



Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

FCC Rules and Regulations / Intentional Radiators

Regulations Governing Licensing and Use of Frequencies in the 4940 - 4990 MHz Band

Part 90, Subpart Y, Sections 90.1201 - 90.1215

**THE FOLLOWING MEETS THE ABOVE TEST SPECIFICATION**

Formal Name: Canopy 4.9 GHz OFDM Radio  
Kind of Equipment: Digital fixed transceiver  
Frequency Range: 4940 MHz - 4990 MHz  
Test Configuration: Stand alone (Tested at 56 vdc)  
Model Number(s): 4940AP, 4940SM, 4940BH  
Model(s) Tested: 4940AP  
Serial Number(s): 0A0035302AA6  
Date of Tests: December 18, 2008  
Test Conducted For: Motorola, Inc.  
1299 E. Algonquin Road  
Schaumburg, Illinois 60196

**NOTICE:** "This report must not be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government". Please see the "Additional Description of Equipment Under Test" page listed inside of this report.

© Copyright 1983-2008 D.L.S. Electronic Systems, Inc

**COPYRIGHT NOTICE**

This report or any portion thereof, may not be reproduced or modified in any form without the expressed written consent of D.L.S. Electronic Systems, Inc.



Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## SIGNATURE PAGE

Report By:

Arnom C. Rowe  
Test Engineer  
EMC-001375-NE

Reviewed By:

William Stumpf  
OATS Manager

Approved By:

Brian Mattson  
General Manager



Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## TABLE OF CONTENTS

i.	Cover Page .....	1
ii.	Signature Page .....	2
iii.	Table of Contents .....	3
iv.	NVLAP Certificate of Accreditation .....	5
1.0	Summary of Test Report .....	6
2.0	Introduction .....	6
3.0	Object .....	6
4.0	Test Set-Up .....	7
5.0	Test Equipment .....	8
6.0	Ambient Measurements .....	9
7.0	AC Power Line Conducted Emission Measurements .....	9
8.0	Description of Test Sample .....	10
9.0	Additional Description of Test Sample .....	11
10.0	Photo Information and Test Set-Up .....	11
11.0	Radiated Photos Taken During Testing .....	12
12.0	Results of Tests .....	14
13.0	Conclusion .....	14
	TABLE 1 – EQUIPMENT LIST .....	15



1250 Peterson Dr., Wheeling, IL 60090

Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

## TABLE OF CONTENTS

Appendix A – Electric Field Radiated Emissions Test.....	16
1.0 Test Set-Up .....	17
2.0 DC Voltages and Current into final Amplifying Stage.....	17
3.0 RF Power Output .....	17
3.0 Data and Charts taken of the RF Power Output.....	18
3.0 Data and Charts taken of the Peak Power Spectral Density Output .....	22
4.0 RF Output Power Photos Taken During Testing .....	26
5.0 Occupied Bandwidth.....	27
5.0 Data and Graph(s) taken of the 99% Occupied Bandwidth.....	27
5.0 Data and Graph(s) taken of the 26 dB Emission Bandwidth .....	31
5.0 Data and Graph(s) taken of the Emission Mask .....	35
6.0 Spurious Emissions At Antenna Terminals .....	39
6.0 Low Channel Conducted Emission Data and Charts made at the Antenna Terminals.....	40
6.0 Mid Channel Conducted Emission Data and Charts made at the Antenna Terminals .....	59
6.0 High Channel Conducted Emission Data and Charts made at the Antenna Terminals .....	78
7.0 Field Strength of Spurious Emission Measurements .....	97
7.0 Radiated Data harts taken for Spurious Emissions using the Substitution Method.....	98
8.0 Frequency Stability (Temperature) .....	100
9.0 Frequency Stability (Voltage Variation).....	100
8.0 & 9.0 Data taken for Frequency Stability Temperature & Voltage Variation.....	101
10.0 Frequency Stability Photos Taken During Testing .....	103

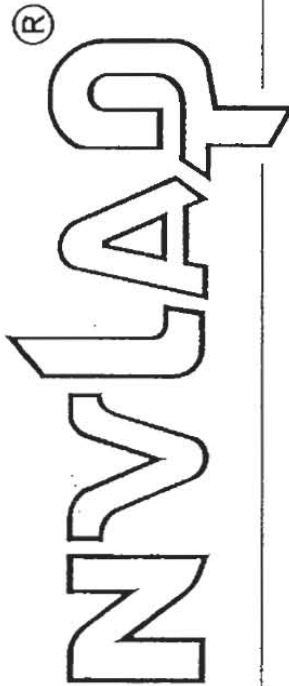


Company:  
Model Tested:  
Report Number:

Motorola, Inc.  
4940AP  
15001

1250 Peterson Dr., Wheeling, IL 60090

United States Department of Commerce  
National Institute of Standards and Technology



## Certificate of Accreditation to ISO/IEC 17025:2005

NVLAP LAB CODE: 100276-0

**D.L.S. Electronic Systems, Inc.**  
Wheeling, IL

is accredited by the National Voluntary Laboratory Accreditation Program for specific services,  
listed on the Scope of Accreditation, for:

### ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005.  
This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality  
management system (refer to joint ISO-ILAC-IAF Communiqué dated 18 June 2005).



2007-10-01 through 2008-09-30

Effective dates

*Dolly S. Bruce*  
For the National Institute of Standards and Technology

NVL AP-01C (REV 2006-09-13)



Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## 1.0 SUMMARY OF TEST REPORT

It was found that the Canopy 4.9 GHz OFDM Radio, Model Number(s) 4940AP **meets** the radio interference radiated emissions requirements of the FCC "Rules and Regulations", Part 90, Subpart Y, Section 90.1201, to 90.1215

## 2.0 INTRODUCTION

On December 18, 2008, a series of radio frequency interference measurements were performed on Canopy 4.9 GHz OFDM Radio, Model Number(s) 4940AP, Serial Number: 0A0035302AA6. The tests were performed according to the procedures of the FCC as stated in Part 90, Subpart I, General Technical Standards and Part 2 - Frequency Allocations and Radio Treaty Matters: General Rules and Regulations, Subpart J, Equipment Authorization Procedures of the Code of Federal Regulations 47. Tests were performed by personnel of D.L.S. Electronic Systems, Inc. who are responsible to Donald L. Sweeney, Senior EMC Engineer.

D.L.S. Electronic Systems, Inc. is a full service EMC/Safety Testing Laboratory accredited to ISO Guide 17025. NVLAP Certificate and Scope can be viewed at <http://www.dlsemc.com/certificate>. Our facilities are registered with the FCC, Industry Canada, and VCCI. All immunity tests were performed by personnel of D.L.S. Electronic Systems, Inc. at the following location(s):

### **Main Test Facility:**

D.L.S. Electronic Systems, Inc.  
1250 Peterson Drive  
Wheeling, Illinois 60090

### **O.A.T.S. Test Facility:**

D.L.S. Electronic Systems, Inc.  
166 S. Carter Street  
Genoa City, Wisconsin 53128  
FCC Registration Number: 334127

## 3.0 OBJECT

The purpose of this series of tests was to determine if the test sample could meet the radio frequency interference requirements of the FCC "Rules and Regulations", Part 90, Subpart Y, Section 90.1201, to 90.215.



Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

#### 4.0 TEST SET-UP

All tests were performed at D.L.S. Electronic Systems, Inc. and set up according to the FCC and TIA-603C regulations. The conducted tests if required were performed with the test item placed on a non-conductive table (table top equipment), located in the test room. Equipment normally operated on the floor was tested by placing it on the metal ground plane. The ground plane has an electrical isolation layer over its surface approximately 7mm thick. The power line supplied was connected to a dual line impedance stabilization network electrically bonded to the ground plane, located on the floor. The networks were constructed per the requirements of the American National Standards Institute, ANSI C63.4-2003.

All radiated emissions tests were performed with the test item placed on a 80 cm high rotating non-conductive table, located in the test room. Equipment normally operated on the floor was placed on a metal covered turntable, which is flush with the surrounding conducting ground plane. The ground plane has an electrical isolation layer over its surface approximately 7 mm thick. The EUT is separated from the turntable ground plane by a non-conductive layer. The equipment under test was set up according to TIA Standard, TIA-603-C:2004, Section 2.2.12.



Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## 5.0 TEST EQUIPMENT (Bandwidths and Detector Function)

All preliminary data below 1000 MHz was automatically plotted using the ESI 26/ESI 40 Fixed Tuned Receiver. The data was taken using Peak, Quasi-Peak or the Average Detector Functions as required. This information was then used to determine the frequencies of maximum emissions. Above 1000 MHz, final data was taken using the Average Detector.

Below 1000 MHz, final data was taken using the ESI 26/ESI 40 fixed tuned receiver. These plots were made using the Peak or Quasi-Peak Detector functions, with manual measurements performed on the questionable frequencies using the Quasi-Peak or the Average Detector Function of the Analyzer or ESI 26/ESI 40 Receiver as required. Above 1000 MHz, final data was taken using the Average Detector on the ESI 26/ESI 40 Fixed Tuned Receiver.

The bandwidths shown below are specified by ANSI C63.4-2003.

Frequency Range	Bandwidth (-6 dB)
10 to 150 kHz	200 Hz
150 kHz to 30 MHz	9 kHz
30 MHz to 1 GHz	120 kHz
Above 1 GHz	1 MHz

A list of the equipment used can be found in Table 1. All primary equipment was calibrated against known reference standards with a verified traceable path to NIST.





Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## 6.0 AMBIENT MEASUREMENTS

For emissions measurements, broadband antennas and an EMI Test Receiver with a panoramic spectrum display are used. First the frequency range is scanned and displayed on the test receiver display. Next the scanned frequency range is divided into smaller ranges, and then it is manually tuned through to determine the emissions from the EUT. A headset or loudspeaker is connected to the test receiver's AM/FM demodulated output as an aid in detecting ambient signals and finding frequencies of significant emission from the EUT. If there is any doubt as to the source of the emission, it is further investigated by rotating the EUT, or by disconnecting the power from the EUT.

The EUT is set up in its typical configuration and operated in its various modes. For tabletop systems, cables are manipulated within the range of likely configurations. For floor-standing equipment, the cables are located in the same manner as the user would install them and no further manipulation is made. If the manner of cable installation is not known, or if it changes with each installation, cables or wires for floor-standing equipment shall be manipulated to the extent possible to produce the maximum level of emissions. For each mode of operation, the frequency spectrum is monitored. Variations in antenna height, antenna polarization, EUT azimuth, and cable or wire placement (each variable within bounds specified elsewhere) are explored to produce the emission that has the highest amplitude relative to the limit.

## 7.0 AC POWER LINE CONDUCTED EMISSION MEASUREMENTS – Part 15.207

**The Canopy 4.9 GHz OFDM Radio is powered from a D.C. power source and will not at any time be directly plugged into the public utility lines, therefore the conducted emissions test was not performed.**



Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## 8.0 DESCRIPTION OF TEST SAMPLE:

### 8.1 Description:

The 4.9 GHz OFDM radio is a Point to Point and Point to Multipoint outdoor digital transmission system tested with 56 Vdc.

### 8.2 PHYSICAL DIMENSIONS OF EQUIPMENT UNDER TEST

Length: 7.5 in. x Width: 3 in. x Height: 13 in.

### 8.3 LINE FILTER USED:

N/A

### 8.4 INTERNAL CLOCK FREQUENCIES:

Switching Power Supply Frequencies:

125 kHz

Clock Frequencies:

20 MHz, 25 MHz, 80 MHz

### 8.5 DESCRIPTION OF ALL CIRCUIT BOARDS:

1. OFDM 4.9 GHz Radio

PN: 84010075001 Issue P1



1250 Peterson Dr., Wheeling, IL 60090

Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

9.0 ADDITIONAL DESCRIPTION OF TEST SAMPLE:  
(See also Paragraph 8.0)

1: There were no additional descriptions noted at the time of test.

**NOTE:**

Unit was tested in 16QAM, 64QAM, and QPSK modulation modes.

The output power setting was set to 70.

10.0 PHOTO INFORMATION AND TEST SET-UP

Item 0 Canopy 4.9 GHz OFDM Radio

Model Number: 4940AP, Serial Number: 0A0035302AA6

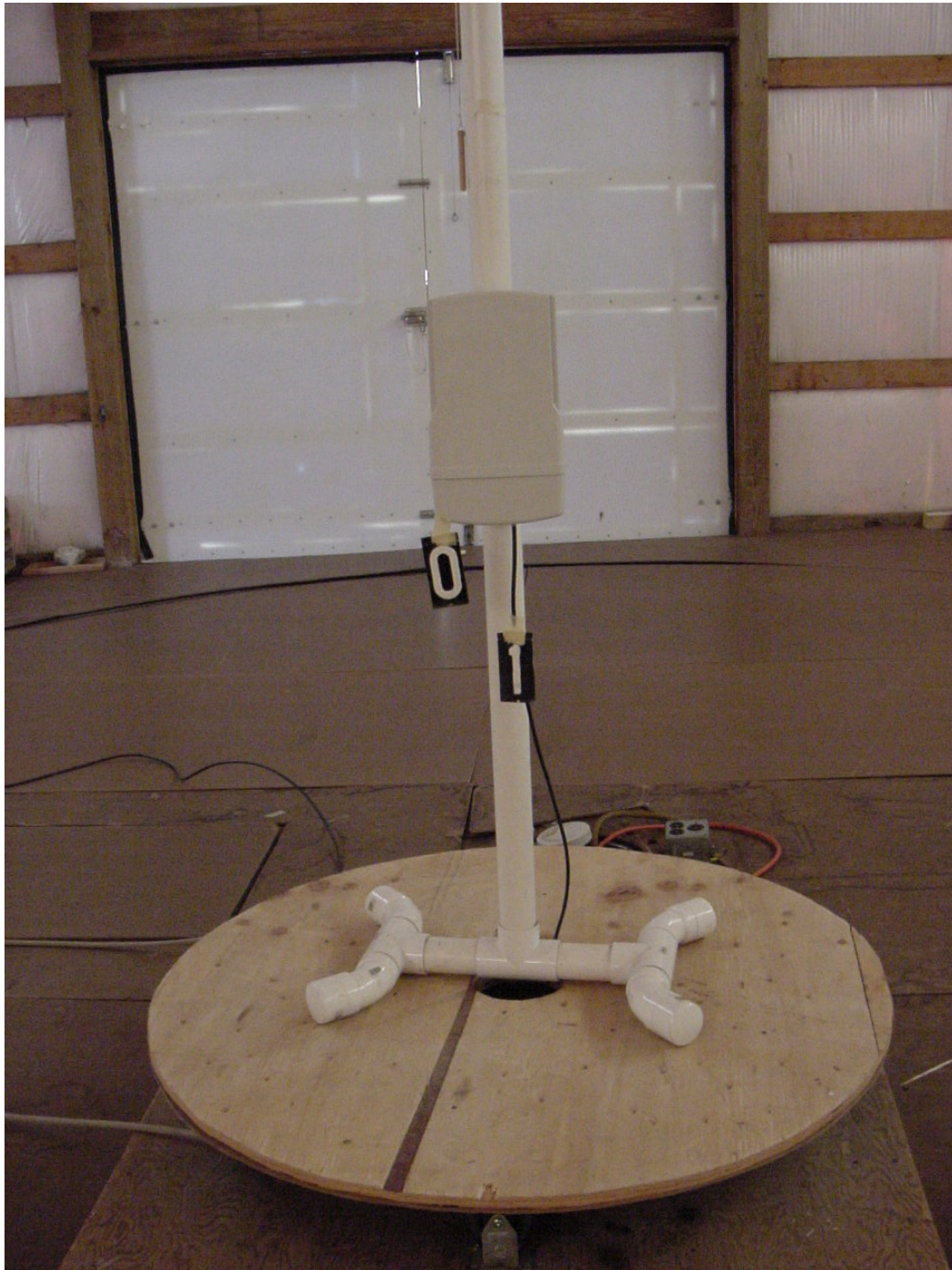
Item 1 Shielded Ethernet Cable with Metal Shells. 300'



Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

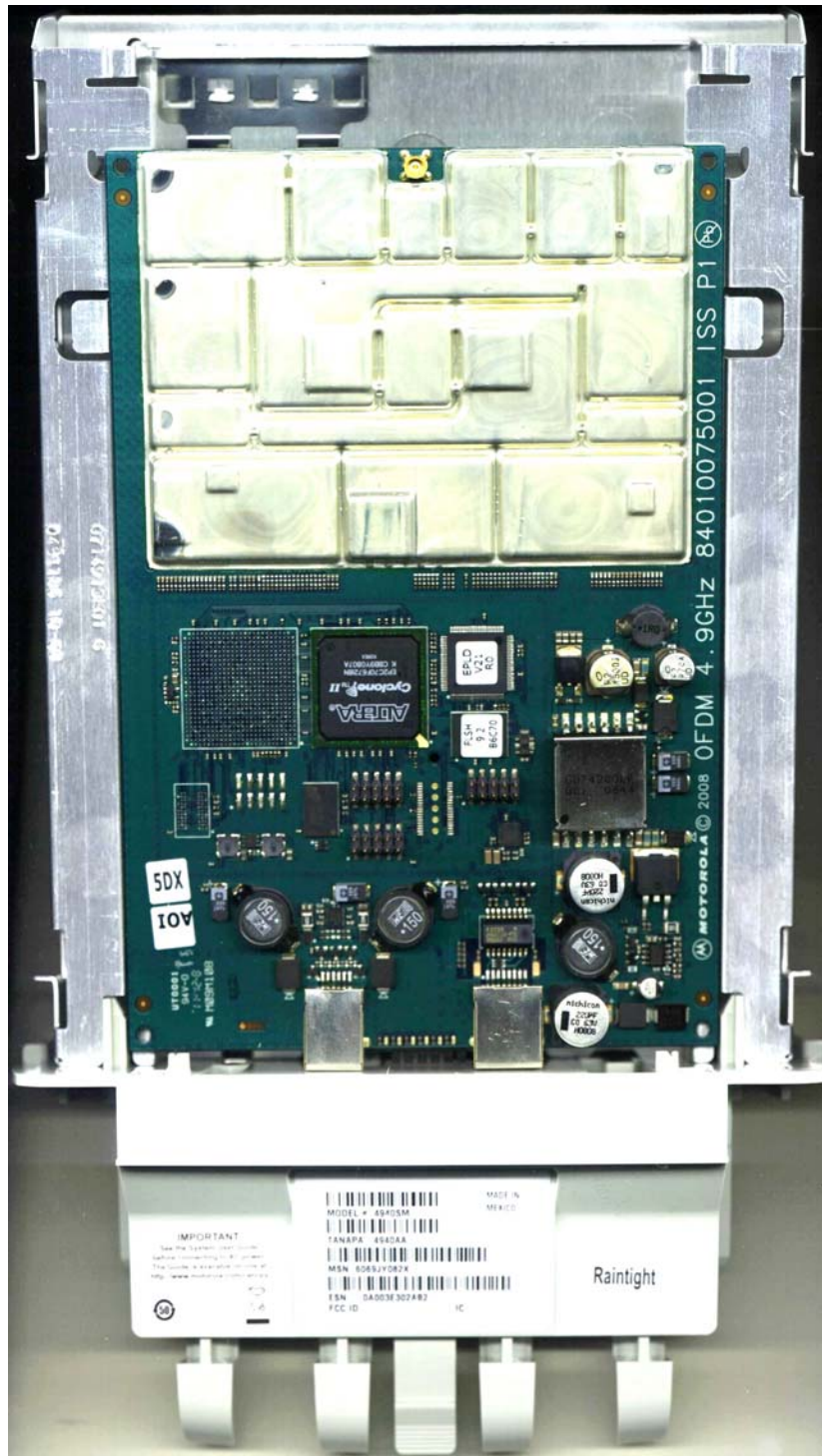
1250 Peterson Dr., Wheeling, IL 60090

## 11.0 RADIATED PHOTOS TAKEN DURING TESTING



**1250 Peterson Dr., Wheeling, IL 60090**

## 11.0 RADIATED PHOTOS TAKEN DURING TESTING







1250 Peterson Dr., Wheeling, IL 60090

Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

## 12.0 RESULTS OF TESTS

The radio interference emission charts can be seen on the pages at the end of this report. Data sheets indicating the test measurements taken during testing can also be found at the end of this report.

