



Report Tracker

For MFA internal use only

Please keep this page with the report in out files.

Applicant:	Telex Communications, Inc.
Model:	REV-H C1, C3, C5
FCC ID:	B5DH221

Formulaire:	L:\Project\Formulaire\FCC.Certification.General.rtf
Last Modified:	1998-Sept-16
Purpose:	FCC, Transmitter Certification for general "Business Band" transmitters. Including "Land Mobile" and "Fixed Radio" stations.
MFA Project ID:	p0650013
Client ID:	TELEX
MFA Document ID:	d0680023
Date:	August 7, 2006
This Printing	2006-Sep-12 Tue
Writer:	DEL/dm

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Flom Test Labs
3356 N. San Marcos Place, Suite 107
Chandler, Arizona 85225-7176
(866) 311-3268 phone, (480) 926-3598 fax

FCC ID: B5DH221
MFA p0650013, d0680023



Flom Test Labs
EMI, EMC, RF Testing Experts Since 1963

toll-free: (866) 311-3268
fax: (480) 926-3598
http://www.flomlabs.com
info@flomlabs.com

Date: August 7, 2006

Applicant: Telex Communications, Inc.
8601 E. Cornhusker Highway
P.O. Box 5579
Lincoln, NE 68505-5579

Attention of: Charles E. Conner, Project Engineer
(402) 467-5321; FAX: -3279
E-mail: charlie.conner@us.telex.com
Jim Andersen
Email: jim.andersen@us.telex.com

Equipment: REV-H C1, C3, C5
FCC ID: B5DH221
P.O. Number: 346167
FCC Rules: 74H

Comment: Use this page for
Type Approval or Class II
Permissive Changes only.

Gentlemen:

Enclosed please find your copy of the Engineering Test Report for which you are subject to the restrictions as listed on the attached summary.

As you know, the FCC, after a TCB issues a Grant, still has 30 days to review a submission and request added information. It is your decision whether or not to market the equipment subject to a possible recall before the end of the 30 days.

If your equipment is still retained by us, it will be returned to you 30 days after approval is achieved. Our invoice for services has been directed to your Accounts Payable Department.

Should you need any clarification, just fax or phone. Thank you again for this order - it has been a pleasure to be of service.

Sincerely yours,

Hoosamuddin S Bandukwala, Senior Test Engineer

Flom Test Labs
3356 N. San Marcos Place, Suite 107
Chandler, Arizona 85225-7176
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Memo

Date: August 7, 2006

Applicant: Telex Communications, Inc.
8601 E. Cornhusker Highway
P.O. Box 5579
Lincoln, NE 68505-5579

Equipment: REV-H C1, C3, C5
FCC ID: B5DH221

Please note that the enclosed Reports reflect the results of tests performed to the currently published Federal Communications Commissions Rules and Regulations.

Should the FCC's Examiners' interpretations request new and unpublished requirements, we will be pleased to provide them. We will invoice you accordingly, i.e. for the time spent on re-testing, providing the amended pages and/or Reports and for the time necessary to be spent on electronic filing. We will of course provide you with copies of any of the additions.

We regret any added expense to the Applicants, but of late the FCC continues to change their requirements without any prior written publication and/or notices.

As in the past, we will continue to provide all liaison with the FCC necessary for the successful conclusion of your project and the receipt of your Grant of Equipment Authorization.

Sincerely yours,

Hoosamuddin S Bandukwala, Senior Test Engineer

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Chandler, Arizona 85225-7176
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Date: August 7, 2006

Federal Communications Commission
Via: Electronic Filing

Attention: Authorization & Evaluation Division

Applicant: Telex Communications, Inc.
Equipment: REV-H C1, C3, C5
FCC ID: B5DH221
FCC Rules: 74H

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,

Hoosamuddin S Bandukwala, Senior Test Engineer

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Transmitter Certification

of

FCC ID: B5DH221
Model: REV-H C1, C3, C5

to

Federal Communications Commission

Rule Part(s) 74H

Date of report: August 7, 2006

On the Behalf of the Applicant:

Telex Communications, Inc.

At the Request of:

P.O. 346167

Telex Communications, Inc.
8601 E. Cornhusker Highway
P.O. Box 5579
Lincoln, NE 68505-5579

Attention of:

Charles E. Conner, Project Engineer
(402) 467-5321; FAX: -3279
E-mail: charlie.conner@us.telex.com
Jim Andersen
Email: jim.andersen@us.telex.com

Supervised by:

Hoosamuddin S Bandukwala, Senior Test Engineer

Flom Test Labs
3356 N. San Marcos Place, Suite 107
Chandler, Arizona 85225-7176
(866) 311-3268 phone, (480) 926-3598 fax

FCC ID: B5DH221
MFA p0650013, d0680023

List of Exhibits

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

Applicant: Telex Communications, Inc.

FCC ID: B5DH221

By Applicant:

1. Letter of Authorization
2. Confidentiality Request: 0.457 And 0.459
3. Part 90.203(e) & (g) Attestation
4. Identification Drawings, 2.1033(c)(11)
 - Label
 - Location of Label
 - Compliance Statement
 - Location of Compliance Statement
5. Photographs, 2.1033(c)(12)
6. Documentation: 2.1033(c)
 - (3) User Manual
 - (9) Tune Up Info
 - (10) Schematic Diagram
 - (10) Circuit Description
 - Block Diagram
 - Parts List
 - Active Devices
7. MPE Report

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.

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Comment: Immediately following this note, there should be a hidden "Section Break (Next Page)" that will set the following page number back to page 1.

