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: April 3, 2008

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

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

Equipment: Rev WT
FCC ID: B5DB119
FCC Rules: Part 74H

Gentlemen:

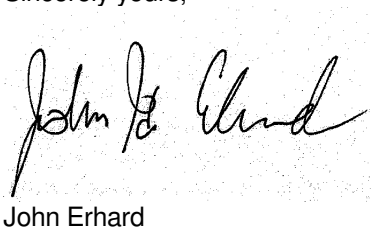
Enclosed please find your copy of the Engineering Test Report for which you are subject to the restrictions as listed on the attached summary.

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,



John Erhard

enclosure(s)
JE/mdw

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

Memo

Date: April 3, 2008

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

Equipment: Rev WT
FCC ID: B5DB119

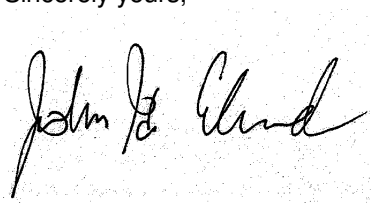
Please note that the enclosed Reports reflect the results of tests performed to the currently published Federal Communications Commissions Rules and Regulations.

Should the FCC's Examiners' interpretations request new and unpublished requirements, we will be pleased to provide them.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,



John Erhard

Summary of Restrictions

1. All submissions to the FCC are subject to **their** Examiner's interpretation.

2. Please allow from 60 to 90 days before hearing from the FCC with regard to any submission.

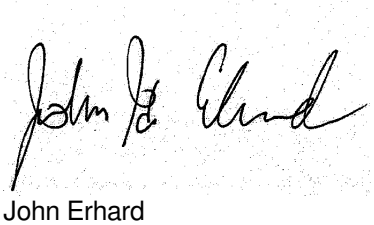
3. The FCC can set aside any action; modify or set aside any action, within 30 days. (FCC Rule 1.108, 1.113).

4. Under Rule 2.803, if device is not type accepted/certificated then it must **not** be sold, leased, offered for sale, imported, shipped or distributed or advertised for sale.

5. FCC can revoke its certificates at any time if the equipment does not meet or **continue** to meet their Rules. (Rule Parts 2.927, 2.939).

6. FCC can request a sample at any time (2.936).

M. Flom Associates, Inc.



John Erhard

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: April 3, 2008

Federal Communications Commission
Via: Electronic Filing

Attention: Authorization & Evaluation Division

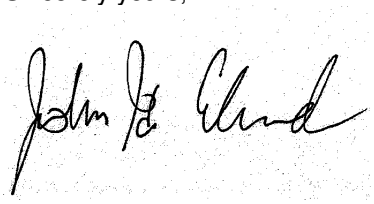
Applicant: Telex Communications, Inc.
Equipment: Rev WT
FCC ID: B5DB119
FCC Rules: Part 74H

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.

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,



John Erhard

enclosure(s)
cc: Applicant
JE/mdw

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

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

Test Report

for

Model: Rev WT

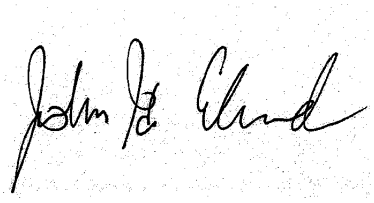
to

Federal Communications Commission

Rule Part(s) 74 Subpart H

Date of report: April 3, 2008
Date of revised report: August 26, 2008

On the Behalf of the Applicant:	Telex Communications, Inc.
At the Request of:	Telex Communications, Inc. 8601 E. Cornhusker Highway P.O. Box 5579 Lincoln, NE 68505-5579
Attention of:	Jim Andersen, Project Engineer (402) 467-5321; FAX: (402) 467-3279 Email: jim.andersen@us.telex.com



Supervised by: John Erhard

Revision History

Revision	Date	Revised By	Reason for revision
1.0	April 3, 2008	M. Wyman	Original Document
2.0	June 12, 2008	Hoosam B	Typo of listed Standard and Output power
3.0	August 21, 2008	M.Wyman	Updates to report per TCB

List of Exhibits

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

Applicant: Telex Communications, Inc.

FCC ID: B5DB119

By Applicant:

1. Letter of Authorization

2. Confidentiality Request: 0.457 And 0.459

3. Identification Drawings, 2.1033(c)(11)
   - Label
   - Location of Label
   - Compliance Statement
   - Location of Compliance Statement

4. Photographs, 2.1033(c)(12)

5. Documentation: 2.1033(c)
   - (3) User Manual
   - (9) Tune Up Info
   - (10) Schematic Diagram
   - (10) Circuit Description
   - Block Diagram
   - Parts List
   - Active Devices

6. MPE/SAR Report

By F.T.L.:

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.

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

Testimonial
and
Statement of Certification

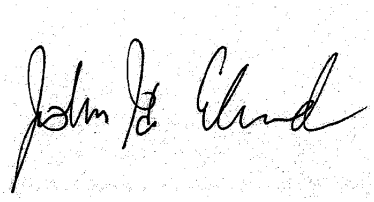
This is to Certify:

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: John Erhard

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

Table of Contents

Required information per ISO 17025-2005, paragraph 5.10.2:

a)	**Test Report**
b) Laboratory: (FCC: 31040/SIT) (Canada: IC 2044-A)	Flom Test Lab 3356 N. San Marcos Place, Suite 107 Chandler, AZ 85225
c) Report Number:	d0840003
d) Client:	Telex Communications, Inc. 8601 E. Cornhusker Highway P.O. Box 5579 Lincoln, NE 68505-5579
e) Identification:	Rev WT
EUT Description:	Belt Pack Transmitter 614-697 MHZ
f) EUT Condition:	Not required unless specified in individual tests.
g) Report Date: EUT Received:	April 3, 2008
h, j, k):	As indicated in individual tests.
i) Sampling method:	No sampling procedure used.
l) Uncertainty:	In accordance with FTL internal quality manual.
m) Supervised by:	
n) Results:	The results presented in this report relate only to the item tested.
o) Reproduction:	This report must not be reproduced, except in full, without written permission from this laboratory.

Accessories used during testing:

Type	Quantity	Manufacturer	Model	Serial No.	FCC ID

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:

_____ 15 – Radio Frequency Devices (unlicensed)
_____ 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 F – Television Broadcast Auxiliary Stations
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 TIA/EIA 603-C, 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.