## 13.0 CONCLUSION

It was found that the Canopy 4.9 GHz OFDM Radio Model Number(s) 4940AP **meets** the radio interference emission requirements of the FCC "Rules and Regulations", Part 90, Subpart Y, Section 90.1201 to 90.1215.



1250 Peterson Dr., Wheeling, IL 60090

Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

TABLE 1 – EQUIPMENT LIST

<b>Test Equipment</b>	<b>Manufacturer</b>	<b>Model Number</b>	<b>Serial Number</b>	<b>Frequency Range</b>	<b>Cal Due Dates</b>
Receiver	Rohde & Schwarz	ESI 40	837808/006	20 Hz – 40 GHz	3/09
Preamplifier	Rohde & Schwarz	TS-PR10	032001/004	9 kHz – 1 GHz	1/09
Antenna	EMCO	3104C	00054892	20 MHz – 200 MHz	4/10
Antenna	EMCO	3146	1205	200 MHz – 1 GHz	4/10
Preamp	Ciao	CA118-4010	101	1GHz-18GHz	1/09
Horn Antenna	EMCO	3115	4451	1-18GHz	5/09
High Pass Filter	Planar	HP8G-7Q8-CD-SFF	PF1226/7728	f c = 7.5GHz	7/09
Preamp	Miteq	AMF-8B-180265-40-10P-H/S	438727	18GHz-26GHz	9/09
Horn Antenna	ETS Lindgren	3116	2549	18 – 40GHz	5/09
High Pass Filter	Planar	CL22600-9000-CD-SS	PF1230/7728	f c = 16.2GHz	7/09
Preamp	Rohde & Schwarz	TS-PR40	052002/025	26GHz-40GHz	10/09
High Pass Filter	Planar	CL22600-9000-CD-SS	PF1230/7728	f c = 16.2GHz	7/09

All primary equipment is calibrated against known reference standards with a verified traceable path to NIST.



1250 Peterson Dr., Wheeling, IL 60090

Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

# APPENDIX A

## TEST PROCEDURE

### SUBPART Y

#### REGULATIONS GOVERNING LICENSING AND USE OF FREQUENCIES IN THE 4940 - 4990 MHz BAND





1250 Peterson Dr., Wheeling, IL 60090

Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

## APPENDIX A

### 1.0 TEST SET-UP

All radiated emission tests were performed at D.L.S. Electronic Systems, Inc. The radiated tests were made with the test item placed on a non-conductive turntable located in the Test Room with the receive antenna placed three or one meter from the device under test.

### 2.0 DC VOLTAGES AND CURRENTS APPLIED INTO FINAL AMPLIFYING STAGE – PART 2.1033(c-8)

5.2 Vdc 253 ma to 380 ma depending upon the duty cycle.

### 3.0 RF-POWER OUTPUT – PART 2.1046 and EIA /TIA-603-C:2004, SECTION 2.2.17

As stated in Part 90.1215, the RF output power should not exceed 65 mW(s). The RF output power was measured with the transmitter unmodulated. The RF output of the Canopy 4.9 GHz OFDM Radio was connected to a Spectrum Analyzer or a Power Meter through suitable attenuation. All cables, connectors, and attenuators were calibrated prior to testing. The RF output power was measured using the following test method:

#### **Actual Measurements Taken:**

17.92 dBm Measured output of the transmitter using the maximum duty cycle for worst case.

17.92 dBm equals 62 mW(s)

#### **LIMIT:**

Manufacturer's rated output power = 18 dBm (65 mW)

#### **MARGIN:**

65 mW- 62 mW = 3 mW(s)



1250 Peterson Dr., Wheeling, IL 60090

Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

## APPENDIX A

# DATA & CHARTS TAKEN OF THE RF POWER OUTPUT MEASUREMENT

EIA /TIA-603-C:2004, SECTION 2.2.17

FCC Part 90.1215 & PART 2.1046



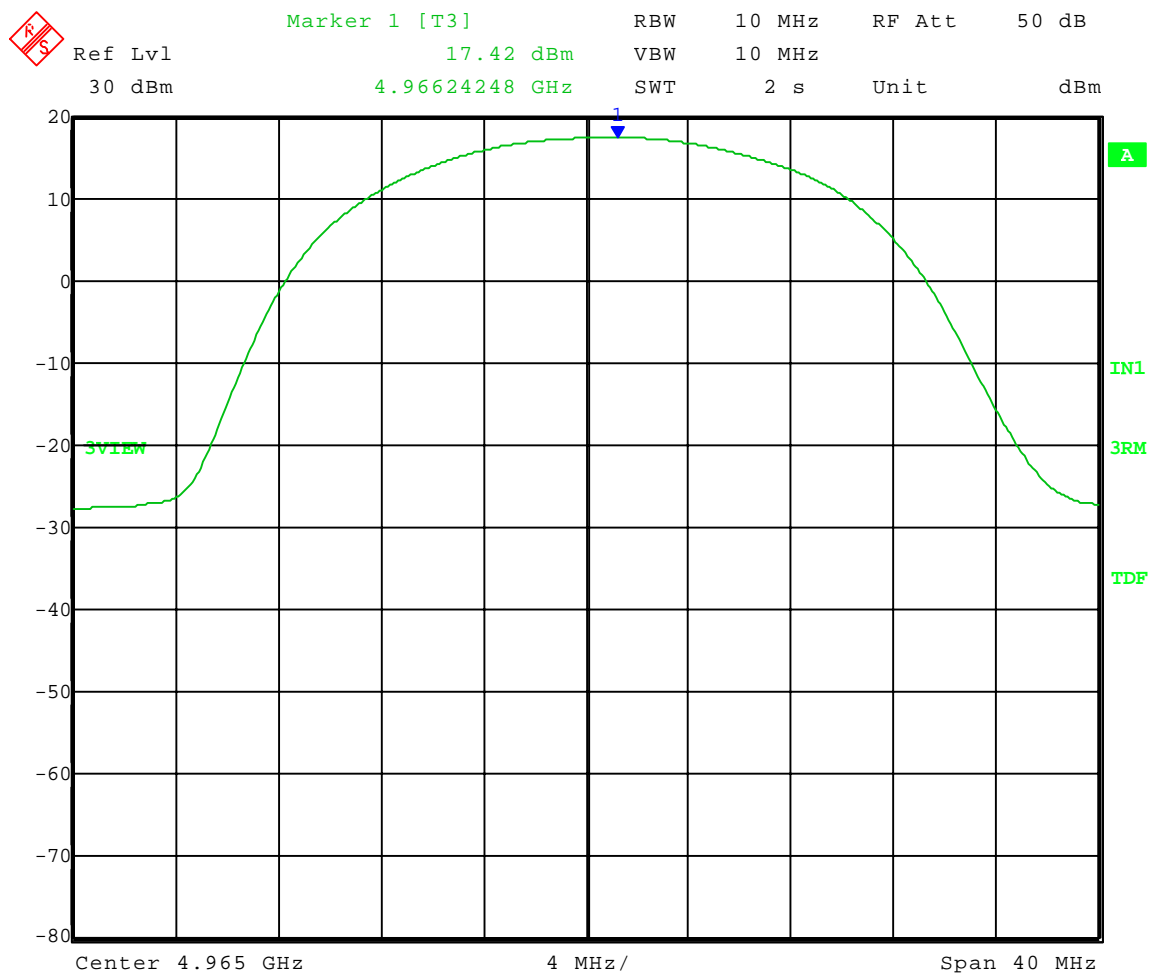
Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: RF Power Output - Conducted  
Rule Part: FCC Pt. 90.2115(a); Pt. 2.1046  
Operator: .....Craig B  
Comment: Center Channel Transmit = 4.965 GHz  
Modulation: **QPSK**  
Power setting 70  
Limit = 30 dBm

RF Power Output = 17.42 dBm + 0.5 dB (Motorola AP antenna cable) = 17.92 dBm



Date: 18.DEC.2008 12:01:04



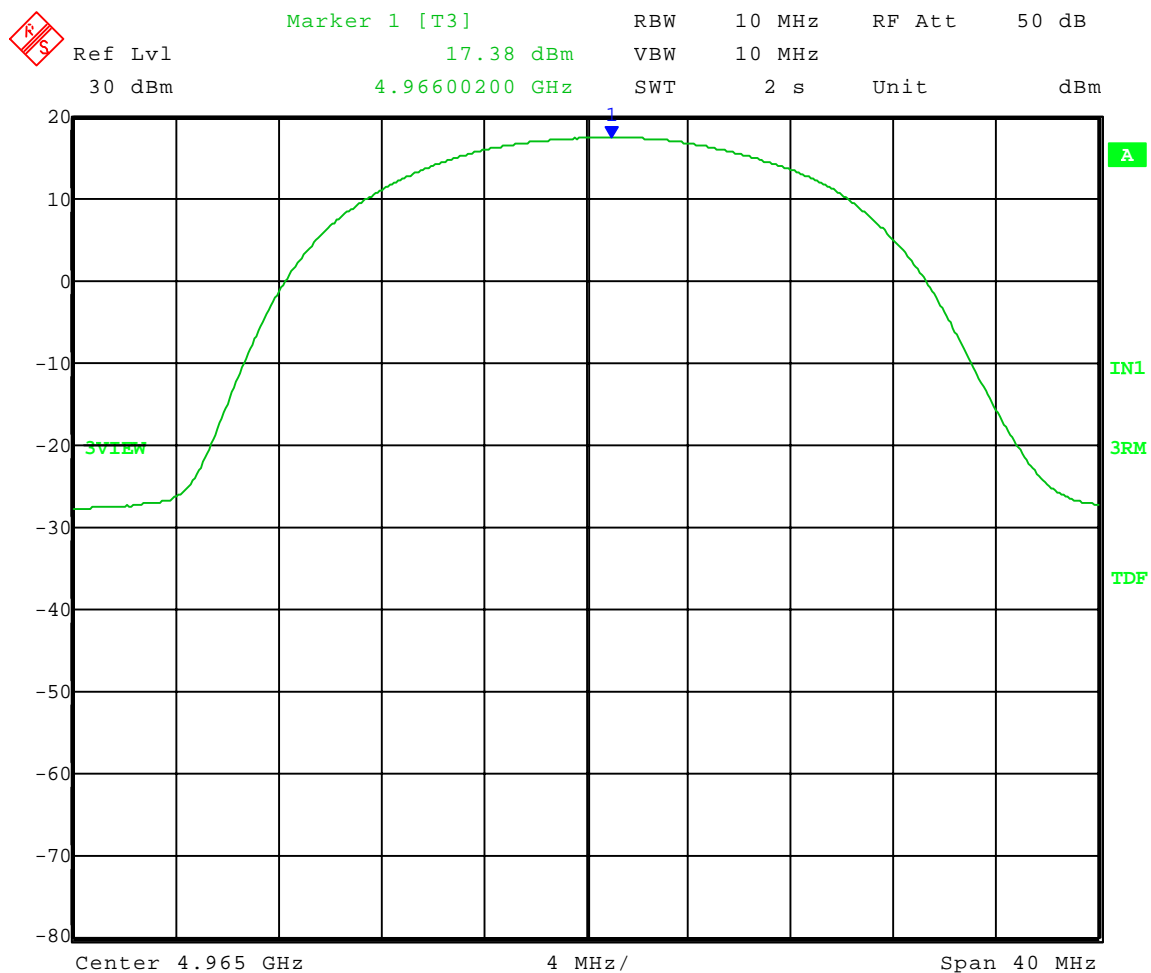
Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: RF Power Output - Conducted  
Rule Part: FCC Pt. 90.2115(a); Pt. 2.1046  
Operator: Craig B  
Comment: Center Channel Transmit = 4.965 GHz  
Modulation: 16QAM  
Power setting 70  
Limit = 30 dBm

RF Power Output = 17.38 dBm + 0.5 dB (Motorola AP antenna cable) = 17.88 dBm



Date: 18.DEC.2008 12:06:58



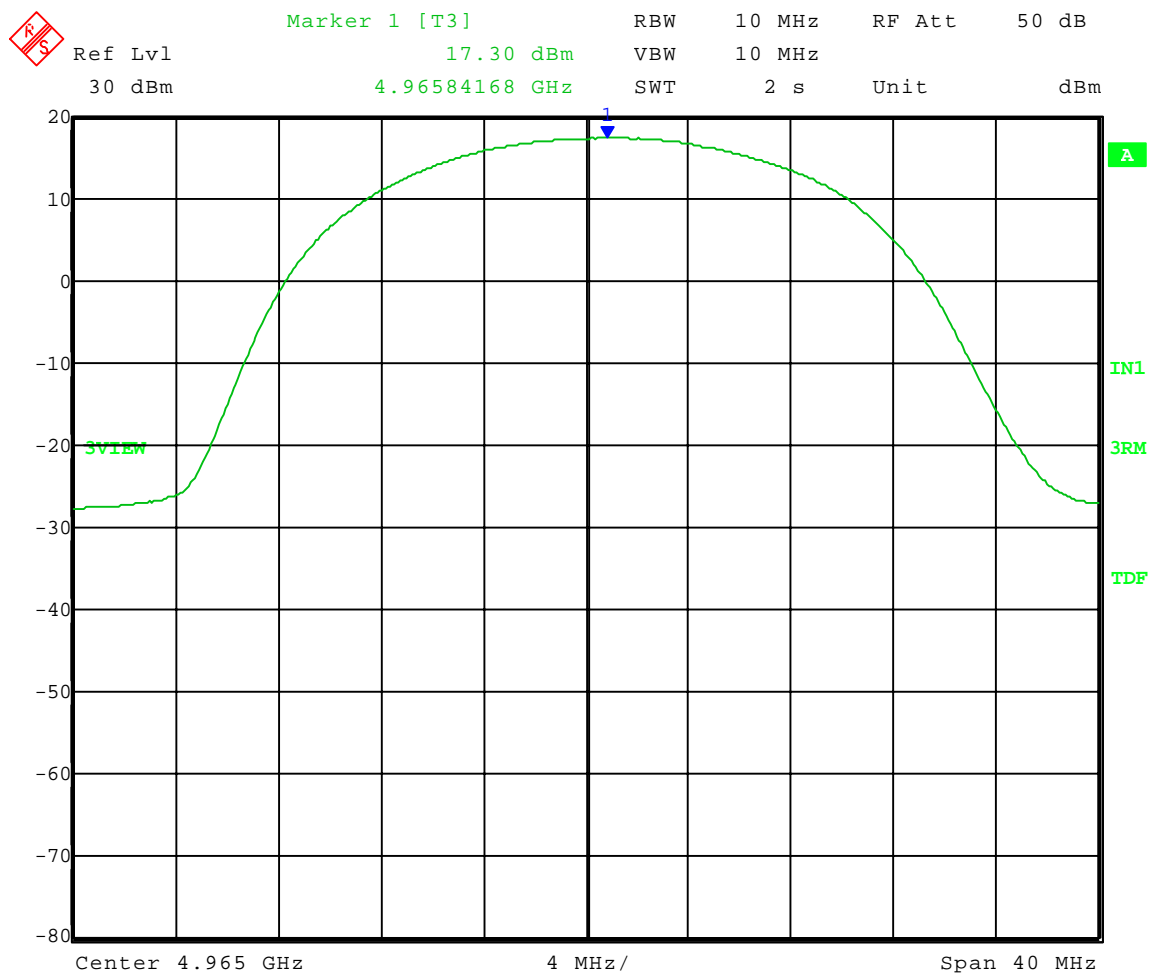
Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: RF Power Output - Conducted  
Rule Part: FCC Pt. 90.2115(a); Pt. 2.1046  
Operator: Craig B  
Comment: Center Channel Transmit = 4.965 GHz  
Modulation: 64QAM  
Power setting 70  
Limit = 30 dBm

RF Power Output = 17.30 dBm + 0.5 dB (Motorola AP antenna cable) = 17.80 dBm



Date: 18.DEC.2008 12:12:23



1250 Peterson Dr., Wheeling, IL 60090

Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

## APPENDIX A

# DATA AND CHARTS TAKEN OF THE PEAK POWER SPECTRAL DENSITY OUTPUT MEASUREMENT

FCC Part 90.1215(a) & (b)



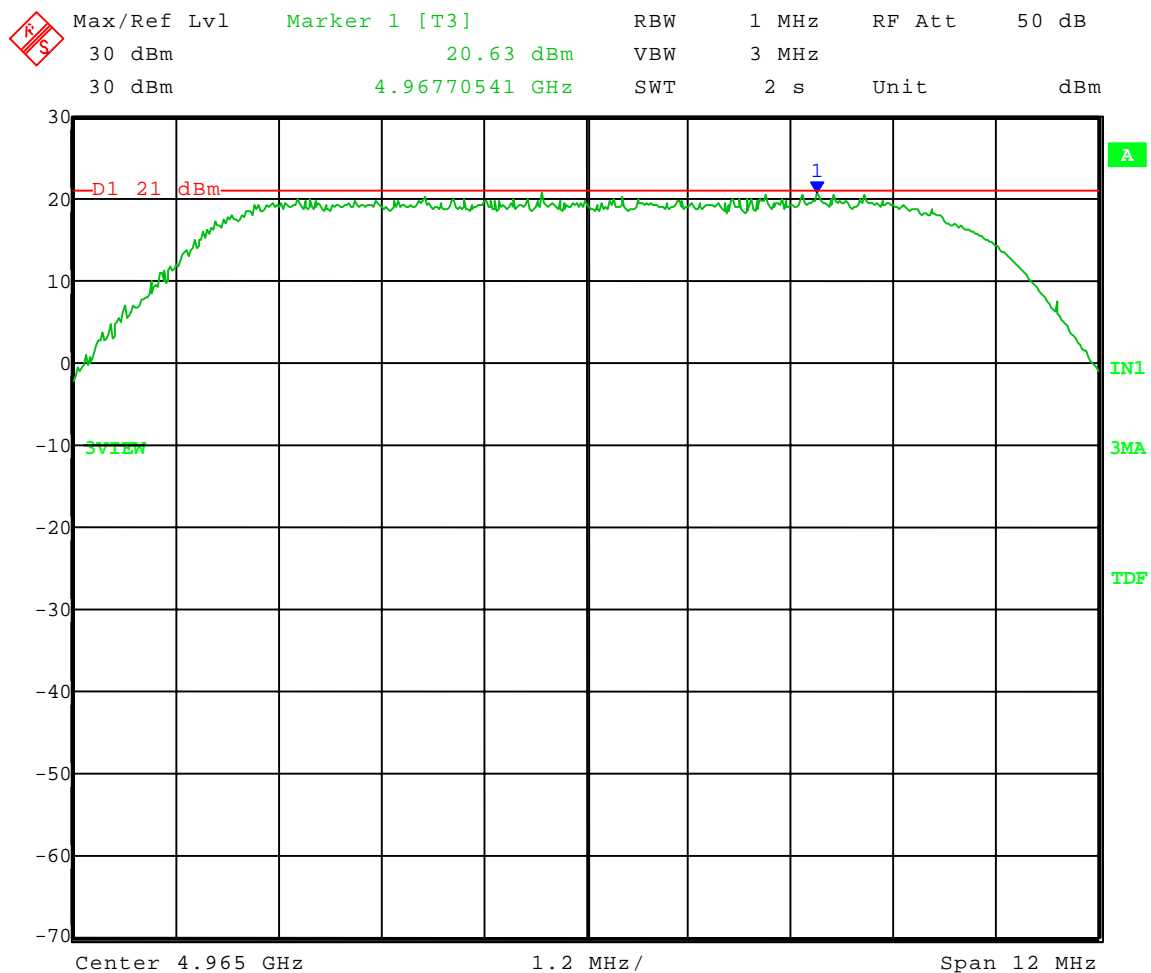
Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: Peak Power Spectral Density - Conducted  
Rule Part: FCC Pt. 90.2115(a); Pt. 90.2115(d)  
Operator: Craig B  
Comment: Center Channel Transmit = 4.965 GHz  
Modulation: **QPSK**  
Power setting 70  
Limit = 21 dBm/MHz