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: d0680023

d) Client: Telex Communications, Inc.
8601 E. Cornhusker Highway
P.O. Box 5579
Lincoln, NE 68505-5579

e) Identification: REV-H C1, C3, C5
FCC ID: B5DH221

EUT Description: Handheld Microphone Transmitter

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

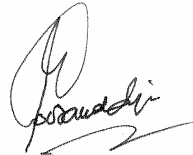
g) Report Date: August 7, 2006
EUT Received: 2006-May-23

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:



Hoosamuddin S Bandukwala, Senior Test Engineer

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.

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
- x_____ 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
- _____ 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 C63.4-2003 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.

	<h3>A2LA</h3> <p>“A2LA has accredited M. Flom Associates, Inc. Chandler, AZ for technical competence in the field of Electrical Testing. The accreditation covers the specific tests and types of tests listed on the agreed scope of accreditation. This laboratory meets the requirements of ISO/IEC 17025 - 1999 'General Requirements for the Competence of Testing and Calibration Laboratories' and any additional program requirements in the identified field of testing.”</p> <hr/> <p>Certificate Number: 2152-01</p>
---	---

List of General Information Required for Certification

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

74H

Sub-part 2.1033

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

Telex Communications, Inc.
8601 E. Cornhusker Highway
P.O. Box 5579
Lincoln, NE 68505-5579

Manufacturer:

Telex Communications, Inc.

(c)(2): FCC ID: B5DH221

Model Number: REV-H C1, C3, C5

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

Please see attached exhibits

(c)(4): Type of Emission: 94K2F3E

(c)(5): Frequency Range, MHz: C1: 614.1 to 746.0 MHz

(c)(6): Power Rating, Watts: 0.05
 _____ Switchable _____ Variable X N/A

(c)(7): Maximum Power Rating, Watts: .250

DUT Results: Passes x Fails _____

Subpart 2.1033 (continued)

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

Comment: Use for
Certifications and Class II
Permissive changes only.

Collector Current, A	=	per manual
Collector Voltage, Vdc	=	per manual
Supply Voltage, Vdc	=	3

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

Please see attached exhibits

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

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

Please see attached exhibits

(c)(11): Label Information:

Please see attached exhibits

(c)(12): Photographs:

Please see attached exhibits

(c)(13): Digital Modulation Description:

Attached Exhibits
 N/A

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

Follows

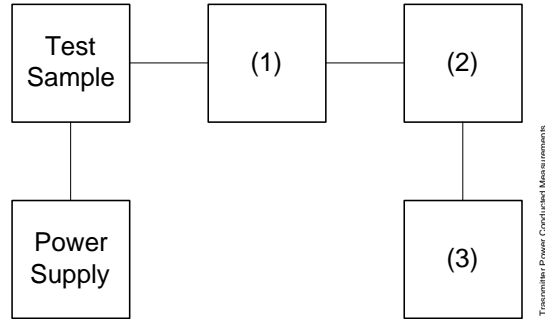
Name of Test: Carrier Output Power (Conducted)
 Specification: 47 CFR 2.1046(a)
 Guide: ANSI/TIA/EIA-603-1992, Paragraph 2.2.1

Comment: Use for Antenna Connectors, otherwise delete this test

Measurement Procedure

- A) 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.
- B) Measurement accuracy is $\pm 3\%$.

Transmitter Test Set-Up: RF Power Output



Asset	Description	s/n	Cycle	Last Cal
(1)	Coaxial Attenuator			
i00231/2	PASTERNAK PE7021-30 (30 dB)	231 or 232	NCR	
i00122/3	NARDA 766 (10 dB)	7802 or 7802A	NCR	
(2)	Power Meters			
i00020	HP 8901A Power Mode	2105A01087	12 mo.	Oct-05
(3)	Frequency Counter			
X i00067	HP 5334B	I00019	12 mo.	Jul-06

Name of Test: Carrier Output Power (Conducted)

Measurement Results
(Worst case)

Frequency of Carrier, MHz =
Ambient Temperature = 23°C ± 3°C

Power Setting

RF Power, Watts

The device has no antenna connector that can be used for conducted measurements

Performed by:



David McPherson, Compliance Test Engineer

Name of Test: RF Power Output (Radiated)
 Specification: 47 CFR 2.1046(a)
 Test Equipment: As per attached page

Measurement Procedure (Radiated)

1. The EUT was placed on an open-field site and its radiated field strength at a known distance was measured by means of a spectrum analyzer. Equivalent loading was calculated from the equation $P_t = (E \times R)^2 / 49.2$ watts, where R = 3m.
2. Measurement accuracy is ± 1.5 dB.

Measurement Results

g0680054: 2006-Aug-04 Fri 14:47:00

State: 2:High Power

Ambient Temperature: 23°C \pm 3°C

Frequency Tuned, MHz	Frequency Emission, MHz	Meter, dBuV/m	CF, dB	ERP, dBm	ERP, mili-Watts
614.100000	614.100000	87.9	26.3	16.11	40.0

g0680055: 2006-Aug-04 Fri 15:09:00

State: 2:High Power

Ambient Temperature: 23°C \pm 3°C

Frequency Tuned, MHz	Frequency Emission, MHz	Meter, dBuV/m	CF, dB	ERP, dBm	ERP, mili-Watts
677.000000	677.000000	88.88	25.67	17.2	52.48

g0680056: 2006-Aug-04 Fri 15:12:00

State: 2:High Power

Ambient Temperature: 23°C \pm 3°C

Frequency Tuned, MHz	Frequency Emission, MHz	Meter, dBuV/m	CF, dB	ERP, dBm	ERP, mili-Watts
746.000000	746.000000	84.4	26.53	13.51	24.0

