OF TEST: Emission Masks (Occupied Bandwidth)
g0190099: 2001-Sep-25 Tue 10:47:00
STATE: 1:Low Power




POWER: LOW
MODULATION: VOICE: 2500 Hz SINE WAVE
MASK: AMPS CELLULAR,
F3E/F3D w/LPF

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

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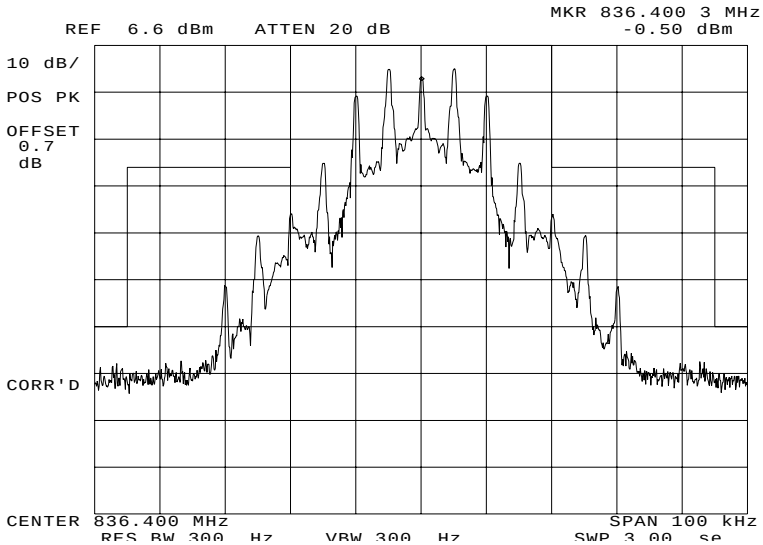
NAME OF TEST: Emission Masks (Occupied Bandwidth)
g0190108: 2001-Sep-25 Tue 11:06:00
STATE: 1:Low Power




POWER: LOW
MODULATION: WBD
MASK: AMPS CELLULAR, F3E/F3D w/LPF

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

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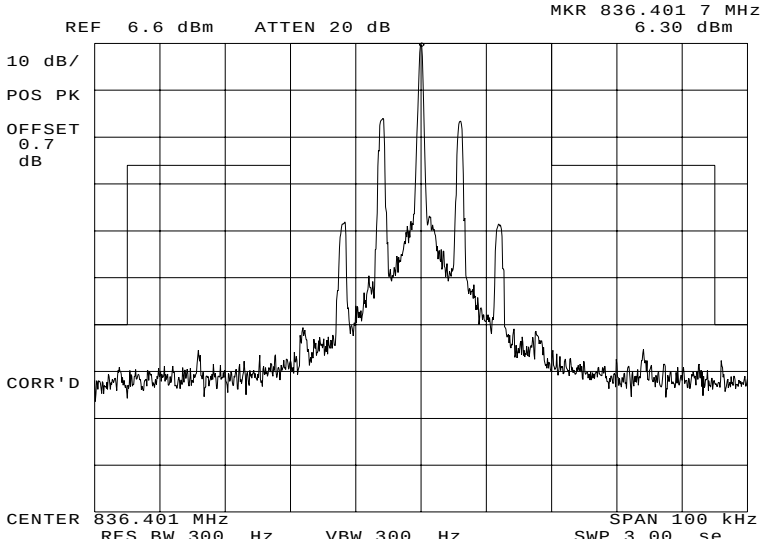
NAME OF TEST: Emission Masks (Occupied Bandwidth)
g0190103: 2001-Sep-25 Tue 10:58:00
STATE: 1:Low Power

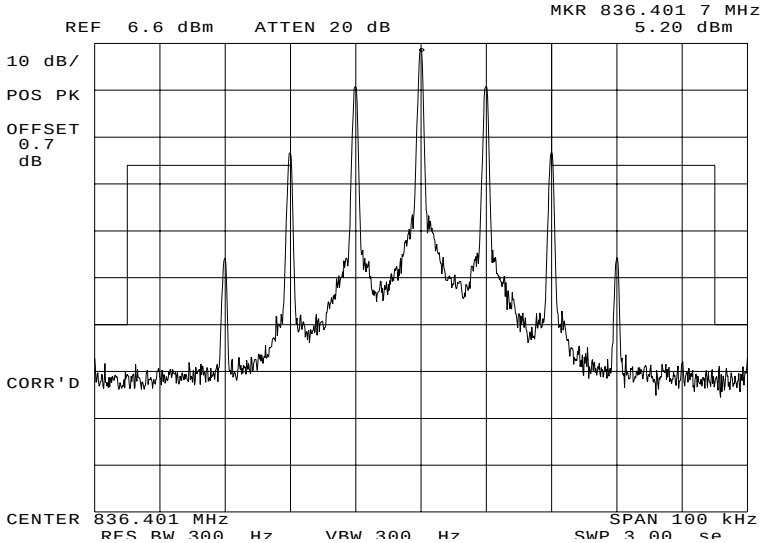



POWER: LOW
MODULATION: SAT
MASK: AMPS CELLULAR, F3E/F3D w/LPF

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

PAGE NO. 28 of 72.

NAME OF TEST: Emission Masks (Occupied Bandwidth)
g0190104: 2001-Sep-25 Tue 10:59:00
STATE: 1:Low Power

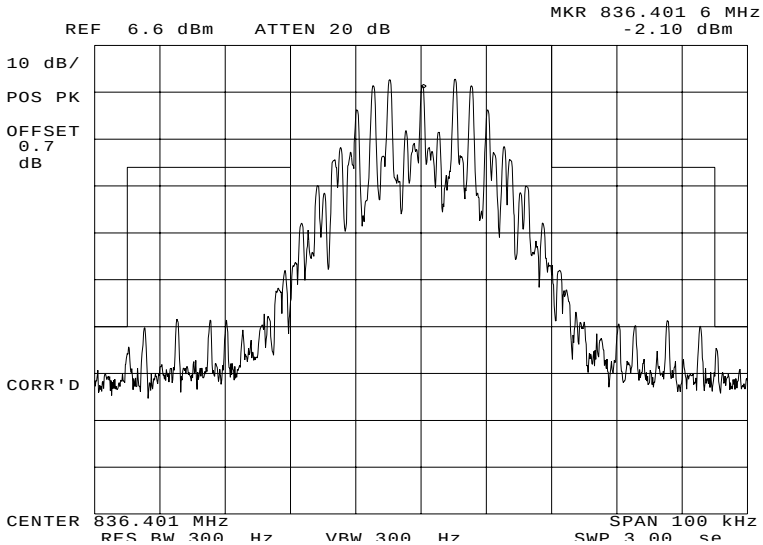



POWER: LOW
MODULATION: ST
MASK: AMPS CELLULAR, F3E/F3D w/LPF

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

PAGE NO. 29 of 72.

NAME OF TEST: Emission Masks (Occupied Bandwidth)
g0190100: 2001-Sep-25 Tue 10:50:00
STATE: 1:Low Power




POWER: LOW
MODULATION: SAT+VOICE
MASK: AMPS CELLULAR,
F3E/F3D w/LPF

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

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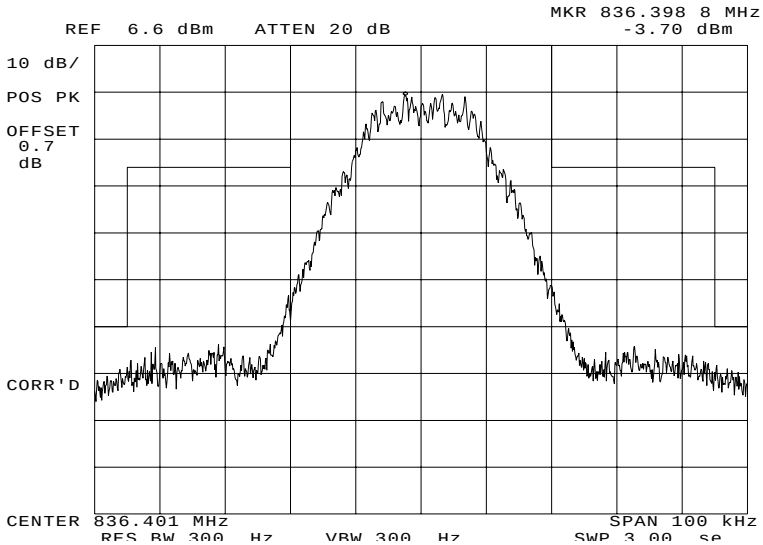
NAME OF TEST: Emission Masks (Occupied Bandwidth)
g0190107: 2001-Sep-25 Tue 11:04:00
STATE: 1:Low Power




POWER: LOW
MODULATION: SAT+DTMF
MASK: AMPS CELLULAR,
F3E/F3D w/LPF

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

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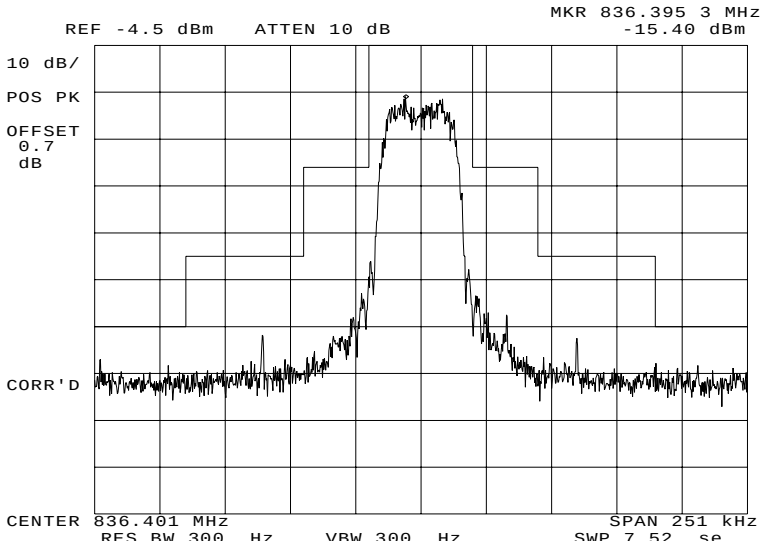
NAME OF TEST: Emission Masks (Occupied Bandwidth)
g0190119: 2001-Sep-25 Tue 11:40:00
STATE: 1:Low Power




