



Report Tracker

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Please keep this page with the report in out files.

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|------------|---------------------|
| Applicant: | Thrane & Thrane A/S |
| Model: | Explorer E727 |
| FCC ID: | ROJEXPLORER727 |

| | |
|----------------|---|
| Formulaire: | L:\PROJEXPLORER-727ect\Formulaire\FCC.Certification.Part 25.rtf |
| Last Modified: | November 12, 2007 |
| Purpose: | FCC Part 25 Satellite Communications |

| | |
|-------------------------|---------------|
| MFA PROJEXPLORER-727ect | p0840021 |
| ID: | |
| Client ID: | THRANE THRANE |

| | |
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| MFA Document ID: | d0850046 |
| Date: | May 27, 2008 |
| This Printing | 2008-Jul-21 Mon |
| Writer: | HSB/je |

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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: May 27, 2008

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

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

Equipment: Explorer E727
FCC ID: ROJEXPLORER727
FCC Rules: Part 25 And part 15

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, Lab Director

enclosure(s)
HSB/je



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Memo

Date: May 27, 2008

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

Equipment: Explorer E727
FCC ID: ROJEXPLORER727

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Should the FCC's Examiners' interpretations request new and unpublished requirements, we will be pleased to provide them.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

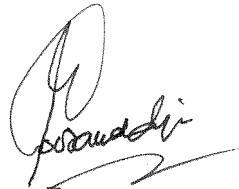
Sincerely yours,

Hoosamuddin S. Bandukwala, Lab Director

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.



Hoosamuddin S. Bandukwala, Lab Director



Flom Test Labs

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info@flomlabs.com

Date: May 27, 2008

Federal Communications Commission
Via: Electronic Filing

Attention: Authorization & Evaluation Division

Applicant: Thrane & Thrane A/S
Equipment: Explorer E727
FCC ID: ROJEXPLORER727
FCC Rules: Part 25

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, Lab Director

enclosure(s)
cc: Applicant
HSB/je

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

MFA p0840021, d0850046 Rev 2.0



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info@flomlabs.com

Test Report

for

Model: Explorer E727

to

Federal Communications Commission

Rule Part(s) Part 25

Date of report: May 27, 2008

On the Behalf of the Applicant: Thrane & Thrane A/S

At the Request of: Thrane & Thrane A/S
Lundtofttegardsvej 93D
DK-2800 Lyngby, Denmark

Attention of: Morten Becker
+45 39 55 88 00; FAX: +45 39 55 88 88
Email: MBS@thrane.com

Supervised by:

Hoosamuddin S. Bandukwala, Lab Director

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

MFA p0840021, d0850046 Rev 2.0

Revision History

| Revision | Date | Revised By | Reason for revision |
|----------|---------------|------------|--|
| 1.0 | May 27, 2008 | J Erhard | Original Document |
| 2.0 | July 15, 2008 | J Erhard | Edit FCC ID and add substitution method information. |
| | | | |
| | | | |

List of Exhibits

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

Applicant: Thrane & Thrane A/S

FCC ID: ROJEXPLORER727

By Applicant:

1. Letter of Authorization
2. Confidentiality Request: 0.457 And 0.459
3. Identification Drawings, 2.1033(c)(11)
 1. Label
 2. Location of Label
 3. Compliance Statement
 4. 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

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.

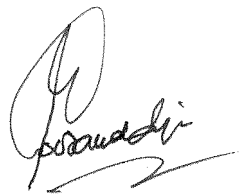
Information detailing any alternative method used to supply the special accessories for a grant of equipment authorization or retained in the verification records, as appropriate. The party responsible for the equipment, as detailed in § 2.909 of this chapter, shall ensure that these special accessories 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:



Hoosamuddin S. Bandukwala, Lab Director

Table of Contents

| <u>Rule</u> | <u>Description</u> | <u>Page</u> |
|---------------|--|-------------|
| 2.1033(c)(14) | Rule Summary | 2 |
| | Standard Test Conditions and Engineering Practices | 3 |
| 2.1033(c) | General Information Required | 4 |
| 25.204 | Power limits (Conducted) | 6 |
| 25.204 | Power limits (Radiated) | 7 |
| 25.202(f) | Emissions Limitations for Mobile Earth Stations | 8 |
| | Occupied Bandwidth | 27 |
| 25.202(f) | Emission Masks | 34 |
| 25.216(h) | Emissions Limits for Mobile Earth Stations | 47 |
| 25.202(d) | Frequency Tolerance (Temperature Variation) | 53 |
| 25.202(d) | Frequency Tolerance (Voltage Variation) | 54 |
| | Test Equipment Utilized | 55 |

Required information per ISO 17025-2005, paragraph 5.10.2:

a) **Test Report**

b) Laboratory: Flom Test Lab
(FCC: 31040/SIT) 3356 N. San Marcos Place, Suite 107
(Canada: IC 2044-A) Chandler, AZ 85225

c) Report Number: d0850046

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

e) Identification: Explorer E727

EUT Description: Solid state power amplifier antenna system

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

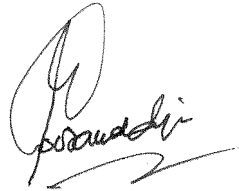
g) Report Date: May 27, 2008
EUT Received:

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:



Hoosamuddin S. Bandukwala, Lab Director

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:

| Terminal Type | Quantity | Manufacturer | Model | Serial No. | FCC ID |
|---------------|----------|-----------------|----------|------------------|-------------------|
| BDU EXPLORER | 1 | Thrane & Thrane | TT-3736A | BGAN-X EMC/FCC 4 | ROJBGAN-XTERMINAL |

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:

FCC Part 25 Satellite Communications

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-2004 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.

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**

Industry Canada OATS Number 2011A-1

List of General Information Required for Certification

In Accordance with FCC Rules and Regulations,
Volume II, Part 2 and to Part 25

Sub-part 2.1033

(c)(1):

Name and Address of Applicant: Thrane & Thrane A/S
Lundtoftegardsvej 93D
DK-2800 Lyngby, Denmark

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

(c)(2): **FCC ID:** ROJEXPLORER727

Model Number: Explorer E727

(c)(3): **Instruction Manual(s):** Please see attached exhibits

(c)(4): **Type of Emission:** PI/4 QPSK, 16-QAM

(c)(5): **Frequency Range, MHz:** 1626.5 to 1660.5

(c)(6): **Power Rating, Watts:** 44.67 (radiated)
 _____ Switchable _____ Variable _____ N/A

FCC Grant Note: None

(c)(7): **Maximum Power Rating, Watts:** N/A

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 | = | 1 |
| Collector Voltage, Vdc | = | 25 |
| Supply Voltage, Vdc | = | 25 |

(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

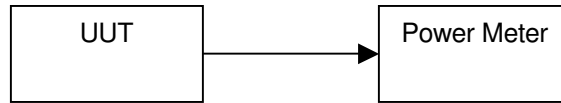
Name Of Test: Power Limits (Conducted)
Specification: 25.204
Test Equipment Utilized As Per Attached Page

Test Date: 5/19/2008

Test Procedure

The UUT was connected directly to a power meter and the peak-conducted power was measured.

Test Setup



Transmitter Peak Output Power (Conducted)

| Tuned Frequency MHz | Recorded Measurement dBm | Specification Limit | Result |
|------------------------|-----------------------------|-----------------------------|--------|
| 1626.51 | 34.64 | No limit for Earth Stations | N/A |
| 1643.5 | 34.73 | No limit for Earth Stations | N/A |
| 1660.49 | 34.76 | No limit for Earth Stations | N/A |

Name Of Test: Power Limits (Radiated)
Specification: 25.204
Test Equipment Utilized As Per Attached Page

Test Date: 5/20/2008

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

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

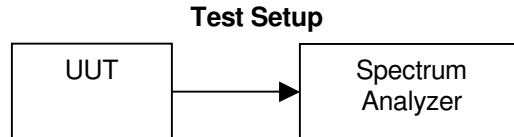
Transmitter Peak Output Power (Radiated)

| Tuned Frequency MHz | Recorded Measurement dBm | Specification Limit | Result |
|------------------------|-----------------------------|-----------------------------|--------|
| 1626.51 | 46.2 | No limit for Earth Stations | N/A |
| 1643.5 | 46.5 | No limit for Earth Stations | N/A |
| 1660.49 | 46.3 | No limit for Earth Stations | N/A |

Name Of Test: Emissions Limitations for Mobile Earth Stations
Specification: 25.202(f)
Limit: 43+10 log (Power)
Test Equipment Utilized As Per Attached Page **Test Date: 5/19/2008**

Test Procedure

The UUT was connected directly to a spectrum analyzer and the conducted spurious emissions were measured to ensure that the UUT met the requirements specified. Only the worst-case emission at each frequency was reported. A Notch filter was utilized to ensure that the fundamental power did not force the input of the spectrum analyzer into compression.



PI/4 QPSK Narrowband Unwanted Emissions Test Results Table

| Tuned Freq (MHz) | Emission Freq (MHz) | Monitored Value (dBm) | Limit (dBm) | Result |
|------------------|---------------------|-----------------------|-------------|--------|
| 1626.51 | 4875 | -57.63 | -13 | Pass |
| 1643.5 | 4921 | -54.69 | -13 | Pass |
| 1660.49 | 4990 | -58.06 | -13 | Pass |

PI/4 QPSK Wideband Unwanted Emissions Test Results Table

| Tuned Freq (MHz) | Emission Freq (MHz) | Monitored Value (dBm) | Limit (dBm) | Result |
|------------------|---------------------|-----------------------|-------------|--------|
| 1626.6 | 4875 | -63.01 | -13 | Pass |
| 1643.5 | 8215 | -62.90 | -13 | Pass |
| 1660.4 | 4990 | -61.52 | -13 | Pass |

16-QAM Narrowband Unwanted Emissions Test Results Table

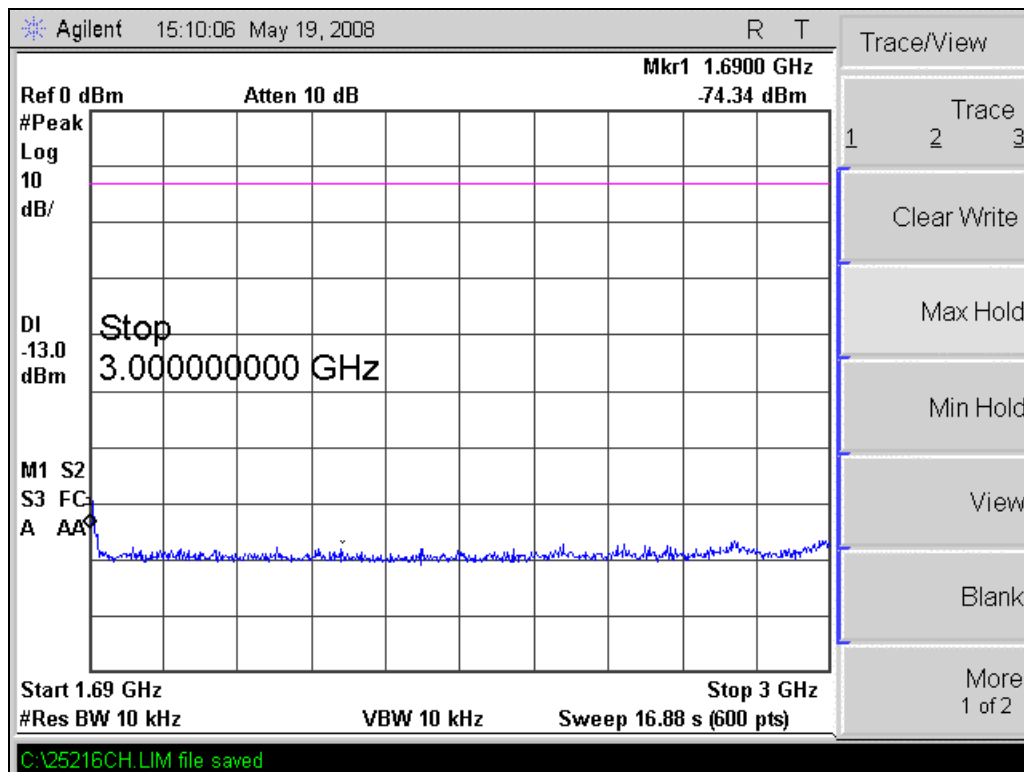
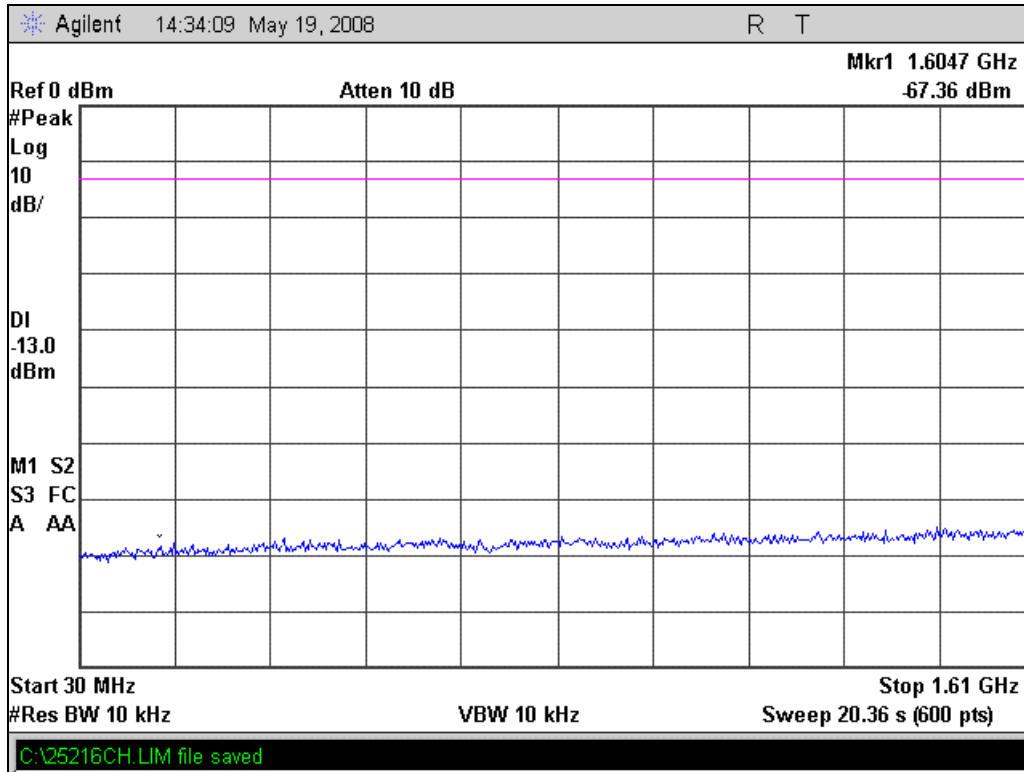
| Tuned Freq (MHz) | Emission Freq (MHz) | Monitored Value (dBm) | Limit (dBm) | Result |
|------------------|---------------------|-----------------------|-------------|--------|
| 1626.51 | 4875 | -57.49 | -13 | Pass |
| 1643.5 | 8215 | -54.30 | -13 | Pass |
| 1660.49 | 8306 | -54.30 | -13 | Pass |

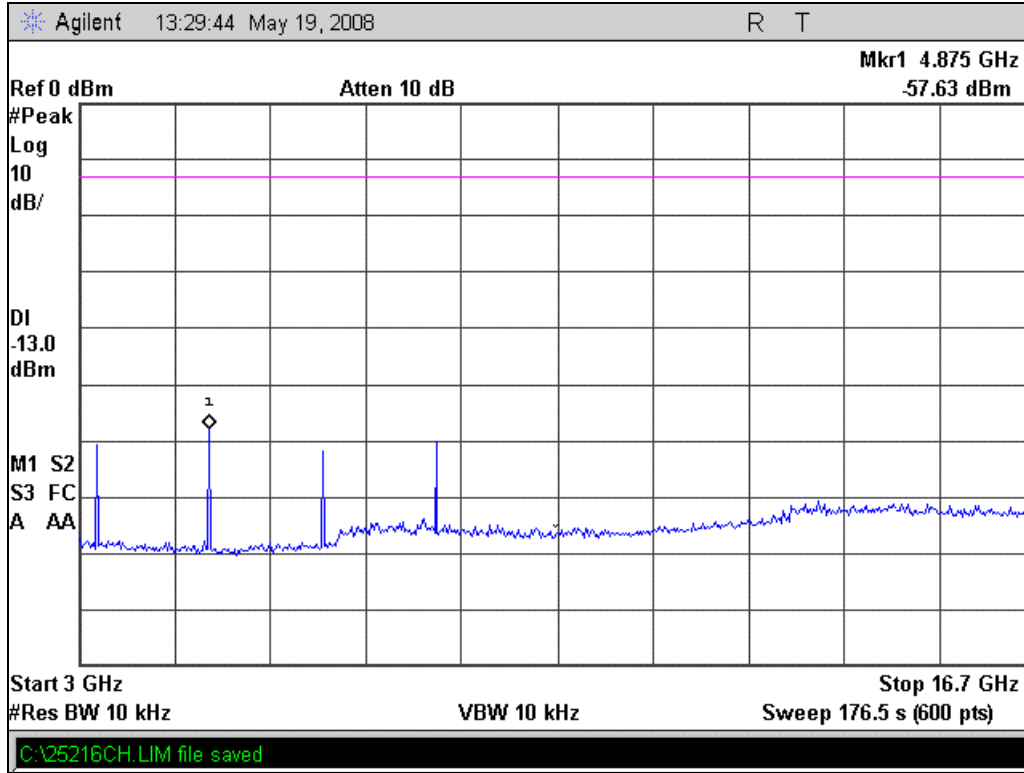
16-QAM Wideband Unwanted Emissions Test Results Table

| Tuned Freq (MHz) | Emission Freq (MHz) | Monitored Value (dBm) | Limit (dBm) | Result |
|------------------|---------------------|-----------------------|-------------|--------|
| 1626.6 | 4875 | -62.26 | -13 | Pass |
| 1643.5 | 4921 | -57.87 | -13 | Pass |
| 1660.4 | 4990 | -60.42 | -13 | Pass |

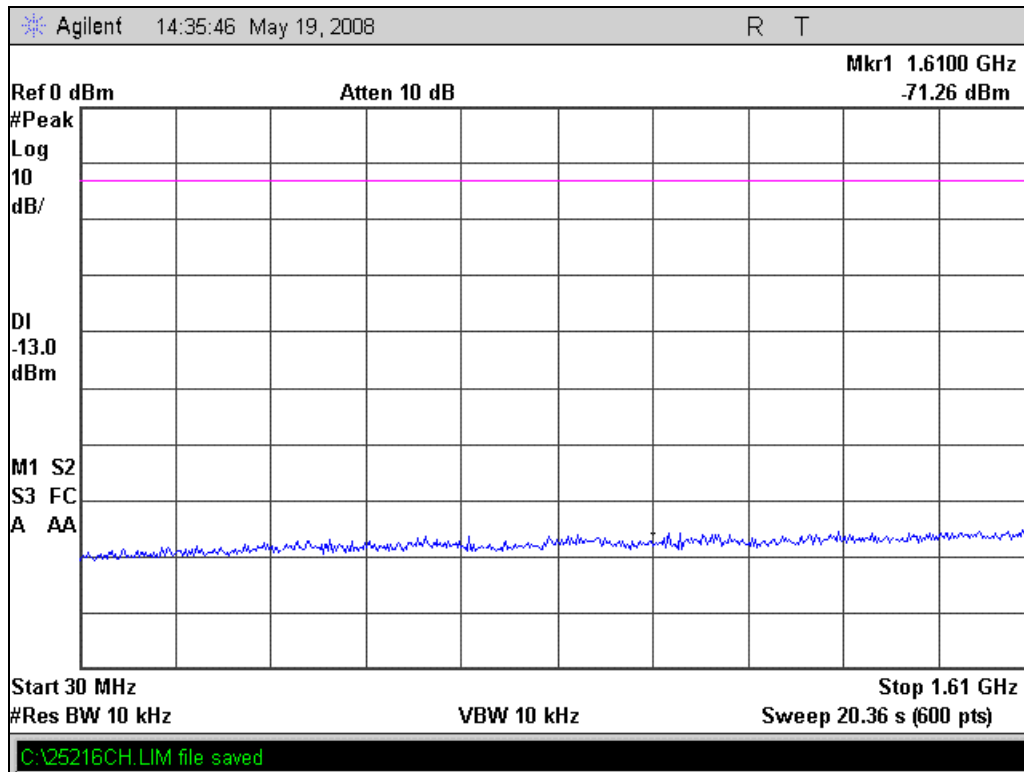
PI/4 QPSK Narrowband Unwanted Emissions Plots

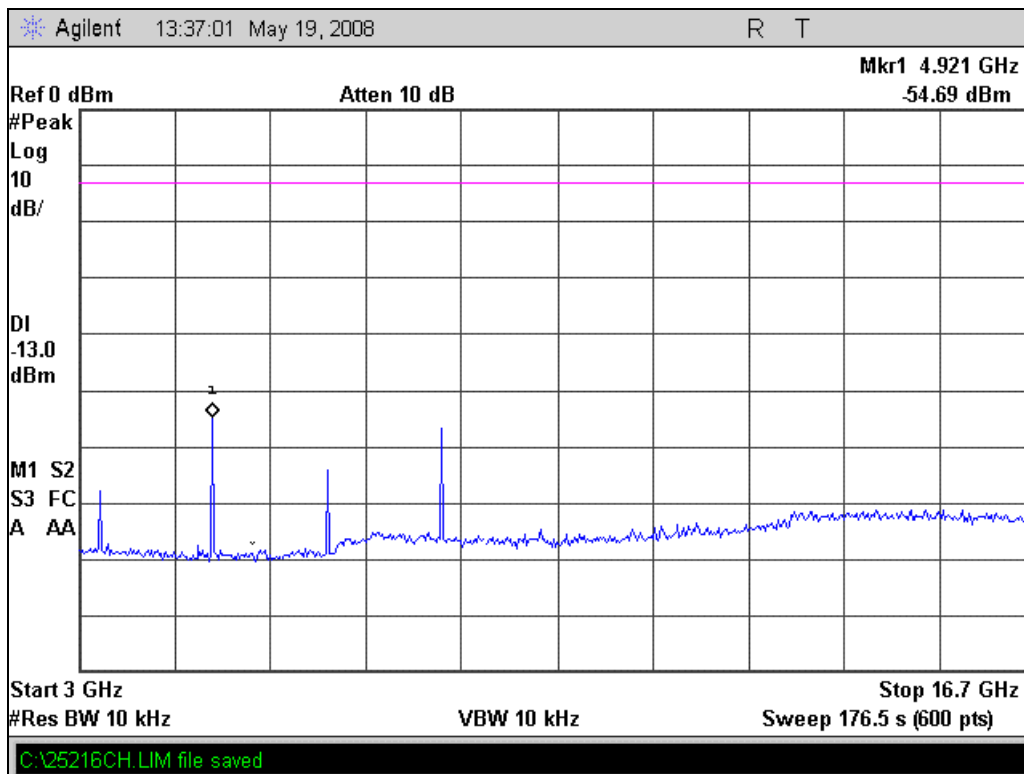
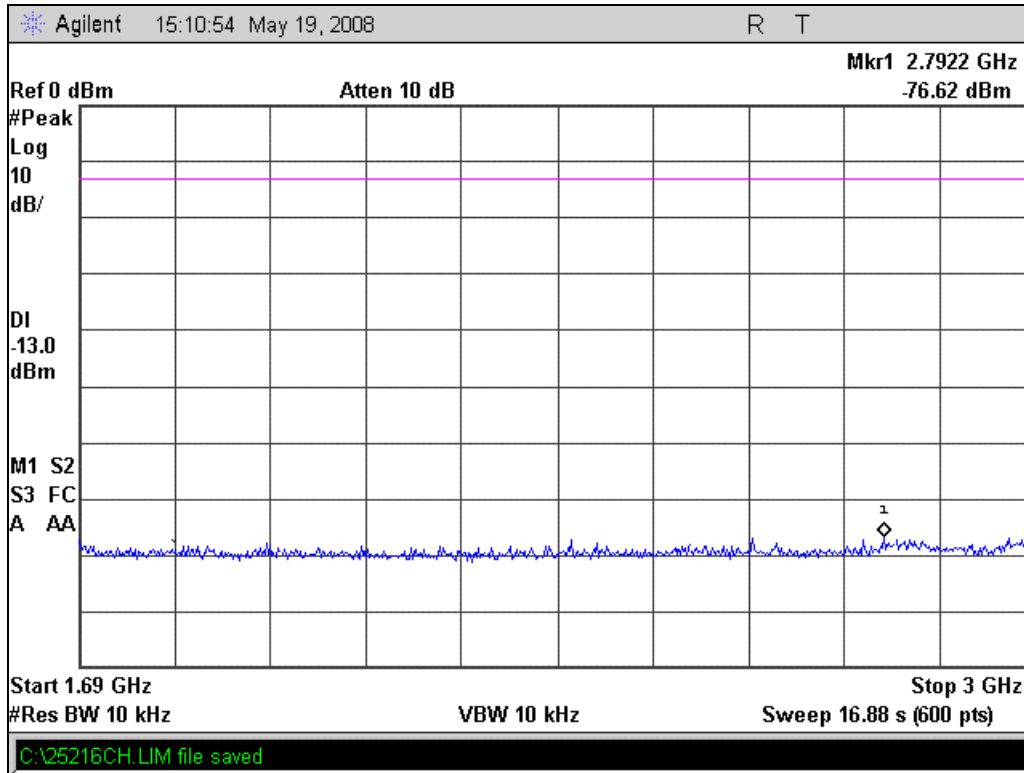
1626.51 MHz



