ComplianceTesting.com
Previously Flom Test Lab
EMI, EMC, RF Testing Experts Since 1963

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

Date: July 30, 2009

Applicant: Telex Communications, Inc.
8601 E. Cornhusker Highway
Lincoln, NE 68507

Attention of: Jim Andersen
(402) 467-6671
Email: Jim.Andersen@us.bosch.com

Equipment: WTU-2
FCC ID: B5DB121
FCC Rules: 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.

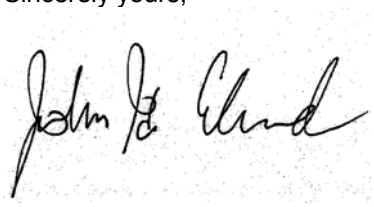
Once a Telecommunication Certification Body (TCB) issues a Grant the Federal Communication Commission (FCC) has 30 days to review the application and request added information. It is your decision whether or not to market the equipment subject to a possible recall before the end of the 30 days.

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.

For any additional information please contact us.

Thank you.

Sincerely yours,



John Erhard: Engineering Manager

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).

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info@ComplianceTesting.com

Date: July 30, 2009

Federal Communications Commission
Via: Electronic Filing

Attention: Authorization & Evaluation Division

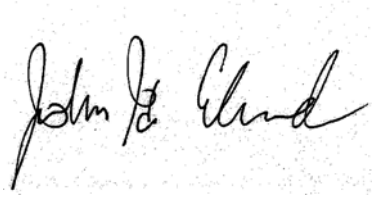
Applicant: Telex Communications, Inc.
Equipment: WTU-2
FCC ID: B5DB121
FCC Rules: 74H

Dear Gentleman:

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.

Best regards,



John Erhard: Engineering Manager

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

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info@ComplianceTesting.com

Test Report

for

Model: WTU-2

to

Federal Communications Commission

Rule Part(s) 74H

Date of report: July 30, 2009

On the Behalf of the Applicant:	Telex Communications, Inc.
At the Request of:	Telex Communications, Inc. 8601 E. Cornhusker Highway Lincoln, NE 68507
Attention of:	Jim Andersen (402) 467-6671 Email: Jim.Andersen@us.bosch.com

Reviewed by: John Erhard: Engineering Manager

Test report Revision History

Revision	Date	Revised By	Reason for revision
1.0	July 30, 2009	J Erhard	Original Document
2.0	August 14, 2009	J Erhard	Add Necessary Bandwidth Calculation to report
2.1	August 14, 2009	J Erhard	Edit Necessary BW calculation

List of Exhibits

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

Applicant: Telex Communications, Inc.

FCC ID: B5DB121

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.

Testimonial and Statement of Certification

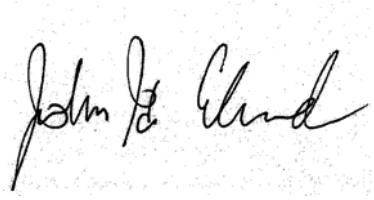
This is to Certify:

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: Engineering Manager

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

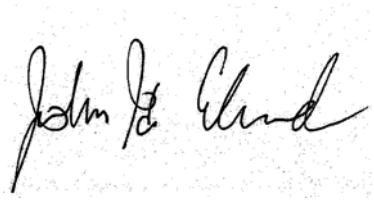
Table of Contents

Required information per ISO 17025-2005, paragraph 5.10.2:

a) **Test Report**

b) Laboratory: (FCC: 31040/SIT) (Canada: IC 2044-A)	Compliance Testing 3356 N. San Marcos Place, Suite 107 Chandler, AZ 85225
c) Report Number:	d0970022
d) Client:	Telex Communications, Inc. 8601 E. Cornhusker Highway Lincoln, NE 68507
e) Identification:	WTU-2
EUT Description:	Beltpack
f) EUT Condition:	Not required unless specified in individual tests.
g) Report Date:	July 30, 2009
h, j, k):	As indicated in individual tests.
i) Sampling method:	No sampling procedure used.
l) Measurement Uncertainty:	In accordance with CT internal quality manual.

m) Reviewed by:



John Erhard: Engineering Manager

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: 74H - Low Power Auxiliary Stations

Standard Test Conditions and Engineering Practices

Except as noted herein, the following conditions and procedures were observed during the testing:

In accordance with ANSI/TIA-603-C-2003, 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 Compliance Testing, 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
TESTING CERT# 2152.01

FCC OATS Reg. #933597

IC Reg. # 2044A-1

List of General Information Required for Certification

In Accordance with FCC Rules and Regulations,
Volume II, Part 2 and to 74HSub-part 2.1033

(c)(1):

Name and Address of Applicant: Telex Communications, Inc.
8601 E. Cornhusker Highway
Lincoln, NE 68507

Manufacturer: Telex Communications, Inc.
8601 E. Cornhusker Highway
Lincoln, NE 68507

(c)(2):**FCC ID**: B5DB121

Model Number: WTU-2

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

Please see attached exhibits

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

(c)(5): **Frequency Range, MHz**: 614 to 676

(c)(6): **Power Rating, Watts**: 0.0564

____ Switchable ____ Variable ____ N/A

FCC Grant Note:

(c)(7): **Maximum Allowable Power, Watts**: 0.250

DUT Results: Passes x Fails _____

The UUT was tested with a 0 dBi ¼ wave dipole antenna.

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	=	18.6 mA
Collector Voltage, Vdc	=	5
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
_x_ N/A

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

Follows

Test Results Summary

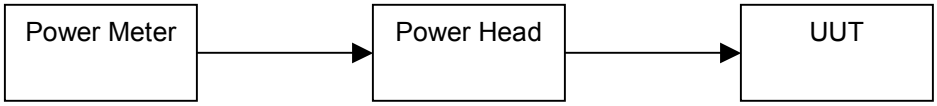
Specification	Test Name	Pass, Fail, N/A	Comments
2.1046	Carrier Output Power (Conducted)	Pass	
2.1046	Carrier Output Power (Radiated)	Pass	
2.1051	Unwanted Emissions (Transmitter Conducted)	Pass	
2.1053	Field Strength of Spurious Radiation	Pass	
2.1049	Emission Masks (Occupied Bandwidth)	Pass	
2.1047(a)	Audio Frequency Response	Pass	
2.1047(b)	Modulation Limiting	Pass	
2.1055(a) (1)	Frequency Stability (Temperature Variation)	Pass	
2.1055(b) (1)	Frequency Stability (Voltage Variation)	Pass	
2.202(g)	Necessary Bandwidth and Emission Bandwidth	Pass	

Name of Test: Carrier Output Power (Conducted)
Specification: 2.1046 **Engineer: J Erhard**
Test Equipment Utilized: i00228, i00334 **Test Date: 7/30/2009**

Measurement Procedure

The Unit Under Test (UUT) was connected directly to a power meter input. The peak readings were taken and the result was then compared to the limit.

Test Setup



Transmitter Peak Output Power

Tuned Frequency MHz	Recorded Measurement	Specification Limit	Result
614.1	43.4 mW	250 mW	Pass
628.0	41.4 mW	250 mW	Pass
641.9	40.8 mW	250 mW	Pass
648.1	56.4 mW	250 mW	Pass
662.0	54.9 mW	250 mW	Pass
675.9	53.7 mW	250 mW	Pass

Name of Test: Carrier Output Power (Radiated)
Specification: 2.1046 **Engineer: J Erhard**
Test Equipment Utilized: i00049, i00267 **Test Date: 7/30/2009**

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
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.

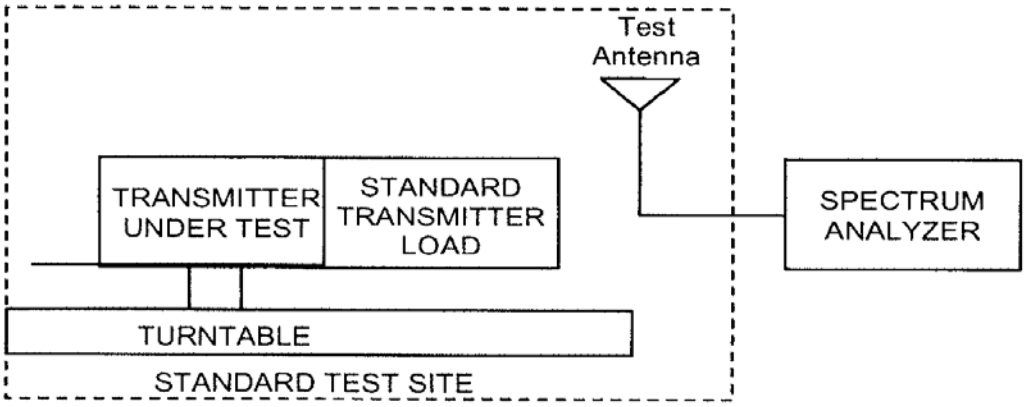
L) Calculate power in dBm into a reference ideal half-wave dipole antenna by reducing the readings obtained in steps J) and K) by the power loss in the cable between the generator and the antenna and further corrected for the gain of the substitution antenna used relative to an ideal half-wave dipole 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.

Substitution Method Test Setup



Radiated Output Power

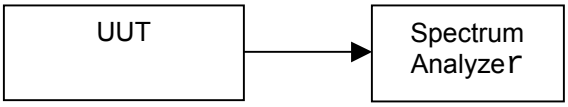
Emission Freq (MHz)	Measured Value (dBm)	Correction Factor (dB)	Corrected Value (dBm)
614.1	-1.1	22.8	21.7
628.0	-1.4	23.1	21.7
641.9	-2.5	23.2	20.7
648.1	-1.3	23.3	22.0
662.0	-0.2	23.4	23.2
675.9	-0.8	23.7	22.9

Name of Test: Conducted Spurious Emissions
Specification: 2.1051 **Engineer: J Erhard**
Test Equipment Utilized: i00331 **Test Date: 7/30/2009**

Test Procedure

The UUT was connected directly to a spectrum analyzer to verify that the UUT met the requirements for spurious emissions. The reference level was offset for the peak power output with the resolution bandwidth set for 1 MHz. The frequency range from 30 MHz to the 10th harmonic of the fundamental transmitter was observed. The IC specification of –25 dBm is the more stringent limit and the UUT was tested against that limit. Only the worst case is recorded in the Conducted Spurious Emissions Summary Test Table.