Peak density = 20.63 dBm/MHz



Date: 18.DEC.2008 12:45:19



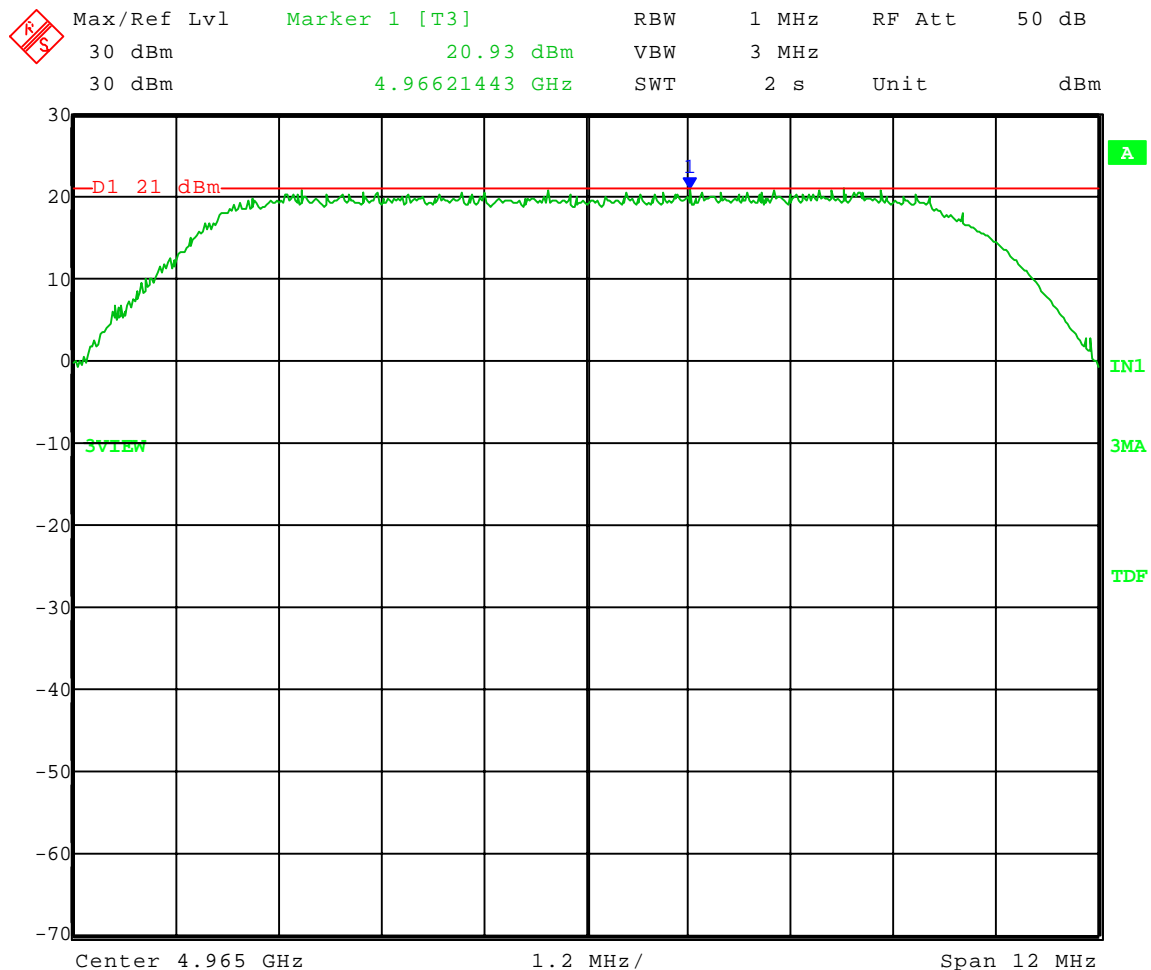
Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: Peak Power Spectral Density - Conducted  
Rule Part: FCC Pt. 90.2115(a); Pt. 90.2115(d)  
Operator: Craig B  
Comment: Center Channel Transmit = 4.965 GHz  
Modulation: 16QAM  
Power setting 70  
Limit = 21 dBm/MHz

Peak density = 20.93 dBm/MHz



Date: 18.DEC.2008 12:30:09





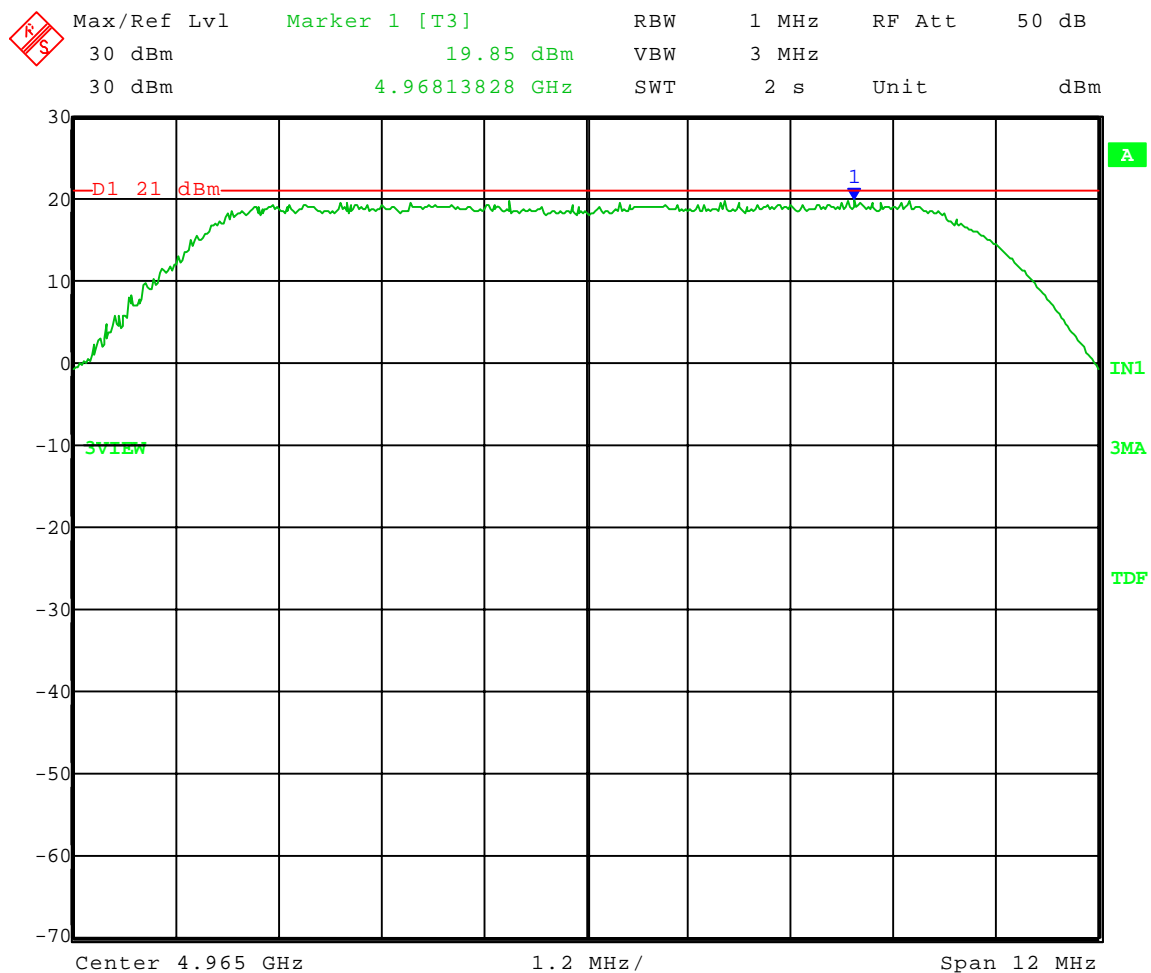
Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: Peak Power Spectral Density - Conducted  
Rule Part: FCC Pt. 90.2115(a); Pt. 90.2115(d)  
Operator: Craig B  
Comment: Center Channel Transmit = 4.965 GHz  
Modulation: 64QAM  
Power setting 70  
Limit = 21 dBm/MHz

Peak density = 19.85 dBm/MHz



Date: 18.DEC.2008 12:20:20

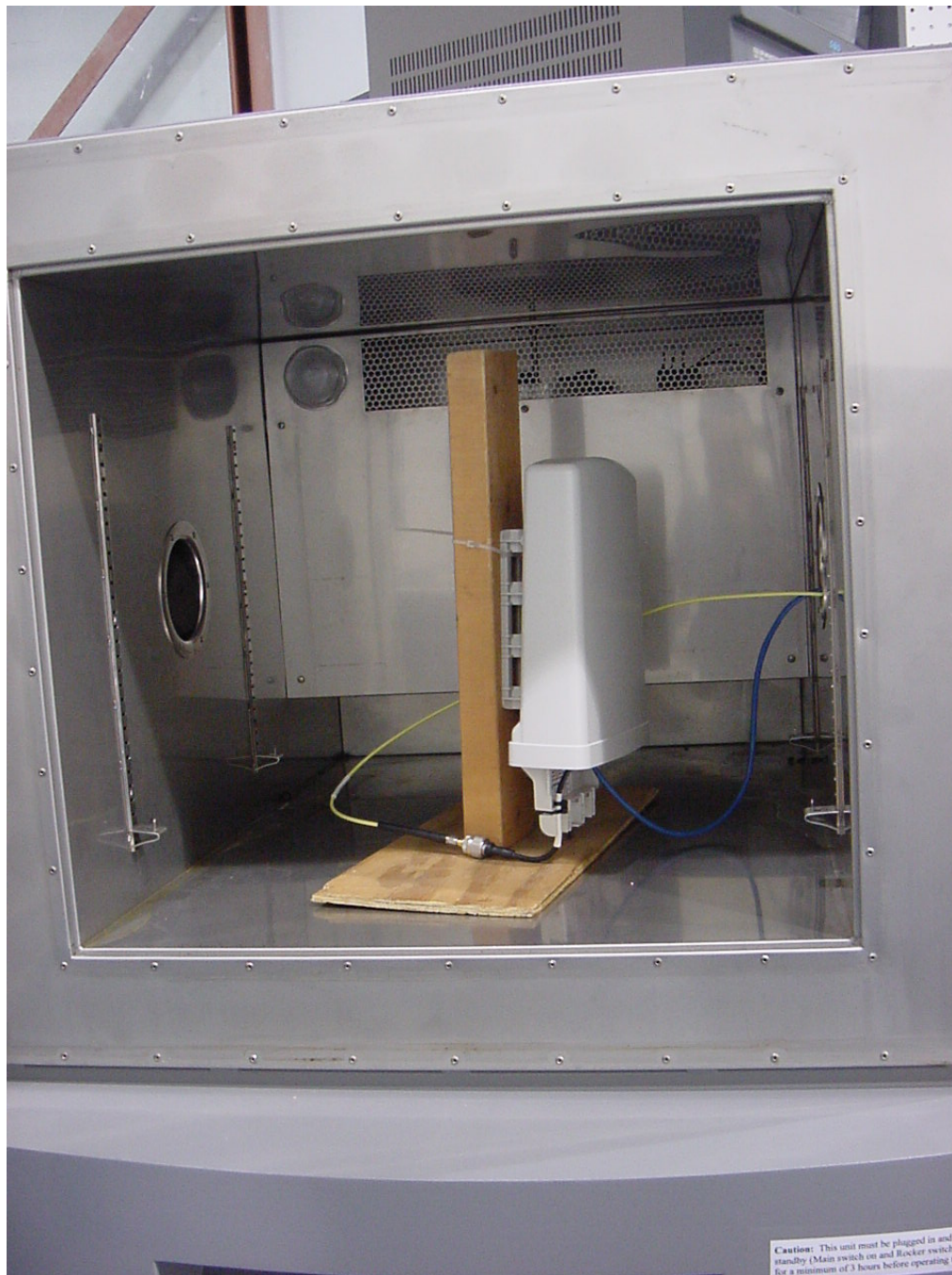


1250 Peterson Dr., Wheeling, IL 60090

Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

## APPENDIX A

### 4.0 RF POWER OUTPUT PHOTOS TAKEN DURING TESTING





1250 Peterson Dr., Wheeling, IL 60090

Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

## APPENDIX A

### 5.0 OCCUPIED BANDWIDTH - PART 2.1049

Transmitters employing digital modulation techniques, as stated in FCC Part 2.1049(h), when modulated by an input signal such that its amplitude and symbol rate represent the maximum rated conditions under which the equipment will be operated. The signal was applied through any filter networks, pseudo-random generators or other devices required in normal service.

DATA AND GRAPH(S) TAKEN OF THE

99% OCCUPIED BANDWIDTH

PART 2.1049



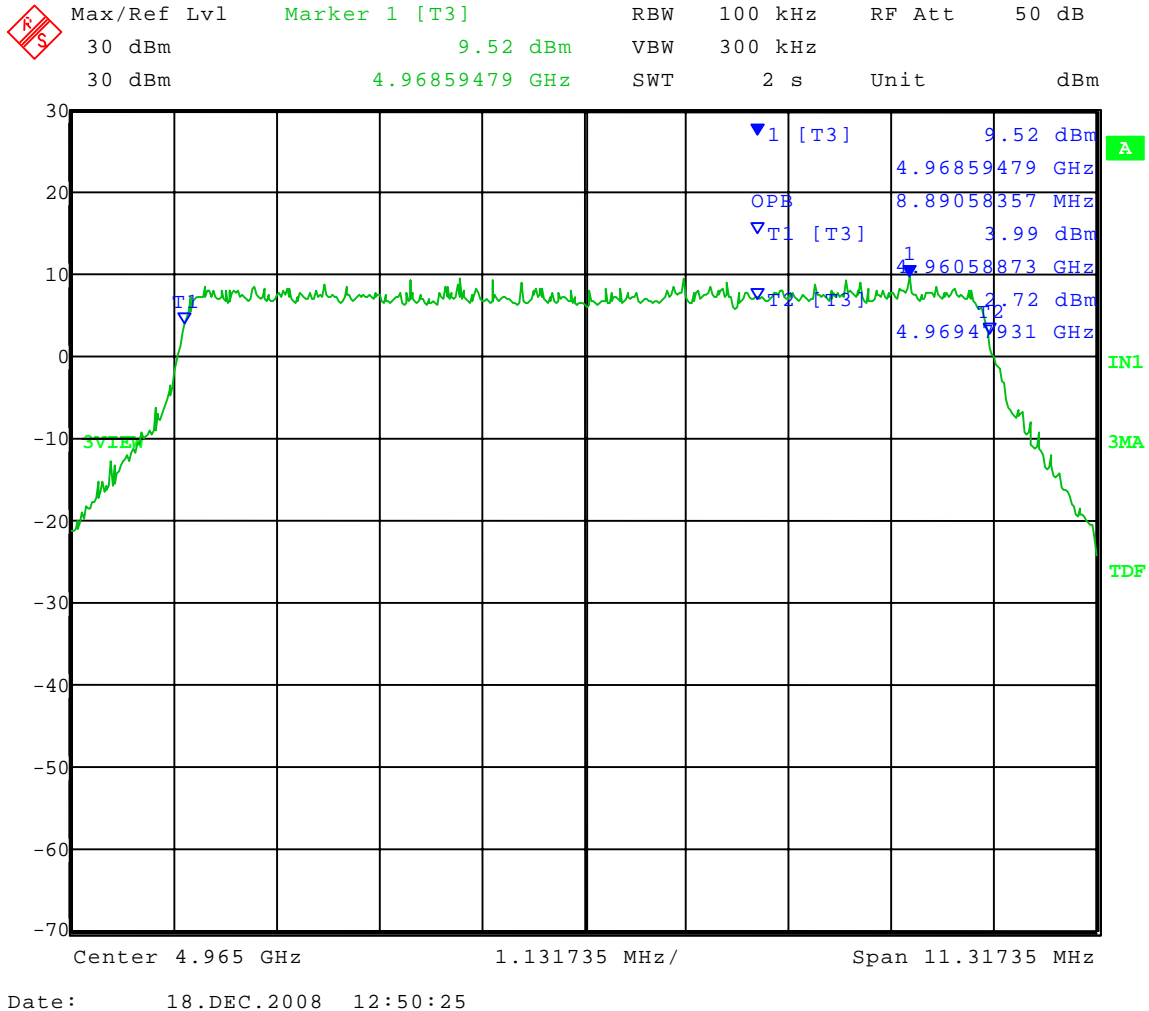
Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: Occupied Bandwidth (99% power bandwidth) - Conducted  
Rule Part: FCC Pt. 2.1049  
Operator: Craig B  
Comment: Center Channel Transmit = 4.965 GHz  
Modulation: QPSK

99% Power Bandwidth = 8.89 MHz





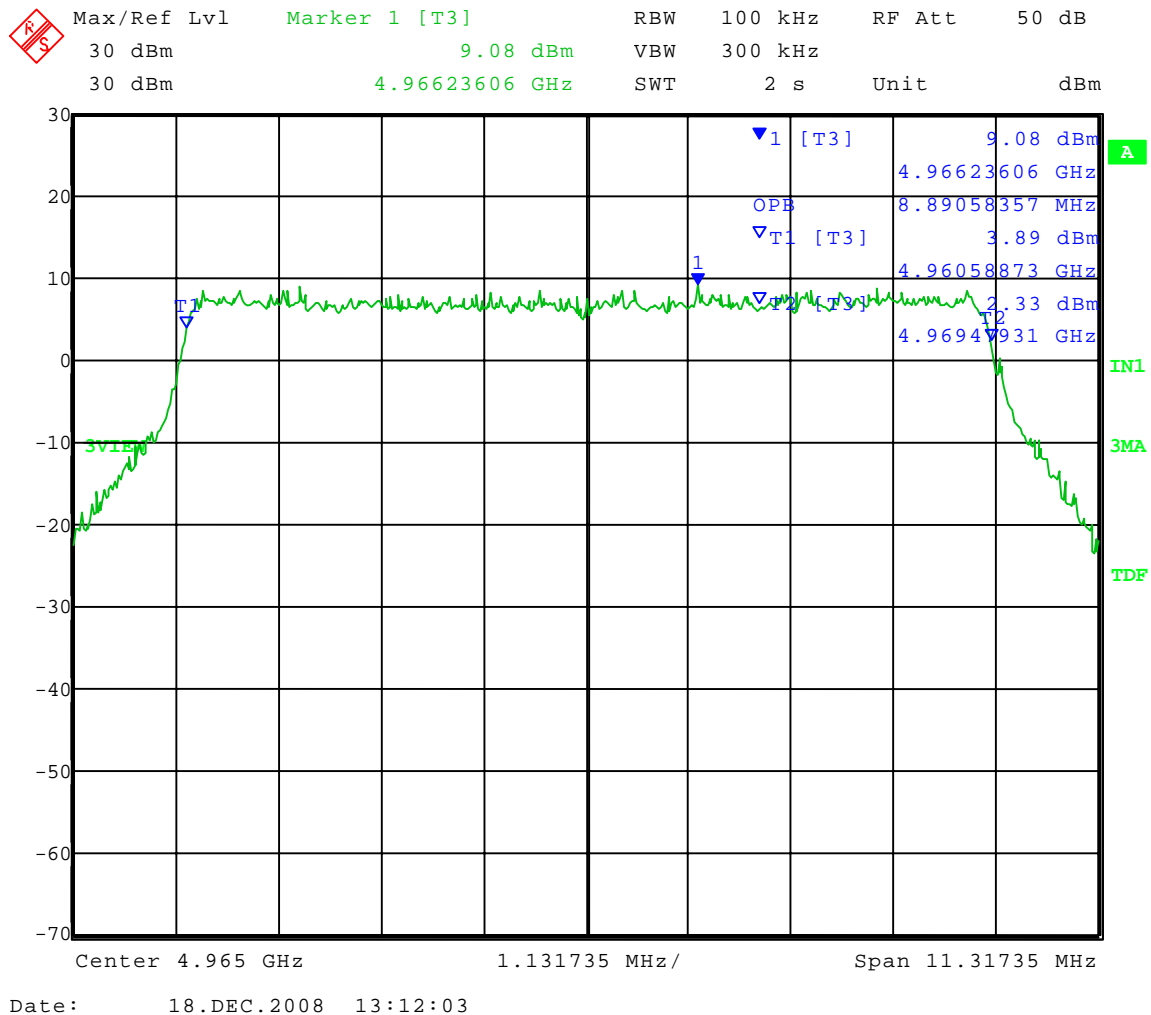
Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: ..... 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: ..... Occupied Bandwidth (99% power bandwidth) - Conducted  
Rule Part: FCC Pt. 2.1049  
Operator: Craig B  
Comment: Center Channel Transmit = 4.965 GHz  
Modulation: 16QAM