POWER: LOW
MODULATION: TDMA
MASK: AMPS CELLULAR, F1D, DATA

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

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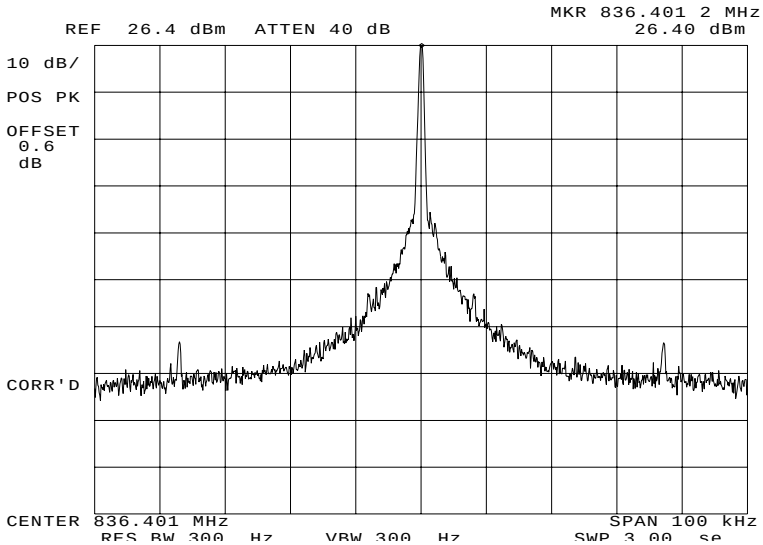
NAME OF TEST: Emission Masks (Occupied Bandwidth)
g0190096: 2001-Sep-25 Tue 10:16:00
STATE: 2:High Power




POWER: HIGH
MODULATION: NONE

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

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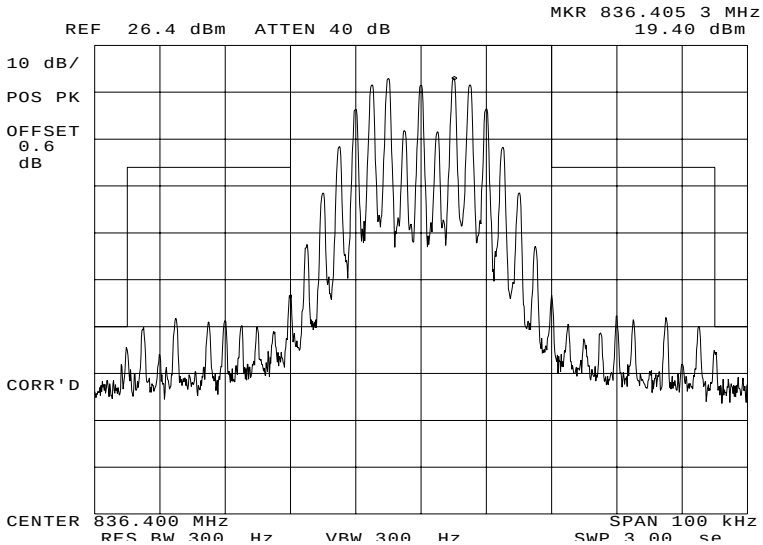
NAME OF TEST: Emission Masks (Occupied Bandwidth)
g0190098: 2001-Sep-25 Tue 10:39:00
STATE: 2:High Power




POWER: HIGH
MODULATION: VOICE: 2500 Hz SINE WAVE
MASK: AMPS CELLULAR,
F3E/F3D w/LPF

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

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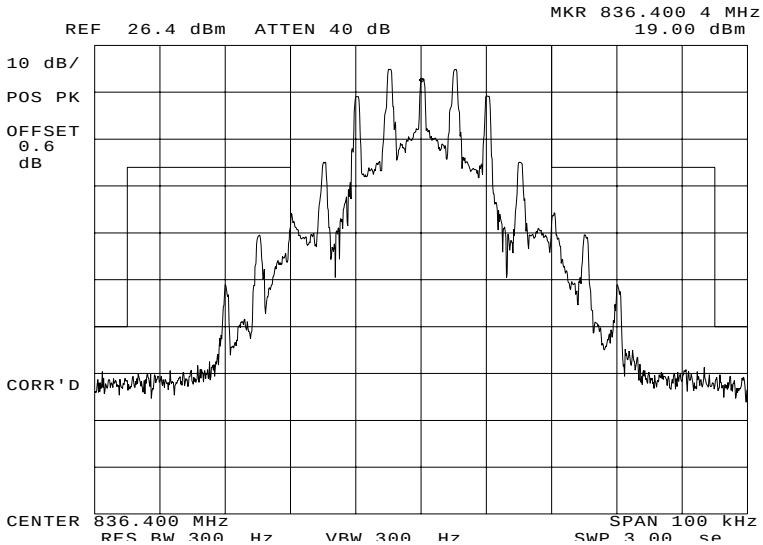
NAME OF TEST: Emission Masks (Occupied Bandwidth)
g0190109: 2001-Sep-25 Tue 11:09:00
STATE: 2:High Power




POWER: HIGH
MODULATION: WBD
MASK: AMPS CELLULAR, F3E/F3D w/LPF

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

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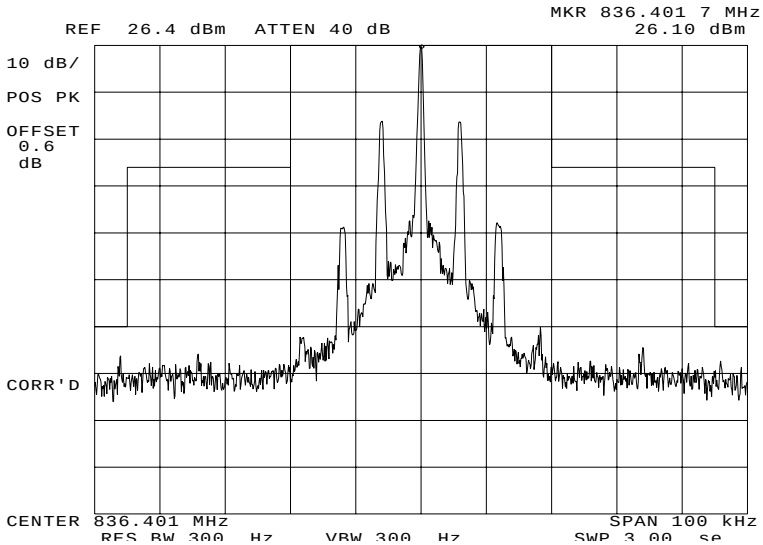
NAME OF TEST: Emission Masks (Occupied Bandwidth)
g0190102: 2001-Sep-25 Tue 10:56:00
STATE: 2:High Power




POWER: HIGH
MODULATION: SAT
MASK: AMPS CELLULAR, F3E/F3D w/LPF

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

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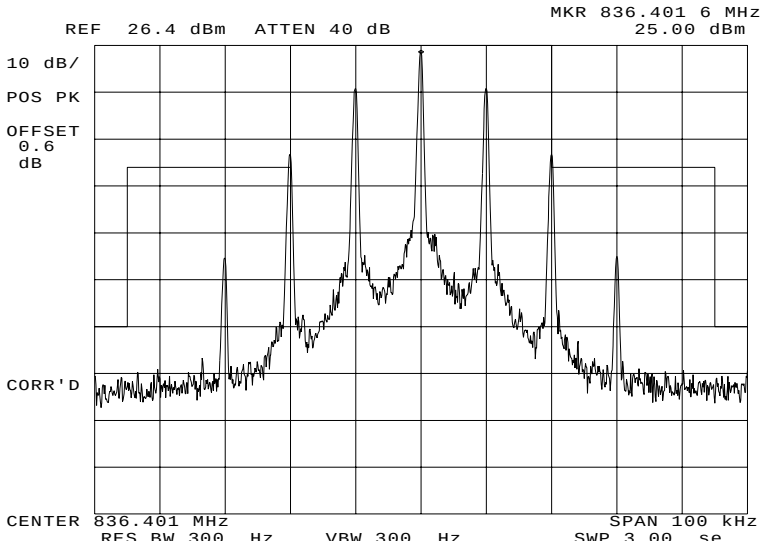
NAME OF TEST: Emission Masks (Occupied Bandwidth)
g0190105: 2001-Sep-25 Tue 11:00:00
STATE: 2:High Power




POWER: HIGH
MODULATION: ST
MASK: AMPS CELLULAR, F3E/F3D w/LPF

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

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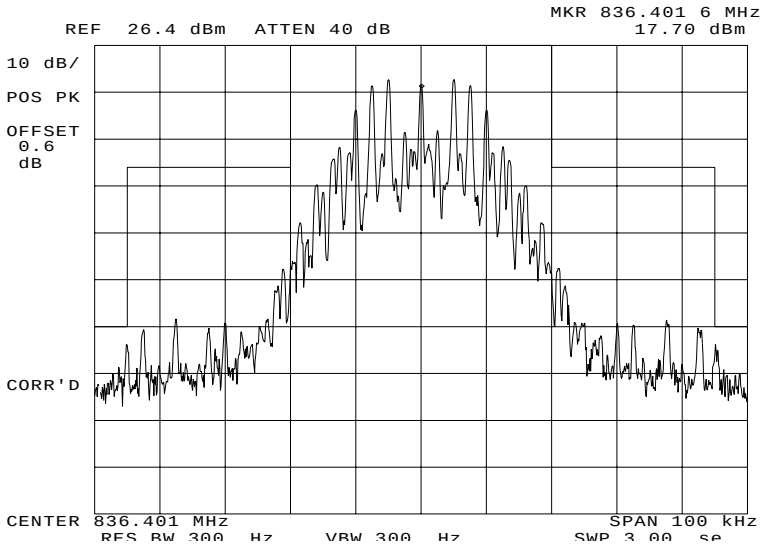
NAME OF TEST: Emission Masks (Occupied Bandwidth)
g0190101: 2001-Sep-25 Tue 10:51:00
STATE: 2:High Power