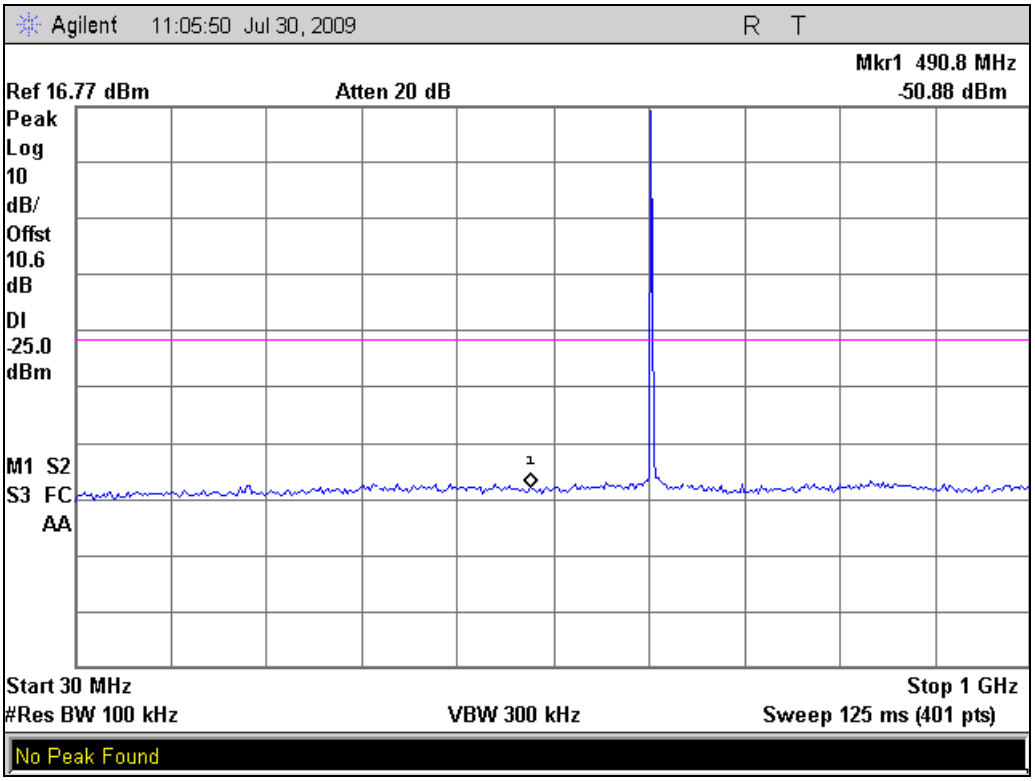
Test Setup

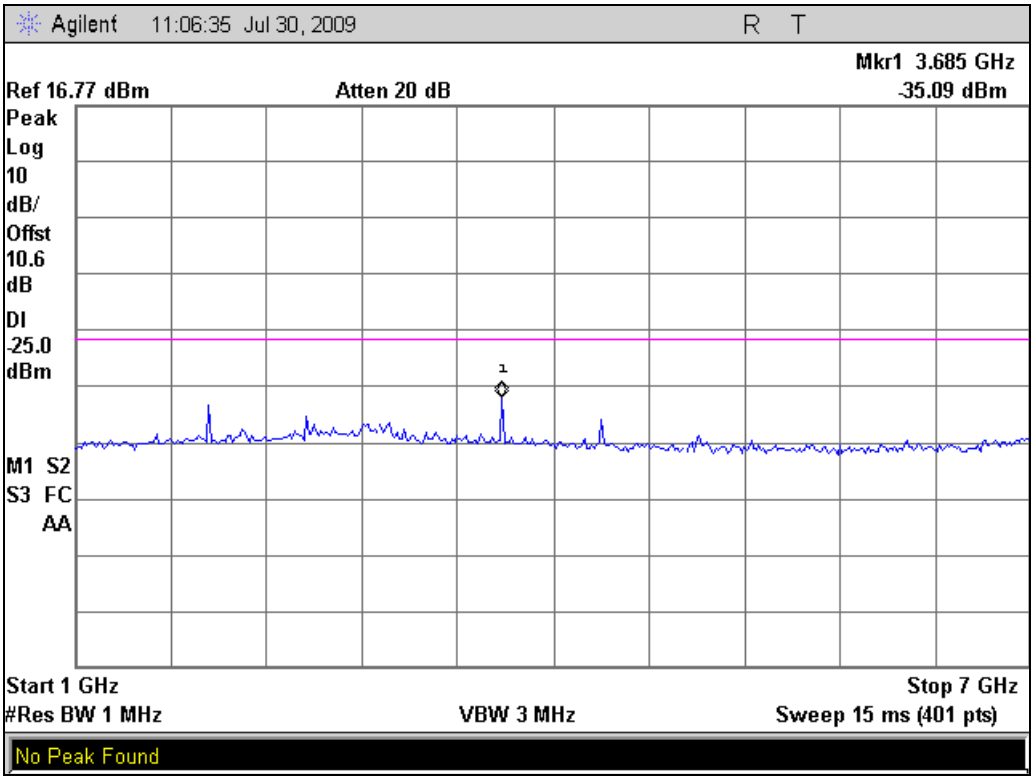


Conducted Spurious Emissions Summary Test Table

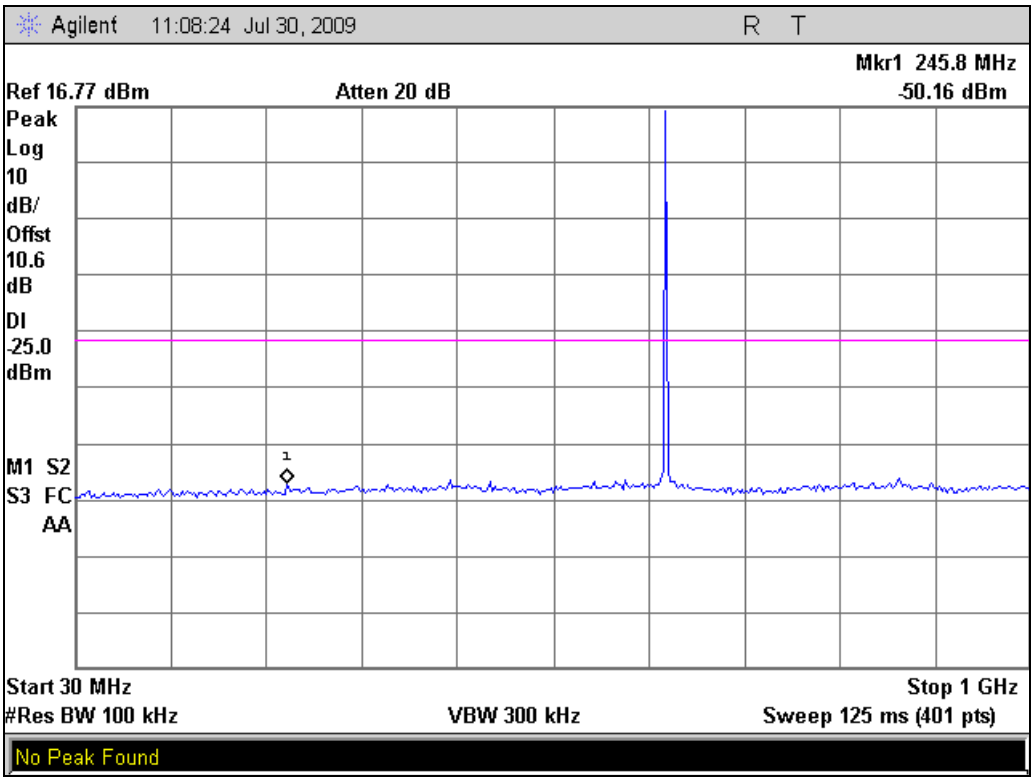
Tuned Frequency MHz	Spurious Frequency MHz	Measured Spurious Level (dBm)	Specification Limit	Result
614.1	3685	-35.09	-25 dBm	Pass
628.0	3775	-31.61	-25 dBm	Pass
641.9	3850	-31.05	-25 dBm	Pass
648.1	2800	-40.02	-25 dBm	Pass
662.0	2980	-38.74	-25 dBm	Pass
675.9	3385	-38.92	-25 dBm	Pass

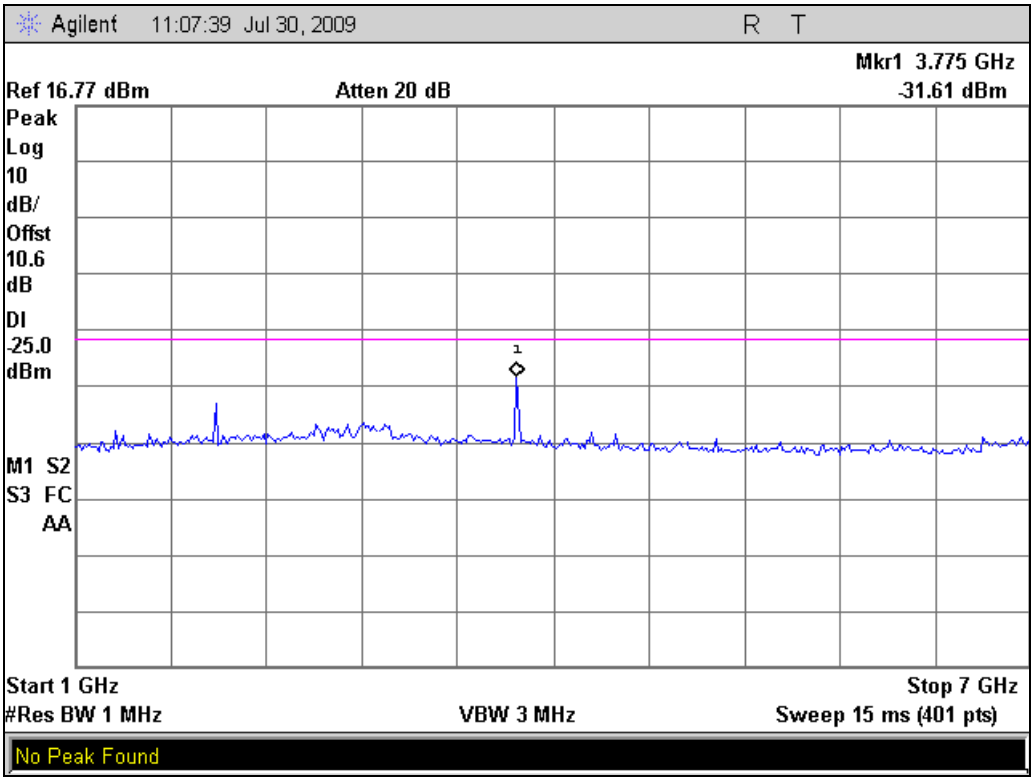
614.1 MHz


Agilent 11:05:50 Jul 30, 2009
R T
Mkr1 490.8 MHz
Ref 16.77 dBm
Atten 20 dB
-50.88 dBm
Peak
Log
10
dB/
Offst
10.6
dB
Dl
-25.0
dBm
M1 S2
S3 FC
AA
Start 30 MHz
#Res BW 100 kHz
VBW 300 kHz
Stop 1 GHz
Sweep 125 ms (401 pts)
No Peak Found

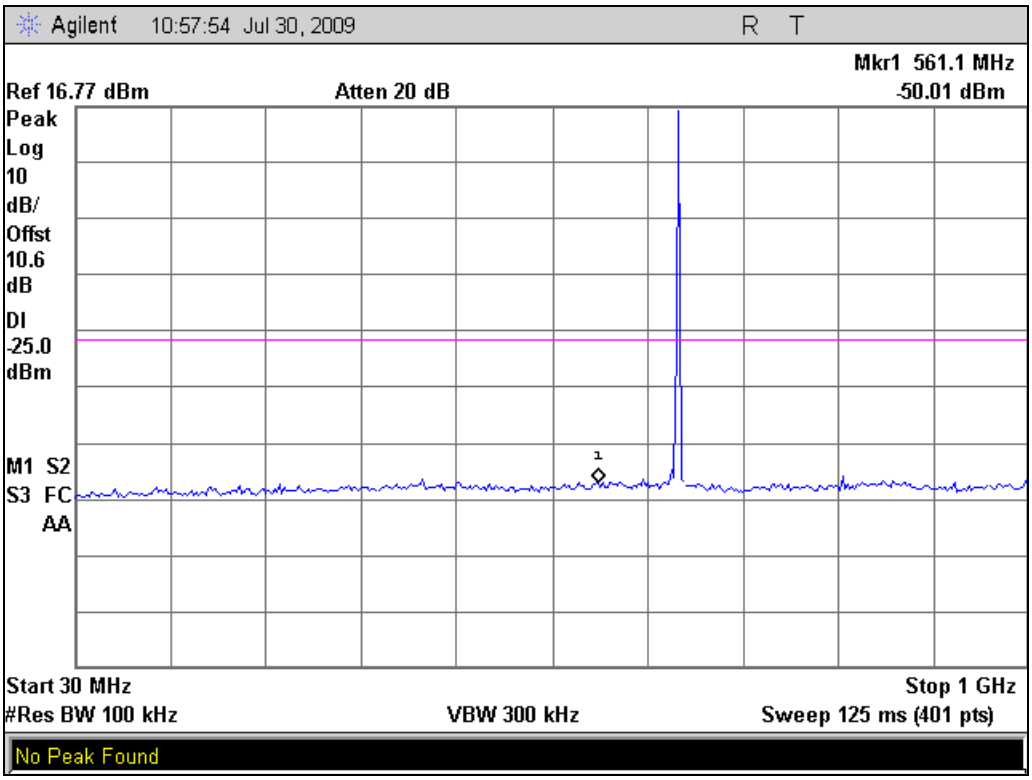

Agilent 11:06:35 Jul 30, 2009
R T
Mkr1 3.685 GHz
Ref 16.77 dBm
Atten 20 dB
-35.09 dBm
Peak
Log
10
dB/
Offst
10.6
dB
Dl
-25.0
dBm
M1 S2
S3 FC
AA
Start 1 GHz
#Res BW 1 MHz
VBW 3 MHz
Stop 7 GHz
Sweep 15 ms (401 pts)
No Peak Found

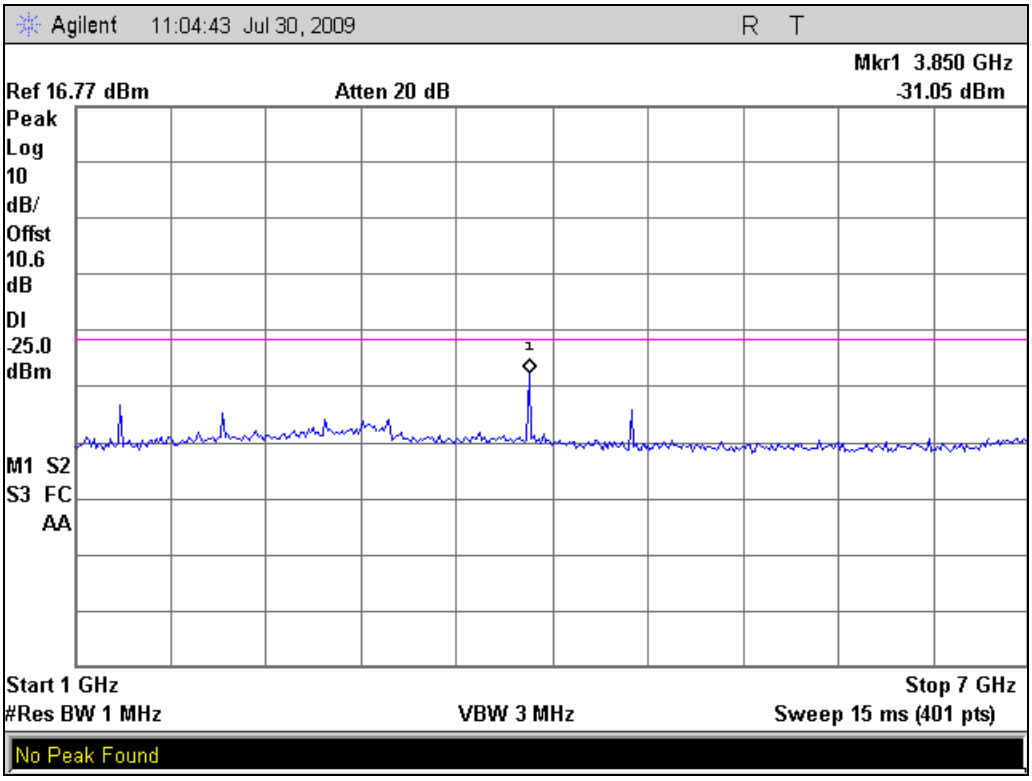
628 MHz


Agilent 11:08:24 Jul 30, 2009
R T
Mkr1 245.8 MHz
Ref 16.77 dBm
Atten 20 dB
-50.16 dBm
Peak
Log
10
dB/
Offst
10.6
dB
Dl
-25.0
dBm
M1 S2
S3 FC
AA
Start 30 MHz
Stop 1 GHz
#Res BW 100 kHz
VBW 300 kHz
Sweep 125 ms (401 pts)
No Peak Found

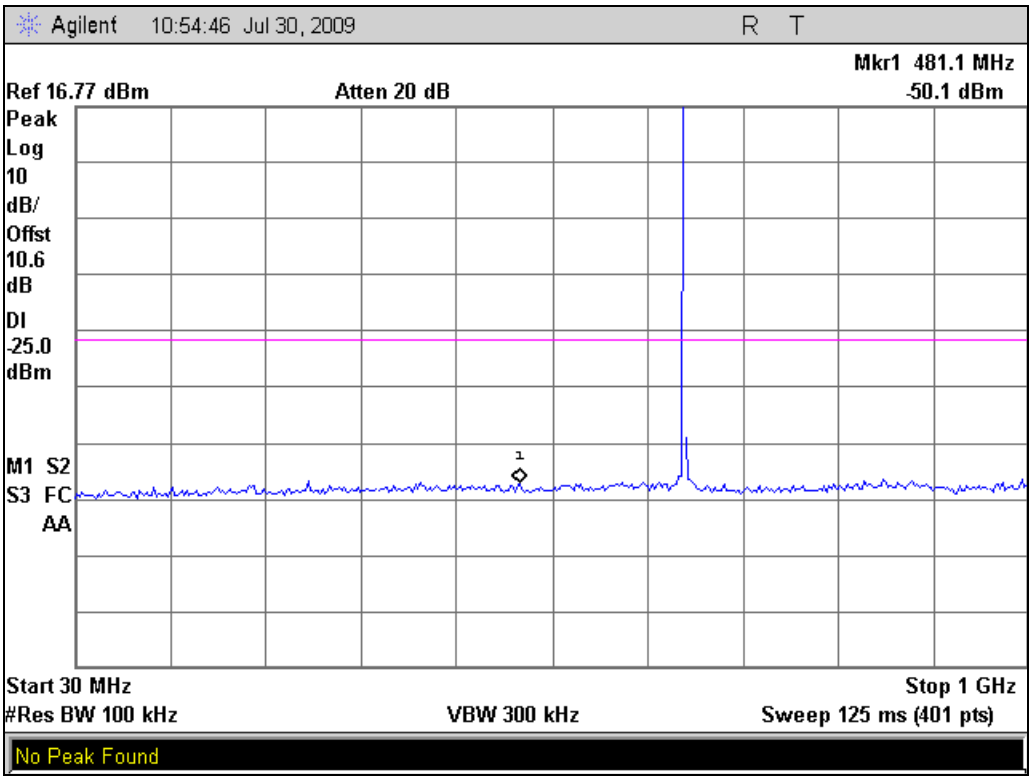

Agilent 11:07:39 Jul 30, 2009
R T
Mkr1 3.775 GHz
Ref 16.77 dBm
Atten 20 dB
-31.61 dBm
Peak
Log
10
dB/
Offst
10.6
dB
Dl
-25.0
dBm
M1 S2
S3 FC
AA
Start 1 GHz
Stop 7 GHz
#Res BW 1 MHz
VBW 3 MHz
Sweep 15 ms (401 pts)
No Peak Found