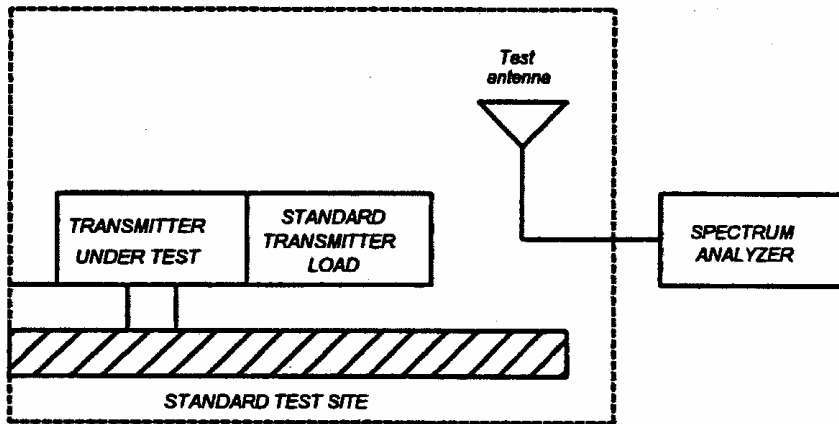
Name of Test: Field Strength of Spurious Radiation
 Specification: 47 CFR 2.1053(a)
 Guide: ANSI/TIA/EIA-603-1992/2001, Paragraph 1.2.12 and Table 16, 47 CFR 22.917
 Measurement Procedure

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.

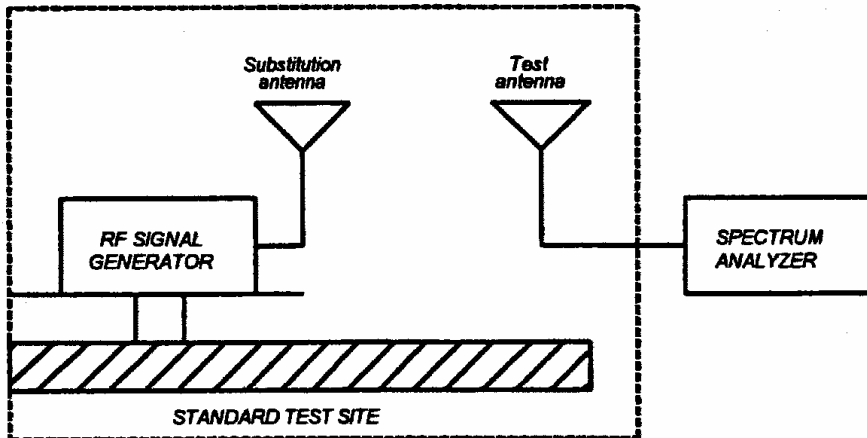
Method of Measurement:

- 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 that is placed on the turntable. The RF cable to this load should be of minimum length.



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

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



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

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

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

Radiated spurious emissions dB =

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

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

Test Equipment

Asset (as applicable)	Description	s/n	Cycle	Last Cal	
Transducer					
X	i00088	EMCO 3109-B 25MHz-300MHz	2336	36 mo.	Oct-05
X	i00089	Aprel 2001 200MHz-1GHz	001500	36 mo.	Oct-05
X	i00103	EMCO 3115 1GHz-18GHz	9208-3925	12 mo.	Aug-05
Spectrum Analyzer					
X	i00033	HP 85462A	3625A00357	12 mo.	Oct-05

Name of Test: Field Strength of Spurious Radiation

Comment: Only include this page when there is data.

Measurement Results

g0670025: 2006-Jul-07 Fri 11:41:00

STATE: 2:High Power

Ambient Temperature: 23°C ± 3°C

Frequency Tuned, MHz	Frequency Emission, MHz	Level, dBuV	CF, dB	Calc. dBuV	EIRP, dBm
614.100000	1228.200000	13.7	27.2	40.9	-56.5
614.100000	1842.300000	9.5	30.7	40.2	-57.1
614.100000	2456.400000	15.5	34.0	49.5	-47.9
614.100000	3070.500000	9.3	36.1	45.4	-52.0
614.100000	3684.600000	9.9	38.7	48.6	-48.8
614.100000	4298.700000	9.1	40.4	49.5	-48.0
614.100000	4912.800000	11.5	42.3	53.8	-43.6
614.100000	5526.900000	9.3	44.1	53.4	-44.0
614.100000	6141.000000	11.3	45.5	56.8	-40.6

g0670026: 2006-Jul-07 Fri 11:54:00

STATE: 2:High Power

Ambient Temperature: 23°C ± 3°C

Frequency Tuned, MHz	Frequency Emission, MHz	Level, dBuV	CF, dB	Calc. dBuV	EIRP, dBm
677.000000	1354.003000	16.8	27.8	44.6	-52.8
677.000000	2031.000000	10.4	32.4	42.8	-54.6
677.000000	2708.000000	11.0	34.9	45.9	-51.5
677.000000	3385.000000	9.7	37.4	47.1	-50.2
677.000000	4062.000000	8.6	40.1	48.7	-48.7
677.000000	4739.000000	8.9	41.6	50.5	-47.0
677.000000	5416.000000	9.3	43.8	53.1	-44.3
677.000000	6093.000000	8.2	45.4	53.6	-43.8

g0670029: 2006-Jul-07 Fri 12:57:00

STATE: 2:High Power

Ambient Temperature: 23°C ± 3°C

Frequency Tuned, MHz	Frequency Emission, MHz	Level, dBuV	CF, dB	Calc. dBuV	EIRP, dBm
746.000000	1492.000000	13.5	28.4	41.9	-55.5
746.000000	2238.000000	11.0	33.2	44.2	-53.2
746.000000	2984.000000	7.0	35.8	42.8	-54.6
746.000000	3730.000000	6.2	38.9	45.1	-52.3
746.000000	4476.000000	5.4	40.5	45.9	-51.5
746.000000	5222.000000	4.1	43.3	47.4	-50.0
746.000000	5968.000000	1.6	45.2	46.8	-50.6