99% Power Bandwidth = 8.89 MHz





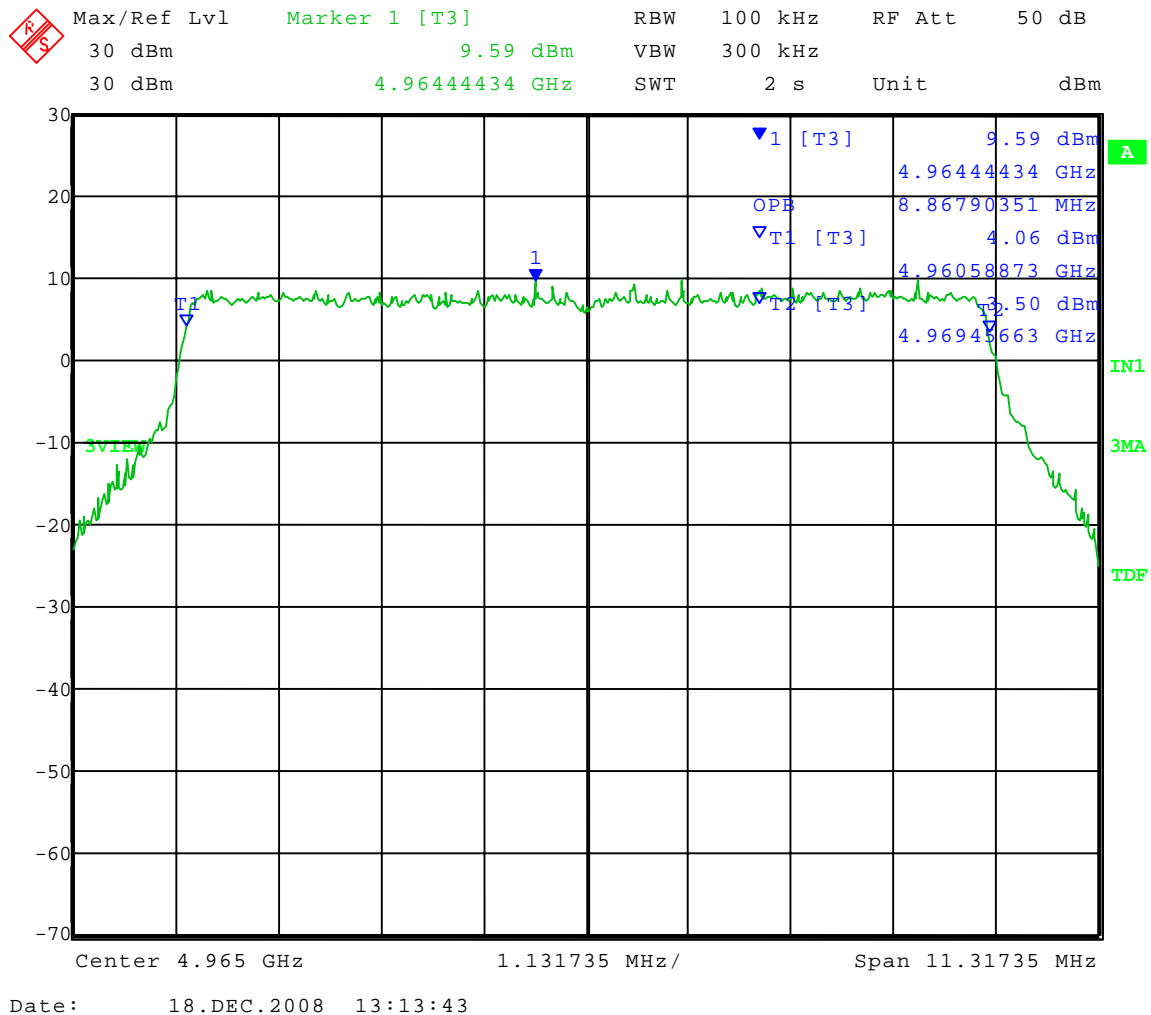
Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: Occupied Bandwidth (99% power bandwidth) - Conducted  
Rule Part: FCC Pt. 2.1049  
Operator: Craig B  
Comment: Center Channel Transmit = 4.965 GHz  
Modulation: 64QAM

99% Power Bandwidth = 8.87 MHz





1250 Peterson Dr., Wheeling, IL 60090

Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

## APPENDIX A

# DATA AND GRAPH(S) TAKEN OF THE

## 26 dB EMISSION BANDWIDTH

### PART 2.1049



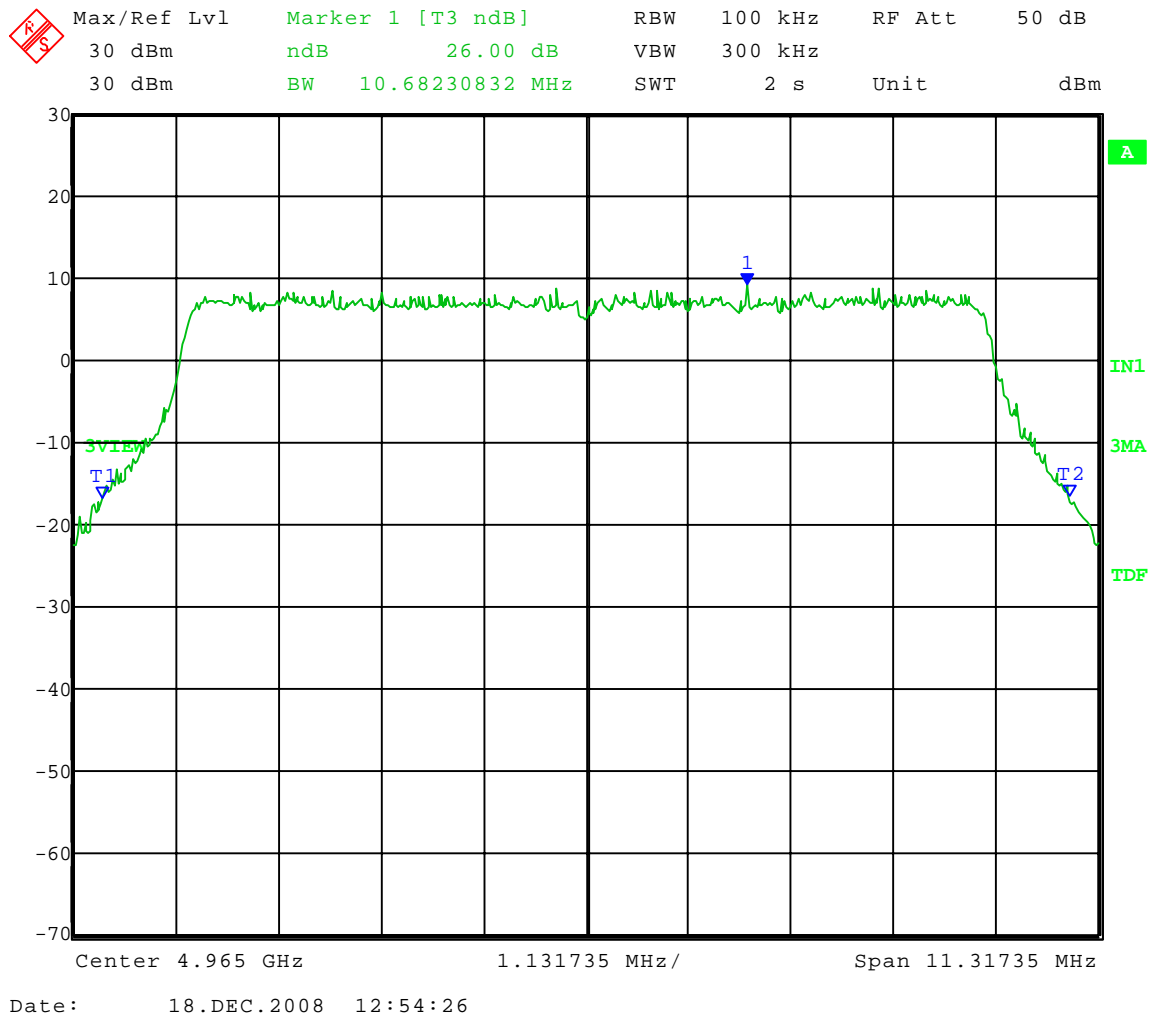
Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: 26 dB Emission Bandwidth - Conducted  
Rule Part: FCC Pt. 90.209  
Operator: Craig B  
Comment: Center Channel Transmit = 4.965 GHz  
Modulation: **QPSK**

26 dB Emission Bandwidth = 10.68 MHz







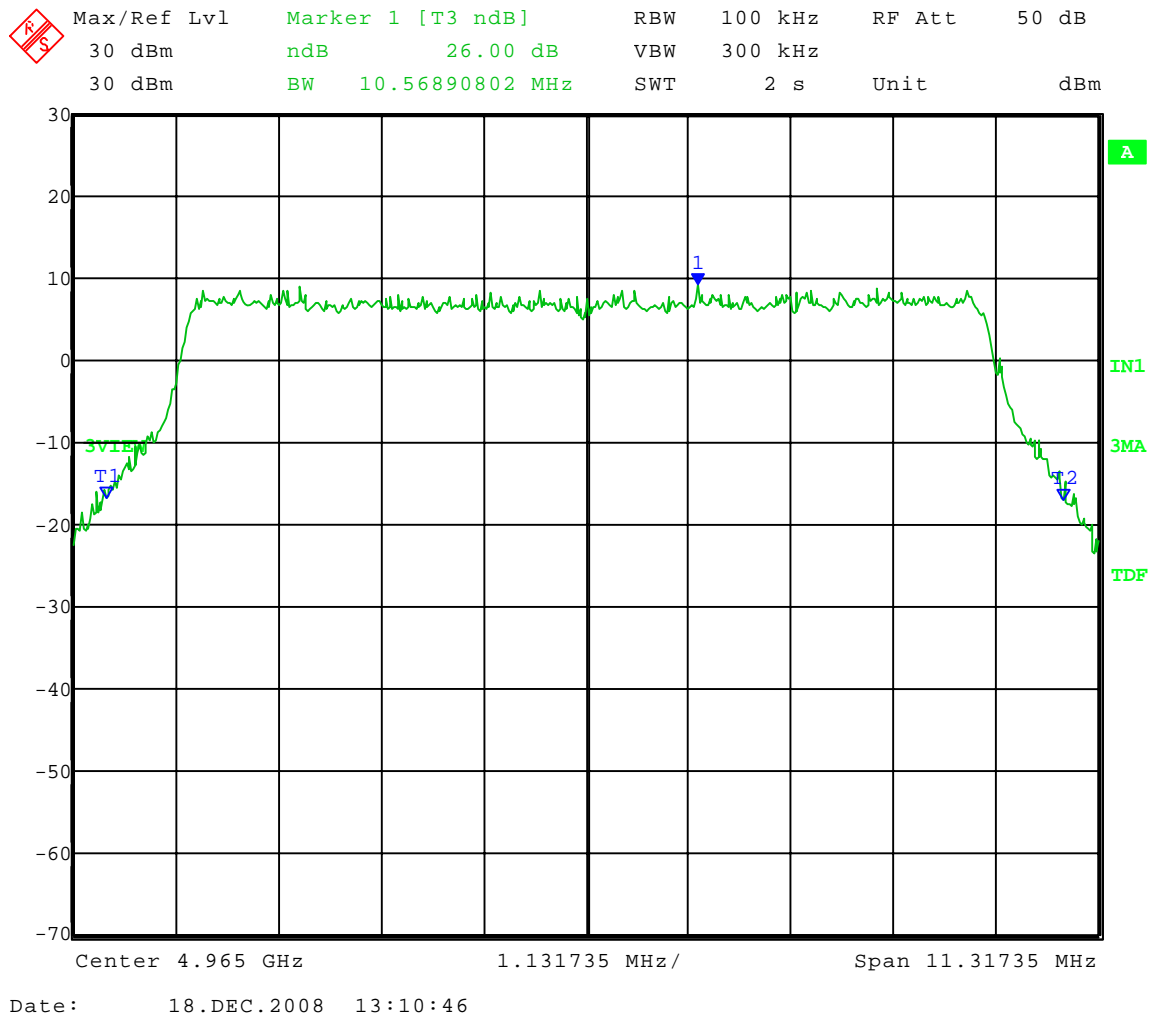
Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: 26 dB Emission Bandwidth - Conducted  
Rule Part: FCC Pt. 90.209  
Operator: Craig B  
Comment: Center Channel Transmit = 4.965 GHz  
Modulation: 16QAM

26 dB Emission Bandwidth = 10.57 MHz





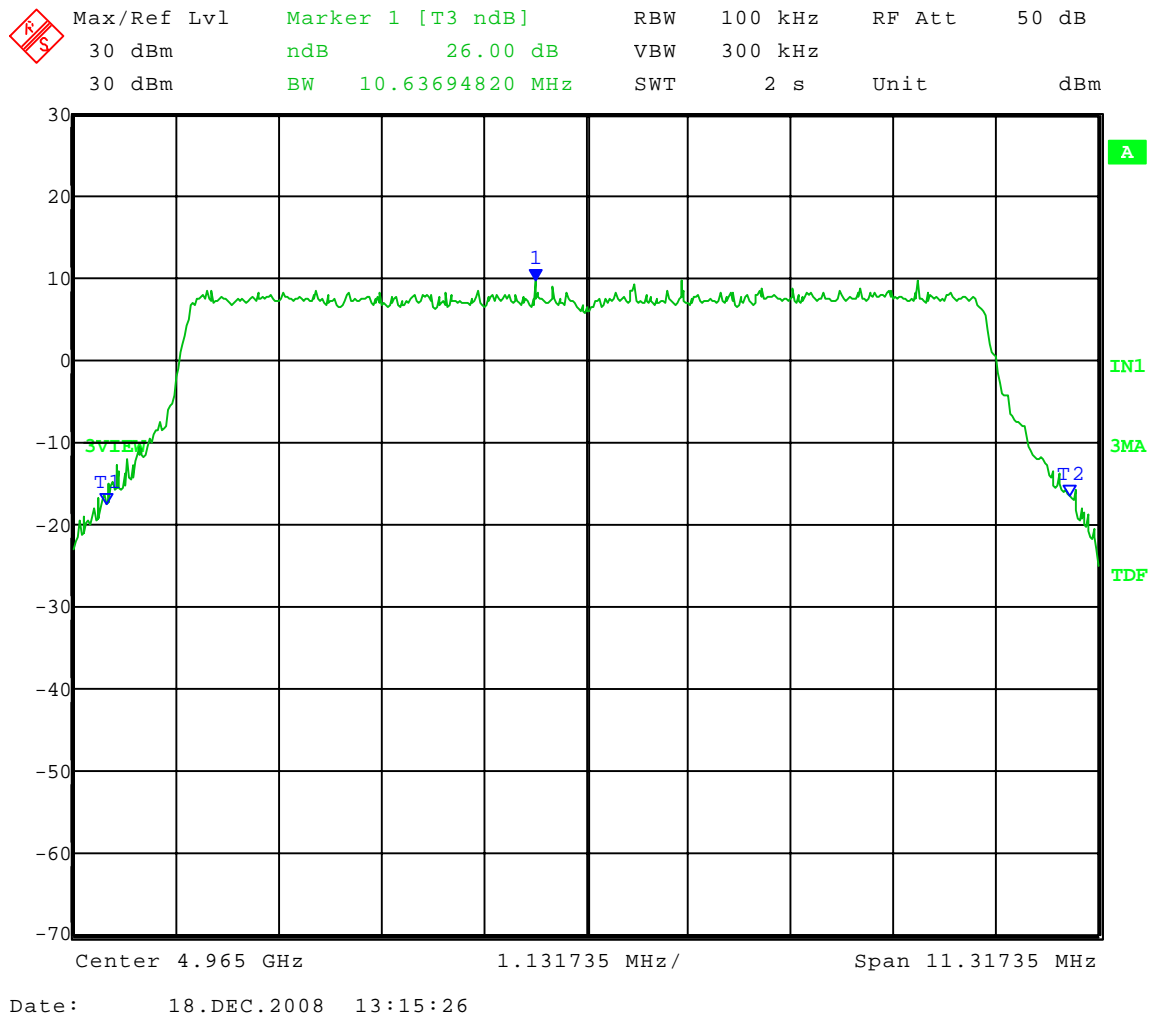
Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: 26 dB Emission Bandwidth - Conducted  
Rule Part: FCC Pt. 90.209  
Operator: Craig B  
Comment: Center Channel Transmit = 4.965 GHz  
Modulation: 64QAM

26 dB Emission Bandwidth = 10.64 MHz





1250 Peterson Dr., Wheeling, IL 60090

Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

## APPENDIX A

# DATA AND GRAPH(S) TAKEN OF THE EMISSION MASK

90.210(m)

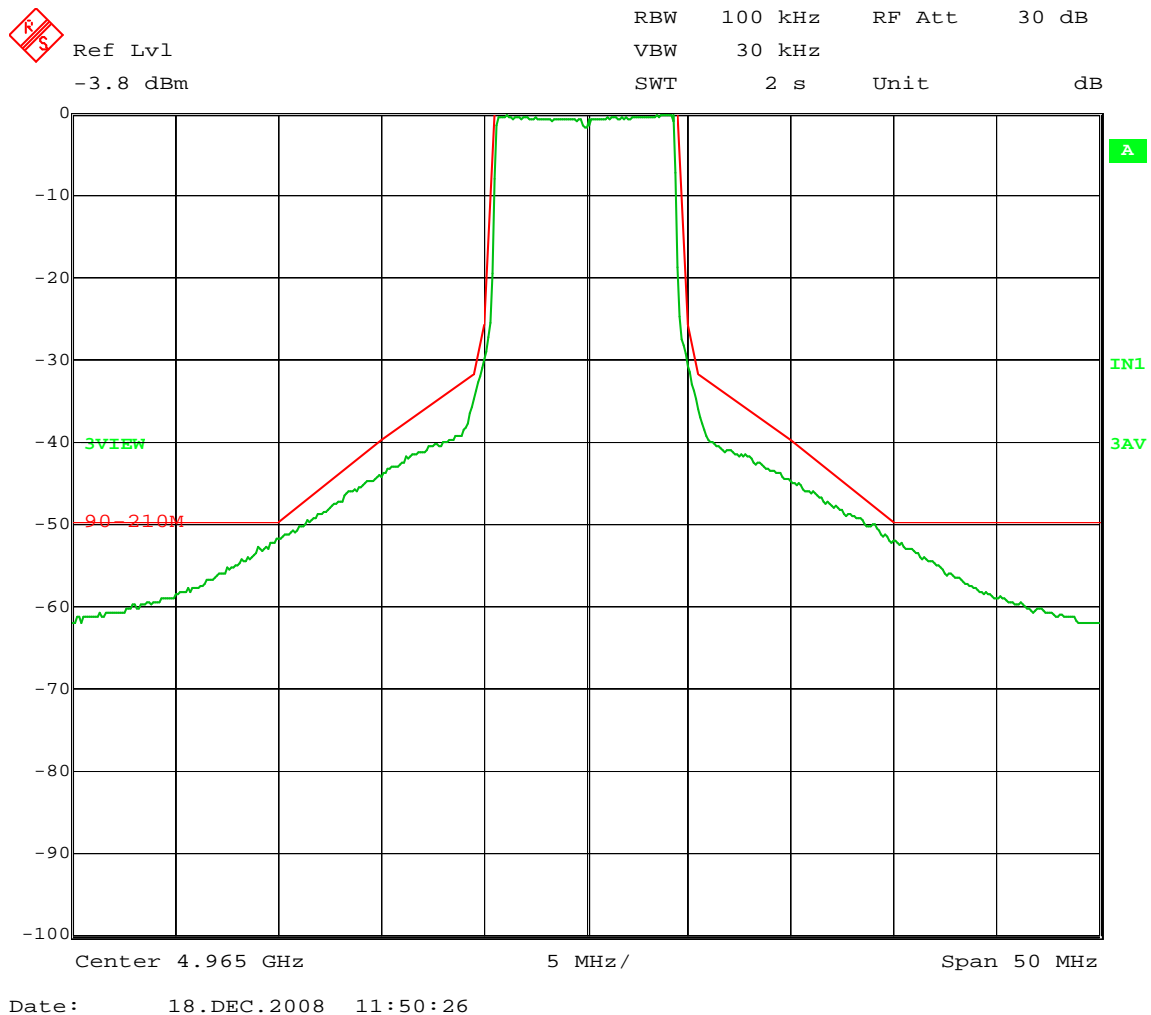


Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: Emission Mask (Power Spectral Density Mask) – Conducted  
Rule Part: FCC Pt. 90.210(m)  
Operator: Craig B  
Comment: Center Channel Transmit = 4.965 GHz  
Modulation: **QPSK**  
Power setting 70



