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

Transmitter Certification

of

FCC ID: ROJAERO-HSD
Model: AERO-HSD+

to

Federal Communications Commission

Rule Part 87 and Confidentiality

Date of report: January 26, 2004

On the Behalf of the Applicant:

Thrane & Thrane A/S

At the Request of:

P.O. Wire Transfer Deposit

Thrane & Thrane A/S
Lundtoftegardsvej 93D
DK-2800 Lyngby, Denmark

Attention of:

Claus Schakow Nielsen, M.Sc.E.E. SMPS
Engineering & Development
+48 39 55 88 21; FAX: +45 39 55 88 88
Email: csn@tt.dk
Thomas T. West, Development Engineer
+45 39 55 83 77; FAX: +45 39 55 88 88
Email: ttw@tt.dk

Supervised by:

Morton Flom, P. Eng.

List of Exhibits

(FCC **Certification** (Transmitters) - Revised 9/28/98)

Applicant: Thrane & Thrane A/S

FCC ID: ROJAERO-HSD

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. 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
5. Confidentiality Request	x
6. MPE Report	x

By M.F.A. Inc.:

A. Testimonial & Statement of Certification

The Applicant has been cautioned as to the following:

15.21 **Information to the 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

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: d0410034

d) Client: Thrane & Thrane A/S
Lundtoftegardsvej 93D
DK-2800 Lyngby, Denmark

e) Identification: AERO-HSD+
FCC ID: ROJAERO-HSD
S/N: Not available – Prototypes tested.
EUT Description: Aeronautical Satellite Phone

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

g) Report Date: January 26, 2004
EUT Received: January 12, 2004

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

i) Sampling method: No sampling procedure used.

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

m) Supervised by:

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.

List of General Information Required for Certification

In Accordance with FCC Rules and Regulations,
Volume II, Part 2 and to

87, Confidentiality

Sub-part 2.1033

(c)(1): **Name and Address of Applicant**:

Thrane & Thrane A/S
Lundtoftegardsvej 93D
DK-2800 Lyngby, Denmark

Manufacturer:

Applicant

(c)(2): **FCC ID**: ROJAERO-HSD

Model Number: AERO-HSD^{+}
Consisting of TT-5014A HPA and TT5035A SDU

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

Please see attached exhibits

(c)(4): **Type of Emission**: 10K0G1D, 2K50G1D, 21K0G1D, 40K0G1D, 38KFD7W

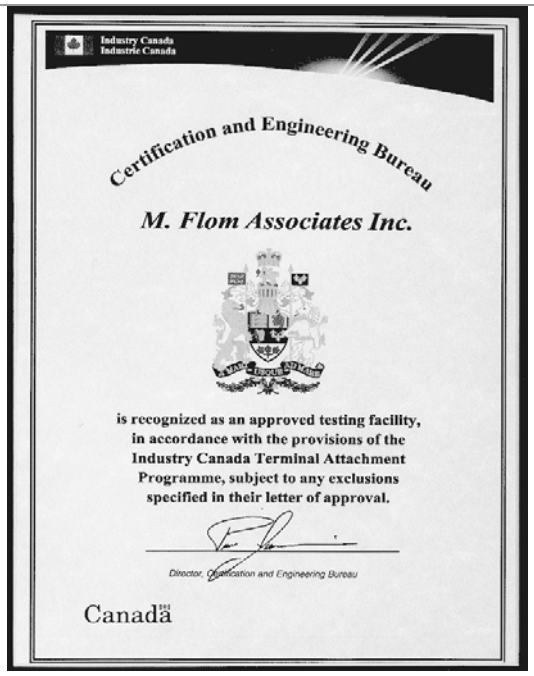
(c)(5): **Frequency Range, MHz**: 1631.5 to 1660.5

(c)(6): **Power Rating, Watts**: 30
____ Switchable ____ Variable ___ N/A

(c)(7): **Maximum Power Rating, Watts**: 300

DUT Results: Passes ___x___ Fails _____

Industry Canada



Industry Canada
Industrie Canada

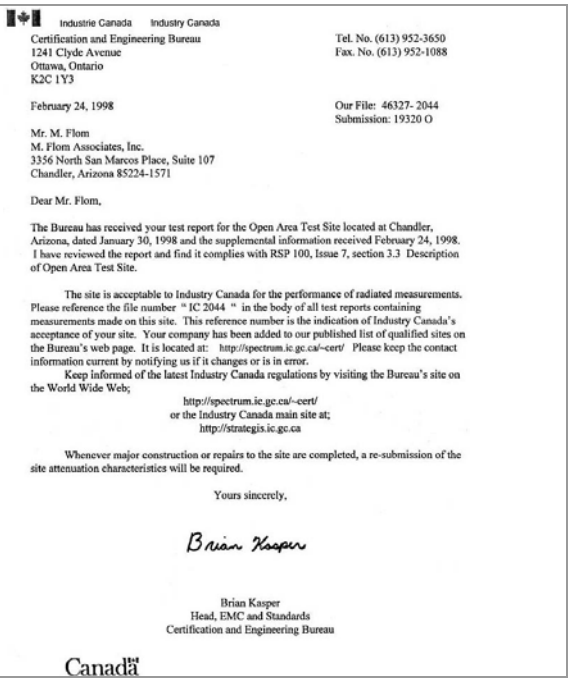
Certification and Engineering Bureau

M. Flom Associates Inc.

is recognized as an approved testing facility, in accordance with the provisions of the Industry Canada Terminal Attachment Programme, subject to any exclusions specified in their letter of approval.

Director, Certification and Engineering Bureau

Canada



Industrie Canada Industry Canada

Certification and Engineering Bureau
1241 Clyde Avenue
Ottawa, Ontario
K2C 1Y3

Tel. No. (613) 952-3650
Fax. No. (613) 952-1088

February 24, 1998

Our File: 46327- 2044
Submission: 19320 O

Mr. M. Flom
M. Flom Associates, Inc.
3356 North San Marcos Place, Suite 107
Chandler, Arizona 85224-1571

Dear Mr. Flom,

The Bureau has received your test report for the Open Area Test Site located at Chandler, Arizona, dated January 30, 1998 and the supplemental information received February 24, 1998. I have reviewed the report and find it complies with RSP 100, Issue 7, section 3.3 Description of Open Area Test Site.

The site is acceptable to Industry Canada for the performance of radiated measurements. Please reference the file number " IC 2044 " in the body of all test reports containing measurements made on this site. This reference number is the indication of Industry Canada's acceptance of your site. Your company has been added to our published list of qualified sites on the Bureau's web page. It is located at: http://spectrum.ic.gc.ca/~cert/ Please keep the contact information current by notifying us if it changes or is in error.

Keep informed of the latest Industry Canada regulations by visiting the Bureau's site on the World Wide Web;

http://spectrum.ic.gc.ca/~cert/
or the Industry Canada main site at;
http://strategis.ic.gc.ca

Whenever major construction or repairs to the site are completed, a re-submission of the site attenuation characteristics will be required.

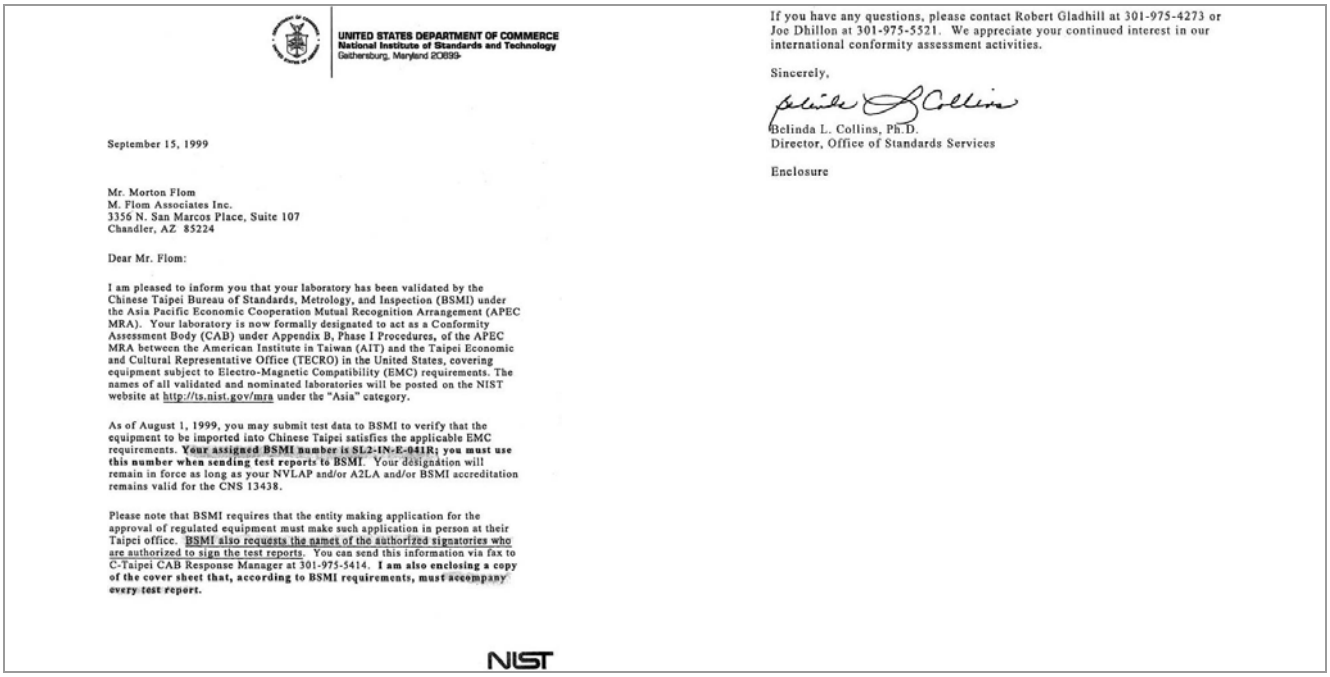
Yours sincerely,

Brian Kasper

Brian Kasper
Head, EMC and Standards
Certification and Engineering Bureau

Canada

NIST



UNITED STATES DEPARTMENT OF COMMERCE
National Institute of Standards and Technology
Gaithersburg, Maryland 20899-

September 15, 1999

Mr. Morton Flom
M. Flom Associates Inc.
3356 N. San Marcos Place, Suite 107
Chandler, AZ 85224

Dear Mr. Flom:

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

As of August 1, 1999, you may submit test data to BSMI to verify that the equipment to be imported into Chinese Taipei satisfies the applicable EMC requirements. **Your assigned BSMI number is SL2-IN-E-041R; you must use this number when sending test reports to BSMI.** Your designation will remain in force as long as your NVLAP and/or A2LA and/or BSMI accreditation remains valid for the CNS 13438.

Please note that BSMI requires that the entity making application for the approval of regulated equipment must make such application in person at their Taipei office. BSMI also requests the names of the authorized signatories who are authorized to sign the test reports. You can send this information via fax to C-Taipei CAB Response Manager at 301-975-5414. **I am also enclosing a copy of the cover sheet that, according to BSMI requirements, must accompany every test report.**

If you have any questions, please contact Robert Gladhill at 301-975-4273 or Joe Dhillon at 301-975-5521. We appreciate your continued interest in our international conformity assessment activities.

Sincerely,

Belinda L. Collins, Ph.D.
Director, Office of Standards Services

Enclosure

NIST

Page Number 4 of 56.

Subpart 2.1033 (continued)
(c)(8): Voltages & currents in all elements in final RF stage, including final transistor or solid-state device:

Collector Current, A	=	5.0
Collector Voltage, Vdc	=	26.5
Supply Voltage, Vdc	=	28.0

(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

Page Number 5 of 56.

Sub-part 2.1033(c)(14): **Test and Measurement Data**

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

_____ 21 – Domestic Public Fixed Radio Services
_____ 22 – Public Mobile Services
_____ 22 Subpart H - Cellular Radiotelephone Service
_____ 22.901(d) - Alternative technologies and auxiliary services
_____ 23 – International Fixed Public Radiocommunication services
_____ 24 – Personal Communications Services
_____ 74 Subpart H - Low Power Auxiliary Stations
_____ 80 – Stations in the Maritime Services
_____ 80 Subpart E - General Technical Standards
_____ 80 Subpart F - Equipment Authorization for Compulsory Ships
_____ 80 Subpart K - Private Coast Stations and Marine Utility Stations
_____ 80 Subpart S - Compulsory Radiotelephone Installations for Small Passenger Boats
_____ 80 Subpart T - Radiotelephone Installation Required for Vessels on the Great Lakes
_____ 80 Subpart U - Radiotelephone Installations Required by the Bridge-to-Bridge Act
_____ 80 Subpart V - Emergency Position Indicating Radio Beacons (EPIRB'S)
_____ 80 Subpart W - Global Maritime Distress and Safety System (GMDSS)
_____ 80 Subpart X - Voluntary Radio Installations
_x_ 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

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

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

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

Page Number 7 of 56.