POWER: HIGH
MODULATION: SAT+VOICE
MASK: AMPS CELLULAR,
F3E/F3D w/LPF

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

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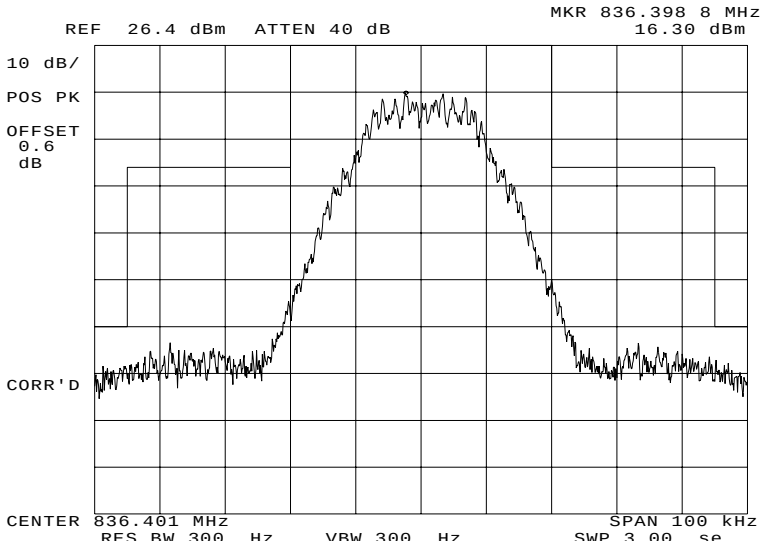
NAME OF TEST: Emission Masks (Occupied Bandwidth)
g0190106: 2001-Sep-25 Tue 11:02:00
STATE: 2:High Power




POWER: HIGH
MODULATION: SAT+DTMF
MASK: AMPS CELLULAR,
F3E/F3D w/LPF

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

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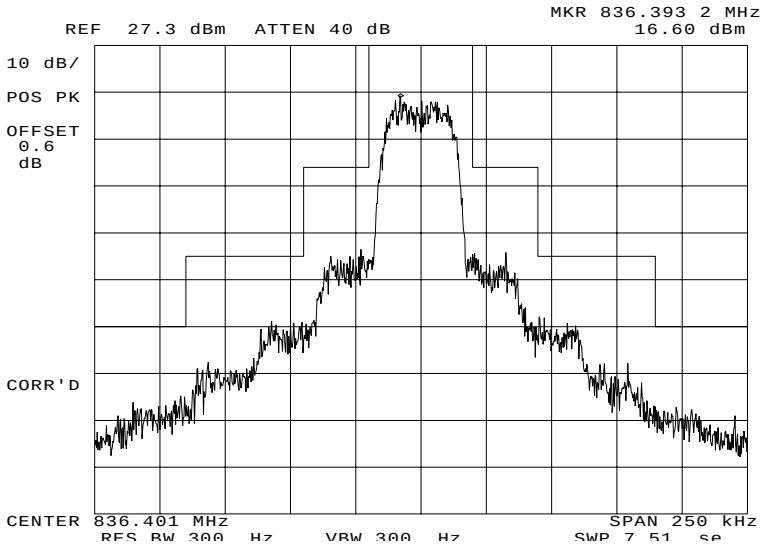
NAME OF TEST: Emission Masks (Occupied Bandwidth)
g0190118: 2001-Sep-25 Tue 11:35:00
STATE: 2:High Power




POWER: HIGH
MODULATION: TDMA
MASK: AMPS CELLULAR, F1D, DATA

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.

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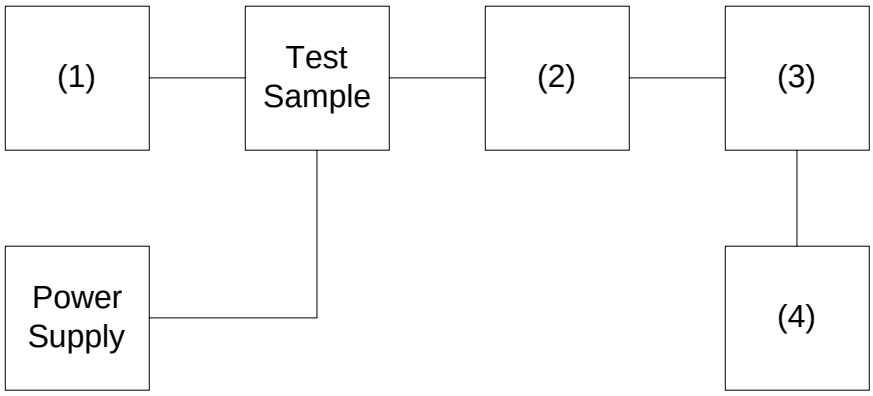
## TRANSMITTER SPURIOUS EMISSION

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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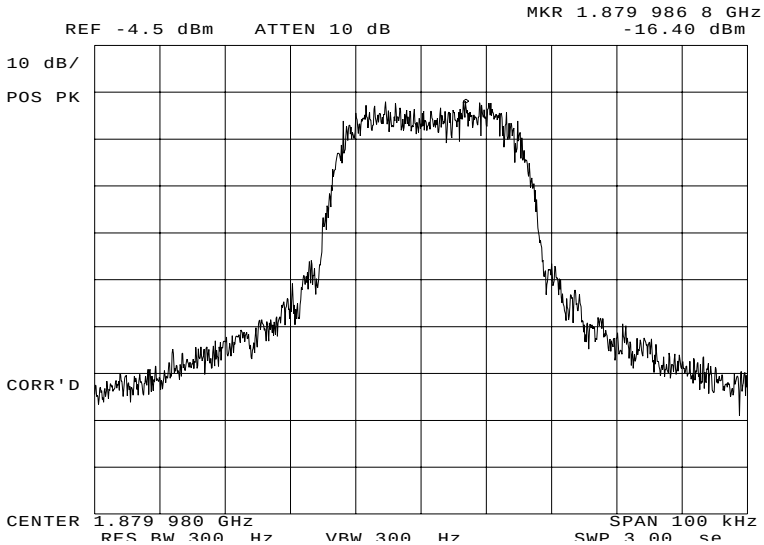
NAME OF TEST: Emission Masks (Occupied Bandwidth)
g0190121: 2001-Sep-25 Tue 11:51:00
STATE: 1:Low Power




POWER: LOW
MODULATION: PCS TDMA

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

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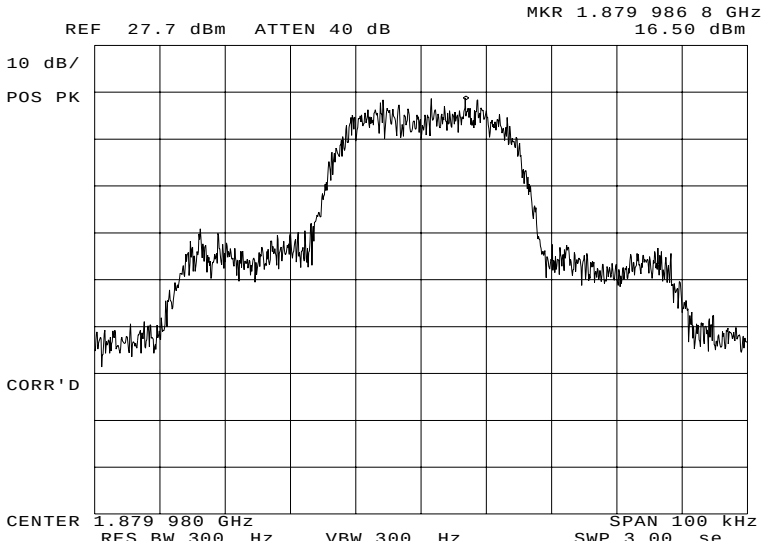
NAME OF TEST: Emission Masks (Occupied Bandwidth)
g0190120: 2001-Sep-25 Tue 11:48:00
STATE: 2:High Power




POWER: HIGH
MODULATION: PCS TDMA

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

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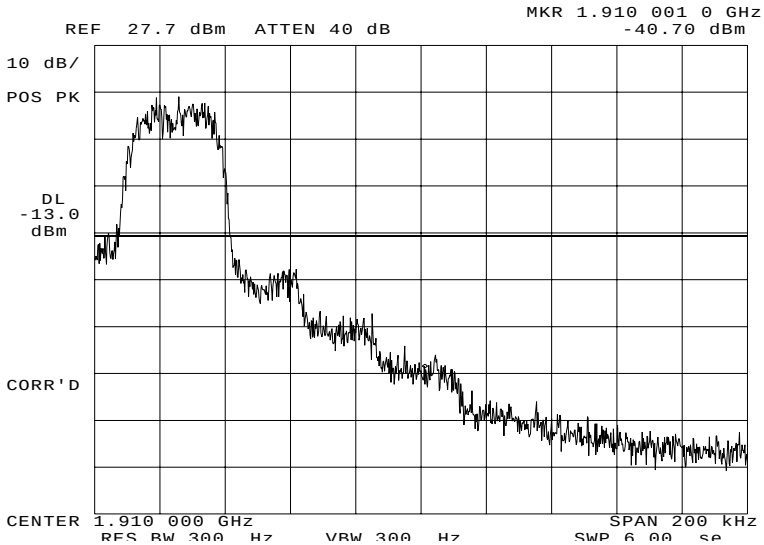
NAME OF TEST: Emission Masks (Occupied Bandwidth)
g0190123: 2001-Sep-25 Tue 11:57:00
STATE: 2:High Power




POWER: HIGH
MODULATION: PCS TDMA
UPPER BANDEDGE CHANNEL 1998

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

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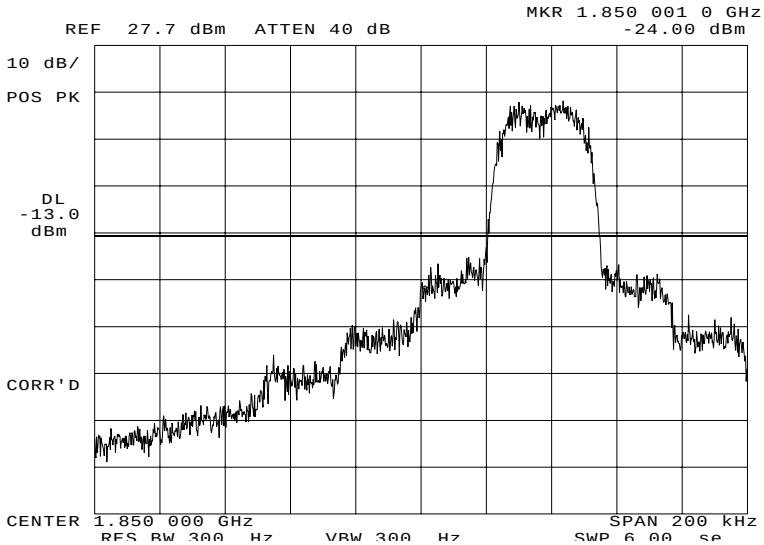
NAME OF TEST: Emission Masks (Occupied Bandwidth)
g0190124: 2001-Sep-25 Tue 11:59:00
STATE: 2:High Power




POWER: HIGH
MODULATION: PCS TDMA
LOWER BANDEDGE CHANNEL 02

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

PAGE NO. 46 of 72.