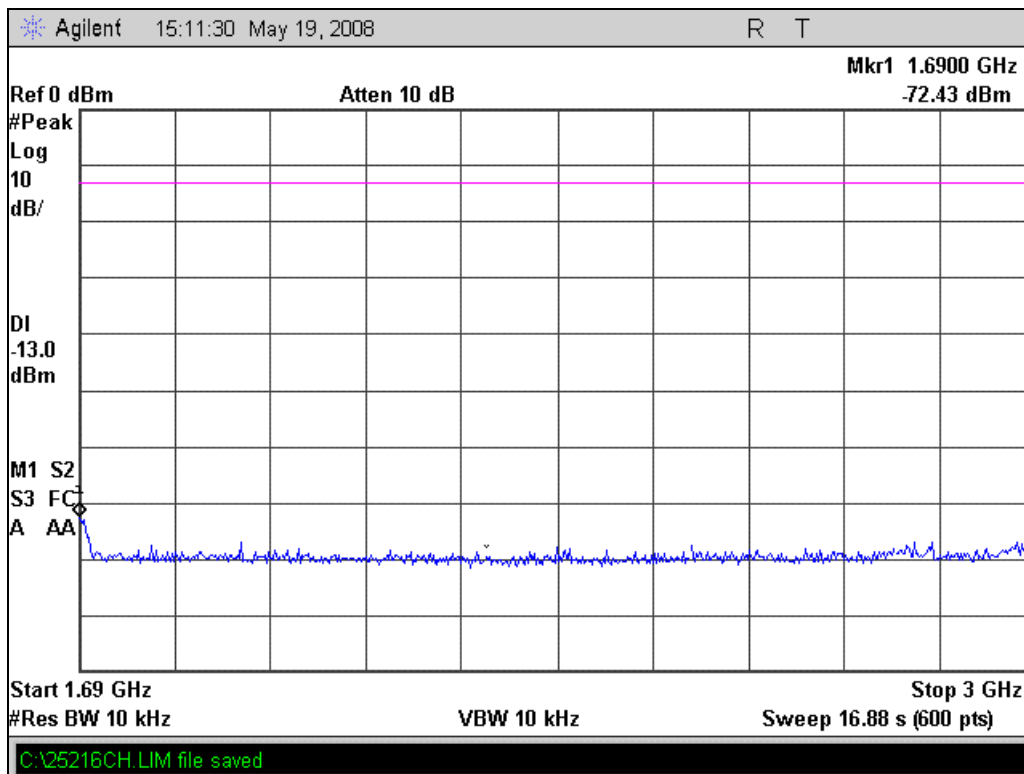
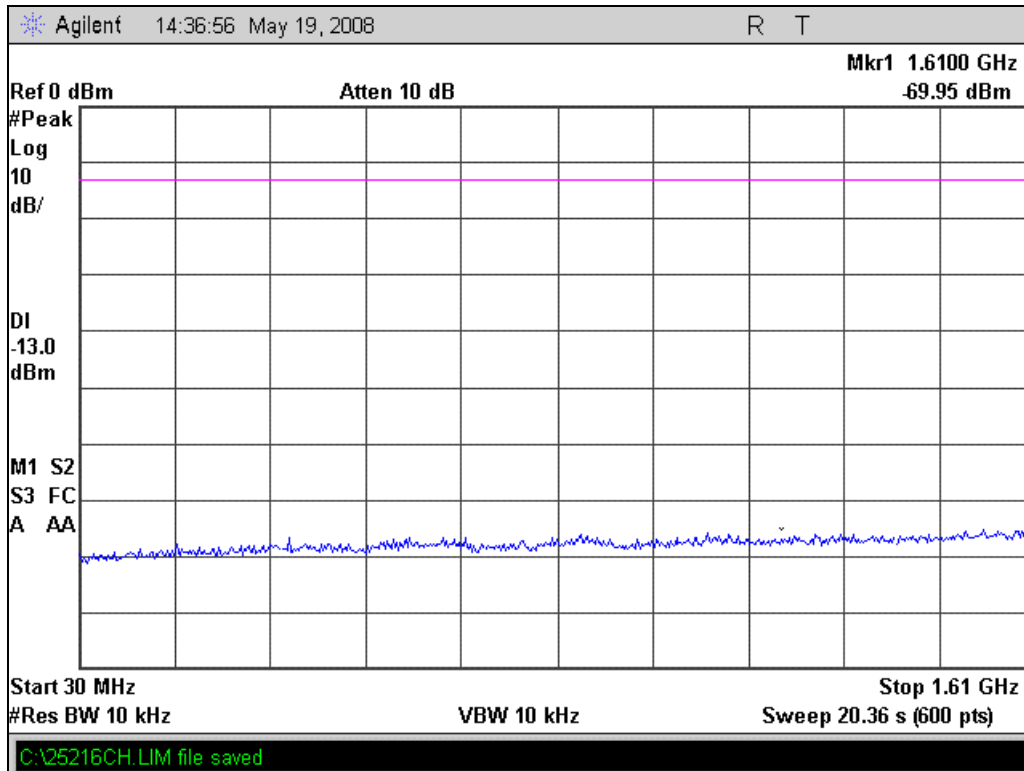


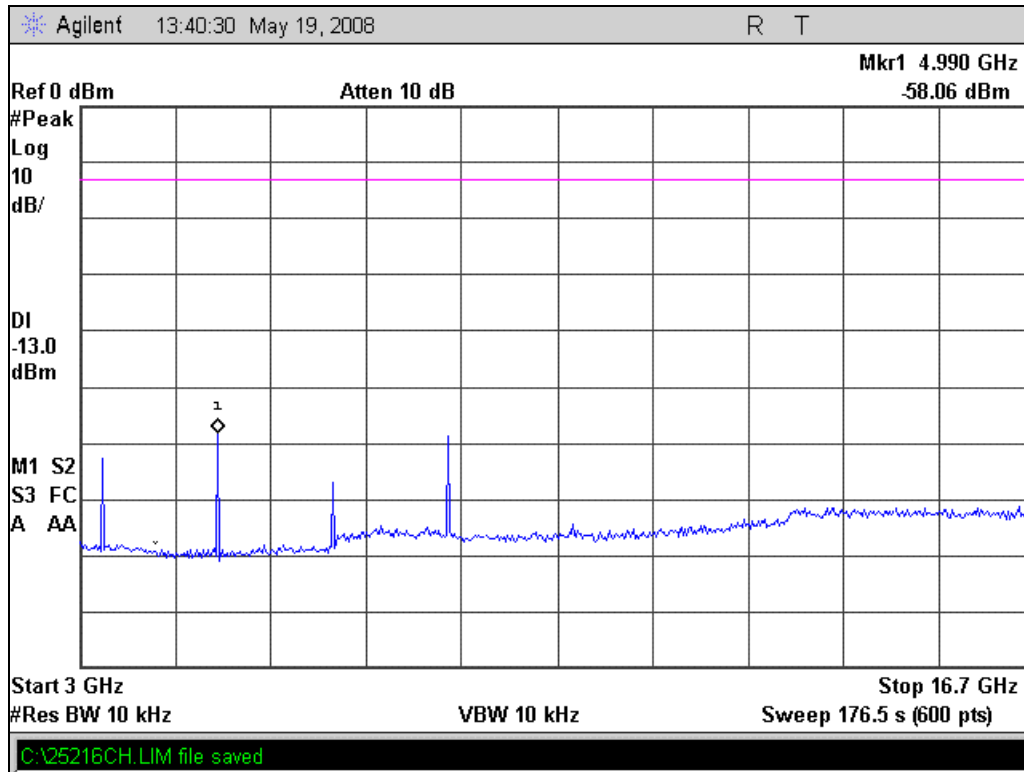
1643.5 MHz





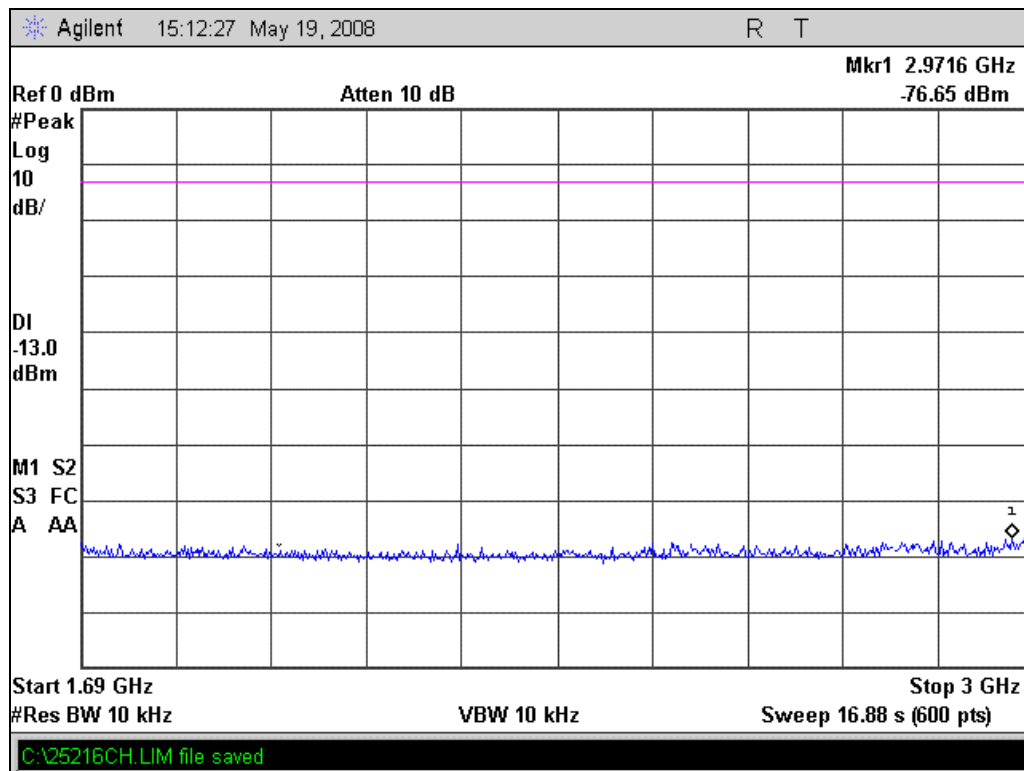
1660.49 MHz

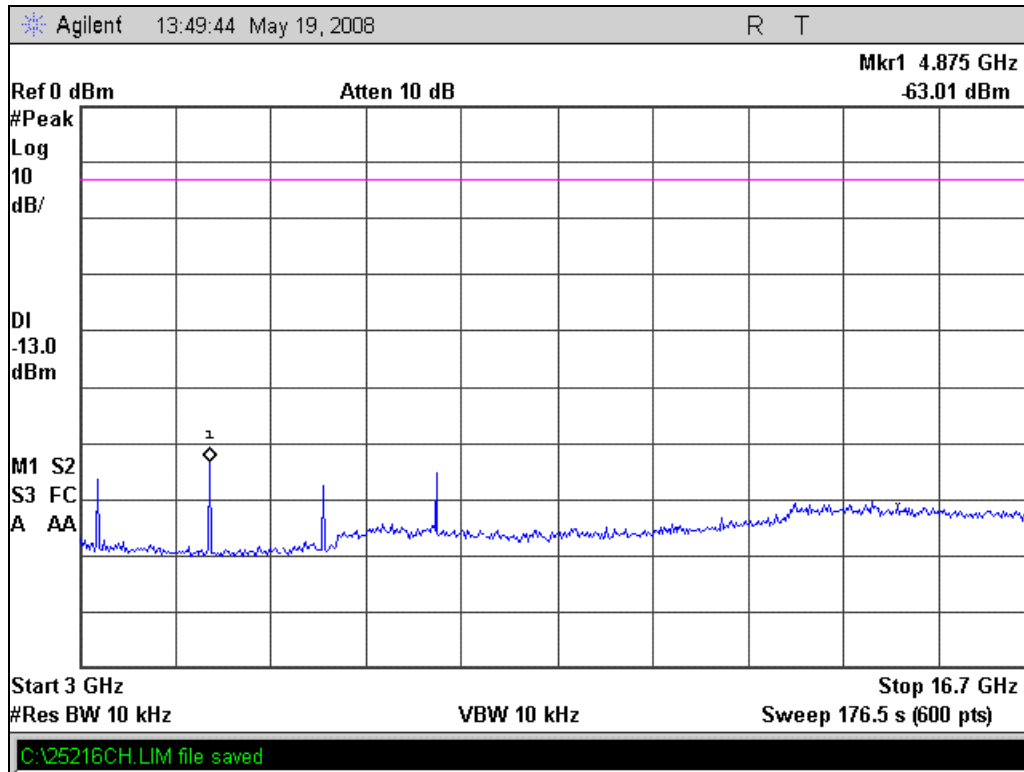




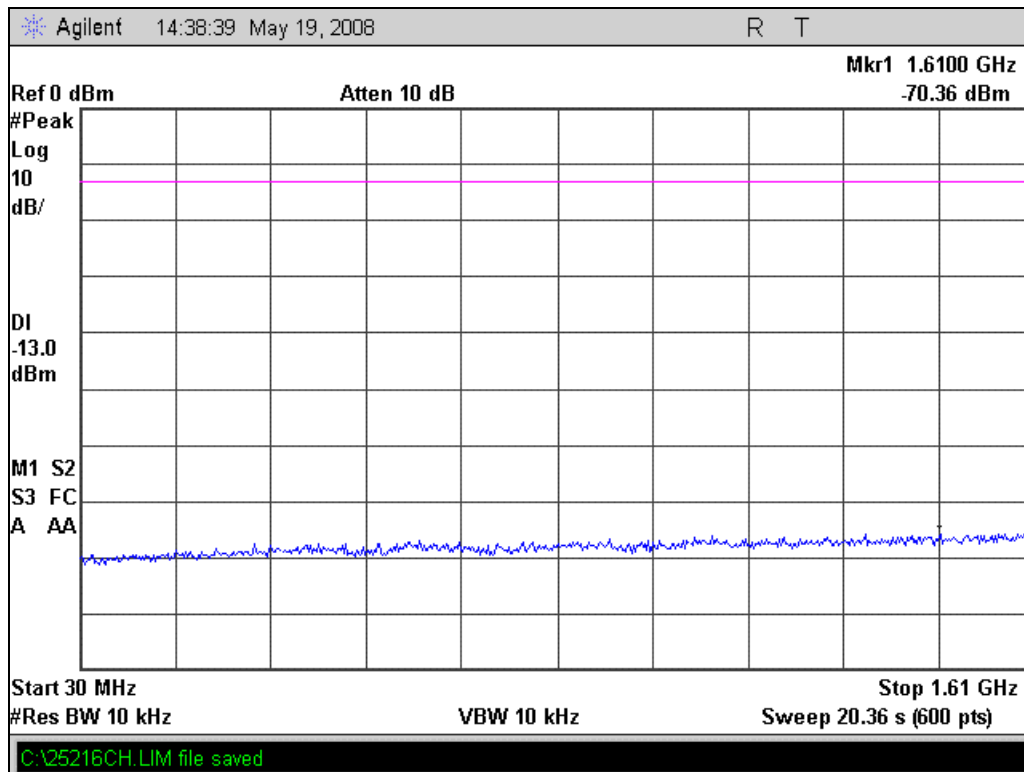
PI/4 QPSK Wideband Unwanted Emissions Plots

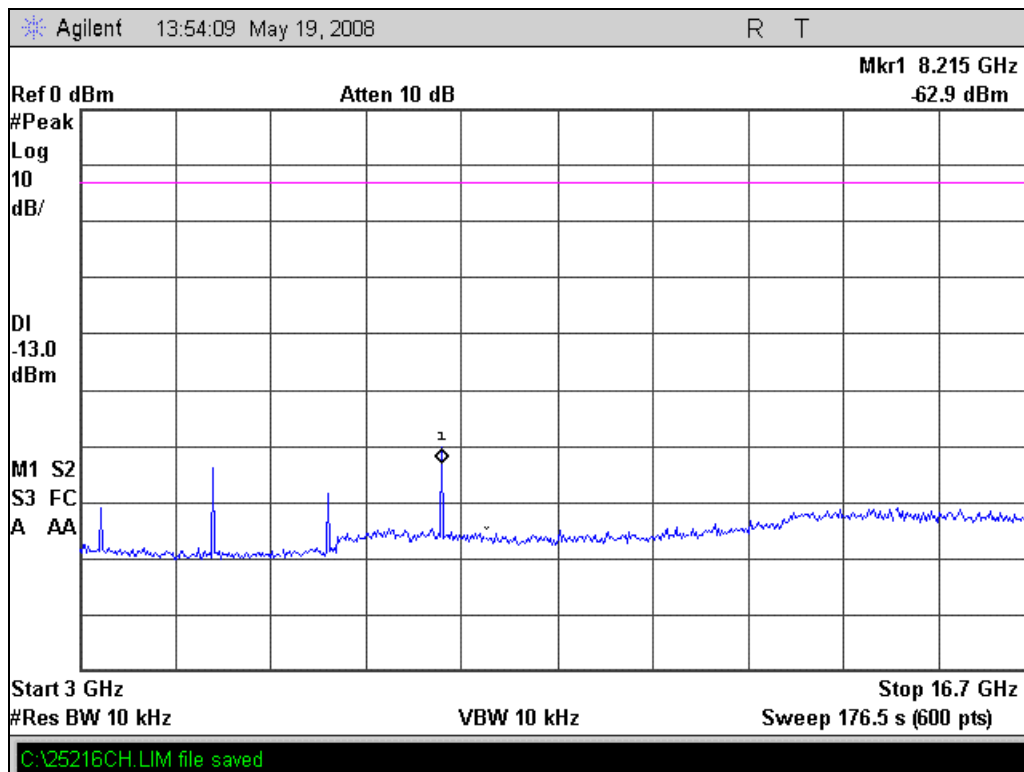
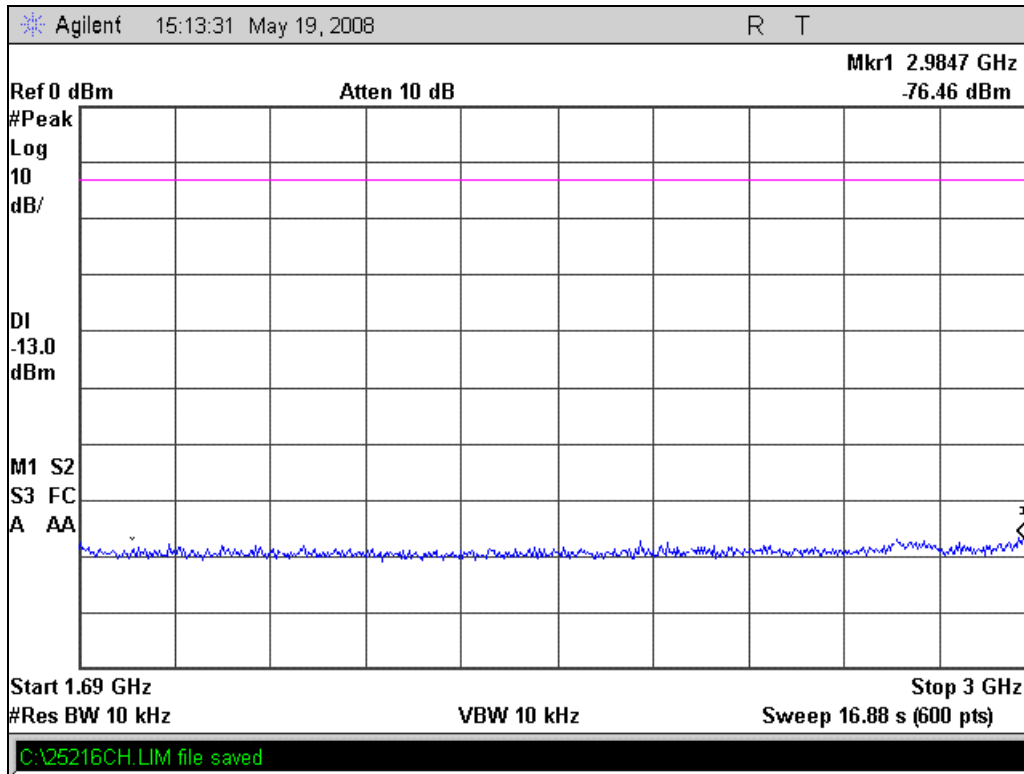
1626.6 MHz



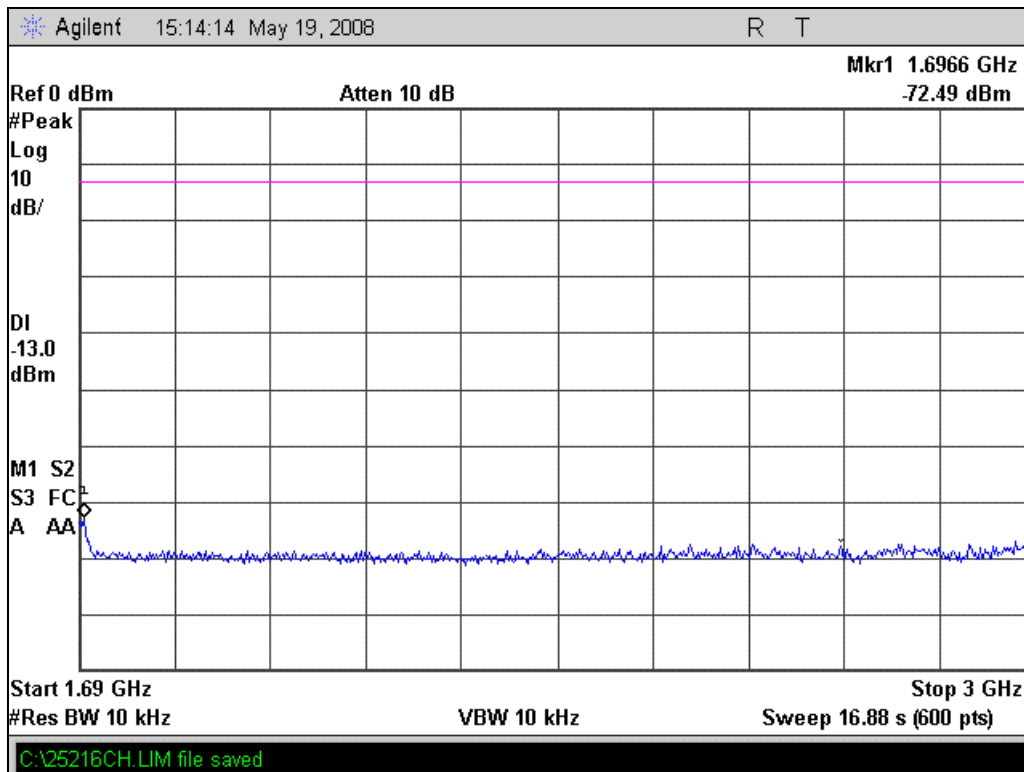
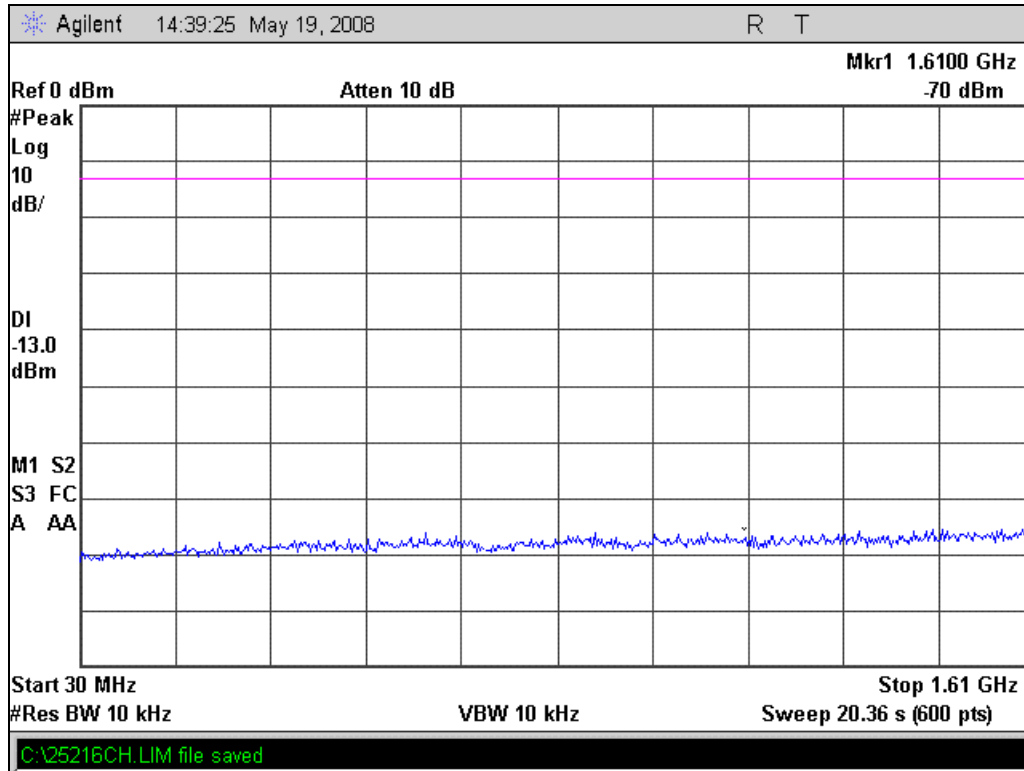