Name of Test: Carrier Output Power (Conducted)

Specification: 47 CFR 2.1046(a)

Guide: ANSI/TIA/EIA-603-1992, Paragraph 2.2.1

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 RF Power Meter.

2. Measurement accuracy is ±3%.

Measurement Results
(Worst case)

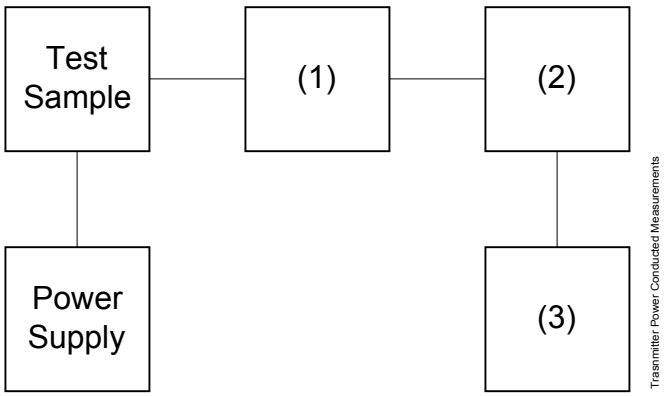
Frequency of Carrier, MHz = 1631.5, 1660.5, 1643.5, 1649
Ambient Temperature = 23°C ± 3°C

Power Setting	RF Power, Watts
High	30

Performed by: Daniel M. Dillon, Test Engineer

Transmitter Power Conducted Measurements

Test A. RF Power Output
Test B. Frequency Stability



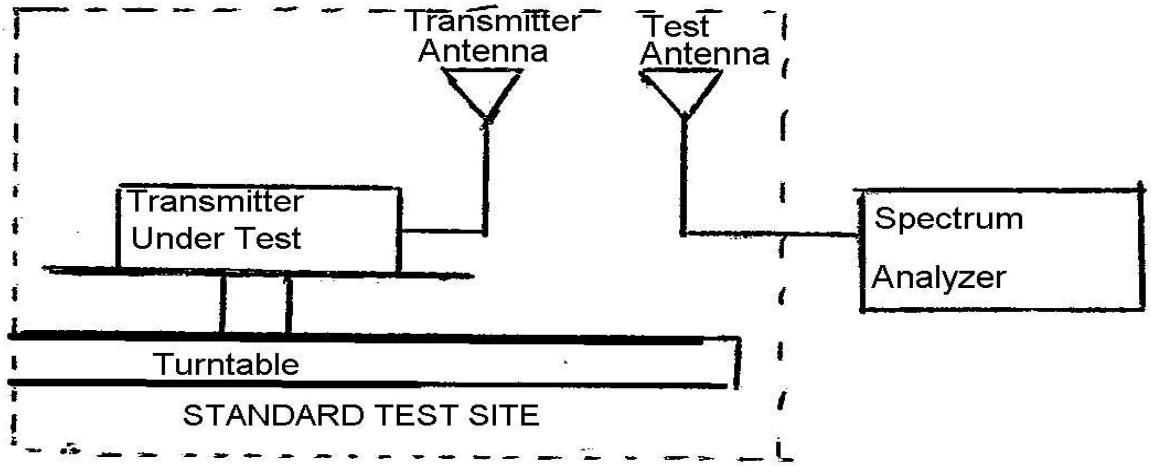
	Asset	Description	s/n
(1)	**Coaxial Attenuator**		
X	i00231/2	PASTERNACK PE7021-30 (30 dB)	231 or 232
	i00122/3	NARDA 766 (10 dB)	7802 or 7802A
(2)	**Power Meters**		
X	i00251	HP53152A	US39270237
(3)	**Frequency Counter**		
X	i00020	HP 8901A Frequency Mode	2105A01087

Name of Test: ERP Carrier Power (Radiated)

Specification: TIA/EIA 603A

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.

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



b) Set the test antenna to horizontal polarization. Rotate the turntable and raise / lower the test antenna with the transmitter antenna facing the test antenna and record the highest received signal in dB as Horizontal.

c) With the test antenna set to vertical repeat b) and record as Vertical.

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:

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

Measurement Results

g0410089: 2004-Jan-13 Tue 11:46:00
State: 2:High Power H+ Ambient Temperature: 21°C

Frequency Tuned, MHz	Polarization	Level, dBm EIRP	Path Loss, dBm	Average, dBm
1631.500000	Vertical	41.7	1.4	43.1
1631.500000	Horizontal	43.3	1.4	44.7
1643.500000	Horizontal	44.9	1.8	46.7
1643.500000	Horizontal	43.5	1.8	46.3
1660.500000	Vertical	44.6	2.2	46.8
1660.500000	Vertical	46.0	2.2	48.2

g0410091: 2004-Jan-13 Tue 11:59:00
State: 2:High Power RT Ambient Temperature: 21°C

Frequency Tuned, MHz	Polarization	Level, dBm EIRP	Path Loss, dBm	Average, dBm
1631.500000	Horizontal	43.7	1.4	45.1
1631.500000	Vertical	42.5	1.4	43.9
1643.500000	Vertical	43.7	1.8	45.5
1643.500000	Horizontal	45.2	1.8	47.0
1660.500000	Vertical	45.5	2.2	47.7
1660.500000	Horizontal	46.9	2.2	49.1

g0410092: 2004-Jan-13 Tue 12:15:00
State: 2:High Power HSD Ambient Temperature: 21°C

Frequency Tuned, MHz	Polarization	Level, dBm EIRP	Path Loss, dBm	Average, dBm
1631.500000	Horizontal	44.5	1.4	45.9
1631.500000	Vertical	43.9	1.4	45.3
1643.500000	Horizontal	45.2	1.8	47.0
1643.500000	Vertical	44.6	1.8	46.4
1660.500000	Horizontal	46.9	2.2	49.1
1660.500000	Vertical	45.8	2.2	48.0

NOTE: This is a 30W (45dBm) device with a 5dB gain antenna, which gives a maximum EIRP of 50dBm.

Name of Test: Unwanted Emissions (Transmitter Conducted)

Specification: 47 CFR 2.1051

Guide: ANSI/TIA/EIA-603-1992, Paragraph 2.2.13

Test Equipment: As per attached page

Measurement Procedure

1. The emissions were measured for the worst case as follows:
   (a): within a band of frequencies defined by the carrier frequency plus and minus one channel.
   (b): from the lowest frequency generated in the EUT and to at least the 10th harmonic of the carrier frequency, or 40 GHz, whichever is lower.

2. The magnitude of spurious emissions that are attenuated more than 20 dB below the permissible value need not be specified.

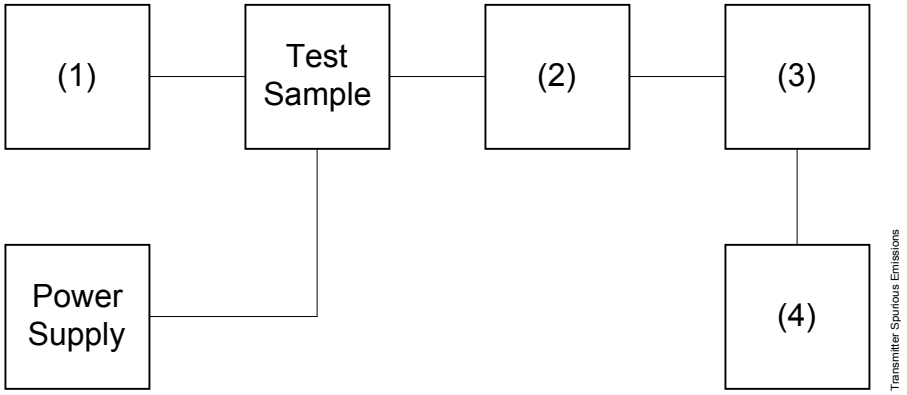
3. Measurement Results: Attached for worst case

Frequency of carrier, MHz	=	1631.5, 1660.5, 1643.5, 1649
Spectrum Searched, GHz	=	0 to 10 x F_C
Maximum Response, Hz	=	N/A –Digital Device
All Other Emissions	=	≥ 20 dB Below Limit

Performed by: Daniel M. Dillon, Test Engineer

Transmitter Spurious Emission

Test A. Occupied Bandwidth (In-Band Spurious)
Test B. Out-Of-Band Spurious



	Asset	Description	s/n
(1) **Audio Oscillator/Generator**			
X	i00017	HP 8903A Audio Analyzer	2216A01753
	i00002	HP 3336B Synthesizer / Level Gen.	1931A01465
(2) **Coaxial Attenuator**			
X	i00231/2	PASTERNACK PE7021-30 (30 dB)	231 or 232
	i0012/3	NARDA 766 (10 dB)	7802 or 7802A
(3) **Filters; Notch, HP, LP, BP**			
	i00126	Eagle TNF-1 Notch Filter	100-250
	i00125	Eagle TNF-1 Notch Filter	50-60
	i00124	Eagle TNF-1 Notch Filter	250-850
(4) **Spectrum Analyzer**			
X	i00048	HP 8566B Spectrum Analyzer	2511A01467
	i00029	HP 8563E Spectrum Analyzer	3213A00104

Page Number 13 of 56.

Name of Test: Unwanted Emissions (Transmitter Conducted)

Limit(s), dBc

-(43+10xLOG P) = -43 (1.0 Watts)

-(43+10xLOG P) = -57.8 (30 Watts)

g0410123: 2004-Jan-14 Wed 08:49:00

State: 2:High Power H+ Ambient Temperature: 23°C ± 3°C

Frequency Tuned, MHz	Frequency Emission, MHz	Level, dBm	Level, dBc	Margin, dB
1631.500000	3263.130500	-53.4	-83.4	-40.4
1643.500000	3287.199500	-53	-83	-40
1660.500000	3321.210500	-53	-83	-40
1631.500000	4894.437500	-53.7	-83.7	-40.7
1643.500000	4930.304000	-53.7	-83.7	-40.7
1660.500000	4981.634500	-52.5	-82.5	-39.5
1631.500000	6526.192500	-46.4	-76.4	-33.4
1643.500000	6573.877500	-46.9	-76.9	-33.9
1660.500000	6642.134000	-47	-77	-34
1631.500000	8157.701500	-47	-77	-34
1643.500000	8217.283500	-46.5	-76.5	-33.5
1660.500000	8302.387500	-45.6	-75.6	-32.6
1631.500000	9789.174000	-46.2	-76.2	-33.2
1643.500000	9861.037500	-46.2	-76.2	-33.2
1660.500000	9962.972000	-46.5	-76.5	-33.5
1631.500000	11420.355500	-46	-76	-33
1643.500000	11504.311500	-46.2	-76.2	-33.2
1660.500000	11623.523000	-45.1	-75.1	-32.1
1631.500000	13051.982500	-41	-71	-28
1643.500000	13148.232500	-41.5	-71.5	-28.5
1660.500000	13284.026100	-42	-72	-29
1631.500000	14683.543200	-41.2	-71.2	-28.2
1643.500000	14791.707300	-39.7	-69.7	-26.7
1660.500000	14944.354400	-41.4	-71.4	-28.4
1631.500000	16315.036300	-39.8	-69.8	-26.8
1643.500000	16435.229300	-41	-71	-28
1660.500000	16605.196300	-40.4	-70.4	-27.4
1631.500000	17946.654800	-39.7	-69.7	-26.7
1643.500000	18078.517700	-39.6	-69.6	-26.6
1660.500000	18265.276600	-38.8	-68.8	-25.8
1631.500000	19578.232300	-34.3	-64.3	-21.3
1643.500000	19722.120500	-33.7	-63.7	-20.7
1660.500000	19926.178400	-34	-64	-21
1631.500000	21209.724300	-32.5	-62.5	-19.5
1643.500000	21365.562000	-31.1	-61.1	-18.1
1660.500000	21586.658800	-32.1	-62.1	-19.1

Performed by: Daniel M. Dillon, Test Engineer

Page Number 14 of 56.

