# Electromagnetic Compatibility Test Report

## Tests Performed on a Westell, Inc.

## Wireless Gateway Router

## Ultraline II, Model A90-806015-07

## Radiometrics Document RP-5662

ACCREDITED
Certification # 1495.01

*Product Detail:*
FCC ID: **CH8A9080YYXX-07**
Equipment type: 2.4 GHz Digitally Modulated Transmitter.

*Test Standards:*
US CFR Title 47, Chapter I, FCC Part 15 Subpart C
FCC Part 15 CFR Title 47: 2004
Industry Canada RSS-210, Issue 5 as required for Category I Equipment

This report concerns: Original Grant for Certification
FCC Part 15.247

| *Tests Performed For:* | *Test Facility:* |
|---|---|
| **Westell, Inc.**<br>750 N. Commons Dr.<br>Aurora, IL 60504 | **Radiometrics Midwest Corporation**<br>12 East Devonwood Ave.<br>Romeoville, IL 60446<br>e-mail: info@radiomet.com |

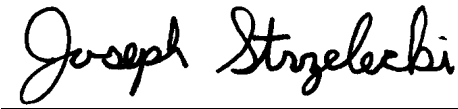
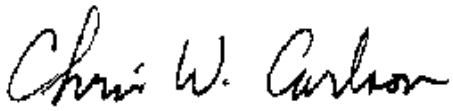
*Test Date(s): (Month-Day-Year)*
July 12 thru September 9, 2005

Document RP-5662 Revisions:

| Rev. | Issue Date | Affected Pages | Revised By |
|---|---|---|---|
| 0 | September 26, 2005 | | |
| | | | |
| | | | |

# Table of Contents

## 1 ADMINISTRATIVE DATA

| | |
|---|---|
| *Equipment Under Test:*<br>A Westell, Inc., Wireless Gateway Router<br>Model: Ultraline II A90-806015-07 Serial Number: C1<br>This will be referred to as the EUT in this Report | |
| *Date EUT Received at Radiometrics: (Month-Day-Year)*<br>July 12, 2005 | *Test Date(s): (Month-Day-Year)*<br>July 12 thru September 9, 2005 |
| *Test Report Written By:*<br>Joseph Strzelecki<br>Senior EMC Engineer | *Test Witnessed By:*<br>Burak Balkuv<br>Westell, Inc. |
| *Radiometrics' Personnel Responsible for Test:*<br>  <br>Joseph Strzelecki<br>Senior EMC Engineer<br>NARTE EMC-000877-NE | *Test Report Approved By*<br>  <br>Chris W. Carlson<br>Director of Engineering<br>NARTE EMC-000921-NE |

## 2 TEST SUMMARY AND RESULTS

The EUT (Equipment Under Test) is a Wireless Gateway Router, Ultraline II Model A90-806015-07, manufactured by Westell, Inc. The detailed test results are presented in a separate section. The following is a summary of the test results.

**Emissions Tests Results**

| Environmental Phenomena | Frequency Range | Basic Standard | Test Result |
|---|---|---|---|
| RF Radiated Emissions | 30 MHz to 25 GHz | RSS-210 & FCC Part 15 | Pass |
| Conducted Emissions, AC Mains | 0.15 - 30 MHz | RSS-210 &<br>FCC Part 15 | Pass |

**Spread Spectrum Transmitter Requirements**

| Environmental Phenomena | Frequency Range | FCC Section | RSS-210 Section | Test Result |
|---|---|---|---|---|
| 6 dB Bandwidth Test | 2400 to 2483 MHz | 15.247 a | 6.2.2 (o) (a) | Pass |
| Peak Output Power | 2400 to 2483 MHz | 15.247 b | 6.2.2 (o) (a) | Pass |
| Band-edge Compliance of RF Conducted Emissions | 2400 to 2483 MHz | 15.247 c | 6.2.2 (o) (e) | Pass |
| Spurious RF Conducted Emissions | 30 MHz to 25 GHz | 15.247 c | 6.2.2 (o) (e1) | Pass |
| Spurious Radiated Emissions | 30 MHz to 25 GHz | 15.247 c | 6.2.2 (o) (a) | Pass |
| Power Spectral Density | 2400 to 2483 MHz | 15.247 d | 6.2.2 (o) (b) | Pass |

# 3 EQUIPMENT UNDER TEST (EUT) DETAILS

## 3.1 EUT Description

The EUT is a Wireless Gateway Router, Model Ultraline II, manufactured by Westell, Inc. The EUT was in good working condition during the tests, with no known defects. This device has an integrated DSL modem and 802.11 WiFi router (to support connectivity to WiFi enabled devices throughout the home).

### 3.1.1 FCC Section 15.203 & RSS-210 Section 5.5 Antenna Requirements

The 2.4 GHz antenna has a reverse polarity SMA connector on it.

## 3.2 Related Submittals

Westell, Inc. is not submitting any other products simultaneously for equipment authorization related to the EUT.

# 4 TESTED SYSTEM DETAILS

## 4.1 Tested System Configuration

The system was configured for testing in a typical fashion. The EUT was placed on an 80-cm high, nonconductive test stand. The testing was performed in conditions as close as possible to installed conditions. Wiring was consistent with manufacturer's recommendations.

The EUT was configured to have the uplink port as Moca. Two Moca bridges ( ECB-4p-LUC ) were connected on the same coax. One bridge was configured as LAN one as a wan device. Traffic was sent from the LAN Ethernet ports to the LAN Moca device. We also sent wireless traffic from a laptop to the BHR using chariot. So we had Moca and wireless traffic at the same time. All Ethernet ports were kept active by connecting them to Westell Ethernet devices

The EUT was tested with a personal computer. Power was supplied at 115 VAC, 60 Hz single-phase to its external power supply. The identification for all equipment, plus descriptions of all cables used in the tested system, are:

**Tested System Configuration List**

| Item | Description | Type* | Manufacturer | Model Number | Serial Number |
|---|---|---|---|---|---|
| 1 | Wireless Gateway Router | E | Westell, Inc. | A90-806015-07 | C1 |
| 2 | Power Supply | E | Westell, Inc. | AEC-T5712A | None |
| 3 | Laptop PC | S | Gateway | SOLO 9100 | BC397290560 |
| 4 | Moca Bridge | S | Entropic | ECB-4p-LUC | 746 |
| 5 | Moca Bridge | S | Entropic | ECB-4p-LUC | 716 |
| 6 | CO | S | Texas Instrument | EUMII 400L PQT | B087268 |
| 7 | Ethernet Switch | S | Westell, Inc. | A90-240010-04 | 02B506808945 |

* Type: E = EUT, P = Peripheral, S = Support Equipment; H = Host Computer

**List of EUT Cables**

| QTY | Length (m) | Cable Description | Connected to (Item #) | Shielded? |
|---|---|---|---|---|
| 1 | 1.8 | AC Cord | #1 and #2 | No |
| 1 | 21 | DSL Cable | #1 and #6 | No |
| 1 | 10 | Moca, 75-ohm Coax cable | #1 and #4 | Yes |
| 5 | 10 | Ethernet Cable | #1 and #7 | No |

## 4.2 Special Accessories

No special accessories were used during the tests in order to achieve compliance.

## 4.3 Equipment Modifications

No modifications were made to the EUT at Radiometrics' test facility in order to comply with the standards listed in this report.

## 5 TEST SPECIFICATIONS AND RELATED DOCUMENTS

| Document | Date | Title |
|---|---|---|
| FCC<br>CFR Title 47 | 2004 | Code of Federal Regulations Title 47, Chapter 1, Federal Communications Commission, Part 15 - Radio Frequency Devices |
| ANSI<br>C63.4-2001 | 2001 | Methods of Measurement of Radio Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz |
| IC RSS-210<br>Issue 5 | 2001 | Low Power Licence-Exempt Radiocommunication Devices (All Frequency Bands) |
| IC RSS-212<br>Issue 1 | 1998 | Test Methods For Radio Equipment |
| FCC 558074 | 2004 | New Guidance on Measurements for Digital Transmission Systems in Section 15.247 |

The test procedures used are in accordance with ANSI document C63.4-2001, "Methods of Measurement of Radio Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz". The specific procedures are described herein. Radiated testing was performed at an antenna to EUT distance of 3 meters. The antenna was raised and lowered from 1 to 4 meters.

## 6 RADIOMETRICS' TEST FACILITIES

The results of these tests were obtained at Radiometrics Midwest Corp. in Romeoville, Illinois, USA. Radiometrics is accredited by A2LA (American Association for Laboratory Accreditation) to conform to ISO/IEC 17025: 1999 "General Requirements for the Competence of Calibration and Testing Laboratories". Radiometrics' Lab Code is 121191 and Certification Number is 1495.01. Radiometrics' scope of accreditation includes all of the test methods listed herein. A copy of the accreditation can be accessed on our web site (www.radiomet.com). Radiometrics accreditation status can be verified at A2LA's web site (www.a2la2.net).

The following is a list of facilities used during the tests.

Chamber E: Is a custom made anechoic chamber that measures 52' L X 30' W X 18' H. The walls and ceiling are fully lined with RF absorber. Pro-shield of Collinsville, Oklahoma manufactured the chamber.

Test Station F: Is an area that measures approximately 10' D X 12' W X 10' H. The floor and back wall are metal shielded. This area is used for conducted emissions measurements.

A separate ten-foot long, brass plated, steel ground rod attached via a 6 inch copper braid grounds each of the above chambers. Each enclosure is also equipped with low-pass power line filters.

Open Area Test Site (OATS): Is located on 8625 Helmar Road in Newark, Illinois, USA and measures 56' L X 24' W X 17' H. The entire open field test site has a metal ground screen. The FCC has accepted these sites as test site number 31040/SIT 1300F2. The FCC test site Registration Number is 90897. Details of the site characteristics are on file with the Industry Canada as file number IC3124.

A complete list of the test equipment is provided herein. The calibration due dates are indicated on the equipment list. The equipment is calibrated in accordance to ANSI/NCSL Z540-1 with traceability to the National Institute of Standards and Technology (NIST).

## 7 DEVIATIONS AND EXCLUSIONS FROM THE TEST SPECIFICATIONS

There were no deviations or exclusions from the test specifications.

## 8 CERTIFICATION

Radiometrics Midwest Corporation certifies that the data contained herein was taken under conditions that meet or exceed the requirements of the test specification. The results relate only to the EUT listed herein. Any modifications made to the EUT subsequent to the indicated test date will invalidate the data and void this certification.

## 9 TEST EQUIPMENT TABLE

| RMC ID | Manufacturer | Description | Model No. | Serial No. | Frequency Range | Cal Period | Cal Date |
|---|---|---|---|---|---|---|---|
| AMP-05 | RMC/Celeritek | Pre-amplifier | MW110G | 1001 | 1.0-12GHz | 12 Mo. | 12/07/04 |
| AMP-20 | Avantek | Pre-amplifier | SF8-0652 | 15221 | 8-18GHz | 12 Mo | 12/07/04 |
| AMP-22 | Anritsu | Pre-amplifier | MH648A | M23969 | 0.1-1200MHz | 12 Mo. | 12/07/04 |
| AMP-29 | HP / Agilent | Amplifier | 11975A | 2304A00158 | 2-8 GHz | 12 Mo. | 08/19/05 |
| AMP-29 | HP / Agilent | Amplifier for 18-26 GHz Mixer | 11975A | 2304A00158 | 2-8 GHz | 12 Mo. | 08/19/05 |
| ANT-13 | EMCO | Horn Antenna | 3115 | 2502 | 1.0-18GHz | 24 Mo. | 10/13/04 |
| ANT-42 | EMCO | Bicon Antenna | 3104C | 9512-4713 | 25-300MHz | 12 Mo. | 12/02/04 |
| ANT-44 | Impossible Machine | Super Log Antenna | SL-20M2G | 1002 | 20-2000MHz | 24 Mo. | 06/15/04 |
| ANT-48 | RMC | Std Gain Horn | HW2020 | 1001 | 18-26 GHz | 12 Mo. | 10/13/04 |
| HPF-01 | Solar | High Pass Filter | 7930-100 | HPF-1 | 0.15-30MHz | 24 Mo. | 12/31/03 |
| HPF-03 | Mini-Circuits | High Pass Filter | VHP-39 | HPF-03 | 3-10 GHz | 12 Mo. | 08/03/04 |
| LSN-03 | Farnell | 50 uH LISN | 1EXLSN30B | 000314 | 0.01-30MHz | 24 Mo. | 04/25/05 |
| MXR-01 | HP / Agilent | Harmonic Mixer | 11970K | 3003A02243 | 18.6-26.5GHz | 12 Mo. | 01/06/05 |
| PRE-01 | HP / Agilent | Preselector | 85685A | 2510A00143 | 20 Hz-2GHz | 12 Mo. | 01/20/05 |
| REC-01 | HP / Agilent | Spectrum Analyzer | 8566A | 2106A02115, 2209A01349 | 30Hz-22GHz | 12 Mo. | 08/19/05 |
| REC-03 | Anritsu | Spectrum Analyzer | MS2601B | MT94589 | 0.01-2200MHz | 12 Mo. | 11/11/04 |
| REC-07 | Anritsu | Spectrum Analyzer | MS2601A | MT53067 | 0.01-2200MHz | 12 Mo. | 01/04/05 |
| REC-08 | HP / Agilent | Spectrum Analyzer | 8566B | 2648A13481 2209A01436 | 30Hz-22GHz | 12 Mo. | 06/14/05 |
| THM-01 | Extech Inst. | Temp/Humid Meter | 4465CF | 001106557 | N/A | 24 Mo. | 01/28/04 |

Note: All calibrated equipment is subject to periodic checks.

## 10 TEST SECTIONS

### 10.1 AC Conducted Emissions; Section 15.207

A computer-controlled analyzer was used to perform the conducted emissions measurements. The frequency range was divided into 500 subranges equally spaced on a logarithmic scale. The computer recorded the peak of each subrange. This data was then plotted on semi-log graph paper generated by the computer and plotter. Adjusting the positions of the cables and orientation of the test system then maximizes the highest emissions.

Mains Conducted emission measurements were performed using a 50 Ohm/50 uH Line Impedance Stabilization Network (LISN) as the pick-up device. Measurements were repeated on both leads within the power cord. If the EUT power cord exceeded 80 cm in length, the excess length of the power cord was made into a 30 to 40 cm bundle near the center of the cord. The LISN was placed on the floor at the base of the test platform and electrically bonded to the ground plane.

Broadband conducted emissions may exceed the following limits by no more than 13 dB. An emission is defined as broadband if the average detector amplitude is 6 dB or more under the quasi-peak detector amplitude.

**FCC Limits of Conducted Emissions at the AC Mains Ports**

| Frequency Range (MHz) | Class B Limits (dBuV) | |
|---|---|---|
| | Quasi-Peak | Average |
| 0.150 - 0.50* | 66 - 56 | 56 - 46 |
| 0.5 – 5.0 | 56 | 46 |
| 5.0 - 30 | 60 | 50 |
| * The limit decreases linearly with the logarithm of the frequency in this range. | | |

The initial step in collecting conducted data is a peak detector scan and the plotting of the measurement range. Significant peaks are then marked as shown on the following table, and these signals are then measured with the quasi-peak detector. The following represents the worst case emissions from power cord, after testing all modes of operation.