NAME OF TEST: Emission Requirements –
Worst Case Modulation & Wideband Data

SPECIFICATION: 47 CFR 22.917

TEST EQUIPMENT: As per previous page

## MEASUREMENT PROCEDURE

1. The EUT was connected to a coaxial attenuator and then to a spectrum analyzer. The unmodulated carrier was set for 0 dB reference level.

2. A notch filter was introduced to reduce or eliminate any spectrum analyzer internally generated spurious for measurements of the harmonics and the carrier level.

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

4. Measurements were made on channels 380, 799 and 991. The equipment was first modulated for the Worst Case Modulation, then for Wideband Data (F8W, F1D).

5. All other spurious emissions over the range of 0 the beyond the $10^{th}$ harmonic (10 GHz) were 20 dB or more below the limit

6. The data presented here is for the Worst Case.

7. MEASUREMENT RESULTS: ATTACHED

PAGE NO. 47 of 72.

MEASUREMENT SUMMARY: Emission Requirements – Worst Case Modulation

WORST CASE MODULATION = VOICE +_SAT

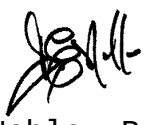
| EMISSION, MHz/HARM. | LIMIT, dBc | SPURIOUS EMISSIONS, dBc Lo | Hi |
|---|---|---|---|
| F0 + 20 kHz to F0 + 45 kHz | ≤-26 | ≤-59 | ≤-59 |
| F0 + 45 kHz to 2nd Harmonic | ≤-60 or 43 + 10 log P | ≤-67 | ≤-69 |
| 2nd to 10th | (≤-13 dBm) | ≤-63 | ≤-61 |

MEASUREMENT RESULTS = ATTACHED OFFSET PLOTS

EMISSION IN THE RECEIVER CRITICAL BAND

| EMISSION, MHz/HARM. | LIMIT, dBm | SPURIOUS EMISSIONS, dBm Lo | Hi |
|---|---|---|---|
| 869 to 894 | ≤-80 | ≤-86 | ≤-86 |

MEASUREMENT RESULTS = ATTACHED PLOTS



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

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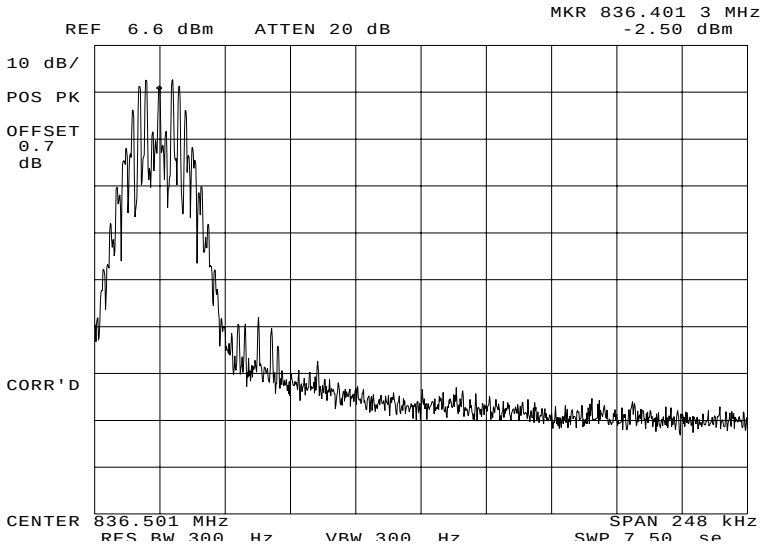
NAME OF TEST: Emission Masks (Occupied Bandwidth)
g0190116: 2001-Sep-25 Tue 11:24:00
STATE: 1:Low Power




POWER: LOW
MODULATION: SAT+VOICE
OFFSET OCCUPIED BANDWIDTH

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

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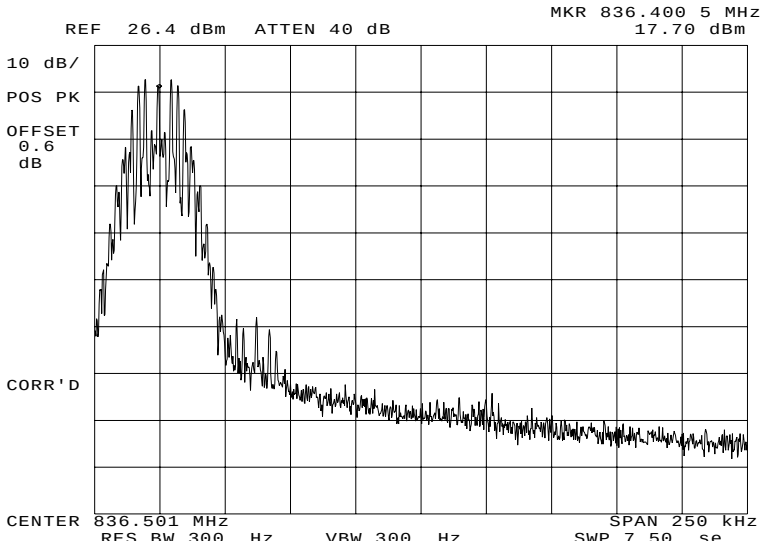
NAME OF TEST: Emission Masks (Occupied Bandwidth)
g0190114: 2001-Sep-25 Tue 11:21:00
STATE: 2:High Power




POWER: HIGH
MODULATION: SAT+VOICE
OFFSET OCCUPIED BANDWIDTH

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

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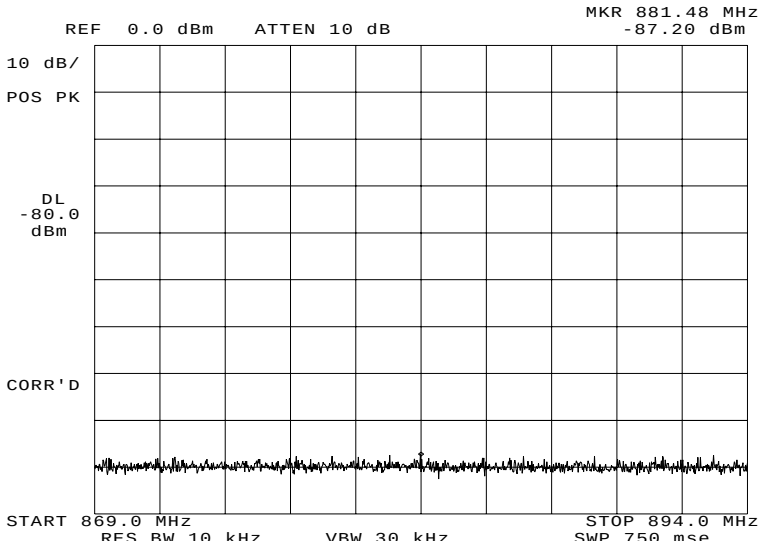
NAME OF TEST: Emission Masks (Occupied Bandwidth)
g0190117: 2001-Sep-25 Tue 11:25:00
STATE: 1:Low Power




POWER: LOW
MODULATION: ANY
TX SPURS IN RX CRITICAL

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

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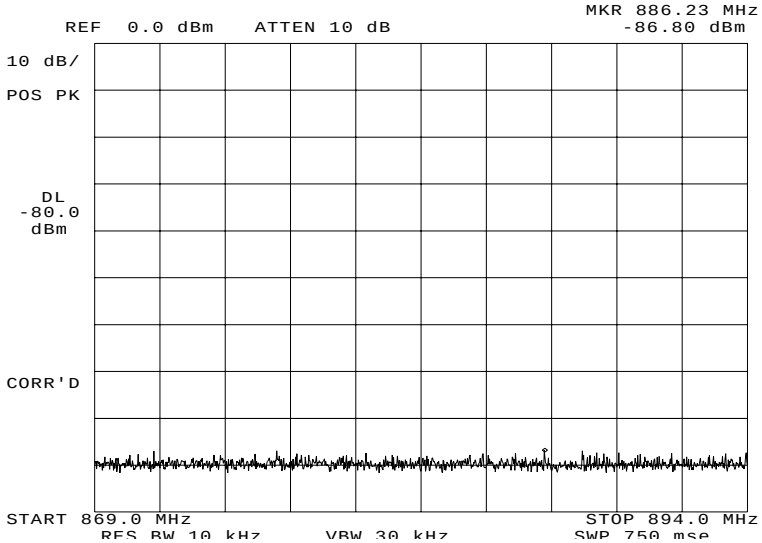
NAME OF TEST: Emission Masks (Occupied Bandwidth)
g0190115: 2001-Sep-25 Tue 11:22:00
STATE: 2:High Power




POWER: HIGH
MODULATION: ANY
TX SPURS IN RX CRITICAL BAND

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

PAGE NO. 52 of 72.

MEASUREMENT SUMMARY: Emission Requirements – Wideband Data (F1D, 10 kb/s)

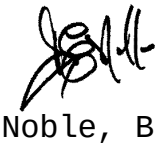
| EMISSION, MHz/HARM. | LIMIT, dBc | SPURIOUS EMISSIONS, dBc Lo | Hi |
|---|---|---|---|
| F0 + 20 kHz to F0 + 45 kHz | ≤-26 | ≤-41 | ≤-37 |
| F0 + 45 kHz to F0 + 90 kHz | ≤-45 | ≤-69 | ≤-69 |
| F0 + 90 kHz to 2nd Harmonic | ≤-60 (≤-13 dBm) | ≤-69 | ≤-68 |
| 2nd to 10th | (≤-13 dBm) | ≤-63 | ≤-61 |

MEASUREMENT RESULTS = ATTACHED OFFSET PLOTS

EMISSION IN THE RECEIVER CRITICAL BAND

| EMISSION, MHz/HARM. | LIMIT, dBm | SPURIOUS EMISSIONS, dBm Lo | Hi |
|---|---|---|---|
| 869 to 894 | ≤-80 | ≤-86 | ≤-86 |

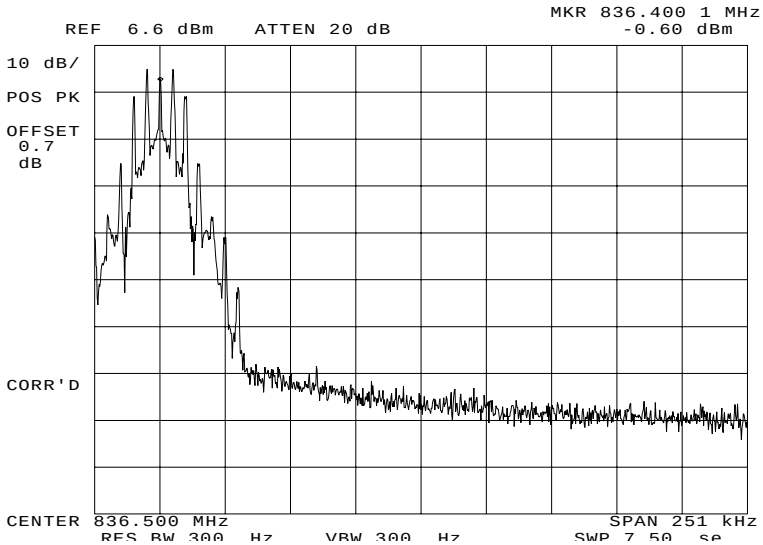
MEASUREMENT RESULTS = ATTACHED PLOTS



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

PAGE NO. 53 of 72.