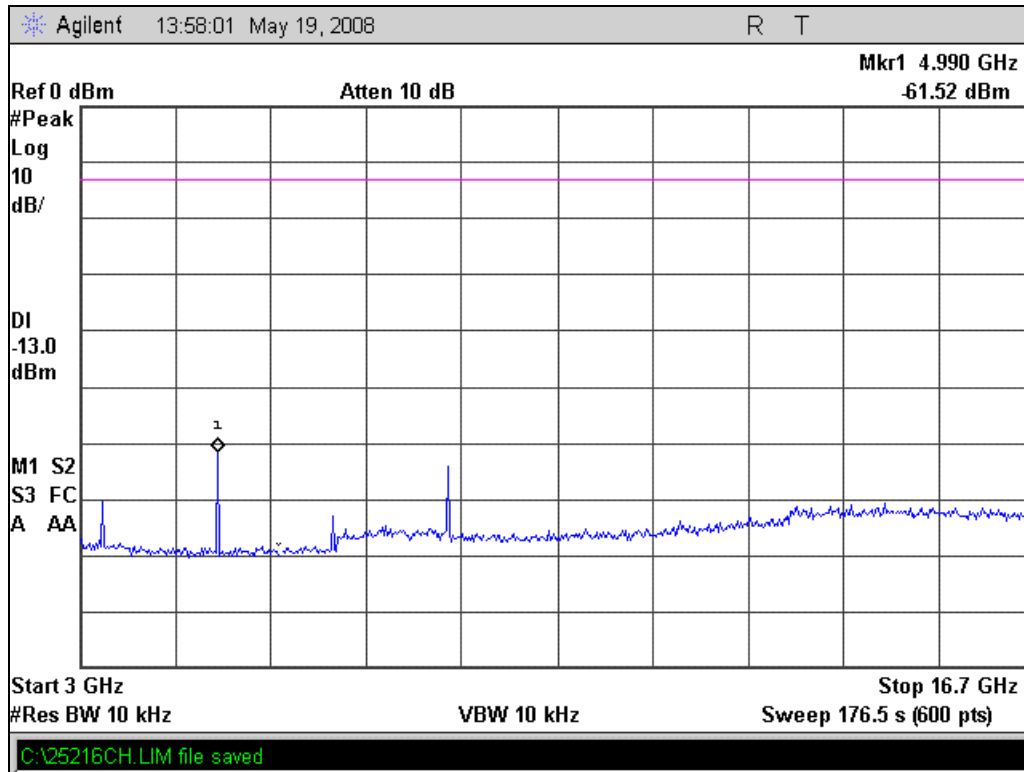
1643.5 MHz





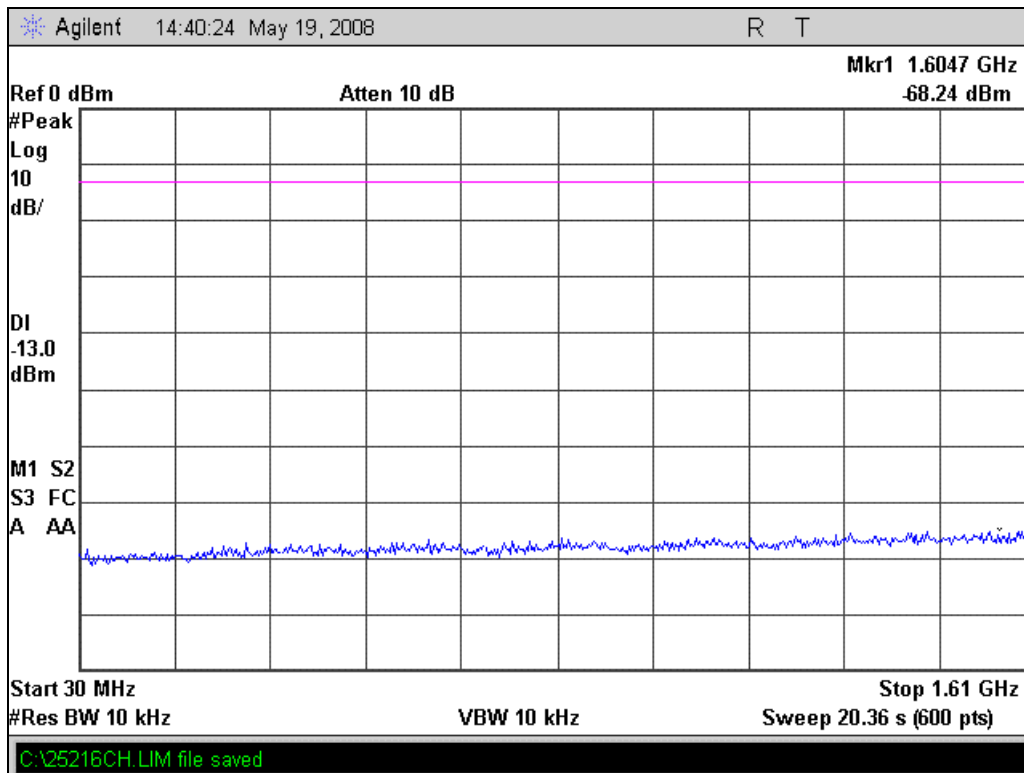
1660.4 MHz

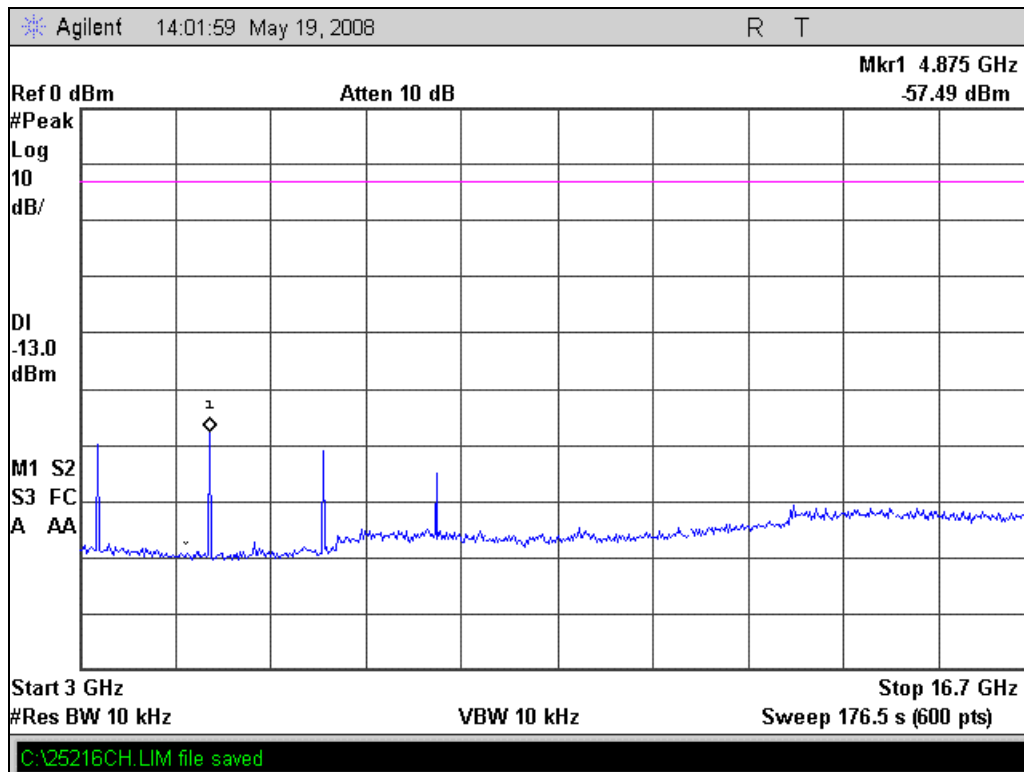
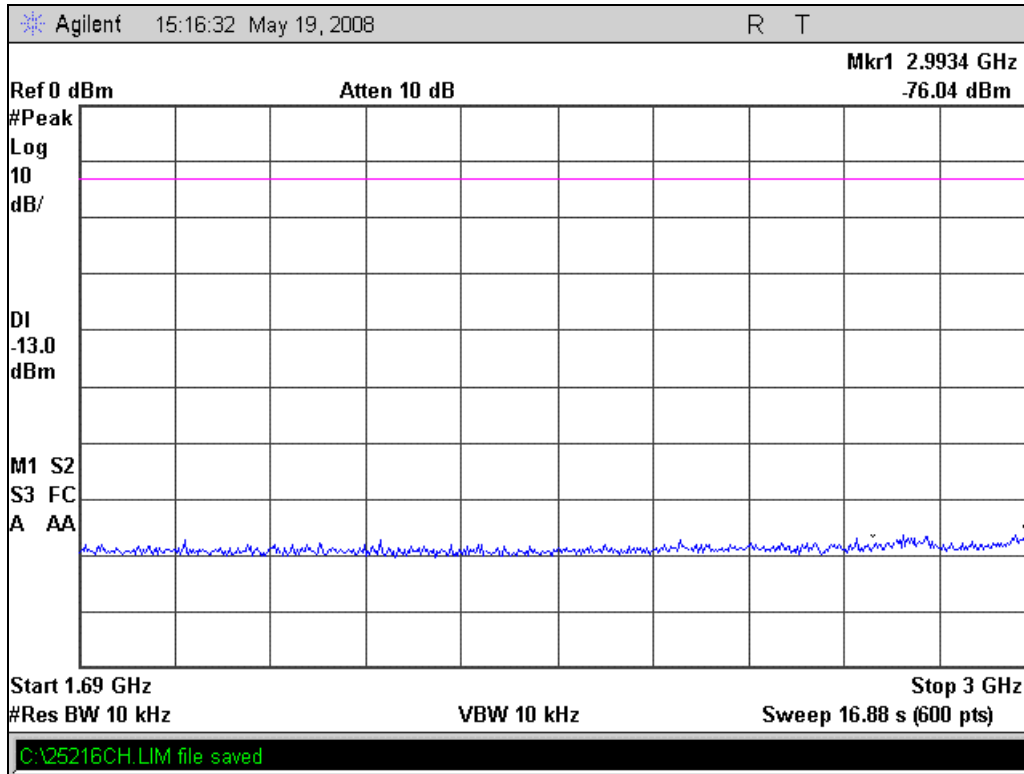




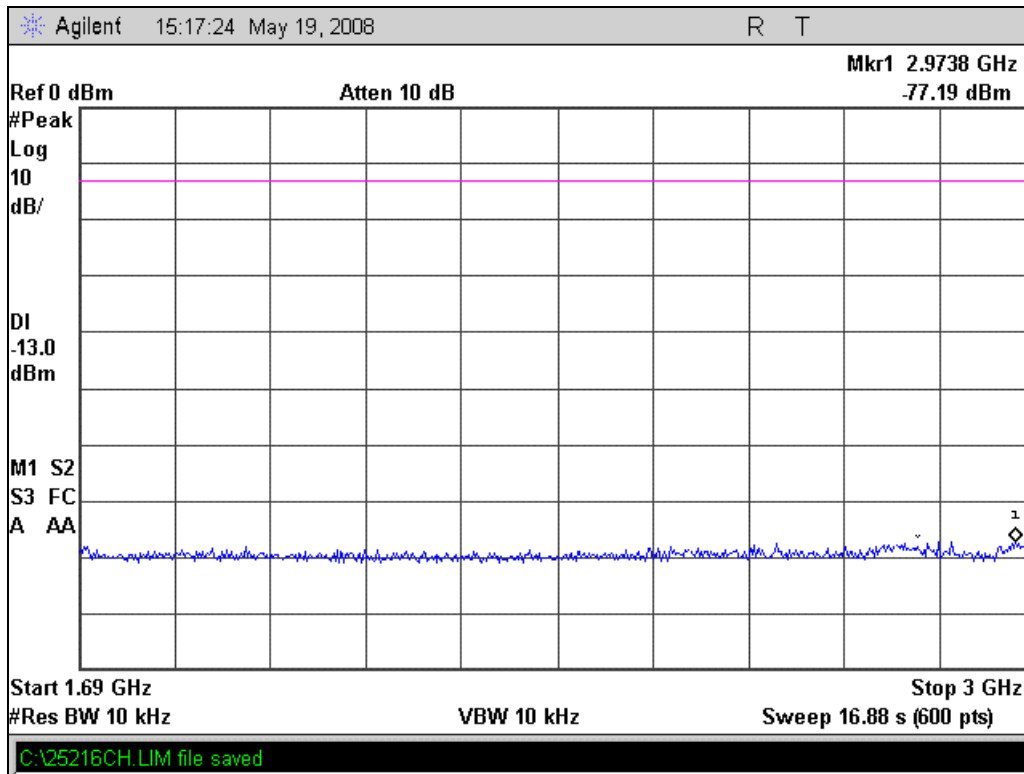
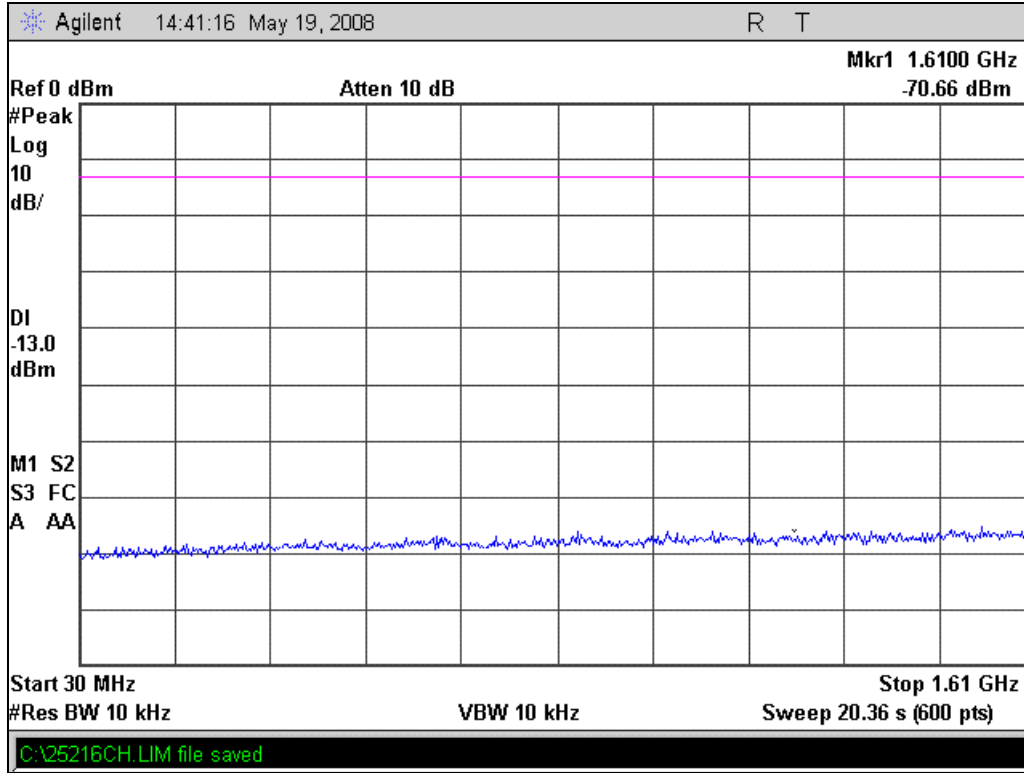
16-QAM Narrowband Unwanted Emissions Plots

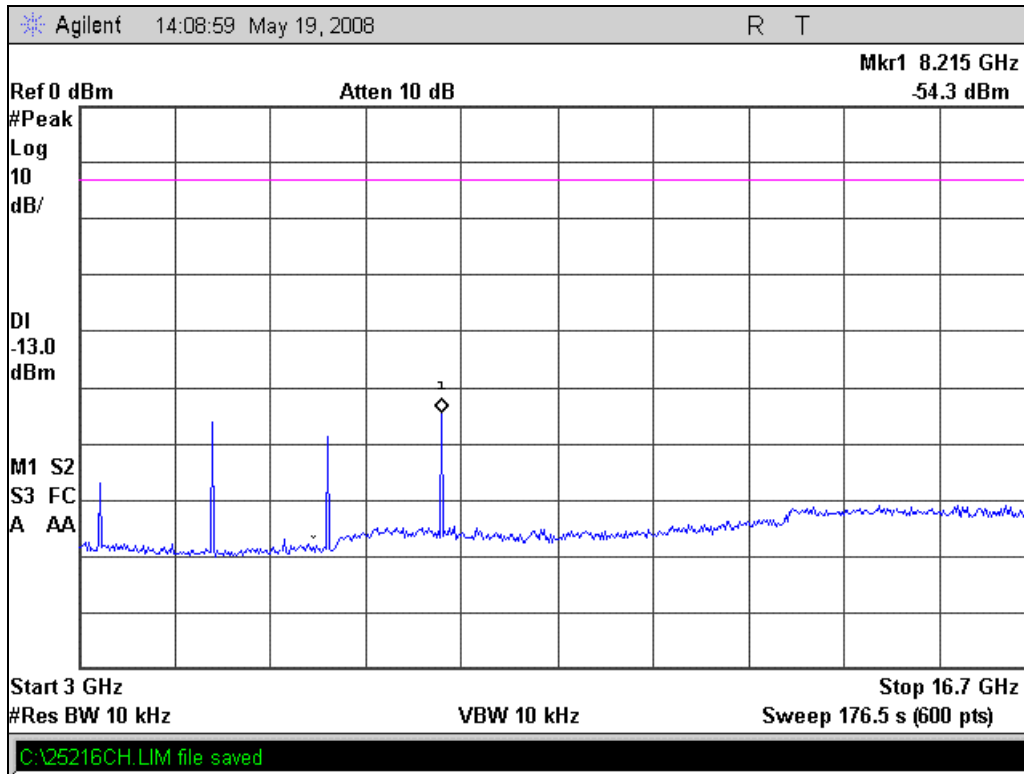
1626.51 MHz



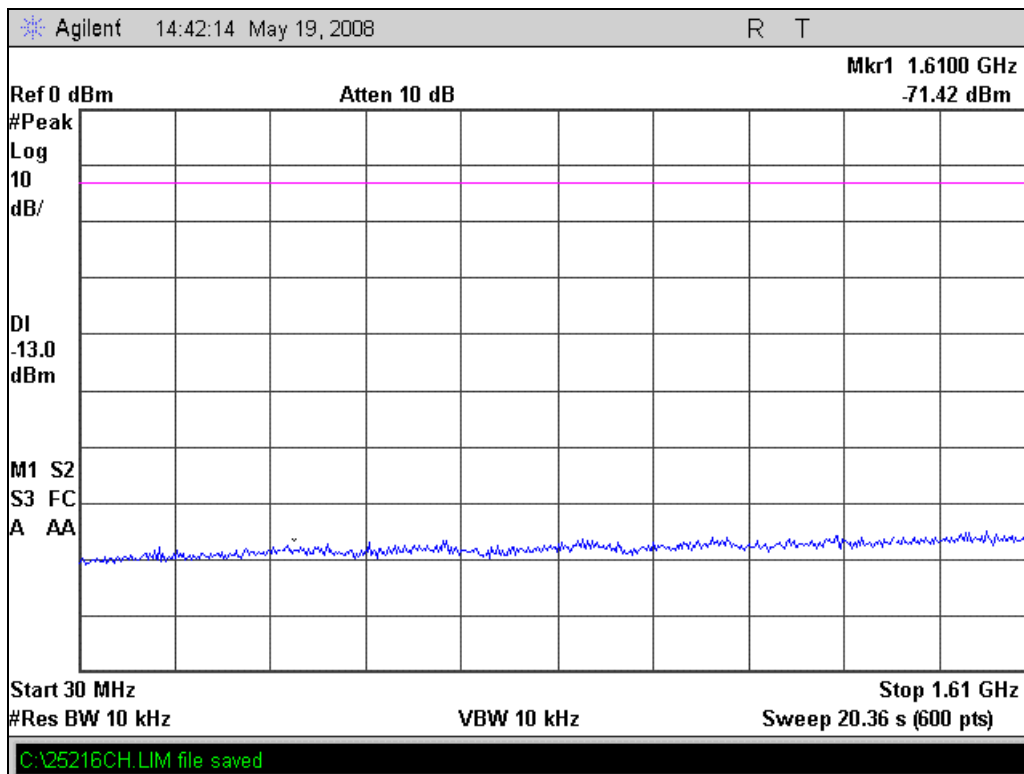


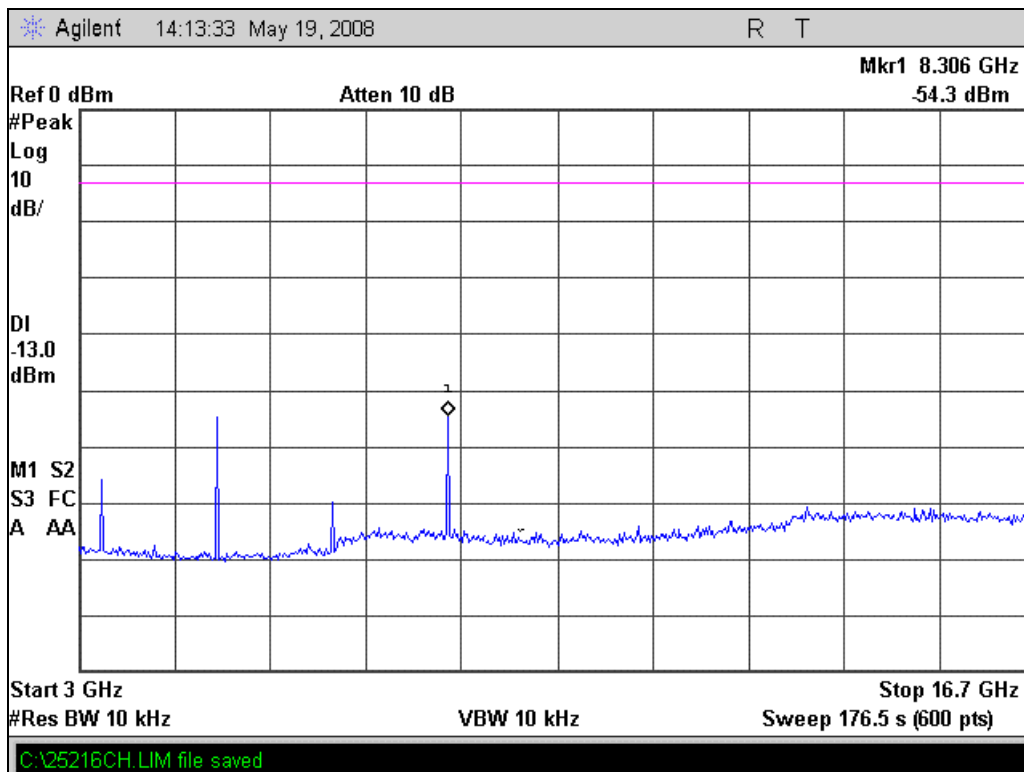
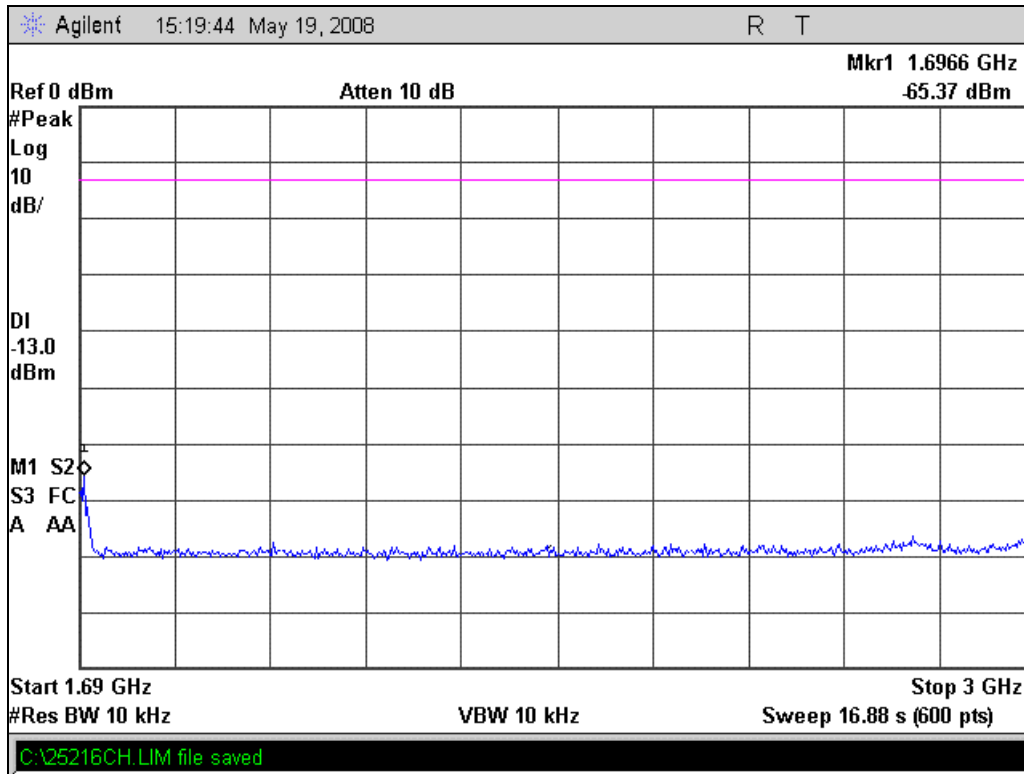
1643.5 MHz





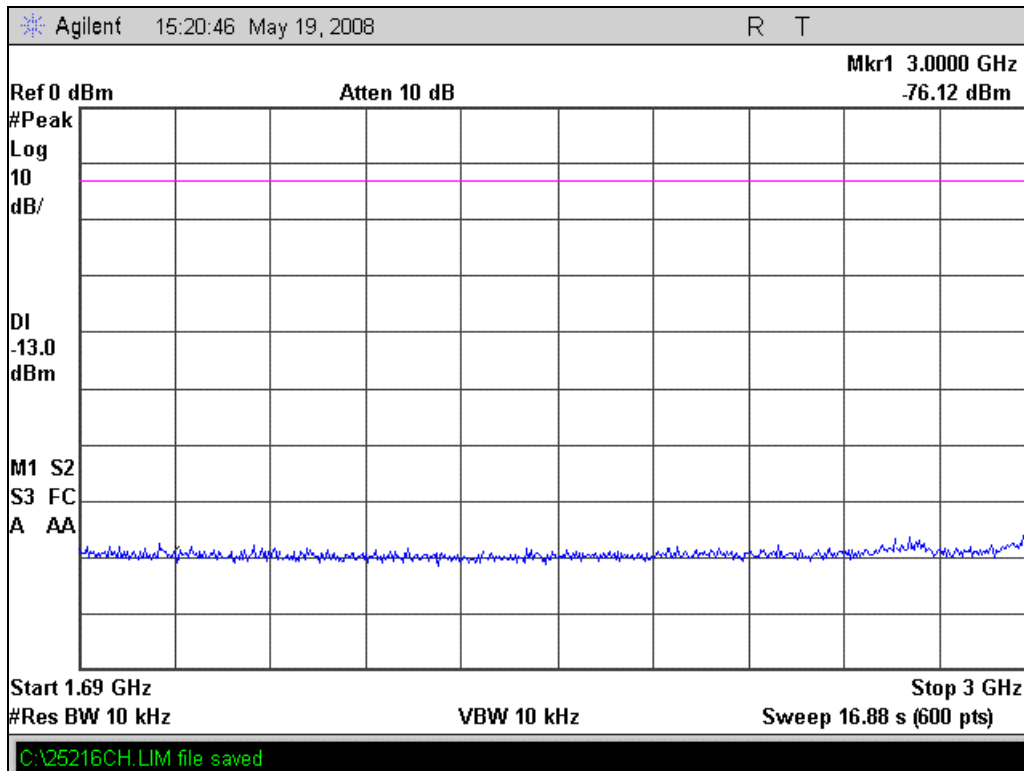
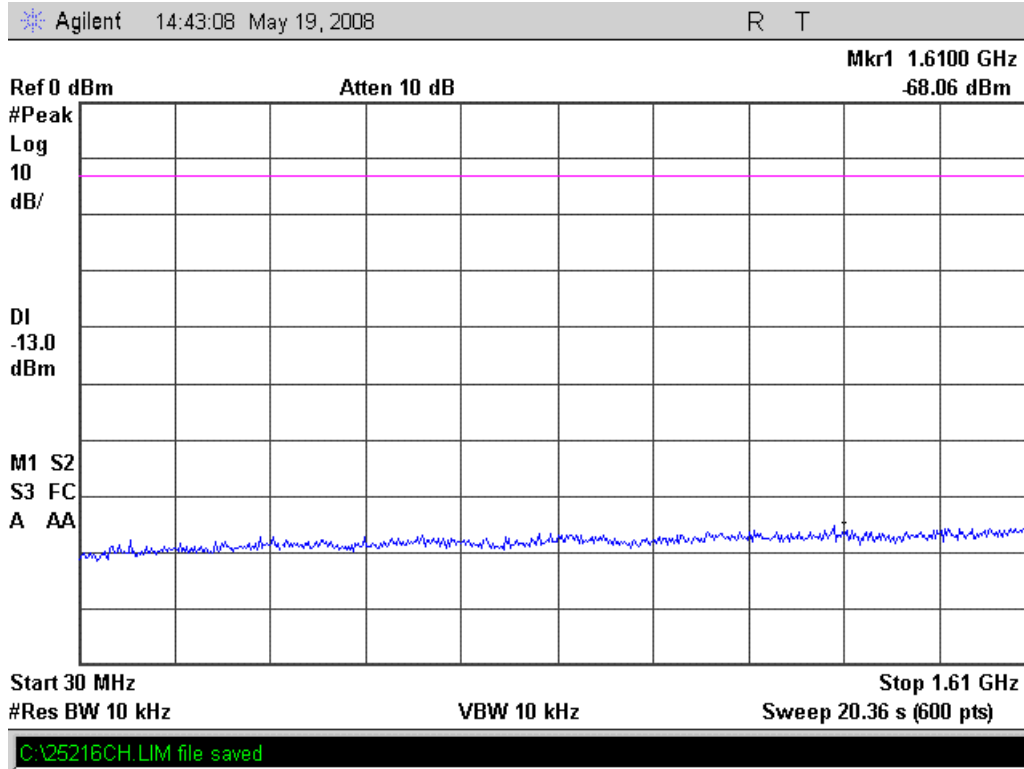
1660.49 MHz