Name of Test: Unwanted Emissions (Transmitter Conducted)

Limit(s), dBc

-(43+10xLOG P) = -43 (1.0 Watts)
-(43+10xLOG P) = -57.8 (30 Watts)

g0410124: 2004-Jan-14 Wed 08:59:00
State: 2:High Power RT Ambient Temperature: 23°C ± 3°C

Frequency Tuned, MHz	Frequency Emission, MHz	Level, dBm	Level, dBc	Margin, dB
1631.500000	3263.067000	-52.1	-82.1	-39.1
1643.500000	3287.231000	-53.8	-83.8	-40.8
1660.500000	3320.907000	-52.2	-82.2	-39.2
1631.500000	4894.276000	-53.6	-83.6	-40.6
1643.500000	4930.296000	-53.3	-83.3	-40.3
1660.500000	4981.323000	-51.2	-81.2	-38.2
1631.500000	6526.097500	-46	-76	-33
1643.500000	6573.856000	-46.7	-76.7	-33.7
1660.500000	6641.771500	-46.8	-76.8	-33.8
1631.500000	8157.577500	-46.9	-76.9	-33.9
1643.500000	8217.342000	-45.9	-75.9	-32.9
1660.500000	8302.288500	-46.5	-76.5	-33.5
1631.500000	9789.193500	-47	-77	-34
1643.500000	9861.147000	-46.7	-76.7	-33.7
1660.500000	9962.982500	-45.8	-75.8	-32.8
1631.500000	11420.414500	-46.2	-76.2	-33.2
1643.500000	11504.359000	-46.7	-76.7	-33.7
1660.500000	11623.586000	-44.6	-74.6	-31.6
1631.500000	13051.963500	-41.9	-71.9	-28.9
1643.500000	13148.154000	-41.4	-71.4	-28.4
1660.500000	13283.952300	-41.8	-71.8	-28.8
1631.500000	14683.425700	-40.7	-70.7	-27.7
1643.500000	14791.735400	-40.7	-70.7	-27.7
1660.500000	14944.683700	-41.2	-71.2	-28.2
1631.500000	16314.924900	-40.4	-70.4	-27.4
1643.500000	16435.077600	-40.2	-70.2	-27.2
1660.500000	16605.244000	-40.3	-70.3	-27.3
1631.500000	17946.525800	-39.3	-69.3	-26.3
1643.500000	18078.394200	-39.6	-69.6	-26.6
1660.500000	18265.665200	-39.3	-69.3	-26.3
1631.500000	19578.150200	-33.2	-63.2	-20.2
1643.500000	19722.070600	-33.3	-63.3	-20.3
1660.500000	19926.021700	-33.7	-63.7	-20.7
1631.500000	21209.513600	-31.9	-61.9	-18.9
1643.500000	21365.324100	-32.3	-62.3	-19.3
1660.500000	21586.494500	-31.2	-61.2	-18.2

Performed by: Daniel M. Dillon, Test Engineer

Page Number 15 of 56.

Name of Test: Unwanted Emissions (Transmitter Conducted)

Limit(s), dBc

-(43+10xLOG P) = -43 (1.0 Watts)
-(43+10xLOG P) = -57.8 (30 Watts)

g0410125: 2004-Jan-14 Wed 09:04:00
State: 2:High Power HSD Ambient Temperature: 23°C ± 3°C

Frequency Tuned, MHz	Frequency Emission, MHz	Level, dBm	Level, dBc	Margin, dB
1631.500000	3263.061500	-53.5	-83.5	-40.5
1643.500000	3287.109500	-53.7	-83.7	-40.7
1660.500000	3321.114000	-53.3	-83.3	-40.3
1631.500000	4894.649500	-53.4	-83.4	-40.4
1643.500000	4930.327500	-53.3	-83.3	-40.3
1660.500000	4981.353000	-52.2	-82.2	-39.2
1631.500000	6525.956000	-46.3	-76.3	-33.3
1643.500000	6573.971500	-47.3	-77.3	-34.3
1660.500000	6642.003500	-46.2	-76.2	-33.2
1631.500000	8157.477500	-46.8	-76.8	-33.8
1643.500000	8217.522000	-45.6	-75.6	-32.6
1660.500000	8302.713000	-46.6	-76.6	-33.6
1631.500000	9788.993500	-46.4	-76.4	-33.4
1643.500000	9860.841000	-46.4	-76.4	-33.4
1660.500000	9963.029000	-46.4	-76.4	-33.4
1631.500000	11420.352500	-46.9	-76.9	-33.9
1643.500000	11504.308500	-46.7	-76.7	-33.7
1660.500000	11623.288000	-46.4	-76.4	-33.4
1631.500000	13052.186000	-42.5	-72.5	-29.5
1643.500000	13148.235500	-41.8	-71.8	-28.8
1660.500000	13283.875000	-42.2	-72.2	-29.2
1631.500000	14683.568800	-41.7	-71.7	-28.7
1643.500000	14791.263100	-40.8	-70.8	-27.8
1660.500000	14944.601900	-40.3	-70.3	-27.3
1631.500000	16314.857900	-39.9	-69.9	-26.9
1643.500000	16434.885600	-40.9	-70.9	-27.9
1660.500000	16604.886500	-40.8	-70.8	-27.8
1631.500000	17946.633100	-39	-69	-26
1643.500000	18078.602700	-39.3	-69.3	-26.3
1660.500000	18265.502500	-40	-70	-27
1631.500000	19578.087200	-33.1	-63.1	-20.1
1643.500000	19721.851300	-34.3	-64.3	-21.3
1660.500000	19926.190000	-32.7	-62.7	-19.7
1631.500000	21209.399700	-31.7	-61.7	-18.7
1643.500000	21365.594800	-31.6	-61.6	-18.6
1660.500000	21586.307500	-31.7	-61.7	-18.7

Performed by: Daniel M. Dillon, Test Engineer

Name of Test: Unwanted Emissions (Transmitter Conducted)

Limit(s), dBc

-(43+10xLOG P) = 3033.5 (0 Watts)
-(43+10xLOG P) = -57.8 (30 Watts)

g0410131: 2004-Jan-14 Wed 15:06:00
State: 2:High Power Ambient Temperature: 23°C ± 3°C

Frequency Tuned, MHz	Frequency Emission, MHz	Level, dBm	Level, dBc	Margin, dB
1649.000000	1643.100000	-24.7	-65.9	-11.7
1649.000000	1655.420000	-27.7	-68.9	-14.7
1649.000000	3297.826000	-63.9	-105.1	-50.9
1649.000000	4947.014500	-63.7	-104.9	-50.7
1649.000000	6596.155000	-57.3	-98.5	-44.3
1649.000000	8244.838500	-56.9	-98.1	-43.9
1649.000000	9894.044500	-56.3	-97.5	-43.3
1649.000000	11542.933000	-56.7	-97.9	-43.7
1649.000000	13192.118000	-51.5	-92.7	-38.5
1649.000000	14841.102200	-50.9	-92.1	-37.9
1649.000000	16490.078100	-50.5	-91.7	-37.5
1649.000000	18139.184000	-49.2	-90.4	-36.2
1649.000000	19787.914100	-43.4	-84.6	-30.4
1649.000000	21436.870700	-41.7	-82.9	-28.7

All four channels transmitting at the same time.

H+ = 1647.7175
H+ = 1647.675
RT = 1646.52
HSD = 1651.49

Performed by: Daniel M. Dillon, Test Engineer

Page Number 17 of 56.

Name of Test: Field Strength of Spurious Radiation

Specification: 47 CFR 2.1053(a)

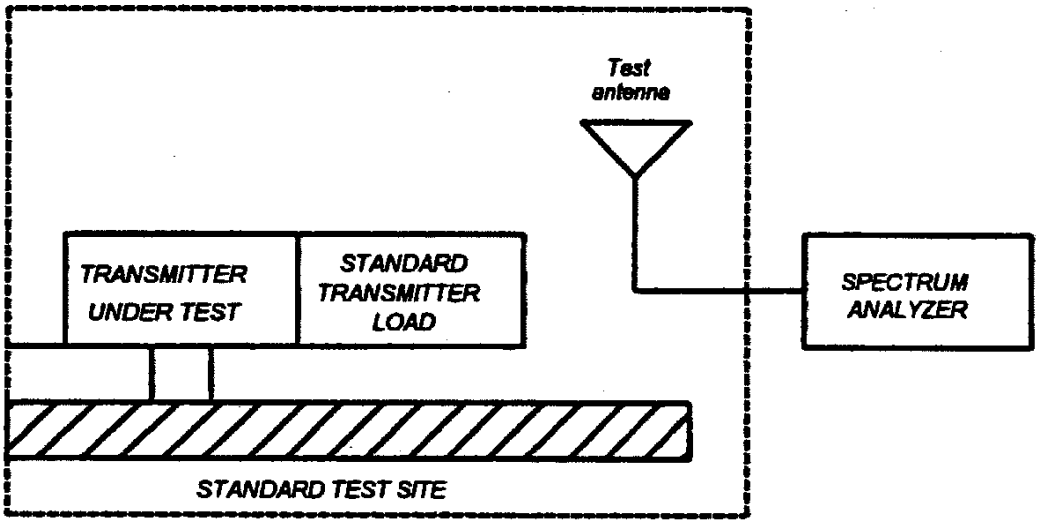
Guide: ANSI/TIA/EIA-603-1992/2001, Paragraph 1.2.12 and Table 16, 47 CFR 22.917

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.

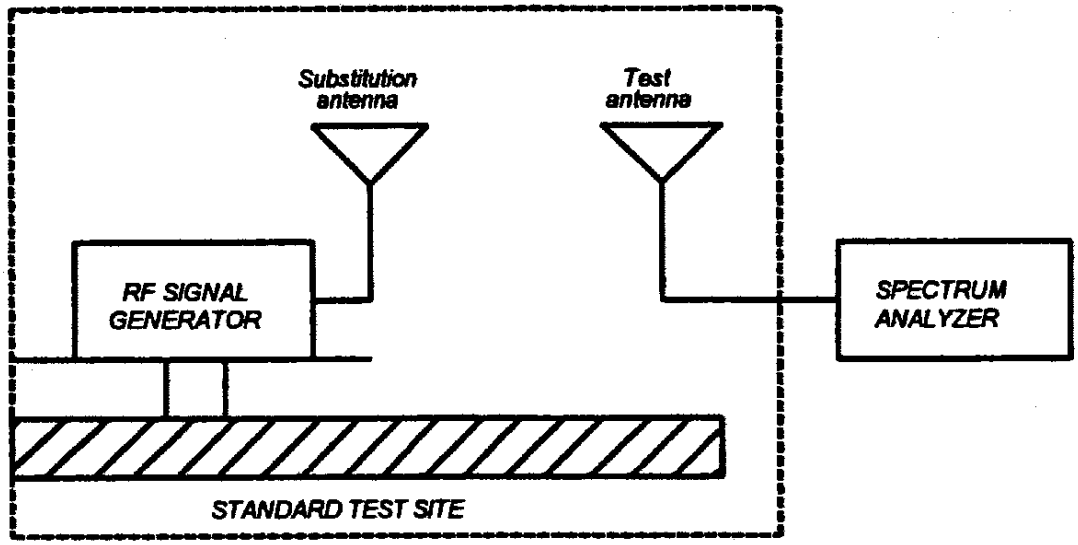


Name of Test: Field Strength of Spurious Radiation (Cont.)

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.

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 (Per ANSI C63.4-1992/2000 Draft, 10.1.4)	Last Cal
Transducer					
	i00088	EMCO 3109-B 25MHz-300MHz	2336	12 mo.	Sep-03
X	i00089	Aprel 2001 200MHz-1GHz	001500	12 mo.	Sep-03
X	i00103	EMCO 3115 1GHz-18GHz	9208-3925	12 mo.	Jan-03
Amplifier					
X	i00028	HP 8449A	2749A00121	12 mo.	May-03
Spectrum Analyzer					
X	i00029	HP 8563E	3213A00104	12 mo.	May-03
X	i00033	HP 85462A	3625A00357	12 mo.	Aug-03
Substitution Generator					
X	i00067	HP 8920A Communication TS	3345U01242	12 mo.	Oct-03
	i00207	HP 8753D Network Analyzer	3410A08514	12 mo.	Jul-03

Microphone, Antenna Port, and Cabling

Microphone	Yes	Cable Length	1.0	Meters
Antenna Port Terminated	Yes	Load	N/A	Antenna Gain 5 dbi
All Ports Terminated by Load	Yes	Peripheral	N/A	

Name of Test: Field Strength of Spurious Radiation
g0410086: 2004-Jan-12 Mon 13:37:00
STATE: 2:High Power HT Ambient Temperature: 23°C ± 3°C

Frequency Tuned, MHz	Frequency Emission, MHz	EIRP, dBm	EIRP, dBc
1631.500000	3263.033333	-34.4	-70.4
1643.500000	3287.000000	-33.6	-70.4
1660.500000	3321.000000	-36.5	-70.4
1631.500000	4894.533333	-38	-70.4
1643.500000	4930.500000	-37.4	-70.4
1660.500000	4981.500000	-41.9	-70.4
1631.500000	6526.033333	-38.6	-70.4
1643.500000	6574.000000	-40.2	-70.4
1660.500000	6642.000000	-42.8	-70.4
1631.500000	8157.533333	-34.5	-70.4
1643.500000	8217.500000	-35.1	-70.4
1660.500000	8302.500000	-36.4	-70.4
1631.500000	9789.033333	-32.3	-70.4
1643.500000	9861.000000	-32.2	-70.4
1660.500000	9963.000000	-32.9	-70.4
1631.500000	11420.533333	-34.1	-70.4
1643.500000	11504.500000	-25.6	-70.4
1660.500000	11623.500000	-25.9	-70.4
1631.500000	13052.033333	-42.3	-70.4
1643.500000	13148.000000	-41.7	-70.4
1660.500000	13284.000000	-39.3	-70.4
1631.500000	14683.533333	-41.5	-70.4
1643.500000	14791.500000	-38.2	-70.4
1660.500000	14944.500000	-36.2	-70.4
1631.500000	16315.033333	-42.9	-70.4
1643.500000	16435.000000	-42.9	-70.4
1660.500000	16605.000000	-42.7	-70.4