NAME OF TEST: Emission Masks (Occupied Bandwidth)
g0190111: 2001-Sep-25 Tue 11:15:00
STATE: 1:Low Power

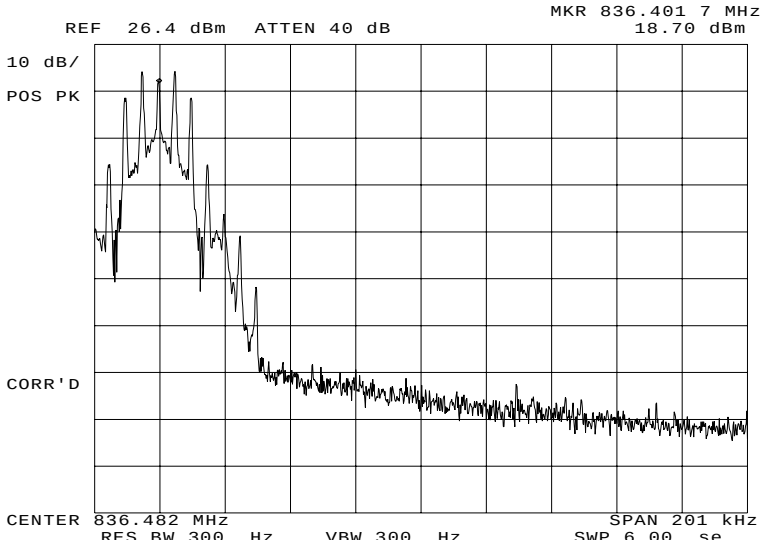



POWER: LOW
MODULATION: WBD
OFFSET OCCUPIED BANDWIDTH

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

PAGE NO. 54 of 72.

NAME OF TEST: Emission Masks (Occupied Bandwidth)
g0190110: 2001-Sep-25 Tue 11:12:00
STATE: 2:High Power

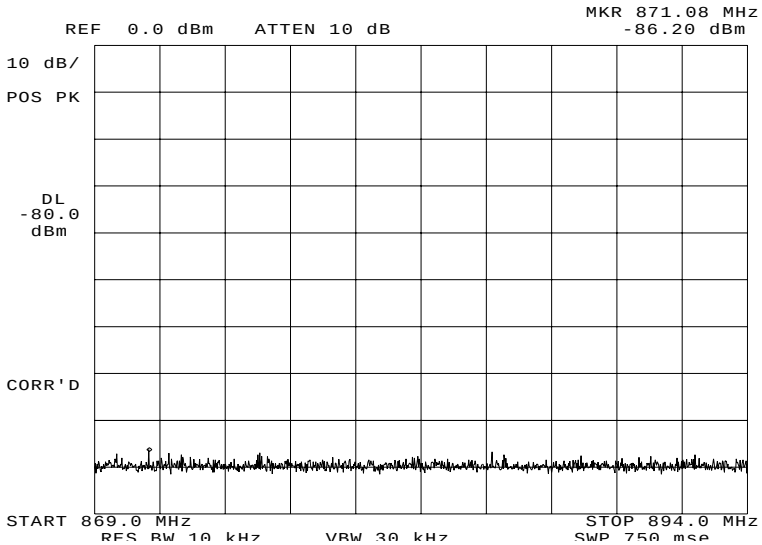



POWER: HIGH
MODULATION: WBD
OFFSET OCCUPIED BANDWIDTH

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

PAGE NO. 55 of 72.

NAME OF TEST: Emission Masks (Occupied Bandwidth)
g0190112: 2001-Sep-25 Tue 11:18:00
STATE: 1:Low Power

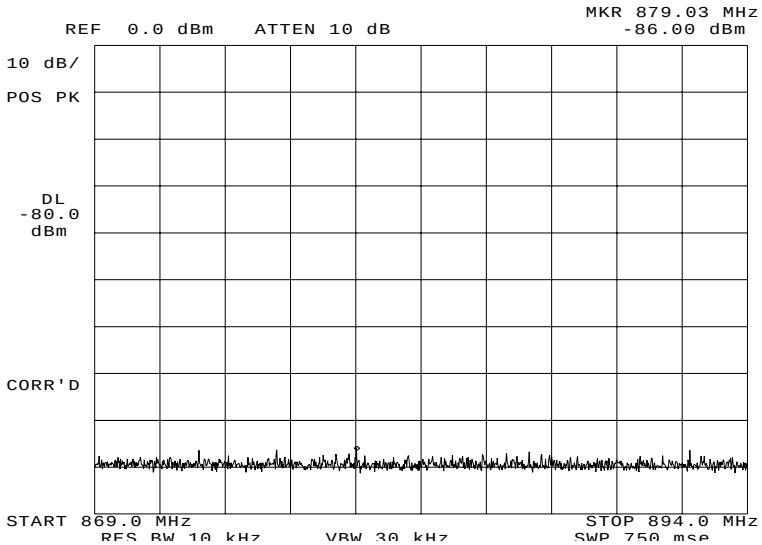



POWER: LOW
MODULATION: ANY
TX SPURS IN RX CRITICAL BAND

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

PAGE NO. 56 of 72.

NAME OF TEST: Emission Masks (Occupied Bandwidth)
g0190113: 2001-Sep-25 Tue 11:19:00
STATE: 2:High Power




POWER: HIGH
MODULATION: ANY
TX SPURS IN RX CRITICAL BAND

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

PAGE NO. 57 of 72.

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. 58 of 72.

NAME OF TEST: Unwanted Emissions (Transmitter Conducted)
g0190136: 2001-Sep-26 Wed 09:52:00
STATE: 1:Low Power AMPS

| FREQUENCY TUNED, MHz | FREQUENCY EMISSION, MHz | LEVEL, dBm | LEVEL, dBc | MARGIN, dB |
|---|---|---|---|---|
| 824.040000 | 1648.099000 | -63 | -69.6 | -43 |
| 836.400000 | 1672.811000 | -60.3 | -66.9 | -40.3 |
| 848.970000 | 1697.942000 | -64.5 | -71.1 | -44.5 |
| 824.040000 | 2471.712000 | -71.6 | -78.2 | -51.6 |
| 836.400000 | 2509.404000 | -74.5 | -81.1 | -54.5 |
| 848.970000 | 2546.645000 | -74 | -80.6 | -54 |
| 824.040000 | 3296.015000 | -75.4 | -82 | -55.4 |
| 836.400000 | 3345.249000 | -74.2 | -80.8 | -54.2 |
| 848.970000 | 3395.763000 | -75.1 | -81.7 | -55.1 |
| 824.040000 | 4119.976000 | -75.3 | -81.9 | -55.3 |
| 836.400000 | 4181.771000 | -75.8 | -82.4 | -55.8 |
| 848.970000 | 4244.796000 | -75.7 | -82.3 | -55.7 |
| 824.040000 | 4944.155000 | -75.6 | -82.2 | -55.6 |
| 836.400000 | 5018.287000 | -76.1 | -82.7 | -56.1 |
| 848.970000 | 5094.179000 | -75.7 | -82.3 | -55.7 |
| 824.040000 | 5768.390000 | -75.7 | -82.3 | -55.7 |
| 836.400000 | 5854.697000 | -68.5 | -75.1 | -48.5 |
| 848.970000 | 5942.392000 | -70.6 | -77.2 | -50.6 |
| 824.040000 | 6591.947000 | -68.7 | -75.3 | -48.7 |
| 836.400000 | 6691.101000 | -69.4 | -76 | -49.4 |
| 848.970000 | 6792.090000 | -69.9 | -76.5 | -49.9 |
| 824.040000 | 7416.262000 | -69.9 | -76.5 | -49.9 |
| 836.400000 | 7527.722000 | -68.9 | -75.5 | -48.9 |
| 848.970000 | 7640.633000 | -69.8 | -76.4 | -49.8 |
| 824.040000 | 8240.024000 | -68.1 | -74.7 | -48.1 |
| 836.400000 | 8363.832000 | -69 | -75.6 | -49 |
| 848.970000 | 8490.066000 | -70.1 | -76.7 | -50.1 |
| 824.040000 | 9064.861000 | -69.8 | -76.4 | -49.8 |
| 836.400000 | 9200.397000 | -69.7 | -76.3 | -49.7 |
| 848.970000 | 9339.166000 | -69.2 | -75.8 | -49.2 |
| 824.040000 | 9888.638000 | -69.4 | -76 | -49.4 |
| 836.400000 | 10036.778000 | -68.8 | -75.4 | -48.8 |
| 848.970000 | 10187.853000 | -69.2 | -75.8 | -49.2 |
| 824.040000 | 10712.251000 | -69.3 | -75.9 | -49.3 |
| 836.400000 | 10873.684000 | -69 | -75.6 | -49 |
| 848.970000 | 11036.964000 | -69.5 | -76.1 | -49.5 |
| 824.040000 | 11536.801000 | -68.4 | -75 | -48.4 |
| 836.400000 | 11709.339000 | -68.3 | -74.9 | -48.3 |
| 848.970000 | 11885.655000 | -69.2 | -75.8 | -49.2 |
| 824.040000 | 12360.900000 | -68.7 | -75.3 | -48.7 |
| 836.400000 | 12545.685000 | -63.4 | -70 | -43.4 |
| 848.970000 | 12734.724000 | -64.4 | -71 | -44.4 |