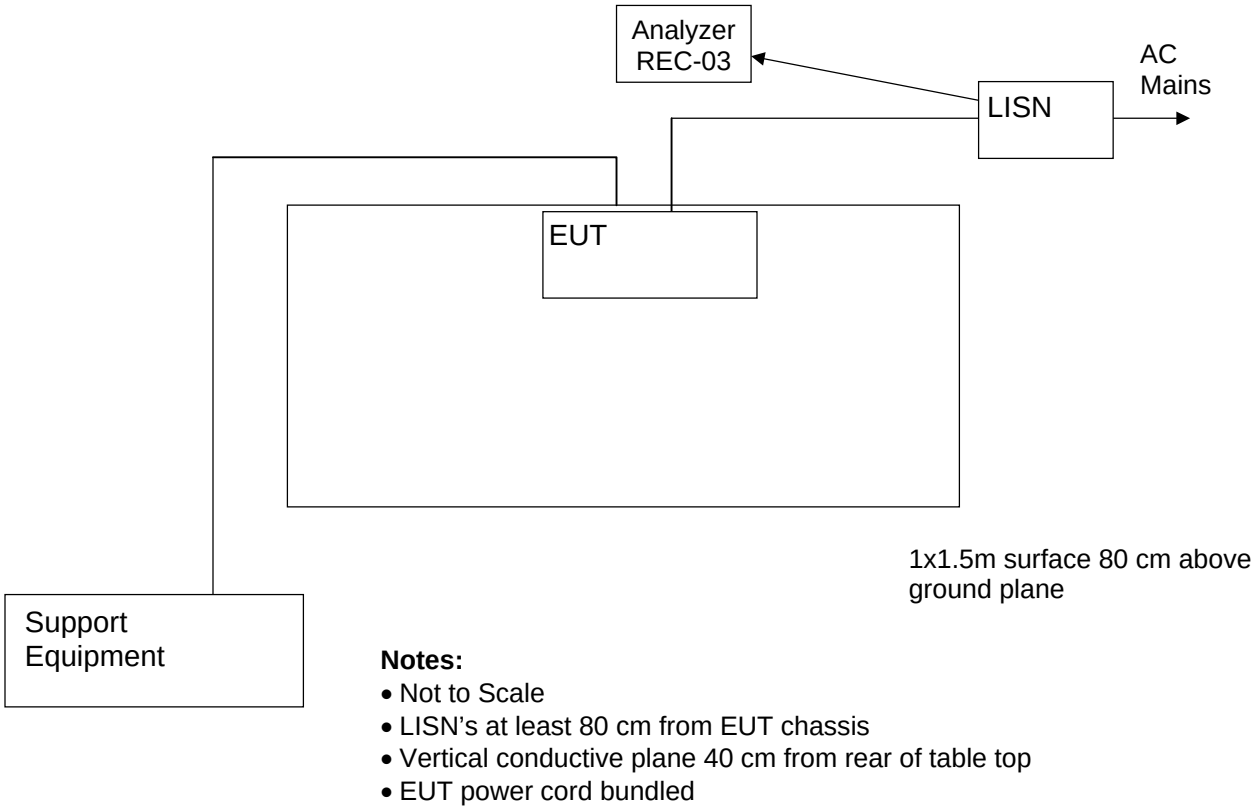
Test Date : September 9, 2005
The Amplitude is the final corrected value with cable and LISN Loss.

| Lead Tested | Frequency MHz | QP Amplitude | QP Limit | Average Amplitude | Average Limit |
|---|---|---|---|---|---|
| AC Hot | 0.15 | 58.86 | 65.99 | 37.09 | 55.99 |
| AC Hot | 0.23 | 55.88 | 62.38 | 35.06 | 52.38 |
| AC Hot | 0.30 | 53.88 | 60.37 | 32.89 | 50.37 |
| AC Hot | 0.42 | 51.01 | 57.47 | 32.74 | 47.47 |
| AC Hot | 0.55 | 48.51 | 56.00 | 30.13 | 46.00 |
| AC Hot | 1.01 | N/A | 56.00 | 32.51 | 46.00 |
| AC Hot | 12.24 | N/A | 60.00 | 30.66 | 50.00 |
| AC Hot | 16.23 | N/A | 60.00 | 30.92 | 50.00 |
| AC Neutral | 0.15 | 57.59 | 65.99 | 36.40 | 55.99 |
| AC Neutral | 0.26 | 53.32 | 61.59 | 32.39 | 51.59 |
| AC Neutral | 0.39 | 48.88 | 58.10 | 36.99 | 48.10 |
| AC Neutral | 0.53 | 44.60 | 56.00 | 29.54 | 46.00 |
| AC Neutral | 0.64 | N/A | 56.00 | 29.50 | 46.00 |
| AC Neutral | 18.25 | N/A | 60.00 | 36.43 | 50.00 |

The above are the worst case results with three frequencies test for each EUT
* QP readings are quasi-peak with a 9 kHz bandwidth and no video filter.

Judgment: Passed by 6.46 dB

**Figure 1. Conducted Emissions Test Setup**



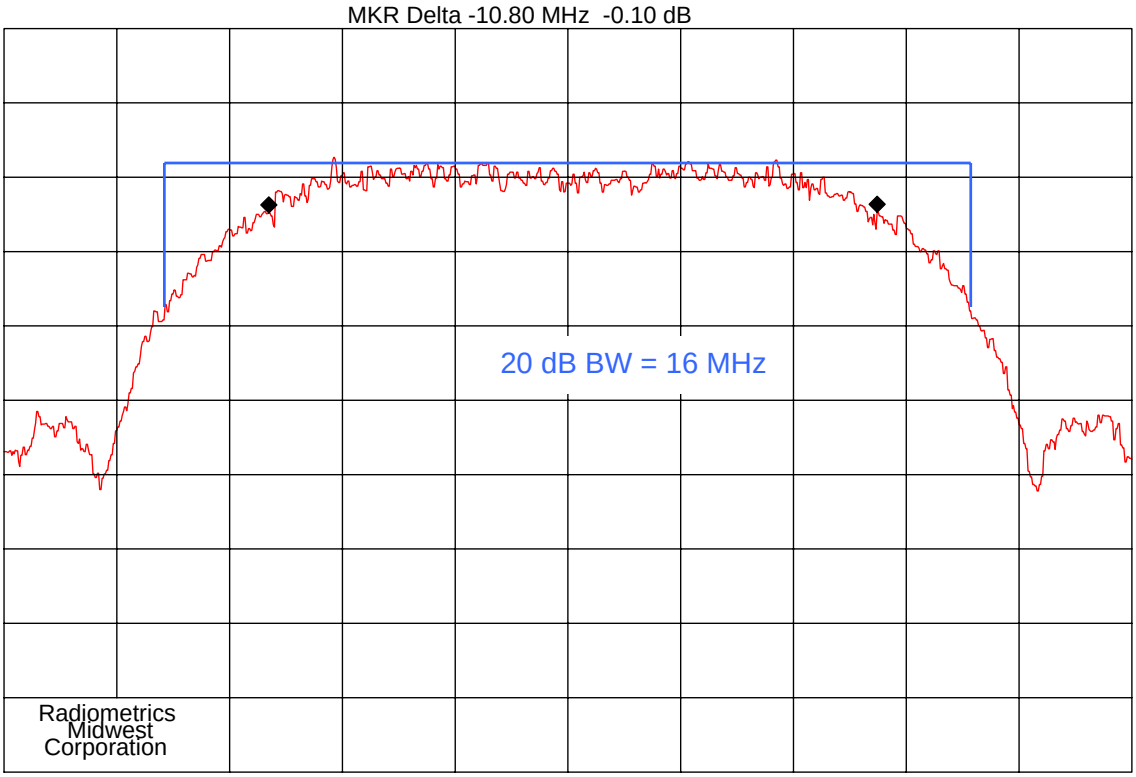

## 10.2 Occupied Bandwidth (6 dB)

The spectrum analyzer was set to the MAX HOLD mode to record the worst case of the modulation. The EUT was transmitting at its maximum data rate. The trace was allowed to stabilize.

The marker-to-peak function was set to the peak of the emission. Then the marker-delta function was used to measure 6 dB down one side of the emission. The marker-delta function was reset and then moved to the other side of the emission, until it is (as close as possible to) even with the reference marker level. The marker-delta reading at this point is the 6 dB bandwidth of the emission.

For canadian requirements, a 99% emission bandwidth was also determined using the same procedures, except that the marker-delta reading is the 20 dB bandwidth down on each side of the emission.

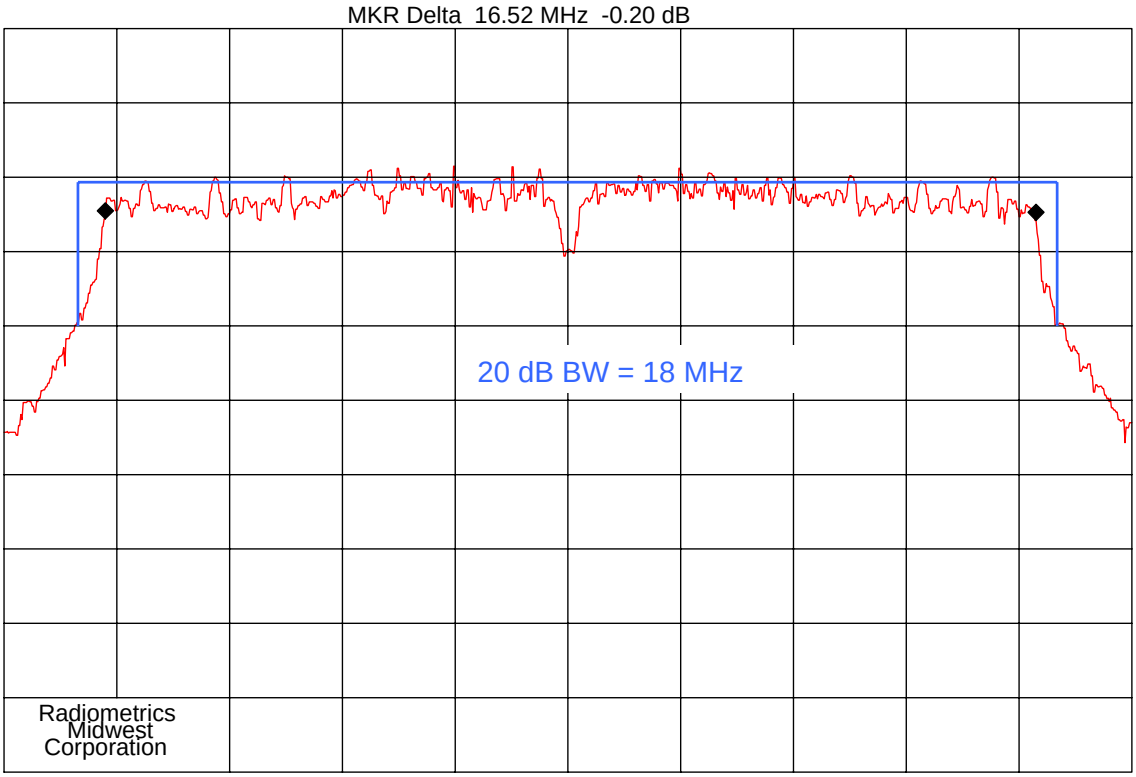
| | 802.11b | 802.11g | 802.11b | 802.11g |
|---|---|---|---|---|
| Channel | 6 dB EBW MHz | 6 dB EBW MHz | 20 dB EBW MHz | 20 dB EBW MHz |
| 1 | 10.8 | 16.5 | 16 | 18 |
| 6 | 11.0 | 16.7 | 16 | 18 |
| 11 | 10.6 | 16.6 | 16 | 18 |




COMPANY : Westell
CENTER 2.412 0 GHz
RES BW 100 kHz
10 dB/
NOTES : Bandwidth Test, 802.11b Ch 1

ITEM : A90-4272V-07
REF 20.0 dBm
VBW 300 kHz
TIME : 11:24

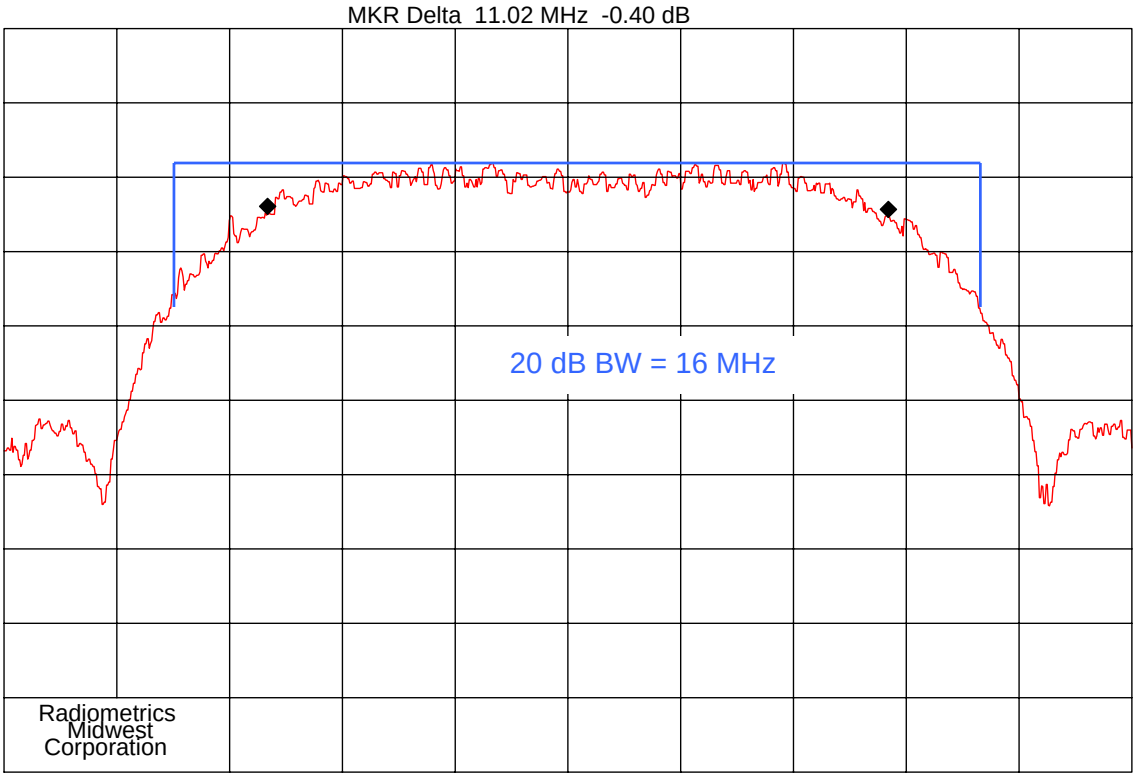
DATE : 05-12-2005
SPAN 20.0 MHz
ATTEN 30 dB
SWP 20.0 msec




COMPANY : Westell
CENTER 2.412 0 GHz
RES BW 100 kHz
10 dB/
NOTES : Bandwidth Test, 802.11g Ch 1