Performed by: Daniel M. Dillon, Test Engineer

Name of Test: Field Strength of Spurious Radiation
g0410087: 2004-Jan-13 Tue 08:52:00
STATE: 2:High Power RT Ambient Temperature: 23°C ± 3°C

Frequency Tuned, MHz	Frequency Emission, MHz	EIRP, dBm	EIRP, dBc
1631.500000	3263.000000	-33	-70.4
1643.500000	3287.108333	-30.4	-70.4
1660.500000	3321.083333	-29.5	-70.4
1631.500000	4894.500000	-37.5	-70.4
1643.500000	4930.591667	-35.4	-70.4
1660.500000	4981.583333	-36.7	-70.4
1631.500000	6526.000000	-39.1	-70.4
1643.500000	6574.091667	-38.9	-70.4
1660.500000	6642.083333	-42.4	-70.4
1631.500000	8157.500000	-38.3	-70.4
1643.500000	8217.591667	-35.3	-70.4
1660.500000	8302.583333	-36.1	-70.4
1631.500000	9789.000000	-34.1	-70.4
1643.500000	9861.091667	-34.7	-70.4
1660.500000	9963.083333	-33.6	-70.4
1631.500000	11420.500000	-25.4	-70.4
1643.500000	11504.591667	-26.4	-70.4
1660.500000	11623.583333	-25.9	-70.4
1631.500000	13052.000000	-41.6	-70.4
1643.500000	13148.091667	-42.8	-70.4
1660.500000	13284.083333	-39	-70.4
1631.500000	14683.500000	-41.8	-70.4
1643.500000	14791.591667	-38.7	-70.4
1660.500000	14944.583333	-35.9	-70.4
1631.500000	16315.000000	-42.5	-70.4
1643.500000	16435.091667	-42.9	-70.4
1660.500000	16605.083333	-43.4	-70.4

Performed by: Daniel M. Dillon, Test Engineer

Name of Test: Field Strength of Spurious Radiation
g0410088: 2004-Jan-13 Tue 10:16:00
STATE: 2:High Power HSD Ambient Temperature: 23°C ± 3°C

Frequency Tuned, MHz	Frequency Emission, MHz	EIRP, dBm	EIRP, dBc
1631.500000	3262.875000	-29.2	-70.4
1643.500000	3287.033334	-31.1	-70.4
1660.500000	3321.100000	-33.9	-70.4
1631.500000	4894.658333	-33.7	-70.4
1643.500000	4930.550001	-42.4	-70.4
1660.500000	4981.616667	-39.9	-70.4
1631.500000	6526.016667	-41.9	-70.4
1643.500000	6574.066668	-44.7	-70.4
1660.500000	6642.133334	-41.8	-70.4
1631.500000	8157.516667	-40.1	-70.4
1643.500000	8217.583335	-39.3	-70.4
1660.500000	8302.650001	-38.8	-70.4
1631.500000	9789.016667	-33.9	-70.4
1643.500000	9861.100002	-35	-70.4
1660.500000	9963.166668	-37.6	-70.4
1631.500000	11420.516667	-26.2	-70.4
1643.500000	11504.616669	-27.8	-70.4
1660.500000	11623.683335	-27.8	-70.4
1631.500000	13052.016667	-47.5	-70.4
1643.500000	13148.133336	-45.5	-70.4
1660.500000	13284.200002	-44.5	-70.4
1631.500000	14683.516667	-46	-70.4
1643.500000	14791.650003	-44.7	-70.4
1660.500000	14944.716669	-42.4	-70.4
1631.500000	16315.016667	-49.2	-70.4
1643.500000	16435.166670	-47.2	-70.4
1660.500000	16605.233336	-47.2	-70.4

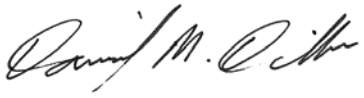
Performed by: Daniel M. Dillon, Test Engineer

Name of Test: Field Strength of Spurious Radiation
g0410132: 2004-Jan-14 Wed 15:05:00
STATE: 2:High Power Ambient Temperature: 23°C ± 3°C

All four channels transmitting at the same time.

Frequency Tuned, MHz	Frequency Emission, MHz	EIRP, dBm	EIRP, dBc
1647.717500	1655.726667	-17.2	-62.2
1647.717500	3294.850000	-31.7	-62.2
1647.717500	3299.033334	-30.2	-62.2
1647.717500	3303.050000	-34	-62.2
1647.717500	4958.716667	-35.5	-62.2
1647.717500	6588.000000	-39.6	-62.2
1647.717500	8235.000000	-36.6	-62.2
1647.717500	9882.000000	-31.7	-62.2
1647.717500	11529.000000	-25.4	-62.2
1647.717500	13176.000000	-42.3	-62.2
1647.717500	14823.000000	-39	-62.2
1647.717500	16470.000000	-41.1	-62.2

H+ = 1647.7175
H+ = 1647.675
RT = 1646.52
HSD = 1651.49



Performed by: Daniel M. Dillon, Test Engineer

Name of Test: Emission Masks (Occupied Bandwidth)

Specification: 47 CFR 2.1049(c)(1)

Guide: ANSI/TIA/EIA-603-1992, Paragraph 2.2.11

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.

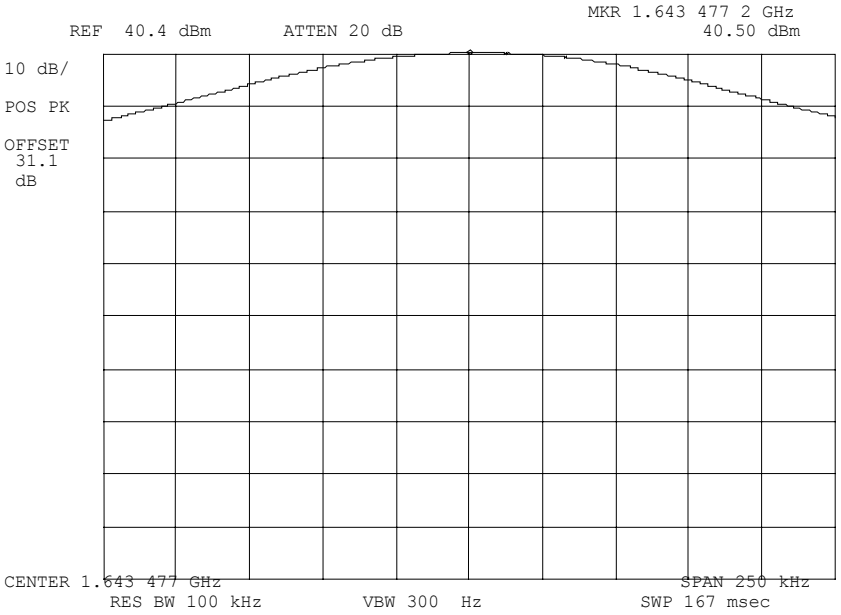
2. For EUTs supporting audio modulation, the audio signal generator was adjusted to the frequency of maximum response and with output level set for ±2.5/±1.25 kHz deviation (or 50% modulation). With level constant, the signal level was increased 16 dB.

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

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

5. Measurement Results: Attached

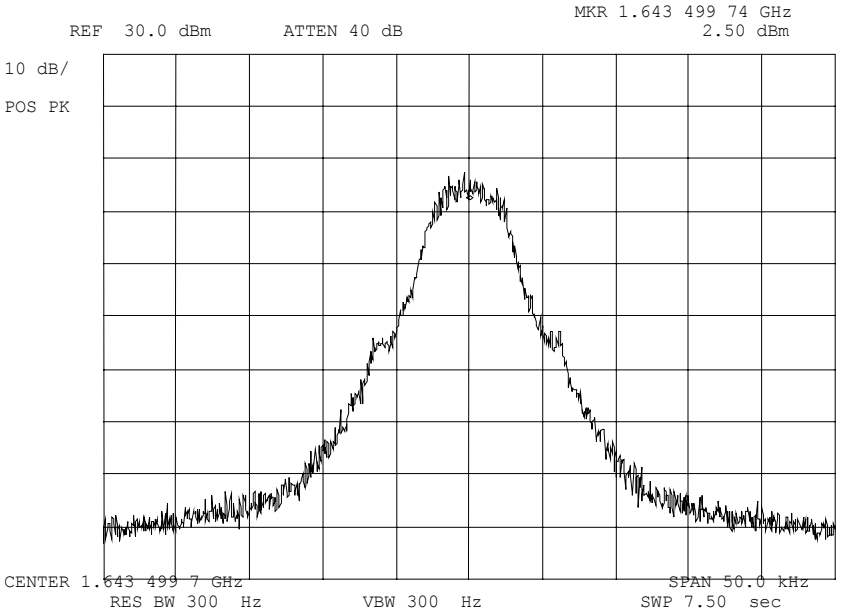
Name of Test: Emission Masks (Occupied Bandwidth)
g0410093: 2004-Jan-13 Tue 14:27:00
State: 2:High Power Ambient Temperature: 23°C ± 3°C



Power: HIGH
Modulation: 10KOG1D
REFERENCE LEVEL

Performed by: Daniel M. Dillon, Test Engineer

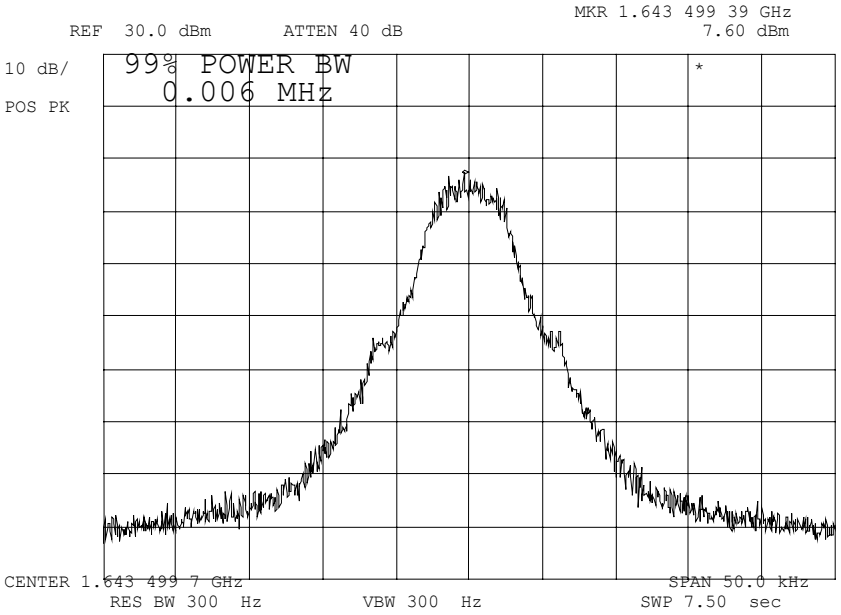
Name of Test: Emission Masks (Occupied Bandwidth)
g0410094: 2004-Jan-13 Tue 14:39:00
State: 2:High Power Ambient Temperature: 23°C ± 3°C



Power: HIGH
Modulation: 10KOG1D
With DLNA

Performed by: Daniel M. Dillon, Test Engineer

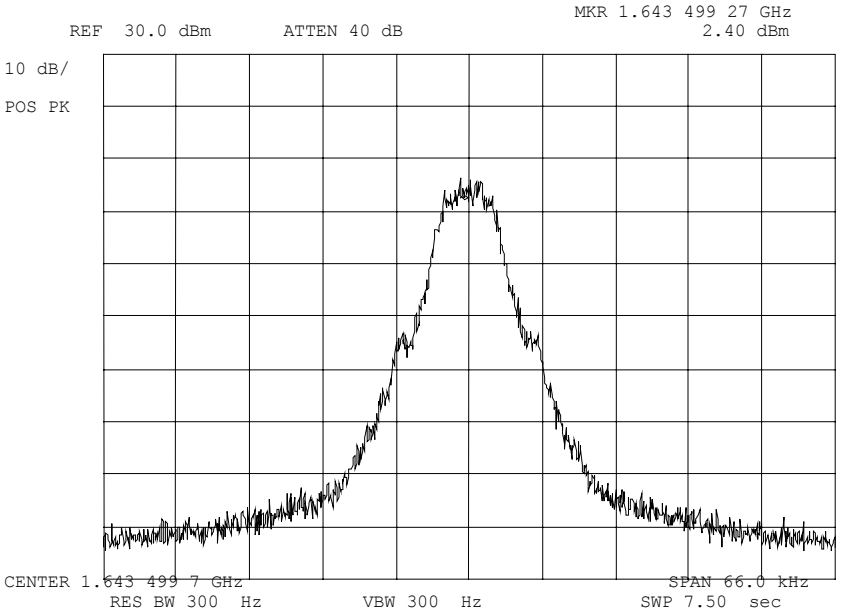
Name of Test: Emission Masks (Occupied Bandwidth)
g0410095: 2004-Jan-13 Tue 14:46:00
State: 2:High Power Ambient Temperature: 23°C ± 3°C