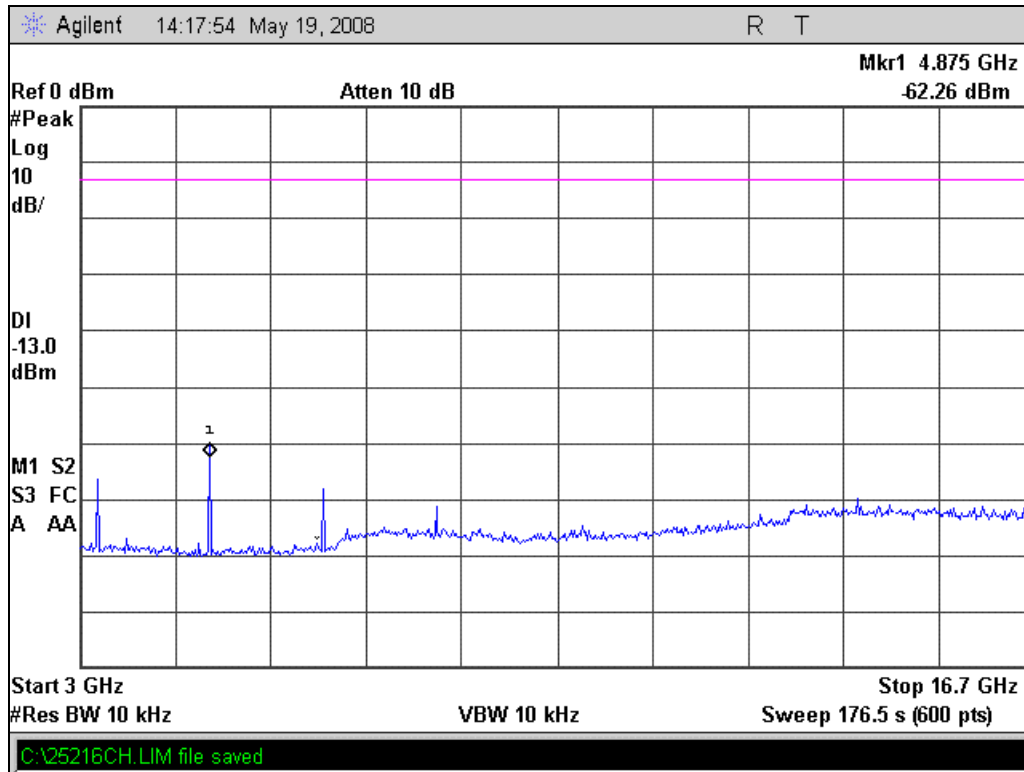




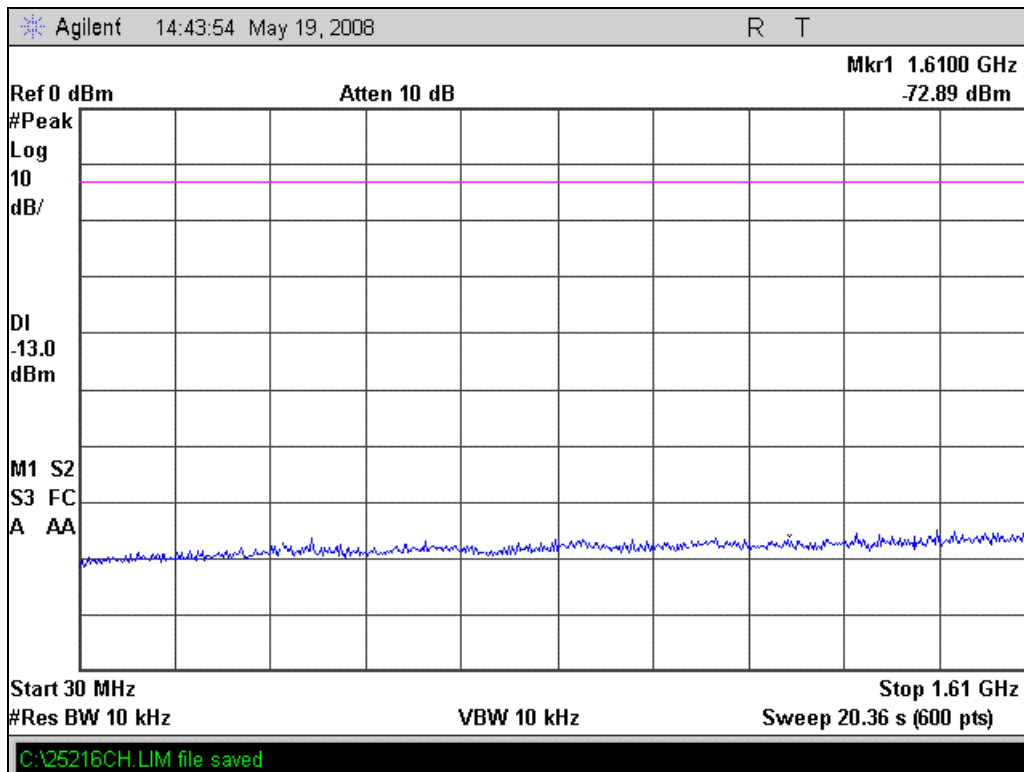
16-QAM Wideband Unwanted Emissions Plots

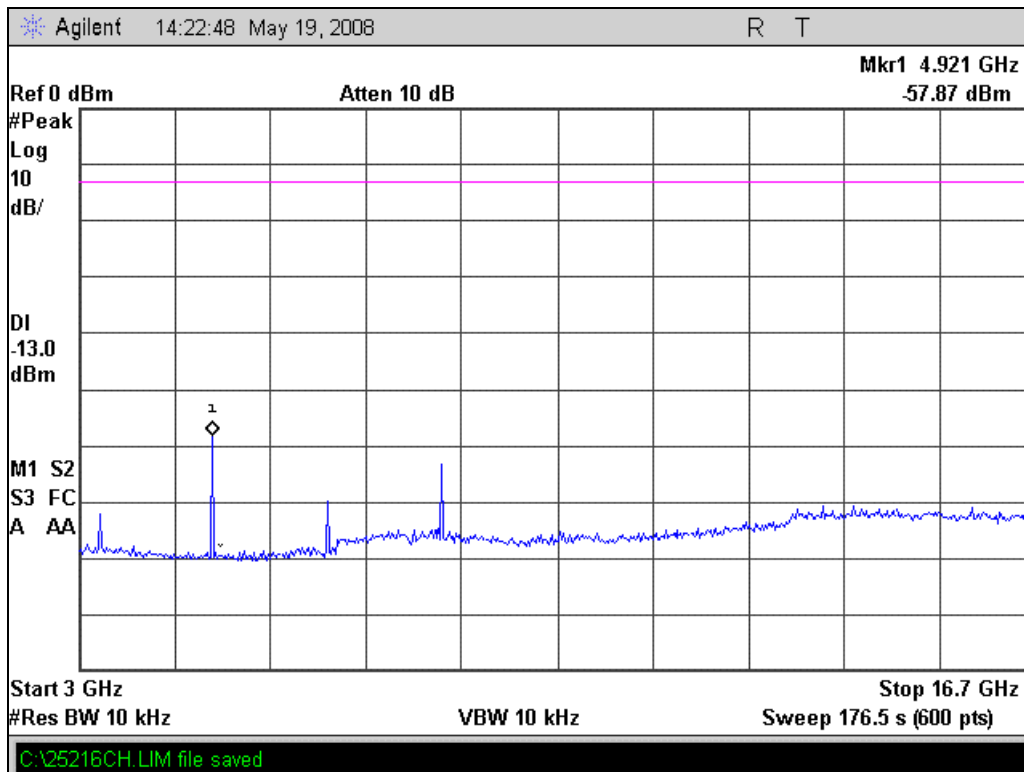
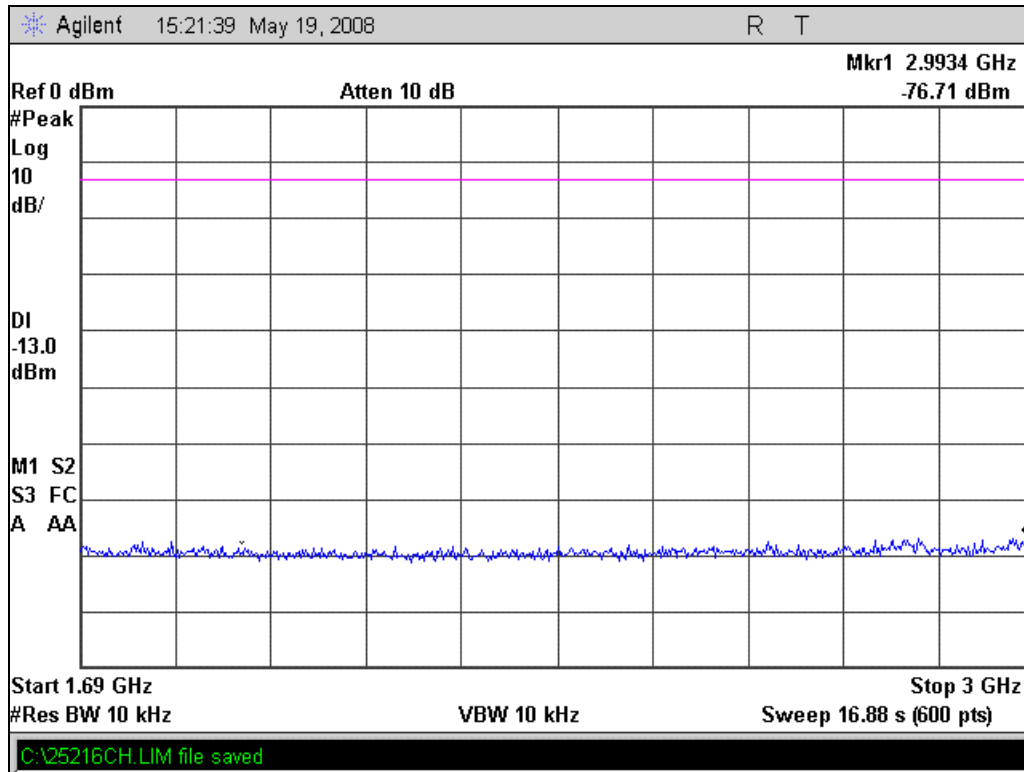
1626.6 MHz



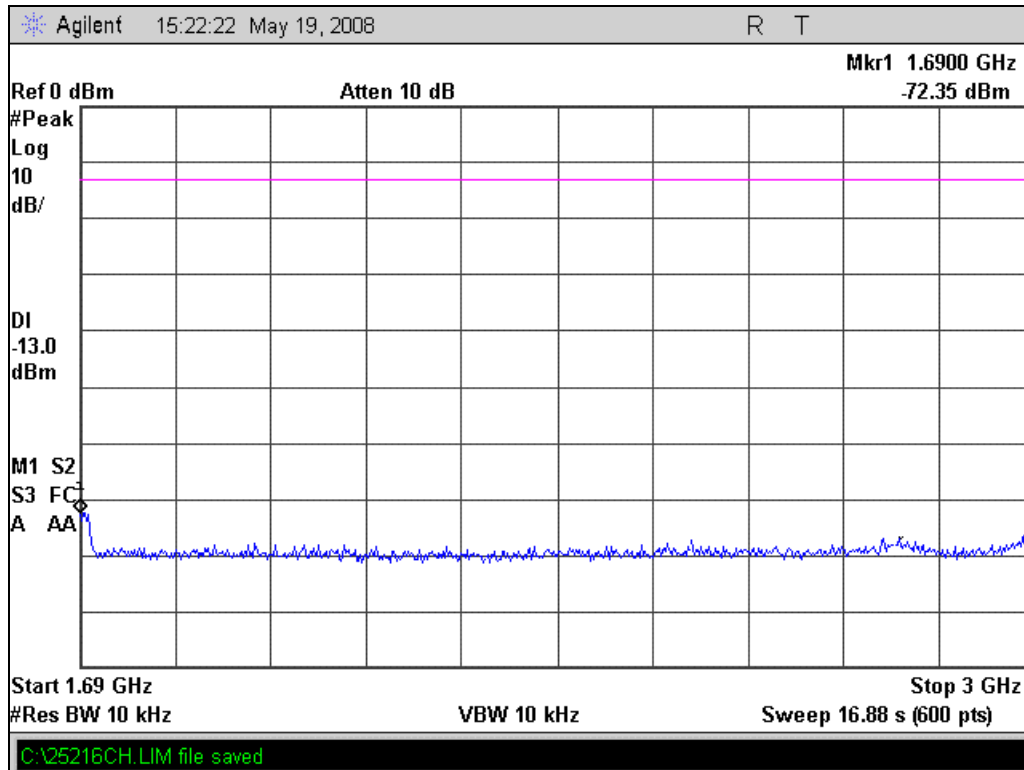
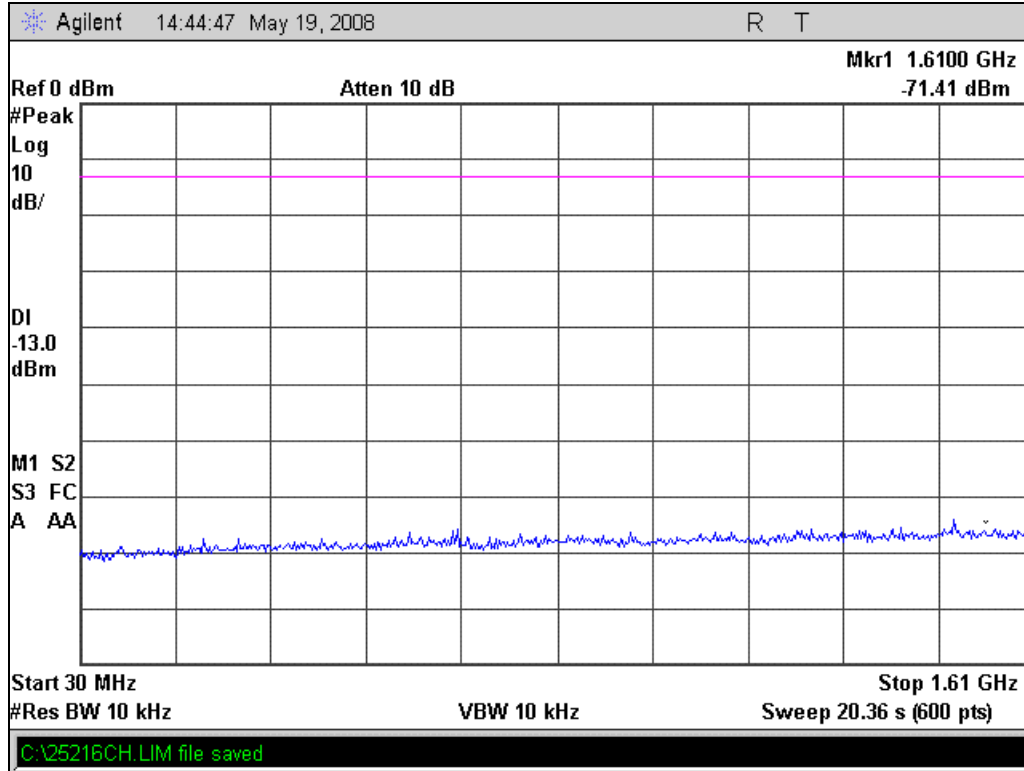


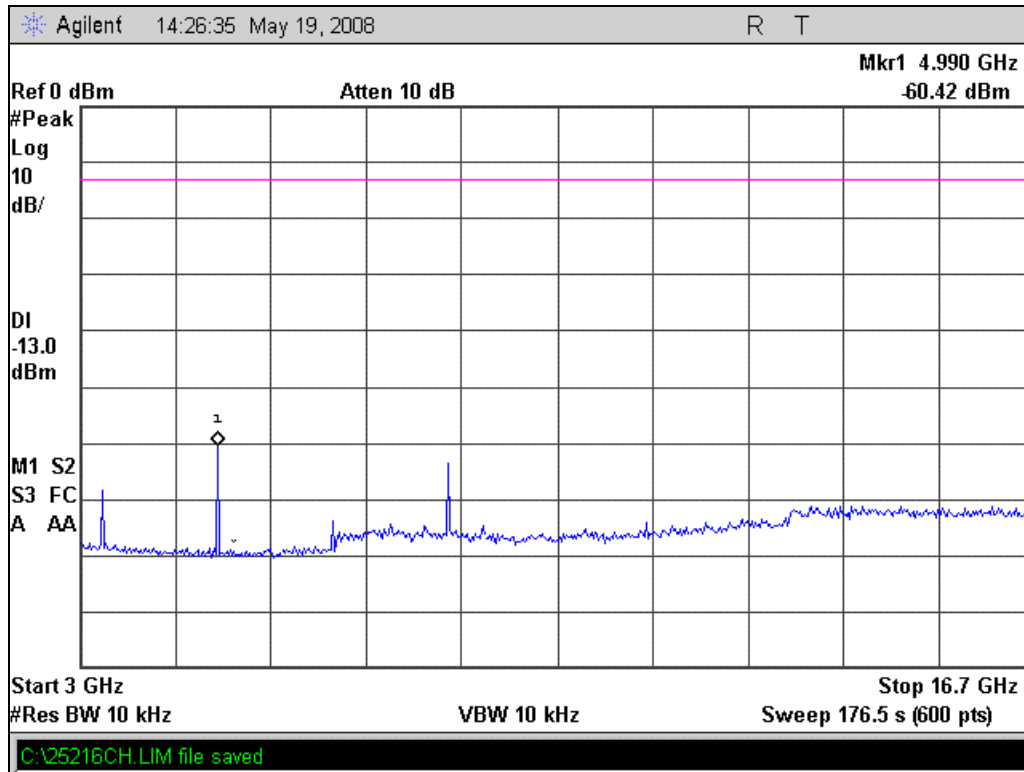
1643.5 MHz





1660.4 MHz





Name Of Test: Occupied Bandwidth
Specification: 2.1049
Test Equipment: As Per Attached Page

Test Date: 5/19/2008

Test Procedure

The UUT was connected directly to a spectrum analyzer. The occupied bandwidth of the modulated output was measured and plotted.



Test results

PI/4 QPSK Narrowband Occupied Bandwidth Results Table

| Frequency (MHz) | Measured Bandwidth (KHz) |
|-----------------|--------------------------|
| 1626.51 | 19.4113 |
| 1643.5 | 19.2728 |
| 1660.49 | 19.3687 |

PI/4 QPSK Wideband Occupied Bandwidth Results Table

| Frequency (MHz) | Measured Bandwidth (KHz) |
|-----------------|--------------------------|
| 1626.6 | 167.2017 |
| 1643.5 | 167.3476 |
| 1660.4 | 166.6122 |

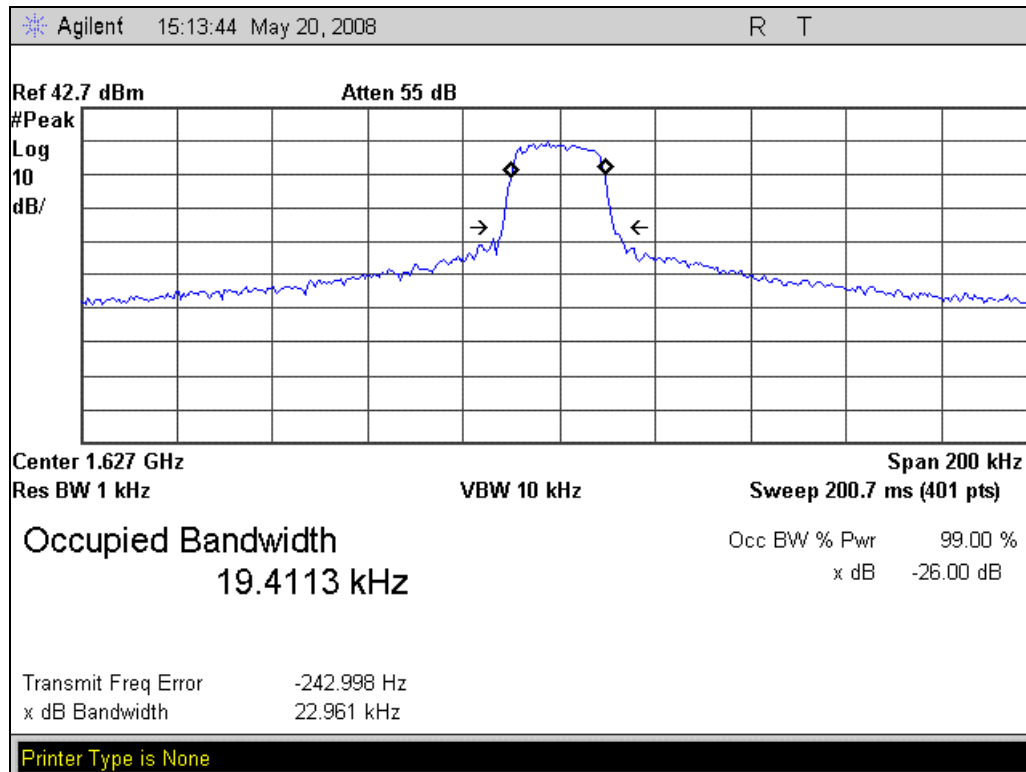
16-QAM Narrowband Occupied Bandwidth Results Table

| Frequency (MHz) | Measured Bandwidth (KHz) |
|-----------------|--------------------------|
| 1626.51 | 37.3746 |
| 1643.5 | 37.4202 |
| 1660.49 | 37.5794 |

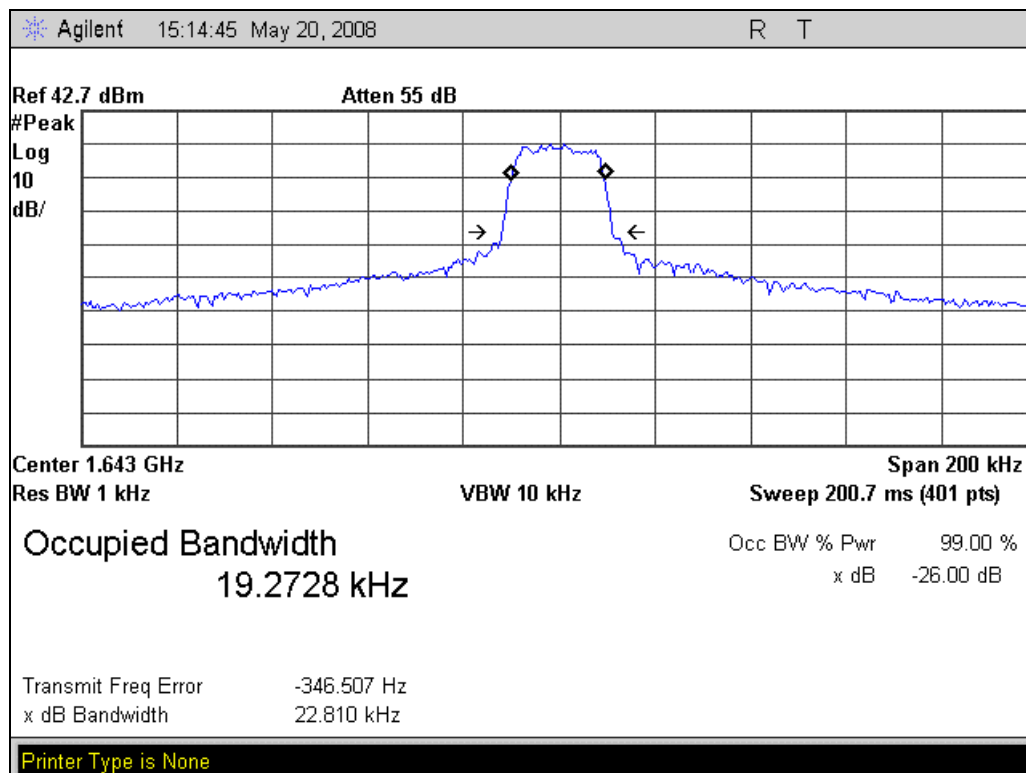
16-QAM Wideband Occupied Bandwidth Results Table

| Frequency (MHz) | Measured Bandwidth (KHz) |
|-----------------|--------------------------|
| 1626.6 | 166.6858 |
| 1643.5 | 166.7089 |
| 1660.4 | 167.3590 |