ITEM : A90-4272V-07
REF 20.0 dBm
VBW 300 kHz
TIME : 11:28

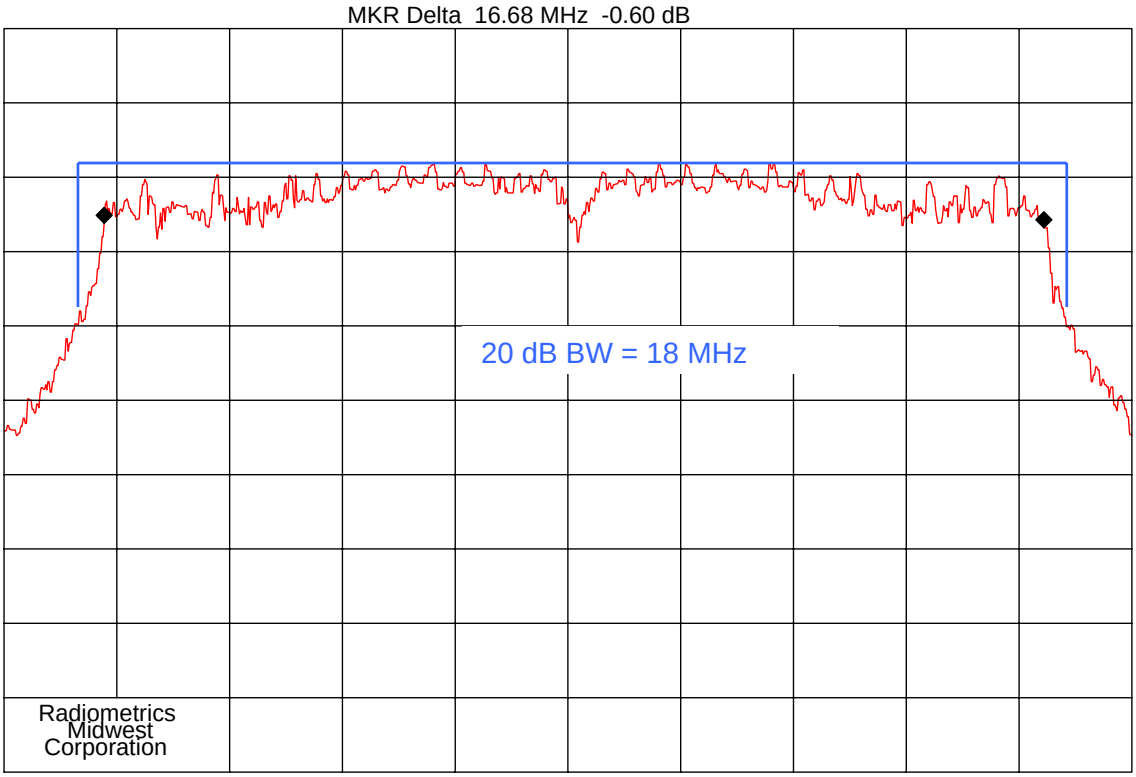
DATE : 05-12-2005
SPAN 20.0 MHz
ATTEN 30 dB
SWP 20.0 msec




COMPANY : Westell
CENTER 2.437 0 GHz
RES BW 100 kHz
10 dB/
NOTES : Bandwidth Test, 802.11b Ch 6

ITEM : A90-4272V-07
REF 20.0 dBm
VBW 300 kHz
TIME : 11:32

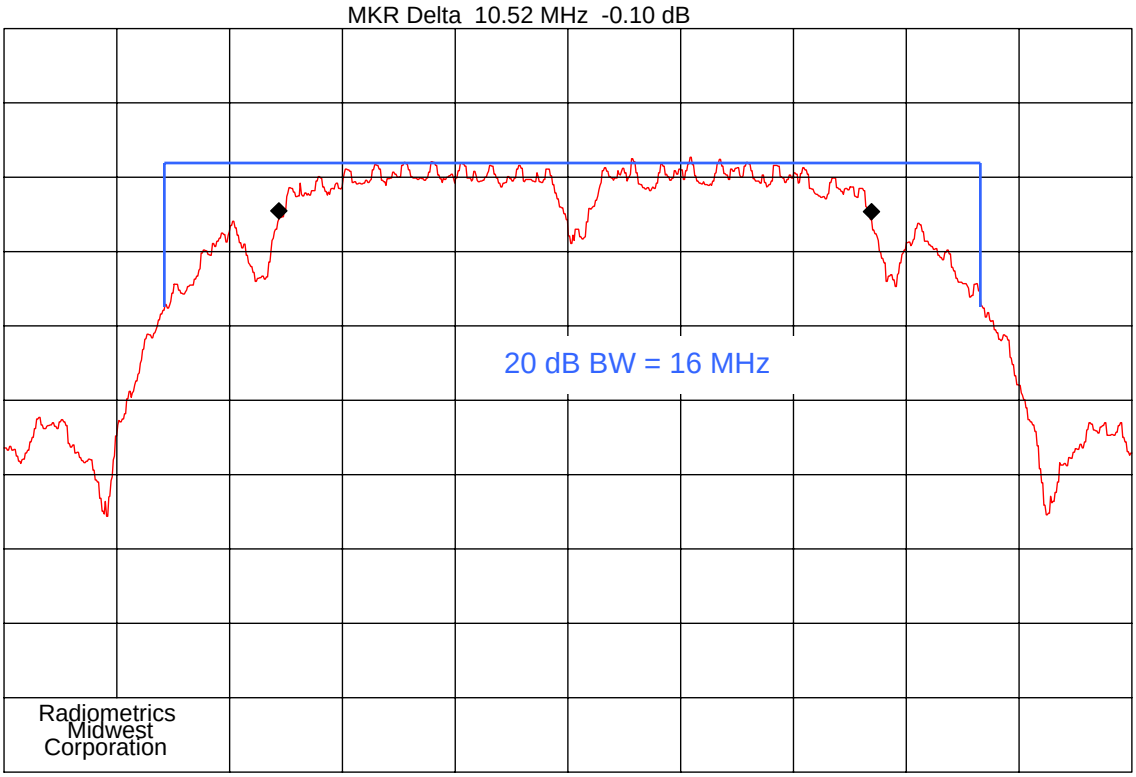
DATE : 05-12-2005
SPAN 20.0 MHz
ATTEN 30 dB
SWP 20.0 msec




COMPANY : Westell
CENTER 2.437 0 GHz
RES BW 100 kHz
10 dB/
NOTES : Bandwidth Test, 802.11g Ch 6

ITEM : A90-4272V-07
REF 20.0 dBm
VBW 300 kHz
TIME : 11:30

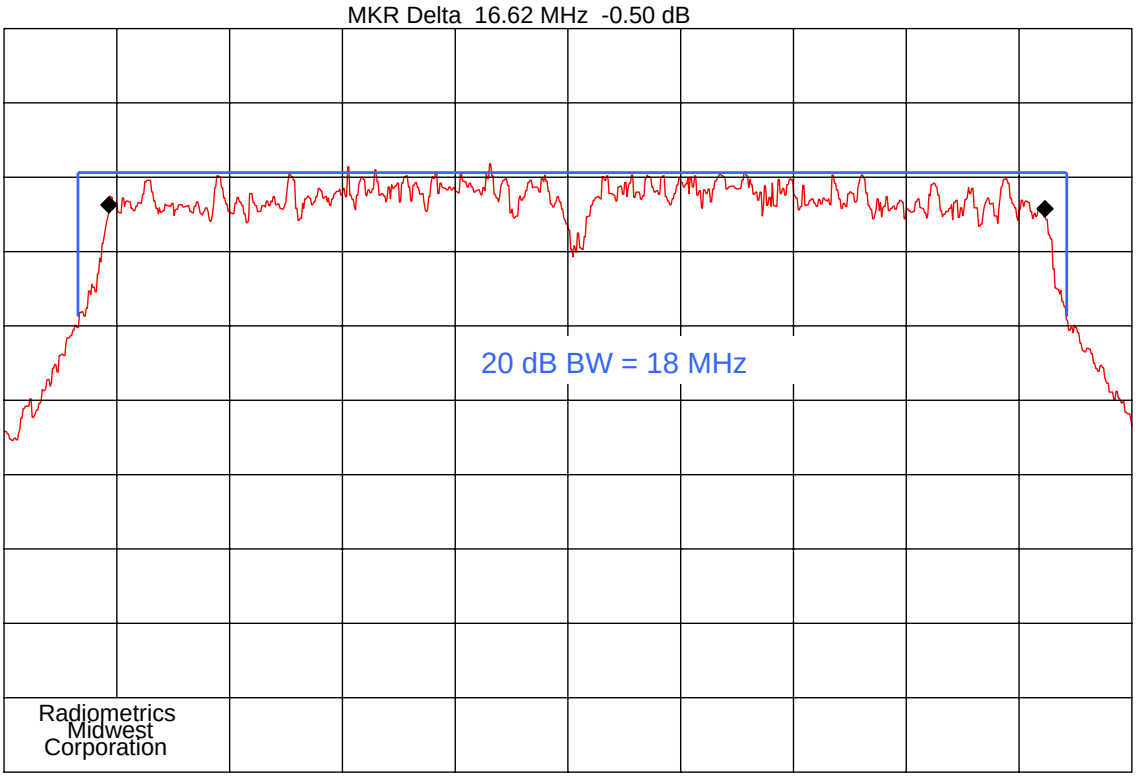
DATE : 05-12-2005
SPAN 20.0 MHz
ATTEN 30 dB
SWP 20.0 msec




COMPANY : Westell
CENTER 2.462 0 GHz
RES BW 100 kHz
10 dB/
NOTES : Bandwidth Test, 802.11b Ch 11

ITEM : A90-4272V-07
REF 20.0 dBm
VBW 300 kHz
TIME : 11:33

DATE : 05-12-2005
SPAN 20.0 MHz
ATTEN 30 dB
SWP 20.0 msec




## 10.3 Peak Output Power

The power output option 2; Method #3 from FCC rules 558074 was used for this test. The spectrum analyzer was set to the following settings:

Span = 2 MHz
RBW = 1 MHz
VBW = 3 MHz
Sweep = auto
Detector function = peak
Trace = max hold

The trace was allowed to stabilize. The marker-to-peak function was used to measure the peak of the emission. The indicated level is the peak output power. The BW correction factor is 10*Log(BW). Note 30 dBm = 1 watt. Since the gain of the antenna is always less than 6dB, the limit is not reduced.

| Mode | Freq. (MHz) | Reading (dBm) | BW Corr Factor (dB) | Cable Loss (dB) | Total Power (dBm) | | Limit (dBm) |
|---|---|---|---|---|---|---|---|
| | | | | | dBm | Watts | |
| 802.11b | 2412 | 7.0 | 10.3 | 0.3 | 17.6 | 0.058 | 30 |
| 802.11b | 2437 | 9.6 | 10.4 | 0.3 | 20.3 | 0.107 | 30 |
| 802.11b | 2462 | 9.3 | 10.3 | 0.3 | 19.9 | 0.097 | 30 |
| 802.11g | 2412 | 7.7 | 12.2 | 0.3 | 20.2 | 0.104 | 30 |
| 802.11g | 2437 | 10.2 | 12.2 | 0.3 | 22.7 | 0.187 | 30 |
| 802.11g | 2462 | 10.8 | 12.2 | 0.3 | 23.3 | 0.214 | 30 |

## 10.4 Power Spectral Density

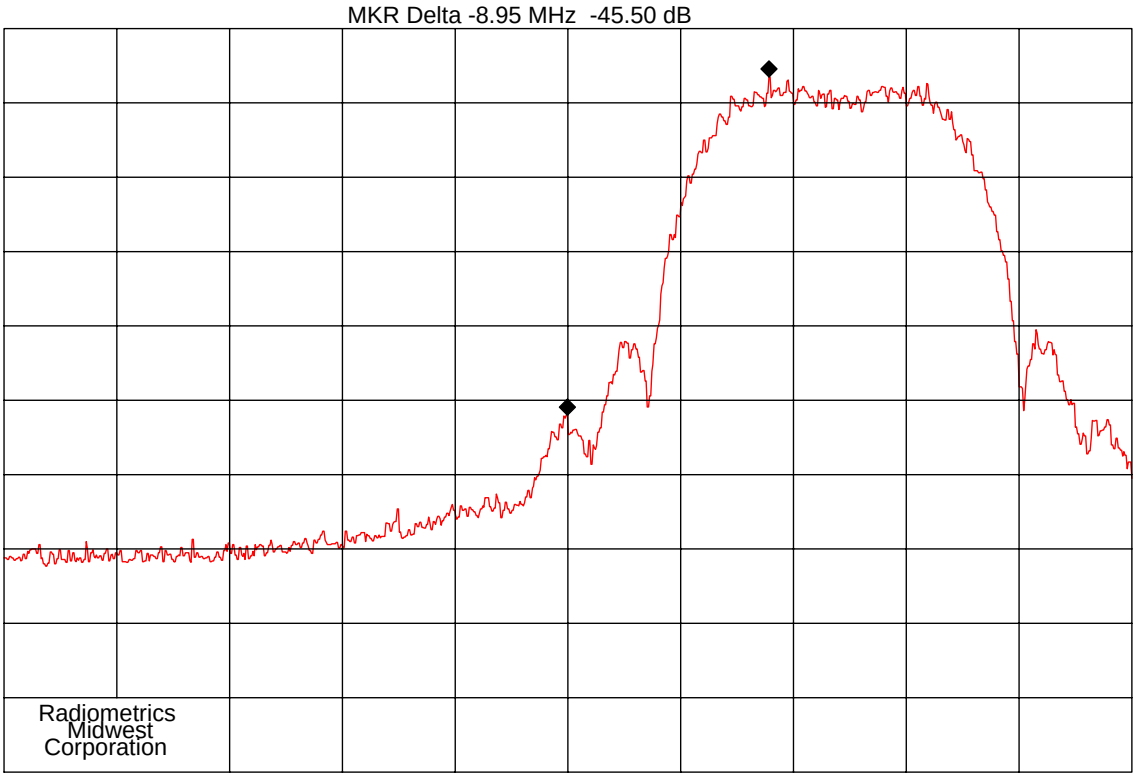
PSD option 1 was used for this test. No external attenuator was used. The spectrum analyzer was set to the following settings:

Span = 500 kHz
RBW = 3 kHz
VBW = 10 kHz
Sweep = 167 seconds
Detector function = Peak

| Mode | Frequency (MHz) | Reading dBm | Cable Loss (dB) | 3 kHz Spectral Density (dBm) | Limit (dBm) |
|---|---|---|---|---|---|
| 802.11b | 2412 | -6.4 | 0.3 | -6.1 | 8.0 |
| 802.11b | 2437 | -6.5 | 0.3 | -6.2 | 8.0 |
| 802.11b | 2462 | -6.7 | 0.3 | -6.4 | 8.0 |
| 802.11g | 2412 | -8 | 0.3 | -7.7 | 8.0 |
| 802.11g | 2437 | -7.6 | 0.3 | -7.3 | 8.0 |
| 802.11g | 2462 | -8.9 | 0.3 | -8.6 | 8.0 |

## 10.5 Band-edge Compliance of RF Conducted Emissions

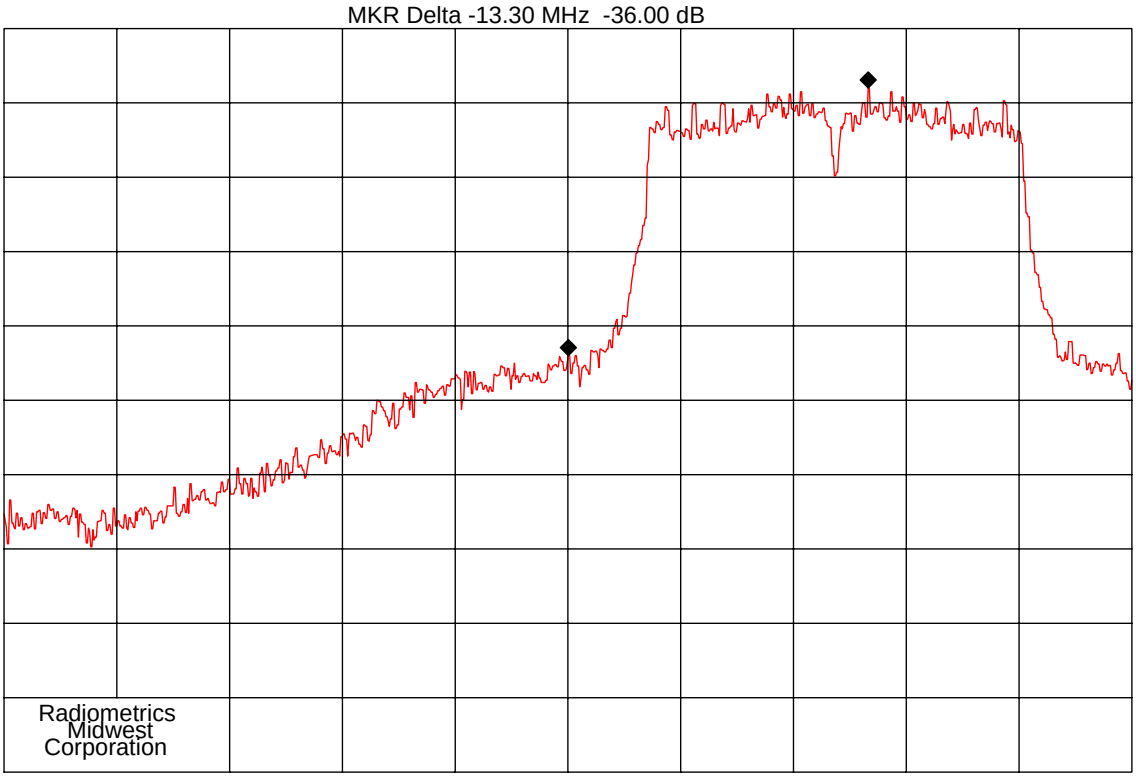
The spectrum analyzer was set to the MAX HOLD mode to record the worst case of the modulation at the band-edge, with the EUT set to the lowest frequency. The trace was allowed to stabilize.