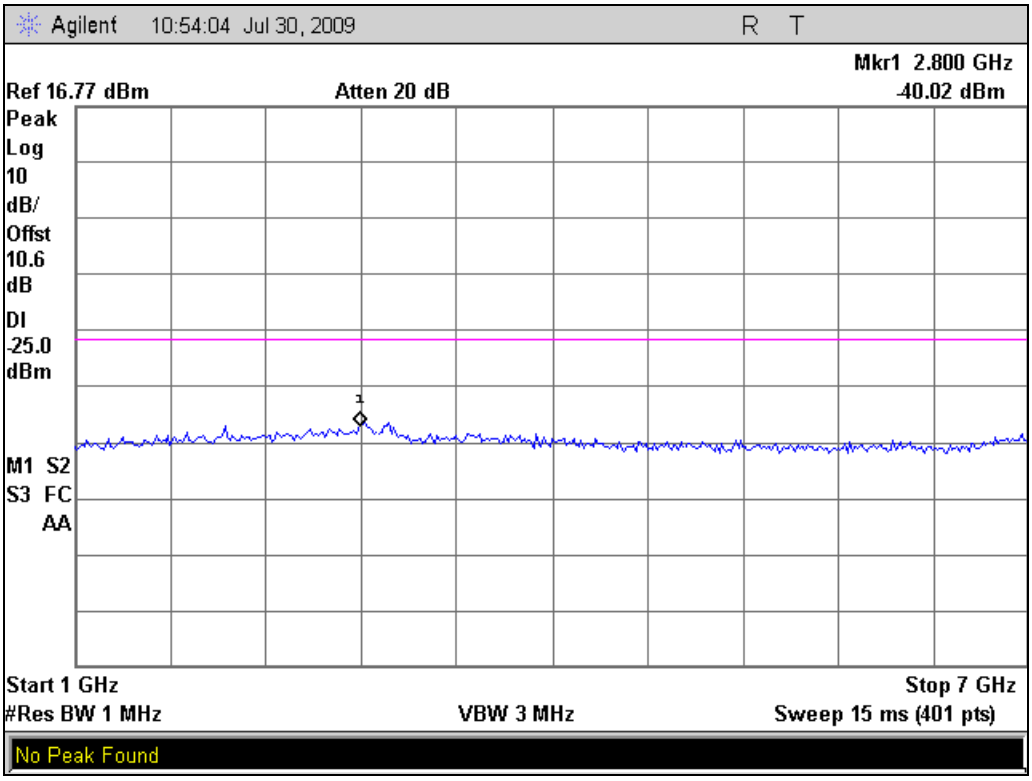
641.9 MHz


Agilent 10:57:54 Jul 30, 2009
R T
Mkr1 561.1 MHz
Ref 16.77 dBm
Atten 20 dB
-50.01 dBm
Peak
Log
10
dB/
Offst
10.6
dB
Dl
-25.0
dBm
M1 S2
S3 FC
AA
Start 30 MHz
#Res BW 100 kHz
VBW 300 kHz
Stop 1 GHz
Sweep 125 ms (401 pts)
No Peak Found

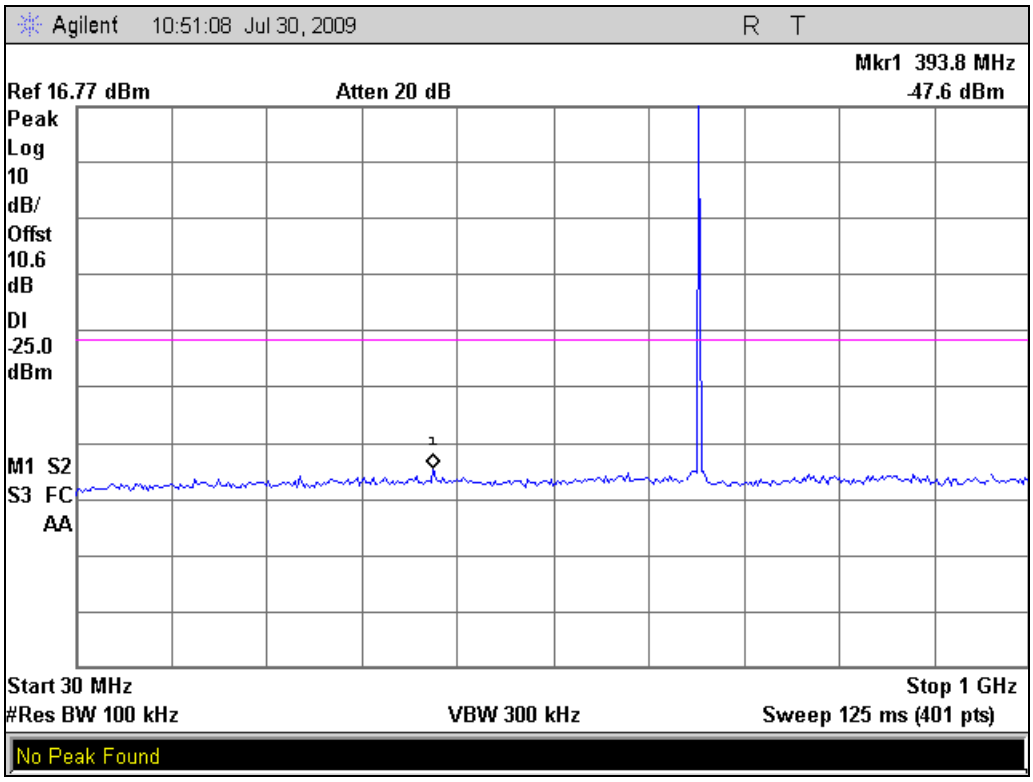

Agilent 11:04:43 Jul 30, 2009
R T
Mkr1 3.850 GHz
Ref 16.77 dBm
Atten 20 dB
-31.05 dBm
Peak
Log
10
dB/
Offst
10.6
dB
Dl
-25.0
dBm
M1 S2
S3 FC
AA
Start 1 GHz
#Res BW 1 MHz
VBW 3 MHz
Stop 7 GHz
Sweep 15 ms (401 pts)
No Peak Found

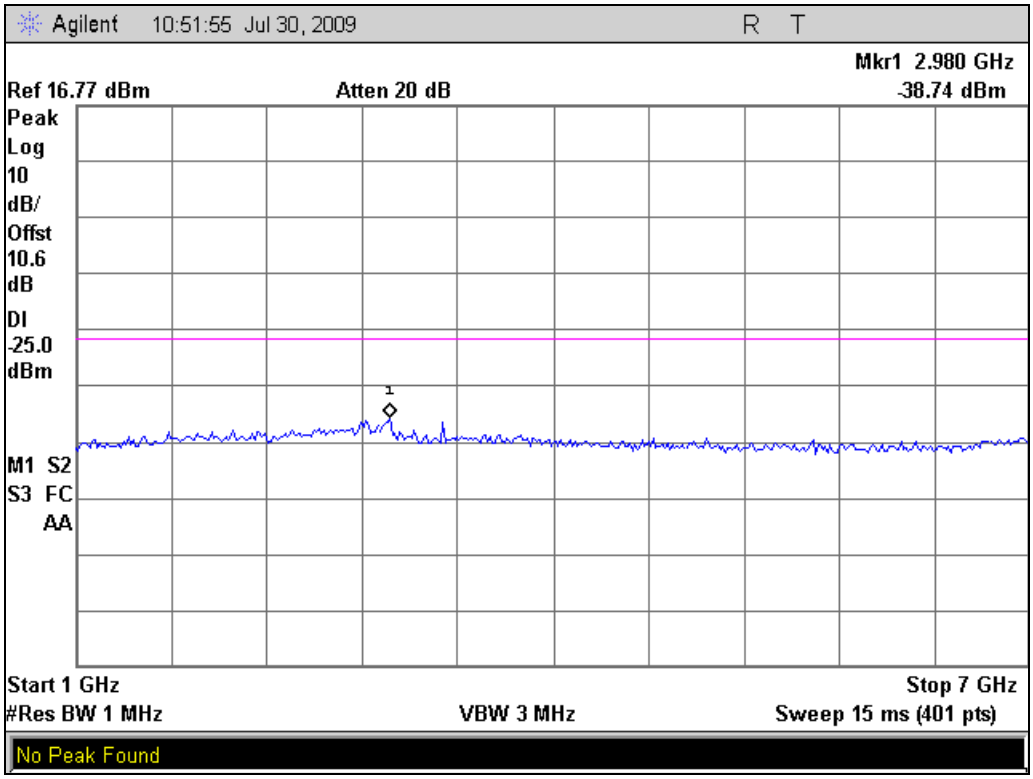
648.1 MHz


Agilent 10:54:46 Jul 30, 2009
R T
Mkr1 481.1 MHz
Ref 16.77 dBm
Atten 20 dB
-50.1 dBm
Peak
Log
10
dB/
Offst
10.6
dB
Dl
-25.0
dBm
M1 S2
S3 FC
AA
Start 30 MHz
#Res BW 100 kHz
VBW 300 kHz
Stop 1 GHz
Sweep 125 ms (401 pts)
No Peak Found

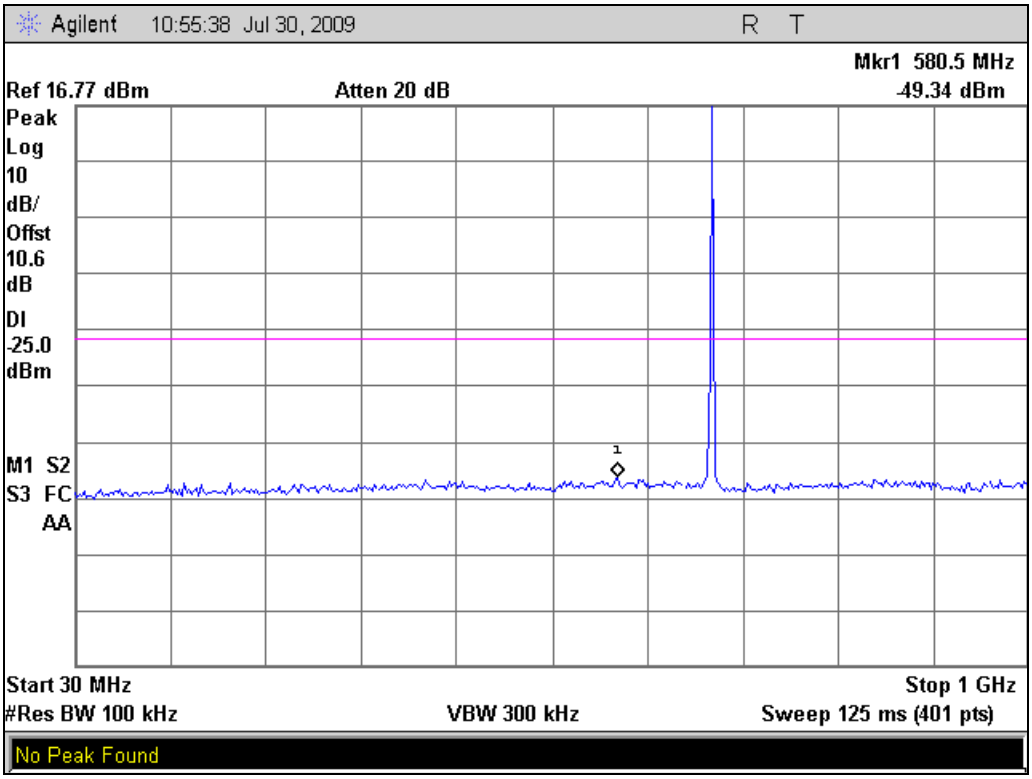

Agilent 10:54:04 Jul 30, 2009
R T
Mkr1 2.800 GHz
Ref 16.77 dBm
Atten 20 dB
-40.02 dBm
Peak
Log
10
dB/
Offst
10.6
dB
Dl
-25.0
dBm
M1 S2
S3 FC
AA
Start 1 GHz
#Res BW 1 MHz
VBW 3 MHz
Stop 7 GHz
Sweep 15 ms (401 pts)
No Peak Found

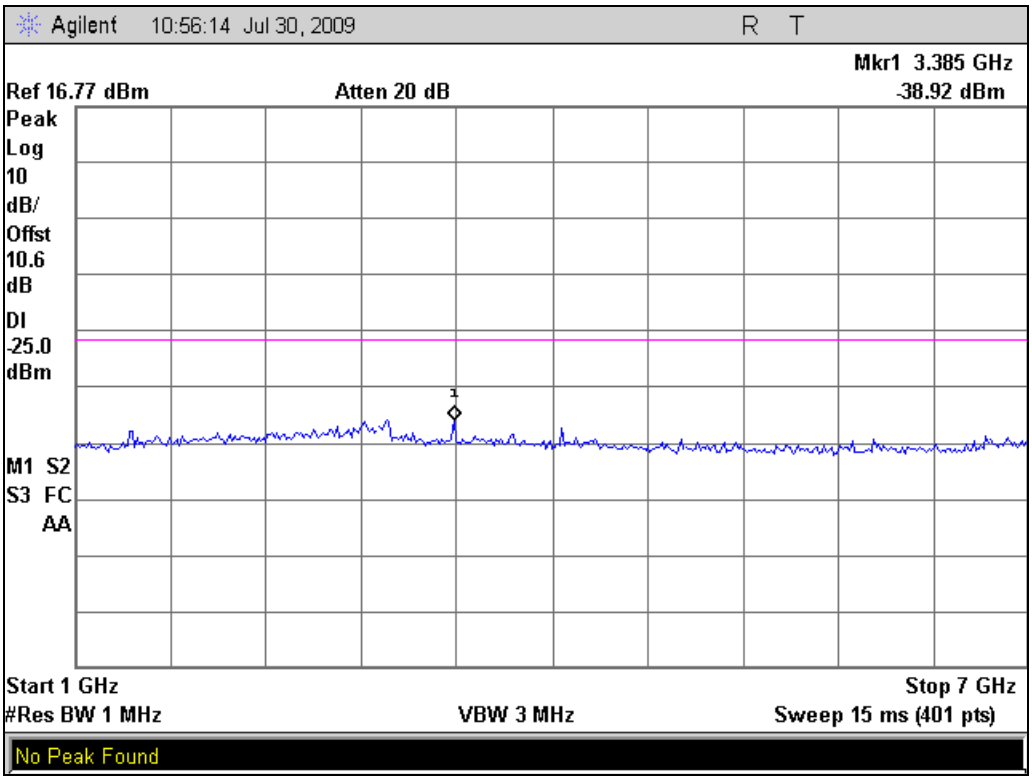
662 MHz


Agilent 10:51:08 Jul 30, 2009
R T
Mkr1 393.8 MHz
Ref 16.77 dBm
Atten 20 dB
-47.6 dBm
Peak
Log
10
dB/
Offst
10.6
dB
Dl
-25.0
dBm
M1 S2
S3 FC
AA
Start 30 MHz
Stop 1 GHz
#Res BW 100 kHz
VBW 300 kHz
Sweep 125 ms (401 pts)
No Peak Found


Agilent 10:51:55 Jul 30, 2009
R T
Mkr1 2.980 GHz
Ref 16.77 dBm
Atten 20 dB
-38.74 dBm
Peak
Log
10
dB/
Offst
10.6
dB
Dl
-25.0
dBm
M1 S2
S3 FC
AA
Start 1 GHz
Stop 7 GHz
#Res BW 1 MHz
VBW 3 MHz
Sweep 15 ms (401 pts)
No Peak Found

675.9 MHz


Agilent 10:55:38 Jul 30, 2009
R T
Mkr1 580.5 MHz
Ref 16.77 dBm
Atten 20 dB
-49.34 dBm
Peak
Log
10
dB/
Offst
10.6
dB
Dl
-25.0
dBm
M1 S2
S3 FC
AA
Start 30 MHz
#Res BW 100 kHz
VBW 300 kHz
Stop 1 GHz
Sweep 125 ms (401 pts)
No Peak Found