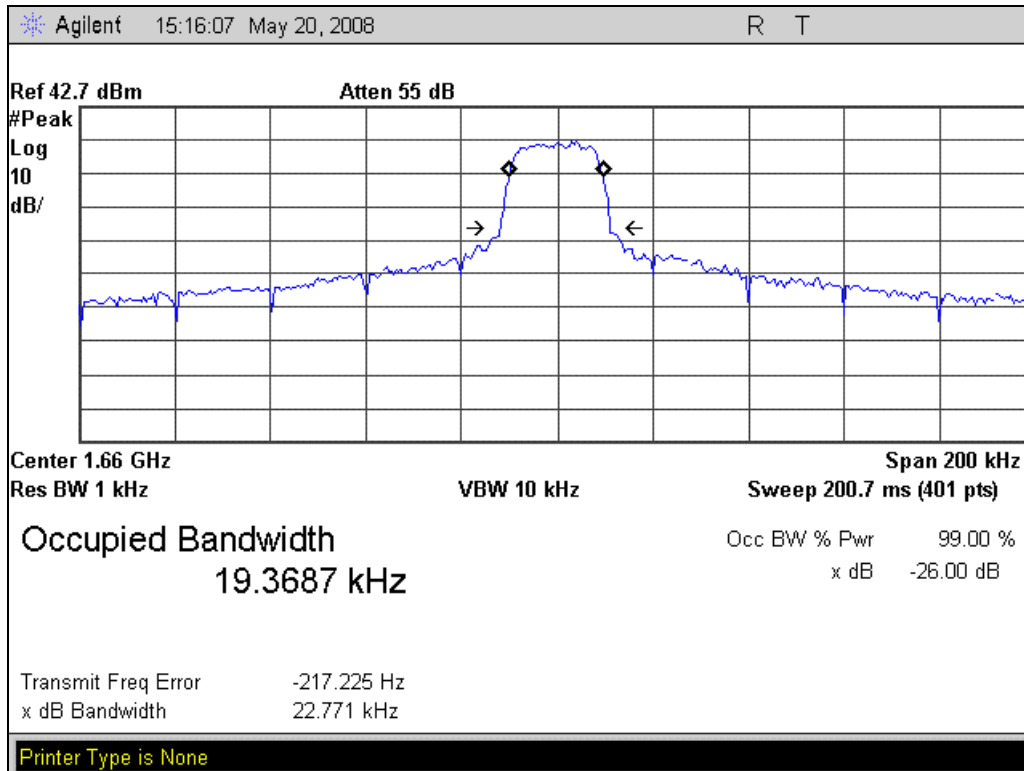
PI/4 QPSK Narrowband 1626.51 MHz



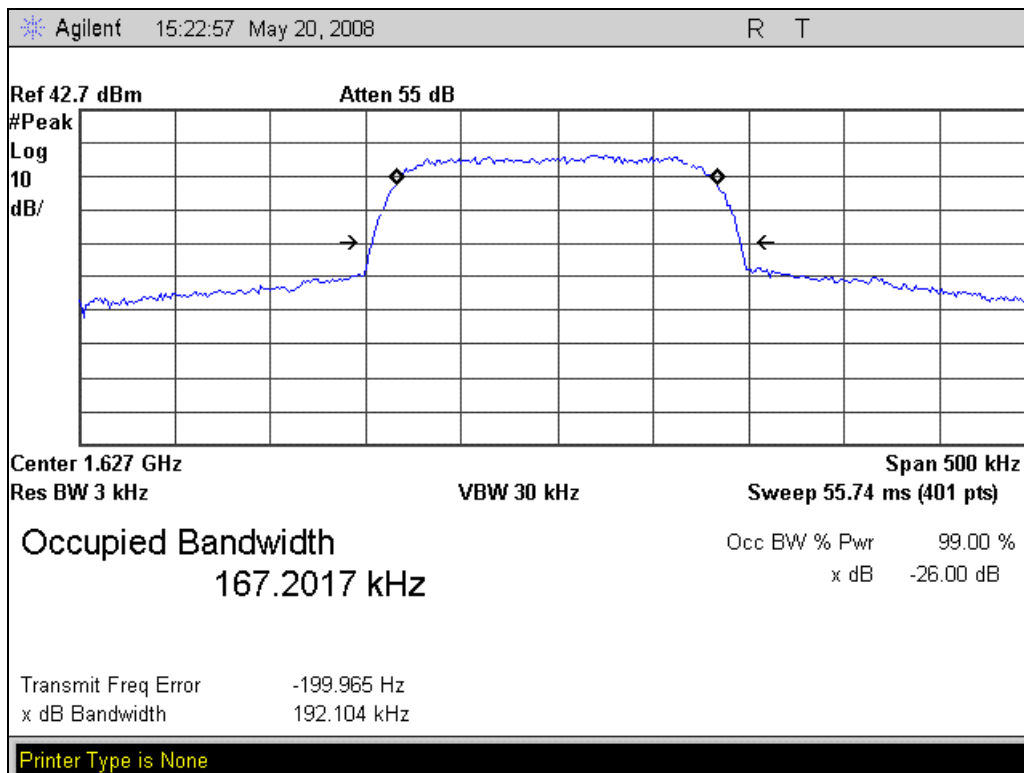
PI/4 QPSK Narrowband 1643.5 MHz



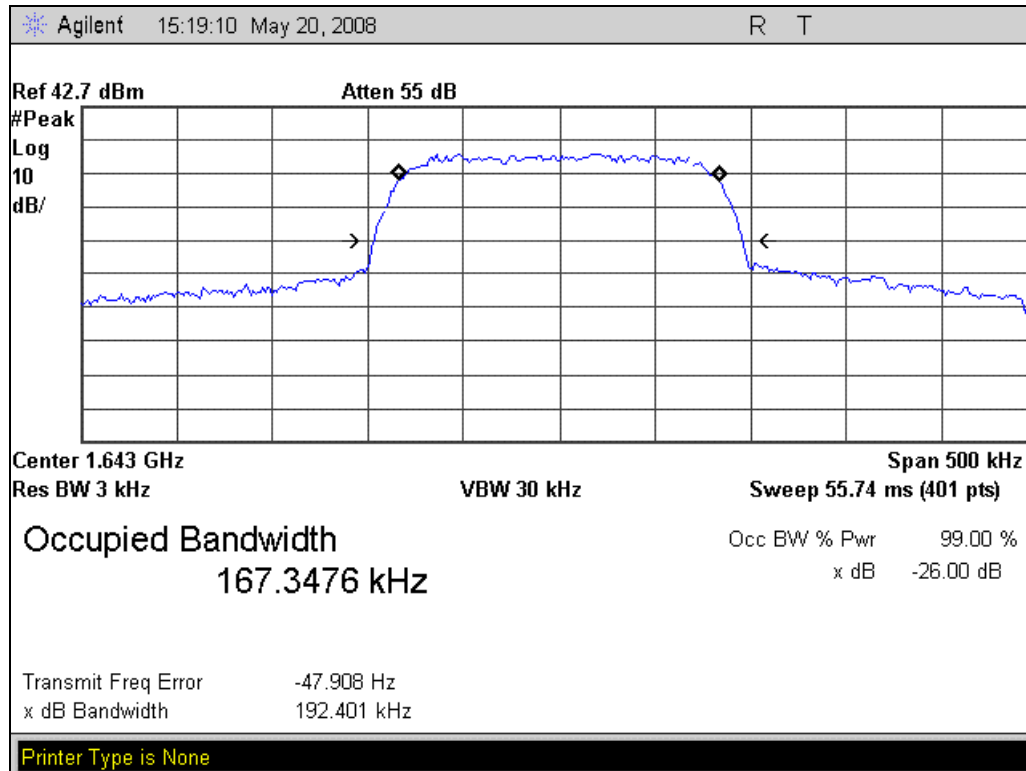
PI/4 QPSK Narrowband 1660.49 MHz



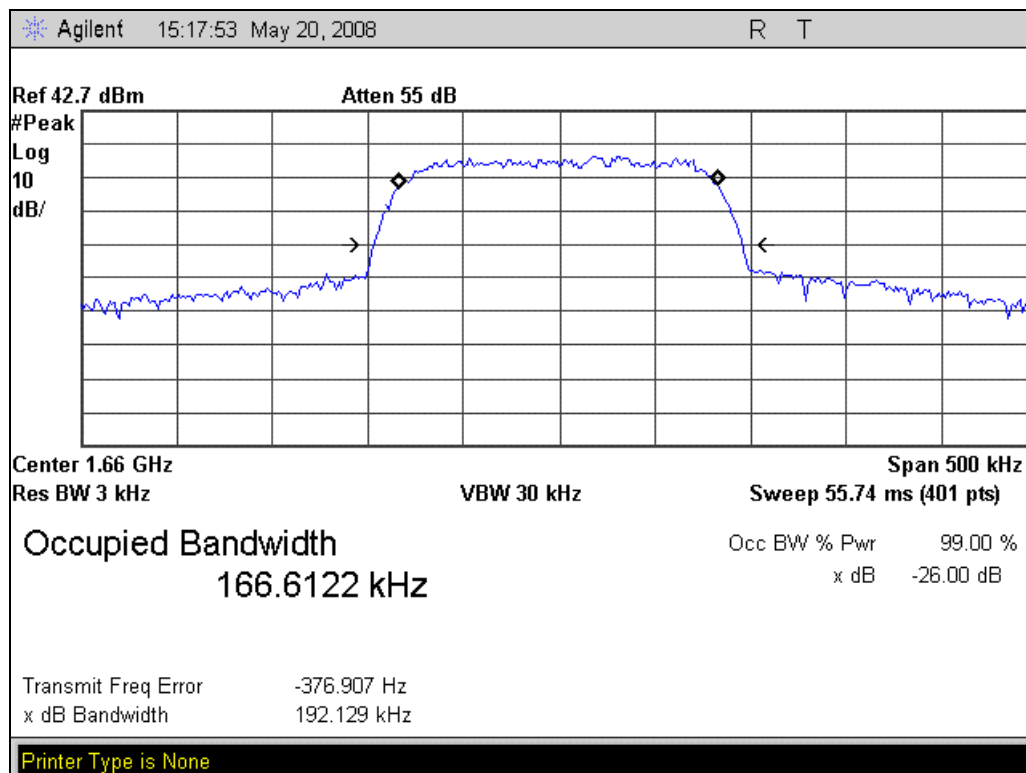
PI/4 QPSK Wideband 1626.6 MHz



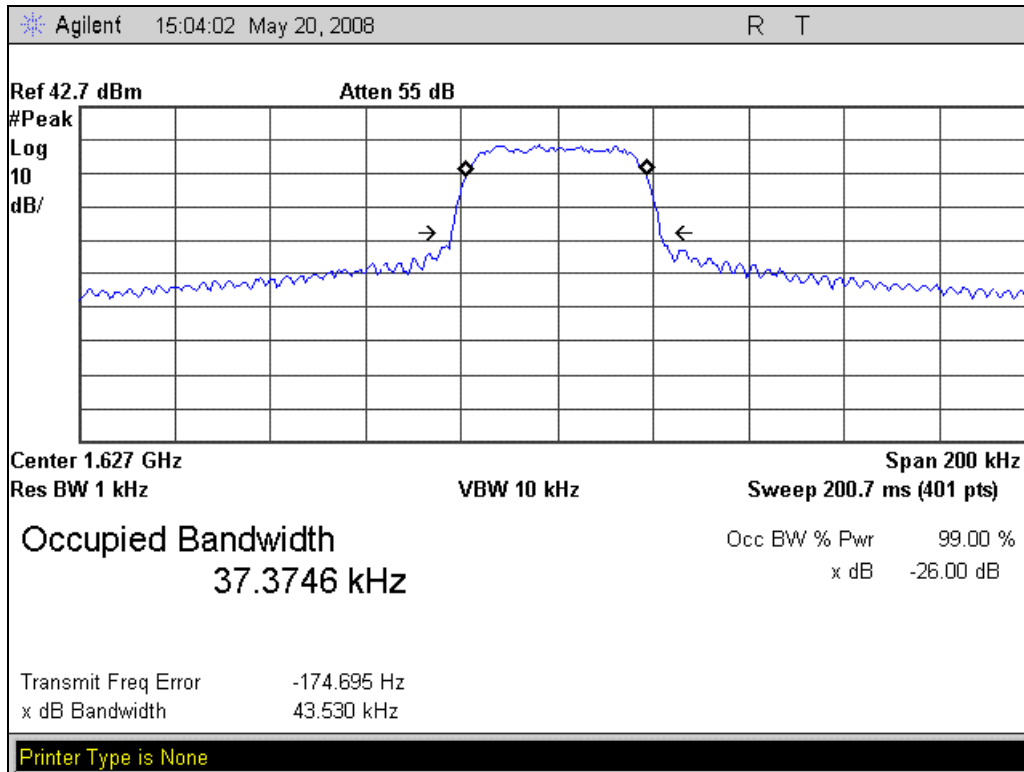
PI/4 QPSK Wideband 1643.5 MHz



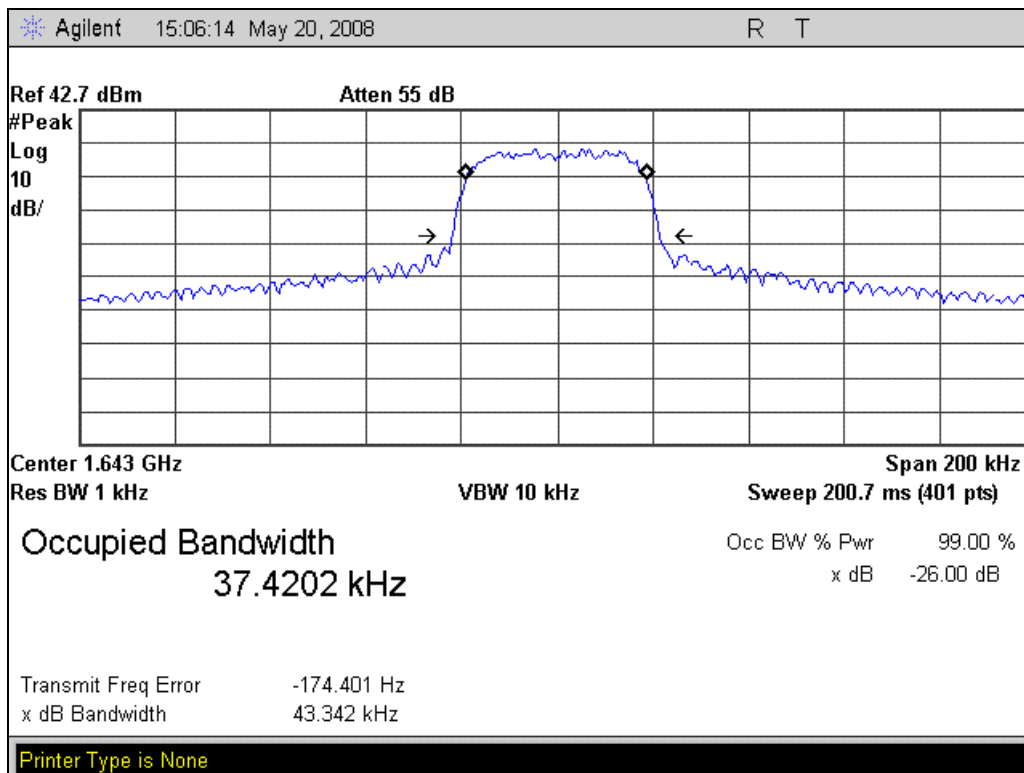
PI/4 QPSK Wideband 1660.4 MHz



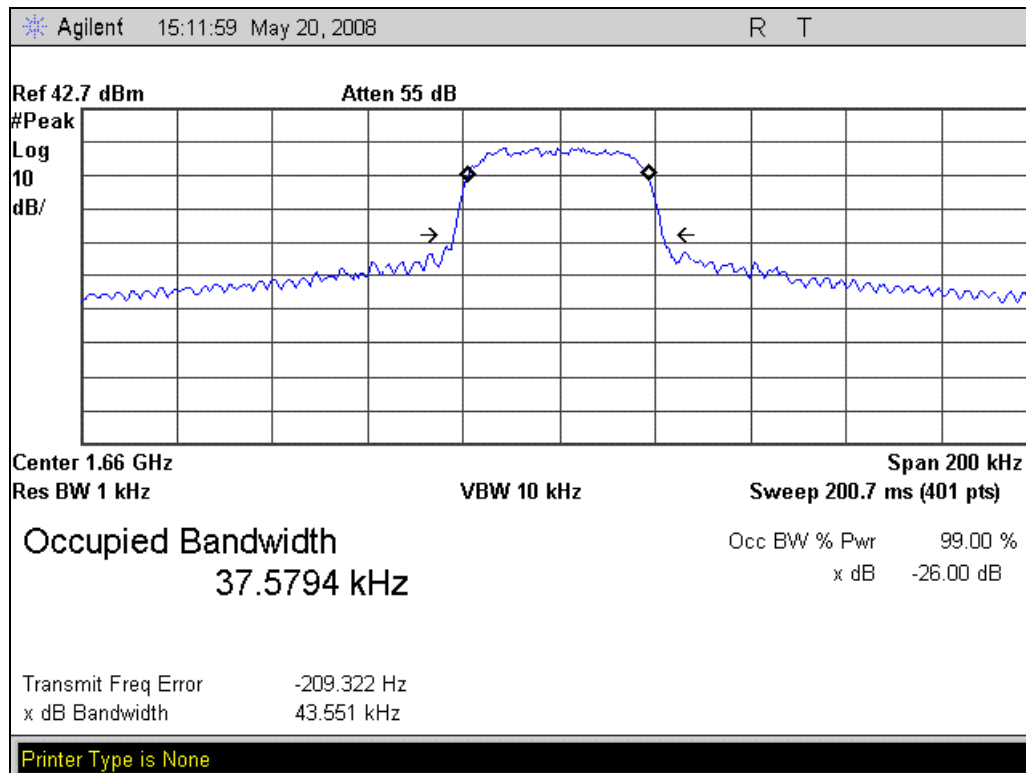
QAM Narrowband 1626.51 MHz



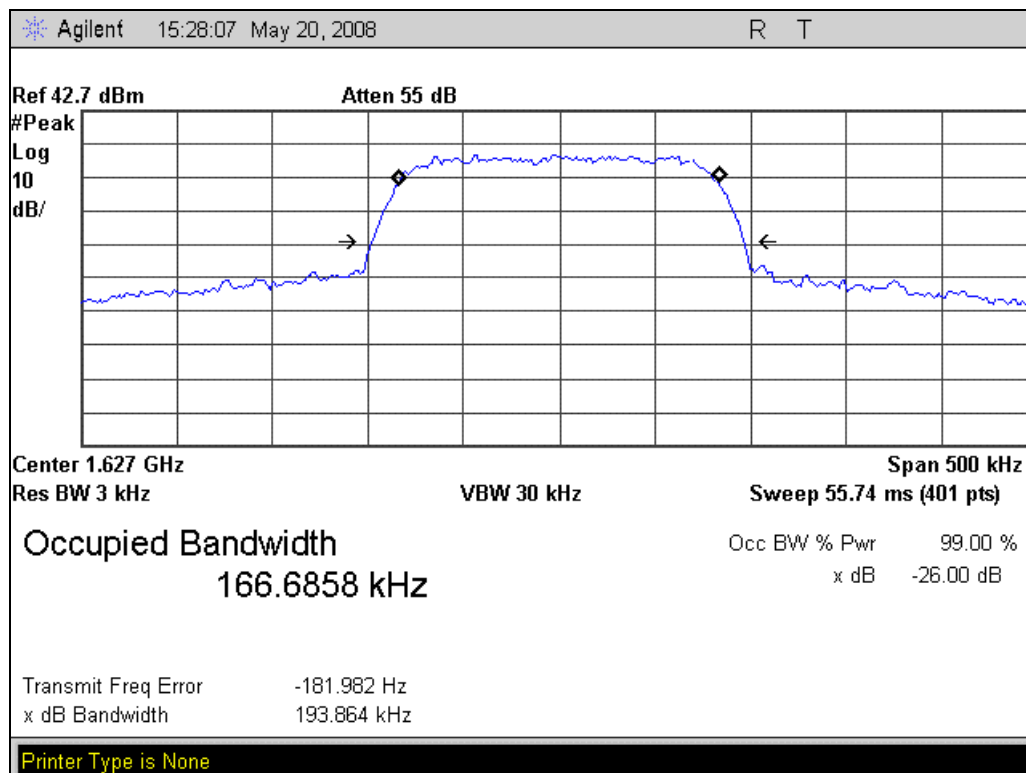
QAM Narrowband 1643.5 MHz



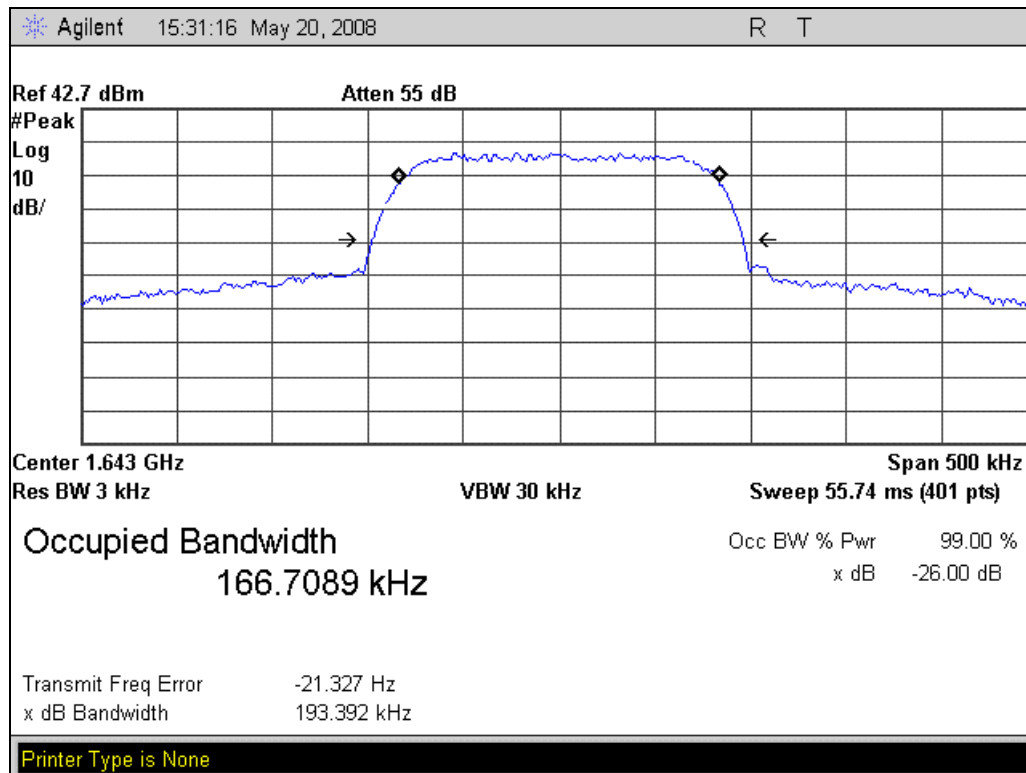
QAM Narrowband 1660.49 MHz



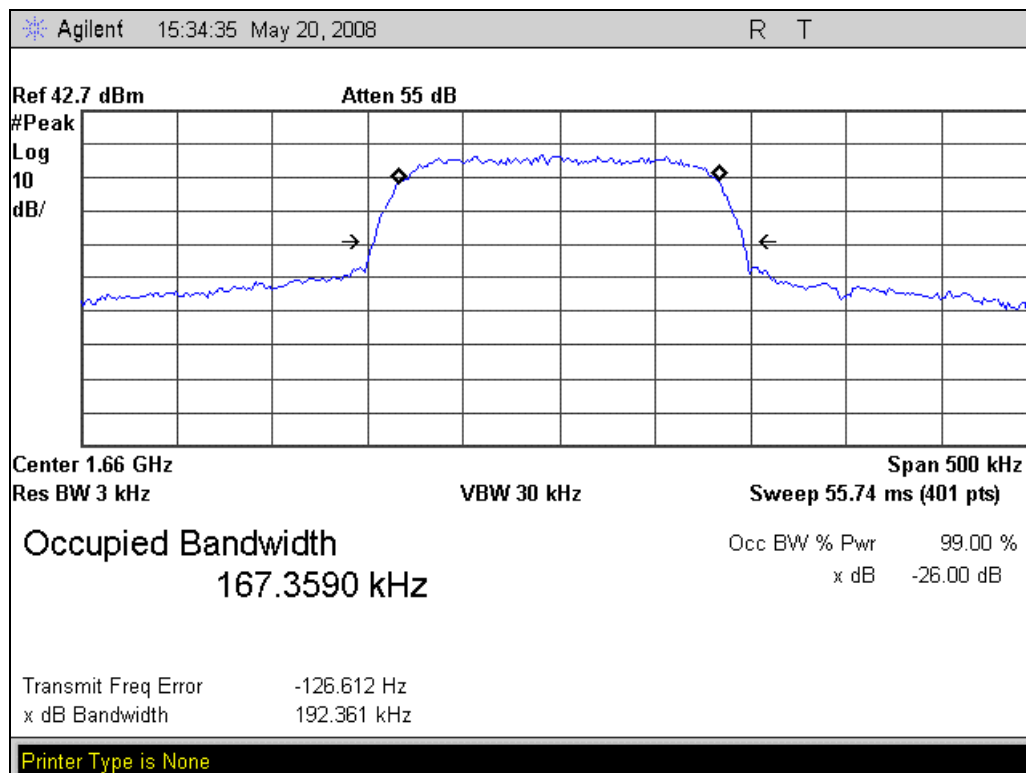
QAM Wideband 1626.6 MHz



QAM Wideband 1643.5 MHz



QAM Wideband 1660.4 MHz



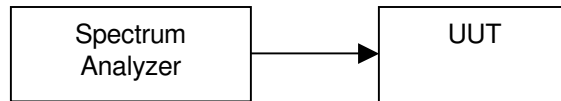
Name Of Test: Emission Masks
Specification: 25.202(f)
Test Equipment Utilized As Per Attached Page

Test Date: 5/19/2008

Test Procedure

The UUT was connected directly to a spectrum analyzer to verify that the UUT met the requirements for emission mask. The reference level was offset for the peak power output with the resolution bandwidth set for greater than 3 times the occupied bandwidth of a modulated signal. The emission masks for both modulation types and occupied bandwidths were measured and plotted.

Test Setup



Test results

PI/4 QPSK Narrowband Occupied Bandwidth Results Table

| Frequency (MHz) | Result |
|-----------------|--------|
| 1626.51 | Pass |
| 1643.5 | Pass |
| 1660.49 | Pass |

PI/4 QPSK Wideband Occupied Bandwidth Results Table

| Frequency (MHz) | Result |
|-----------------|--------|
| 1626.6 | Pass |
| 1643.5 | Pass |
| 1660.4 | Pass |

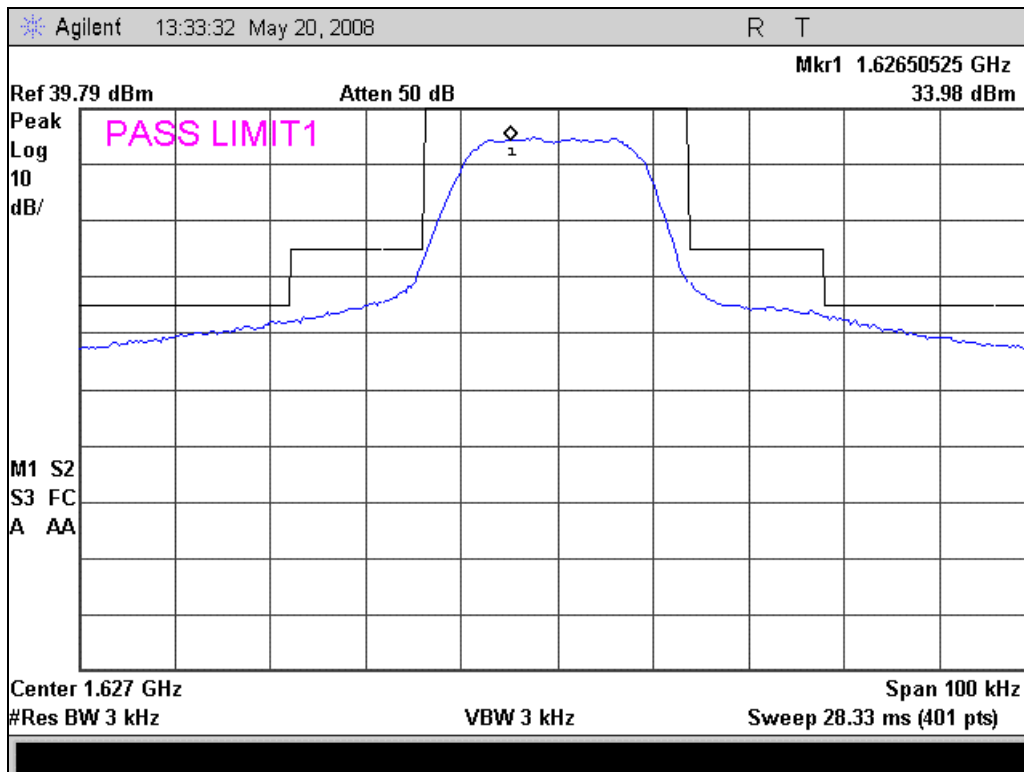
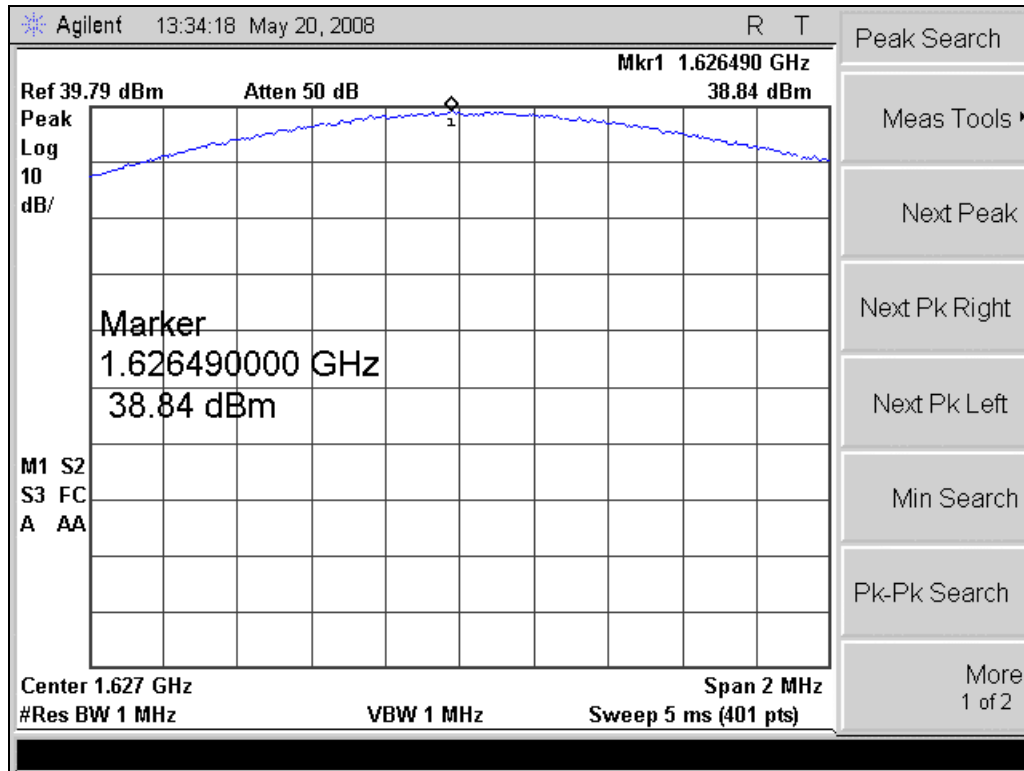
16-QAM Narrowband Occupied Bandwidth Results Table

| Frequency (MHz) | Result |
|-----------------|--------|
| 1626.51 | Pass |
| 1643.5 | Pass |
| 1660.49 | Pass |