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NAME OF TEST: Unwanted Emissions (Transmitter Conducted)
g0190135: 2001-Sep-26 Wed 09:43:00
STATE: 2:High Power AMPS

| FREQUENCY TUNED, MHz | FREQUENCY EMISSION, MHz | LEVEL, dBm | LEVEL, dBc | MARGIN, dB |
|---|---|---|---|---|
| 824.040000 | 1648.073000 | -41.7 | -68.1 | -21.7 |
| 836.400000 | 1672.815000 | -36.1 | -62.5 | -16.1 |
| 848.970000 | 1697.930000 | -39.6 | -66 | -19.6 |
| 824.040000 | 2472.161000 | -52.2 | -78.6 | -32.2 |
| 836.400000 | 2509.243000 | -54.1 | -80.5 | -34.1 |
| 848.970000 | 2547.262000 | -55 | -81.4 | -35 |
| 824.040000 | 3295.888000 | -55.7 | -82.1 | -35.7 |
| 836.400000 | 3345.426000 | -55.1 | -81.5 | -35.1 |
| 848.970000 | 3396.088000 | -55 | -81.4 | -35 |
| 824.040000 | 4119.888000 | -55.5 | -81.9 | -35.5 |
| 836.400000 | 4182.072000 | -55.9 | -82.3 | -35.9 |
| 848.970000 | 4244.364000 | -55.8 | -82.2 | -35.8 |
| 824.040000 | 4944.016000 | -54.6 | -81 | -34.6 |
| 836.400000 | 5018.741000 | -54.2 | -80.6 | -34.2 |
| 848.970000 | 5094.073000 | -54.9 | -81.3 | -34.9 |
| 824.040000 | 5768.553000 | -55.3 | -81.7 | -35.3 |
| 836.400000 | 5854.905000 | -49 | -75.4 | -29 |
| 848.970000 | 5942.747000 | -49.6 | -76 | -29.6 |
| 824.040000 | 6591.925000 | -49.5 | -75.9 | -29.5 |
| 836.400000 | 6691.167000 | -49.3 | -75.7 | -29.3 |
| 848.970000 | 6791.757000 | -48.9 | -75.3 | -28.9 |
| 824.040000 | 7416.840000 | -49.4 | -75.8 | -29.4 |
| 836.400000 | 7527.707000 | -49.6 | -76 | -29.6 |
| 848.970000 | 7640.717000 | -49.4 | -75.8 | -29.4 |
| 824.040000 | 8240.714000 | -48.7 | -75.1 | -28.7 |
| 836.400000 | 8363.940000 | -49.5 | -75.9 | -29.5 |
| 848.970000 | 8489.523000 | -49.7 | -76.1 | -29.7 |
| 824.040000 | 9064.910000 | -49.7 | -76.1 | -29.7 |
| 836.400000 | 9200.754000 | -49 | -75.4 | -29 |
| 848.970000 | 9338.524000 | -49.1 | -75.5 | -29.1 |
| 824.040000 | 9888.602000 | -49.4 | -75.8 | -29.4 |
| 836.400000 | 10036.706000 | -49.5 | -75.9 | -29.5 |
| 848.970000 | 10187.271000 | -48.7 | -75.1 | -28.7 |
| 824.040000 | 10712.837000 | -48.8 | -75.2 | -28.8 |
| 836.400000 | 10872.709000 | -49.8 | -76.2 | -29.8 |
| 848.970000 | 11036.471000 | -49.5 | -75.9 | -29.5 |
| 824.040000 | 11536.486000 | -49.7 | -76.1 | -29.7 |
| 836.400000 | 11709.721000 | -48.8 | -75.2 | -28.8 |
| 848.970000 | 11885.986000 | -47.9 | -74.3 | -27.9 |
| 824.040000 | 12360.308000 | -49.6 | -76 | -29.6 |
| 836.400000 | 12546.282000 | -44.7 | -71.1 | -24.7 |
| 848.970000 | 12734.412000 | -44 | -70.4 | -24 |

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NAME OF TEST: Unwanted Emissions (Transmitter Conducted)
g0190138: 2001-Sep-26 Wed 10:15:00
STATE: 2:Low Power TDMA800

| FREQUENCY TUNED, MHz | FREQUENCY EMISSION, MHz | LEVEL, dBm | LEVEL, dBc | MARGIN, dB |
|---|---|---|---|---|
| 824.040000 | 1648.556000 | -83.9 | -79.4 | -63.9 |
| 836.400000 | 1672.837000 | -80.3 | -75.8 | -60.3 |
| 848.970000 | 1697.935000 | -79.7 | -75.2 | -59.7 |
| 824.040000 | 2472.015000 | -82 | -77.5 | -62 |
| 836.400000 | 2508.892000 | -84.8 | -80.3 | -64.8 |
| 848.970000 | 2546.719000 | -85.4 | -80.9 | -65.4 |
| 824.040000 | 3296.395000 | -86 | -81.5 | -66 |
| 836.400000 | 3346.046000 | -84.3 | -79.8 | -64.3 |
| 848.970000 | 3395.898000 | -85.3 | -80.8 | -65.3 |
| 824.040000 | 4120.392000 | -85.5 | -81 | -65.5 |
| 836.400000 | 4181.991000 | -85.6 | -81.1 | -65.6 |
| 848.970000 | 4244.642000 | -84.9 | -80.4 | -64.9 |
| 824.040000 | 4944.561000 | -85.1 | -80.6 | -65.1 |
| 836.400000 | 5018.751000 | -84.4 | -79.9 | -64.4 |
| 848.970000 | 5093.625000 | -84.8 | -80.3 | -64.8 |
| 824.040000 | 5768.346000 | -85.6 | -81.1 | -65.6 |
| 836.400000 | 5854.796000 | -80 | -75.5 | -60 |
| 848.970000 | 5942.805000 | -79.5 | -75 | -59.5 |
| 824.040000 | 6592.690000 | -78.1 | -73.6 | -58.1 |
| 836.400000 | 6691.138000 | -78.7 | -74.2 | -58.7 |
| 848.970000 | 6791.490000 | -78.6 | -74.1 | -58.6 |
| 824.040000 | 7415.917000 | -79.2 | -74.7 | -59.2 |
| 836.400000 | 7527.973000 | -79.6 | -75.1 | -59.6 |
| 848.970000 | 7640.318000 | -80.4 | -75.9 | -60.4 |
| 824.040000 | 8240.783000 | -78.4 | -73.9 | -58.4 |
| 836.400000 | 8364.392000 | -79 | -74.5 | -59 |
| 848.970000 | 8489.238000 | -79.1 | -74.6 | -59.1 |
| 824.040000 | 9064.920000 | -79.3 | -74.8 | -59.3 |
| 836.400000 | 9200.282000 | -80.1 | -75.6 | -60.1 |
| 848.970000 | 9339.111000 | -80.1 | -75.6 | -60.1 |
| 824.040000 | 9888.100000 | -79.1 | -74.6 | -59.1 |
| 836.400000 | 10036.505000 | -78.2 | -73.7 | -58.2 |
| 848.970000 | 10187.469000 | -78.8 | -74.3 | -58.8 |
| 824.040000 | 10712.587000 | -80 | -75.5 | -60 |
| 836.400000 | 10872.830000 | -79.1 | -74.6 | -59.1 |
| 848.970000 | 11036.482000 | -79.1 | -74.6 | -59.1 |
| 824.040000 | 11536.311000 | -79.3 | -74.8 | -59.3 |
| 836.400000 | 11710.099000 | -79.1 | -74.6 | -59.1 |
| 848.970000 | 11885.696000 | -78.7 | -74.2 | -58.7 |
| 824.040000 | 12360.595000 | -78 | -73.5 | -58 |
| 836.400000 | 12546.082000 | -75.1 | -70.6 | -55.1 |
| 848.970000 | 12734.119000 | -74.9 | -70.4 | -54.9 |

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NAME OF TEST: Unwanted Emissions (Transmitter Conducted)
g0190137: 2001-Sep-26 Wed 10:13:00
STATE: 2:High Power TDMA800

| FREQUENCY TUNED, MHz | FREQUENCY EMISSION, MHz | LEVEL, dBm | LEVEL, dBc | MARGIN, dB |
|---|---|---|---|---|
| 824.040000 | 1648.007000 | -52 | -79.3 | -32 |
| 836.400000 | 1672.335000 | -53.5 | -80.8 | -33.5 |
| 848.970000 | 1697.898000 | -49.4 | -76.7 | -29.4 |
| 824.040000 | 2471.796000 | -52.5 | -79.8 | -32.5 |
| 836.400000 | 2509.381000 | -54.7 | -82 | -34.7 |
| 848.970000 | 2547.292000 | -55 | -82.3 | -35 |
| 824.040000 | 3296.111000 | -54.8 | -82.1 | -34.8 |
| 836.400000 | 3345.417000 | -54.8 | -82.1 | -34.8 |
| 848.970000 | 3395.495000 | -55.2 | -82.5 | -35.2 |
| 824.040000 | 4119.859000 | -56 | -83.3 | -36 |
| 836.400000 | 4182.119000 | -55.4 | -82.7 | -35.4 |
| 848.970000 | 4244.615000 | -55.5 | -82.8 | -35.5 |
| 824.040000 | 4943.989000 | -54.8 | -82.1 | -34.8 |
| 836.400000 | 5018.454000 | -54.8 | -82.1 | -34.8 |
| 848.970000 | 5093.831000 | -55 | -82.3 | -35 |
| 824.040000 | 5768.752000 | -54.9 | -82.2 | -34.9 |
| 836.400000 | 5855.105000 | -50 | -77.3 | -30 |
| 848.970000 | 5942.448000 | -49.2 | -76.5 | -29.2 |
| 824.040000 | 6592.578000 | -49 | -76.3 | -29 |
| 836.400000 | 6690.800000 | -49.6 | -76.9 | -29.6 |
| 848.970000 | 6791.638000 | -48.9 | -76.2 | -28.9 |
| 824.040000 | 7416.765000 | -49.3 | -76.6 | -29.3 |
| 836.400000 | 7527.145000 | -50.2 | -77.5 | -30.2 |
| 848.970000 | 7640.366000 | -49.1 | -76.4 | -29.1 |
| 824.040000 | 8240.343000 | -49.4 | -76.7 | -29.4 |
| 836.400000 | 8363.900000 | -49 | -76.3 | -29 |
| 848.970000 | 8489.284000 | -50.1 | -77.4 | -30.1 |
| 824.040000 | 9064.311000 | -48.9 | -76.2 | -28.9 |
| 836.400000 | 9200.307000 | -49.9 | -77.2 | -29.9 |
| 848.970000 | 9339.050000 | -49.5 | -76.8 | -29.5 |
| 824.040000 | 9888.340000 | -49.2 | -76.5 | -29.2 |
| 836.400000 | 10036.524000 | -49.9 | -77.2 | -29.9 |
| 848.970000 | 10187.860000 | -49.6 | -76.9 | -29.6 |
| 824.040000 | 10712.053000 | -49.6 | -76.9 | -29.6 |
| 836.400000 | 10872.857000 | -49.5 | -76.8 | -29.5 |
| 848.970000 | 11036.664000 | -48.6 | -75.9 | -28.6 |
| 824.040000 | 11536.166000 | -49.4 | -76.7 | -29.4 |
| 836.400000 | 11709.186000 | -49.5 | -76.8 | -29.5 |
| 848.970000 | 11885.162000 | -48.9 | -76.2 | -28.9 |
| 824.040000 | 12360.564000 | -48.8 | -76.1 | -28.8 |
| 836.400000 | 12546.180000 | -44.7 | -72 | -24.7 |
| 848.970000 | 12734.723000 | -44.8 | -72.1 | -24.8 |