Performed by:

Fred Chastain, Test Technician

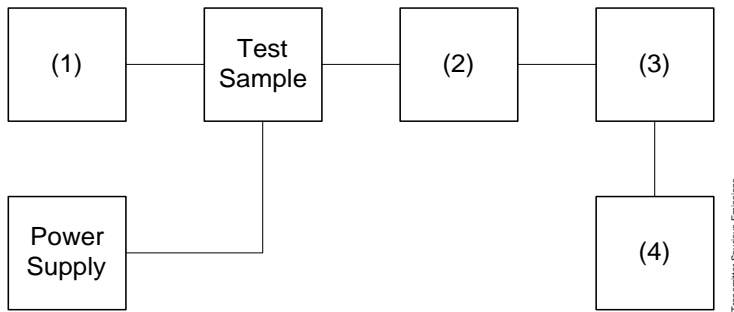
Name of Test: Emission Masks (Occupied Bandwidth)
 Specification: 47 CFR 2.1049(c)(1)
 Guide: ANSI/TIA/EIA-603-1992, Paragraph 2.2.11

Comment: For Wireless Mics, change deviation from b12.5 to b16.0

Measurement Procedure

- A) The EUT and test equipment were set up as shown below
- B) For EUTs supporting audio modulation, the audio signal generator was adjusted to the frequency of maximum response and with output level set for $\pm 2.5/\pm 1.25$ kHz deviation (or 50% modulation). With level constant, the signal level was increased 16 dB.
- C) For EUTs supporting digital modulation, the digital modulation mode was operated to its maximum extent.
- D) The Occupied Bandwidth was measured with the Spectrum Analyzer controls set as shown on the test results.

Transmitter Test Set-Up: Occupied Bandwidth



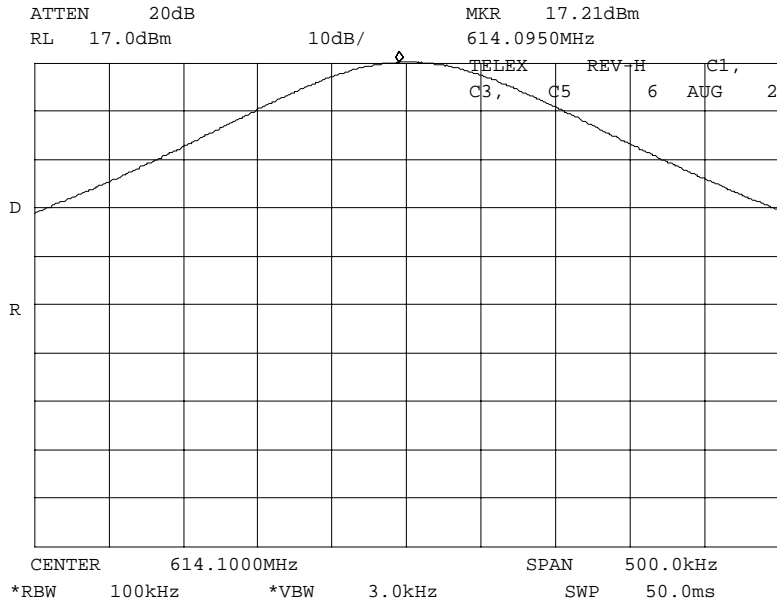
Asset	Description	s/n	Cycle	Last Cal
(1) Audio Oscillator/Generator				
X i00017	HP 8903A Modulation Meter	2216A01753	12 mo.	Aug-05
(2) Coaxial Attenuator				
X i00231/2	PASTERNAK PE7021-30 (30 dB)	231 or 232	NCR	
i00123	NARDA 766 (10 dB)	7802A	NCR	
(3) Interface				
X i00021	HP 8954A Transceiver Interface	2146A00159	NCR	
(4) Spectrum Analyzer				
i00048	HP 8566B Spectrum Analyzer	2511A01467	12 mo.	Jun-06
X i00029	HP 8563E Spectrum Analyzer	3213A00104	12 mo.	Jan-06

Name of Test: Emission Masks (Occupied Bandwidth)

Measurement Results

g0680068: 2006-Aug-06 Sun 17:07:00
State: 2:High Power

Ambient Temperature: 23°C ± 3°C



Power: HIGH
Modulation: NONE
C1 614.1MHZ REFERENCE LEVEL

Performed by:

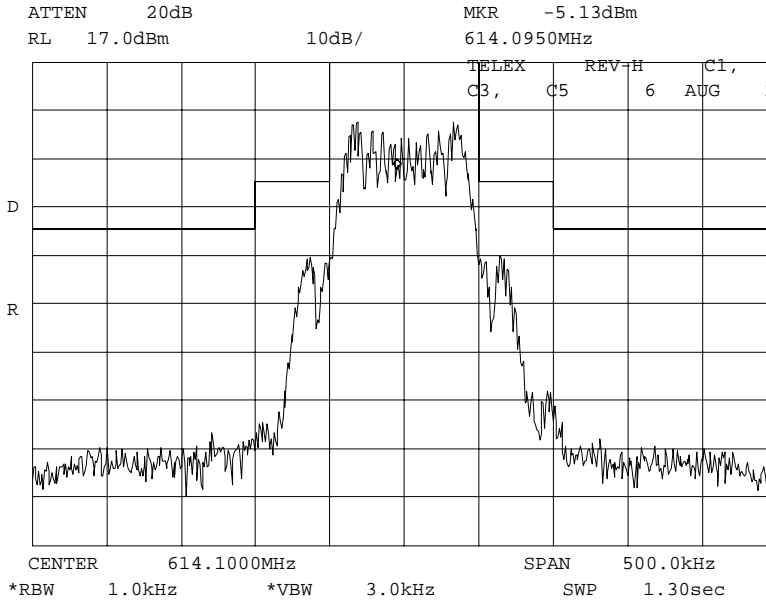

David McPherson, Compliance Test Engineer

Name of Test: Emission Masks (Occupied Bandwidth)