COMPANY : Westell
CENTER 2.400 0 GHz
RES BW 100 kHz
10 dB/
NOTES : Band Edge, 802.11b Ch 1

ITEM : A90-4272V-07
REF 10.0 dBm
VBW 300 kHz
TIME : 12:48

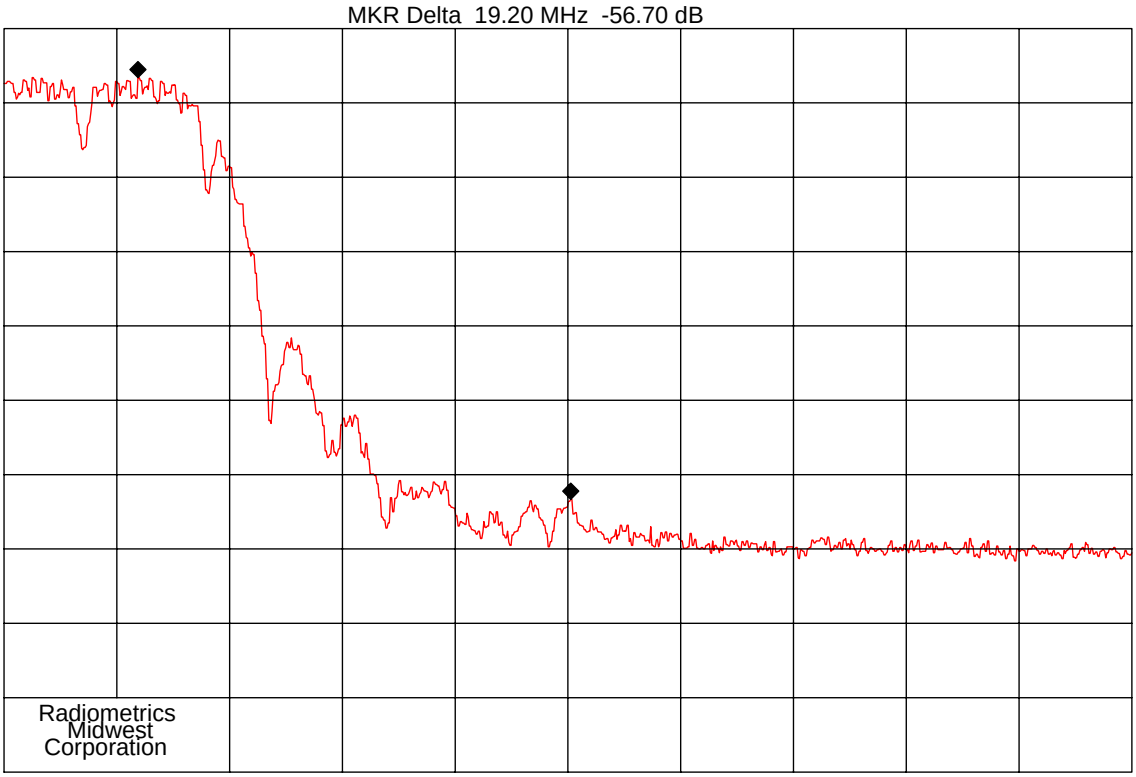
DATE : 05-12-2005
SPAN 50.0 MHz
ATTEN 20 dB
SWP 20.0 msec




COMPANY : Westell
CENTER 2.400 0 GHz
RES BW 100 kHz
10 dB/
NOTES : Band Edge, 802.11g Ch 1

ITEM : A90-4272V-07
REF 10.0 dBm
VBW 300 kHz
TIME : 12:50

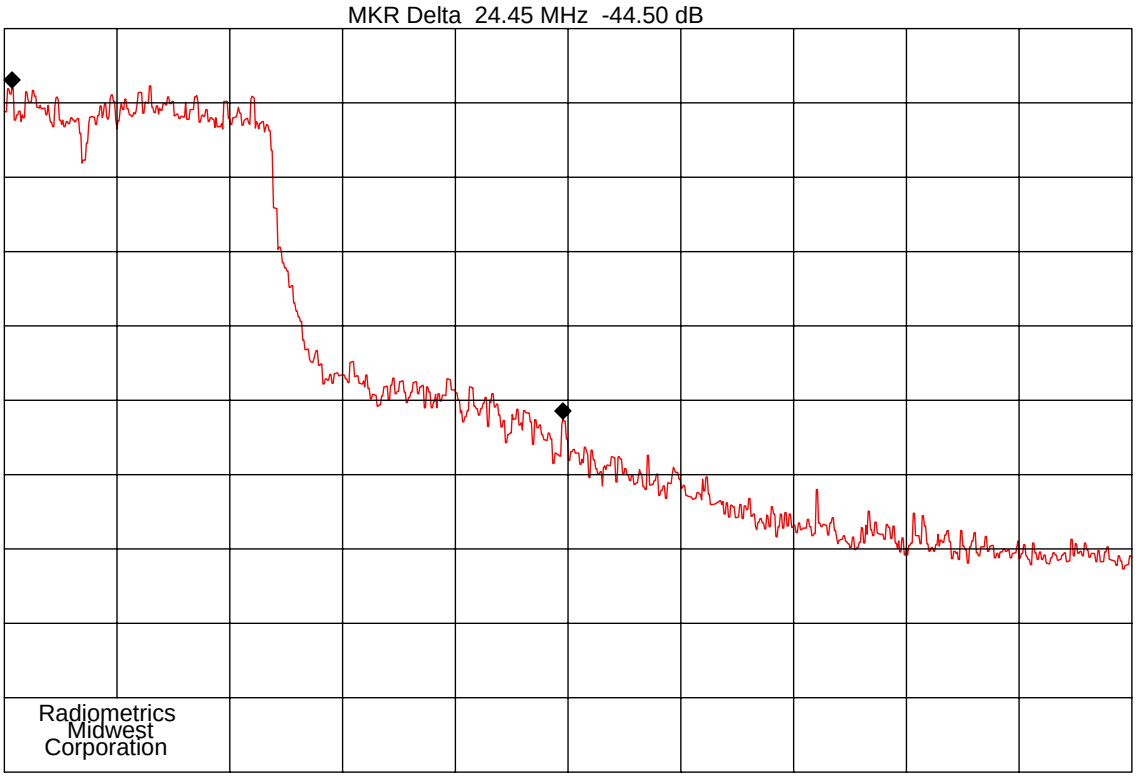
DATE : 05-12-2005
SPAN 50.0 MHz
ATTEN 20 dB
SWP 20.0 msec




COMPANY : Westell
CENTER 2.483 5 GHz
RES BW 100 kHz
10 dB/
NOTES : Band Edge, 802.11b Ch 11

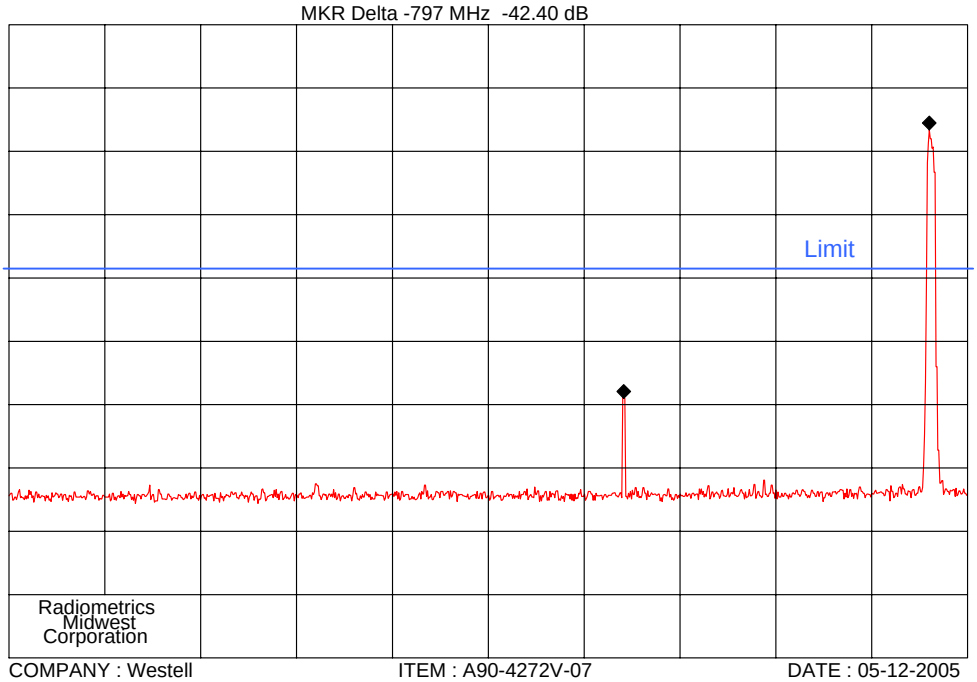
ITEM : A90-4272V-07
REF 10.0 dBm
VBW 300 kHz
TIME : 12:53

DATE : 05-12-2005
SPAN 50.0 MHz
ATTEN 20 dB
SWP 20.0 msec




## 10.6 Spurious RF Conducted Emissions

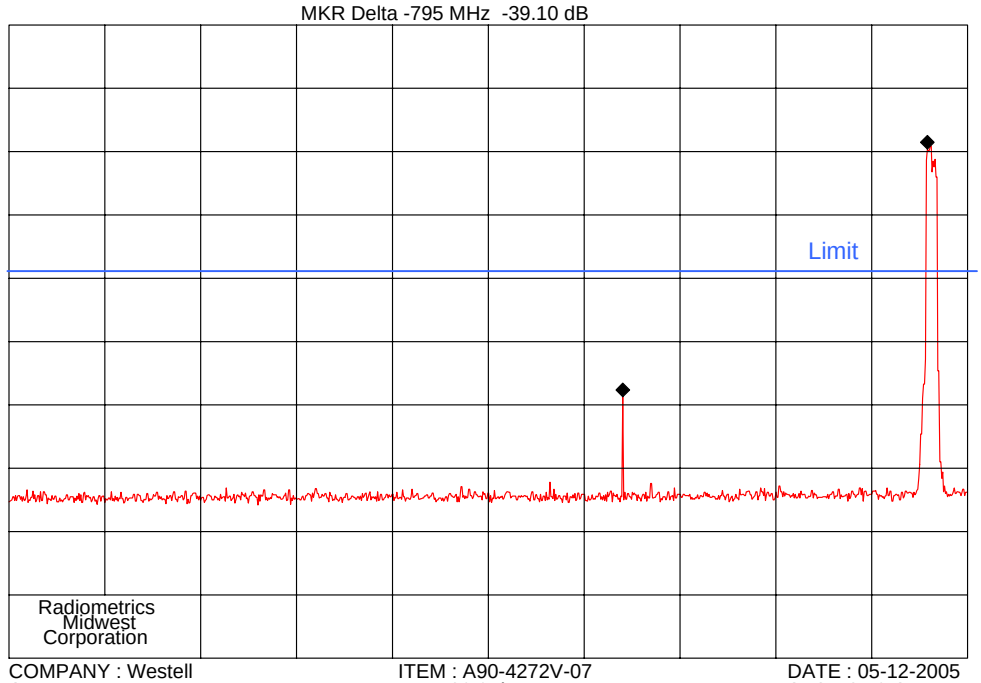
The spectrum analyzer was set to the MAX HOLD mode to record all spurious emissions from the lowest frequency generated in the EUT up through the 10$^{th}$ harmonic. The trace was allowed to stabilize. The first two plots were made while stepping through three frequencies (Low middle and high). Each frequency was on for 30 seconds. The last two plots were made with hopping enabled.