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NAME OF TEST: Unwanted Emissions (Transmitter Conducted)
g0190130: 2001-Sep-25 Tue 14:27:00
STATE: 2:Low Power TDMA1900

| FREQUENCY TUNED, MHz | FREQUENCY EMISSION, MHz | LEVEL, dBm | LEVEL, dBc | MARGIN, dB |
|---|---|---|---|---|
| 1850.040000 | 3699.585000 | -54.1 | -81.4 | -41.1 |
| 1879.980000 | 3760.045000 | -56.1 | -83.4 | -43.1 |
| 1909.920000 | 3820.225000 | -55.4 | -82.7 | -42.4 |
| 1850.040000 | 5550.467000 | -55.6 | -82.9 | -42.6 |
| 1879.980000 | 5639.933000 | -54.8 | -82.1 | -41.8 |
| 1909.920000 | 5729.512000 | -54.8 | -82.1 | -41.8 |
| 1850.040000 | 7400.519000 | -49.9 | -77.2 | -36.9 |
| 1879.980000 | 7520.231000 | -49.6 | -76.9 | -36.6 |
| 1909.920000 | 7639.627000 | -49.7 | -77 | -36.7 |
| 1850.040000 | 9250.004000 | -49 | -76.3 | -36 |
| 1879.980000 | 9400.347000 | -49 | -76.3 | -36 |
| 1909.920000 | 9549.552000 | -47.9 | -75.2 | -34.9 |
| 1850.040000 | 11099.768000 | -49.7 | -77 | -36.7 |
| 1879.980000 | 11280.125000 | -49.3 | -76.6 | -36.3 |
| 1909.920000 | 11459.143000 | -49.4 | -76.7 | -36.4 |
| 1850.040000 | 12950.720000 | -44.5 | -71.8 | -31.5 |
| 1879.980000 | 13159.886000 | -44.6 | -71.9 | -31.6 |
| 1909.920000 | 13369.895000 | -44.9 | -72.2 | -31.9 |
| 1850.040000 | 14800.557000 | -43.4 | -70.7 | -30.4 |
| 1879.980000 | 15040.119000 | -43.2 | -70.5 | -30.2 |
| 1909.920000 | 15279.137000 | -43.2 | -70.5 | -30.2 |
| 1850.040000 | 16650.086000 | -42.4 | -69.7 | -29.4 |
| 1879.980000 | 16919.972000 | -43.8 | -71.1 | -30.8 |
| 1909.920000 | 17189.026000 | -43.6 | -70.9 | -30.6 |
| 1850.040000 | 18500.203000 | -42.5 | -69.8 | -29.5 |
| 1879.980000 | 18800.258000 | -37.8 | -65.1 | -24.8 |
| 1909.920000 | 19098.809000 | -38.2 | -65.5 | -25.2 |
| 1850.040000 | 20350.882000 | -34.6 | -61.9 | -21.6 |
| 1879.980000 | 20679.859000 | -36.4 | -63.7 | -23.4 |
| 1909.920000 | 21009.491000 | -35.9 | -63.2 | -22.9 |

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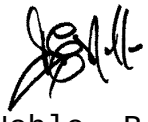
NAME OF TEST: Unwanted Emissions (Transmitter Conducted)
g0190139: 2001-Sep-26 Wed 10:42:00
STATE: 2:High Power TDMA1900

| FREQUENCY TUNED, MHz | FREQUENCY EMISSION, MHz | LEVEL, dBm | LEVEL, dBc | MARGIN, dB |
|---|---|---|---|---|
| 1850.040000 | 3699.851000 | -55.6 | -83.3 | -35.6 |
| 1879.980000 | 3760.316000 | -56.3 | -84 | -36.3 |
| 1909.920000 | 3819.649000 | -56.5 | -84.2 | -36.5 |
| 1850.040000 | 5549.727000 | -56 | -83.7 | -36 |
| 1879.980000 | 5639.469000 | -55.5 | -83.2 | -35.5 |
| 1909.920000 | 5729.804000 | -55.2 | -82.9 | -35.2 |
| 1850.040000 | 7400.175000 | -49.6 | -77.3 | -29.6 |
| 1879.980000 | 7520.324000 | -50.6 | -78.3 | -30.6 |
| 1909.920000 | 7639.955000 | -49.9 | -77.6 | -29.9 |
| 1850.040000 | 9250.159000 | -50.2 | -77.9 | -30.2 |
| 1879.980000 | 9399.610000 | -48.9 | -76.6 | -28.9 |
| 1909.920000 | 9549.730000 | -50.1 | -77.8 | -30.1 |
| 1850.040000 | 11099.915000 | -50.3 | -78 | -30.3 |
| 1879.980000 | 11279.477000 | -49.8 | -77.5 | -29.8 |
| 1909.920000 | 11459.661000 | -49.8 | -77.5 | -29.8 |
| 1850.040000 | 12950.614000 | -45.4 | -73.1 | -25.4 |
| 1879.980000 | 13160.035000 | -45.5 | -73.2 | -25.5 |
| 1909.920000 | 13368.962000 | -45.2 | -72.9 | -25.2 |
| 1850.040000 | 14800.203000 | -44.6 | -72.3 | -24.6 |
| 1879.980000 | 15039.968000 | -43.9 | -71.6 | -23.9 |
| 1909.920000 | 15279.269000 | -44.6 | -72.3 | -24.6 |
| 1850.040000 | 16650.198000 | -44.4 | -72.1 | -24.4 |
| 1879.980000 | 16919.939000 | -44 | -71.7 | -24 |
| 1909.920000 | 17188.944000 | -43.9 | -71.6 | -23.9 |
| 1850.040000 | 18500.400000 | -43.7 | -71.4 | -23.7 |
| 1879.980000 | 18799.837000 | -38.5 | -66.2 | -18.5 |
| 1909.920000 | 19099.629000 | -38.3 | -66 | -18.3 |
| 1850.040000 | 20350.731000 | -37.1 | -64.8 | -17.1 |
| 1879.980000 | 20680.126000 | -36.7 | -64.4 | -16.7 |
| 1909.920000 | 21009.170000 | -37.2 | -64.9 | -17.2 |



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, Paragraph 1.2.12

MEASUREMENT PROCEDURE

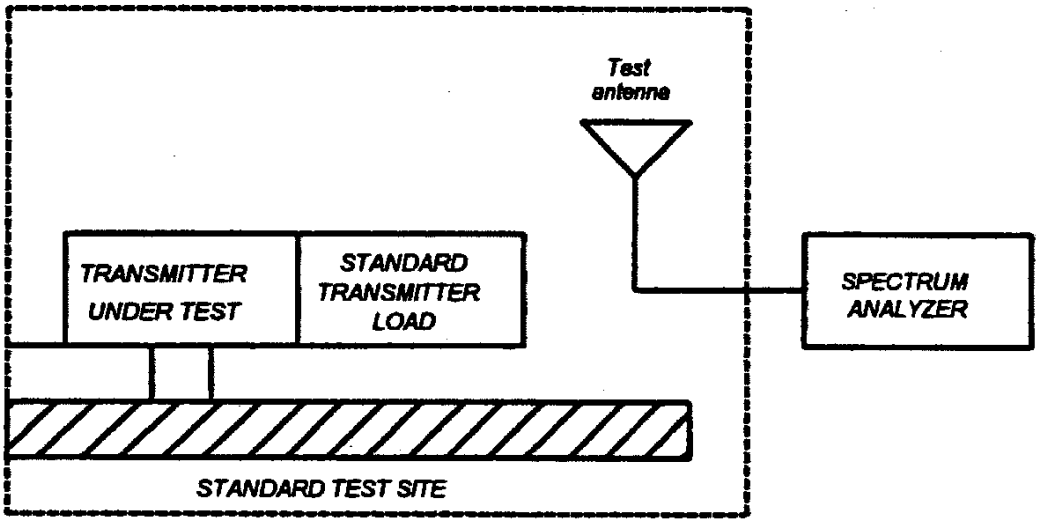
1.2.12.1 Definition: Radiated spurious emissions are emissions from the equipment when transmitting into a non-radiating load on a frequency or frequencies which are outside an occupied band sufficient to ensure transmission of information of required quality for the class of communications desired.