Measurement Results

g0680069: 2006-Aug-06 Sun 17:13:00
State: 2:High Power

Ambient Temperature: 23°C ± 3°C



Power: HIGH
Modulation: FM 2.5KHZ @ 20 dB above Reference level
MASK: Wireless Mic, 74.861

Performed by:

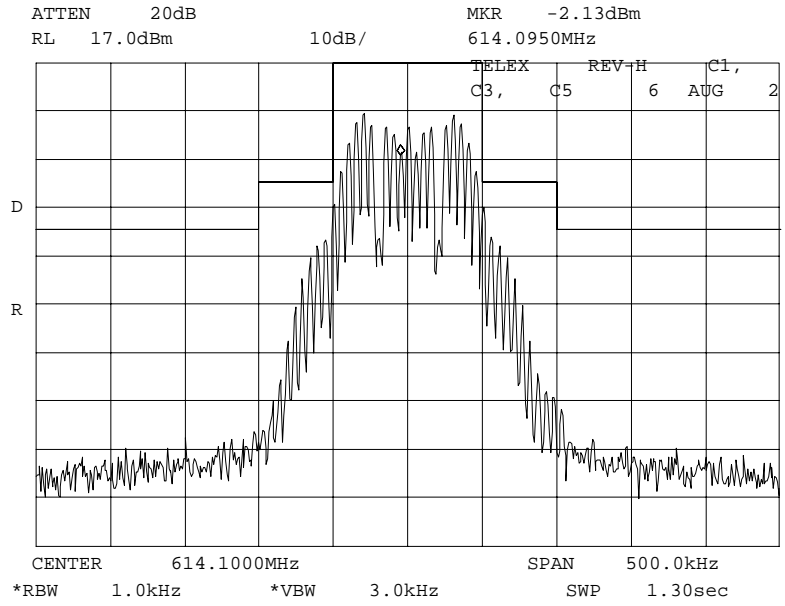

David McPherson, Compliance Test Engineer

Name of Test: Emission Masks (Occupied Bandwidth)

Measurement Results

g0680070: 2006-Aug-06 Sun 17:17:00
State: 2:High Power

Ambient Temperature: 23°C ± 3°C



Power: HIGH
Modulation: FM 5KHZ @ 20 dB above Reference level
MASK: Wireless Mic, 74.861

Performed by:

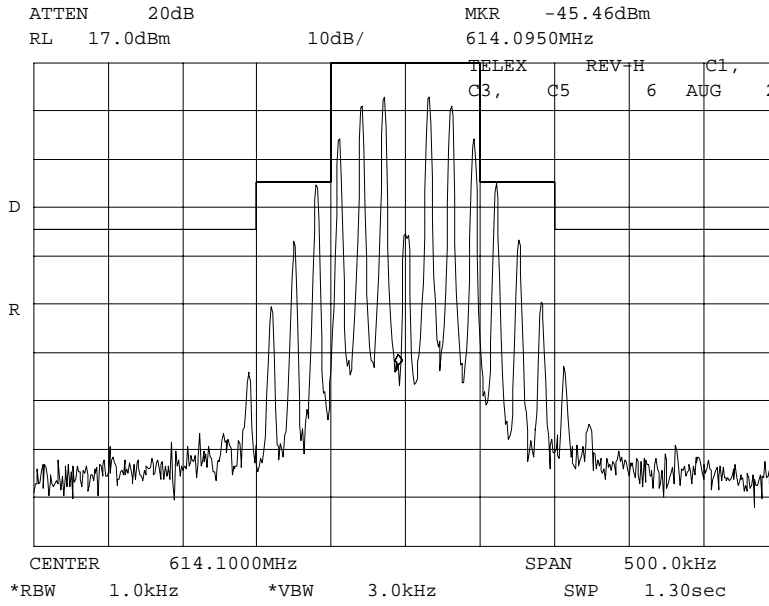
David McPherson
David McPherson, Compliance Test Engineer

Name of Test: Emission Masks (Occupied Bandwidth)

Measurement Results

g0680072: 2006-Aug-06 Sun 17:22:00
State: 2:High Power

Ambient Temperature: 23°C ± 3°C



Power: HIGH
Modulation: FM 15KHZ @ 20 dB above Reference level
MASK: Wireless Mic, 74.861

Performed by:

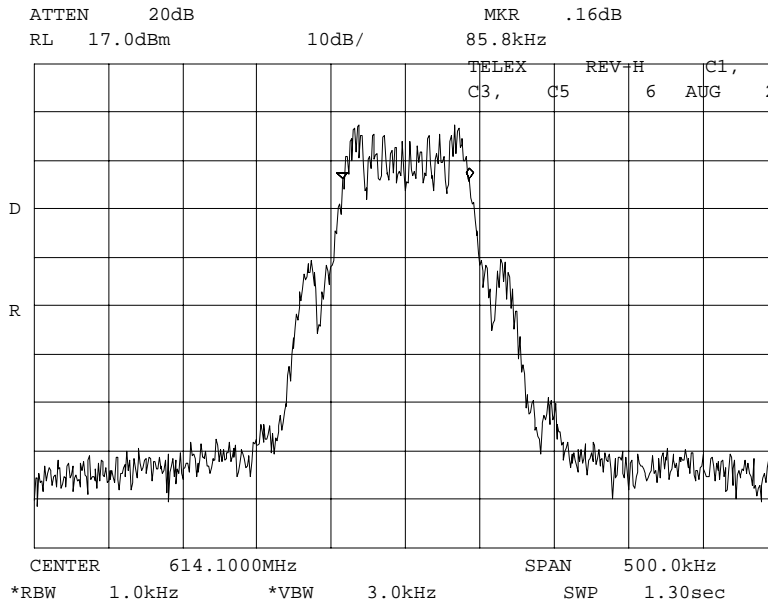
David McPherson
David McPherson, Compliance Test Engineer