COMPANY : Westell
START 1 MHz
RES BW 100 kHz
10 dB/
NOTES : Ant cond Em, 802.11b Ch 1

ITEM : A90-4272V-07
REF 20.0 dBm
VBW 300 kHz
TIME : 13:13

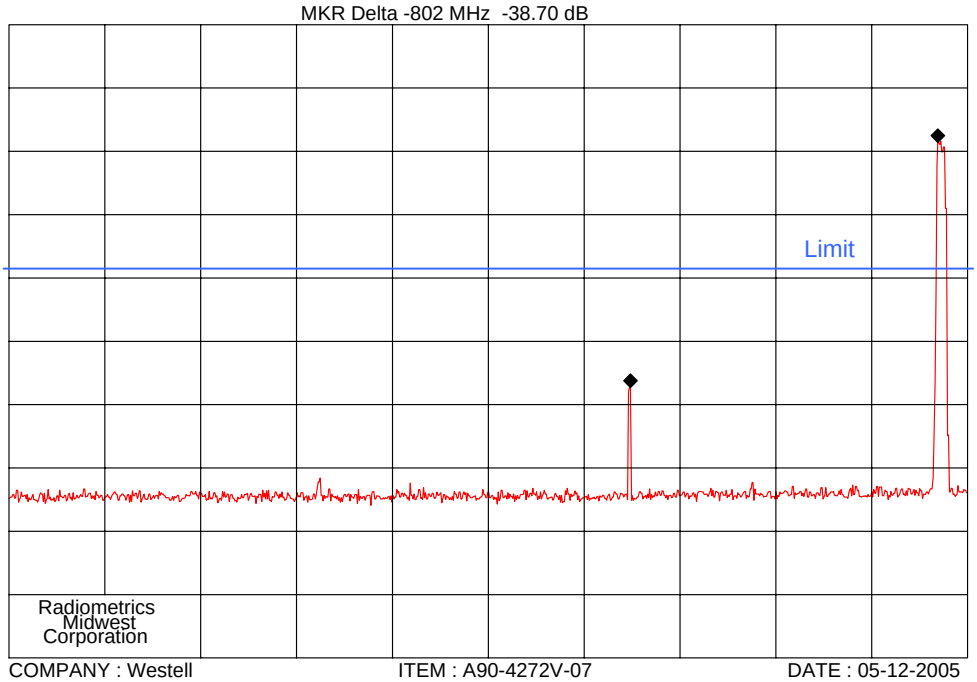
DATE : 05-12-2005
STOP 2.50 GHz
ATTEN 30 dB
SWP 750 msec




COMPANY : Westell
START 1 MHz
RES BW 100 kHz
10 dB/
NOTES : Ant cond Em, 802.11g Ch 1

ITEM : A90-4272V-07
REF 20.0 dBm
VBW 300 kHz
TIME : 13:23

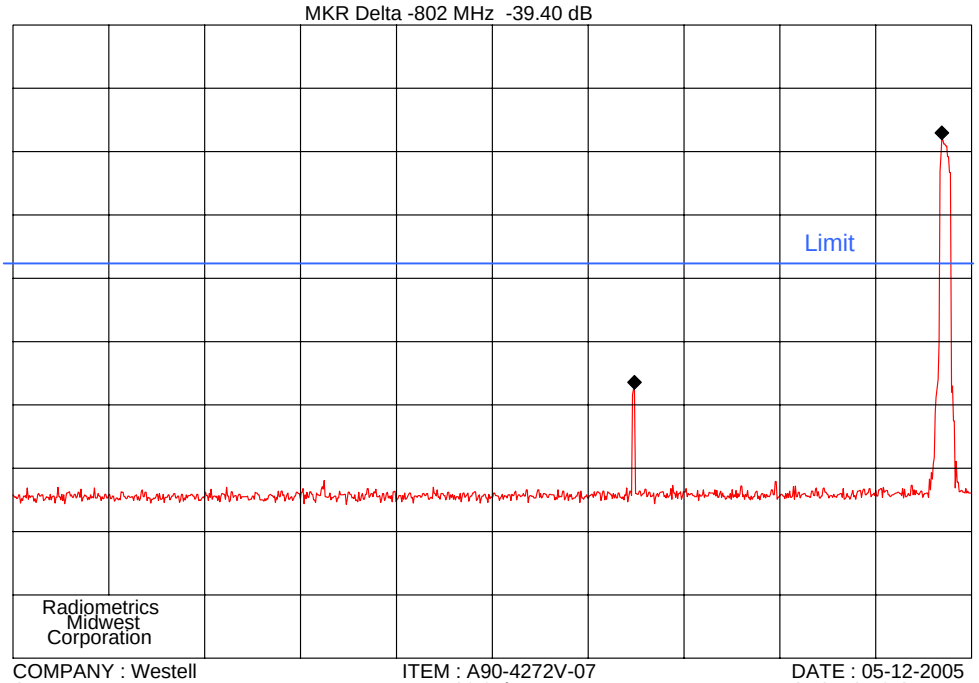
DATE : 05-12-2005
STOP 2.50 GHz
ATTEN 30 dB
SWP 750 msec




COMPANY : Westell
START 1 MHz
RES BW 100 kHz
10 dB/
NOTES : Ant cond Em, 802.11b Ch 6

ITEM : A90-4272V-07
REF 20.0 dBm
VBW 300 kHz
TIME : 13:15

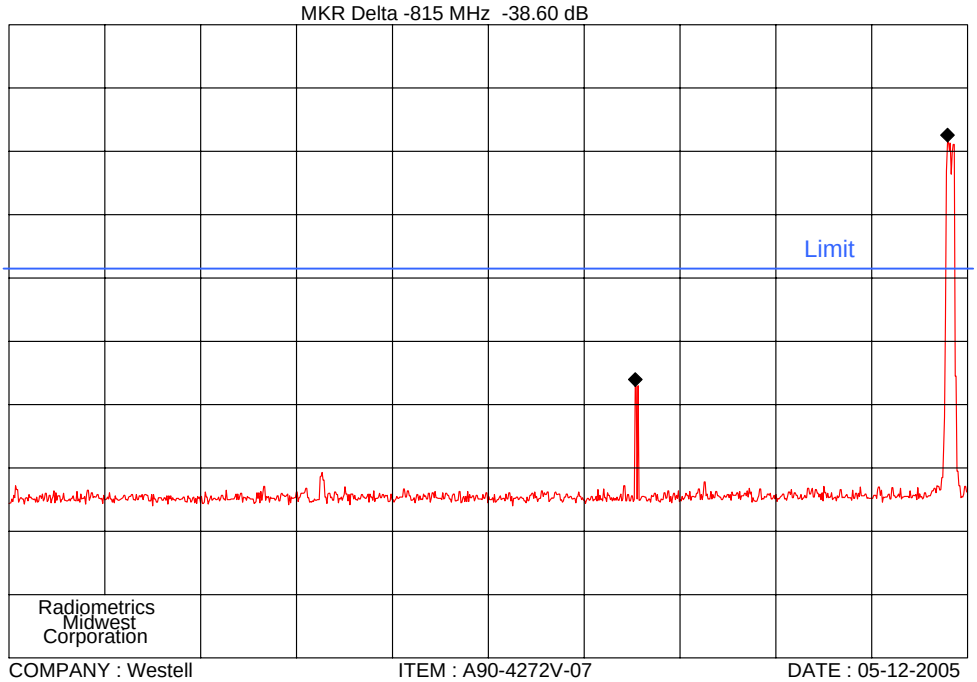
DATE : 05-12-2005
STOP 2.50 GHz
ATTEN 30 dB
SWP 750 msec




COMPANY : Westell
START 1 MHz
RES BW 100 kHz
10 dB/
NOTES : Ant cond Em, 802.11g Ch 6

ITEM : A90-4272V-07
REF 20.0 dBm
VBW 300 kHz
TIME : 13:22

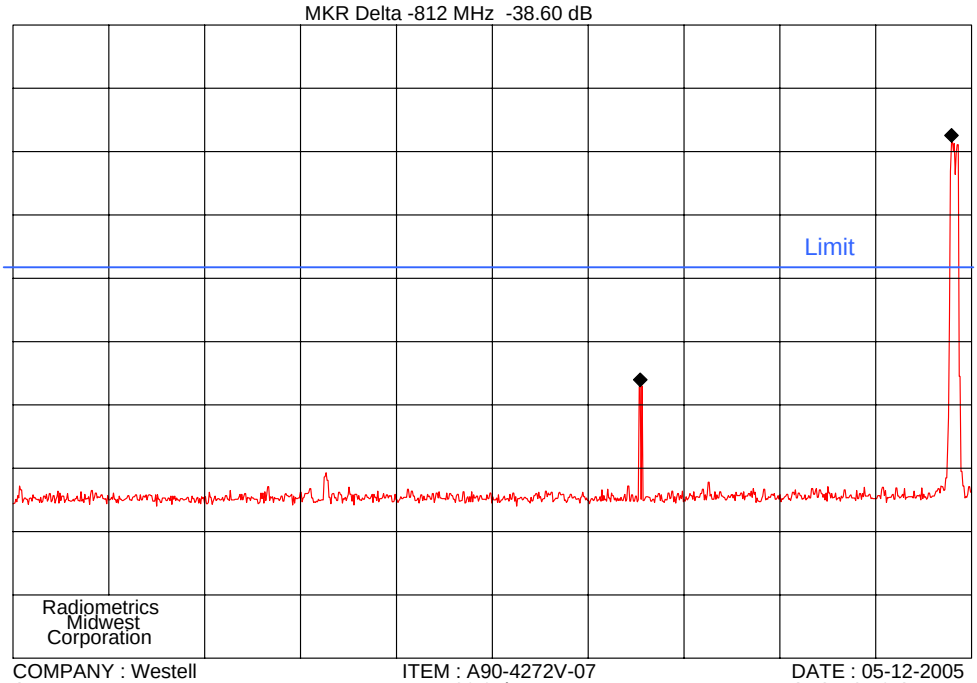
DATE : 05-12-2005
STOP 2.50 GHz
ATTEN 30 dB
SWP 750 msec




COMPANY : Westell
START 1 MHz
RES BW 100 kHz
10 dB/
NOTES : Ant cond Em, 802.11b Ch 11

ITEM : A90-4272V-07
REF 20.0 dBm
VBW 300 kHz
TIME : 13:16

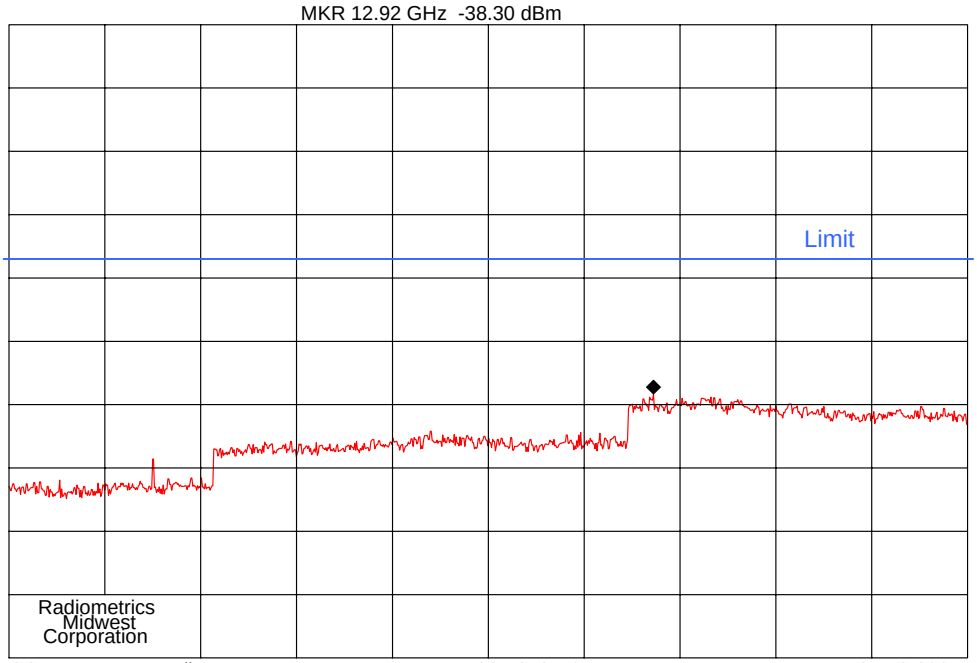
DATE : 05-12-2005
STOP 2.50 GHz
ATTEN 30 dB
SWP 750 msec




COMPANY : Westell
START 1 MHz
RES BW 100 kHz
10 dB/
NOTES : Ant cond Em, 802.11g Ch 11

ITEM : A90-4272V-07
REF 20.0 dBm
VBW 300 kHz
TIME : 13:19

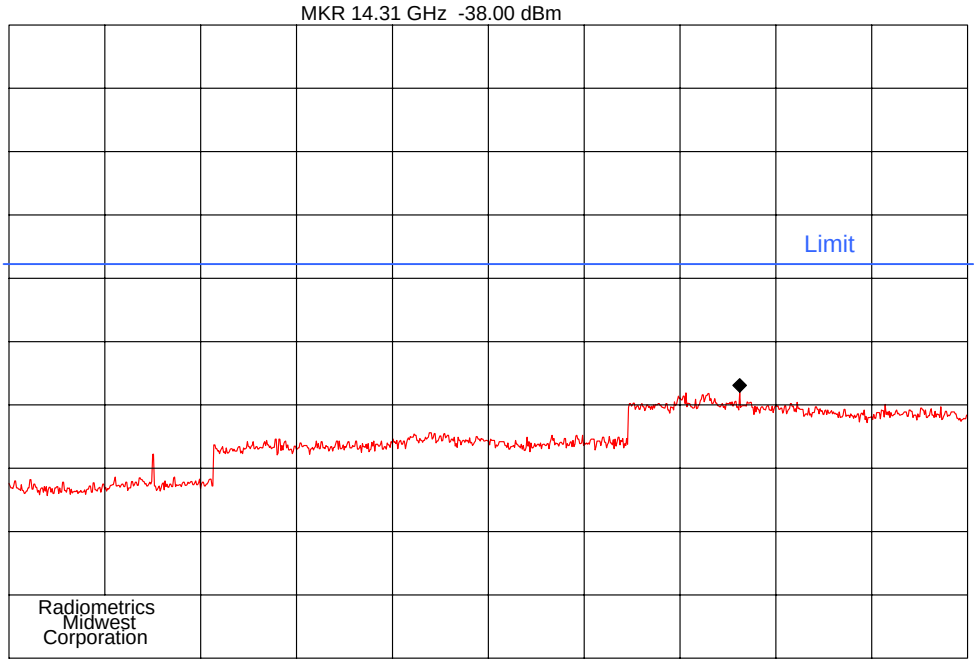
DATE : 05-12-2005
STOP 2.50 GHz
ATTEN 30 dB
SWP 750 msec




COMPANY : Westell
START 2.5 GHz
RES BW 300 kHz
10 dB/
NOTES : Ant cond Em, 802.11b Ch 1

ITEM : A90-4272V-07
REF 20.0 dBm
VBW 1 MHz
TIME : 13:30

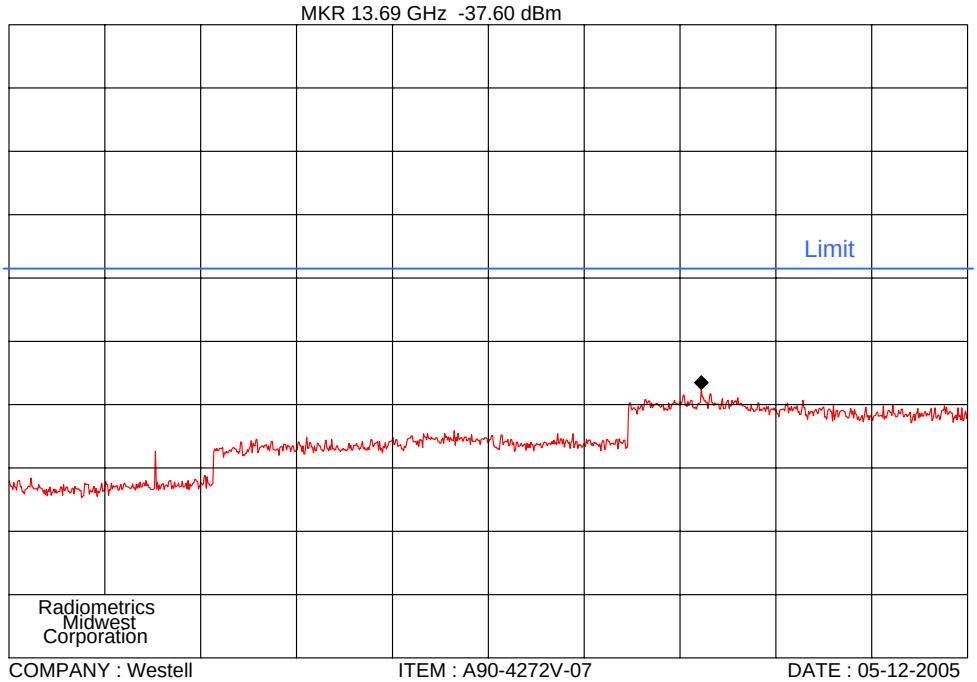
DATE : 05-12-2005
STOP 18.0 GHz
ATTEN 30 dB
SWP 465 msec