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

A2LA

"A2LA has accredited Flom Test Labs, 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 17025:2005 'General Requirements for the Competence of Testing and Calibration Laboratories' and any additional program requirements in the identified field of testing."

Please refer to www.a2la.org for current scope of accreditation.

Certificate number: 2152.01

ACCREDITED
CERT NO: 2152-01

IC O.A.T.S. Number: 2044A-1

List of General Information Required for Certification

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

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

(c)(2): **FCC ID**: B5DB119

Model Number: Rev WT

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

Please see attached exhibits

(c)(4): **Type of Emission**: FM

(c)(5): **Frequency Range, MHz**: 614 - 697

(c)(6): **Power Rating, Watts**: 50mW
____ Switchable ____ Variable ____ N/A

FCC Grant Note:

(c)(7): **Maximum Power Rating, Watts**: 250mW

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:

Collector Current, A	=	0.027
Collector Voltage, Vdc	=	3.00
Supply Voltage, Vdc	=	3.00

(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

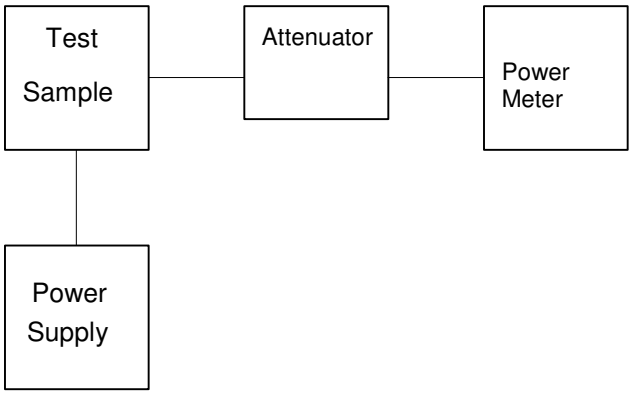
Name of Test: Carrier Output Power (Conducted)
Specification: 2.1046(a)
Test Equipment Utilized: **Test Date:** 4/3/08

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 ±3%.

Transmitter Test Set-Up: RF Power Output



Measurement Results
(Worst case)

Ambient Temperature = 23°C ± 3°C

Frequency, MHz	Power Output (dBm)	Power output, Watts
614.00000	17.1	0.051Watts
680.00000	16.9	0.049Watts

Performed by: Michael Wyman

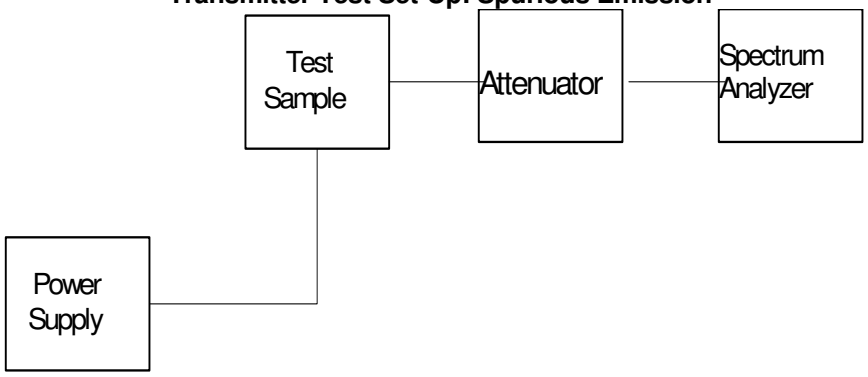
Name of Test: Unwanted Emissions (Transmitter Conducted)
Specification: 2.1051
Test Equipment Utilized: **Test Date:** 4/4/08

Measurement Procedure

A) The emissions were measured for the worst case as follows:
   1). within a band of frequencies defined by the carrier frequency plus and minus one channel.
   2). 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.

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

Transmitter Test Set-Up: Spurious Emission



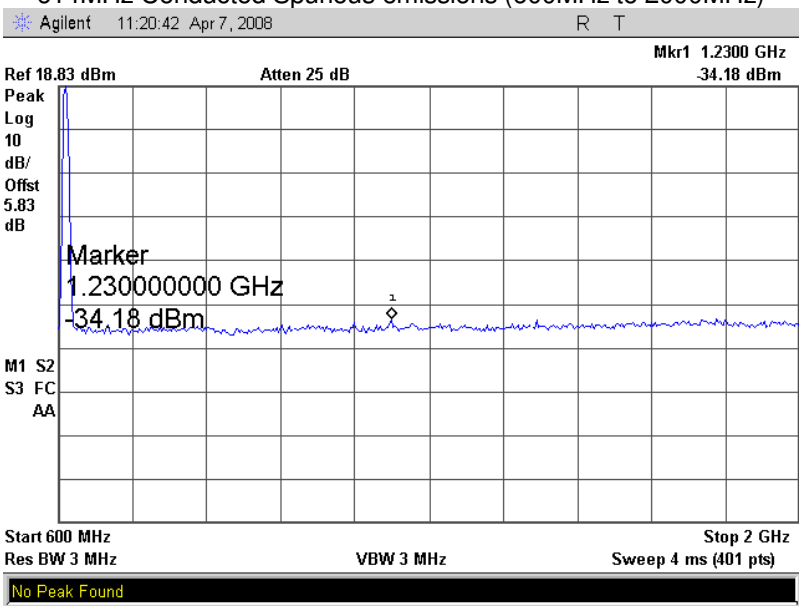
Measurement Results

Summary:

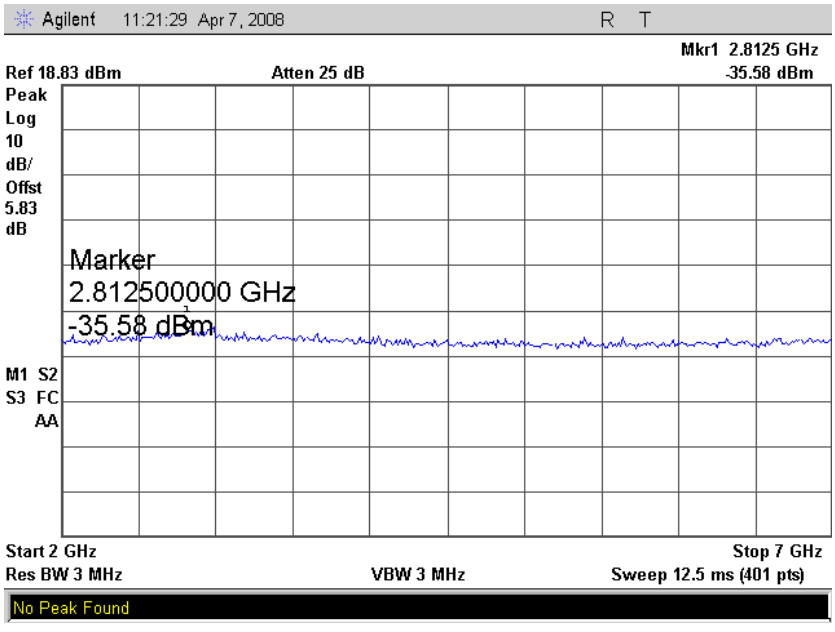
Frequency of carrier, MHz	=	614, 680 MHz
Spectrum Searched, GHz	=	0 to 10 x F_C
Maximum Response, Hz	=	3160
All Other Emissions	=	≥ 20 dB Below Limit

Measurement Results

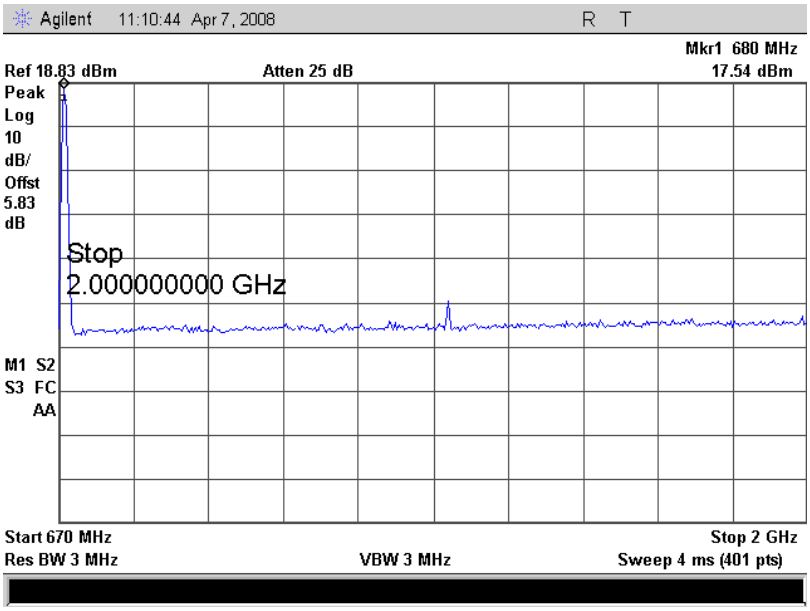
614MHz Conducted Spurious emissions (600MHz to 2000MHz)



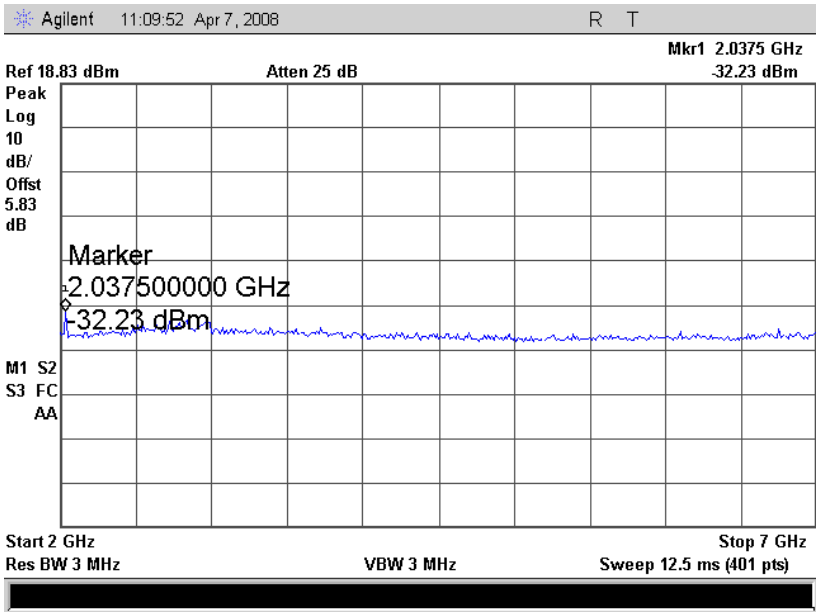
614MHz Conducted Spurious emissions (2000MHz to 7000MHz)



680MHz Conducted Spurious emissions (600MHz to 2000MHz)



680MHz Conducted Spurious emissions (2000MHz to 7000MHz)



Michael D Wyman

Performed by: Michael Wyman

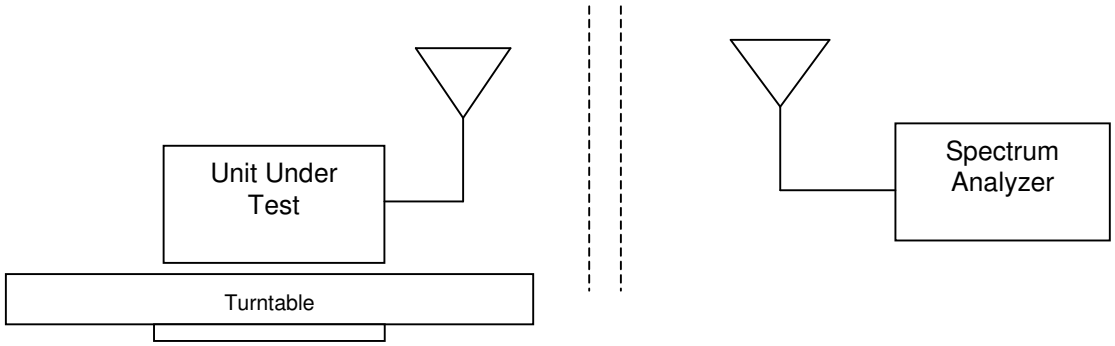
Flom Test Labs
3356 North San Marcos Place, Suite 107
Chandler, Arizona 85225-7176
(866) 311-3268 phone, (480) 926-3598 fax

Name of Test: Field Strength of Spurious Radiation
Specification: 2.1053(a)
Test Equipment Utilized: **Test Date:** 4/ 3/08