Name of Test: Emission Masks (Occupied Bandwidth)

Measurement Results

g0680075: 2006-Aug-06 Sun 17:35:00
State: 2:High Power

Ambient Temperature: 23°C ± 3°C



Power: HIGH
Modulation: FM 2.5KHZ @ 20 dB above Reference level
99% BW PWR

Performed by:

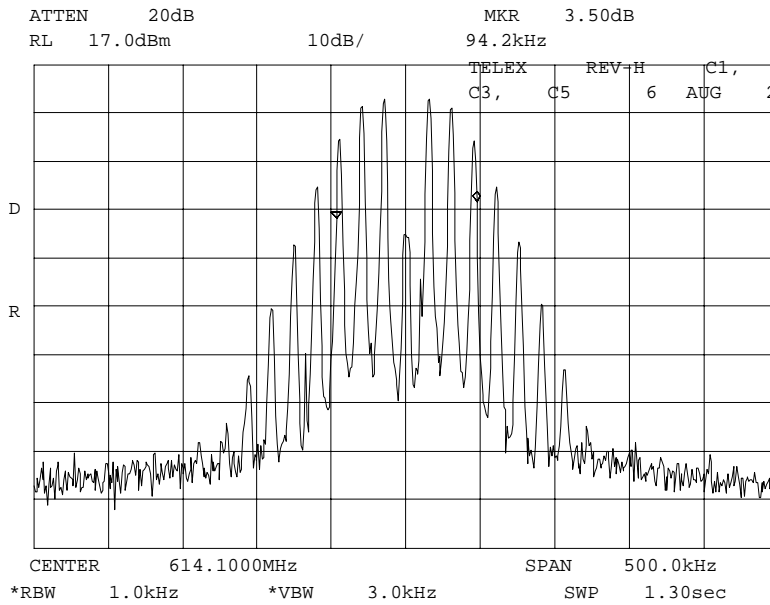
David McPherson
David McPherson, Compliance Test Engineer

Name of Test: Emission Masks (Occupied Bandwidth)

Measurement Results

g0680074: 2006-Aug-06 Sun 17:29:00
State: 2:High Power

Ambient Temperature: 23°C ± 3°C



Power: HIGH
Modulation: FM 15KHZ @ 20 dB above Reference level
99% BW PWR

Performed by:

David McPherson
David McPherson, Compliance Test Engineer

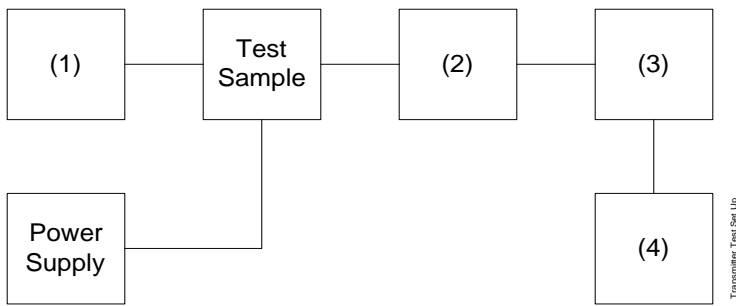
Name of Test: Modulation Limiting
 Specification: 47 CFR 2.1047(b)
 Guide: ANSI/TIA/EIA-603-1992, Paragraph 2.2.3

Comment: For Wireless Mics, change deviation from b11.5 to b13.6

Measurement Procedure

- A) The signal generator was connected to the input of the EUT as shown below.
- B) The modulation response was measured for each of three frequencies (one of which was the frequency of maximum response), and the input voltage was varied and was observed on an HP 8901A Modulation Analyzer.
- C) The input level was varied from 30% modulation (± 1.5 kHz deviation) to at least 20 dB higher than the saturation point.
- D) Measurements were performed for both negative and positive modulation and the respective results were recorded.

Transmitter Test Set-Up: Modulation Limiting



Asset	Description	s/n		
(1) Audio Oscillator				
X i00017	HP 8903A Audio Analyzer	2216A01753	12 mo.	Aug-05
(2) Coaxial Attenuator				
i0012/23	NARDA 766-(-10 dB)	7802 or 7802A	NCR	
X i00231/2	PASTERNAK PE7021-30 (30 dB)	231 or 232	NCR	
(3) Modulation Analyzer				
X i00020	HP 8901A Modulation Meter	2105A01087	NCR	
(4) Audio Analyzer				
X i00017	HP 8903A Audio Analyzer	2216A01753	12 mo.	Aug-05