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 ≤3 kHz.
2) Video Bandwidth ≥10 kHz
3) Sweep Speed ≤2000 Hz/second
4) Detector Mode = Positive Peak

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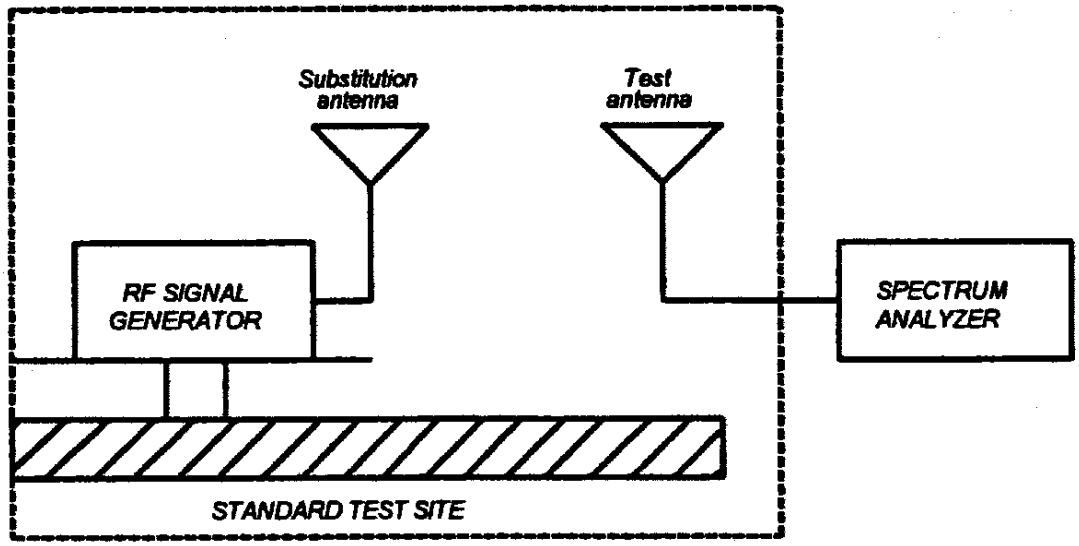
NAME OF TEST: Field Strength of Spurious Radiation (Cont.)

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.

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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 | Description | s/n | Cycle | Last Cal |
|---|---|---|---|---|
| (as applicable) | | | Per ANSI C63.4-1992/2000 Draft, 10.1.4 | |
| **TRANSDUCER** | | | | |
| i00088 | EMCO 3109-B 25MHz-300MHz | 2336 | 12 mo. | Sep-01 |
| i00065 | EMCO 3301-B Active Monopole | 2635 | 12 mo. | Sep-01 |
| i00089 | Aprel 2001 200MHz-1GHz | 001500 | 12 mo. | Sep-01 |
| i00103 | EMCO 3115 1GHz-18GHz | 9208-3925 | 12 mo. | Sep-01 |
| **AMPLIFIER** | | | | |
| i00028 | HP 8449A | 2749A00121 | 12 mo. | Mar-01 |
| **SPECTRUM ANALYZER** | | | | |
| i00029 | HP 8563E | 3213A00104 | 12 mo. | Aug-01 |
| i00033 | HP 85462A | 3625A00357 | 12 mo. | May-01 |
| i00048 | HP 8566B | 2511AD1467 | 6 mo. | Nov-01 |

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NAME OF TEST: Field Strength of Spurious Radiation

STATE: 2:High Power AMPS g0190134: 2001-Sep-26 Wed 08:01:00

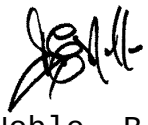
| FREQUENCY TUNED, MHz | FREQUENCY EMISSION, MHz | METER, dBuV | CF, dB | ERP, dBm | ERP, dbc |
|---|---|---|---|---|---|
| 836.400000 | 1672.800833 | 55.67 | -0.38 | -42.1 | ≤-67 |
| 836.400000 | 2509.200833 | 53 | 3.06 | -41.3 | ≤-67 |
| 836.400000 | 3345.608333 | 43.17 | 5.7 | -48.5 | ≤-67 |
| 836.400000 | 4182.015833 | 40.67 | 7.53 | -49.2 | ≤-67 |
| 836.400000 | 5018.408333 | 34.83 | 9.26 | -53.3 | ≤-67 |
| 836.400000 | 5854.810833 | 34.5 | 10.78 | -52.1 | ≤-67 |
| 836.400000 | 6691.220666 | 36.33 | 12.2 | -48.8 | ≤-67 |
| 836.400000 | 7527.620166 | 33.83 | 13.5 | -50 | ≤-67 |
| 836.400000 | 8364.020166 | 33.67 | 14.55 | -49.2 | ≤-67 |

STATE: 2:High Power TDMA800 g0190140: 2001-Sep-26 Wed 09:31:00

| FREQUENCY TUNED, MHz | FREQUENCY EMISSION, MHz | METER, dBuV | CF, dB | ERP, dBm | ERP, dbc |
|---|---|---|---|---|---|
| 836.400000 | 1672.788333 | 56.67 | -0.38 | -41.1 | ≤-65.6 |
| 836.400000 | 2509.196667 | 57.5 | 3.06 | -36.8 | ≤-65.6 |
| 836.400000 | 3345.567500 | 45.5 | 5.7 | -46.2 | ≤-65.6 |
| 836.400000 | 4181.993333 | 41.5 | 7.53 | -48.3 | ≤-65.6 |
| 836.400000 | 5018.414167 | 38.67 | 9.26 | -49.4 | ≤-65.6 |
| 836.400000 | 5854.827500 | 37 | 10.78 | -49.6 | ≤-65.6 |
| 836.400000 | 6691.264167 | 38.33 | 12.2 | -46.8 | ≤-65.6 |
| 836.400000 | 7527.673333 | 38.33 | 13.5 | -45.5 | ≤-65.6 |
| 836.400000 | 8364.010833 | 36.33 | 14.55 | -46.5 | ≤-65.6 |

STATE: 2:High Power TDMA1900 g0190141: 2001-Sep-26 Wed 11:53:00

| FREQUENCY TUNED, MHz | FREQUENCY EMISSION, MHz | METER, dBuV | CF, dB | EIRP, dBm | EIRP, dbc |
|---|---|---|---|---|---|
| 1879.980000 | 3759.976667 | 57.67 | 6.61 | -30.9 | ≤-58.4 |
| 1879.980000 | 5640.040000 | 53 | 10.4 | -31.8 | ≤-58.4 |
| 1879.980000 | 7519.773333 | 45.83 | 13.49 | -35.9 | ≤-58.4 |
| 1879.980000 | 9399.913333 | 43.5 | 15.51 | -36.2 | ≤-58.4 |
| 1879.980000 | 11279.903333 | 44.33 | 17.4 | -33.5 | ≤-58.4 |
| 1879.980000 | 13159.900000 | 35.33 | 17.62 | -42.3 | ≤-58.4 |
| 1879.980000 | 15039.846667 | 36 | 18.19 | -41 | ≤-58.4 |
| 1879.980000 | 16919.806667 | 35.83 | 19.65 | -39.7 | ≤-58.4 |



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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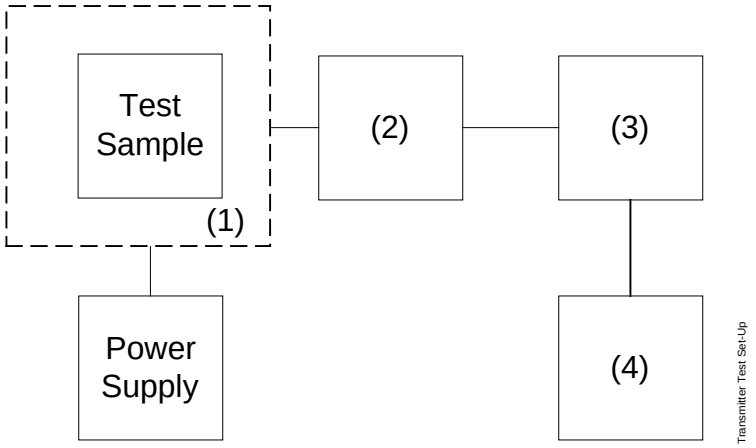
## TRANSMITTER TEST SET-UP

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 | Description | s/n |
|---|---|---|
| (as applicable) | | |
| (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)

TEMPERATURE EXTREMES @ NOMINAL VOLTAGE

| Temp., ˚C | BAND | CHANNEL | MAX ERROR (Hz) |
|---|---|---|---|
| -30 | AMPS | 384 | 343 |
| -20 | AMPS | 384 | 347 |
| -10 | AMPS | 384 | 346 |
| 0 | AMPS | 384 | 338 |
| 10 | AMPS | 384 | 334 |
| 20 | AMPS | 384 | 333 |
| 30 | AMPS | 384 | 330 |
| 40 | AMPS | 384 | 326 |
| 50 | AMPS | 384 | 335 |
| | | | |
| -30 | TDMA800 | 384 | 10 |
| -20 | TDMA800 | 384 | 8 |
| -10 | TDMA800 | 384 | 16 |
| 0 | TDMA800 | 384 | 7 |
| 10 | TDMA800 | 384 | 11 |
| 20 | TDMA800 | 384 | 16 |
| 30 | TDMA800 | 384 | 9 |
| 40 | TDMA800 | 384 | 8 |
| 50 | TDMA800 | 384 | 9 |
| | | | |
| -30 | TDMA1900 | 1000 | 15 |
| -20 | TDMA1900 | 1000 | 26 |
| -10 | TDMA1900 | 1000 | 21 |
| 0 | TDMA1900 | 1000 | 22 |
| 10 | TDMA1900 | 1000 | 25 |
| 20 | TDMA1900 | 1000 | 27 |
| 30 | TDMA1900 | 1000 | 14 |
| 40 | TDMA1900 | 1000 | 12 |
| 50 | TDMA1900 | 1000 | 26 |

PAGE NO. 71 of 72.

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.

Voltage Extremes @ 20˚C

| Voltage | BAND | CHANNEL | MAX ERROR (Hz) |
|---|---|---|---|
| 3.8V (Nominal) | AMPS | 384 | 343 |
| 3.6V (End Point) | AMPS | 384 | 349 |
| 4.37V (115%) | AMPS | 384 | 342 |
| 3.8V (Nominal) | TDMA800 | 384 | 13 |
| 3.6V (End Point) | TDMA800 | 384 | 11 |
| 4.37V (115%) | TDMA800 | 384 | 21 |
| 3.8V (Nominal) | TDMA1900 | 1000 | 25 |
| 3.6V (End Point) | TDMA1900 | 1000 | 24 |
| 4.37V (115%) | TDMA1900 | 1000 | 54 |

NOTE: 85% of nominal voltage was below battery end point, so only 3 voltages were examined.

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NAME OF TEST: Necessary Bandwidth and Emission Bandwidth

SPECIFICATION: 47 CFR 2.202(g)

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

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

MODULATION = 30K0DXW
NECESSARY BANDWIDTH:
NECESSARY BANDWIDTH ($B_N$), kHz = 30
(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.