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

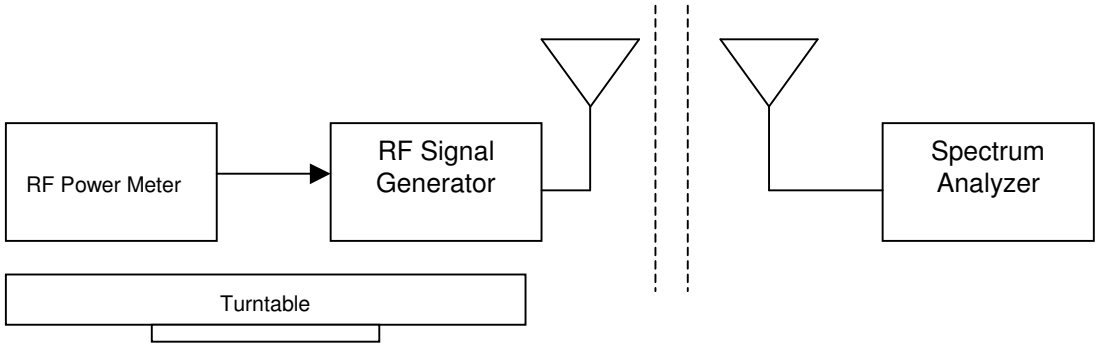
C) Place the transmitter to be tested on the turntable in the standard test site. The transmitter is transmitting into a non-radiating load that is placed on the turntable. The RF cable to this load should be of minimum length.

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.

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.

Measurement Results

g0840003: 2008-Apr-01 Tue 14:00:00
STATE: 2:High Power Ambient Temperature: 23℃ ± 3℃

Frequency Tuned, MHz	Frequency Emission, MHz	EIRP, dBm
614.000000	1227.980000	-43.5
614.000000	1842.010000	-41.6
614.000000	2456.010000	-42.3
614.000000	3070.010000	-39.0
614.000000	3684.010000	-38.2
614.000000	4298.010000	-38.6
614.000000	4912.010000	-37.0
614.000000	5526.010000	-34.3
614.000000	6140.000000	-31.1

Frequency Tuned, MHz	Frequency Emission, MHz	EIRP, dBm
680.000000	1359.990000	-35.4
680.000000	2039.990000	-26.7
680.000000	2719.990000	-35.9
680.000000	3399.990000	-34.2
680.000000	4079.990000	-32.8
680.000000	4759.990000	-31.9
680.000000	5439.990000	-29.0
680.000000	6119.990000	-24.3
680.000000	6799.990000	-22.7

Performed by: Michael Wyman

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

Name of Test: Emission Masks (Occupied Bandwidth)
Specification: 2.1049(c)(1)
Test Equipment Utilized: See Equipment list for details **Test Date:** 2/21/08

Measurement Procedure

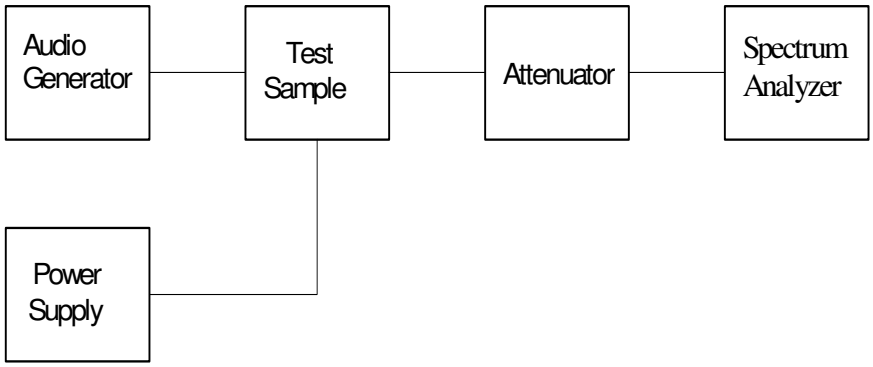
A) The EUT and test equipment were set up as shown below

B) For EUTs supporting audio modulation, the audio signal generator was adjusted to the frequency of maximum response and with output level set for ±2.5/±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.

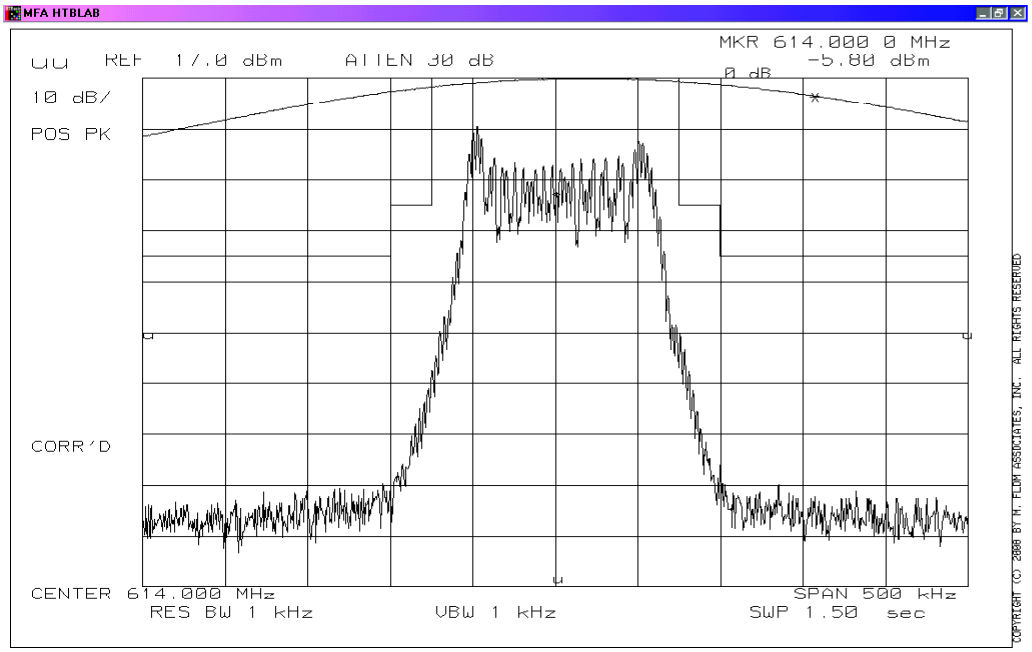
D) The Occupied Bandwidth was measured with the Spectrum Analyzer controls set as shown on the test results.