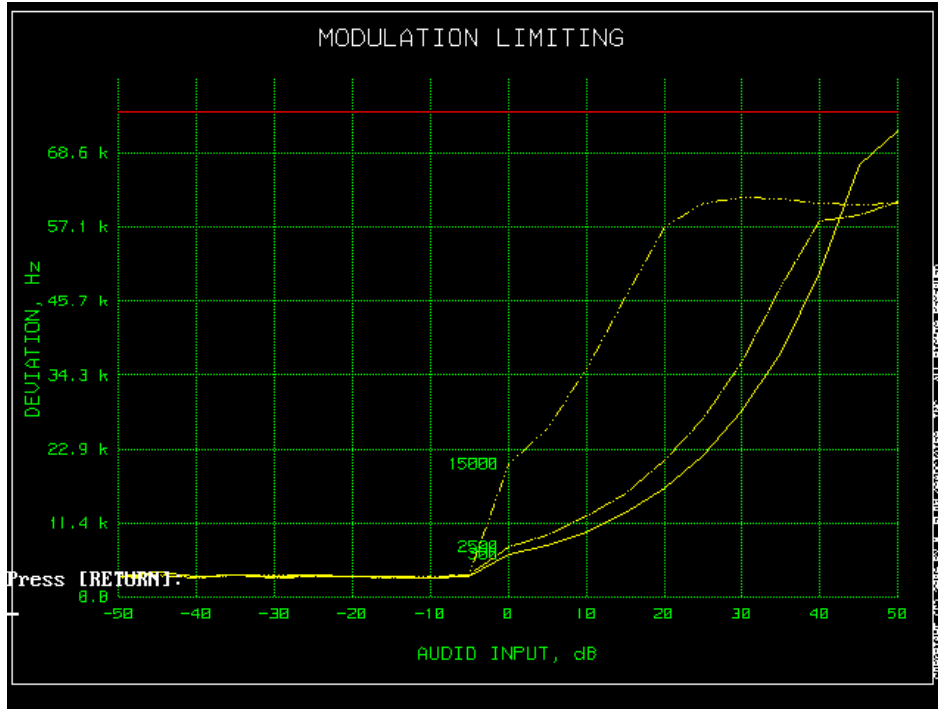
Name of Test: Modulation Limiting

Measurement Results

g0680053: 2006-Aug-04 Fri 16:06:00

State: 0:General

Ambient Temperature: 23°C ± 3°C



Performed by:

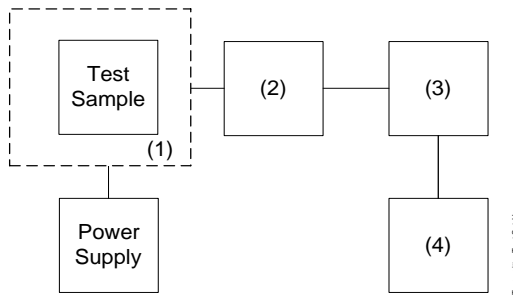

David McPherson, Compliance Test Engineer

Name of Test: Frequency Stability (Temperature Variation)
 Specification: 47 CFR 2.1055(a)(1)
 Guide: ANSI/TIA/EIA-603-1992, Paragraph 2.2.2

Measurement Procedure

- A) The EUT and test equipment were set up as shown on the following page.
- B) 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.
- C) 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.
- D) The temperature tests were performed for the worst case.

Transmitter Test Set-Up: Temperature Variation



Asset	Description	s/n	Cycle	Last Cal
(1) Temperature, Humidity, Vibration				
X i00027	Tenney Temp. Chamber	9083-765-234	NCR	
(2) Coaxial Attenuator				
i00231/2	PASTERNAK PE7021-30 (30 dB)	231 or 232	NCR	
X i00122/3	NARDA 766 (10 dB)	7802 or 7802A	NCR	
(3) RF Power				
i00067	HP E4418A	US38261805	12 mo.	Oct-05
(4) Frequency Counter				
X i00067	HP 5334B	I00019	12 mo.	Jul-06

Name of Test: Frequency Stability (Temperature Variation)

Measurement Results

g0680031: 2006-Aug-03 Thu 11:43:22

State: 0:General

Ambient Temperature: 23°C ± 3°C

C1 REV-H (614.1 to 638.0 MHz)

Temperature (° C)	Percent of Nominal Voltage	Supplied Voltage (VDC)	Measured Frequency (MHz)	Nominal Frequency (MHz)	Deviation (%)	Limit (%)	Deviation (Hz)	Limit (Hz)
+50	100%	2 AA Batteries (3VDC)	614.099280	614.100000	-0.00012	0.005	-720	30705
+40			614.099640	614.100000	-0.00006	0.005	-360	30705
+30			614.098780	614.100000	-0.00020	0.005	-1220	30705
+25 (ref)			614.100510	614.100000	0.00008	0.005	510	30705
+20			614.100760	614.100000	0.00012	0.005	760	30705
+10			614.101530	614.100000	0.00025	0.005	1530	30705
+0			614.101200	614.100000	0.00020	0.005	1200	30705
-10			614.100280	614.100000	0.00005	0.005	280	30705
-20			614.098550	614.100000	-0.00024	0.005	-1450	30705
-30			614.098440	614.100000	-0.00025	0.005	-1560	30705

C3 REV-H (674.1 to 698.0 MHz)

Temperature (° C)	Percent of Nominal Voltage	Supplied Voltage (VDC)	Measured Frequency (MHz)	Nominal Frequency (MHz)	Deviation (%)	Limit (%)	Deviation (Hz)	Limit (Hz)
+50	100%	2 AA Batteries (3VDC)	677.000110	677.000000	0.00002	0.005	110	33850
+40			676.999790	677.000000	-0.00003	0.005	-210	33850
+30			677.000290	677.000000	0.00004	0.005	290	33850
+25 (ref)			677.000470	677.000000	0.00007	0.005	470	33850
+20			676.999830	677.000000	-0.00003	0.005	-170	33850
+10			676.998960	677.000000	-0.00015	0.005	-1040	33850
+0			676.997540	677.000000	-0.00036	0.005	-2460	33850
-10			676.995390	677.000000	-0.00068	0.005	-4610	33850
-20			676.993620	677.000000	-0.00094	0.005	-6380	33850
-30			676.992140	677.000000	-0.00116	0.005	-7860	33850

Performed by:


David McPherson, Compliance Test Engineer

Name of Test: Frequency Stability (Temperature Variation)