Power: HIGH
Modulation: 10KOG1D
99% POWER BANDWIDTH
With DLNA

Performed by: Daniel M. Dillon, Test Engineer

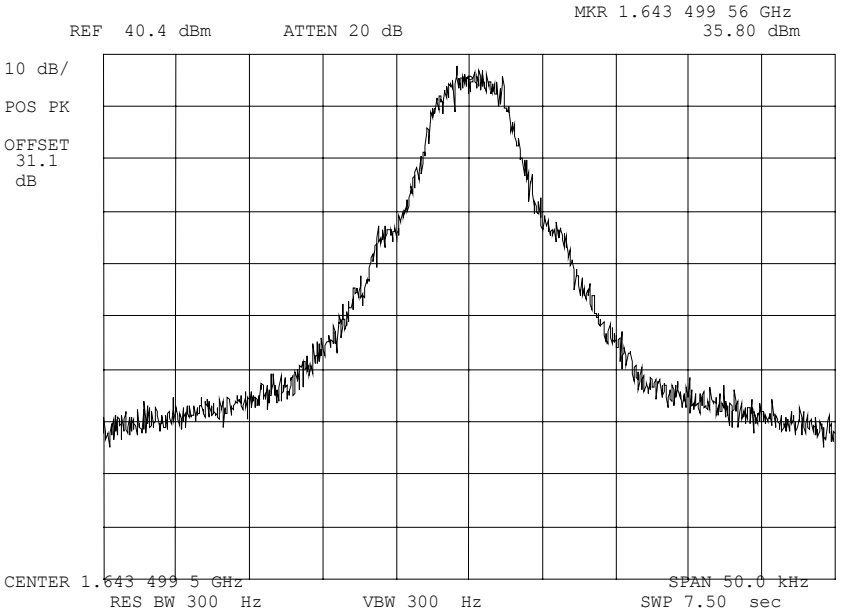
Name of Test: Emission Masks (Occupied Bandwidth)
g0410096: 2004-Jan-13 Tue 14:50:00
State: 2:High Power Ambient Temperature: 23°C ± 3°C



Power: HIGH
Modulation: 10KOG1D
BANDWIDTH EDGES
With DLNA

Performed by: Daniel M. Dillon, Test Engineer

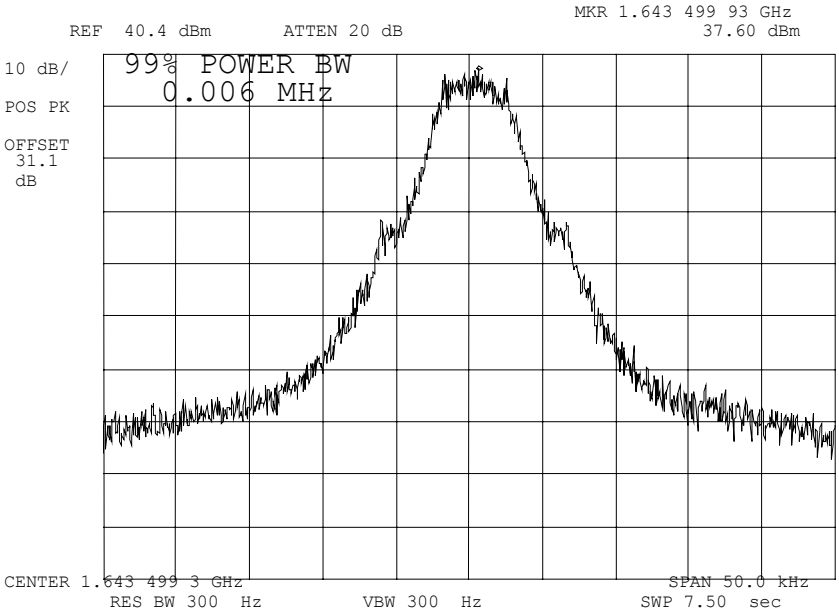
Name of Test: Emission Masks (Occupied Bandwidth)
g0410097: 2004-Jan-13 Tue 14:59:00
State: 2:High Power Ambient Temperature: 23°C ± 3°C



Power: HIGH
Modulation: 10K0G1D
With DLNA

Performed by: Daniel M. Dillon, Test Engineer

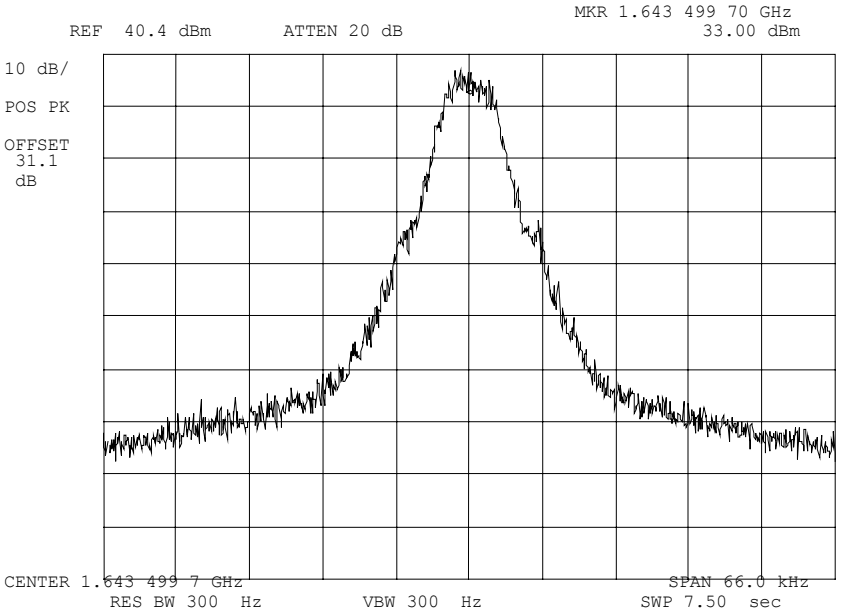
Name of Test: Emission Masks (Occupied Bandwidth)
g0410098: 2004-Jan-13 Tue 15:02:00
State: 2:High Power Ambient Temperature: 23°C ± 3°C



Power: HIGH
Modulation: 10K0G1D
99% POWER BANDWIDTH
With DLNA

Performed by: Daniel M. Dillon, Test Engineer

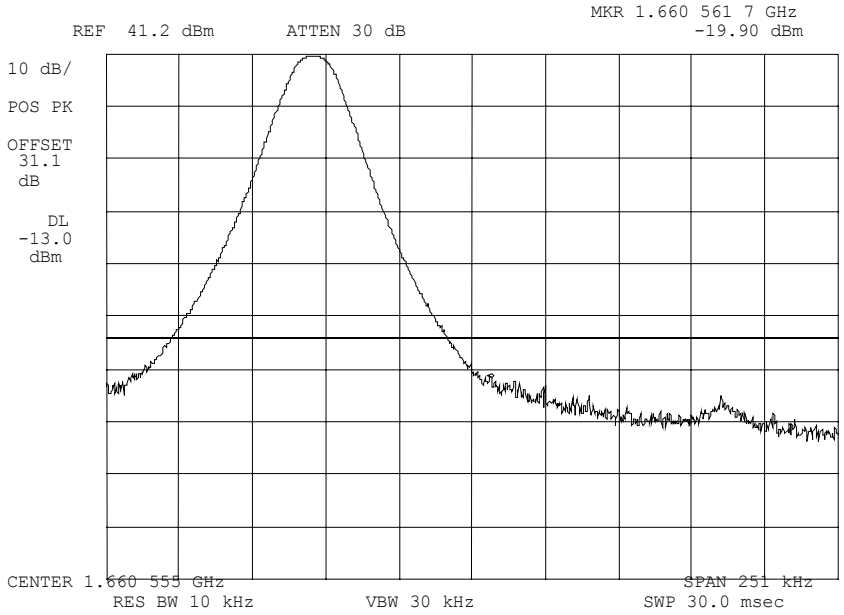
Name of Test: Emission Masks (Occupied Bandwidth)
g0410099: 2004-Jan-13 Tue 15:05:00
State: 2:High Power Ambient Temperature: 23°C ± 3°C



Power: HIGH
Modulation: 10K0G1D
BANDWIDTH EDGES
With DLNA

Performed by: Daniel M. Dillon, Test Engineer

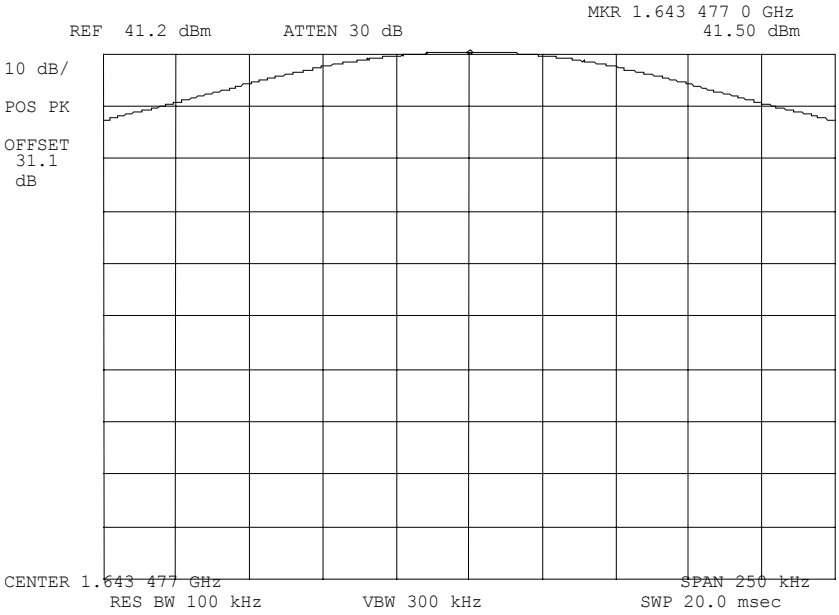
Name of Test: Emission Masks (Occupied Bandwidth)
g0410115: 2004-Jan-13 Tue 16:23:00
State: 2:High Power Ambient Temperature: 23°C ± 3°C



Power: HIGH
Modulation: 10K0G1D
UPPER BAND EDGE
With DLNA

Performed by: Daniel M. Dillon, Test Engineer

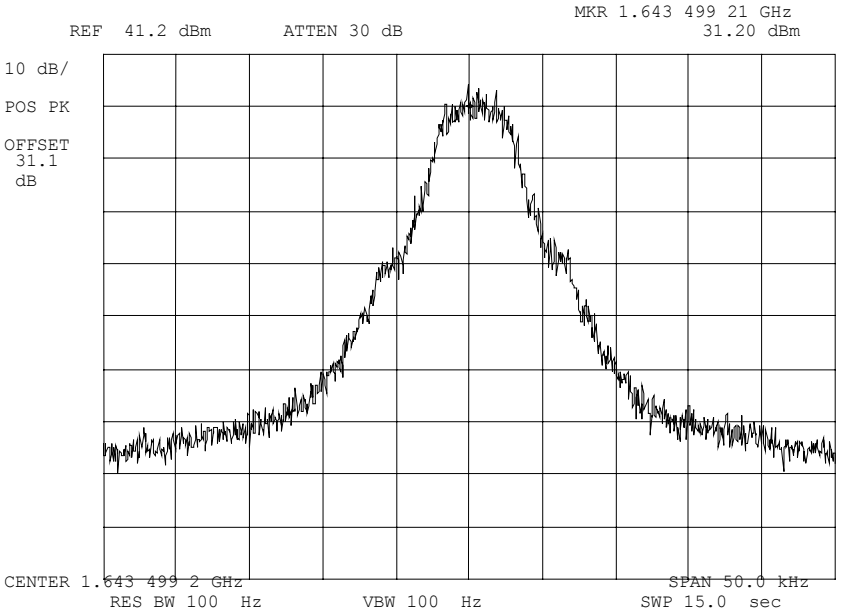
Name of Test: Emission Masks (Occupied Bandwidth)
g0410116: 2004-Jan-13 Tue 16:33:00
State: 2:High Power Ambient Temperature: 23°C ± 3°C