Agilent 10:56:14 Jul 30, 2009
R T
Mkr1 3.385 GHz
Ref 16.77 dBm
Atten 20 dB
-38.92 dBm
Peak
Log
10
dB/
Offst
10.6
dB
Dl
-25.0
dBm
M1 S2
S3 FC
AA
Start 1 GHz
#Res BW 1 MHz
VBW 3 MHz
Stop 7 GHz
Sweep 15 ms (401 pts)
No Peak Found

Name of Test: Field Strength of Spurious Radiation
Specification: 2.1046 **Engineer: J Erhard**
Test Equipment Utilized: i00049, i00103, i00267 **Test Date: 7/30/2009**

Measurement Procedure

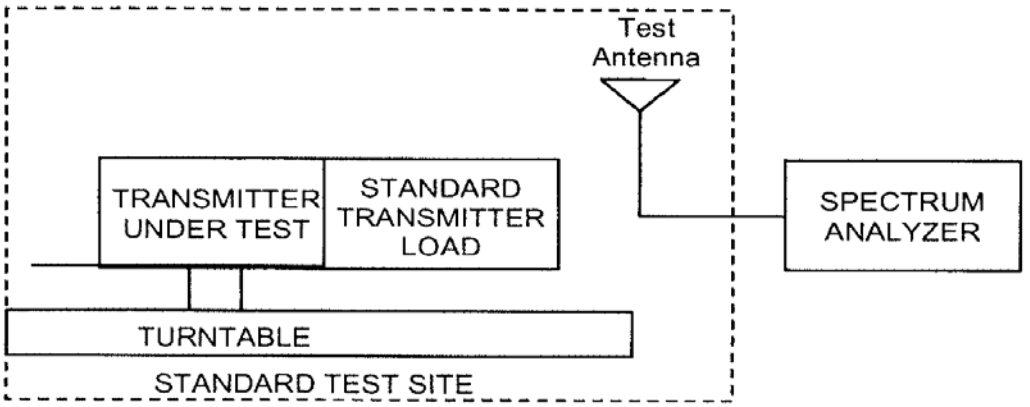
Definition:
Radiated spurious emissions are emissions from the equipment when transmitting into a non-radiating load on a frequency or frequencies which are outside an occupied band sufficient to ensure transmission of information of required quality for the class of communications desired.

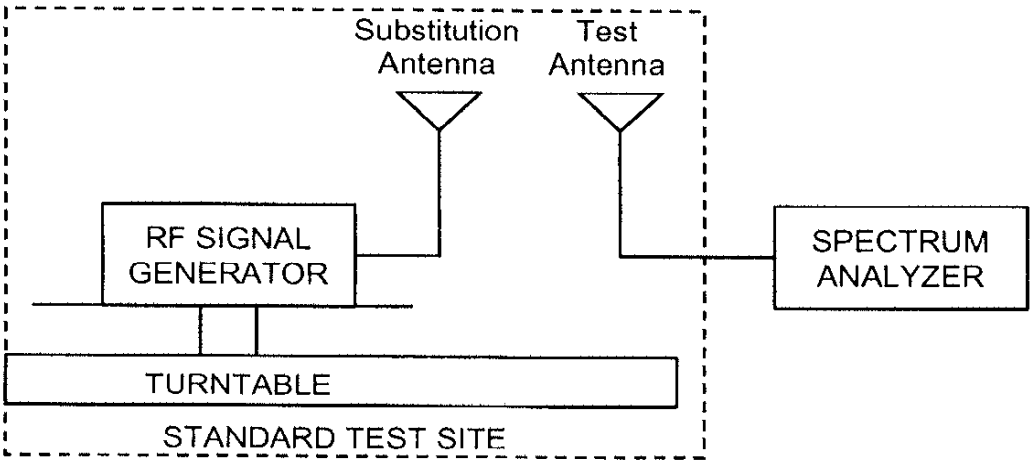
Method of Measurement:
A) Connect the equipment as illustrated
B) Adjust the spectrum analyzer for the following settings:
1) Resolution Bandwidth 100 kHz (<1 GHZ), 1 MHZ (> 1GHz).
2) Video Bandwidth ≥ 3 times Resolution Bandwidth, or 30 kHz
3) Sweep Speed ≤2000 Hz/second
4) Detector Mode = Mean or Average Power
D) 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.

Substitution Method Test Setup





Measurement Results

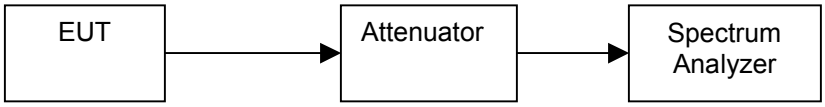
Emission Freq (MHz)	Measured Value (dBuV/m)	Correction Factor (dB)	Corrected Value (dBuV/m)	Limit (dBuV/m)	Margin dB
35.622	15.8	5.5	21.3	39.1	-17.8
60.490	23.8	-3.8	20.0	39.1	-19.1
150.162	23.2	3.1	26.3	43.5	-17.2
210.960	23.2	1.5	24.7	43.5	-18.8
393.640	23.2	7.7	30.9	46.4	-15.5
580.278	23.2	11.9	35.1	46.4	-11.3

No other emissions were detected. All emissions were greater than –20 dBc.

Name of Test: Emission Masks (Occupied Bandwidth)
Specification: 74.861 **Engineer: J Erhard**
Test Equipment Utilized: i00331 **Test Date: 7/30/2009**

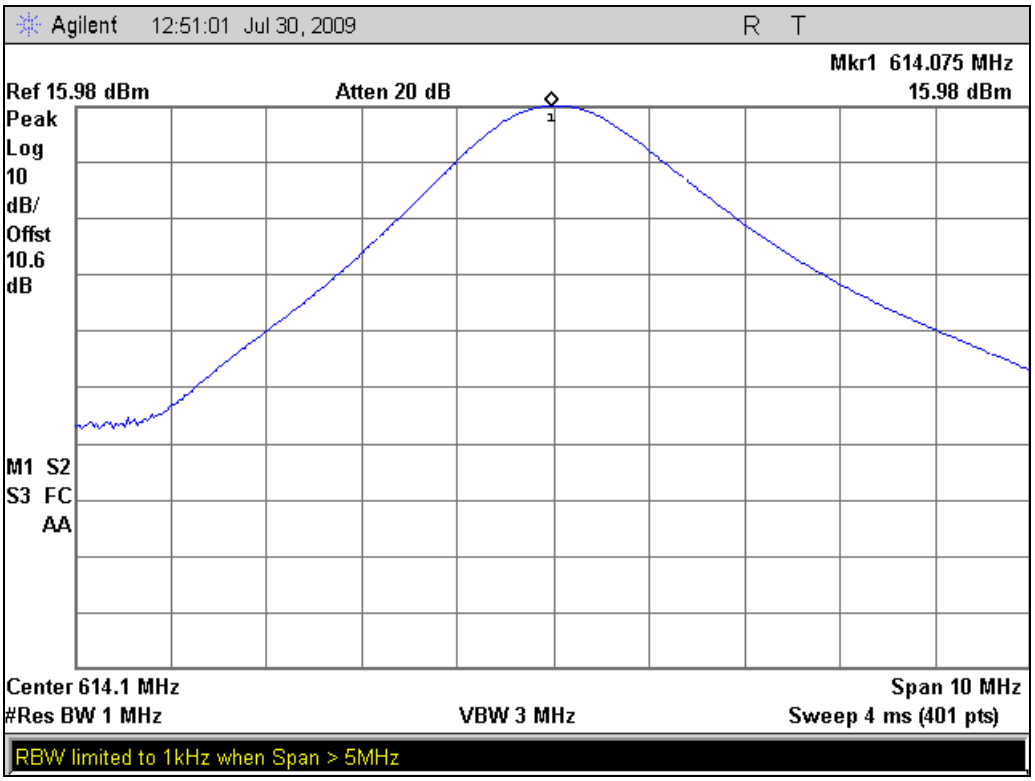
The EUT was connected directly to a spectrum analyzer to verify that the EUT meets the required emissions mask. A reference level plot is provided to verify that the peak power was established prior to testing the mask. The UUT was modulated with a 2.5 KHz audio tone with the level adjusted to provide maximum deviation.