Transmitter Test Set-Up: Occupied Bandwidth



Measurement Results

State: Ambient Temperature: 23℃ ± 3℃



Input Modulation Frequency 2500Hz
Input Modulation Amplitude 1.0V

Carrier Frequency 614.000MHz

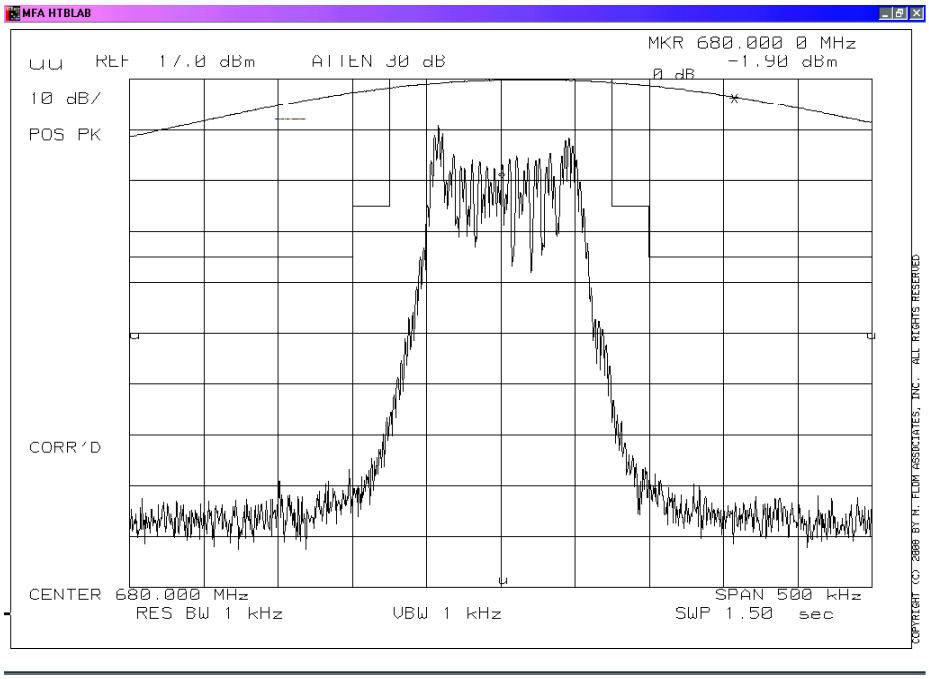
Reference Power was measured at 1MHz RBW and 1MHz VBW. The span and bandwidth were adjusted without touching the amplitude to display the mask and signal amplitude.

Marker Delta was used to find the bandwidth at 26dB down from the peak signal level for 99% BW.

Performed by: Michael Wyman

Measurement Results

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



Input Modulation Frequency 2500Hz
Input Modulation Amplitude 1.0V

Carrier Frequency 680.000MHz

Reference Power was measured at 1MHz RBW and 1MHz VBW. The span and bandwidth were adjusted without touching the amplitude to display the mask and signal amplitude.

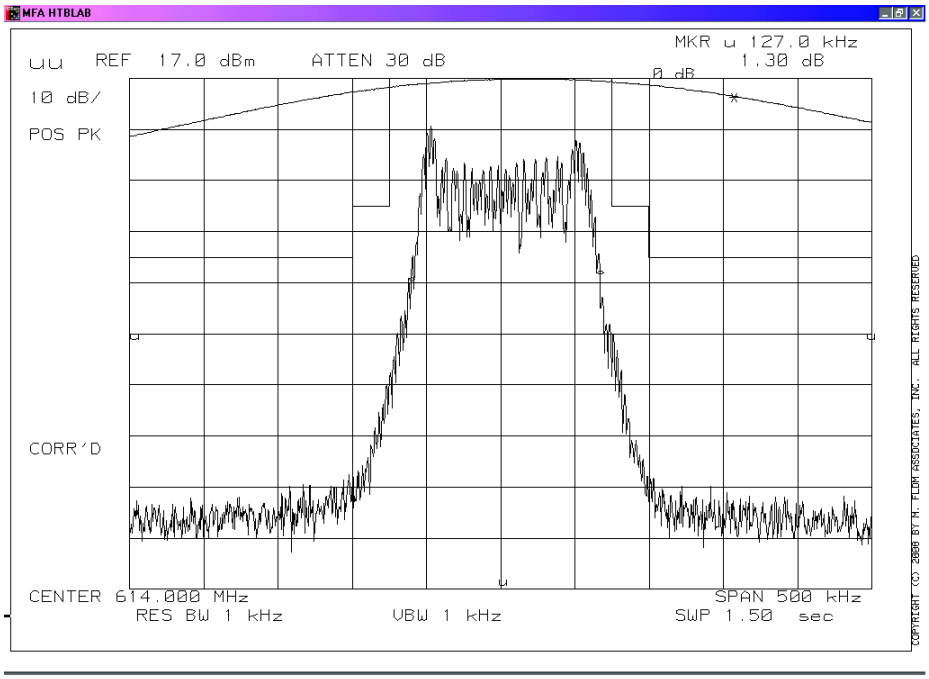
Marker Delta was used to find the bandwidth at 26dB down from the peak signal level for 99% BW.

Performed by: Michael Wyman

Name of Test: Emission Masks (Occupied Bandwidth)
Specification: 2.1049(c)(1)
Test Equipment Utilized: **Test Date:** 4 /3/08