Power: HIGH
Modulation: 10K0G1D
REFERENCE W/O DLNA OPTION

Performed by: Daniel M. Dillon, Test Engineer

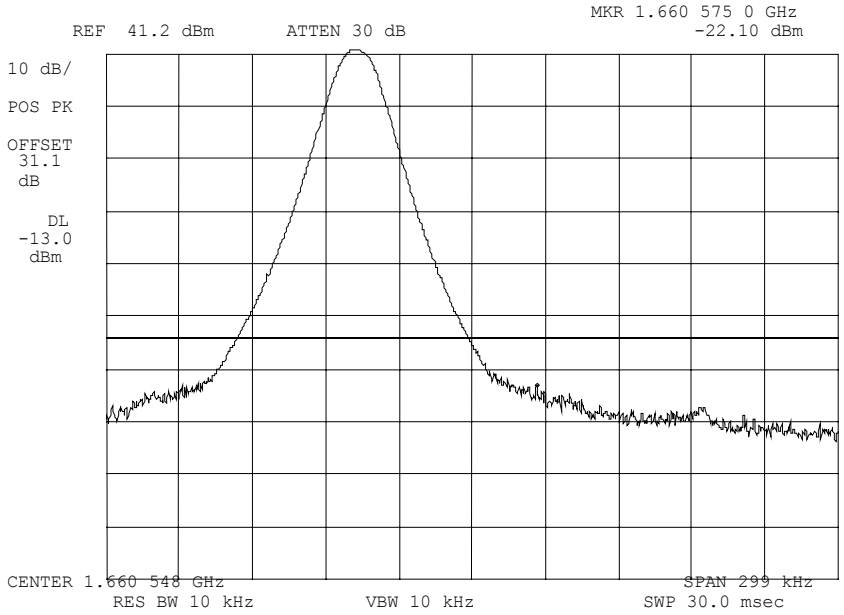
Name of Test: Emission Masks (Occupied Bandwidth)
g0410117: 2004-Jan-13 Tue 16:37:00
State: 2:High Power Ambient Temperature: 23°C ± 3°C



Power: HIGH
Modulation: 10K0G1D
W/O DLNA OPTION

Performed by: Daniel M. Dillon, Test Engineer

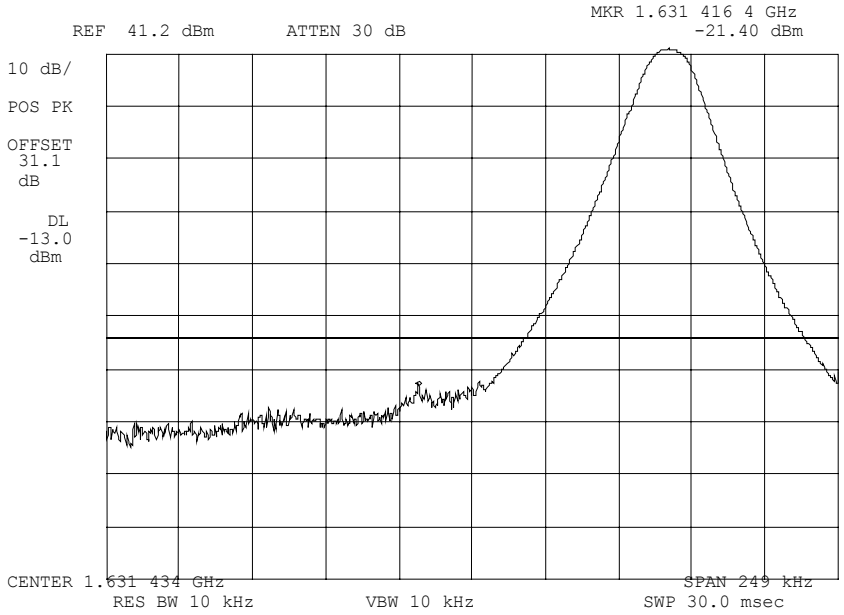
Name of Test: Emission Masks (Occupied Bandwidth)
g0410118: 2004-Jan-13 Tue 16:40:00
State: 2:High Power Ambient Temperature: 23°C ± 3°C



Power: HIGH
Modulation: 10K0G1D
UPPER BAND EDGE W/O DLNA OPTION

Performed by: Daniel M. Dillon, Test Engineer

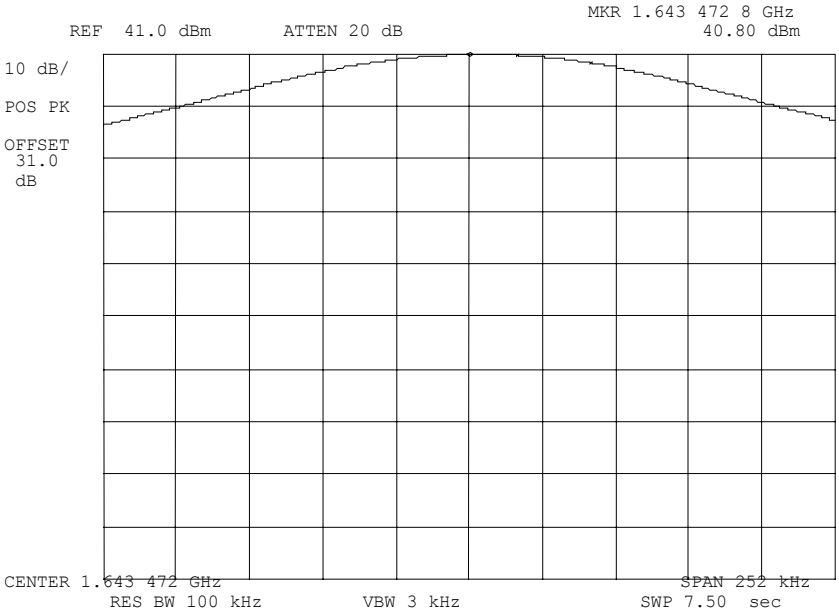
Name of Test: Emission Masks (Occupied Bandwidth)
g0410119: 2004-Jan-13 Tue 16:42:00
State: 2:High Power Ambient Temperature: 23°C ± 3°C



Power: HIGH
Modulation: 10K0G1D
LOWER BAND EDGE W/O DLNA OPTION

Performed by: Daniel M. Dillon, Test Engineer

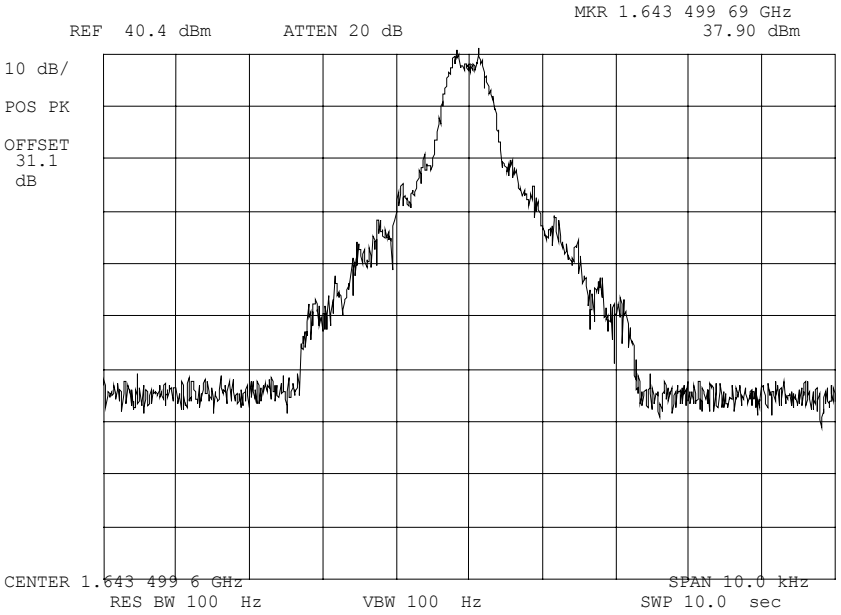
Name of Test: Emission Masks (Occupied Bandwidth)
g0410100: 2004-Jan-13 Tue 15:08:00
State: 2:High Power Ambient Temperature: 23°C ± 3°C



Power: HIGH
Modulation: 2K50G1D
REFERENCE LEVEL

Performed by: Daniel M. Dillon, Test Engineer

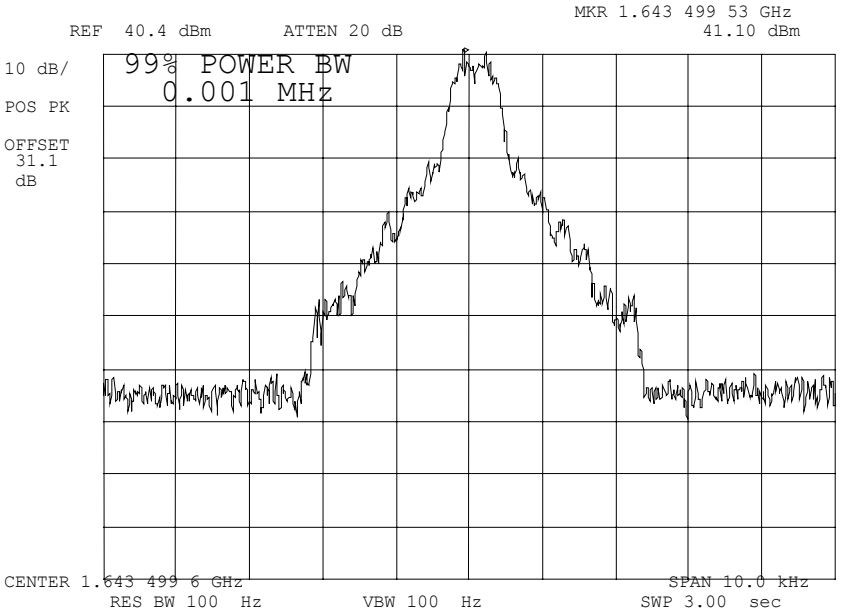
Name of Test: Emission Masks (Occupied Bandwidth)
g0410101: 2004-Jan-13 Tue 15:13:00
State: 2:High Power Ambient Temperature: 23°C ± 3°C



Power: HIGH
Modulation: 2K50G1D

Performed by: Daniel M. Dillon, Test Engineer

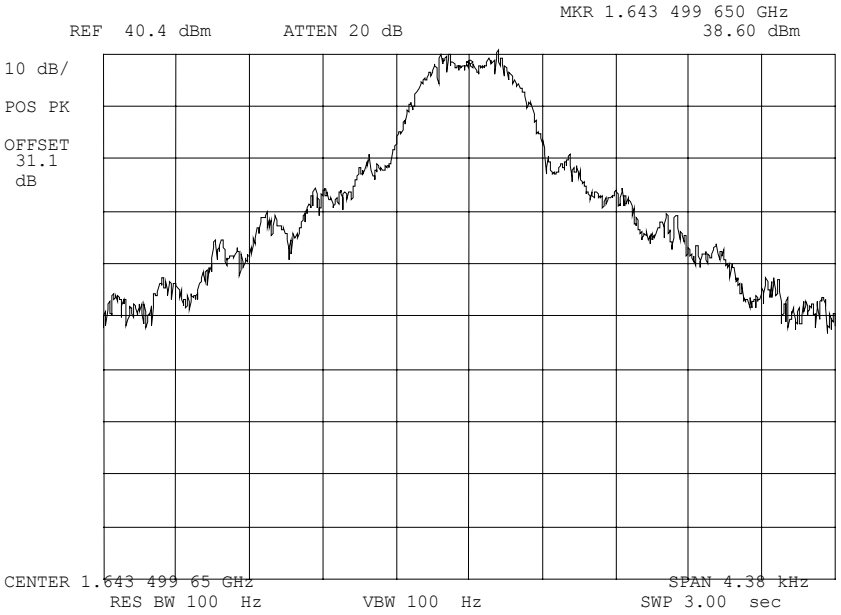
Name of Test: Emission Masks (Occupied Bandwidth)
g0410102: 2004-Jan-13 Tue 15:16:00
State: 2:High Power Ambient Temperature: 23°C ± 3°C



Power: HIGH
Modulation: 2K50G1D
99% POWER BANDWIDTH

Performed by: Daniel M. Dillon, Test Engineer

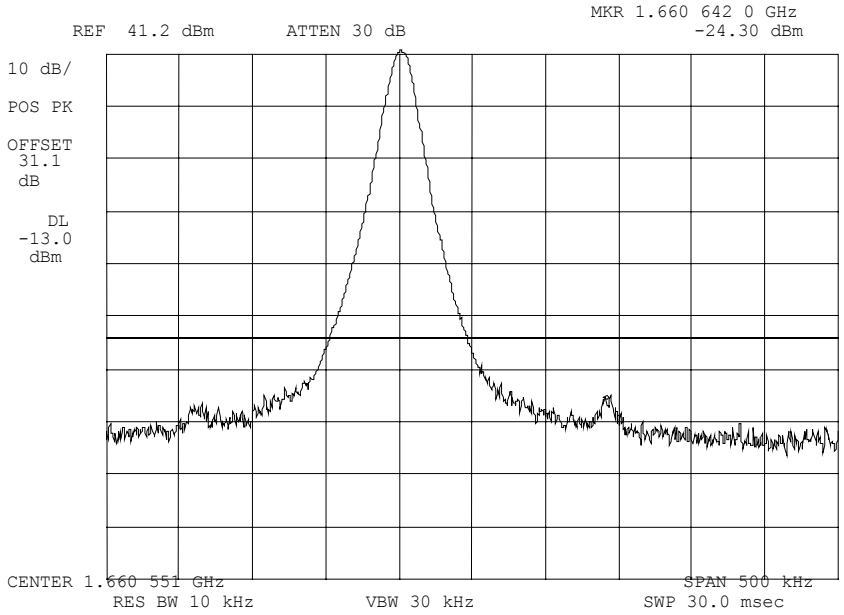
Name of Test: Emission Masks (Occupied Bandwidth)
g0410103: 2004-Jan-13 Tue 15:22:00
State: 2:High Power Ambient Temperature: 23°C ± 3°C