Measurement Results

g0680031: 2006-Aug-03 Thu 11:43:22

State: 0:General

Ambient Temperature: 23°C ± 3°C

C5 REV-H (722.1 to 746.0 MHz)

Temperature (° C)	Percent of Nominal Voltage	Supplied Voltage (VDC)	Measured Frequency (MHz)	Nominal Frequency (MHz)	Deviation (%)	Limit (%)	Deviation (Hz)	Limit (Hz)
+50	100%	2 AA Batteries (3VDC)	745.999970	746.000000	0.00000	0.005	-30	37300
+40			745.998500	746.000000	-0.00020	0.005	-1500	37300
+30			745.999670	746.000000	-0.00004	0.005	-330	37300
+25 (ref)			745.999780	746.000000	-0.00003	0.005	-220	37300
+20			745.999930	746.000000	-0.00001	0.005	-70	37300
+10			746.001190	746.000000	0.00016	0.005	1190	37300
+0			745.999960	746.000000	-0.00001	0.005	-40	37300
-10			745.998050	746.000000	-0.00026	0.005	-1950	37300
-20			745.996570	746.000000	-0.00046	0.005	-3430	37300
-30			745.995610	746.000000	-0.00059	0.005	-4390	37300

Performed by:



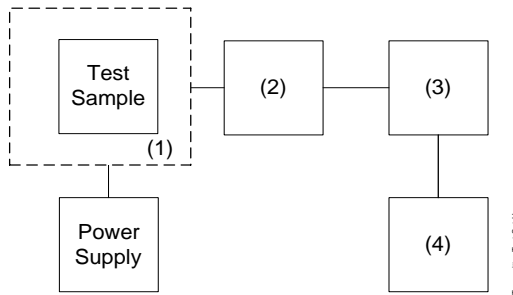
David McPherson, Compliance Test Engineer

Name of Test: Frequency Stability (Voltage Variation)
 Specification: 47 CFR 2.1055(d)(1)
 Guide: ANSI/TIA/EIA-603-1992, Paragraph 2.2.2

Measurement Procedure

- A) The EUT was placed in a temperature chamber (if required) at 25±5°C and connected as shown below.
- B) The power supply voltage to the EUT was varied from 85% to 115% of the nominal value measured at the input to the EUT.
- C) The variation in frequency was measured for the worst case.

Transmitter Test Set-Up: Voltage Variation



Asset	Description	s/n	Cycle	Last Cal
(1)	Temperature, Humidity, Vibration			
X i00027	Tenney Temp. Chamber	9083-765-234	NCR	
(2)	Coaxial Attenuator			
i00231/2	PASTERNAK PE7021-30 (30 dB)	231 or 232	NCR	
X i00122/3	NARDA 766 (10 dB)	7802 or 7802A	NCR	
(3)	RF Power			
i00067	HP E4418A	US38261805	12 mo.	Oct-05
(4)	Frequency Counter			
X i00067	HP 5334B	I00019	12 mo.	Jul-06

Results: Frequency Stability (Voltage Variation)

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

Temperature, °C = +25 (ref)
Battery End Point (Voltage) =

C1 REV-H (614.1 to 638.0 MHz)

Percent of Nominal Voltage	Supplied Voltage (VDC)	Measured Frequency (MHz)	Nominal Frequency (MHz)	Deviation (%)	Limit (%)	Deviation (Hz)	Limit (Hz)
85%	2.55	614.100400	614.100000	0.00007	0.005	400	30705
100%	3.00	614.100430	614.100000	0.00007	0.005	430	30705
115%	3.45	614.100440	614.100000	0.00007	0.005	440	30705

C3 REV-H (674.1 to 698.0 MHz)

Percent of Nominal Voltage	Supplied Voltage (VDC)	Measured Frequency (MHz)	Nominal Frequency (MHz)	Deviation (%)	Limit (%)	Deviation (Hz)	Limit (Hz)
85%	2.55	677.000250	677.000000	0.00004	0.005	250	33850
100%	3.00	677.000300	677.000000	0.00004	0.005	300	33850
115%	3.45	677.000320	677.000000	0.00005	0.005	320	33850

C5 REV-H (722.1 to 746.0 MHz)

Percent of Nominal Voltage	Supplied Voltage (VDC)	Measured Frequency (MHz)	Nominal Frequency (MHz)	Deviation (%)	Limit (%)	Deviation (Hz)	Limit (Hz)
85%	2.55	745.999360	746.000000	-0.00009	0.005	-640	37300
100%	3	745.999400	746.000000	-0.00008	0.005	-600	37300
115%	3.45	745.999450	746.000000	-0.00007	0.005	-550	37300

Performed by:


David McPherson, Compliance Test Engineer

Name of Test: Necessary Bandwidth and Emission Bandwidth

Specification: 47 CFR 2.202(g)

Modulation = 94K2F3E

Necessary Bandwidth Calculation:
Maximum Modulation (M), kHz = 15.0
Maximum Deviation (D), kHz = 58.0
Constant Factor (K) = 1
Necessary Bandwidth (B_N), kHz = $(2 \times M) + ((2 \times D) \times K)$
= 146.0 KHz Measured

Performed by:


David McPherson, Compliance Test Engineer

END OF TEST REPORT

Flom Test Labs
3356 North San Marcos Place, Suite 107
Chandler, Arizona 85225-7176
(866) 311-3268 phone, (480) 926-3598 fax

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FCC ID: B5DH221
MFA p0650013, d0680023

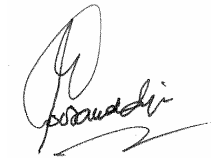
Comment: This bookmark MUST be placed on the last page of the Test Report

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.

a



Certifying Engineer:

Hoosamuddin S Bandukwala, Senior Test Engineer