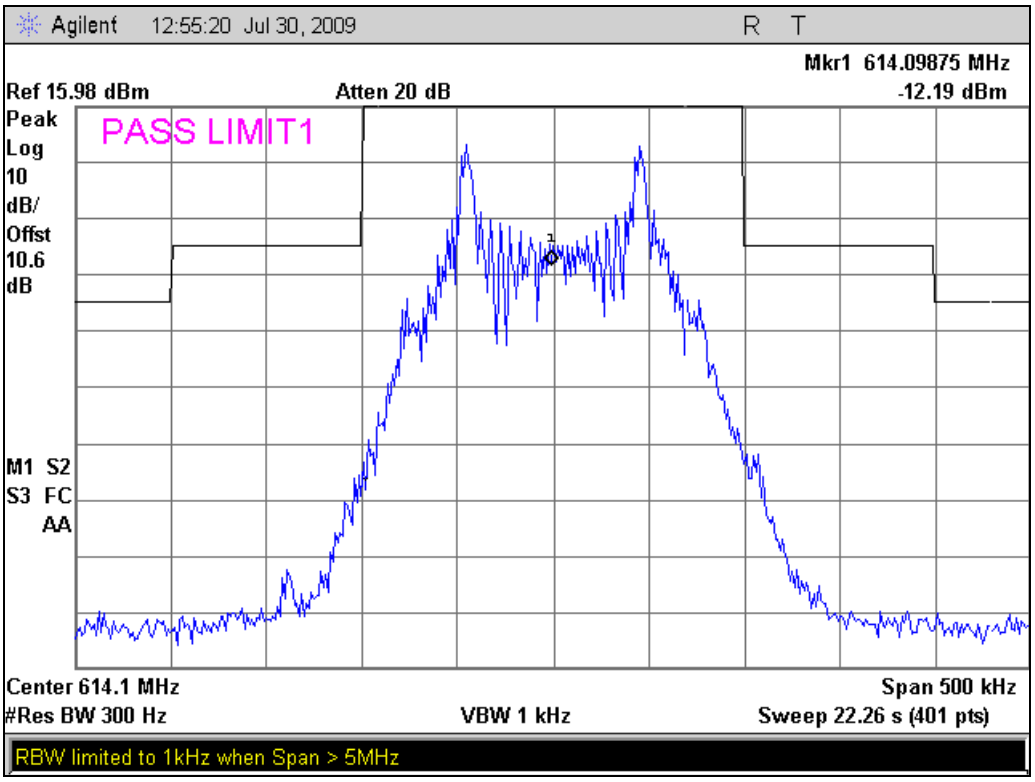
Test Setup



Emission Mask Plots

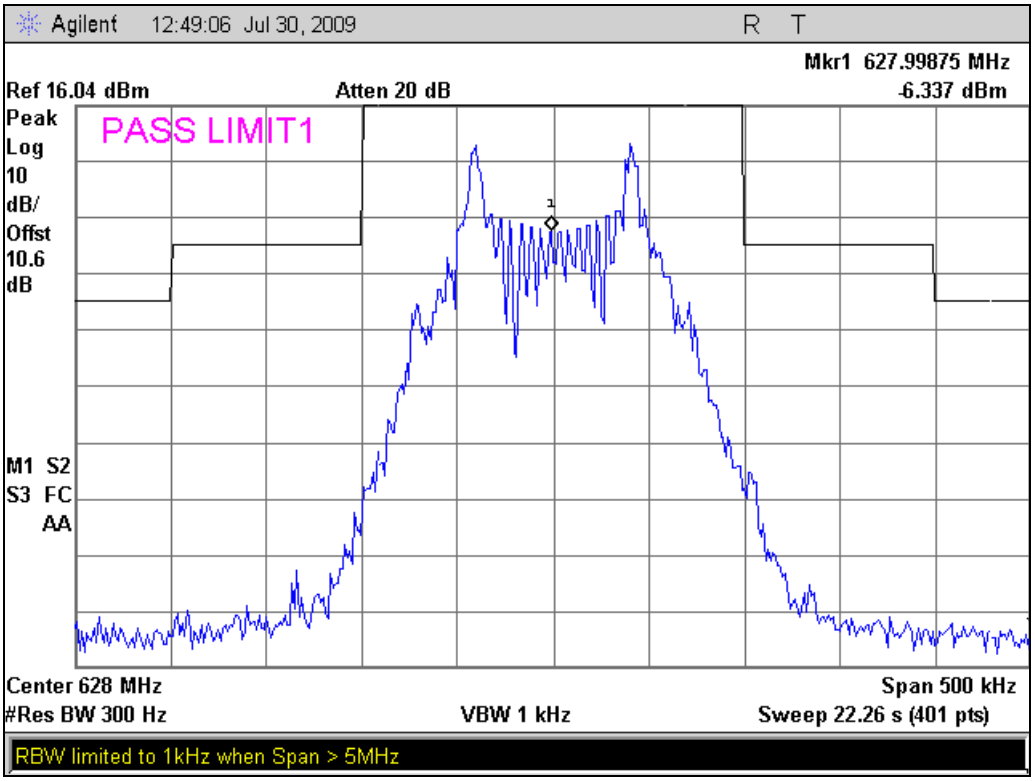
614.1 MHz



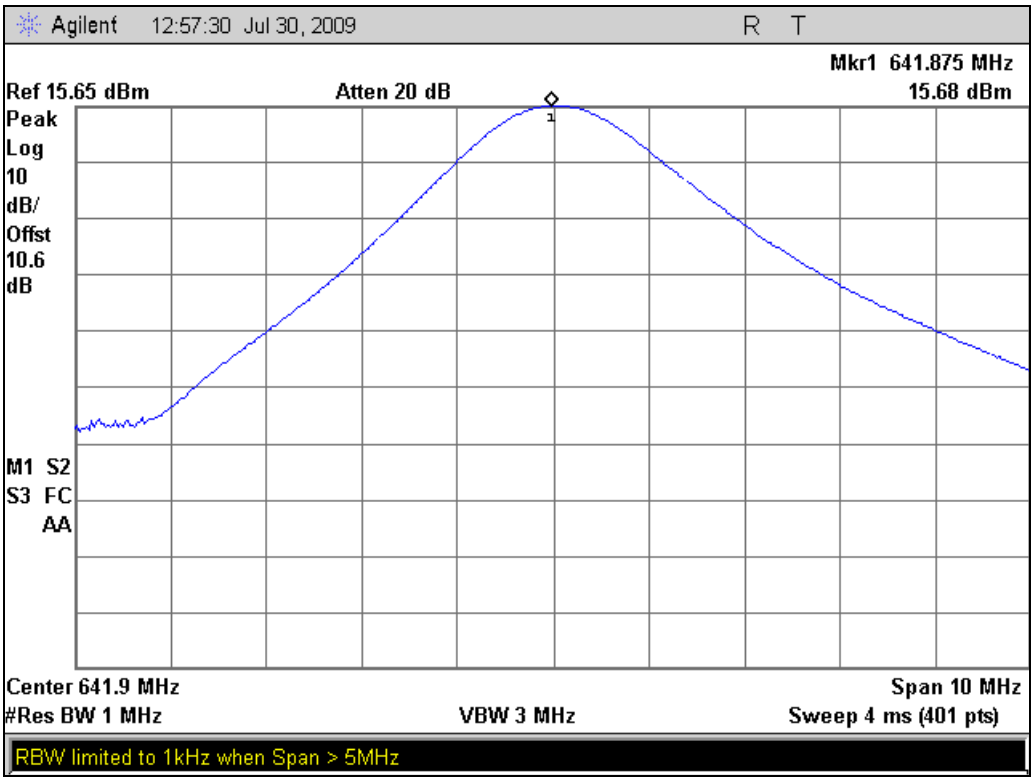


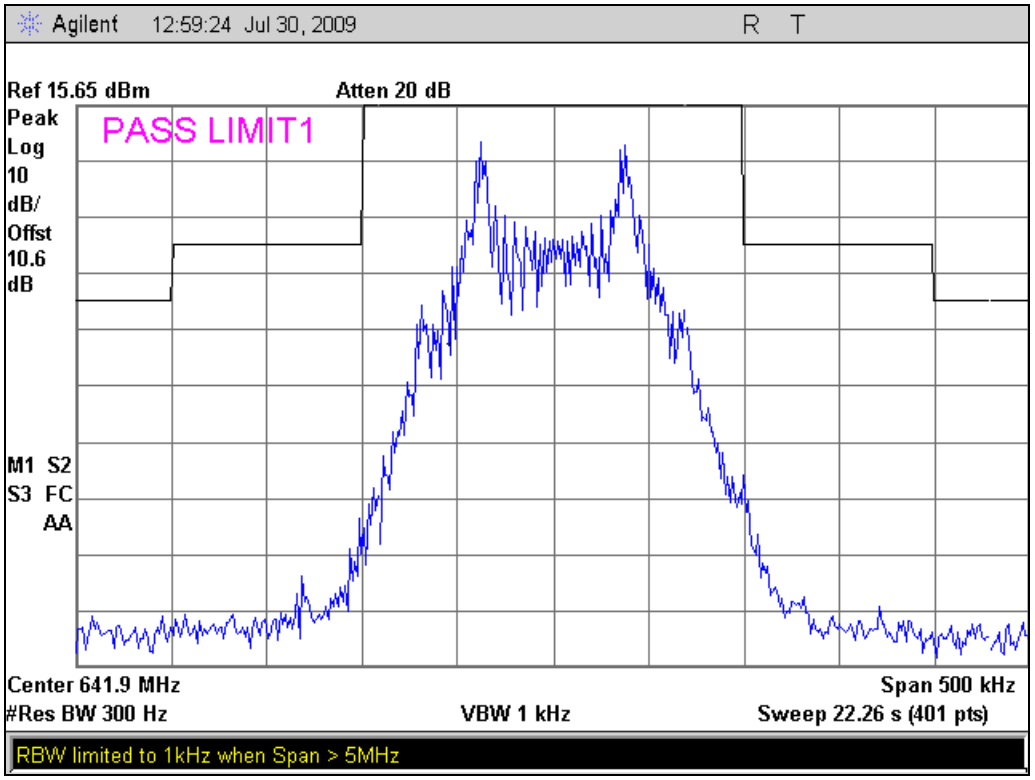
628 MHz


Agilent 12:47:07 Jul 30, 2009
R T
Mkr1 627.975 MHz
Ref 16.04 dBm
Atten 20 dB
16.04 dBm
Peak
Log
10
dB/
Offst
10.6
dB
M1 S2
S3 FC
AA
Center 628 MHz
Span 10 MHz
#Res BW 1 MHz
VBW 3 MHz
Sweep 4 ms (401 pts)
RBW limited to 1kHz when Span > 5MHz

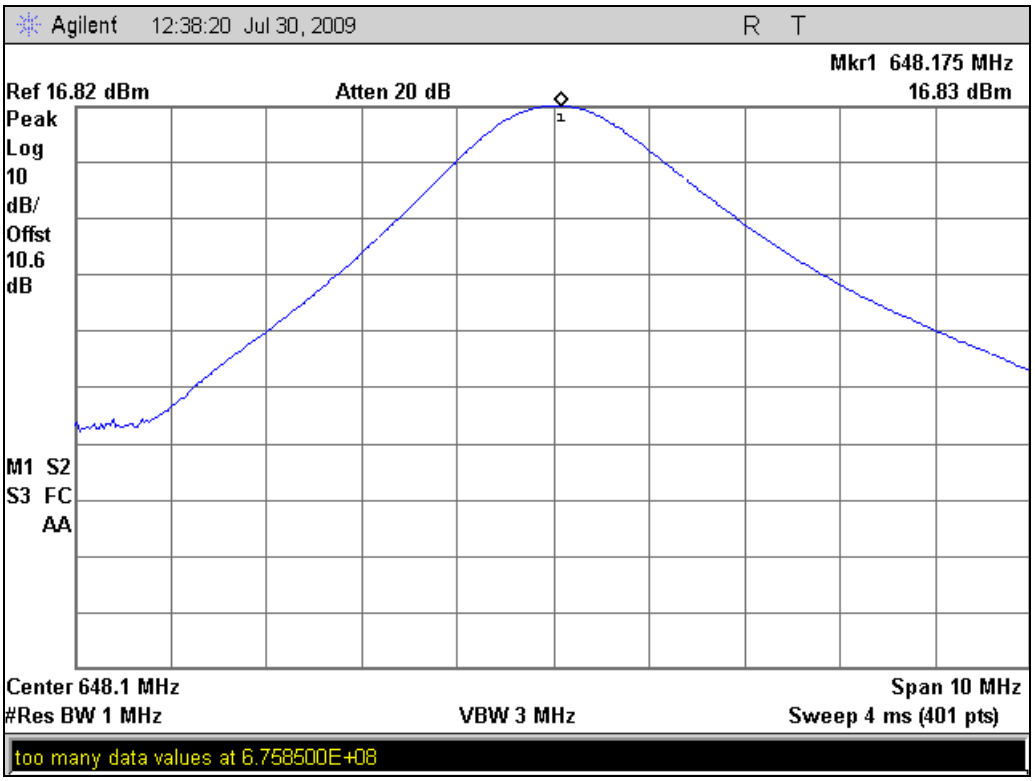

Agilent 12:49:06 Jul 30, 2009
R T
Mkr1 627.99875 MHz
Ref 16.04 dBm
Atten 20 dB
-6.337 dBm
Peak
Log
10
dB/
Offst
10.6
dB
PASS LIMIT1
M1 S2
S3 FC
AA
Center 628 MHz
Span 500 kHz
#Res BW 300 Hz
VBW 1 kHz
Sweep 22.26 s (401 pts)
RBW limited to 1kHz when Span > 5MHz

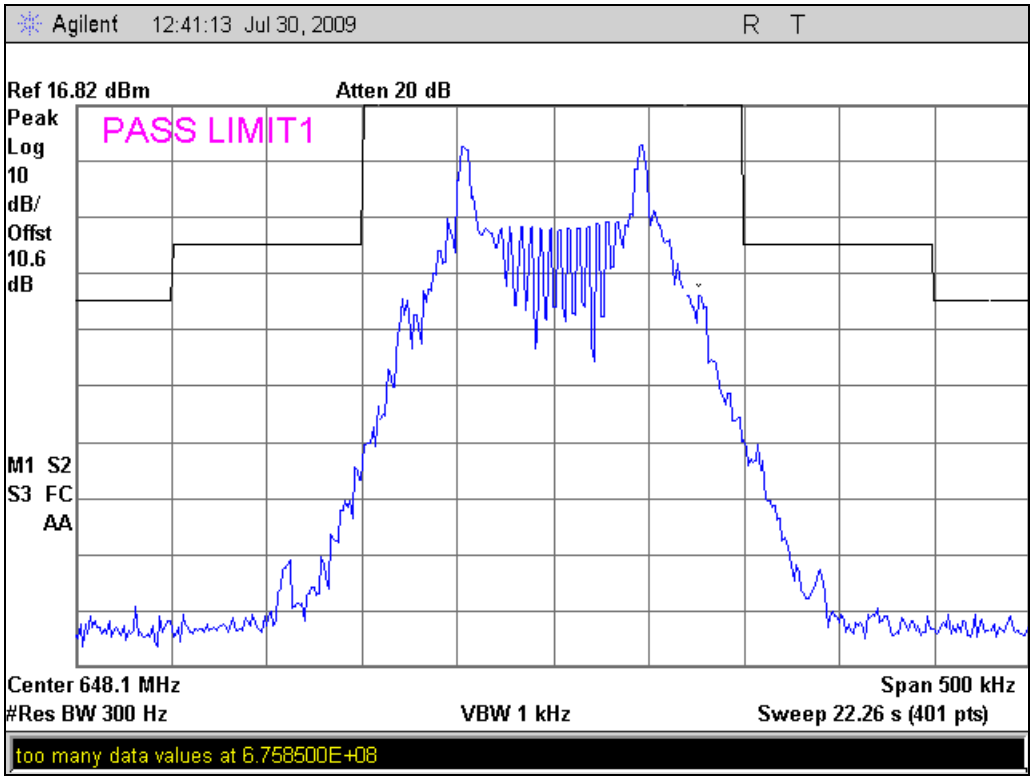
641.9 MHz


Agilent 12:57:30 Jul 30, 2009
R T
Mkr1 641.875 MHz
15.68 dBm
Ref 15.65 dBm
Atten 20 dB
Peak
Log
10
dB/
Offst
10.6
dB
M1 S2
S3 FC
AA
Center 641.9 MHz
#Res BW 1 MHz
VBW 3 MHz
Span 10 MHz
Sweep 4 ms (401 pts)
RBW limited to 1kHz when Span > 5MHz

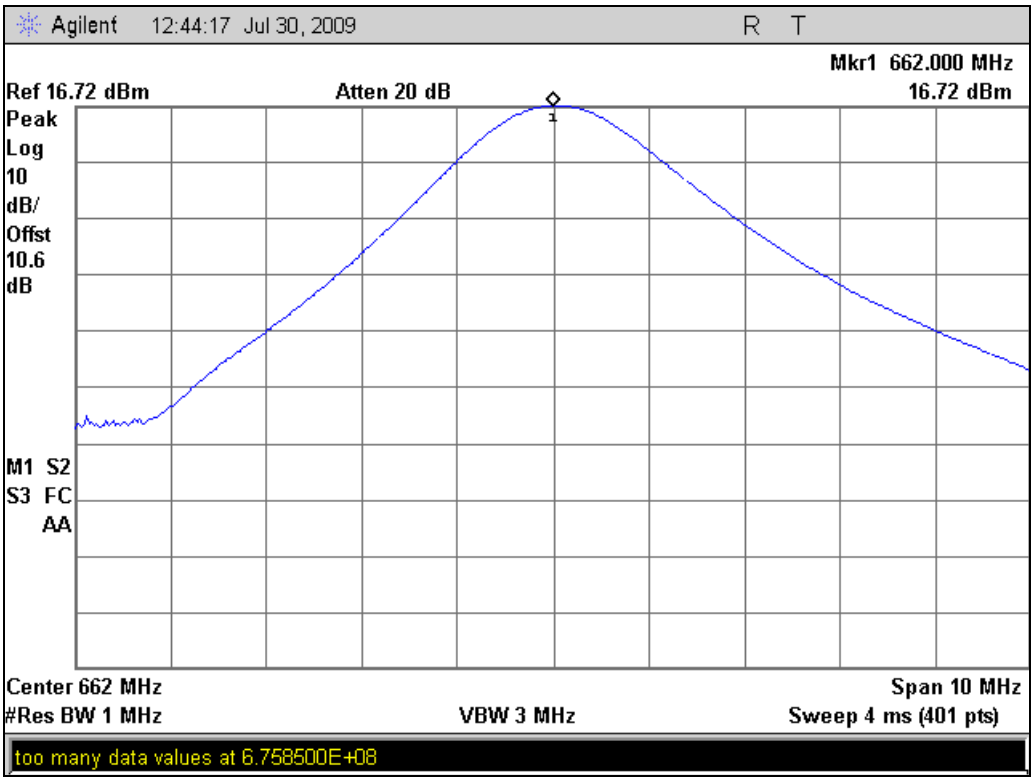

Agilent 12:59:24 Jul 30, 2009
R T
Ref 15.65 dBm
Atten 20 dB
PASS LIMIT1
Peak
Log
10
dB/
Offst
10.6
dB
M1 S2
S3 FC
AA
Center 641.9 MHz
#Res BW 300 Hz
VBW 1 kHz
Span 500 kHz
Sweep 22.26 s (401 pts)
RBW limited to 1kHz when Span > 5MHz

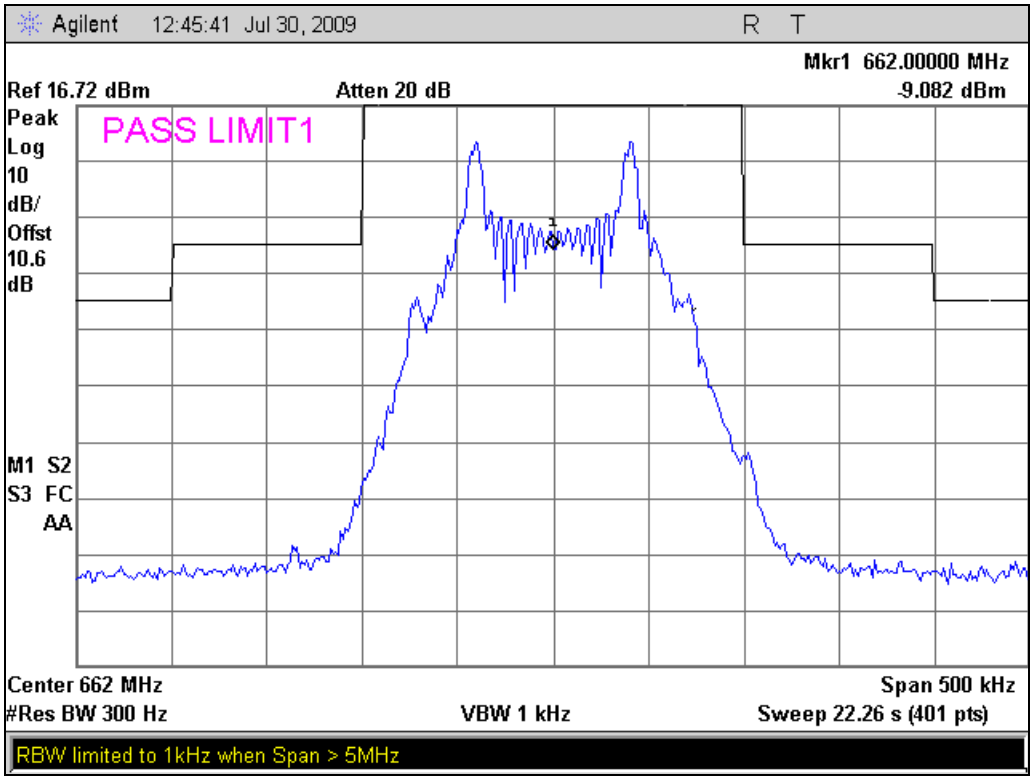
648.1 MHz


Agilent 12:38:20 Jul 30, 2009
R T
Mkr1 648.175 MHz
16.83 dBm
Ref 16.82 dBm
Atten 20 dB
Peak
Log
10
dB/
Offst
10.6
dB
M1 S2
S3 FC
AA
Center 648.1 MHz
#Res BW 1 MHz
VBW 3 MHz
Span 10 MHz
Sweep 4 ms (401 pts)
too many data values at 6.758500E+08