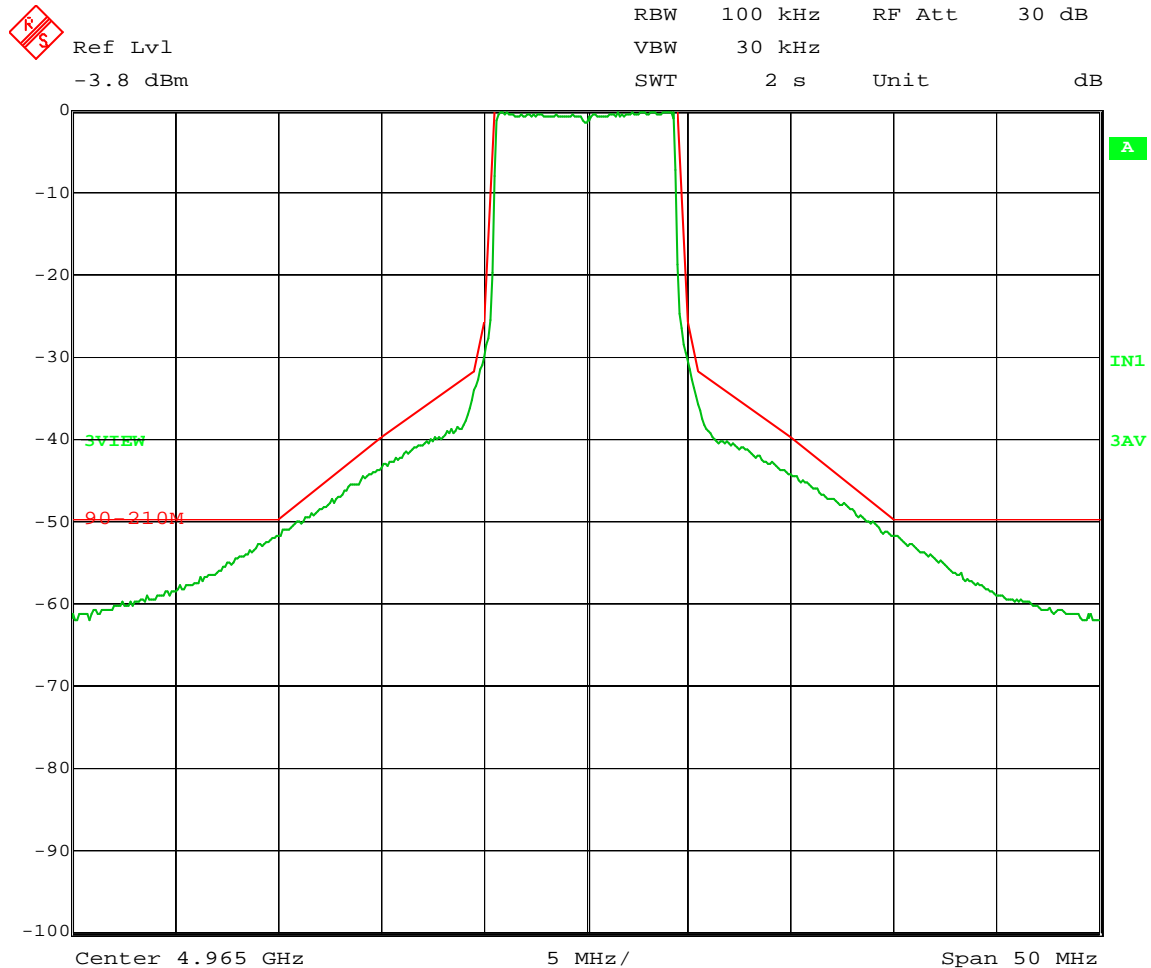


Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: Emission Mask (Power Spectral Density Mask) – Conducted  
Rule Part: FCC Pt. 90.210(m)  
Operator: Craig B  
Comment: Center Channel Transmit = 4.965 GHz  
Modulation: 16QAM  
Power setting 70



Date: 18.DEC.2008 11:48:40

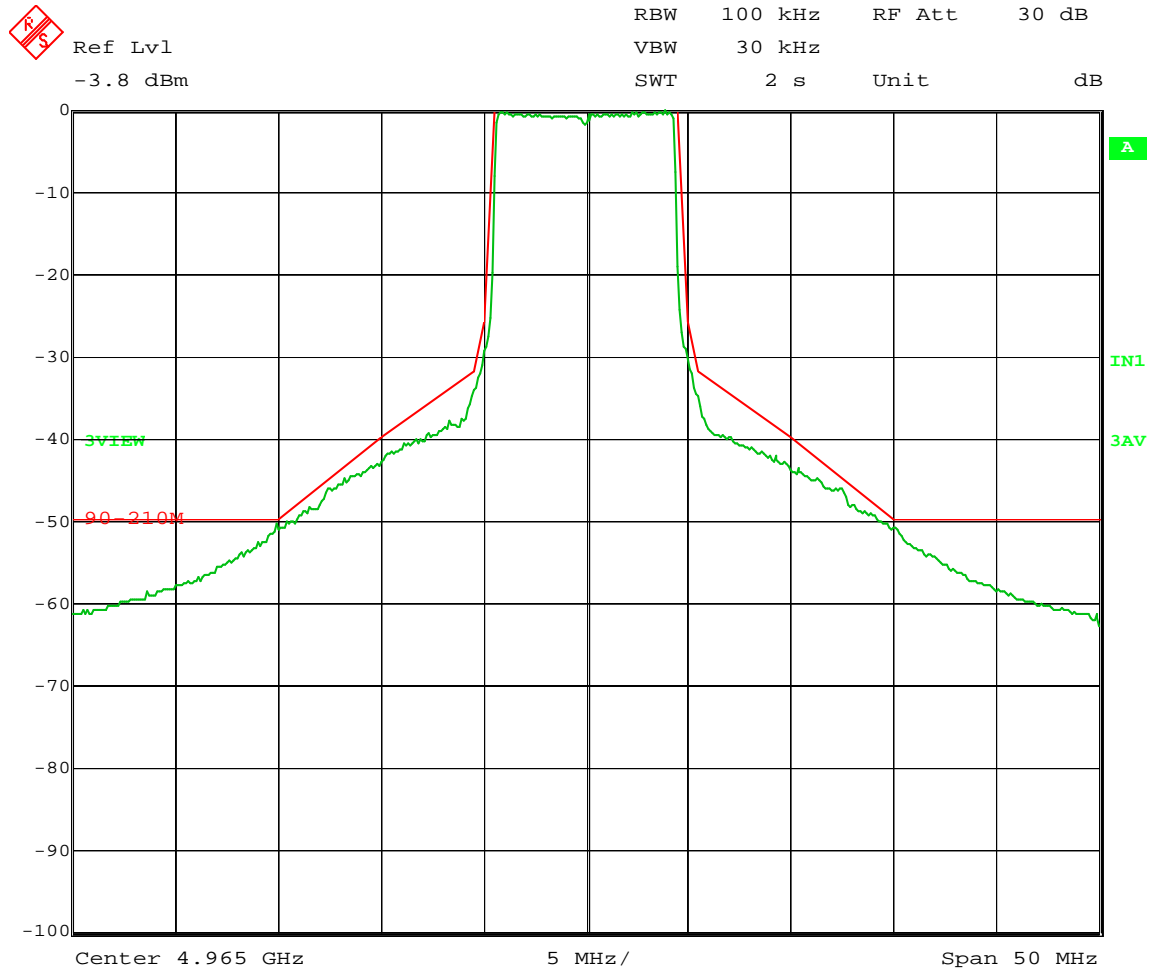


Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: Emission Mask (Power Spectral Density Mask) – Conducted  
Rule Part: FCC Pt. 90.210(m)  
Operator: Craig B  
Comment: Center Channel Transmit = 4.965 GHz  
Modulation: 64QAM  
Power setting 70



Date: 18.DEC.2008 11:44:05



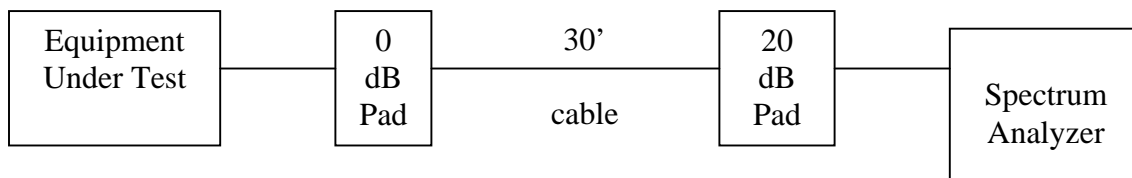
1250 Peterson Dr., Wheeling, IL 60090

Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

## APPENDIX A

### 6.0 SPURIOUS EMISSIONS AT ANTENNA TERMINALS – PART 90.210(m), PART 2.1051 and EIA /TIA-603-C:2004, SECTION 2.2.13

Spurious conducted emissions were measured at the antenna terminals using an artificial load. Plots were made showing the amplitude of each harmonic emission with the equipment operated as specified in 2.989. Measurements were made up to the 10<sup>th</sup> harmonic of the fundamental. The following setup was used showing placement of the attenuators:



The allowed emissions for transmitters operating in the 4990 - 4990 MHz bands for Canopy 4.9 GHz OFDM Radio equipment are found under Part 74, Section 90.210, Paragraph m for Regulations Governing Licensing in the 4940 - 4990 MHz Band. This paragraph states the mean power of the emissions shall be attenuated below the mean output power of the transmitter in accordance with the following schedule:

- (1) On any frequency removed from the assigned frequency between 0-45% of the authorized bandwidth (BW): 0dB.
- (2) On any frequency removed from the assigned frequency between 45-50% of the authorized bandwidth:  $56.8 \log (\% \text{ of (BW)/45})$  dB.
- (3) On any frequency removed from the assigned frequency between 50-55% of the authorized bandwidth:  $26 + 14.5 \log (\% \text{ of (BW)/50})$  dB.
- (4) On any frequency removed from the assigned frequency between 55-100% of the authorized bandwidth:  $32 + 3.1 \log (\% \text{ of (BW)/55})$  dB.
- (5) On any frequency removed from the assigned frequency between 100-150% of the authorized bandwidth:  $40 + 5.7 \log (\% \text{ of (BW)/100})$  dB.
- (6) On any frequency removed from the assigned frequency above 150% of the authorized bandwidth: 50 dB or  $55 + 10 \log P$  dB, whichever is the lesser attenuation.

#### NOTE:

**The Canopy 4.9 GHz OFDM Radio uses the Radiated testing was done with a 50 termination in place of the antenna..** See the following pages for the data and graphs of the actual measurements made:



1250 Peterson Dr., Wheeling, IL 60090

Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

## APPENDIX A

# CONDUCTED EMISSION DATA & CHARTS TAKEN FOR SPURIOUS EMISSION MEASUREMENTS MADE AT THE ANTENNA TERMINALS EIA /TIA-603-C:2004, SECTION 2.2.13 90.210(m) & PART 2.1051 LOW CHANNEL MODULATION



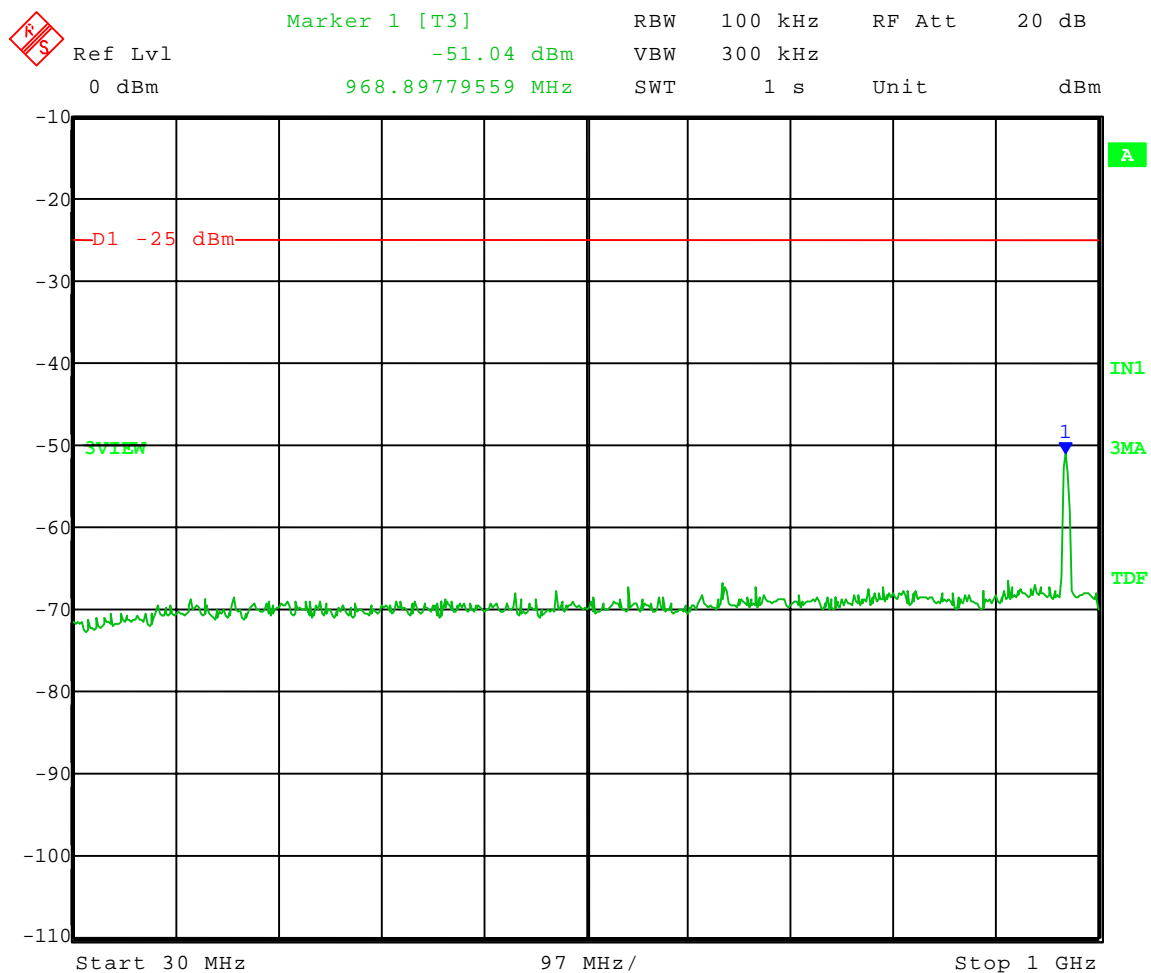


Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: Spurious Emissions - Conducted - Out-of-Band  
Rule Part: FCC Pt. 90.210(m); Pt. 2.1051  
Operator: Craig B  
Comment: Low Channel Transmit = 4.940 GHz  
Modulation: QPSK  
Frequency Range: 30 MHz to 1 GHz  
Limit = -25 dBm



Date: 18.DEC.2008 14:57:38

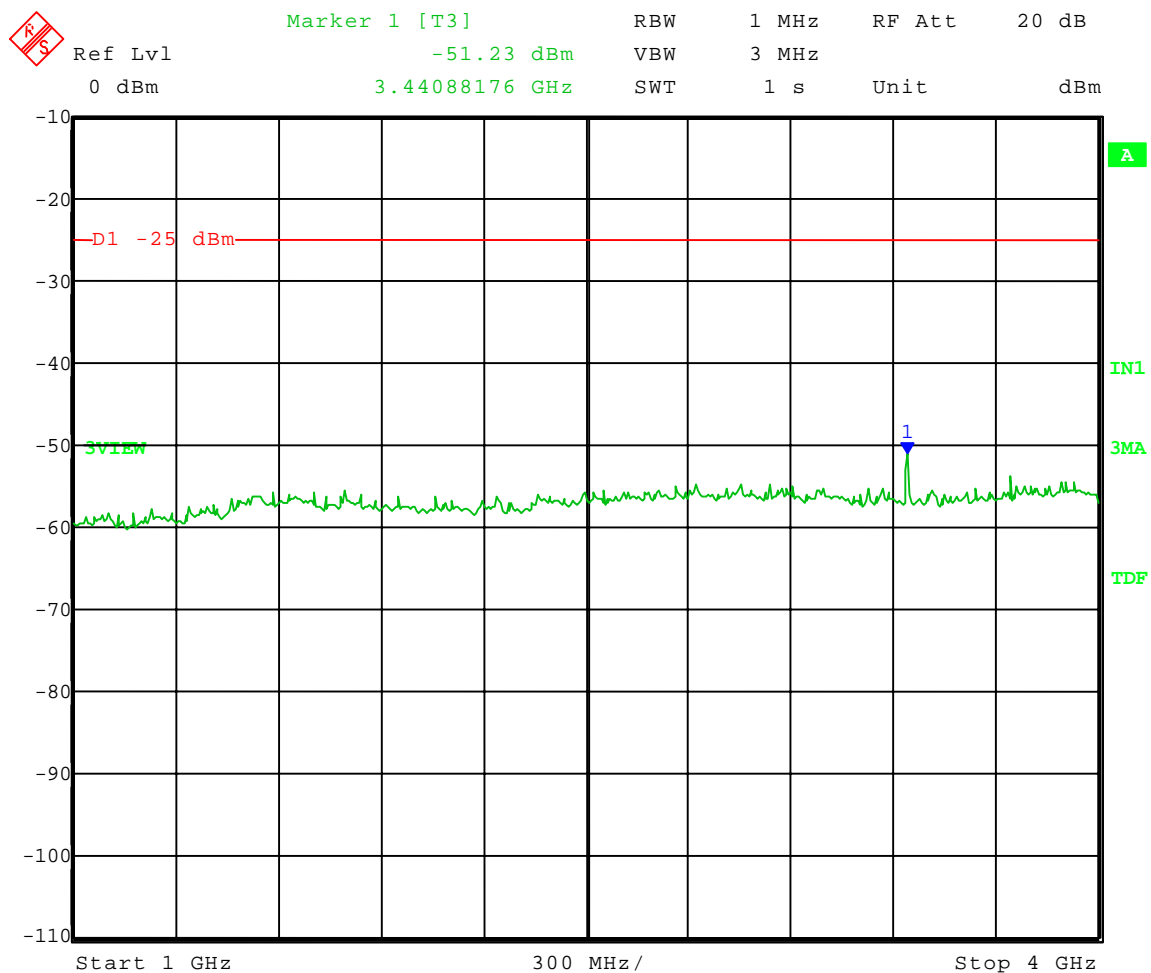


Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: Spurious Emissions - Conducted - Out-of-Band  
Rule Part: FCC Pt. 90.210(m); Pt. 2.1051  
Operator: Craig B  
Comment: Low Channel Transmit = 4.940 GHz  
Modulation: QPSK  
Frequency Range: 1 GHz to 4 GHz  
Limit = -25 dBm