Power: HIGH
Modulation: 2K50G1D
BANDWIDTH EDGES

Performed by: Daniel M. Dillon, Test Engineer

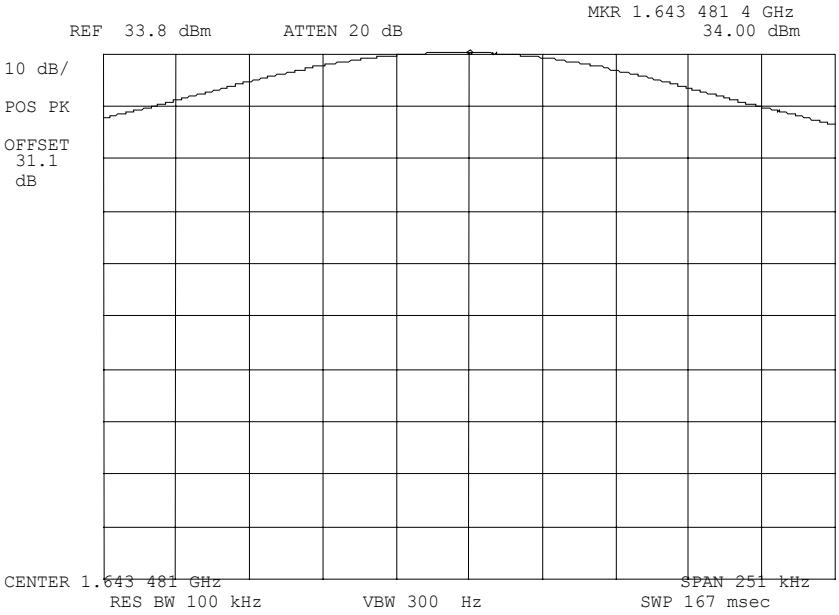
Name of Test: Emission Masks (Occupied Bandwidth)
g0410114: 2004-Jan-13 Tue 16:21:00
State: 2:High Power Ambient Temperature: 23°C ± 3°C



Power: HIGH
Modulation: 2K50G1D
UPPER BAND EDGE

Performed by: Daniel M. Dillon, Test Engineer

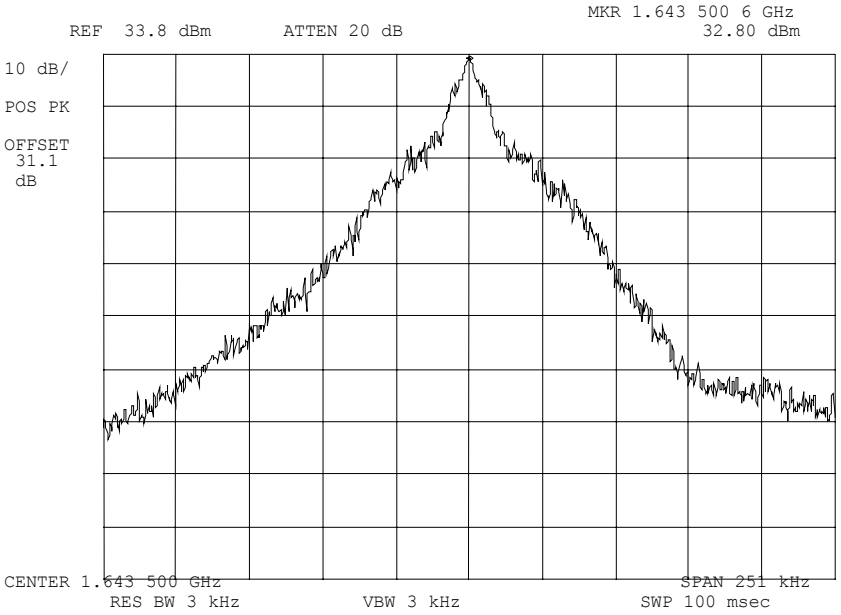
Name of Test: Emission Masks (Occupied Bandwidth)
g0410104: 2004-Jan-13 Tue 15:24:00
State: 2:High Power Ambient Temperature: 23°C ± 3°C



Power: HIGH
Modulation: 21K0G1D
REFERENCE LEVEL

Performed by: Daniel M. Dillon, Test Engineer

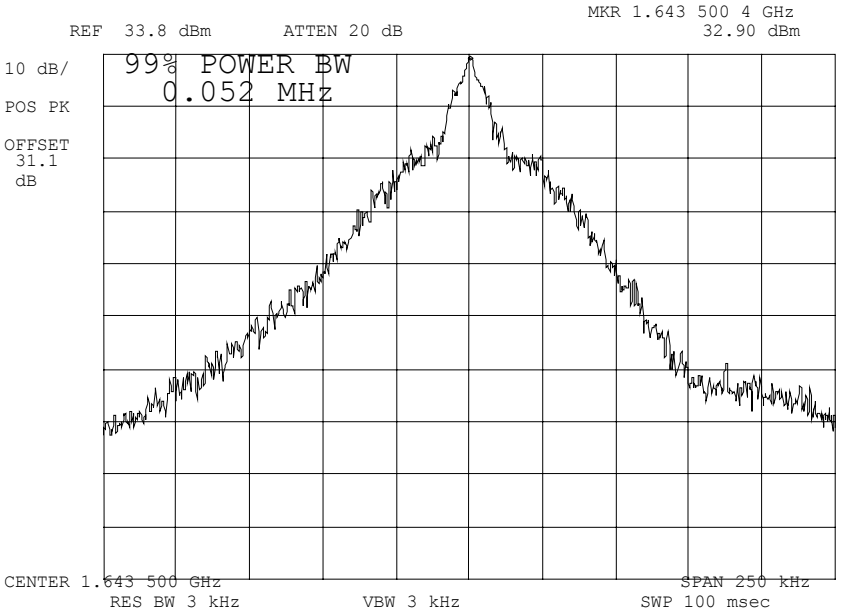
Name of Test: Emission Masks (Occupied Bandwidth)
g0410105: 2004-Jan-13 Tue 15:36:00
State: 2:High Power Ambient Temperature: 23°C ± 3°C



Power: HIGH
Modulation: 21K0G1D

Performed by: Daniel M. Dillon, Test Engineer

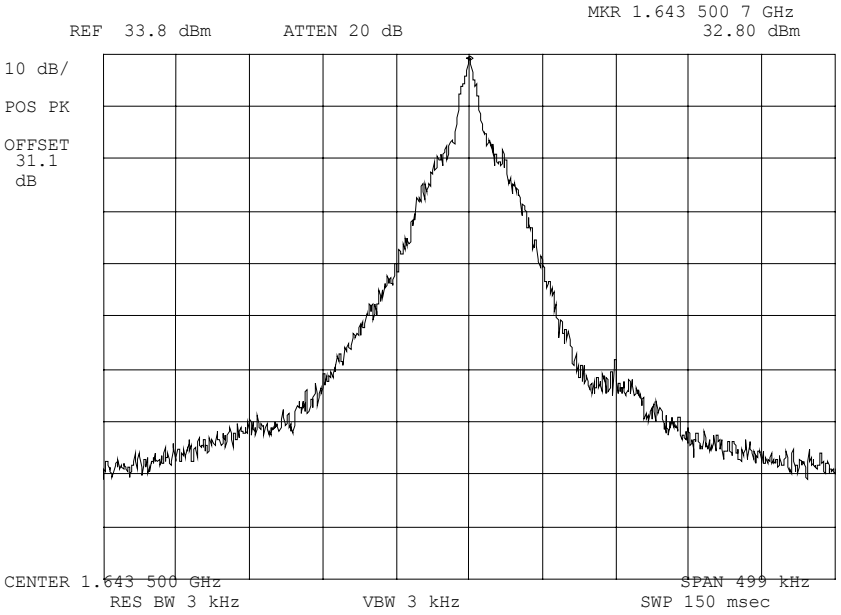
Name of Test: Emission Masks (Occupied Bandwidth)
g0410106: 2004-Jan-13 Tue 15:38:00
State: 2:High Power Ambient Temperature: 23°C ± 3°C



Power: HIGH
Modulation: 21K0G1D
99% POWER BANDWIDTH

Performed by: Daniel M. Dillon, Test Engineer

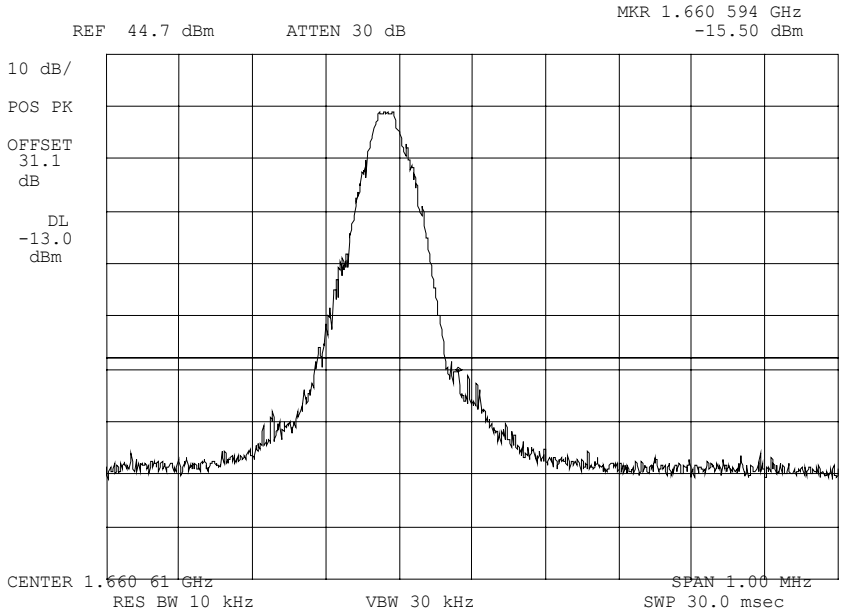
Name of Test: Emission Masks (Occupied Bandwidth)
g0410107: 2004-Jan-13 Tue 15:41:00
State: 2:High Power Ambient Temperature: 23°C ± 3°C



Power: HIGH
Modulation: 21K0G1D
BANDWIDTH EDGES

Performed by: Daniel M. Dillon, Test Engineer

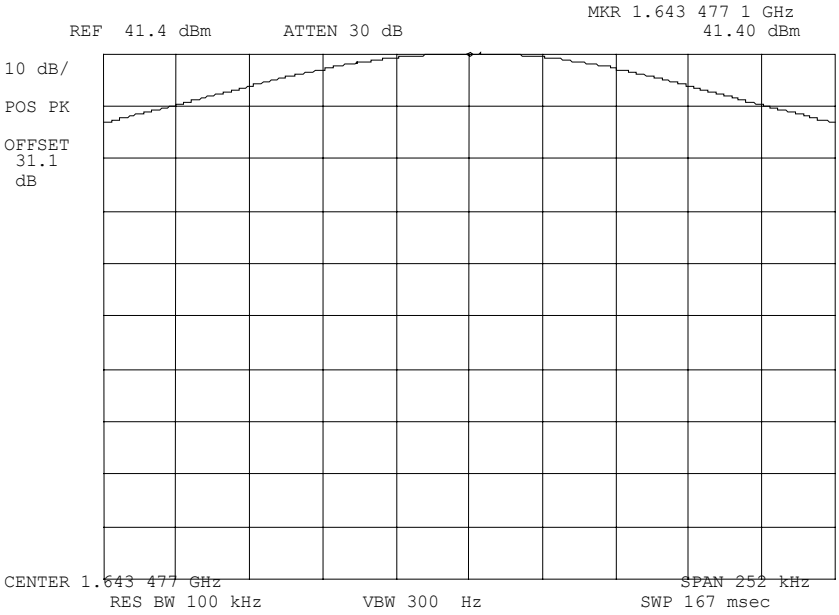
Name of Test: Emission Masks (Occupied Bandwidth)
g0410113: 2004-Jan-13 Tue 16:18:00
State: 2:High Power Ambient Temperature: 23°C ± 3°C