COMPANY : Westell
START 2.5 GHz
RES BW 300 kHz
10 dB/
NOTES : Ant cond Em, 802.11g Ch 1

ITEM : A90-4272V-07
REF 20.0 dBm
VBW 1 MHz
TIME : 13:24

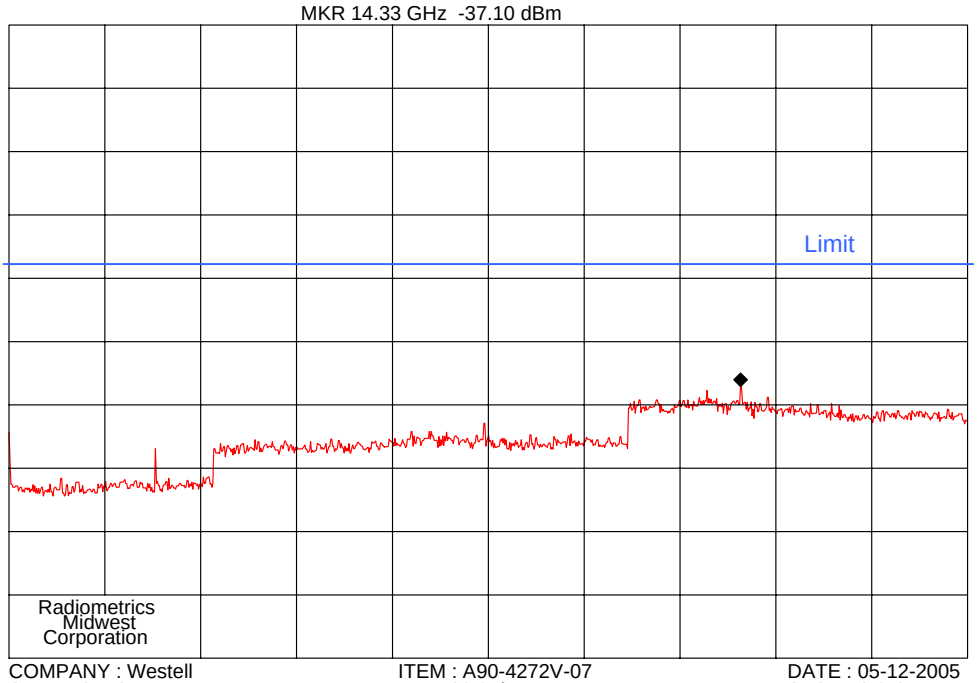
DATE : 05-12-2005
STOP 18.0 GHz
ATTEN 30 dB
SWP 465 msec




COMPANY : Westell
START 2.5 GHz
RES BW 300 kHz
10 dB/
NOTES : Ant cond Em, 802.11b Ch 6

ITEM : A90-4272V-07
REF 20.0 dBm
VBW 1 MHz
TIME : 13:29

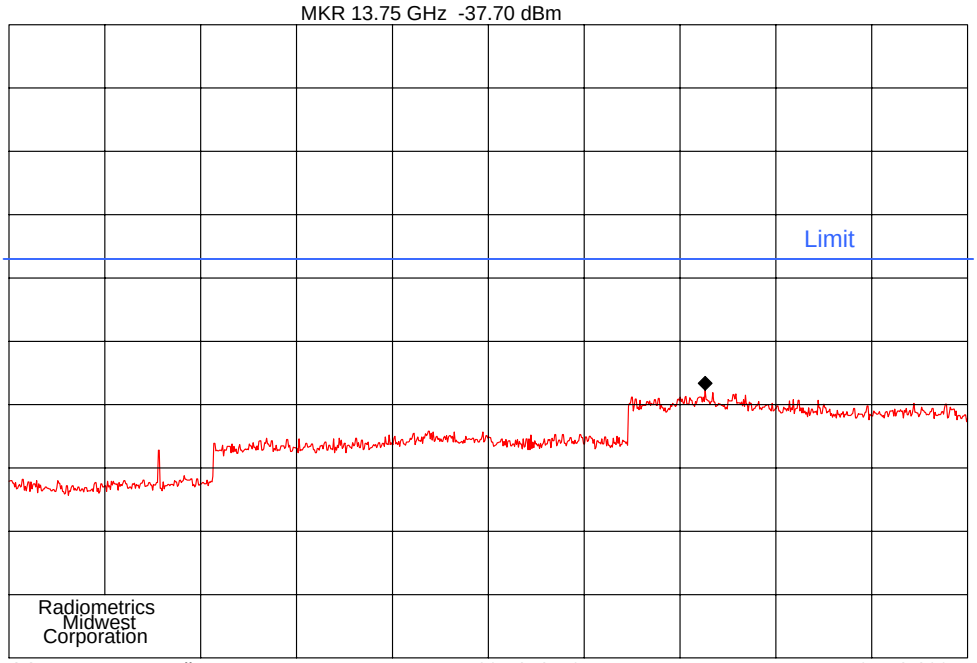
DATE : 05-12-2005
STOP 18.0 GHz
ATTEN 30 dB
SWP 465 msec




COMPANY : Westell
START 2.5 GHz
RES BW 300 kHz
10 dB/
NOTES : Ant cond Em, 802.11g Ch 6

ITEM : A90-4272V-07
REF 20.0 dBm
VBW 1 MHz
TIME : 13:26

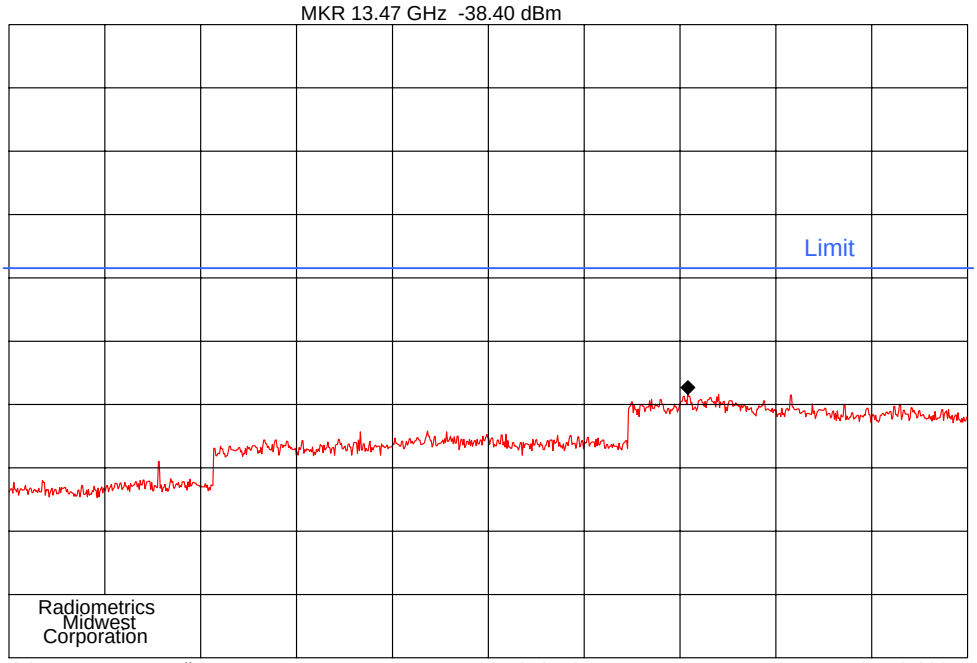
DATE : 05-12-2005
STOP 18.0 GHz
ATTEN 30 dB
SWP 465 msec




COMPANY : Westell
START 2.5 GHz
RES BW 300 kHz
10 dB/
NOTES : Ant cond Em, 802.11b Ch 11

ITEM : A90-4272V-07
REF 20.0 dBm
VBW 1 MHz
TIME : 13:28

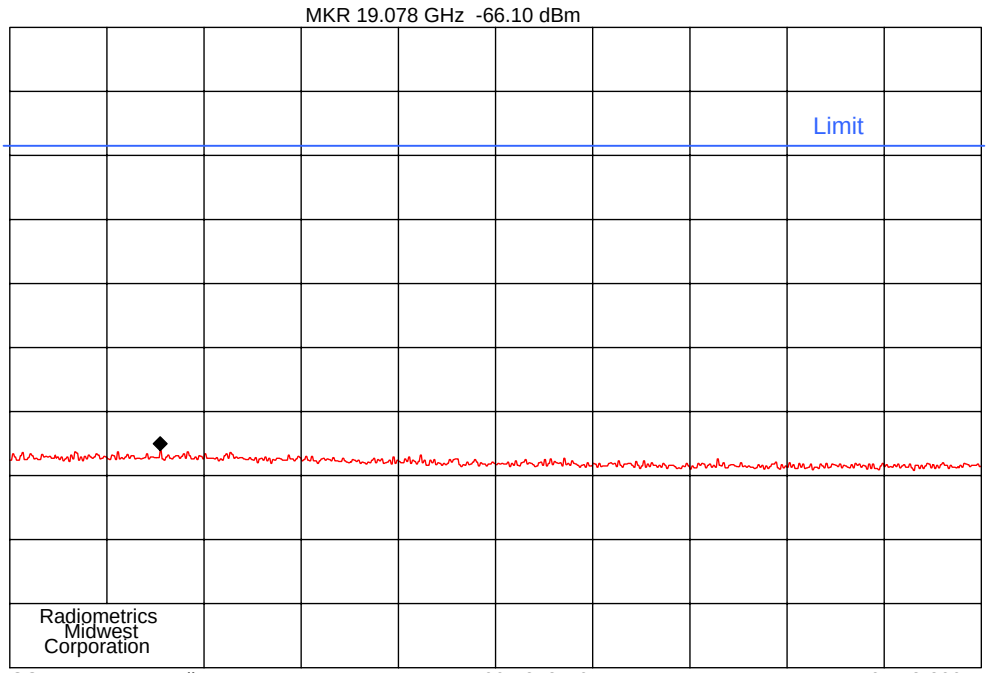
DATE : 05-12-2005
STOP 18.0 GHz
ATTEN 30 dB
SWP 465 msec




COMPANY : Westell
START 2.5 GHz
RES BW 300 kHz
10 dB/
NOTES : Ant cond Em, 802.11g Ch 11

ITEM : A90-4272V-07
REF 20.0 dBm
VBW 1 MHz
TIME : 13:27

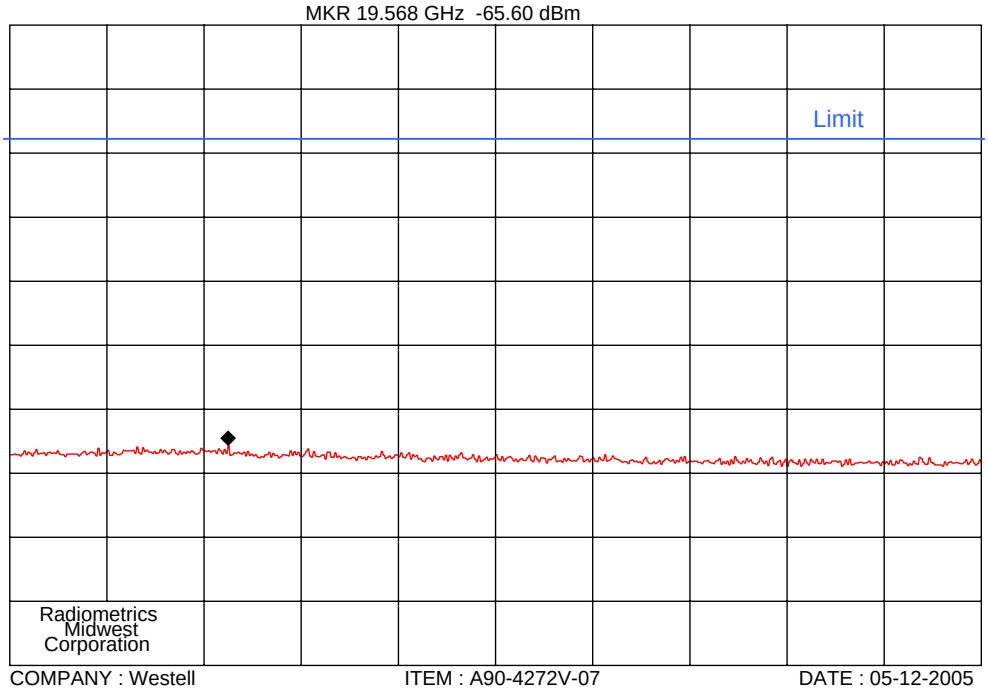
DATE : 05-12-2005
STOP 18.0 GHz
ATTEN 30 dB
SWP 465 msec




COMPANY : Westell
START 18.00 GHz
RES BW 3 MHz
10 dB/
NOTES : Ant cond Em, 802.11b Ch 1

ITEM : A90-4272V-07
REF 0.0 dBm
VBW 3 MHz
TIME : 13:55

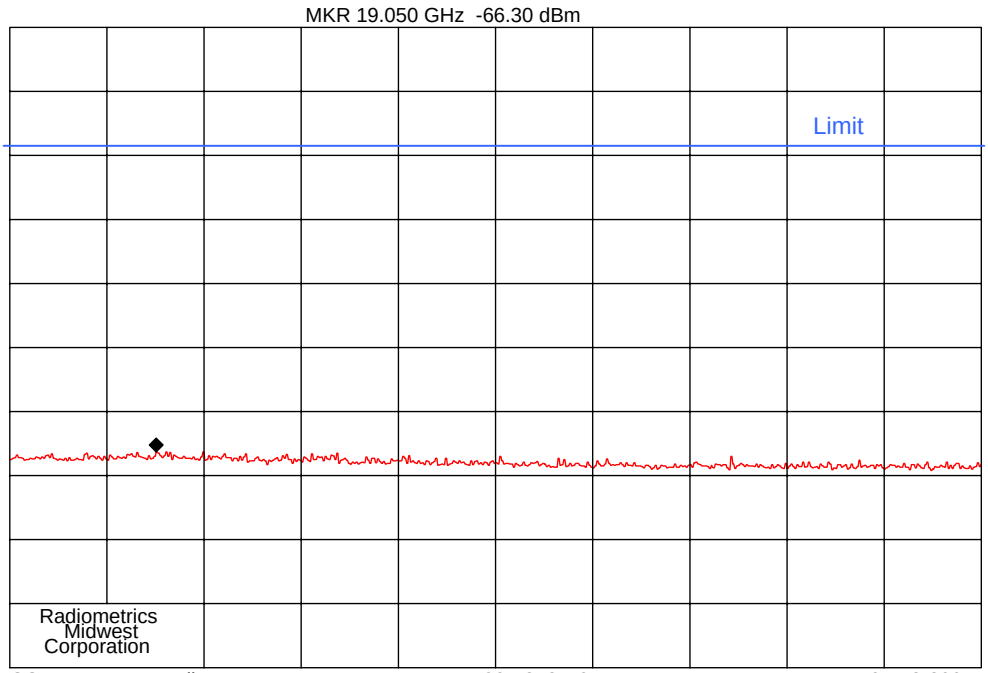
DATE : 05-12-2005
STOP 25.00 GHz
HARMONIC 6
SWP 23.3 msec




COMPANY : Westell
START 18.00 GHz
RES BW 3 MHz
10 dB/
NOTES : Ant cond Em, 802.11g Ch 1