Date: 18.DEC.2008 14:58:32

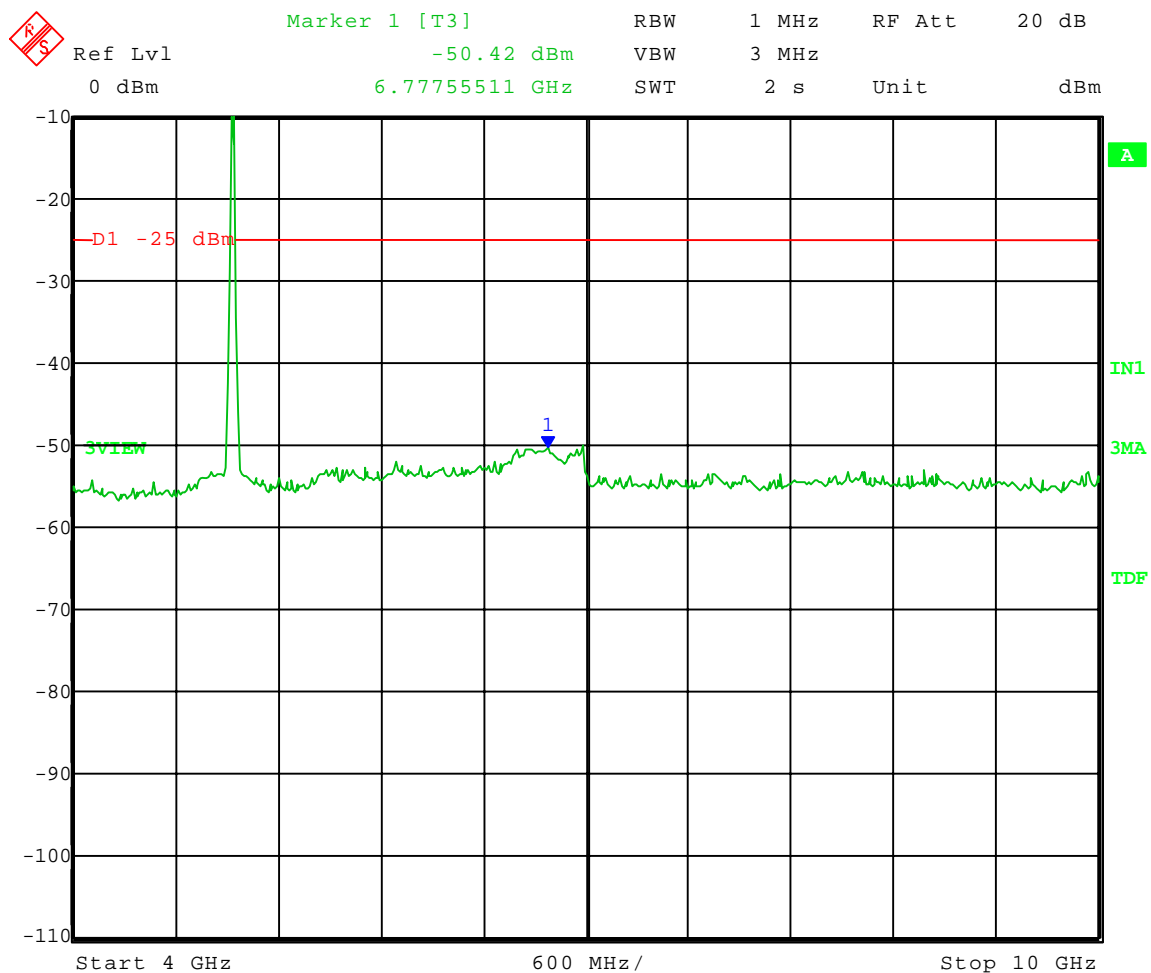


Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: Spurious Emissions - Conducted - Out-of-Band  
Rule Part: FCC Pt. 90.210(m); Pt. 2.1051  
Operator: Craig B  
Comment: Low Channel Transmit = 4.940 GHz  
Modulation: QPSK  
Frequency Range: 4 GHz to 10 GHz  
Limit = -25 dBm



Date: 18.DEC.2008 14:59:21

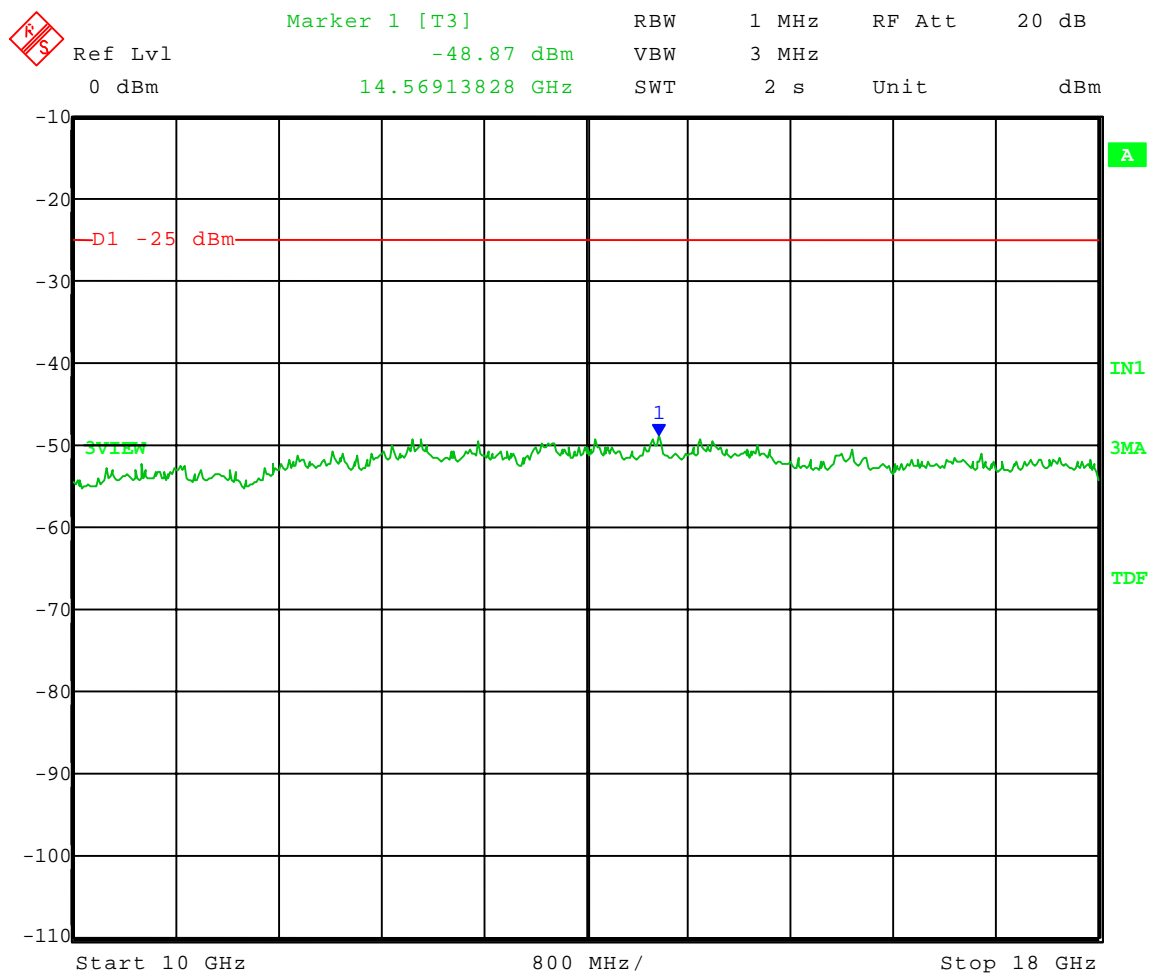


Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: Spurious Emissions - Conducted - Out-of-Band  
Rule Part: FCC Pt. 90.210(m); Pt. 2.1051  
Operator: Craig B  
Comment: Low Channel Transmit = 4.940 GHz  
Modulation: QPSK  
Frequency Range: 10 GHz to 18 GHz  
Limit = -25 dBm



Date: 18.DEC.2008 15:00:05

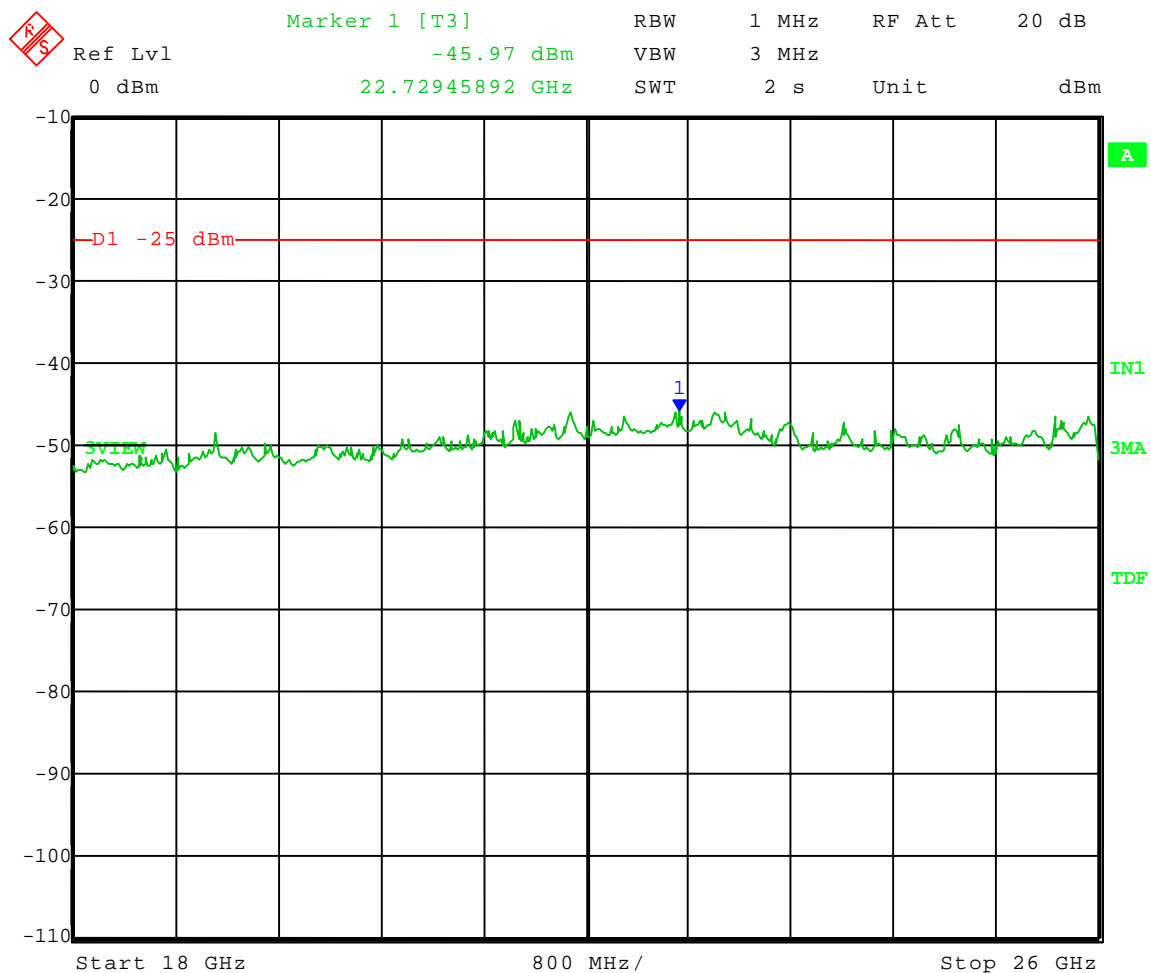


Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: ..... Spurious Emissions - Conducted - Out-of-Band  
Rule Part: FCC Pt. 90.210(m); Pt. 2.1051  
Operator: Craig B  
Comment: Low Channel Transmit = 4.940 GHz  
Modulation: QPSK  
Frequency Range: 18 GHz to 26 GHz  
Limit = -25 dBm



Date: 18.DEC.2008 15:00:43

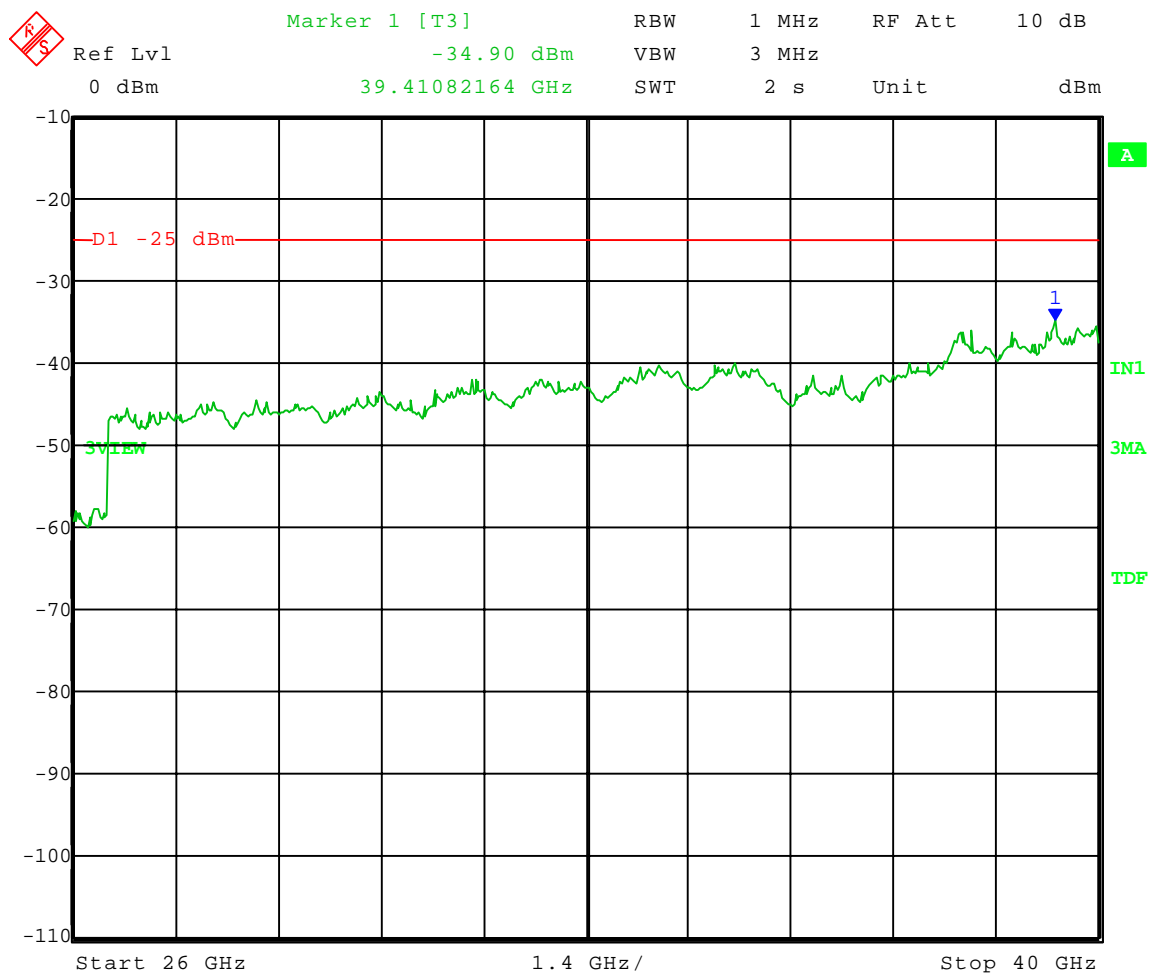


Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: Spurious Emissions - Conducted - Out-of-Band  
Rule Part: FCC Pt. 90.210(m); Pt. 2.1051  
Operator: Craig B  
Comment: Low Channel Transmit = 4.940 GHz  
Modulation: QPSK  
Frequency Range: 26 GHz to 40 GHz  
Limit = -25 dBm



Date: 18.DEC.2008 15:01:24

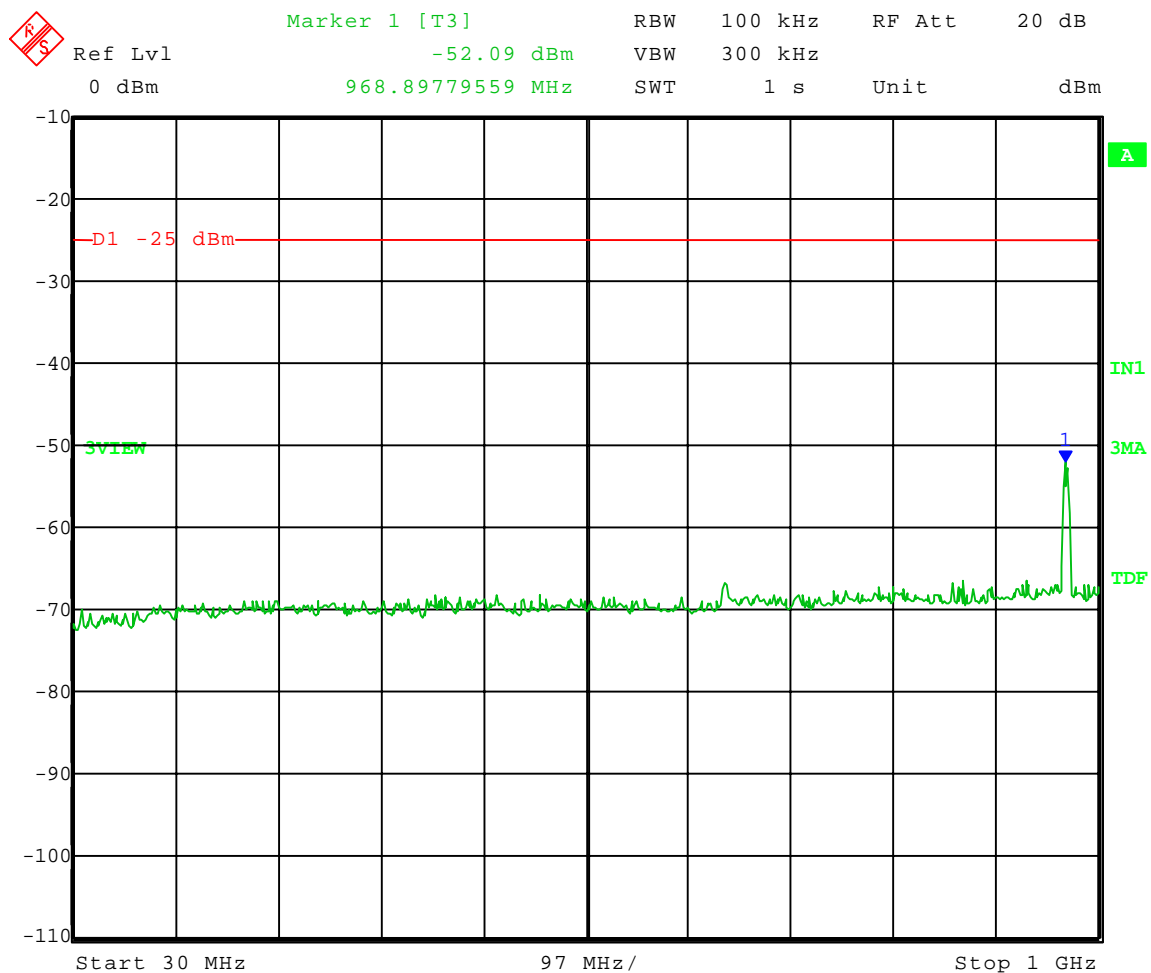


Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: Spurious Emissions - Conducted - Out-of-Band  
Rule Part: FCC Pt. 90.210(m); Pt. 2.1051  
Operator: Craig B  
Comment: Low Channel Transmit = 4.940 GHz  
Modulation: 16QAM  
Frequency Range: 30 MHz to 1 GHz  
Limit = -25 dBm