Measurement Results

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



99% bandwidth 127KHz
Modulation amplitude 1.0V
Modulation frequency 2500Hz

Carrier Frequency 614.000MHz

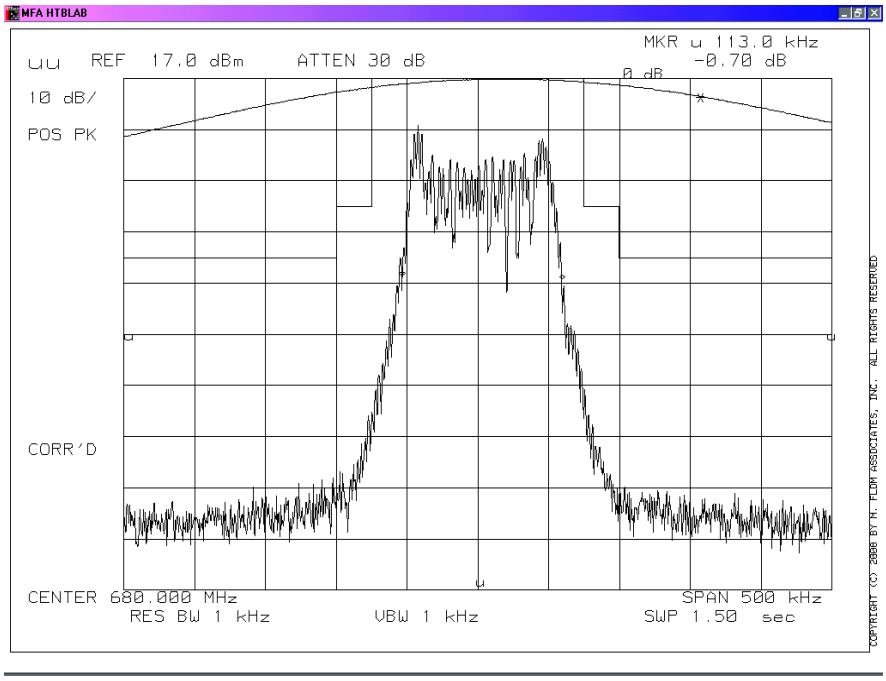
Reference Power was measured at 1MHz RBW and 1MHz VBW. The span and bandwidth were adjusted without touching the amplitude to display the mask and signal amplitude.

Marker Delta was used to find the bandwidth at 26dB down from the peak signal level for 99% BW.

Name of Test: Emission Masks (Occupied Bandwidth)
Specification: 2.1049(c)(1)
Test Equipment Utilized: **Test Date:** 4 /03/08

Measurement Results

State: Ambient Temperature: 23℃ ± 3℃



99% bandwidth 113KHz
Modulation amplitude 1.0V
Modulation frequency 2500Hz

Carrier Frequency 680.000MHz

Reference Power was measured at 1MHz RBW and 1MHz VBW. The span and bandwidth were adjusted without touching the amplitude to display the mask and signal amplitude.

Marker Delta was used to find the bandwidth at 26dB down from the peak signal level for 99% BW.

Name of Test: Audio Frequency Response
Specification: 2.1047(a)
Test Equipment Utilized: **Test Date:**

Measurement Procedure

A) The EUT and test equipment were set up as shown below.

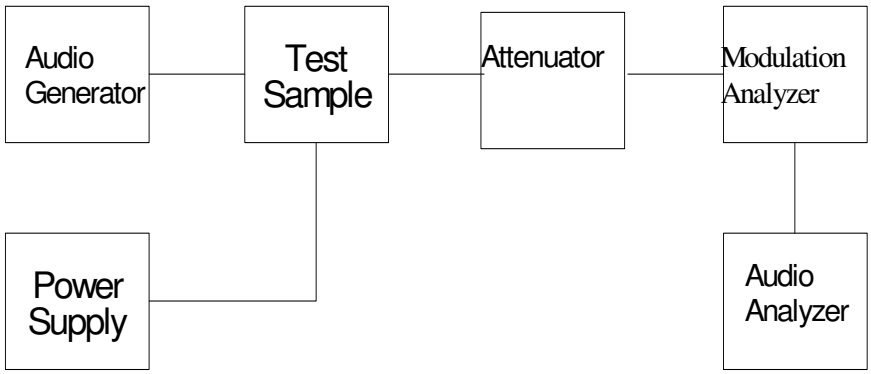
B) The audio signal generator was connected to the audio input circuit/microphone of the EUT.

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

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

E) The response in dB relative to 1 kHz was measured, using the HP 8901A Modulation Meter.

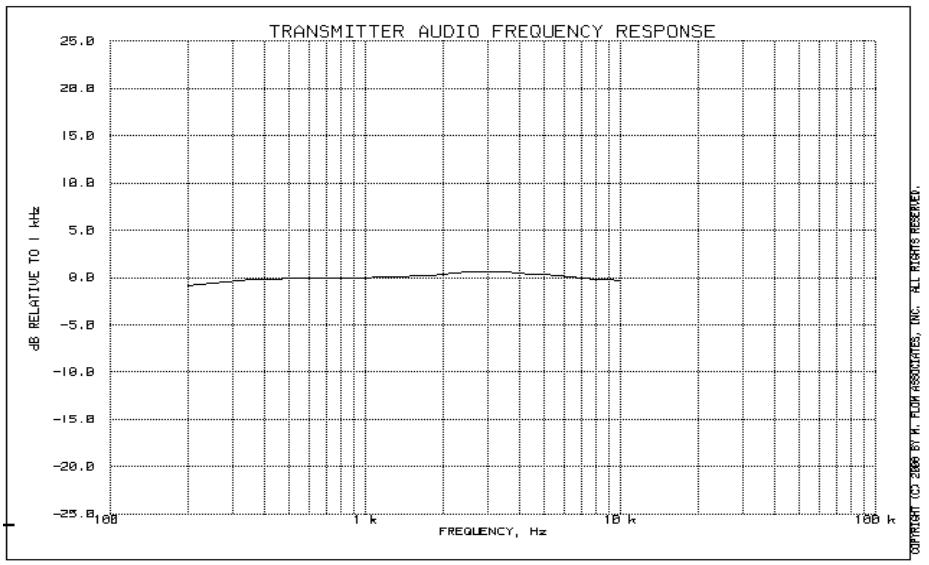
Transmitter Test Set-Up: Audio Frequency Response



Measurement Results

State: Ambient Temperature: 23℃ ± 3℃

Frequency of Maximum Audio Response, Hz = 10000Hz



R

Name of Test: Modulation Limiting
Specification: 2.1047(b)
Test Equipment Utilized: **Test Date:**

Measurement Procedure

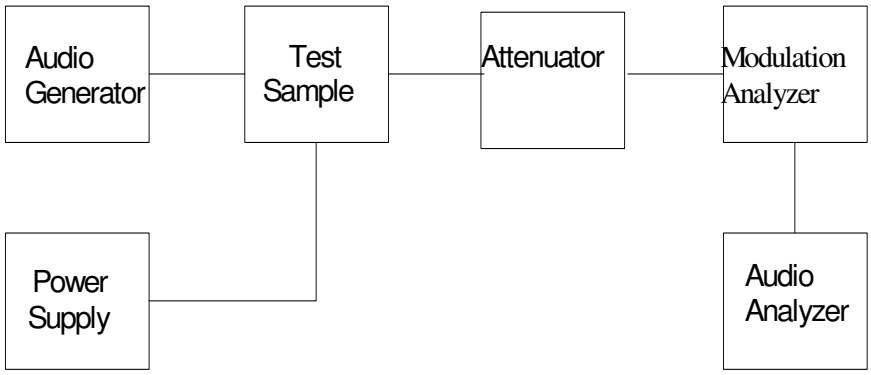
A) The signal generator was connected to the input of the EUT as shown below.