ITEM : A90-4272V-07
REF 0.0 dBm
VBW 3 MHz
TIME : 13:59

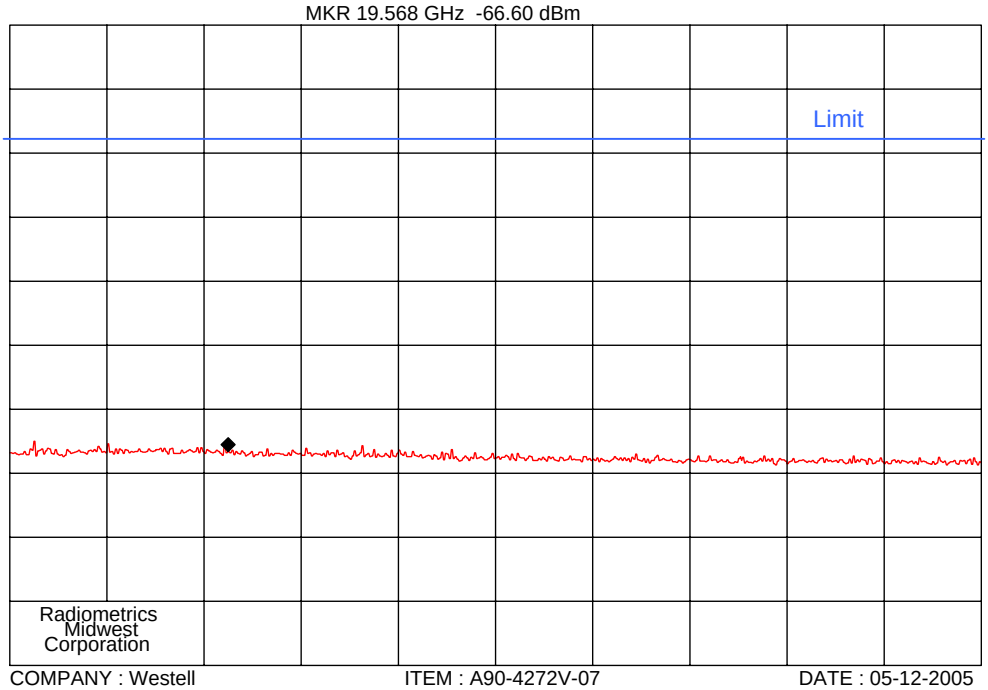
DATE : 05-12-2005
STOP 25.00 GHz
HARMONIC 6
SWP 23.3 msec




COMPANY : Westell
START 18.00 GHz
RES BW 3 MHz
10 dB/
NOTES : Ant cond Em, 802.11b Ch 6

ITEM : A90-4272V-07
REF 0.0 dBm
VBW 3 MHz
TIME : 13:56

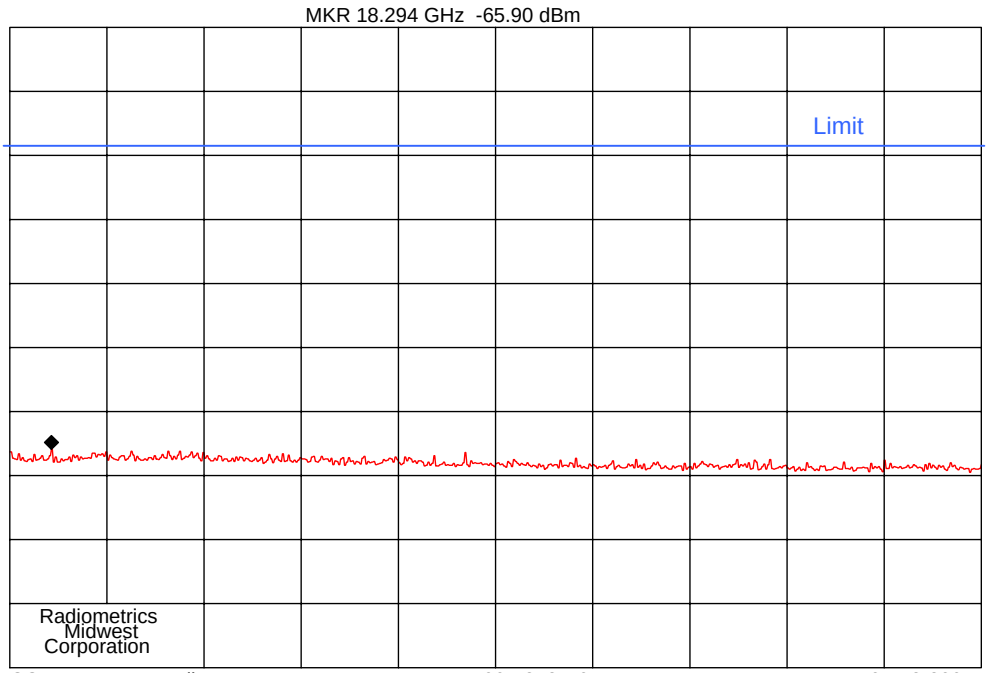
DATE : 05-12-2005
STOP 25.00 GHz
HARMONIC 6
SWP 23.3 msec




COMPANY : Westell
START 18.00 GHz
RES BW 3 MHz
10 dB/
NOTES : Ant cond Em, 802.11g Ch 6

ITEM : A90-4272V-07
REF 0.0 dBm
VBW 3 MHz
TIME : 14:00

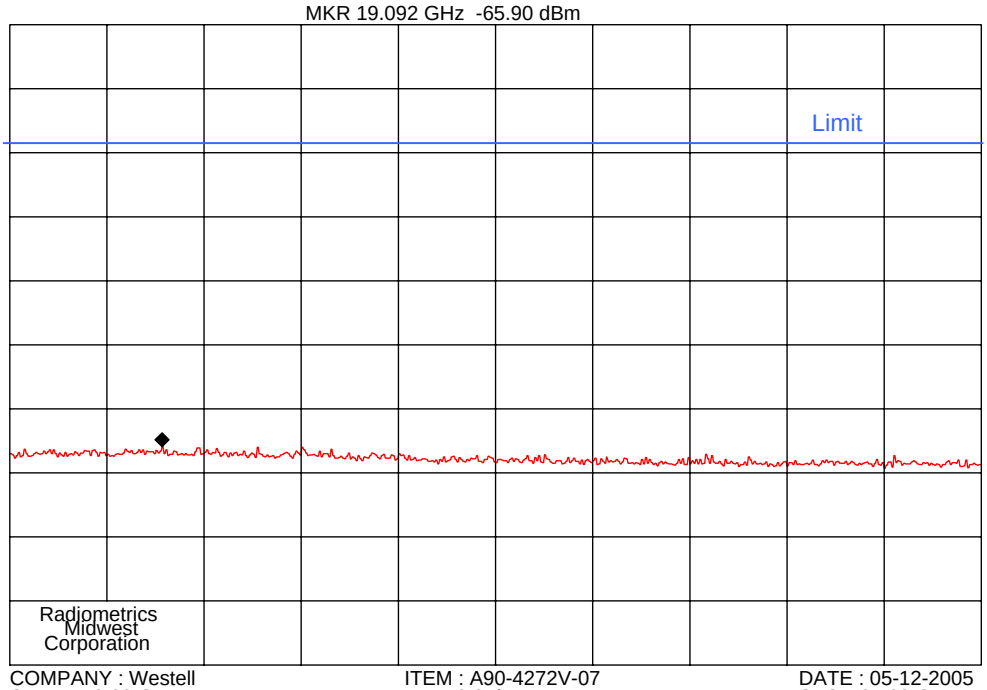
DATE : 05-12-2005
STOP 25.00 GHz
HARMONIC 6
SWP 23.3 msec




COMPANY : Westell
START 18.00 GHz
RES BW 3 MHz
10 dB/
NOTES : Ant cond Em, 802.11b Ch 11

ITEM : A90-4272V-07
REF 0.0 dBm
VBW 3 MHz
TIME : 13:58

DATE : 05-12-2005
STOP 25.00 GHz
HARMONIC 6
SWP 23.3 msec




COMPANY : Westell
START 18.00 GHz
RES BW 3 MHz
10 dB/
NOTES : Ant cond Em, 802.11g Ch 11

ITEM : A90-4272V-07
REF 0.0 dBm
VBW 3 MHz
TIME : 14:01

DATE : 05-12-2005
STOP 25.00 GHz
HARMONIC 6
SWP 23.3 msec

## 10.7 Spurious Radiated Emissions (Restricted Band)

Radiated emission measurements in the Restricted bands were performed with linearly polarized broadband antennas. The results obtained with these antennas can be correlated with results obtained with a tuned dipole antenna. Below 1 GHz, when a radiated emission is detected approaching the specification limit, the measurement of the emission is repeated using a tuned dipole antenna with a Roberts Balun. A 10 dB linearity check is performed prior to start of testing in order to determine if an overload condition exists.

From 30 to 1000 MHz, an Anritsu Spectrum analyzer and a preamplifier were used. The out of band emissions and the ambient emissions were below the level of input overload (80 dBuV).

For tests from 1 to 25 GHz, an HP8566A spectrum analyzer was used with a preamplifier. A harmonic mixer was used from 20 to 25 GHz. The out of band emissions and the ambient emissions were below the level of input overload (72 dBuV). In addition, a high pass filter was used to reduce the fundamental emission.

Radiated emission measurements are performed with linearly polarized broadband antennas. Measurements were performed using two antenna polarizations, (vertical and horizontal). The worst case emissions were recorded.

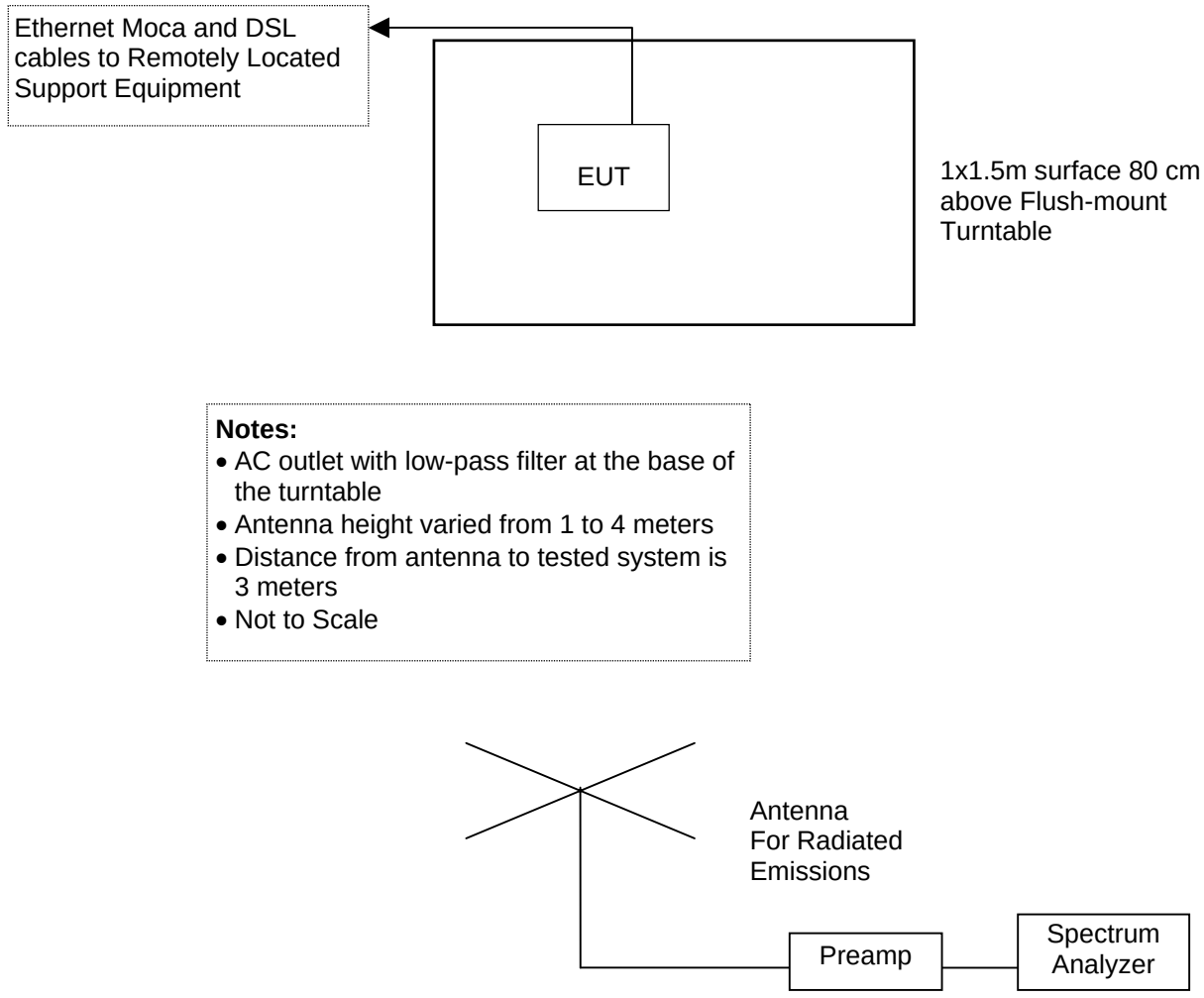
Final radiated emissions measurements were performed in Chamber E at a test distance of 3 meters. The entire frequency range from 30 MHz to 25 GHz was slowly scanned and the emissions in the restricted frequency bands were recorded. Measurements were performed using the peak detector function. The detected emission levels were maximized by rotating the EUT, adjusting the positions of all cables, and by scanning the measurement antenna from 1 to 4 meters above the ground. The anechoic test chamber has a metal ground screen.

### 10.7.1 Radiated Emissions Field Strength Sample Calculation

The field strength is calculated by adding the Antenna Factor and Cable Loss, and by subtracting the Amplifier Gain from the measured reading. The basic equation is as follows:

FS = RA + AF + CF - AG
Where: FS = Field Strength
RA = Receiver Amplitude
AF = Antenna Factor
CF = Cable Attenuation Factor
AG = Amplifier Gain
HPF = High pass Filter Loss

**Figure 2. Drawing of Radiated Emissions Setup**




## 10.7.2 Spurious Radiated Emissions Test Results (Restricted Band)

The following spectrum analyzer settings were used.

Span = wide enough to fully capture the emission being measured
RBW = 1 MHz for f ≥ 1 GHz, 100 kHz for f < 1 GHz
VBW ≥ RBW
Sweep = auto
Detector function = peak
Trace = max hold

A Video Bandwidth of 10 Hz was used for Average measurements above 1 GHz.