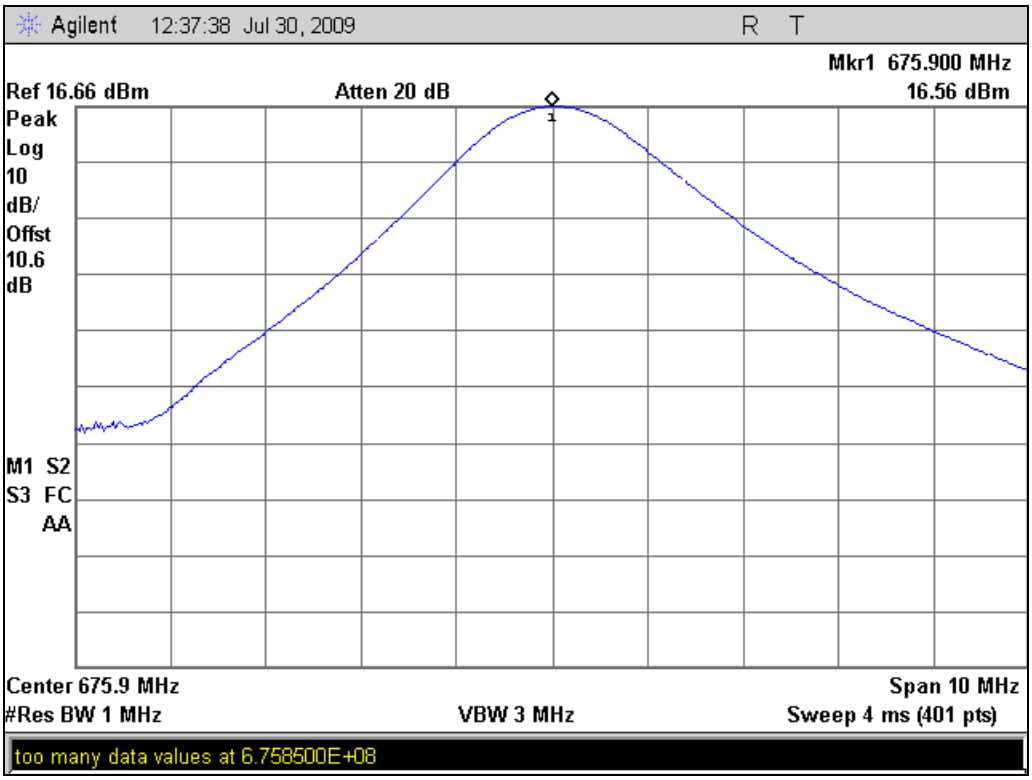

Agilent 12:41:13 Jul 30, 2009
R T
Ref 16.82 dBm
Atten 20 dB
PASS LIMIT1
Peak
Log
10
dB/
Offst
10.6
dB
M1 S2
S3 FC
AA
Center 648.1 MHz
#Res BW 300 Hz
VBW 1 kHz
Span 500 kHz
Sweep 22.26 s (401 pts)
too many data values at 6.758500E+08

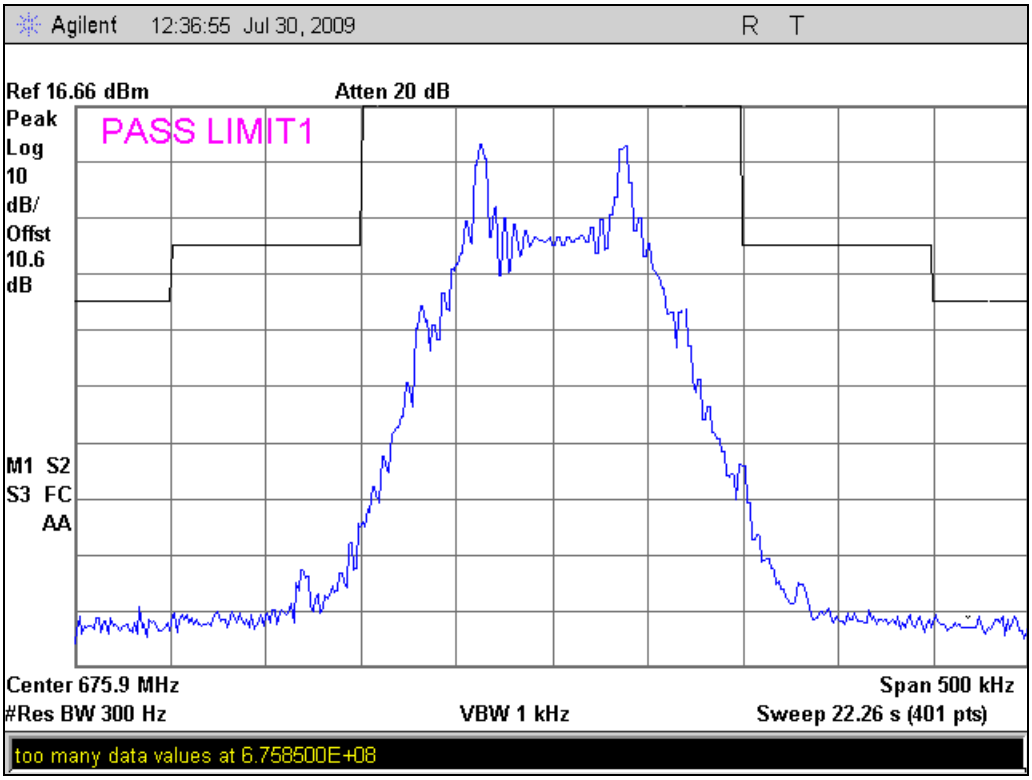
662 MHz


Agilent 12:44:17 Jul 30, 2009
R T
Mkr1 662.000 MHz
Ref 16.72 dBm
Atten 20 dB
16.72 dBm
Peak
Log
10
dB/
Offst
10.6
dB
M1 S2
S3 FC
AA
Center 662 MHz
Span 10 MHz
#Res BW 1 MHz
VBW 3 MHz
Sweep 4 ms (401 pts)
too many data values at 6.758500E+08


Agilent 12:45:41 Jul 30, 2009
R T
Mkr1 662.00000 MHz
Ref 16.72 dBm
Atten 20 dB
-9.082 dBm
Peak
Log
10
dB/
Offst
10.6
dB
PASS LIMIT1
M1 S2
S3 FC
AA
Center 662 MHz
Span 500 kHz
#Res BW 300 Hz
VBW 1 kHz
Sweep 22.26 s (401 pts)
RBW limited to 1kHz when Span > 5MHz

675.9 MHz


Agilent 12:37:38 Jul 30, 2009
R T
Mkr1 675.900 MHz
16.56 dBm
Ref 16.66 dBm
Atten 20 dB
Peak
Log
10
dB/
Offst
10.6
dB
M1 S2
S3 FC
AA
Center 675.9 MHz
#Res BW 1 MHz
VBW 3 MHz
Span 10 MHz
Sweep 4 ms (401 pts)
too many data values at 6.758500E+08

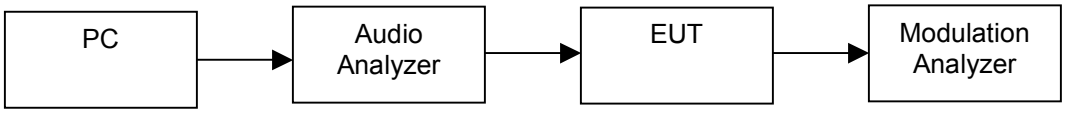

Agilent 12:36:55 Jul 30, 2009
R T
Ref 16.66 dBm
Atten 20 dB
PASS LIMIT1
Peak
Log
10
dB/
Offst
10.6
dB
M1 S2
S3 FC
AA
Center 675.9 MHz
#Res BW 300 Hz
VBW 1 kHz
Span 500 kHz
Sweep 22.26 s (401 pts)
too many data values at 6.758500E+08

Name of Test: Audio Frequency Response
Specification: 2.1047 **Engineer: J Erhard**
Test Equipment Utilized: i00020, i00324 **Test Date: 7/30/2009**

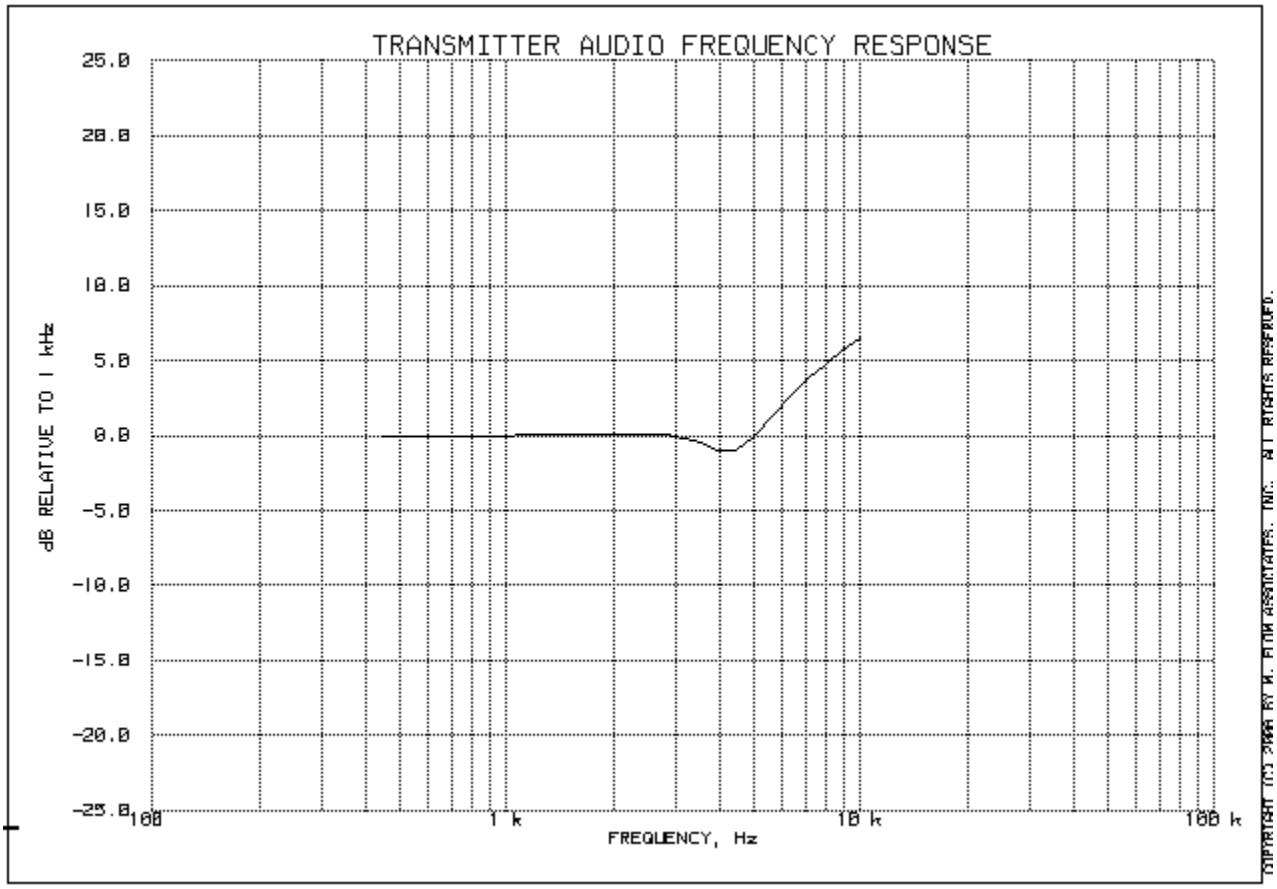
Measurement Procedure

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



Measurement Results



Name of Test: Modulation Limiting
Specification: 2.1047 **Engineer: J Erhard**
Test Equipment Utilized: i00020, i00324 **Test Date: 7/30/2009**

Measurement Procedure

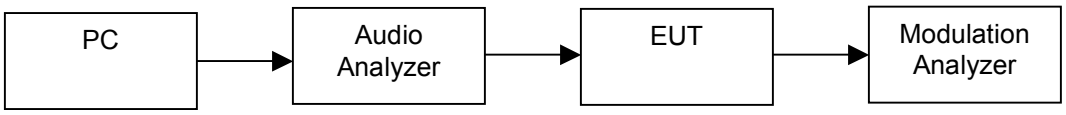
A) The signal generator was connected to the input of the EUT as shown below.

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.

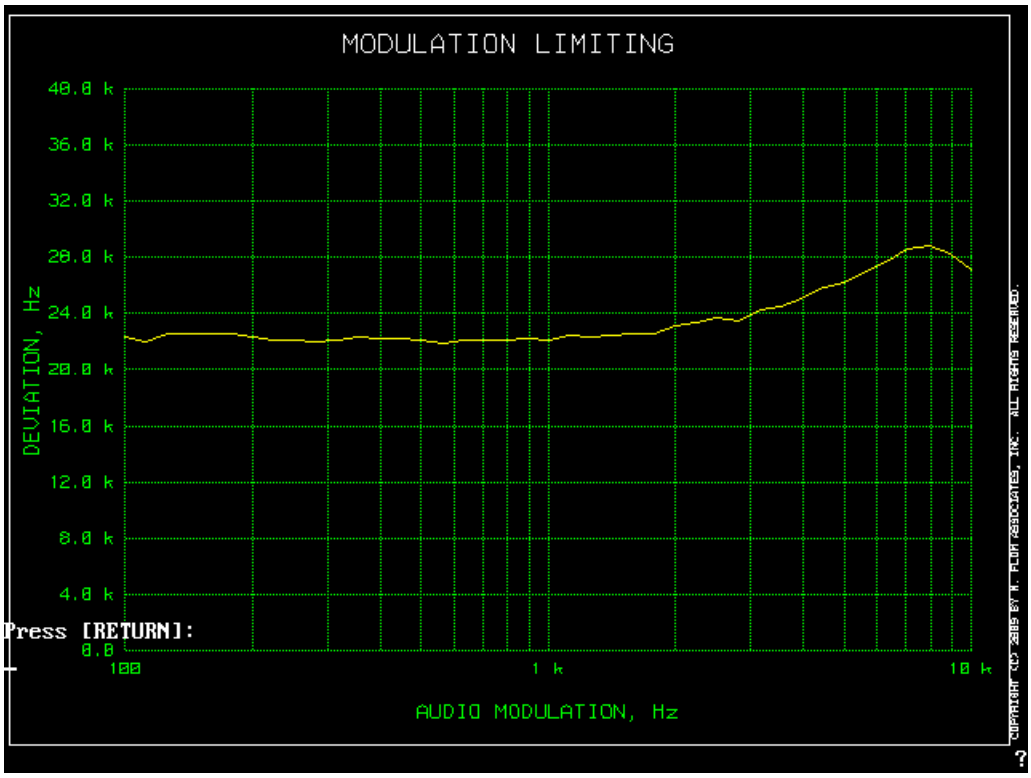
C) The input level was varied from 30% modulation (±12 kHz deviation) to at least 20 dB higher than the saturation point.