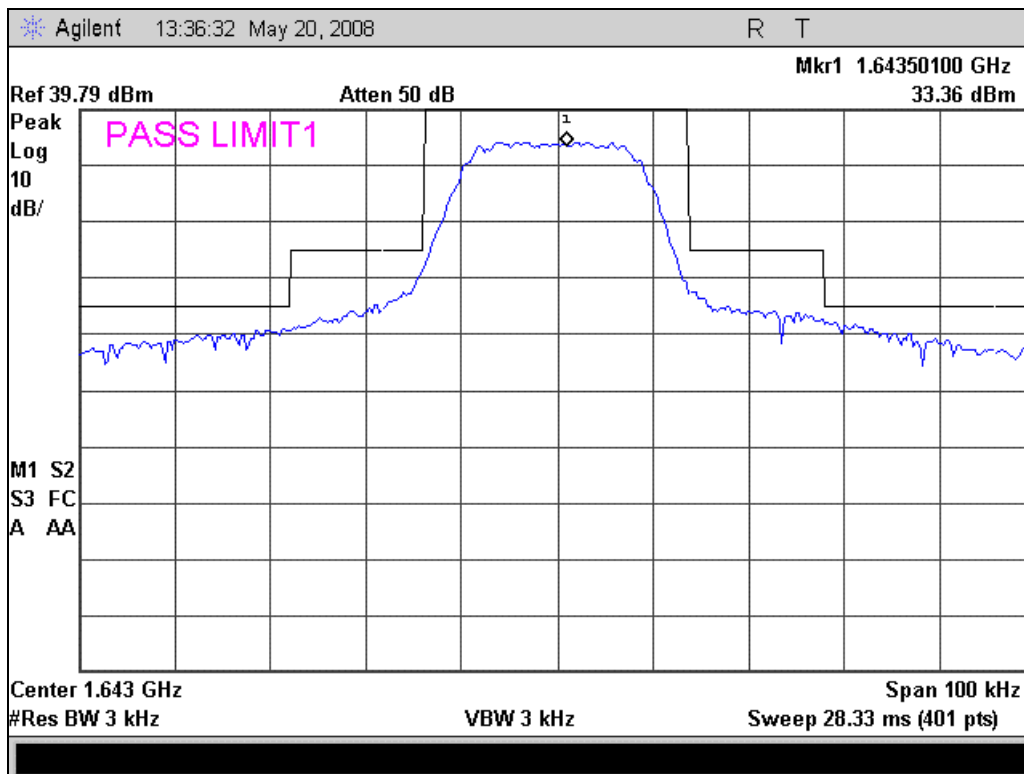
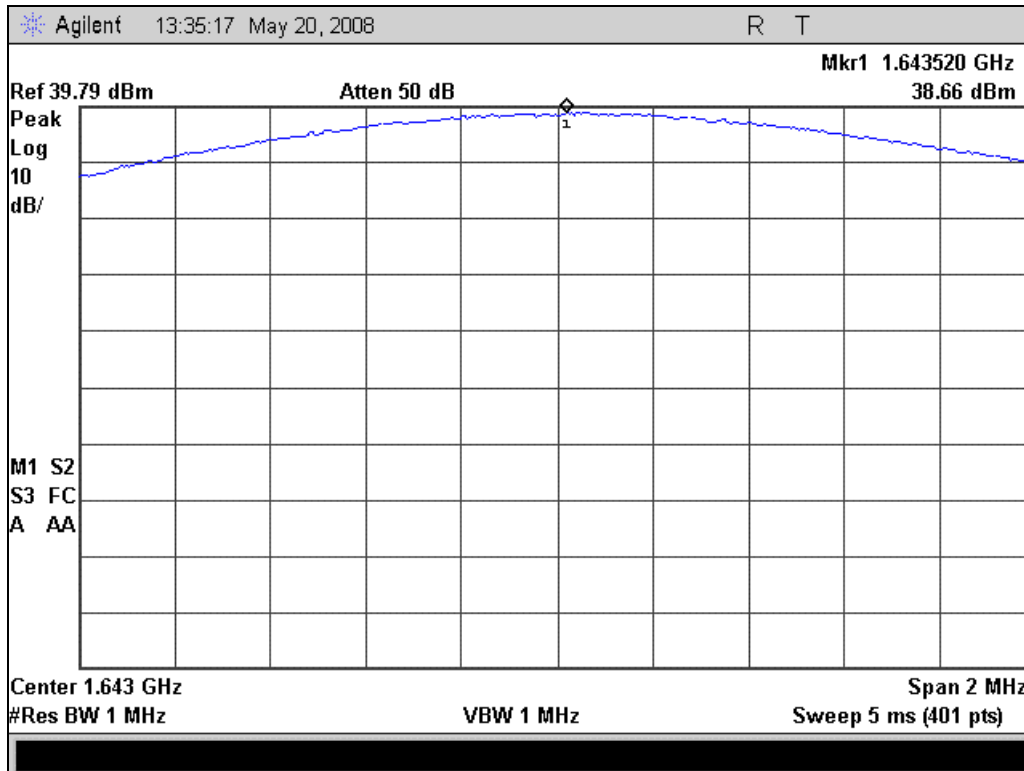
16-QAM Wideband Occupied Bandwidth Results Table

| Frequency (MHz) | Result |
|-----------------|--------|
| 1626.6 | Pass |
| 1643.5 | Pass |
| 1660.4 | Pass |

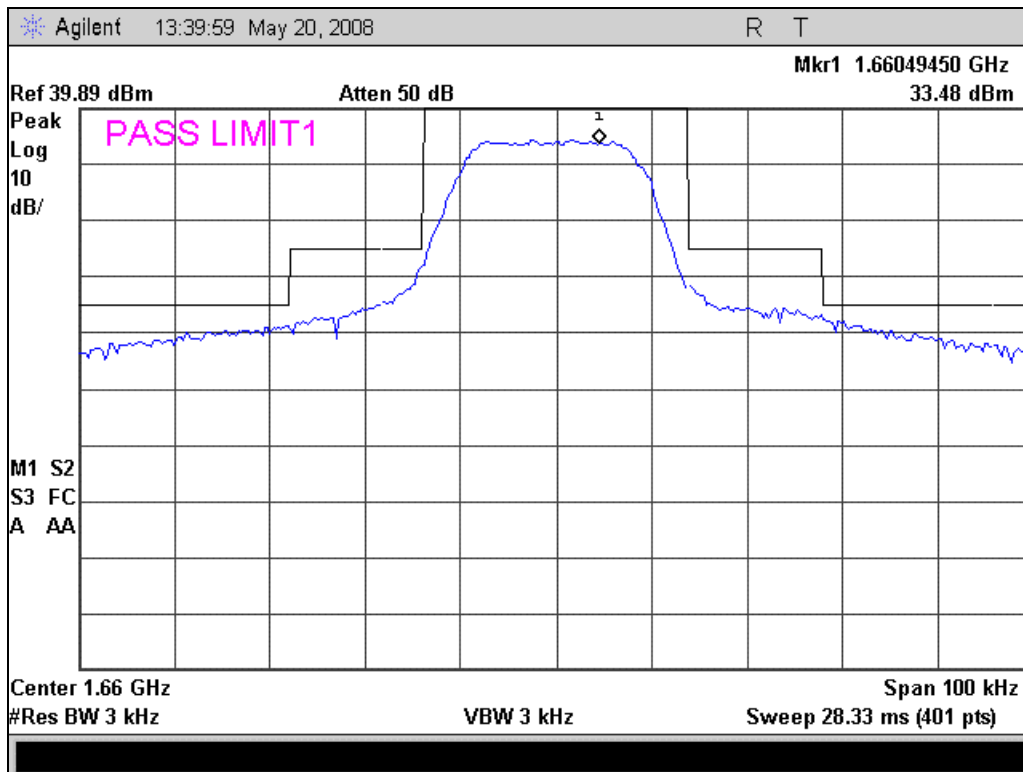
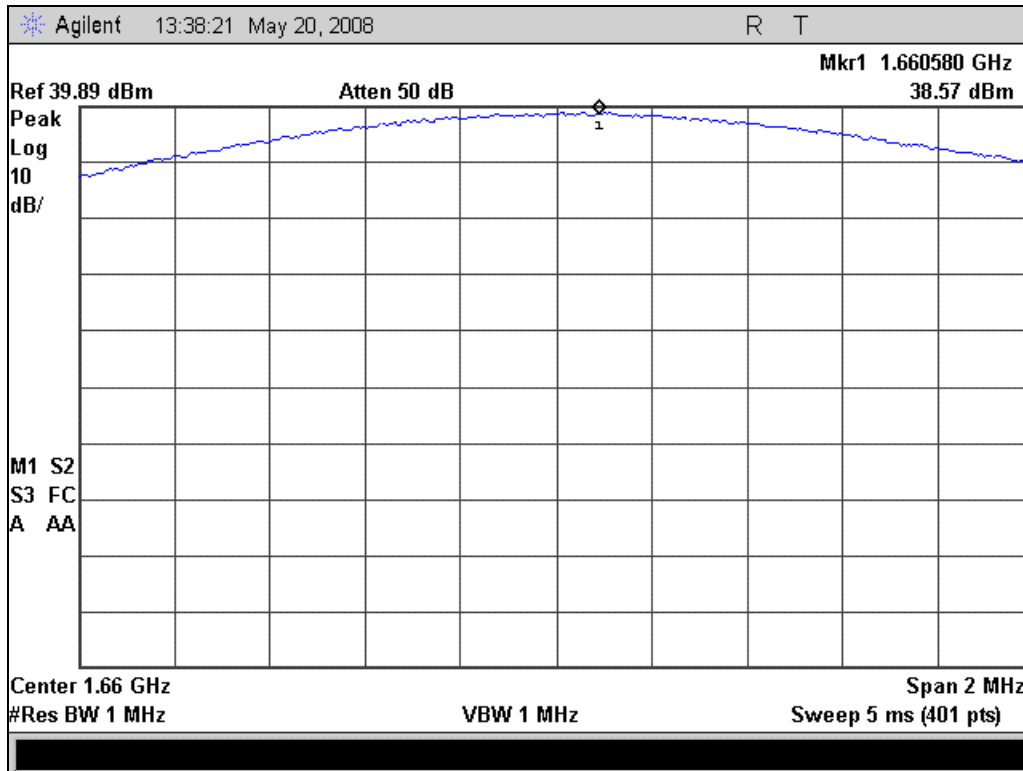
PI/4 QPSK Narrowband 1626.51 MHz



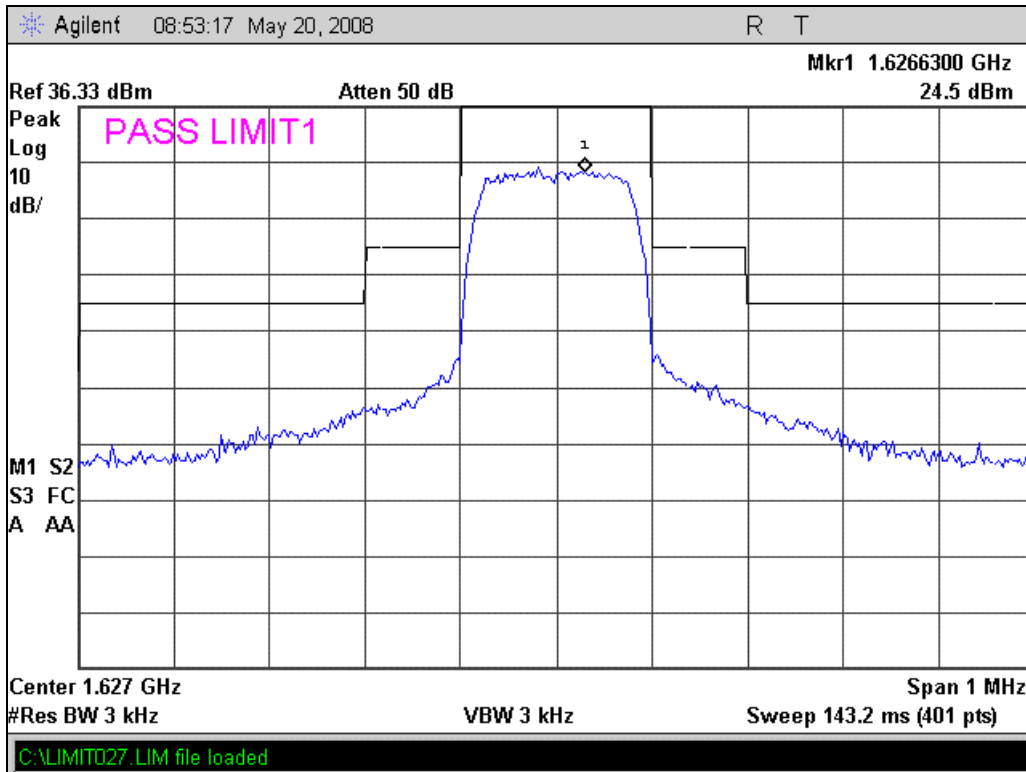
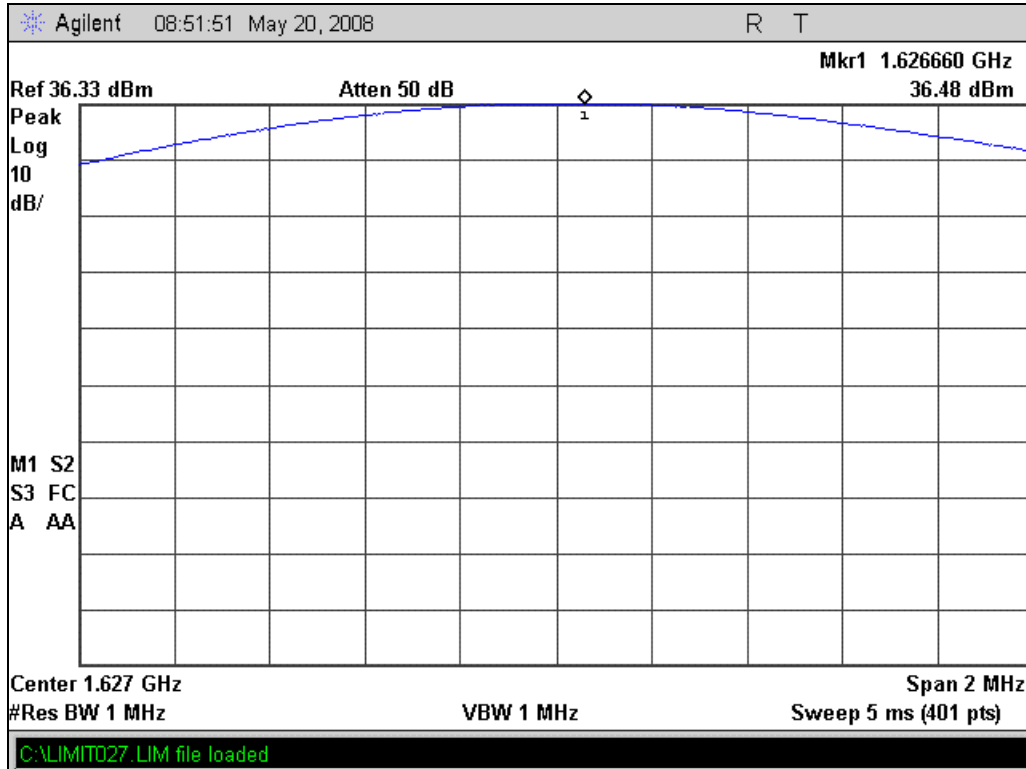
PI/4 QPSK Narrowband 1643.5 MHz



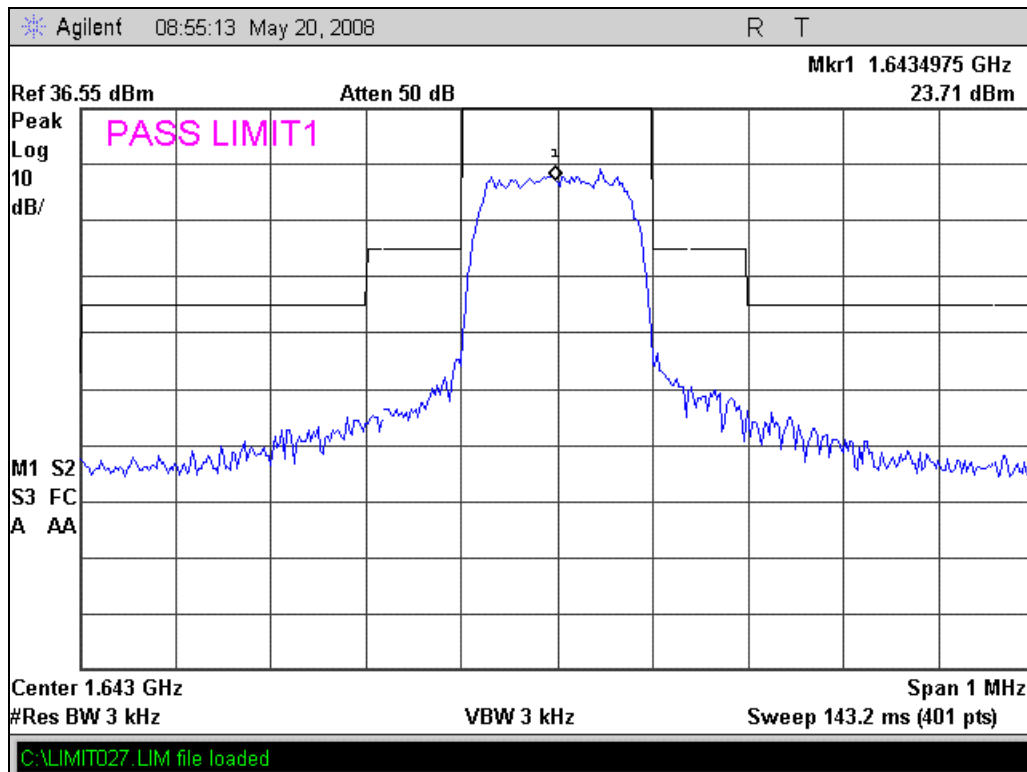
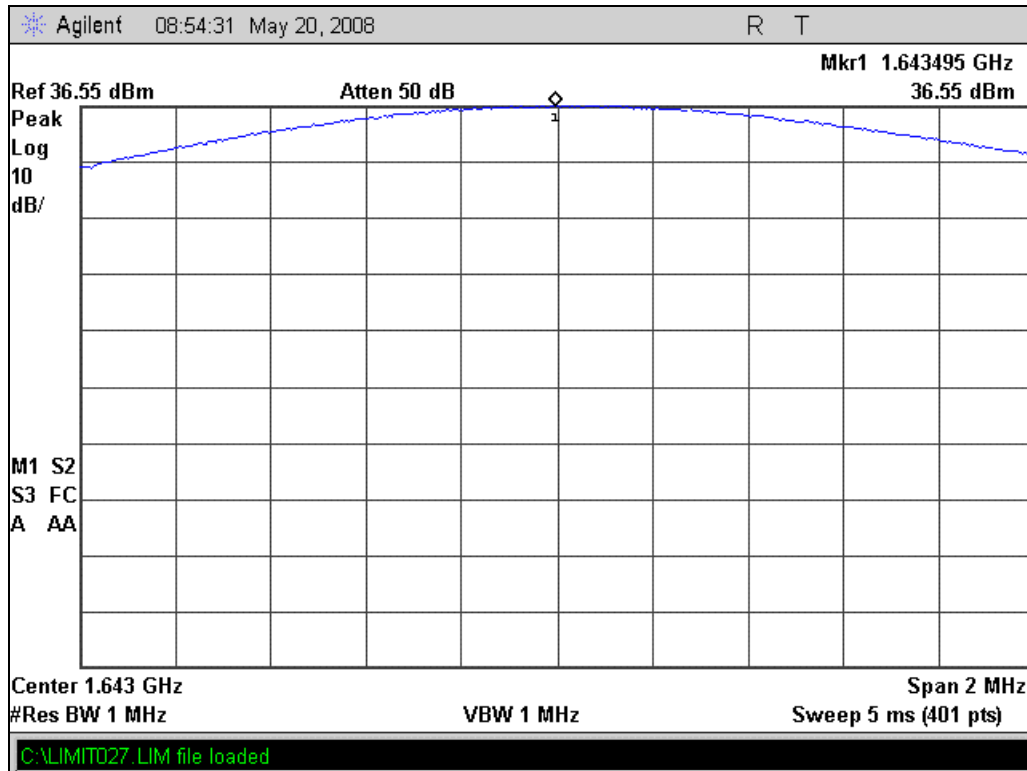
PI/4 QPSK Narrowband 1660.49 MHz



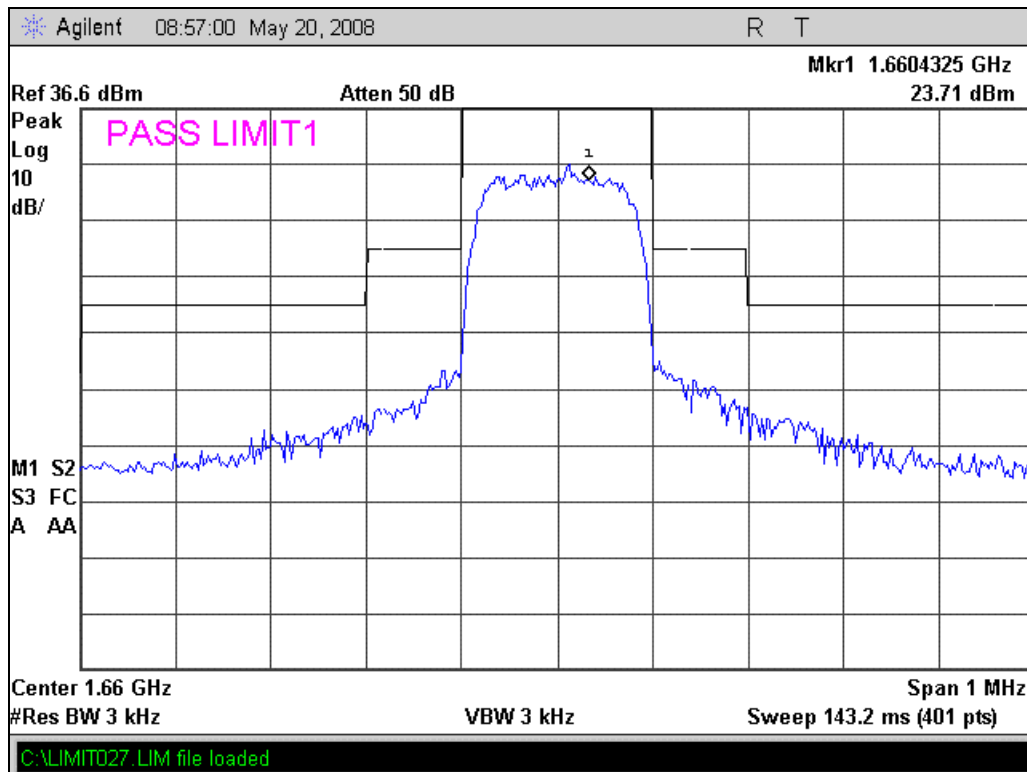
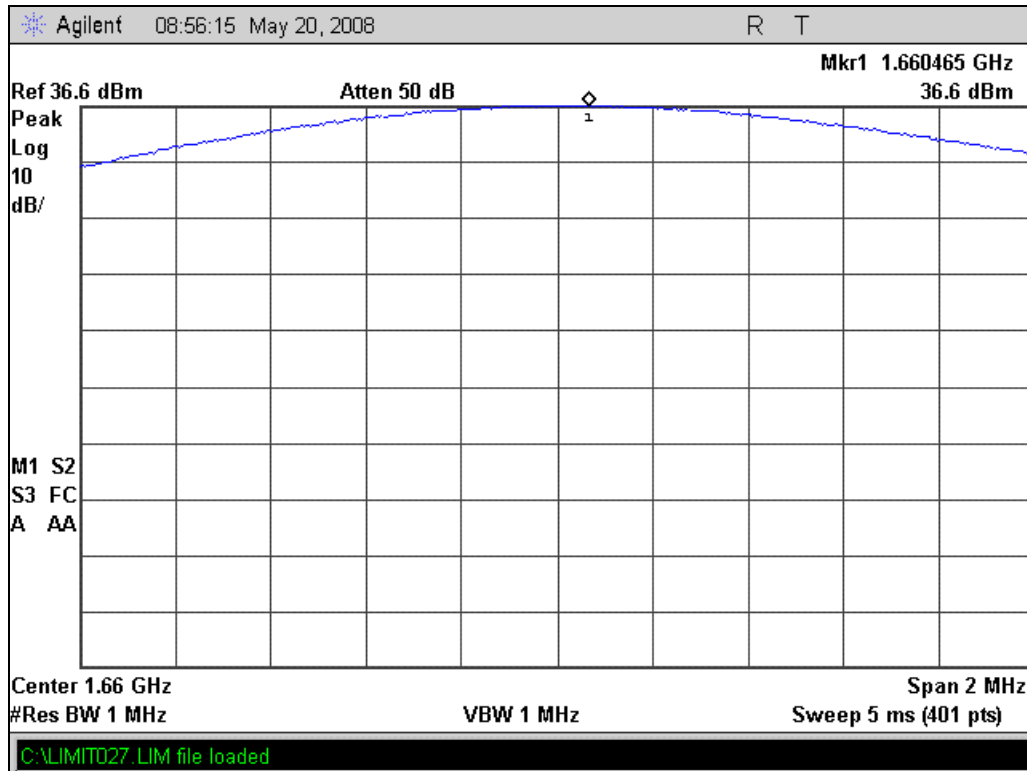
PI/4 QPSK Wideband 1626.6 MHz



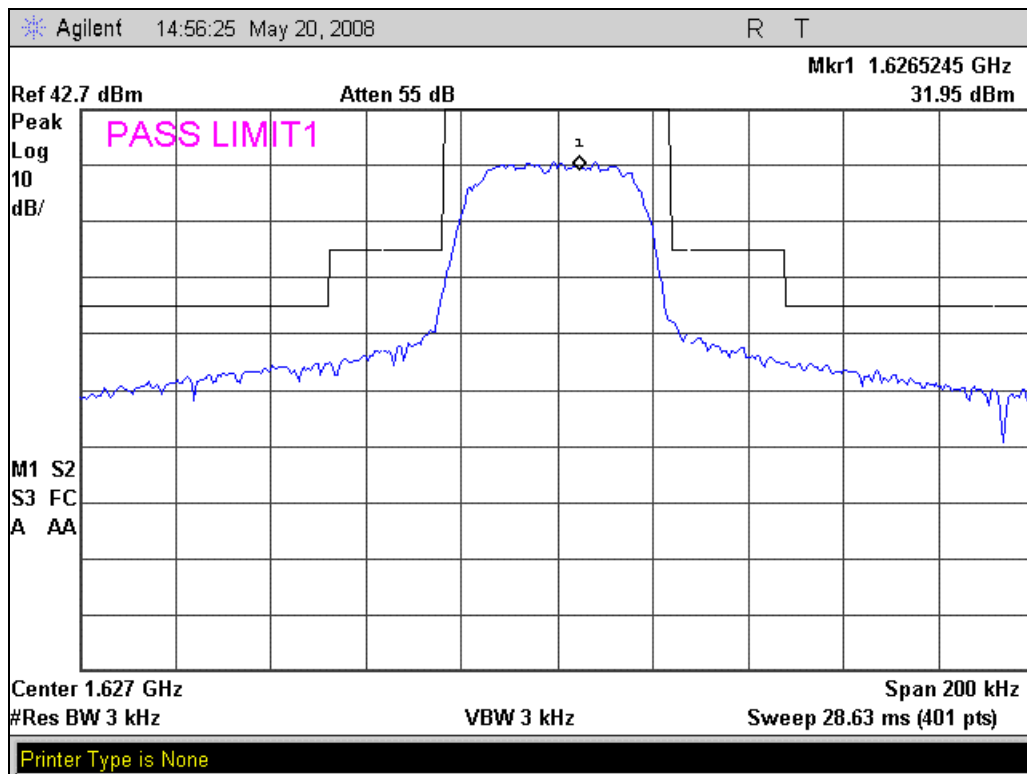
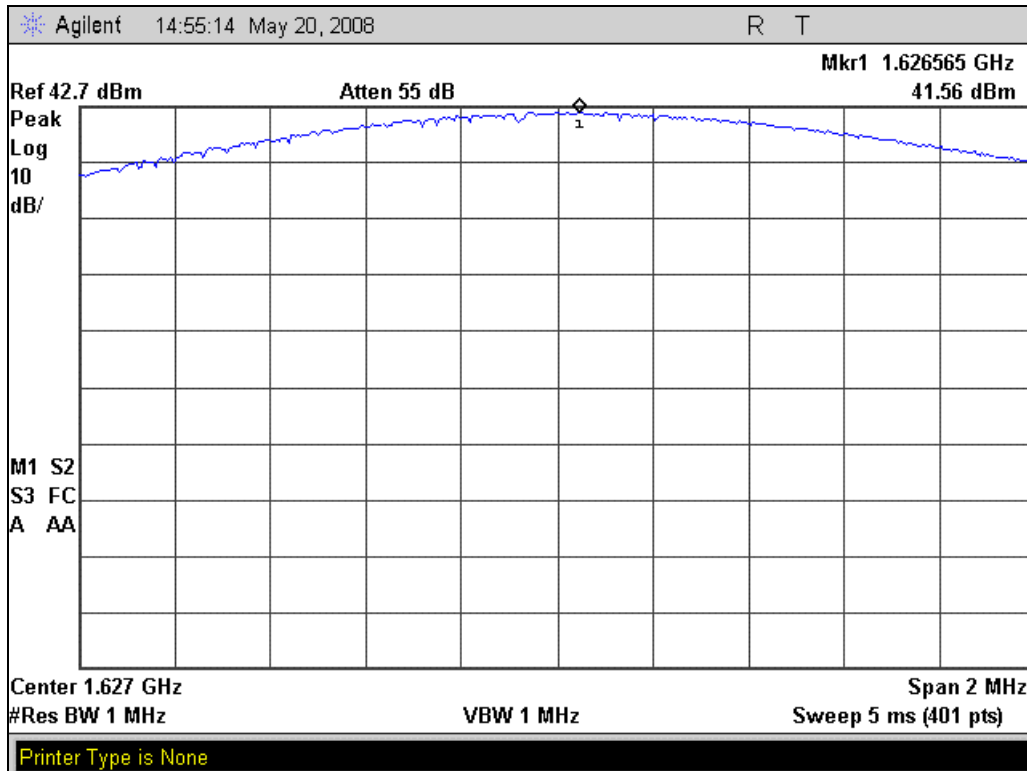
PI/4 QPSK Wideband 1643.5 MHz