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.

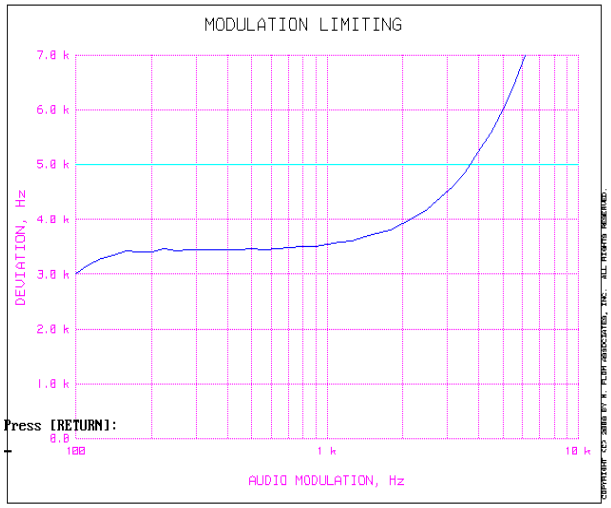
Transmitter Test Set-Up: Modulation Limiting



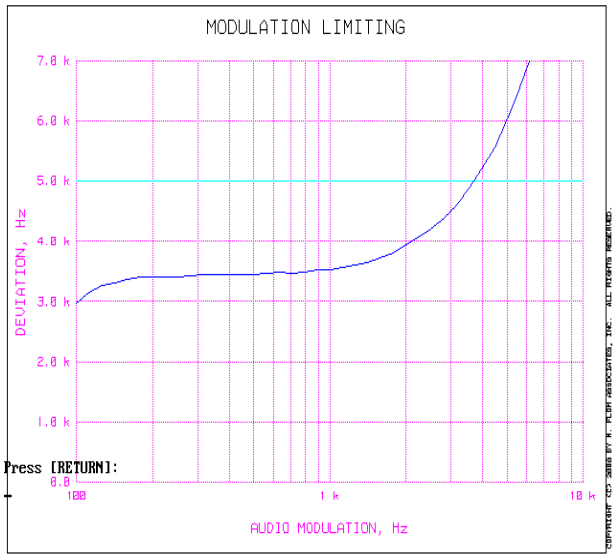
Measurement Results

State: Ambient Temperature: 23℃ ± 3℃

Positive Peaks:



Negative Peaks:



Name of Test: Frequency Stability (Temperature Variation)
Specification: 2.1055(a)(1)
Test Equipment Utilized: **Test Date:** 4 /4/08

Measurement Procedure

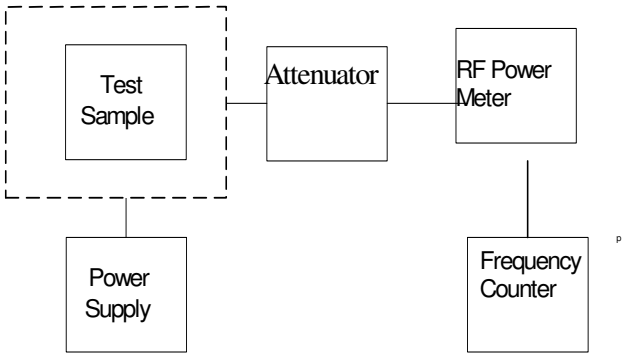
A) The EUT and test equipment were set up as shown on the following page.

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.

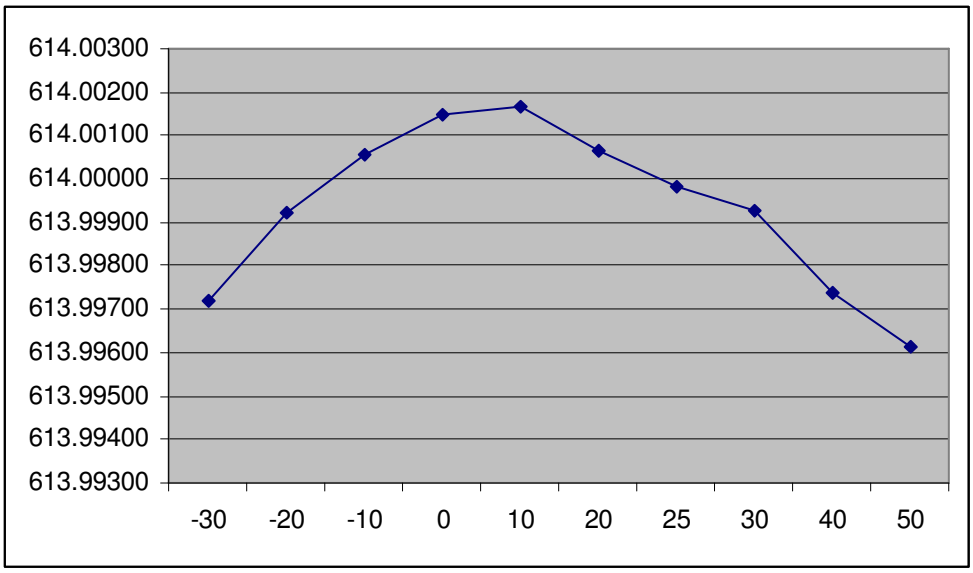
D) The temperature tests were performed for the worst case.