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

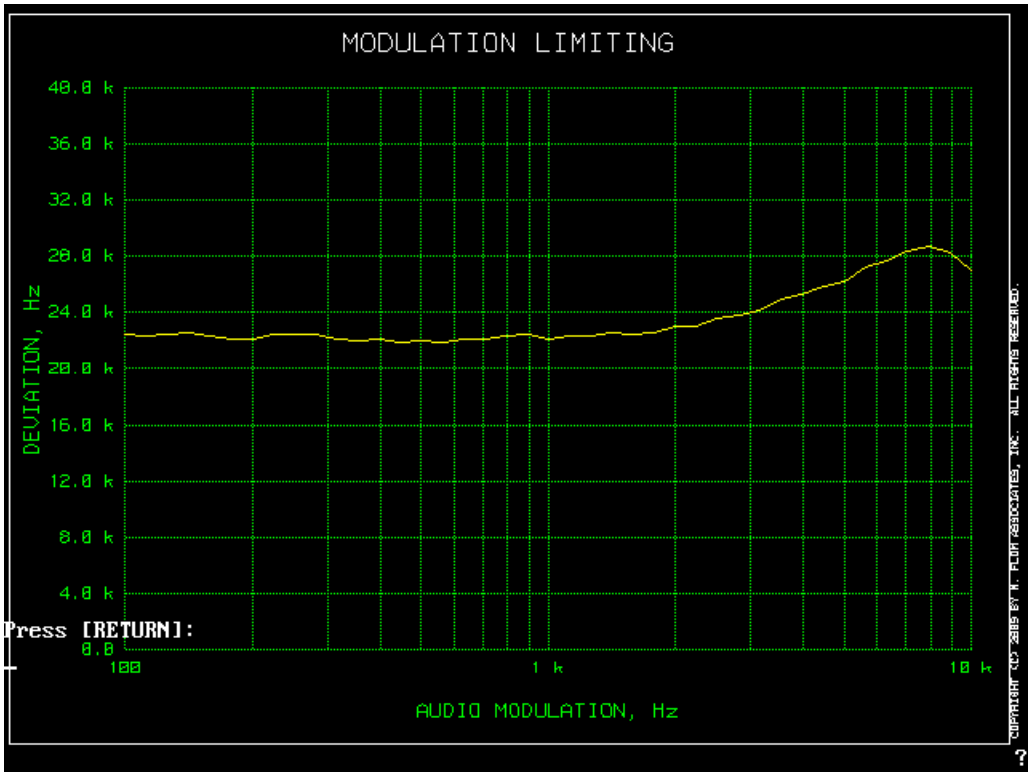
Transmitter Test Set-Up



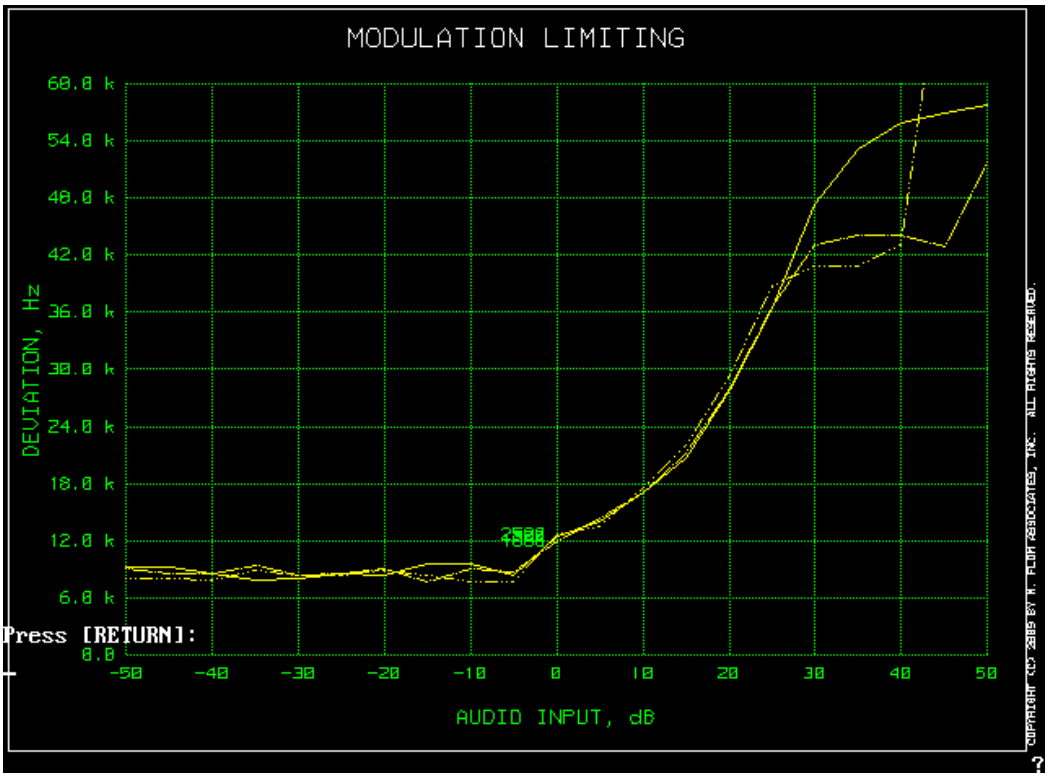
Swept Frequency Positive Peaks



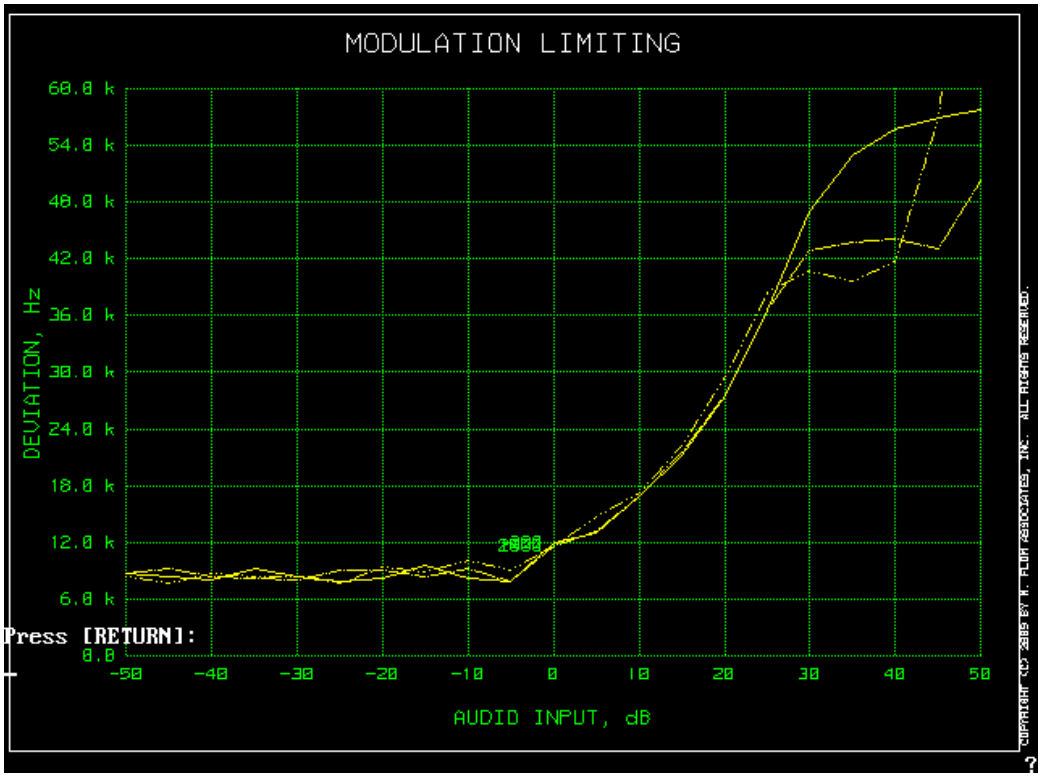
Swept Frequency Negative Peaks



Swept Amplitude Positive Peaks



Swept Amplitude Negative Peaks

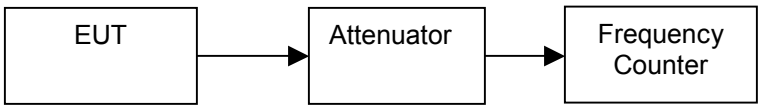


Name of Test: Frequency Stability
Specification: 74.861 **Engineer: J Erhard**
Test Equipment Utilized: i00004, i00019, i00027 **Test Date: 7/30/2009**

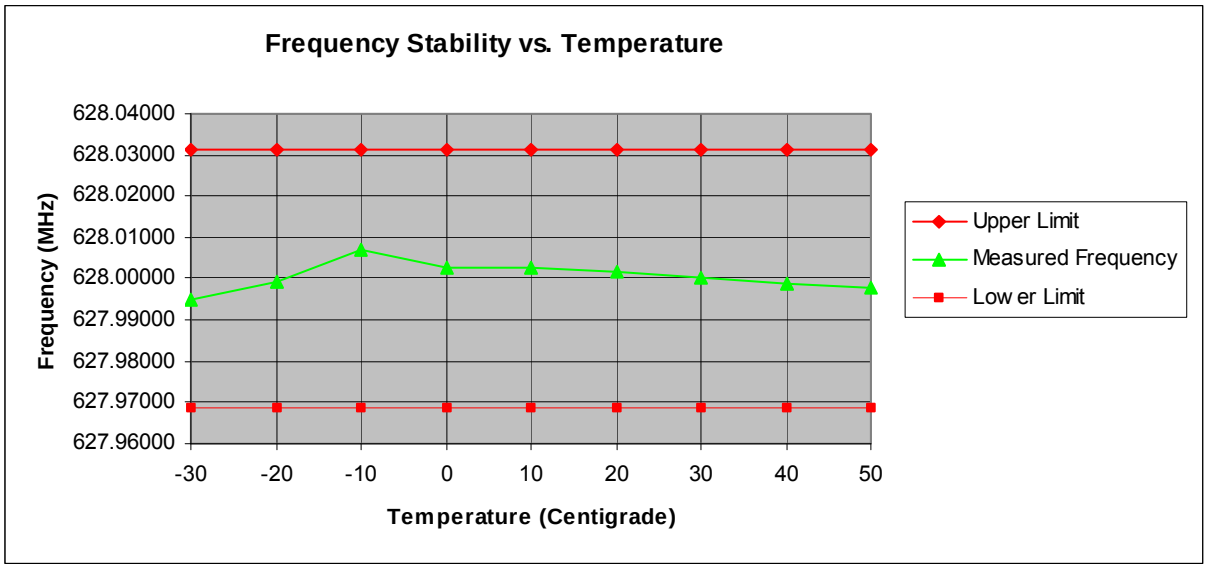
Measurement Procedure

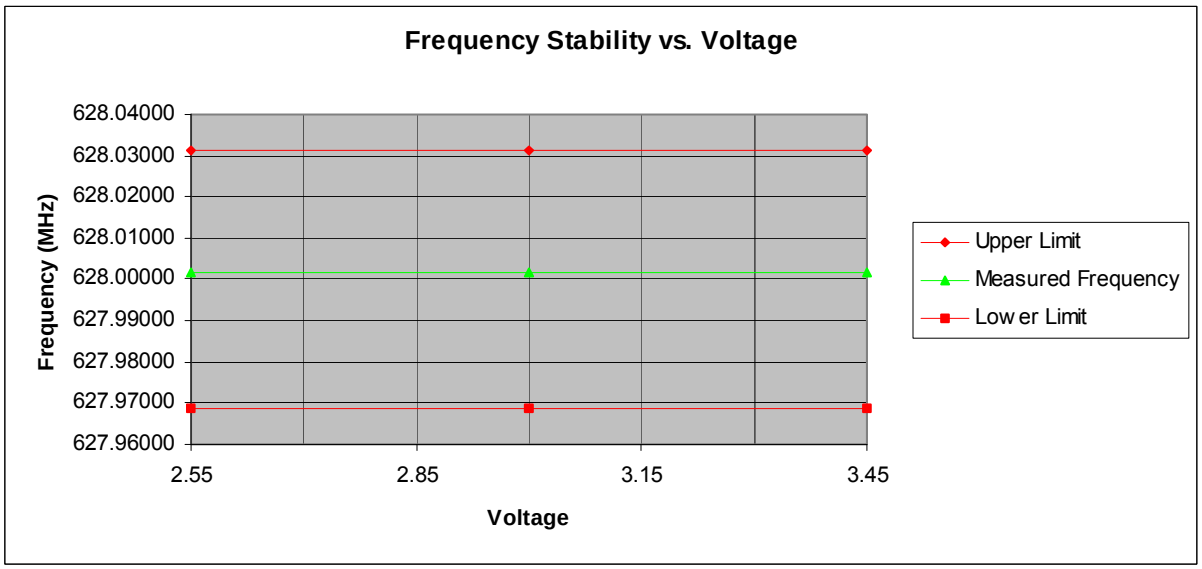
The EUT was placed in an environmental test chamber and the RF output was connected directly to a frequency counter. The temperature was varied from -30ºC to 50ºC in 10ºC increments. After a sufficient time for temperature stabilization the RF output frequency was measured.

Measurement Setup



Measurement Results

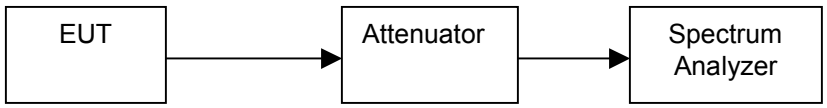




Name of Test: 99% Occupied Bandwidth
Specification: RSS-Gen **Engineer: J Erhard**
Test Equipment Utilized: i00331 **Test Date: 7/30/2009**

The EUT was connected directly to a spectrum analyzer to measure the 99% occupied bandwidth