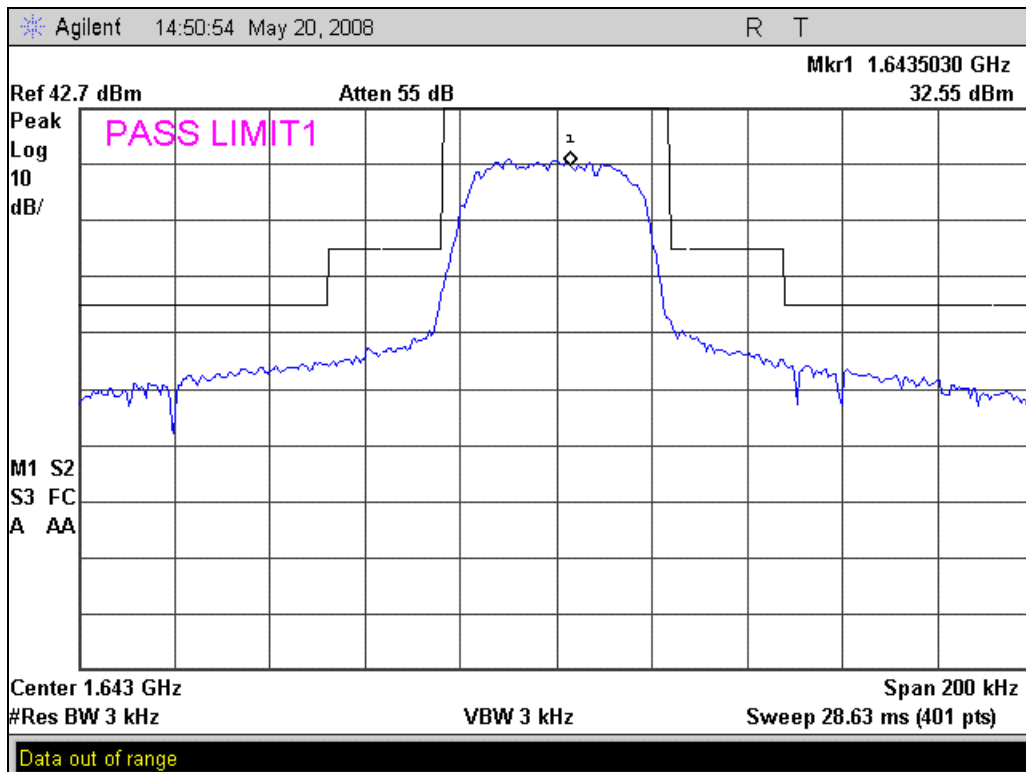
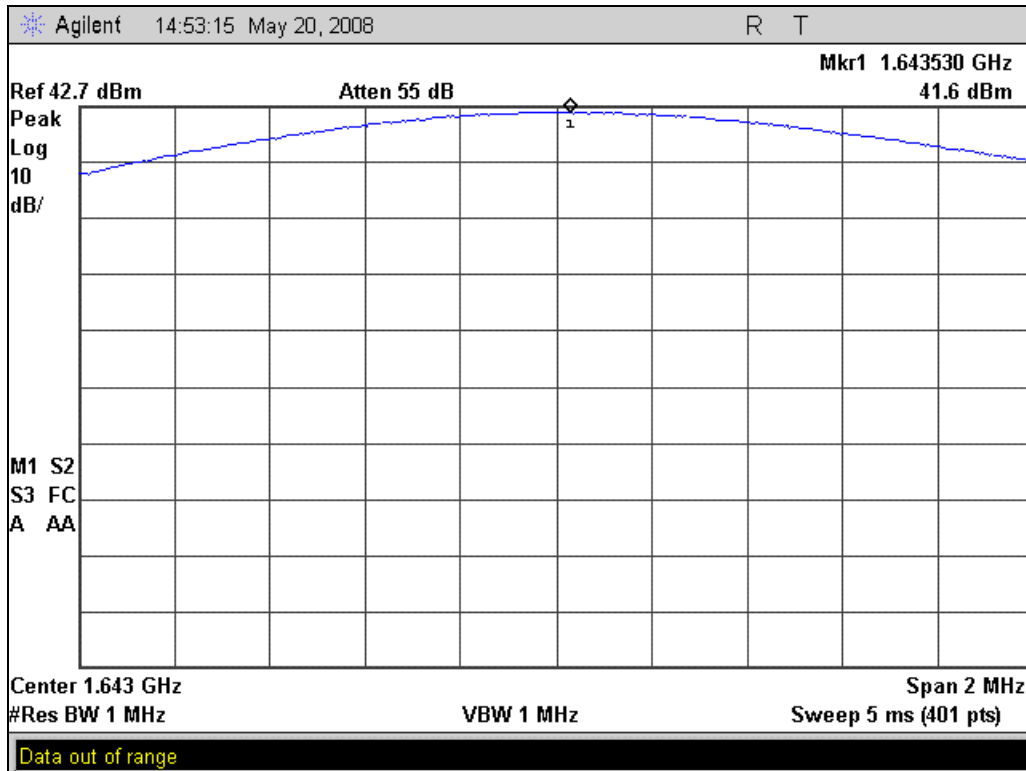
PI/4 QPSK Wideband 1660.4 MHz



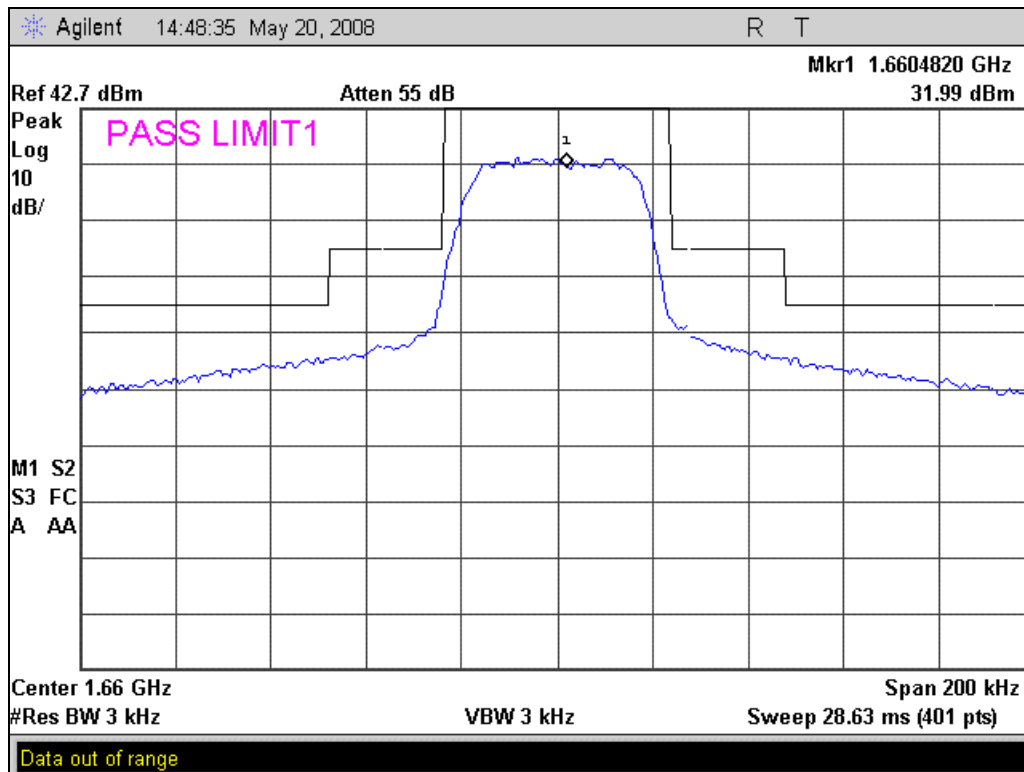
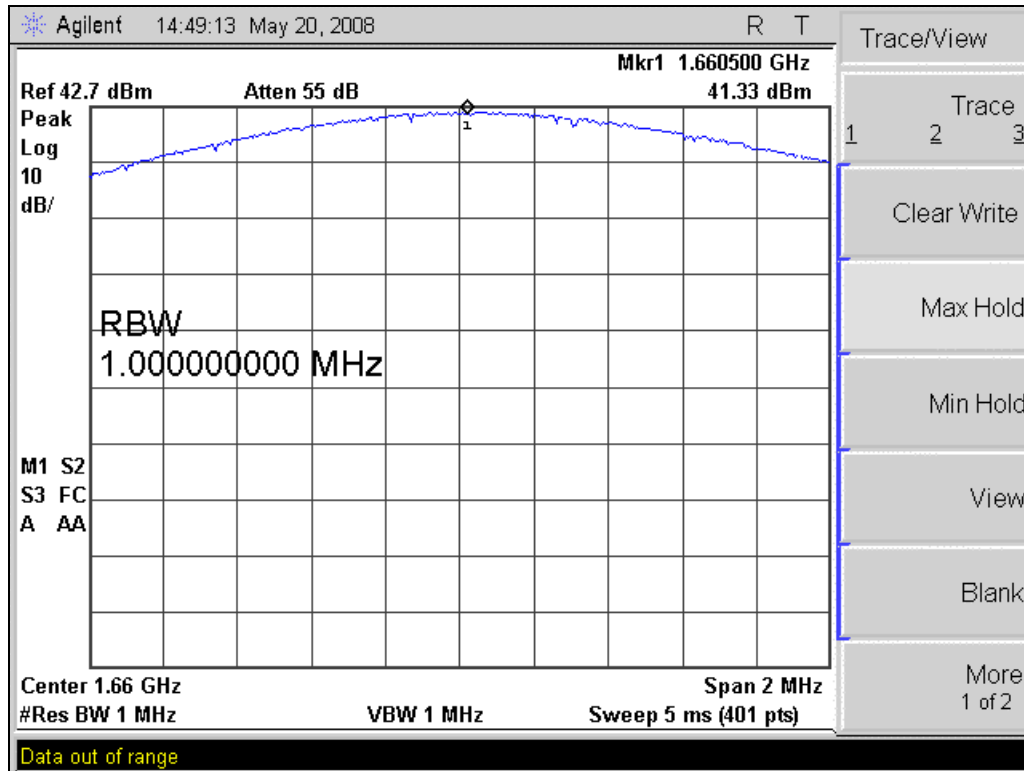
QAM Narrowband 1626.51 MHz



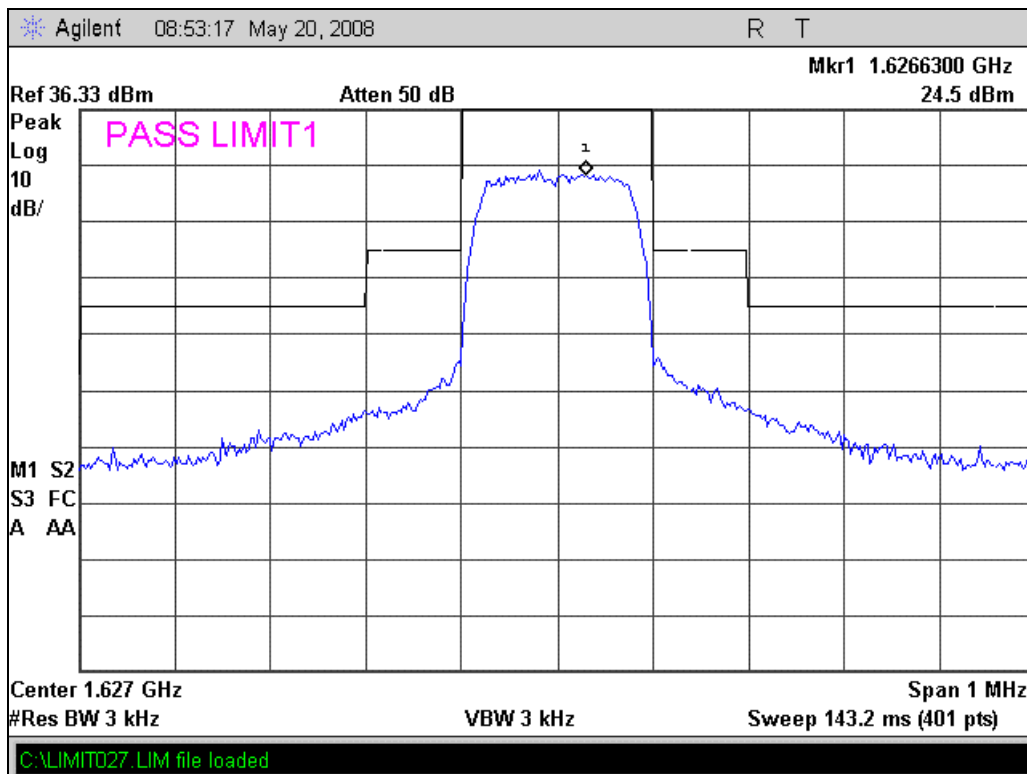
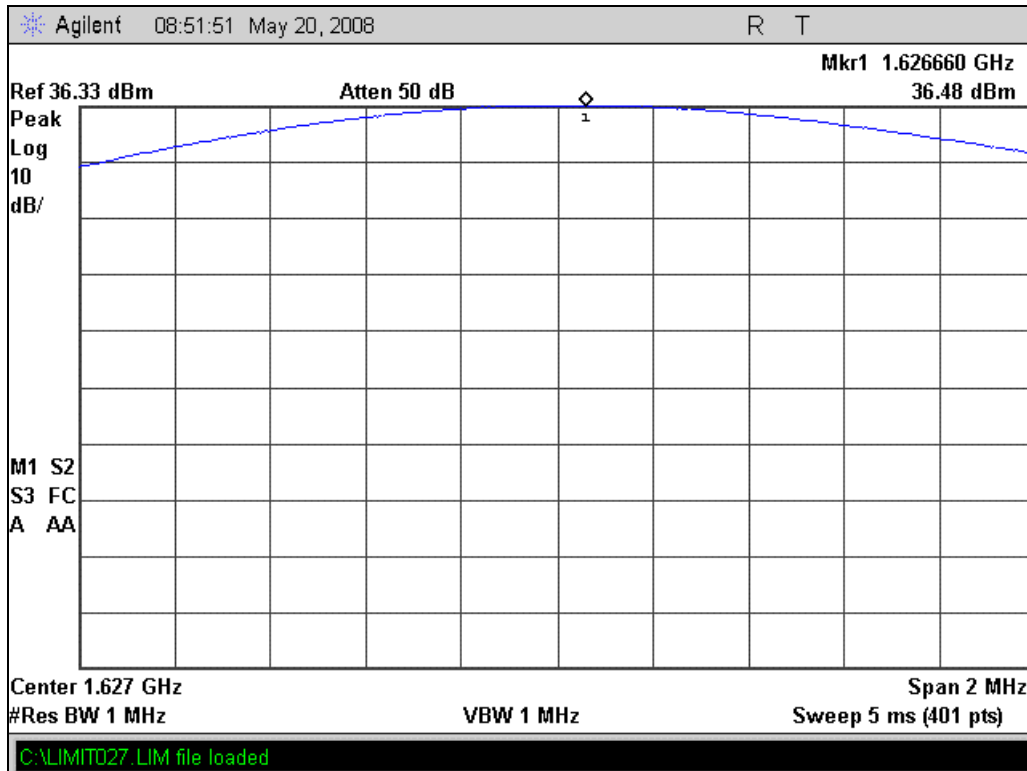
QAM Narrowband 1643.5 MHz



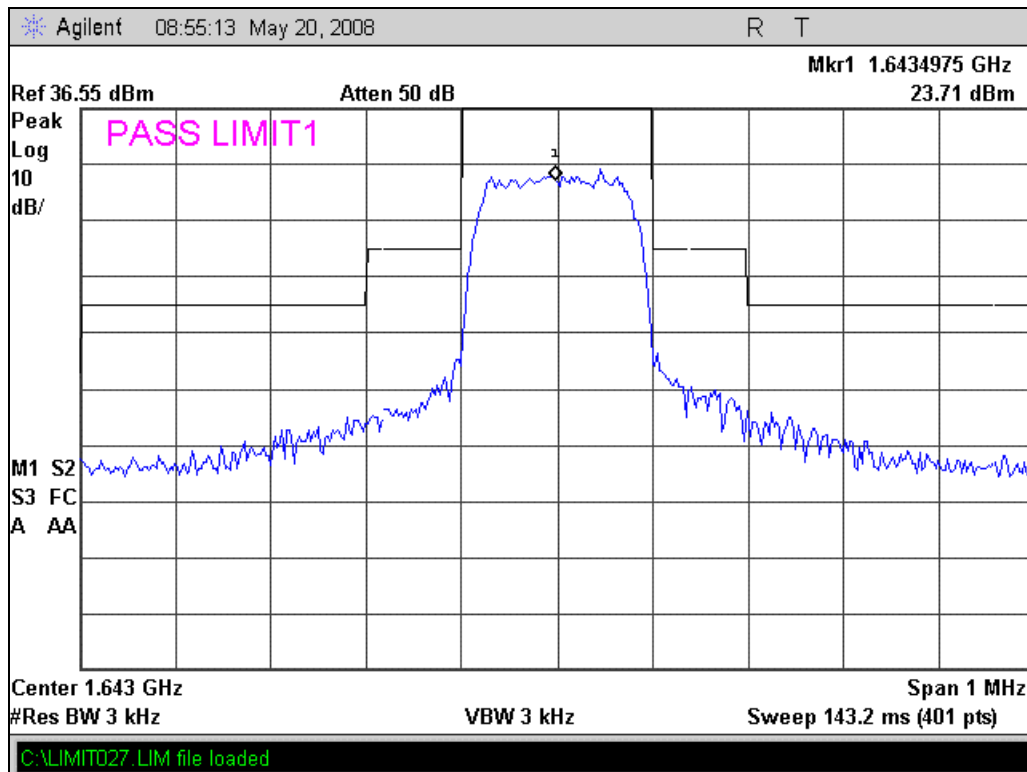
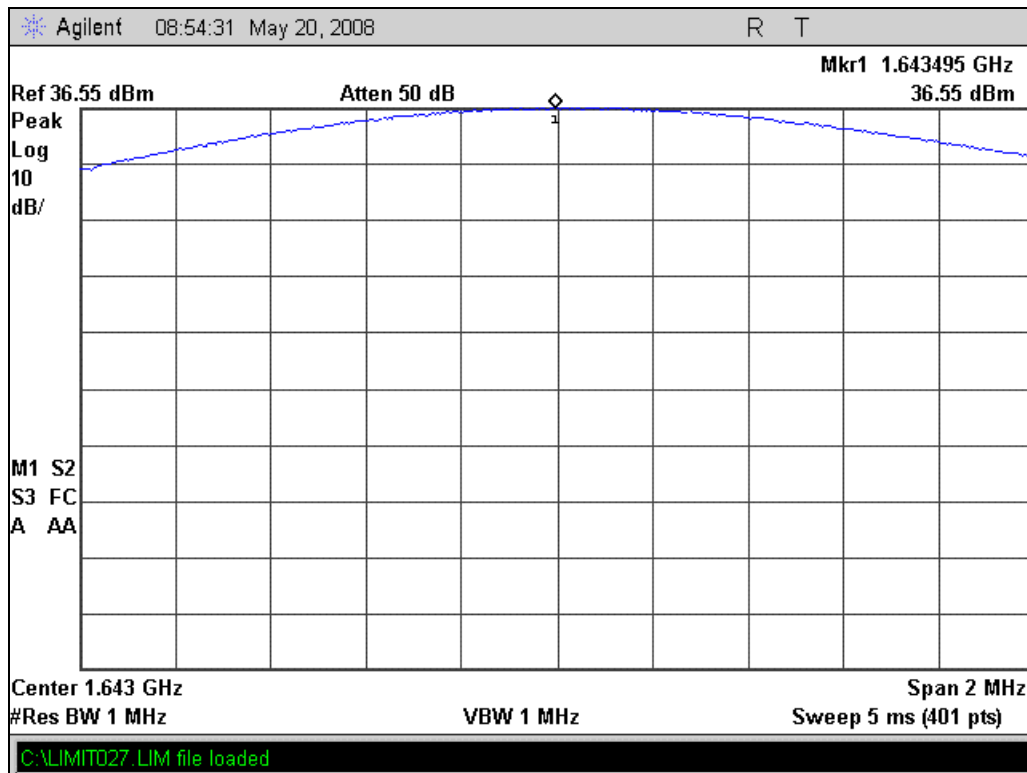
QAM Narrowband 1660.49 MHz



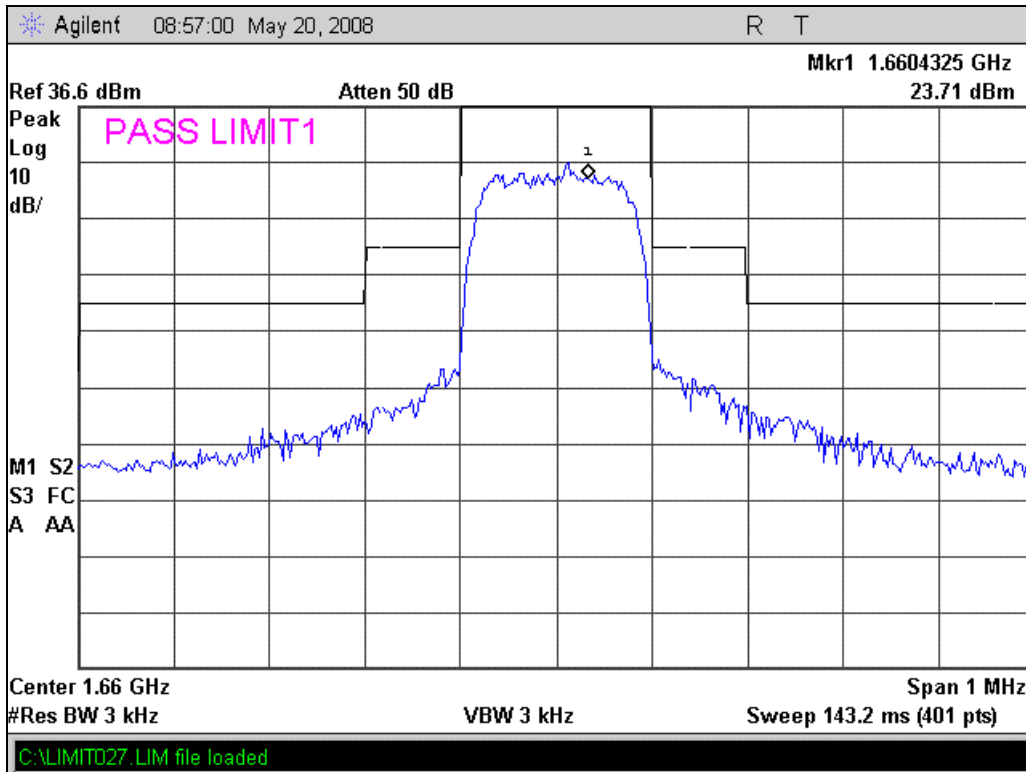
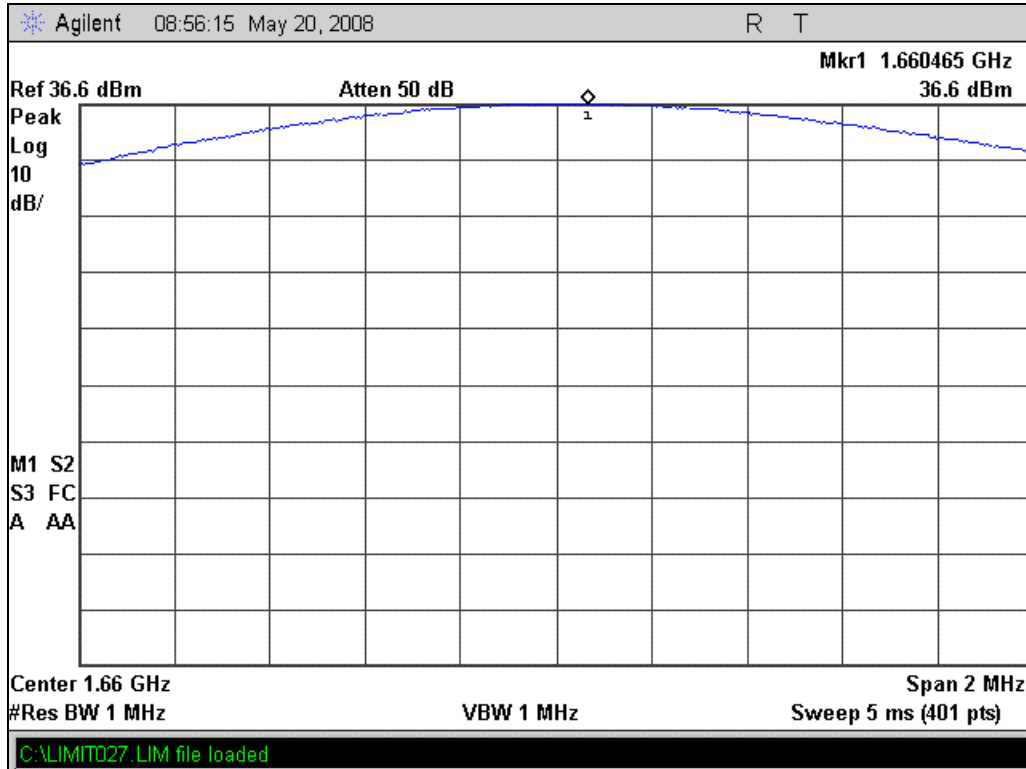
QAM Wideband 1626.6 MHz



QAM Wideband 1643.5 MHz



QAM Wideband 1660.4 MHz

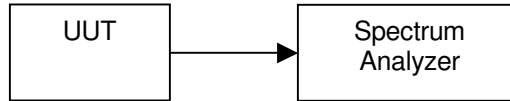


Name Of Test: Emissions Limits for Mobile Earth Stations
Specification: 25.216(h)
Test Equipment Utilized As Per Attached Page **Test Date: 5/19/2008**

Test Procedure

The UUT was connected directly to a spectrum analyzer to verify that the UUT met the requirements for emission mask. The reference level was offset for the peak power output with the resolution bandwidth set for greater than 3 times the occupied bandwidth of a modulated signal. The emission masks for both modulation types and occupied bandwidths were measured and plotted.