Date: 18.DEC.2008 15:03:40

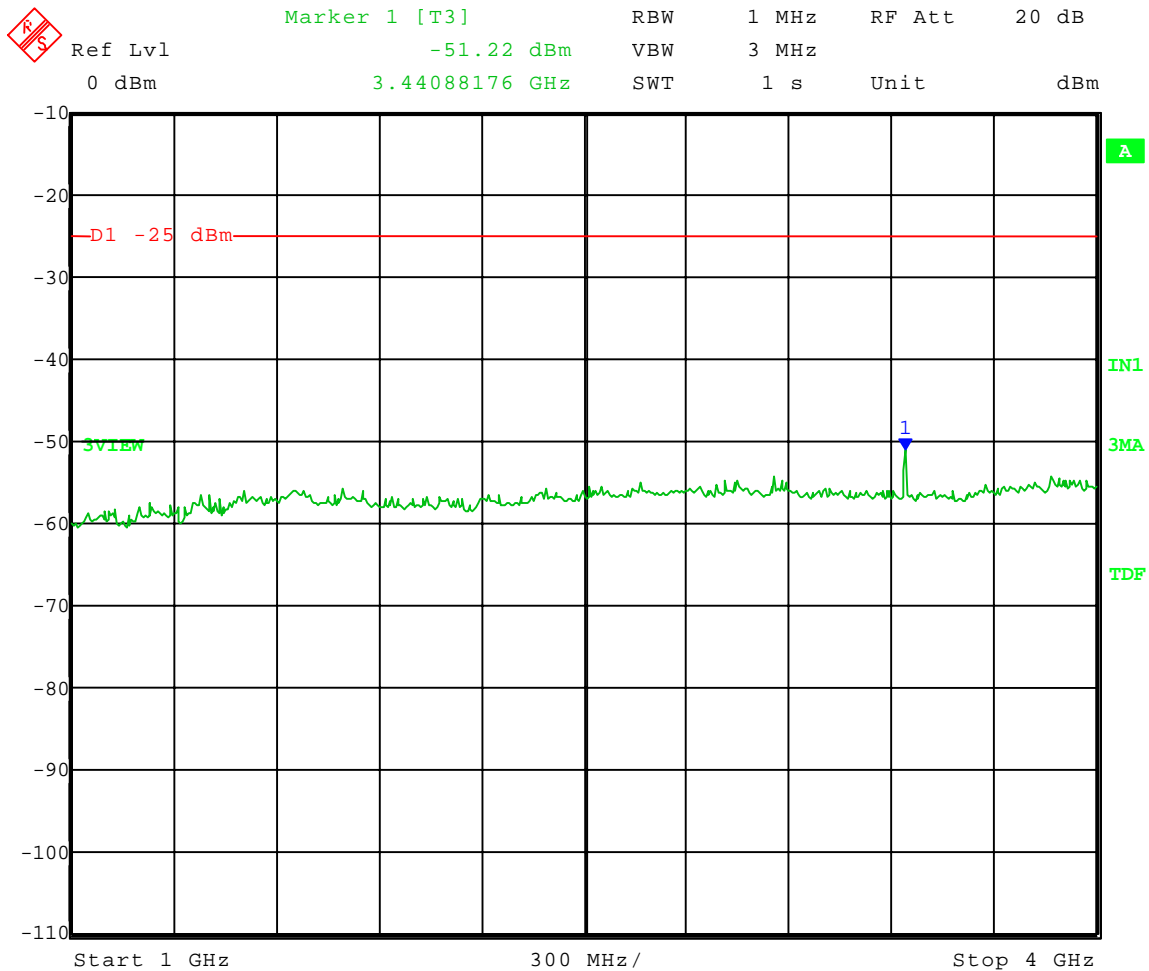


Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: Spurious Emissions - Conducted - Out-of-Band  
Rule Part: FCC Pt. 90.210(m); Pt. 2.1051  
Operator: Craig B  
Comment: Low Channel Transmit = 4.940 GHz  
Modulation: 16QAM  
Frequency Range: 1 GHz to 4 GHz  
Limit = -25 dBm



Date: 18.DEC.2008 15:06:37



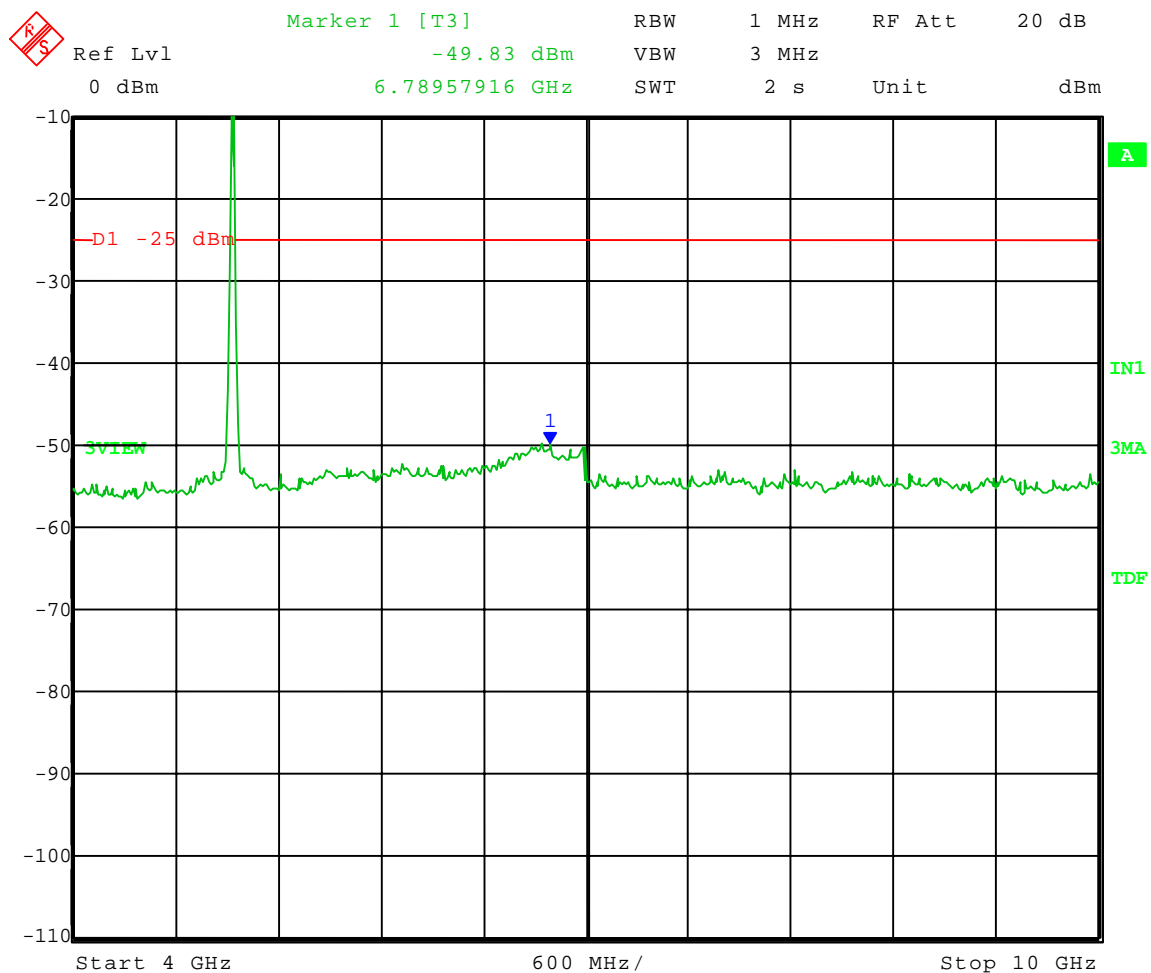


Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: Spurious Emissions - Conducted - Out-of-Band  
Rule Part: FCC Pt. 90.210(m); Pt. 2.1051  
Operator: Craig B  
Comment: Low Channel Transmit = 4.940 GHz  
Modulation: 16QAM  
Frequency Range: 4 GHz to 10 GHz  
Limit = -25 dBm



Date: 18.DEC.2008 15:07:26

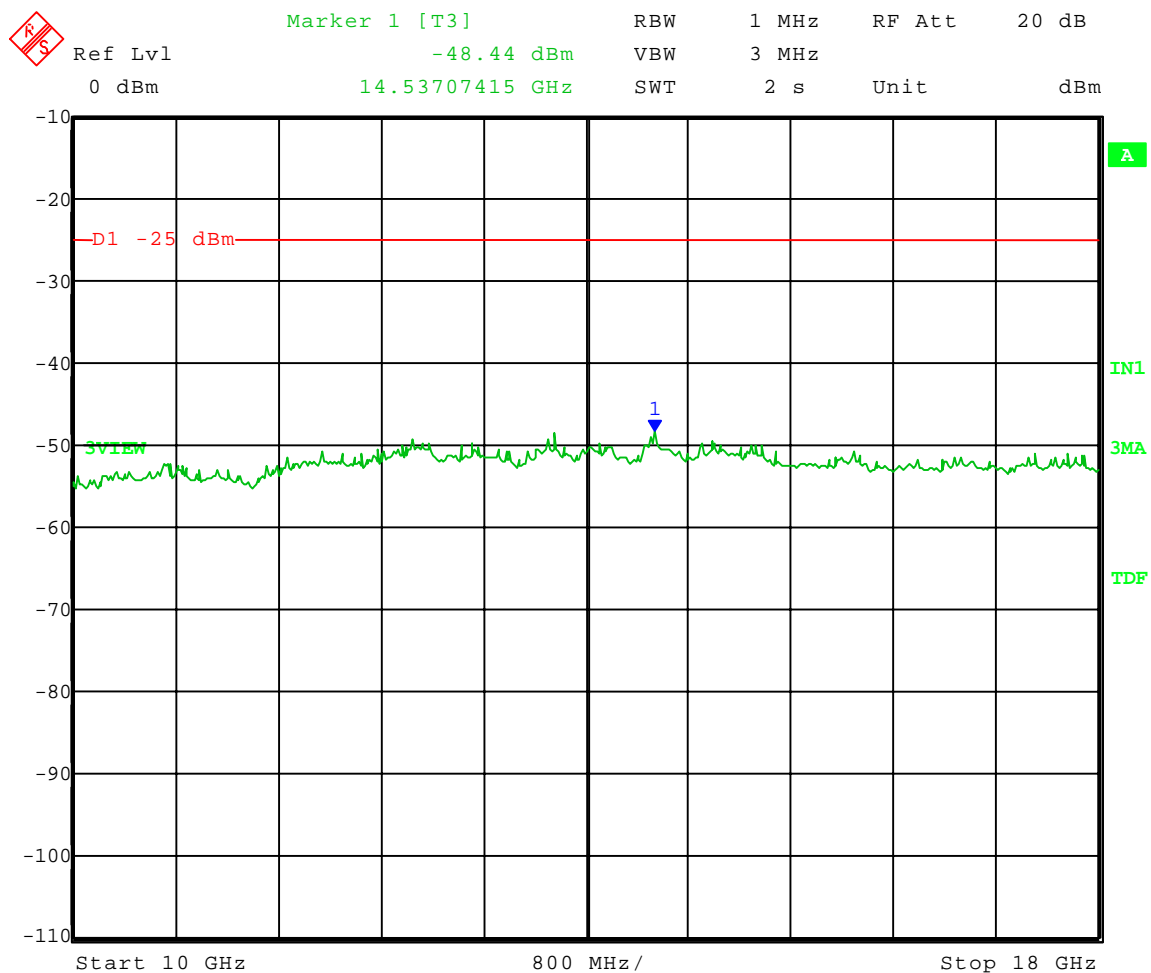


Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: Spurious Emissions - Conducted - Out-of-Band  
Rule Part: FCC Pt. 90.210(m); Pt. 2.1051  
Operator: Craig B  
Comment: Low Channel Transmit = 4.940 GHz  
Modulation: 16QAM  
Frequency Range: 10 GHz to 18 GHz  
Limit = -25 dBm



Date: 18.DEC.2008 15:08:02

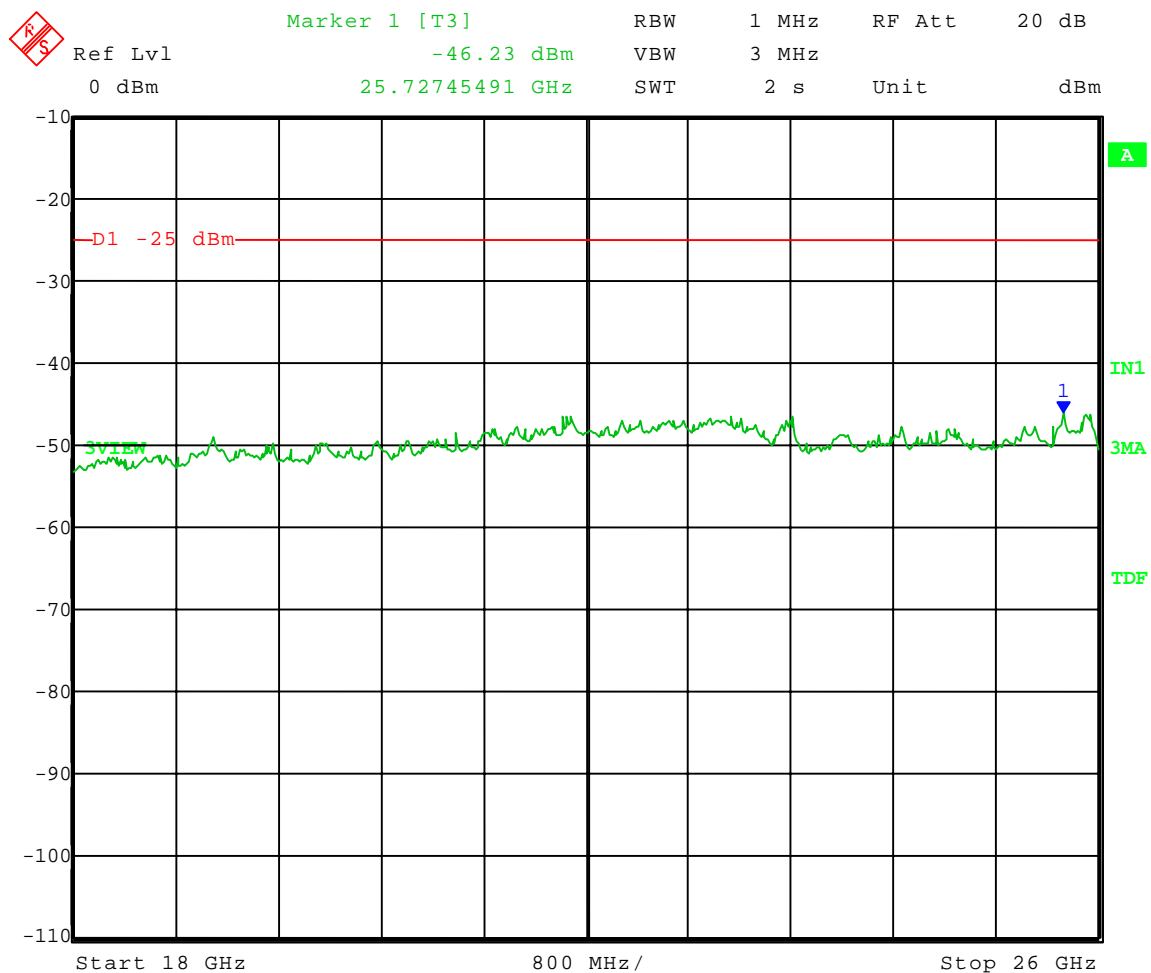


Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: Spurious Emissions - Conducted - Out-of-Band  
Rule Part: FCC Pt. 90.210(m); Pt. 2.1051  
Operator: Craig B  
Comment: Low Channel Transmit = 4.940 GHz  
Modulation: 16QAM  
Frequency Range: 18 GHz to 26 GHz  
Limit = -25 dBm



Date: 18.DEC.2008 15:08:40

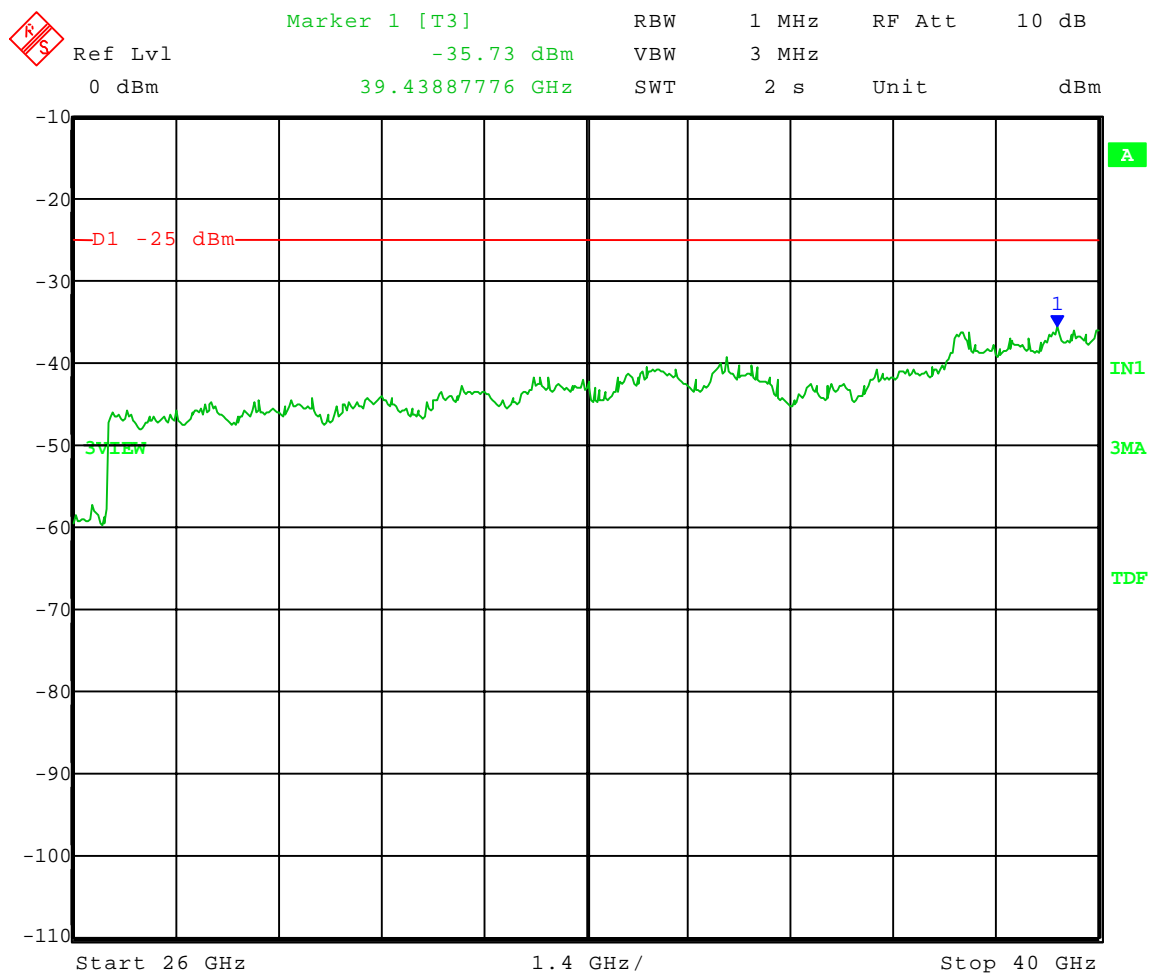


Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: Spurious Emissions - Conducted - Out-of-Band  
Rule Part: FCC Pt. 90.210(m); Pt. 2.1051  
Operator: Craig B  
Comment: .....Low Channel Transmit = 4.940 GHz  
Modulation: 16QAM  
Frequency Range: 26 GHz to 40 GHz  
Limit = -25 dBm