The peak emissions did not exceed the average limit by more than 20 dB.

| | | | |
|---|---|---|---|
| Manufacturer | Westell, Inc. | Specification | FCC Part 15 Subpart C & RSS-210 |
| Model | A90-806015-07 | Test Date | 07-12-2005 |
| Serial Number | C1 | Test Distance | 3 Meters |
| Abbreviations | Pol = Antenna Polarization; V = Vertical; H = Horizontal;; Bilog (ANT-6); HN = Horn (ANT-13) used above 1 GHz P = peak; Q = QP | | |

**Emissions Above 1 GHz**

| Mode | Tx Freq | Ant Pol. | Detector Function | Emission Freq. MHz | EUT FS dBuV/m | Limit dBuV/m | Margin under limit |
|---|---|---|---|---|---|---|---|
| 802.11b | 2412 | V | Peak | 1200 | 55.3 | 74 | 18.7 |
| 802.11b | 2412 | H | Peak | 1200 | 46.8 | 74 | 27.2 |
| 802.11b | 2412 | V | Peak | 1420 | 67.9 | 74 | 6.1 |
| 802.11b | 2412 | H | Peak | 1420 | 53.9 | 74 | 20.1 |
| 802.11b | 2412 | V | Peak | 2000 | 69.2 | 74 | 4.8 |
| 802.11b | 2412 | H | Peak | 2000 | 66.6 | 74 | 7.4 |
| 802.11b | 2412 | V | Peak | 2390 | 56.6 | 74 | 17.4 |
| 802.11b | 2412 | H | Peak | 2390 | 48.6 | 74 | 25.4 |
| 802.11b | 2412 | H | Peak | 2615 | 41.9 | 74 | 39.5 |
| 802.11b | 2412 | V | Peak | 4824 | 51.6 | 74 | 22.4 |
| 802.11b | 2412 | H | Peak | 4824 | 42.6 | 74 | 31.4 |
| 802.11b | 2412 | V | Peak | 7236 | 51 | 74 | 23 |
| 802.11b | 2412 | H | Peak | 7236 | 51 | 74 | 23 |
| 802.11b | 2412 | V | Peak | 9648 | 58 | 74 | 16 |
| 802.11b | 2412 | H | Peak | 9648 | 51.5 | 74 | 22.5 |
| 802.11b | 2437 | V | Peak | 4874 | 53.1 | 74 | 20.9 |
| 802.11b | 2437 | H | Peak | 4874 | 47.1 | 74 | 26.9 |
| 802.11b | 2437 | V | Peak | 7311 | 48.3 | 74 | 25.7 |
| 802.11b | 2437 | H | Peak | 7311 | 48.3 | 74 | 25.7 |
| 802.11b | 2437 | V | Peak | 9748 | 57.1 | 74 | 16.9 |
| 802.11b | 2437 | H | Peak | 9748 | 50.5 | 74 | 23.5 |
| 802.11b | 2462 | V | Peak | 2485 | 66.5 | 74 | 7.5 |
| 802.11b | 2462 | H | Peak | 2485 | 59 | 74 | 15 |
| 802.11b | 2462 | V | Peak | 4924 | 52.8 | 74 | 21.2 |
| 802.11b | 2462 | H | Peak | 4924 | 46.4 | 74 | 27.6 |
| 802.11b | 2462 | V | Peak | 7386 | 51.5 | 74 | 22.5 |
| 802.11b | 2462 | H | Peak | 7386 | 51.5 | 74 | 22.5 |
| 802.11b | 2462 | V | Peak | 9848 | 58.4 | 74 | 15.6 |
| 802.11b | 2412 | V | Ave | 1200 | 51 | 54 | 3 |
| 802.11b | 2412 | H | Ave | 1200 | 42 | 54 | 12 |
| 802.11b | 2412 | V | Ave | 1420 | 43.9 | 54 | 10.1 |
| 802.11b | 2412 | H | Ave | 1420 | 47.4 | 54 | 6.6 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 802.11b | 2412 | V | Ave | 1607 | 40.6 | 54 | 13.4 |
| 802.11b | 2412 | V | Ave | 2000 | 46.7 | 54 | 7.3 |
| 802.11b | 2412 | H | Ave | 2000 | 47.9 | 54 | 6.1 |
| 802.11b | 2412 | V | Ave | 2615 | 36.5 | 54 | 17.5 |
| 802.11b | 2412 | H | Ave | 2615 | 36.5 | 54 | 17.5 |
| 802.11b | 2412 | V | Ave | 2390 | 44 | 54 | 10 |
| 802.11b | 2412 | H | Ave | 2390 | 41.8 | 54 | 12.2 |
| 802.11b | 2412 | V | Ave | 4824 | 44.1 | 54 | 9.9 |
| 802.11b | 2412 | H | Ave | 4824 | 38.2 | 54 | 15.8 |
| 802.11b | 2412 | V | Ave | 7236 | 45.5 | 54 | 8.5 |
| 802.11b | 2412 | H | Ave | 7236 | 45.2 | 54 | 8.8 |
| 802.11b | 2437 | V | Ave | 4874 | 44.2 | 54 | 9.8 |
| 802.11b | 2437 | H | Ave | 4874 | 37.3 | 54 | 16.7 |
| 802.11b | 2437 | V | Ave | 7311 | 46.6 | 54 | 7.4 |
| 802.11b | 2437 | H | Ave | 7311 | 46 | 54 | 8 |
| 802.11b | 2462 | V | Ave | 2485 | 48 | 54 | 6 |
| 802.11b | 2462 | H | Ave | 2485 | 44.2 | 54 | 9.8 |
| 802.11b | 2462 | V | Ave | 4924 | 44.5 | 54 | 9.5 |
| 802.11b | 2462 | H | Ave | 4924 | 38.9 | 54 | 15.1 |
| 802.11b | 2462 | V | Ave | 7386 | 46.3 | 54 | 7.7 |
| 802.11b | 2462 | H | Ave | 7386 | 46.9 | 54 | 7.1 |
| 802.11g | 2412 | V | Peak | 1200 | 58.7 | 74 | 15.3 |
| 802.11g | 2412 | H | Peak | 1200 | 46.3 | 74 | 27.7 |
| 802.11g | 2412 | V | Peak | 1420 | 62.2 | 74 | 11.8 |
| 802.11g | 2412 | H | Peak | 1420 | 53.4 | 74 | 20.6 |
| 802.11g | 2412 | V | Peak | 2390 | 63.9 | 74 | 10.1 |
| 802.11g | 2412 | H | Peak | 2390 | 45.6 | 74 | 28.4 |
| 802.11g | 2412 | V | Peak | 2615 | 43.1 | 74 | 30.9 |
| 802.11g | 2412 | H | Peak | 2615 | 41.9 | 74 | 32.1 |
| 802.11g | 2412 | V | Peak | 2000 | 69.3 | 74 | 4.7 |
| 802.11g | 2412 | H | Peak | 2000 | 65.2 | 74 | 8.8 |
| 802.11g | 2412 | V | Peak | 4824 | 53 | 74 | 21 |
| 802.11g | 2412 | H | Peak | 4824 | 45.1 | 74 | 28.9 |
| 802.11g | 2412 | V | Peak | 7236 | 51 | 74 | 23 |
| 802.11g | 2412 | H | Peak | 7236 | 51 | 74 | 23 |
| 802.11g | 2412 | V | Peak | 9648 | 56.8 | 74 | 17.2 |
| 802.11g | 2412 | H | Peak | 9648 | 47.5 | 74 | 26.5 |
| 802.11g | 2437 | V | Peak | 4874 | 53 | 74 | 21 |
| 802.11g | 2437 | H | Peak | 4874 | 45.7 | 74 | 28.3 |
| 802.11g | 2437 | V | Peak | 7311 | 48.3 | 74 | 25.7 |
| 802.11g | 2437 | H | Peak | 7311 | 48.3 | 74 | 25.7 |
| 802.11g | 2462 | V | Peak | 2485 | 67.6 | 74 | 6.4 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 802.11g | 2462 | H | Peak | 2485 | 56 | 74 | 18 |
| 802.11g | 2462 | V | Peak | 4924 | 53.2 | 74 | 20.8 |
| 802.11g | 2462 | H | Peak | 4924 | 46.8 | 74 | 27.2 |
| 802.11g | 2462 | V | Peak | 7386 | 51.5 | 74 | 22.5 |
| 802.11g | 2462 | H | Peak | 7386 | 51.5 | 74 | 22.5 |
| 802.11g | 2412 | H | Ave | 1200 | 42.3 | 54 | 11.7 |
| 802.11g | 2412 | V | Ave | 1420 | 46.4 | 54 | 7.6 |
| 802.11g | 2412 | H | Ave | 1420 | 47.5 | 54 | 6.5 |
| 802.11g | 2412 | V | Ave | 2000 | 47.7 | 54 | 6.3 |
| 802.11g | 2412 | H | Ave | 2000 | 46.2 | 54 | 7.8 |
| 802.11g | 2412 | V | Ave | 2390 | 45.5 | 54 | 8.5 |
| 802.11g | 2412 | V | Ave | 4824 | 44.9 | 54 | 9.1 |
| 802.11g | 2412 | H | Ave | 4824 | 38.3 | 54 | 15.7 |
| 802.11g | 2412 | V | Ave | 7236 | 46.1 | 54 | 7.9 |
| 802.11g | 2412 | H | Ave | 7236 | 45.6 | 54 | 8.4 |
| 802.11g | 2412 | H | Ave | 9648 | 42.7 | 54 | 11.3 |
| 802.11g | 2437 | V | Ave | 4874 | 44.9 | 54 | 9.1 |
| 802.11g | 2437 | H | Ave | 4874 | 38.6 | 54 | 15.4 |
| 802.11g | 2437 | V | Ave | 7311 | 45.8 | 54 | 8.2 |
| 802.11g | 2437 | H | Ave | 7311 | 45.9 | 54 | 8.1 |
| 802.11g | 2462 | V | Ave | 2485 | 48.5 | 54 | 5.5 |
| 802.11g | 2462 | H | Ave | 2485 | 41.1 | 54 | 12.9 |
| 802.11g | 2462 | V | Ave | 4924 | 45.2 | 54 | 8.8 |
| 802.11g | 2462 | H | Ave | 7386 | 46.8 | 54 | 7.2 |

Judgment: Passed by 3.0 dB
No other emissions were detected in the restricted bands.

**Emissions Below 1 GHz**

| Test Date | 09/09/2005 |
|---|---|

| Freq. MHz | Meter Reading dBuV | Antenna Factor dB | Antenna Pol/ Type | Corr. Factors dB | Field Strength dBuV/m EUT | Field Strength dBuV/m Limit | Margin Under Limit dB |
|---|---|---|---|---|---|---|---|
| 131.9 | 39.1 P | 9.9 | H/44 | -16.2 | 32.8 | 43.5 | 10.7 |
| 165.4 | 43.2 P | 9.6 | H/44 | -16.0 | 36.8 | 43.5 | 6.7 |
| 179.9 | 37.4 P | 9.6 | H/44 | -15.9 | 31.2 | 43.5 | 12.3 |
| 250.3 | 40.7 P | 12.9 | H/44 | -15.3 | 38.3 | 46.0 | 7.7 |
| 267.1 | 45.3 P | 13.1 | H/44 | -15.2 | 43.2 | 46.0 | 2.8 |
| 275.4 | 42.5 P | 13.7 | H/44 | -15.2 | 41.0 | 46.0 | 5.0 |
| 297.2 | 41.3 P | 14.2 | H/44 | -15.0 | 40.5 | 46.0 | 5.5 |
| 300.3 | 37.8 P | 14.3 | H/44 | -15.0 | 37.1 | 46.0 | 8.9 |
| 325.1 | 37.7 P | 14.2 | H/44 | -14.8 | 37.1 | 46.0 | 8.9 |
| 329.8 | 41.0 P | 14.4 | H/44 | -14.8 | 40.6 | 46.0 | 5.4 |
| 363.3 | 42.0 P | 15.2 | H/44 | -14.7 | 42.6 | 46.0 | 3.4 |
| 396.0 | 42.9 P | 16.0 | H/44 | -14.5 | 44.4 | 46.0 | 1.6 |
| 396.0 | 43.2 Q | 16.0 | H/44 | -14.5 | 44.7 | 46.0 | 1.3 |
| 659.9 | 31.8 P | 20.0 | H/44 | -12.4 | 39.4 | 46.0 | 6.6 |
| 700.5 | 32.6 P | 20.8 | H/44 | -12.2 | 41.2 | 46.0 | 4.8 |
| 1136.3 | 24.8 P | 23.5 | H/44 | -8.0 | 40.3 | 54.0 | 13.7 |
| 43.8 | 38.2 Q | 17.0 | V/44 | -17.5 | 37.7 | 40.0 | 2.3 |
| 79.6 | 39.9 P | 7.1 | V/44 | -16.9 | 30.2 | 40.0 | 9.8 |
| 97.5 | 40.6 P | 10.3 | V/44 | -16.7 | 34.3 | 43.5 | 9.2 |
| 101.9 | 43.8 P | 11.7 | V/44 | -16.6 | 38.9 | 43.5 | 4.6 |
| 102.0 | 41.3 P | 11.7 | V/44 | -16.6 | 36.3 | 43.5 | 7.2 |
| 131.6 | 43.1 P | 10.1 | V/44 | -16.2 | 36.9 | 43.5 | 6.6 |
| 132.0 | 41.5 P | 10.1 | V/44 | -16.2 | 35.4 | 43.5 | 8.1 |
| 145.2 | 44.1 P | 6.5 | V/44 | -16.1 | 34.4 | 43.5 | 9.1 |
| 145.6 | 45.6 P | 6.6 | V/44 | -16.1 | 36.1 | 43.5 | 7.4 |
| 146.9 | 43.5 P | 6.8 | V/44 | -16.1 | 34.2 | 43.5 | 9.3 |
| 165.0 | 34.9 Q | 12.4 | V/44 | -16.0 | 31.3 | 43.5 | 12.2 |
| 178.0 | 43.7 P | 10.2 | V/44 | -15.9 | 38.1 | 43.5 | 5.4 |
| 180.0 | 42.1 Q | 10.0 | V/44 | -15.9 | 36.3 | 43.5 | 7.2 |
| 180.8 | 44.8 P | 10.0 | V/44 | -15.9 | 39.0 | 43.5 | 4.5 |
| 181.0 | 44.0 P | 10.0 | V/44 | -15.8 | 38.2 | 43.5 | 5.3 |
| 230.7 | 39.4 P | 11.8 | V/44 | -15.5 | 35.8 | 46.0 | 10.2 |
| 249.2 | 44.5 P | 12.8 | V/44 | -15.3 | 42.0 | 46.0 | 4.0 |
| 250.3 | 42.4 P | 12.8 | V/44 | -15.3 | 39.9 | 46.0 | 6.1 |
| 264.0 | 37.9 P | 13.0 | V/44 | -15.2 | 35.7 | 46.0 | 10.3 |
| 265.2 | 44.8 P | 13.1 | V/44 | -15.2 | 42.7 | 46.0 | 3.3 |
| 267.1 | 44.9 P | 13.2 | V/44 | -15.2 | 42.9 | 46.0 | 3.1 |
| 275.4 | 39.9 P | 13.0 | V/44 | -15.2 | 37.7 | 46.0 | 8.3 |
| 295.6 | 40.4 P | 13.1 | V/44 | -15.0 | 38.5 | 46.0 | 7.5 |
| 367.6 | 37.8 P | 15.9 | V/44 | -14.6 | 39.0 | 46.0 | 7.0 |
| 394.0 | 37.5 P | 15.9 | V/44 | -14.5 | 38.9 | 46.0 | 7.1 |
| 396.0 | 37.0 P | 15.8 | V/44 | -14.5 | 38.3 | 46.0 | 7.7 |

| Freq. MHz | Meter Reading dBuV | Antenna Factor dB | Antenna Pol/ Type | Corr. Factors dB | Field Strength dBuV/m EUT | Field Strength dBuV/m Limit | Margin Under Limit dB |
|---|---|---|---|---|---|---|---|
| 528.0 | 32.1 P | 18.3 | V/44 | -13.4 | 37.0 | 46.0 | 9.0 |
| 660.0 | 31.0 P | 19.5 | V/44 | -12.4 | 38.1 | 46.0 | 7.9 |
| 700.5 | 34.0 P | 19.4 | V/44 | -12.2 | 41.2 | 46.0 | 4.8 |
| 1056.0 | 24.3 P | 24.0 | V/44 | -9.1 | 39.1 | 54.0 | 14.9 |

Judgment: Passed by 1.3 dB