Test Setup



Narrowband Unwanted Emissions Test Results Table

| Tuned Freq (MHz) | Emission Freq (MHz) | Monitored Value (dBm) | Limit | Result |
|------------------|---------------------|-----------------------|----------|--------|
| 1626.51 | 1605.03 | -88.30 | See Plot | Pass |
| 1643.5 | 1610.00 | -93.90 | See Plot | Pass |
| 1660.49 | 1610.00 | -93.54 | See Plot | Pass |

Wideband Unwanted Emissions Test Results Table

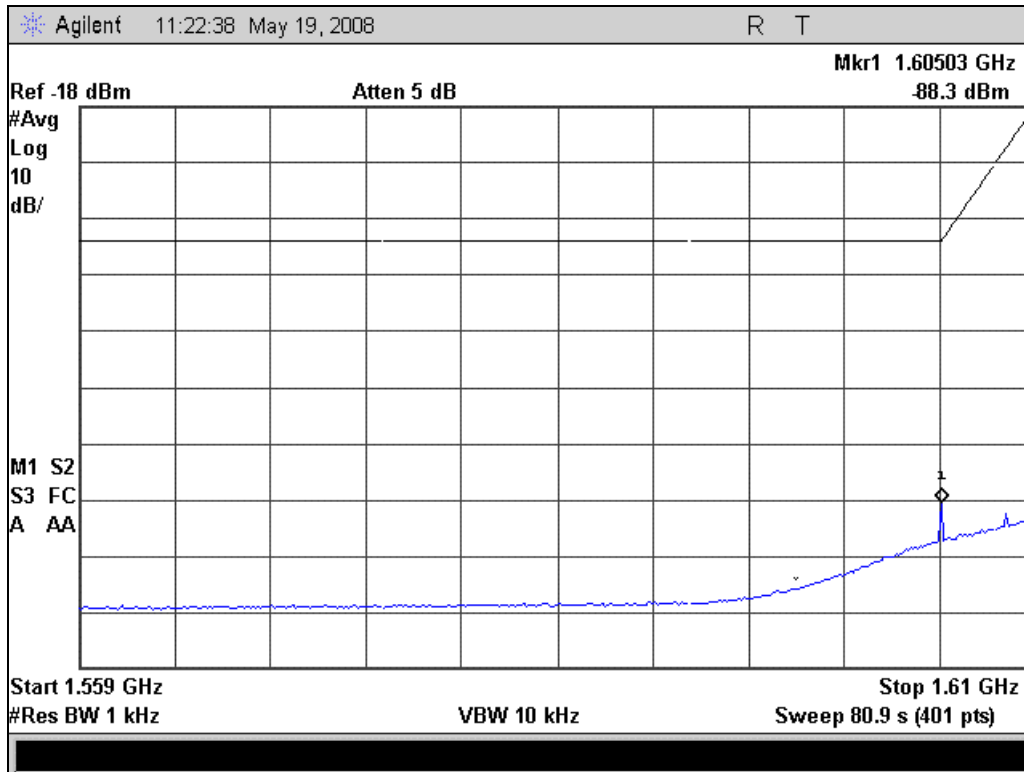
| Tuned Freq (MHz) | Emission Freq (MHz) | Monitored Value (dBm) | Limit | Result |
|------------------|---------------------|-----------------------|----------|--------|
| 1626.6 | 1605.03 | -89.48 | See Plot | Pass |
| 1643.5 | 1610.00 | -94.35 | See Plot | Pass |
| 1660.4 | 1610.00 | -93.43 | See Plot | Pass |

Carrier Off Emissions Test Results Table

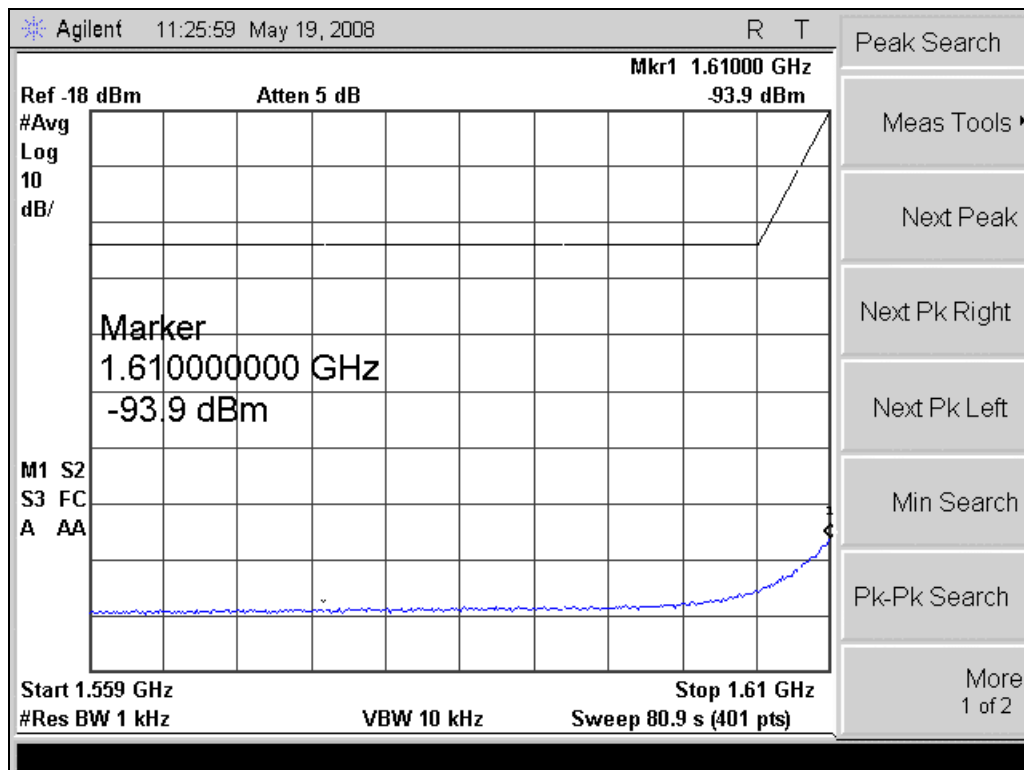
| Tuned Freq (MHz) | Emission Freq (MHz) | Monitored Value (dBm) | Limit | Result |
|------------------|---------------------|-----------------------|----------|--------|
| N/A | 1610.00 | -74.07 | See Plot | Pass |

Narrowband Unwanted Emissions Plots

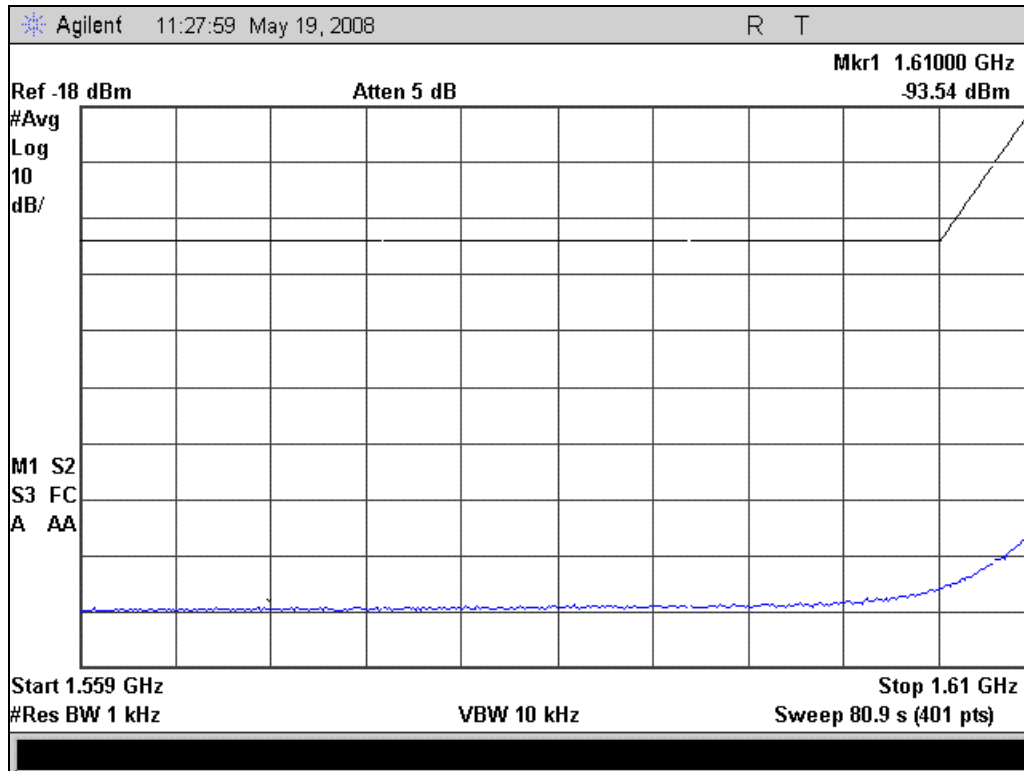
1626.51 MHz



1643.5 MHz

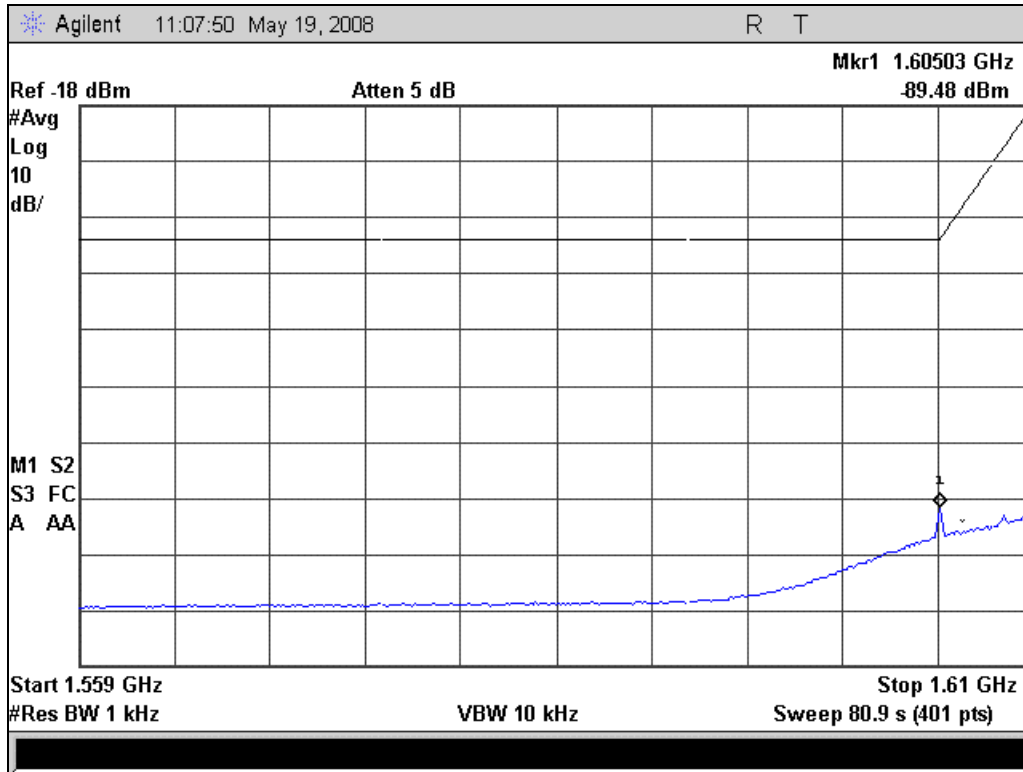


1660.49 MHz

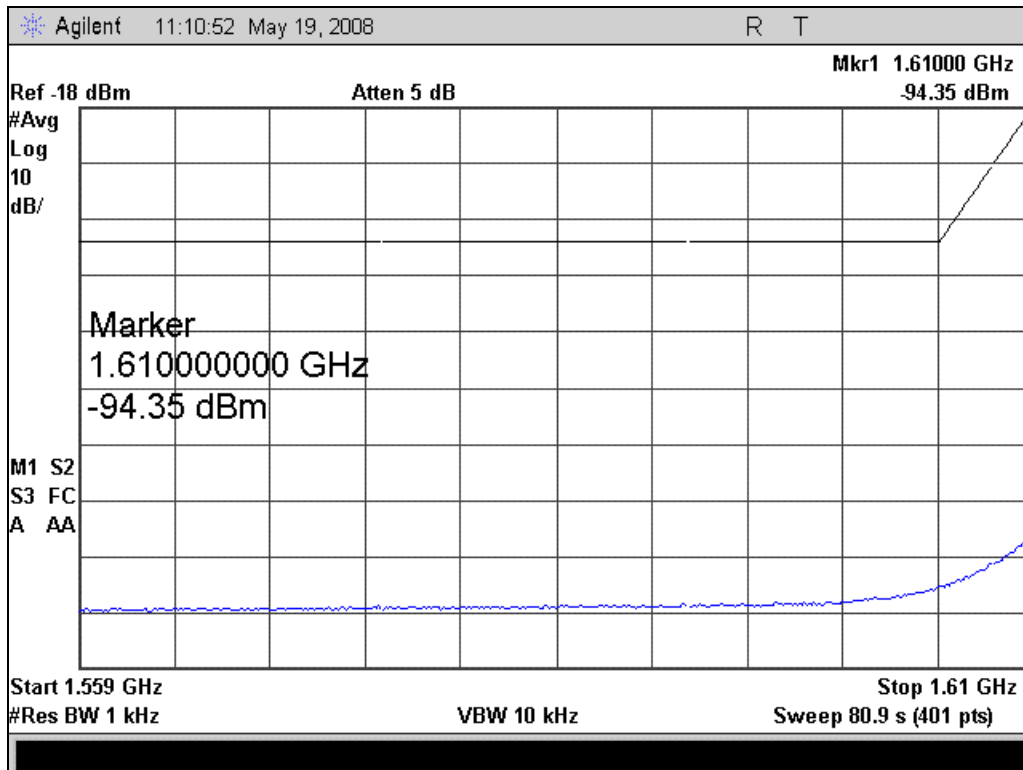


Wideband Unwanted Emissions Plots

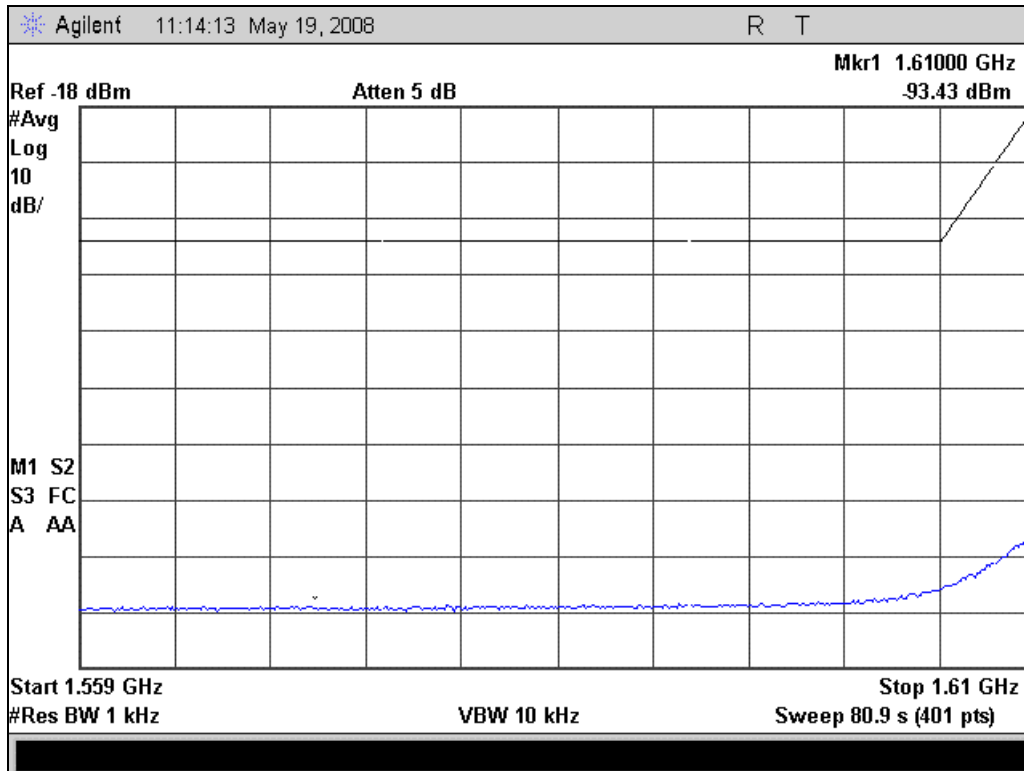
1626.6 MHz



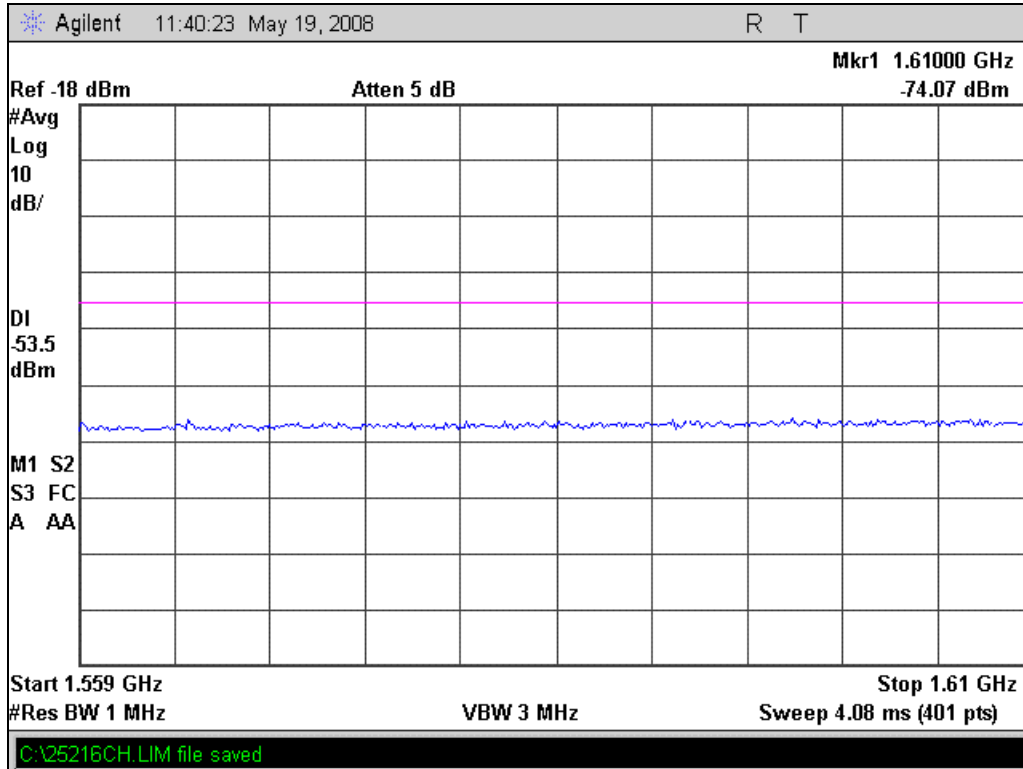
1643.5 MHz



1660.4 MHz



Carrier Off

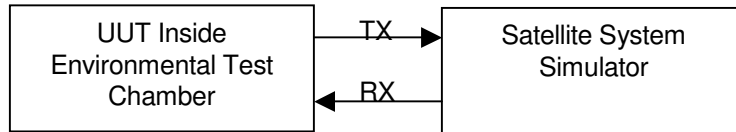


Name Of Test: Frequency Tolerance (Temperature Variation)
Specification: 25.202(d)
Limit: 0.001%
Test Equipment Utilized See attached list

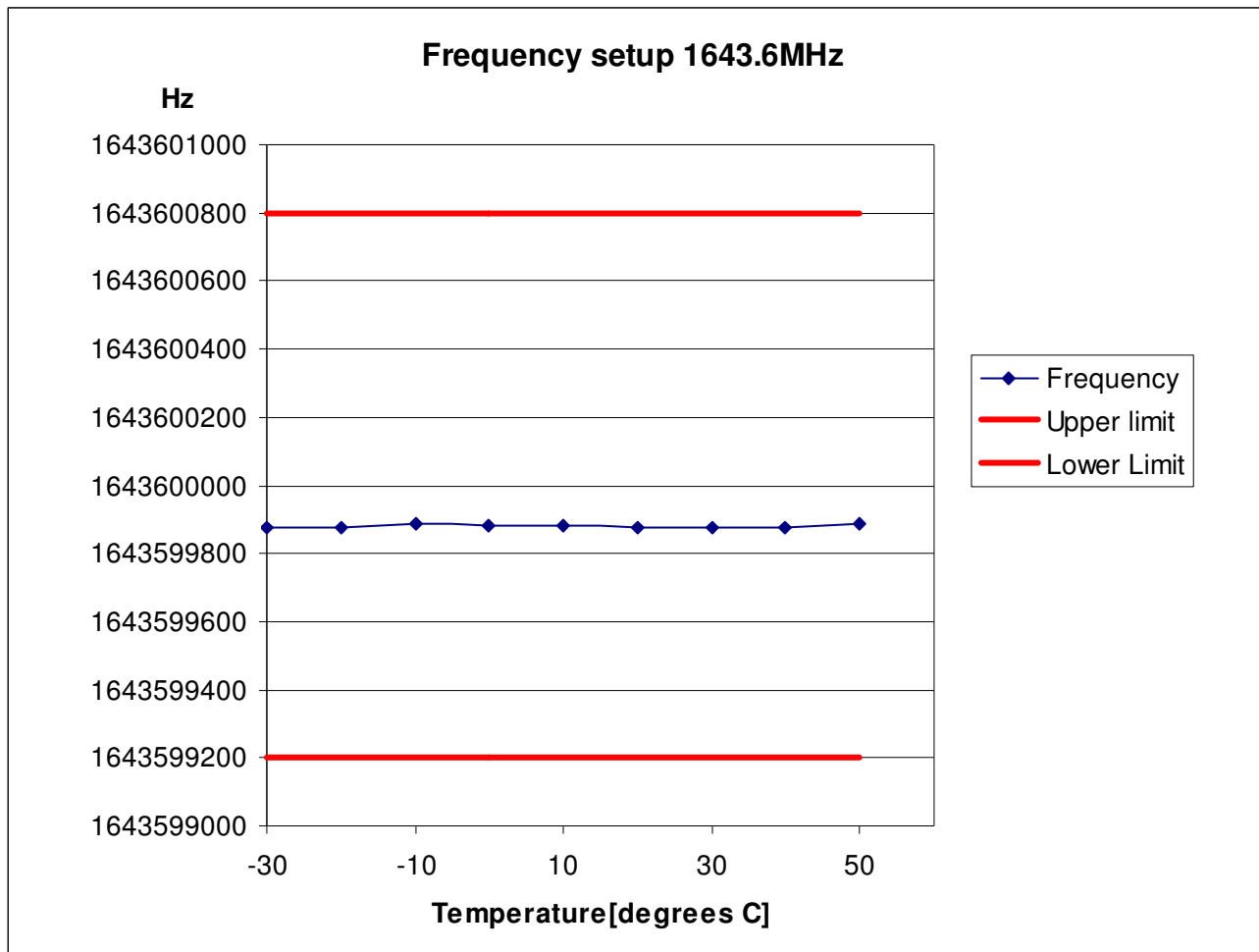
Test Date: 5/19/2008

Test Procedure

The UUT was placed in an environmental test chamber and the temperature was raised from -30°C to 50°C in 10°C increments. The UUT was connected a satellite system simulator where the output frequency was measured at each 10°C increment.



Test Plot

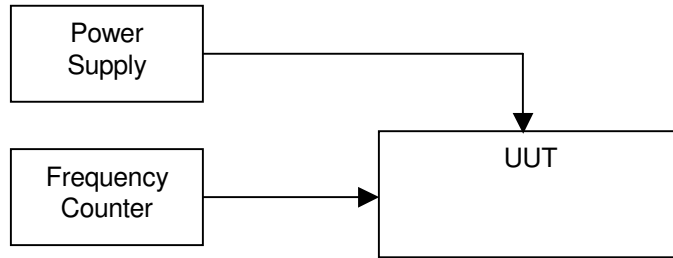


Name Of Test: Frequency Tolerance (Voltage Variation)
Specification: 25.202(d)
Limit: 0.001%
Test Equipment Utilized See attached list

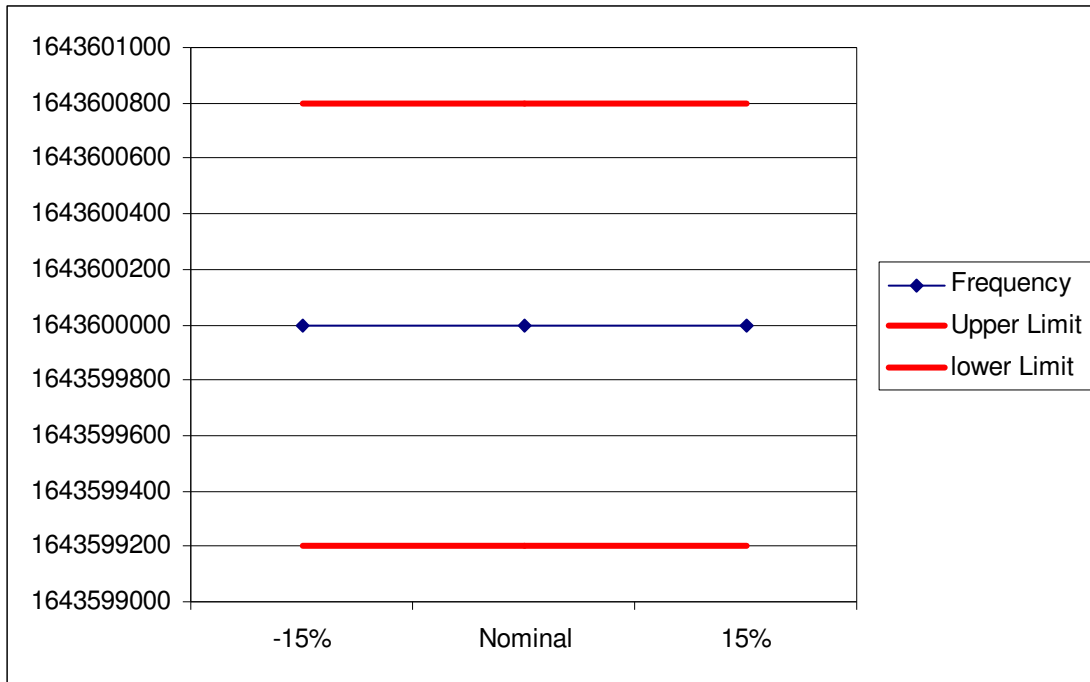
Test Date: 5/19/2008

Test Procedure

The UUT was powered by a DC power supply. The UUT RF output was connected directly to a frequency counter. The UUT has the ability to operate from a 12 or 24 VDC supply. The UUT output frequency was measured at the nominal voltage and the +/- 15% voltage levels for the UUT. The -15% voltage calculated from the 12 VDC nominal is 10.2 VDC. The +15% calculated from the 24 VDC nominal is 28.75 VDC. The UUT was tested from 10.2 to 28.75 VDC with no observable change in output frequency.



Test Plot



Test Equipment Utilized

| Asset# | Manufacturer | Model | Serial Number | Cal Cycle | Calibration Due |
|--------|--------------|--------|---------------|-----------|-----------------|
| 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 |
| i00103 | EMCO Horn | 3115 | 9028-3925 | 36 mo. | 10/4/2009 |
| i00228 | HP | E4418B | GB39512470 | 12 mo. | 9/6/2008 |
| i00317 | HP | 8481A | 3318A28077 | 12 mo. | 9/7/2008 |
| 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