Power: HIGH
Modulation: 21KOG1D
UPPER BAND EDGE

Performed by: Daniel M. Dillon, Test Engineer

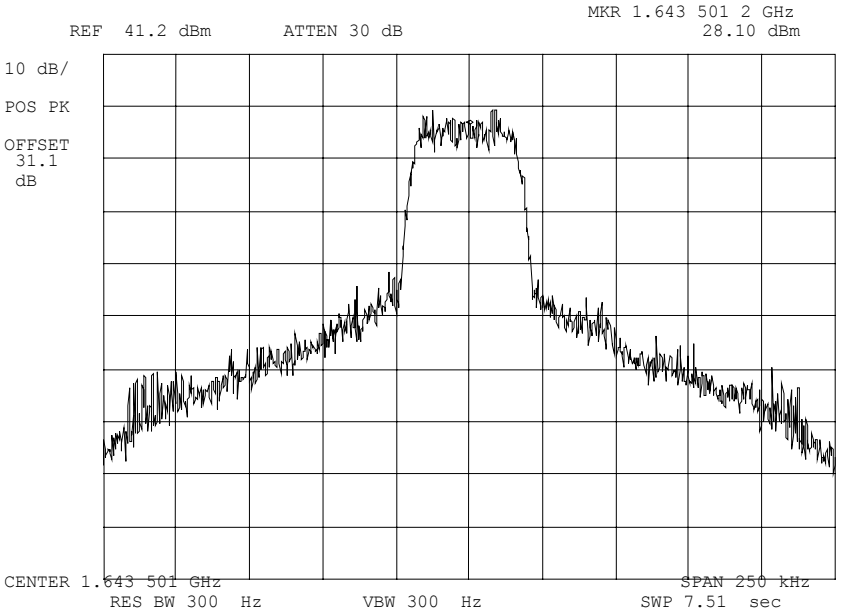
Name of Test: Emission Masks (Occupied Bandwidth)
g0410108: 2004-Jan-13 Tue 15:48:00
State: 2:High Power Ambient Temperature: 23°C ± 3°C



Power: HIGH
Modulation: 40KOG1D
REFERENCE LEVEL

Performed by: Daniel M. Dillon, Test Engineer

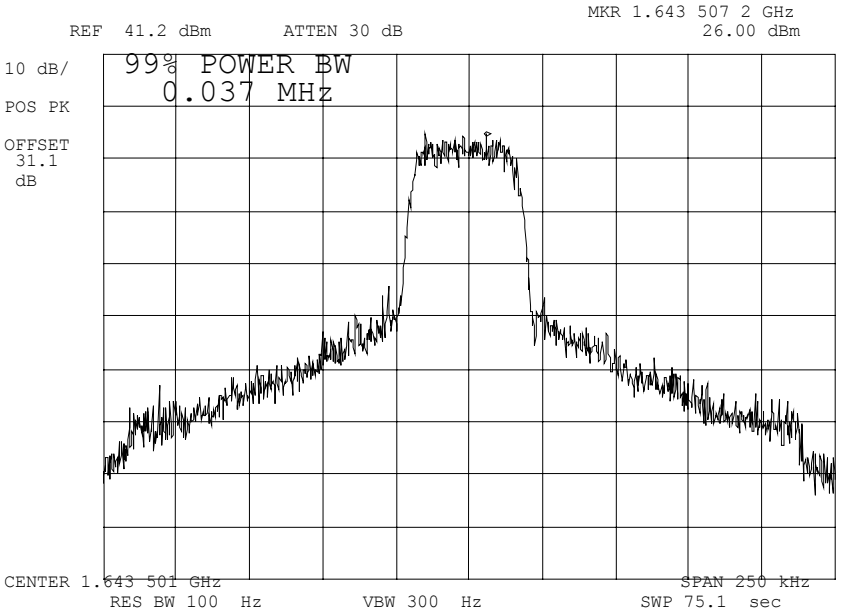
Name of Test: Emission Masks (Occupied Bandwidth)
g0410109: 2004-Jan-13 Tue 15:51:00
State: 2:High Power Ambient Temperature: 23°C ± 3°C



Power: HIGH
Modulation: 40KOG1D
16QAM

Performed by: Daniel M. Dillon, Test Engineer

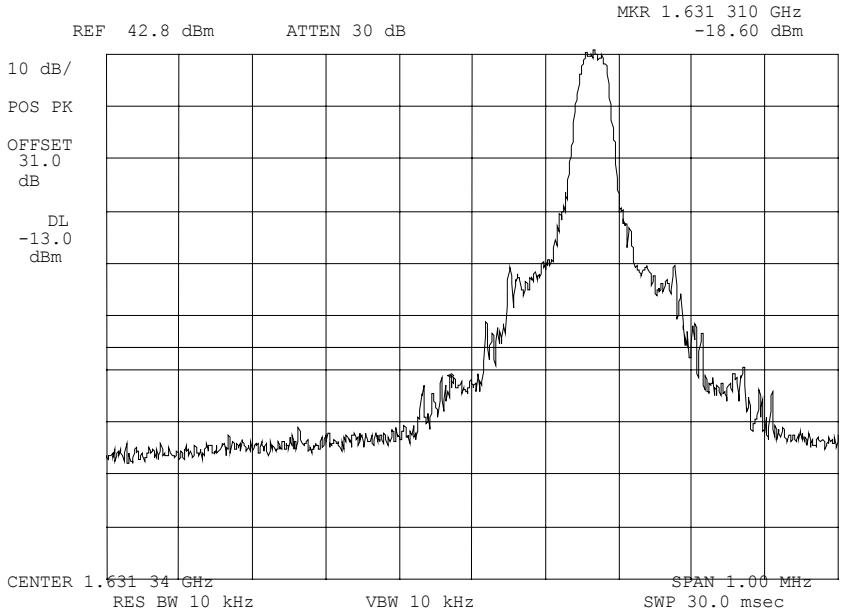
Name of Test: Emission Masks (Occupied Bandwidth)
g0410110: 2004-Jan-13 Tue 15:55:00
State: 2:High Power Ambient Temperature: 23°C ± 3°C



Power: HIGH
Modulation: 40KOG1D
99% POWER BANDWIDTH

Performed by: Daniel M. Dillon, Test Engineer

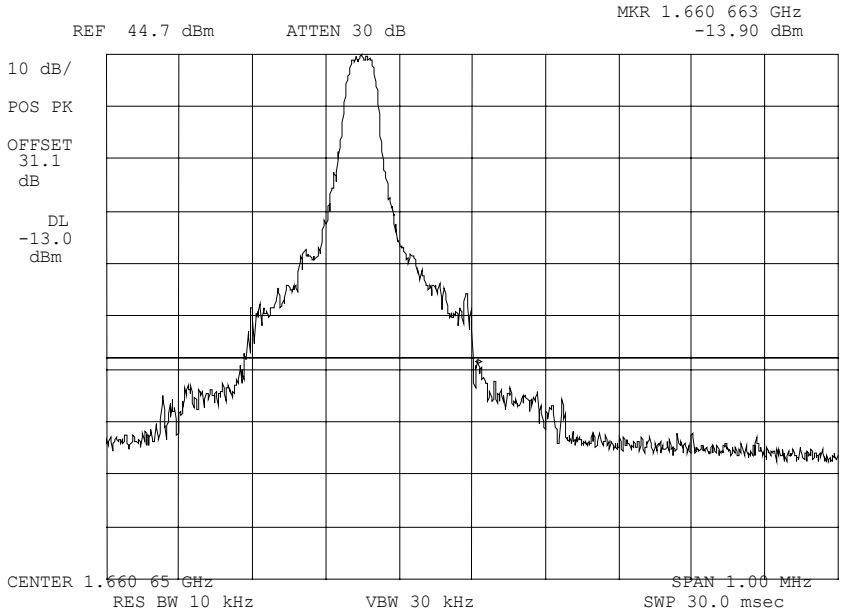
Name of Test: Emission Masks (Occupied Bandwidth)
g0410111: 2004-Jan-13 Tue 16:04:00
State: 2:High Power Ambient Temperature: 23°C ± 3°C



Power: HIGH
Modulation: 40KOG1D
LOWER BAND EDGE

Performed by: Daniel M. Dillon, Test Engineer

Name of Test: Emission Masks (Occupied Bandwidth)
g0410112: 2004-Jan-13 Tue 16:09:00
State: 2:High Power Ambient Temperature: 23°C ± 3°C



Power: HIGH
Modulation: 40KOG1D
UPPER BAND EDGE

Performed by: Daniel M. Dillon, Test Engineer

Name of Test: Frequency Stability (Temperature Variation)

Specification: 47 CFR 2.1055(a)(1)

Guide: ANSI/TIA/EIA-603-1992, Paragraph 2.2.2

Test Conditions: As Indicated

Test Equipment: As per previous page

Measurement Procedure

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

2. With all power removed, the temperature was decreased to -30°C and permitted to stabilize for three hours. Power was applied and the maximum change in frequency was noted within one minute.

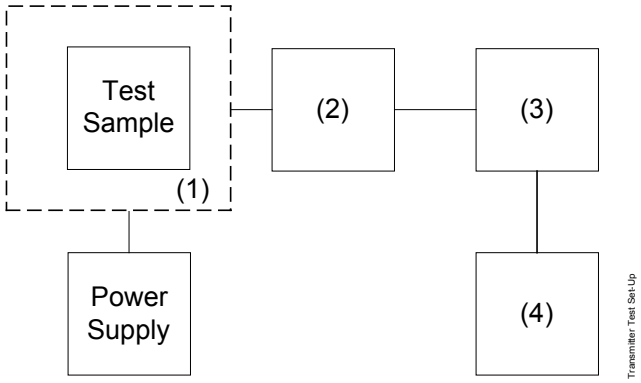
3. With power OFF, the temperature was raised in 10°C steps. The sample was permitted to stabilize at each step for at least one-half hour. Power was applied and the maximum frequency change was noted within one minute.

4. The temperature tests were performed for the worst case.

5. Measurement Results: Attached

Transmitter Test Set-Up

Frequency Stability: Temperature Variation
Frequency Stability: Voltage Variation



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) **RF Power**		
i00014	HP 435A Power Meter	1733A05839
i00039	HP 436A Power Meter	2709A26776
i00020	HP 8901A Power Mode	2105A01087
i00251	HP 53152A	US39270237
(4) **Frequency Counter**		
i00042	HP 5383A	1628A00959
i00019	HP 5334B	2704A00347
i00020	HP 8901A	2105A01087

Name of Test: Frequency Stability (Temperature Variation)

State: Ambient Temperature: 23°C ± 3°C

DEGREES, CELSIUS		Hz
-20	1643499864	-136
-10	1643499853	-147
0	1643499834	-166
10	1643499847	-153
20	1643499844	-156
25	1643500170	0
30	1643499843	157
40	1643499861	-139
50	1643499890	-110

Name of Test: Frequency Stability (Voltage Variation)

Specification: 47 CFR 2.1055(d)(1)

Guide: ANSI/TIA/EIA-603-1992, Paragraph 2.2.2

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.

Results: Frequency Stability (Voltage Variation)

State: Ambient Temperature: 23°C ± 3°C

% of STV	Voltage	Frequency, MHz	Change, Hz	Change, ppm
115	32.2	16435005	1	0
100	28	16435004	0	0
85	23.8	16435004	1	0

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Name of Test: Necessary Bandwidth and Emission Bandwidth

Specification: 47 CFR 2.202(g)

Modulation = 10K0G1D

Necessary Bandwidth Calculation:

Maximum Modulation (M), kHz	=	3
Maximum Deviation (D), kHz	=	5
Constant Factor (K)	=	1
Necessary Bandwidth (B_N), kHz	=	(2xM)+(2xDxK)
	=	16.0

Modulation = 2K50G1D

Necessary Bandwidth Calculation:

Maximum Modulation (M), kHz	=	3
Maximum Deviation (D), kHz	=	2.5
Constant Factor (K)	=	1
Necessary Bandwidth (B_N), kHz	=	(2xM)+(2xDxK)
	=	11.0

Modulation = 21K0G1D

Necessary Bandwidth Calculation:

Maximum Modulation (M), kHz	=	3
Maximum Deviation (D), kHz	=	1.25
Constant Factor (K)	=	1
Necessary Bandwidth (B_N), kHz	=	(2xM)+(2xDxK)
	=	8.0

Modulation = 40K0G1D

Necessary Bandwidth Calculation:

Maximum Modulation (M), kHz	=	3
Maximum Deviation (D), kHz	=	5
Constant Factor (K)	=	1
Necessary Bandwidth (B_N), kHz	=	(2xM)+(2xDxK)
	=	16.0

Performed by: Daniel M. Dillon, Test Engineer

END OF TEST REPORT

Testimonial
and
Statement of Certification

This is to Certify:

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.