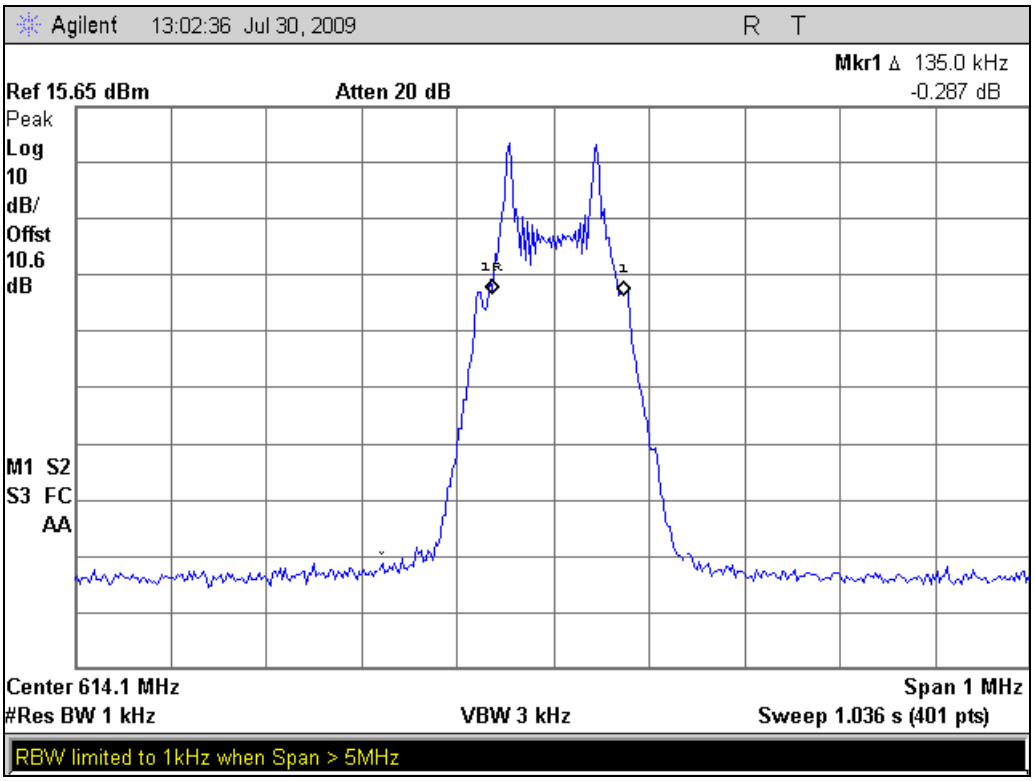
Test Setup



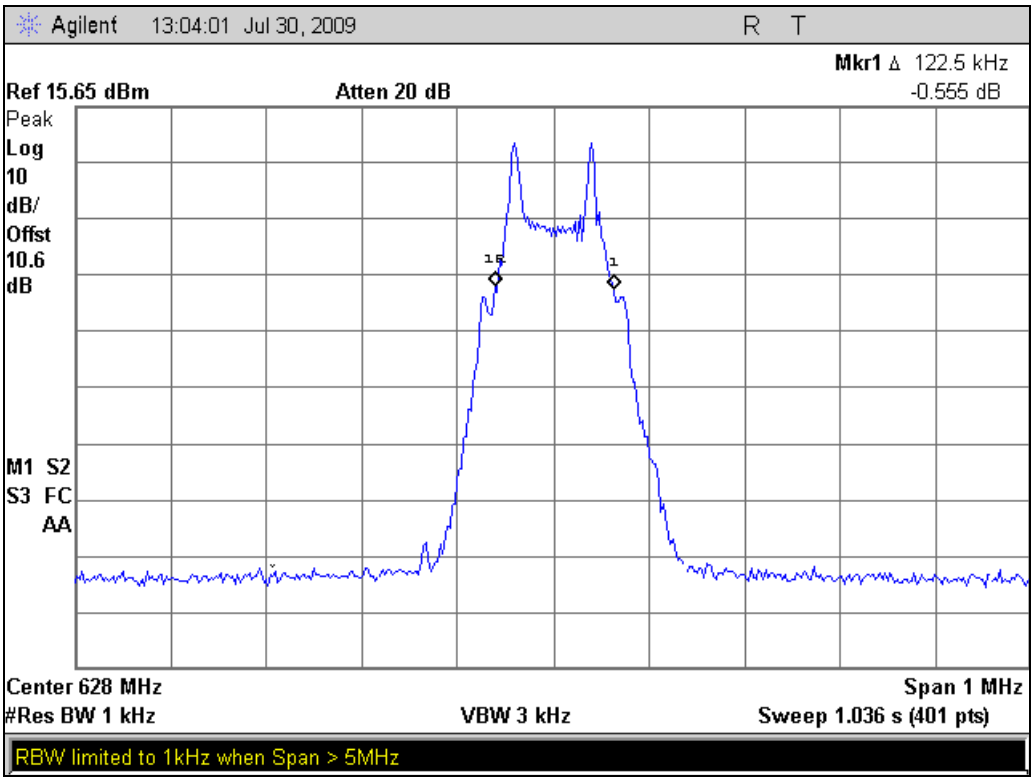
99% Occupied Bandwidth

Tuned Frequency MHz	Recorded Measurement
614.1	135.0 kHz
628.0	122.5 kHz
641.9	117.5 kHz
648.1	132.5 kHz
662.0	120.0 kHz
675.9	105.0 kHz

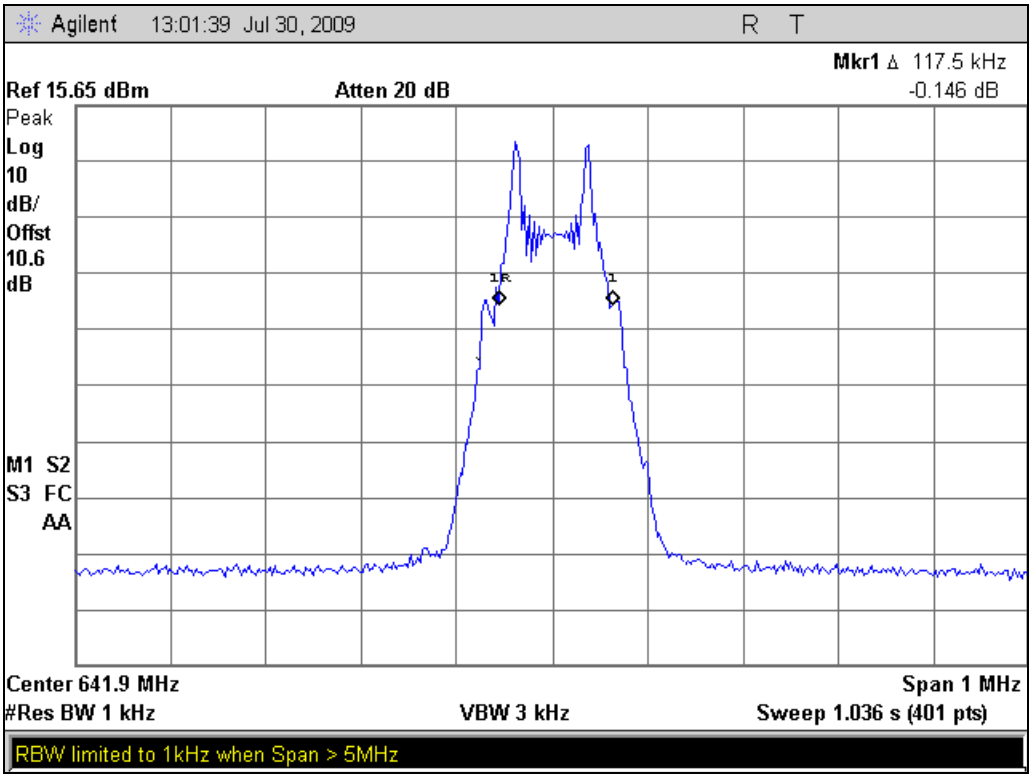
614.1 MHz



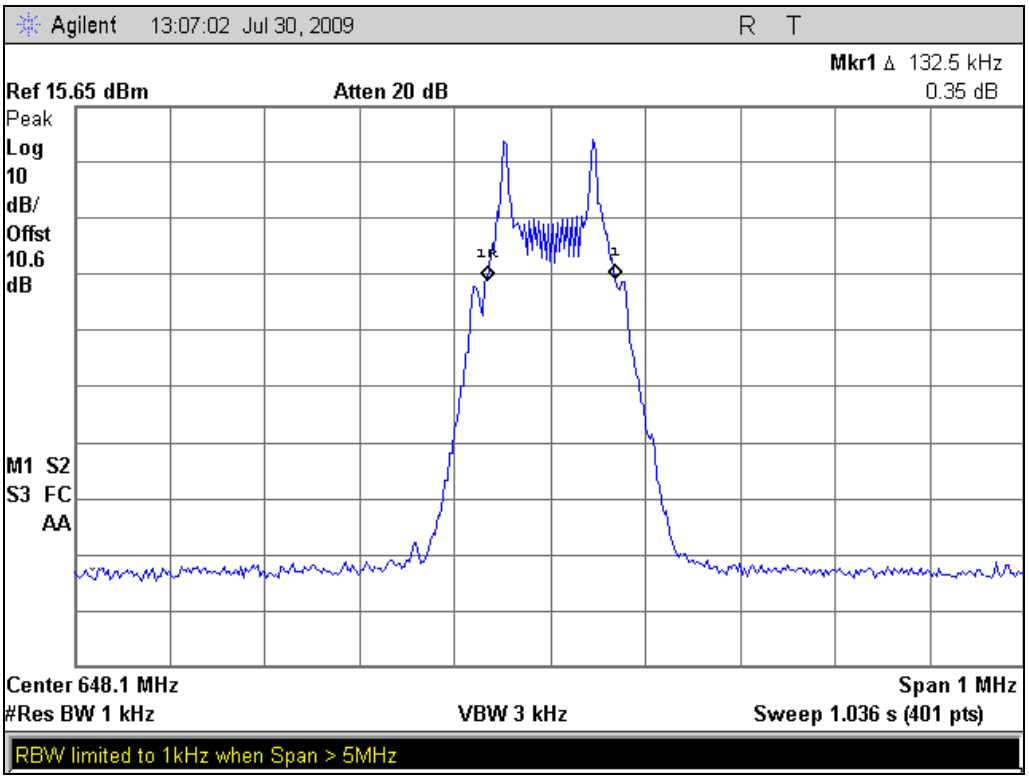
628 MHz



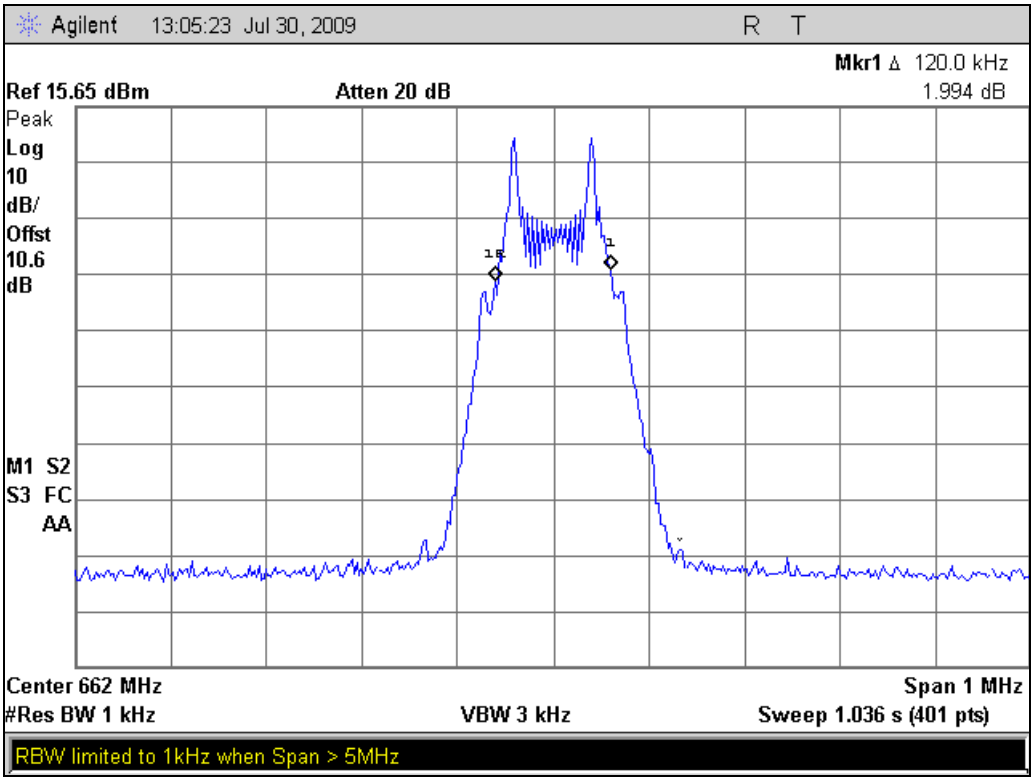
641.9 MHz



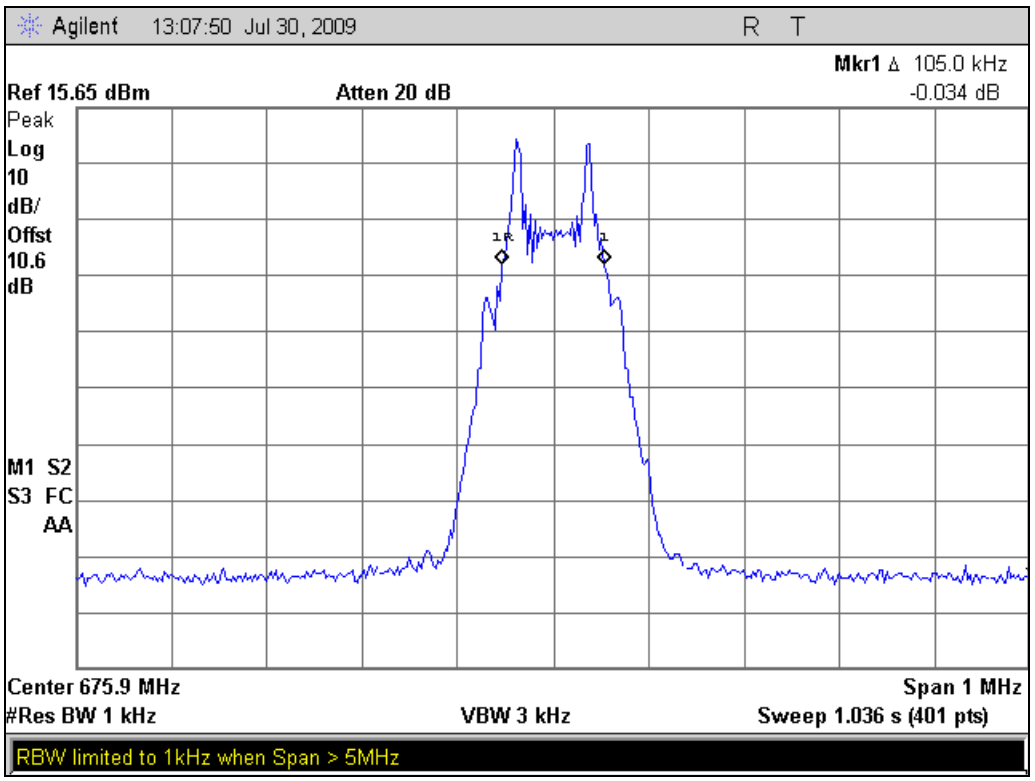
648.1 MHz



662 MHz



675.9 MHz



Name of Test: Necessary Bandwidth Calculation
Specification: 2.202(g) **Engineer: J Erhard**
Test Equipment Utilized: N/A **Test Date: 8/14/2009**

Modulation = 91K0F3E

Necessary Bandwidth Calculation:

Maximum Modulation (M), kHz		33.5
Maximum Deviation (D), kHz	=	12
Constant Factor (K)	=	1
Necessary Bandwidth (B_N), kHz	=	(2xM)+(2xDxK)
	=	91

Test Equipment Utilized

Description	MFG	Model Number	CTL Asset Number	Last Cal Date	Cal Due Date
Power Supply	HP	6634A	i00004	NCR	NCR
Frequency Counter	HP	5334A	i00019	1/26/09	1/26/10
Modulation Analyzer	HP	8901A	i00020	2/5/09	2/5/10
Temperature Chamber	Tenney	Tenney Jr.	i00027	12/8/08	12/9/09
Spectrum Analyzer	HP	8566B	i00049	10/14//08	10/14//09
Horn Antenna	EMCO	3115	i00103	11/25/08	11/25/10
Power Meter	HP	E4418B	i00228	10/1/08	10/1/09
Bilog Antenna	Schaffner	CBL6111C	i00267	11/06/07	11/06/09
Power sensor	HP	8485A	i00334	9/30/08	9/30/09
Audio Analyzer	HP	8903A	i00324	0/27/08	10/27/09
Spectrum Analyzer	Agilent	E4407B	i00331	11/3/08	11/3/09

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