Transmitter Test Set-Up: Temperature Variation

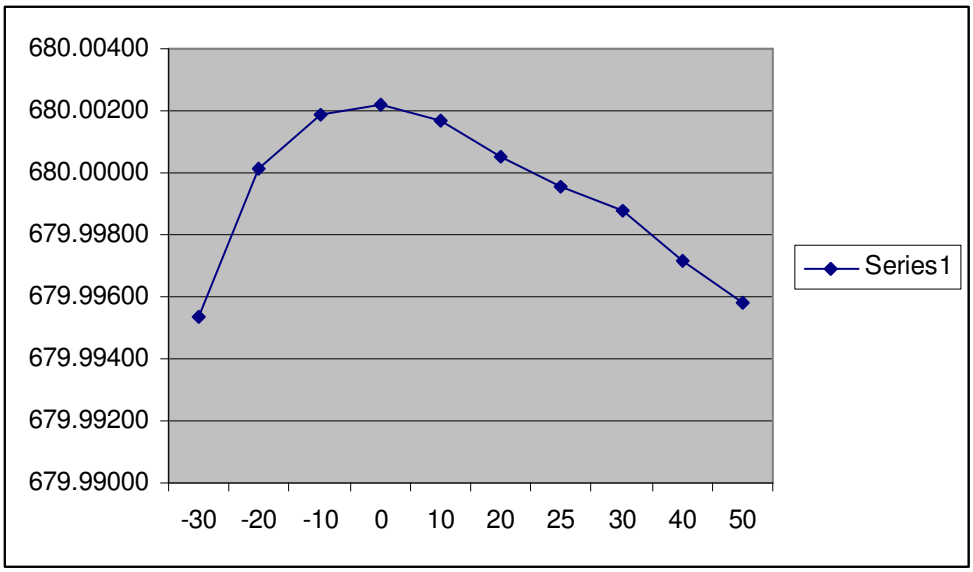


Measurement Results

State: Ambient Temperature: 23℃ ± 3℃



Frequency deviation vs. temperature for 614.00000MHz. The graph bounds indicate the limits for the frequency deviation for .05%



Frequency deviation vs. temperature for 680.00000MHz. The graph bounds indicate the limits for the frequency deviation for .005%

Performed by: Michael Wyman

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

Name of Test: Frequency Stability (Voltage Variation)
Specification: 2.1055(b)(1)
Test Equipment Utilized: **Test Date:** 4/ 4/08

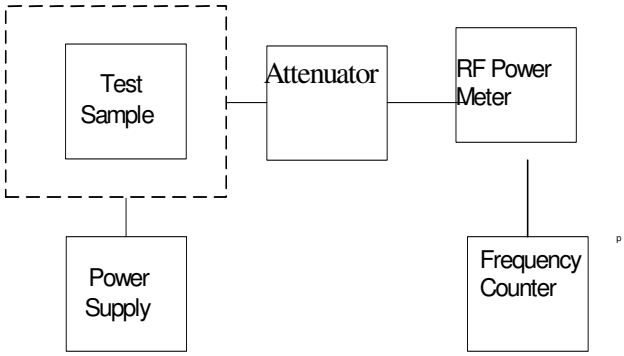
Measurement Procedure

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



Measurement Results

% of STV	Voltage	Frequency, MHz	Change, Hz
15% of 3.00vdc	3.45	613.99969	31
	2.55	613.99964	36

% of STV	Voltage	Frequency, MHz	Change, Hz
15% of 3.00vdc	3.45	679.99936	72
	2.55	679.99936	72

Performed by: Michael Wyman

Name of Test: Necessary Bandwidth and Emission Bandwidth
Specification: 2.202(g)

By Carson's rule:

Ex: $BW_{Necessary} = (2M+2DK)$

Modulation =

Necessary Bandwidth Calculation:

Maximum Modulation (M), kHz	=	5.0
Maximum Deviation (D), kHz	=	3.0
Constant Factor (K)	=	1.0
Necessary Bandwidth (B_N), kHz	=	16K0F3E

Test Equipment Utilized

Asset#	**Manufacturer**	Model	Serial Number	Cal Cycle	Calibration Due
I00008	Kenwood	PR19-3A	5080154	When used	Verified
I00017	HP	8903A	2216A01753	12 mo.	1/24/2009
I00020	HP	8901A	2105A01087	12 mo.	1/24/2009
I00021	HP	8945A	2146A00159	N/A	Verified
I00027	Tenney	Tenney Jr	9083-76J-234	12 mo.	9/25/2008
I00031	HP	8656A	2402A06180	When used	Verified
I00033	HP	85462A	3625A00357	12 mo.	10/1//2008
I00034	HP	8546A	3448A00225	12 mo.	10/1/2008
I00048	HP	85662A	2511AD1467	12 mo.	8/18/2008
I00049	HP	8566B	2511AD1467	12 mo.	8/18/2008
I00050	HP	85685A	2510A00185	12 mo.	8/18/2008
I00051	HP	85650A	2521A00647	12 mo.	8/18/2008
I00054	HP	6286A	1612A02671	When used	Verified
I00055	HP	8447D	1726A01101	When used	Verified
I00062	HP	6842A	3531A00123	12 mo.	6/4/2008
I00088	EMCO Biconical	3109B	2336	24 mo.	10/16/2009
I00089	Aprel Log Periodic	2001	001500	24 mo.	10/19/2009
I00103	EMCO Horn	3115	9028-3925	36 mo.	10/4/2009
I00170	Lindgren	LG170	4999	When used	Verified
I00192	Solar Electronics	6741-1	841402	24 mo.	10/24/2008
I00207	HP	8753D	3410A08514	12 mo.	8/4/2008
I00231	Pasternak	PE7021-30dB		When used	Verified
I00244	FCC	50-25-2-01	2047	12 mo.	10/25/2007
I00250	S-5 Electronics	CDN	0250	When used	Verified
I00251	HP	53152A	US39270237	12 mo.	5/3/2008
I00252	Luthi	EM101	43773	24 mo.	10/24/2008
I00266	Rohde&Schwarz	SMT03	82611/005	When used	Verified
I00267	Schaffner	CBL611C	2910	24 mo.	11/6/2009
I00271	ARA	DRG-1181A	1176	36 mo.	3/6/2010
I00273	ARA	MWH-1826/B	1044	36 mo.	3/7/2010
I00275	EIN	440LA	231	When used	Verified
I00290	HP	8566B	2140A01231	12 mo.	8/7/2008
I00291	HP	85662A	2152A02970	12 mo.	8/7/2008
I00315	HP	9142-1N	063802	36 mo.	5/26/2008
I00318	HP	54502A	2934A00688	12 mo.	10/17/2008
I00321	HP	8901A	2239A02170	12 mo.	9/17/2008
I00324	HP	8903B	3011A09079	12 mo.	9/4/2008
I00325	Tektronix	TDS2021B	C010121	12 mo.	10/17/2008
I00331	HP	E4407B	MY45101313	12 mo.	10/31/2008

In addition to the above listed equipment standard RF connectors and cables were utilized in the testing of the described equipment. Prior to testing these components were tested to verify proper operation.

END OF TEST REPORT