Date: 18.DEC.2008 15:09:21

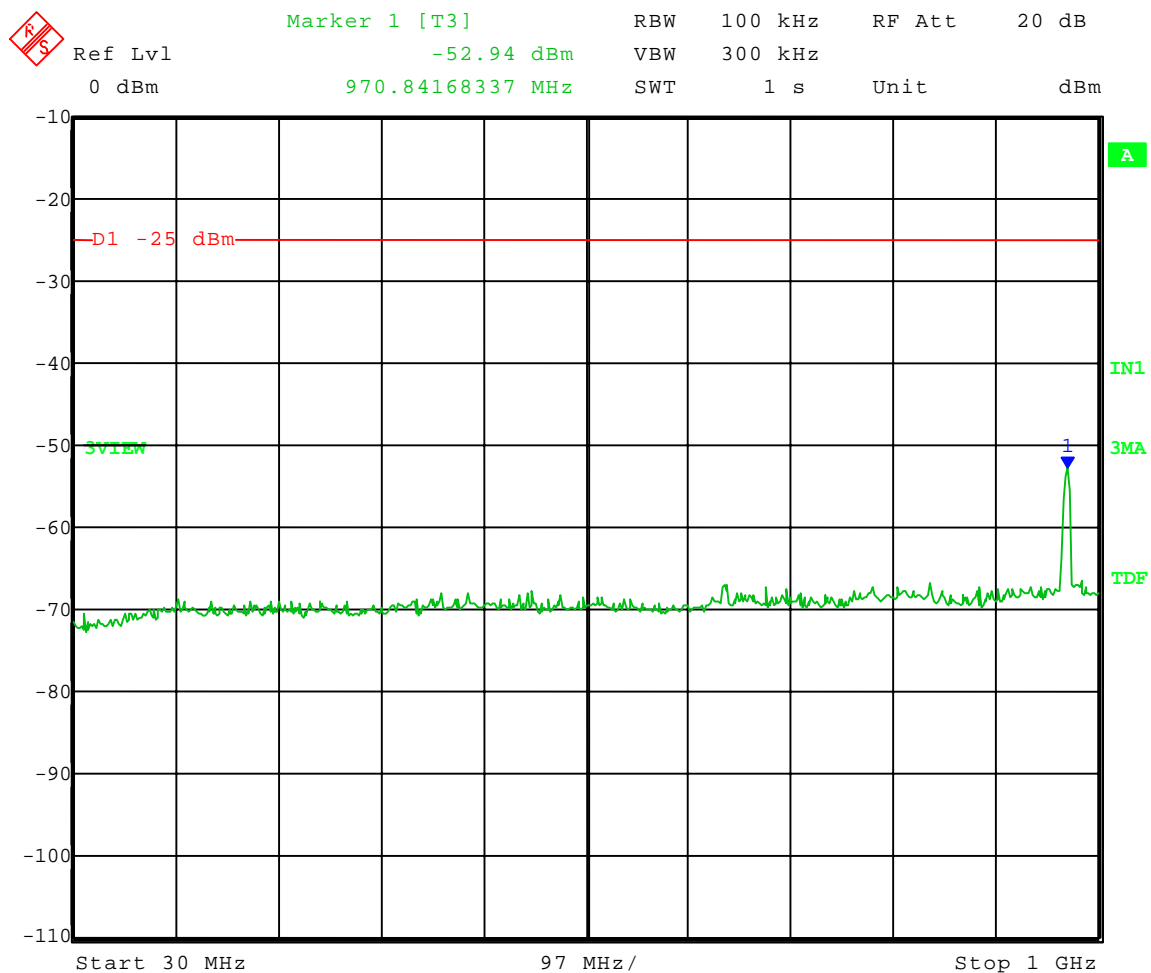


Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: Spurious Emissions - Conducted - Out-of-Band  
Rule Part: FCC Pt. 90.210(m); Pt. 2.1051  
Operator: Craig B  
Comment: Low Channel Transmit = 4.940 GHz  
Modulation: 64QAM  
Frequency Range: 30 MHz to 1 GHz  
Limit = -25 dBm



Date: 18.DEC.2008 15:11:44

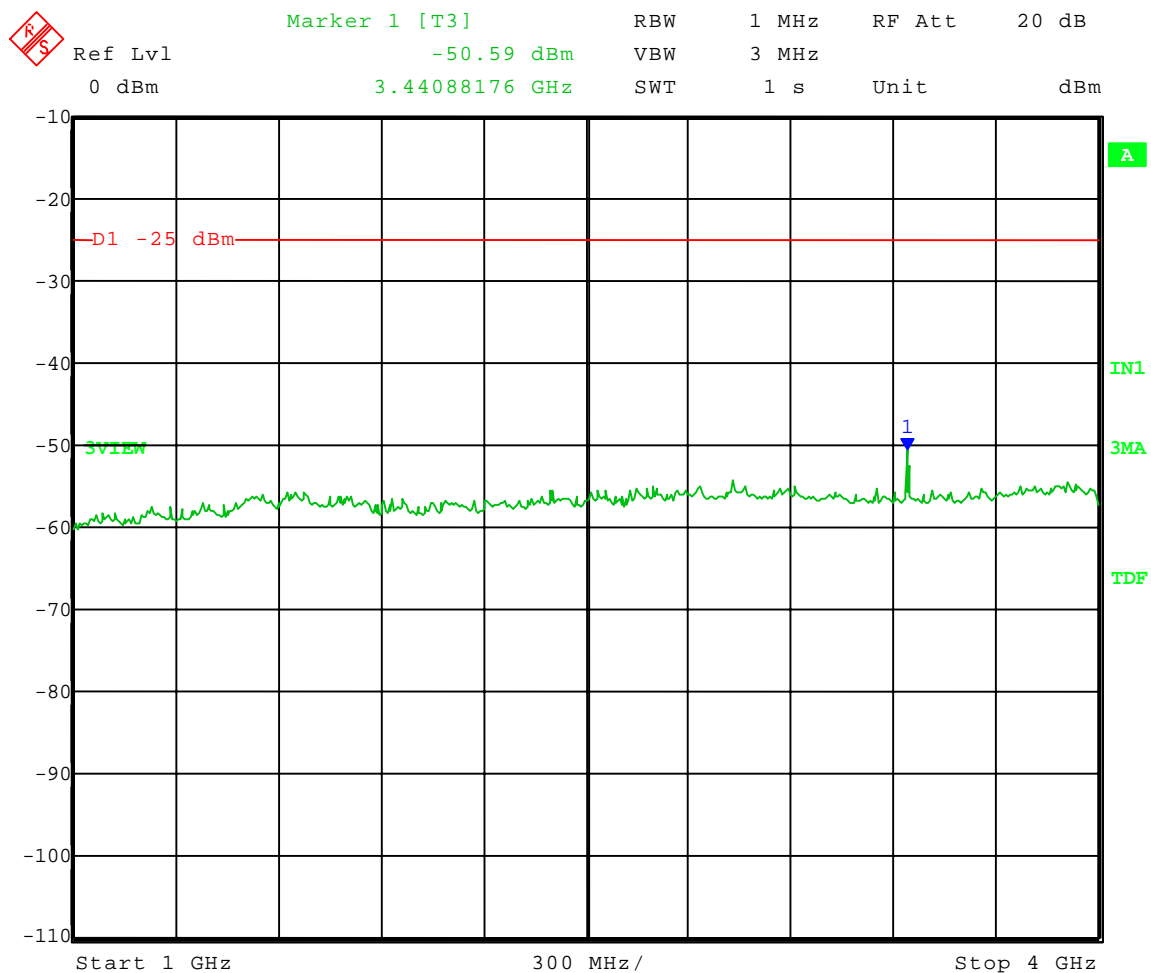


Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: Spurious Emissions - Conducted - Out-of-Band  
Rule Part: FCC Pt. 90.210(m); Pt. 2.1051  
Operator: Craig B  
Comment: Low Channel Transmit = 4.940 GHz  
Modulation: 64QAM  
Frequency Range: 1 GHz to 4 GHz  
Limit = -25 dBm



Date: 18.DEC.2008 15:12:40

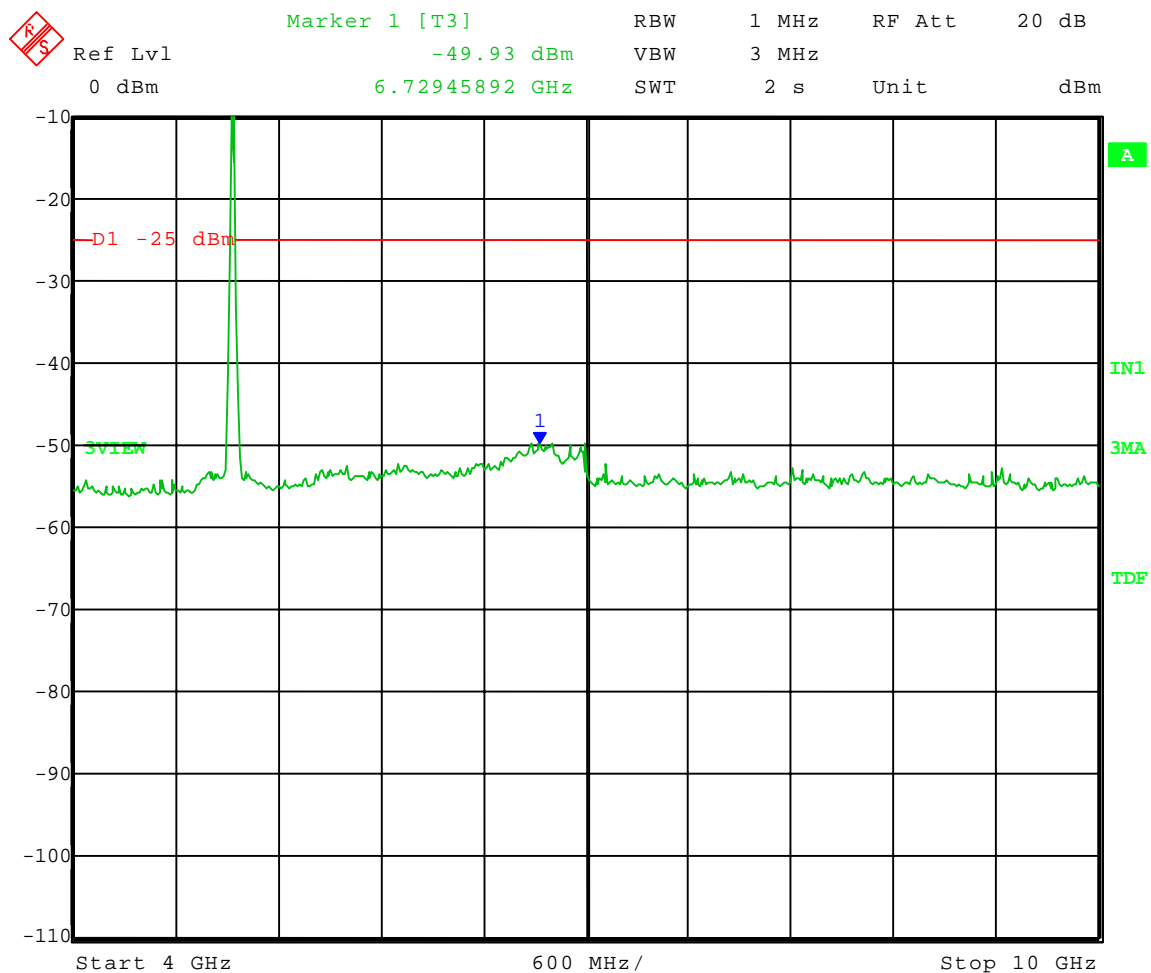


Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: Spurious Emissions - Conducted - Out-of-Band  
Rule Part: FCC Pt. 90.210(m); Pt. 2.1051  
Operator: Craig B  
Comment: Low Channel Transmit = 4.940 GHz  
Modulation: 64QAM  
Frequency Range: 4 GHz to 10 GHz  
Limit = -25 dBm



Date: 18.DEC.2008 15:13:37

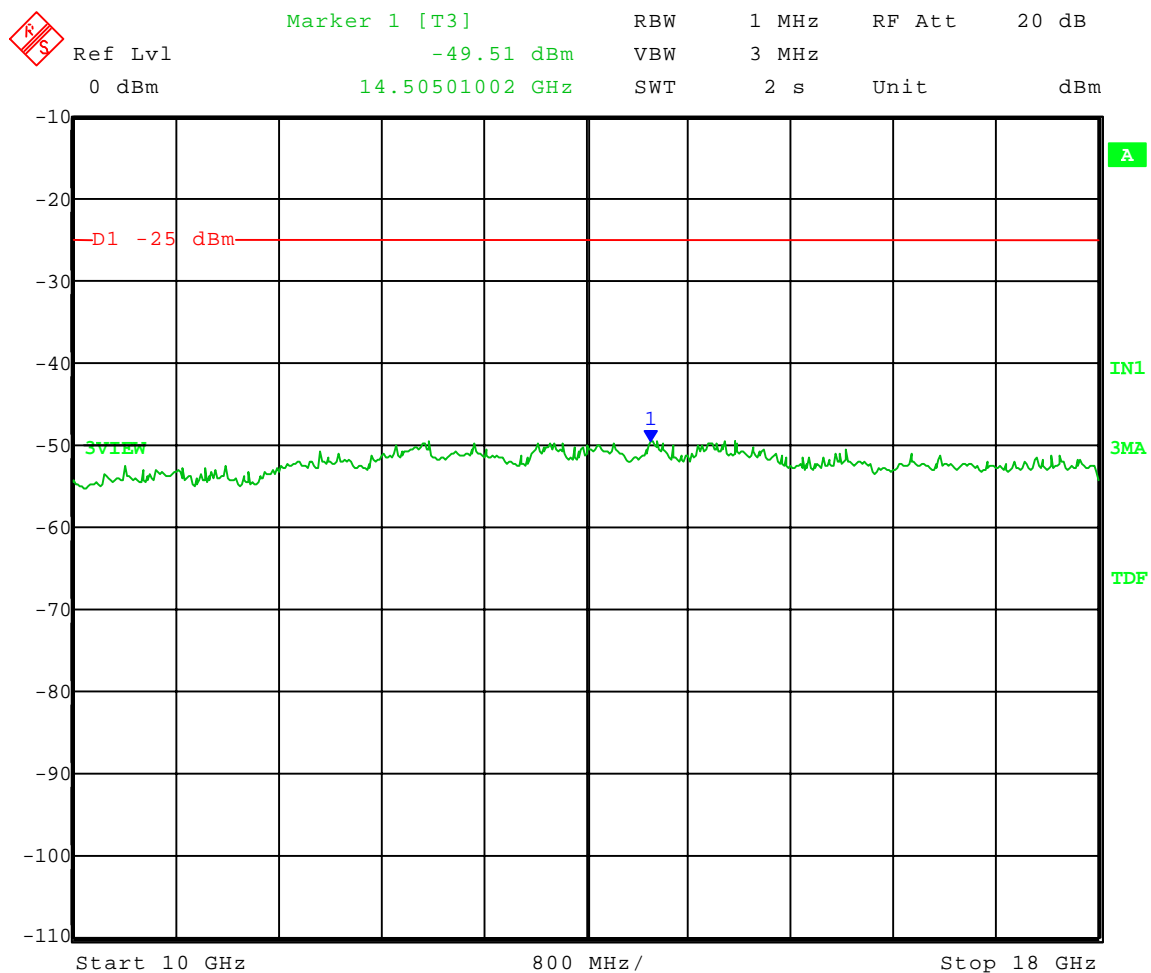


Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: Spurious Emissions - Conducted - Out-of-Band  
Rule Part: FCC Pt. 90.210(m); Pt. 2.1051  
Operator: Craig B  
Comment: Low Channel Transmit = 4.940 GHz  
Modulation: 64QAM  
Frequency Range: 10 GHz to 18 GHz  
Limit = -25 dBm



Date: 18.DEC.2008 15:14:11



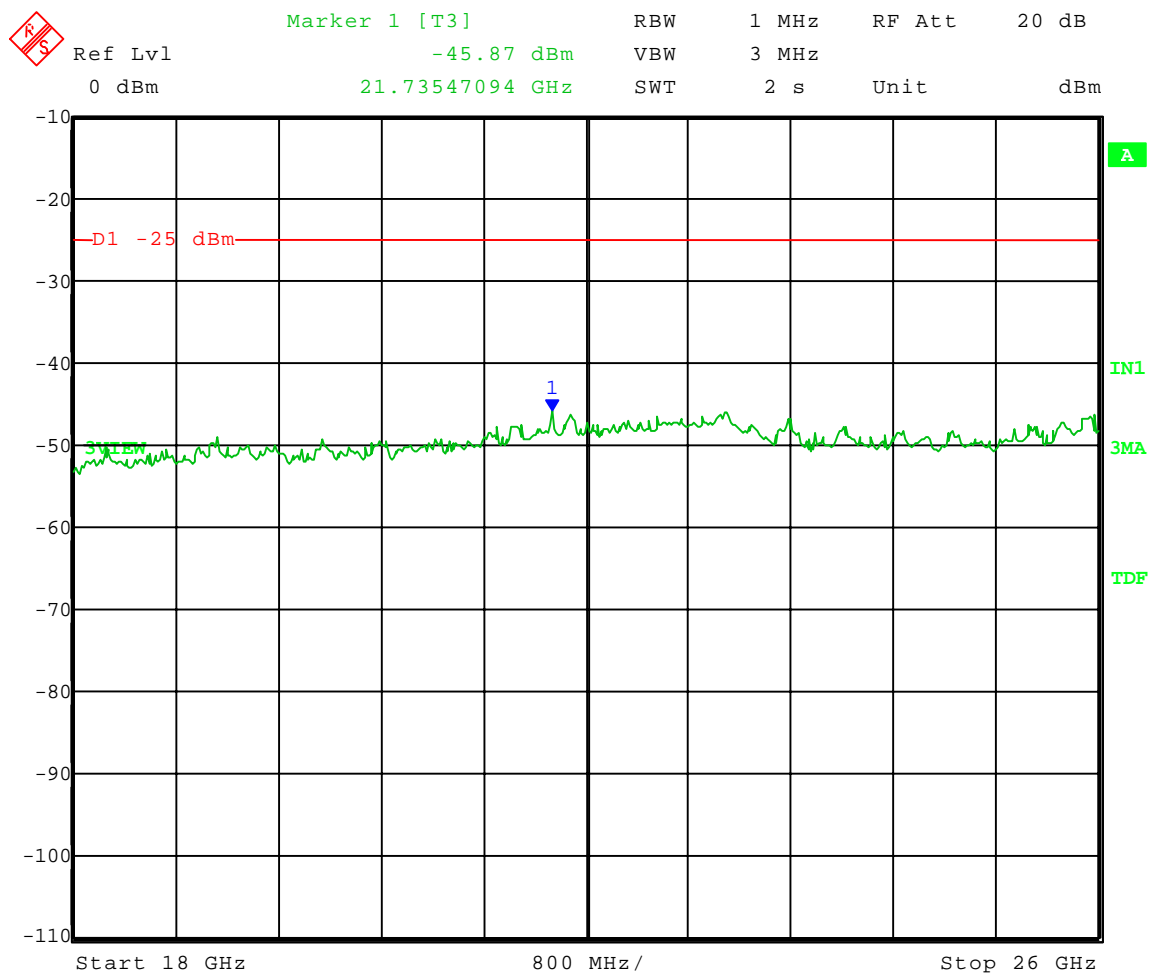


Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: Spurious Emissions - Conducted - Out-of-Band  
Rule Part: FCC Pt. 90.210(m); Pt. 2.1051  
Operator: Craig B  
Comment: Low Channel Transmit = 4.940 GHz  
Modulation: 64QAM  
Frequency Range: 18 GHz to 26 GHz  
Limit = -25 dBm



Date: 18.DEC.2008 15:15:00

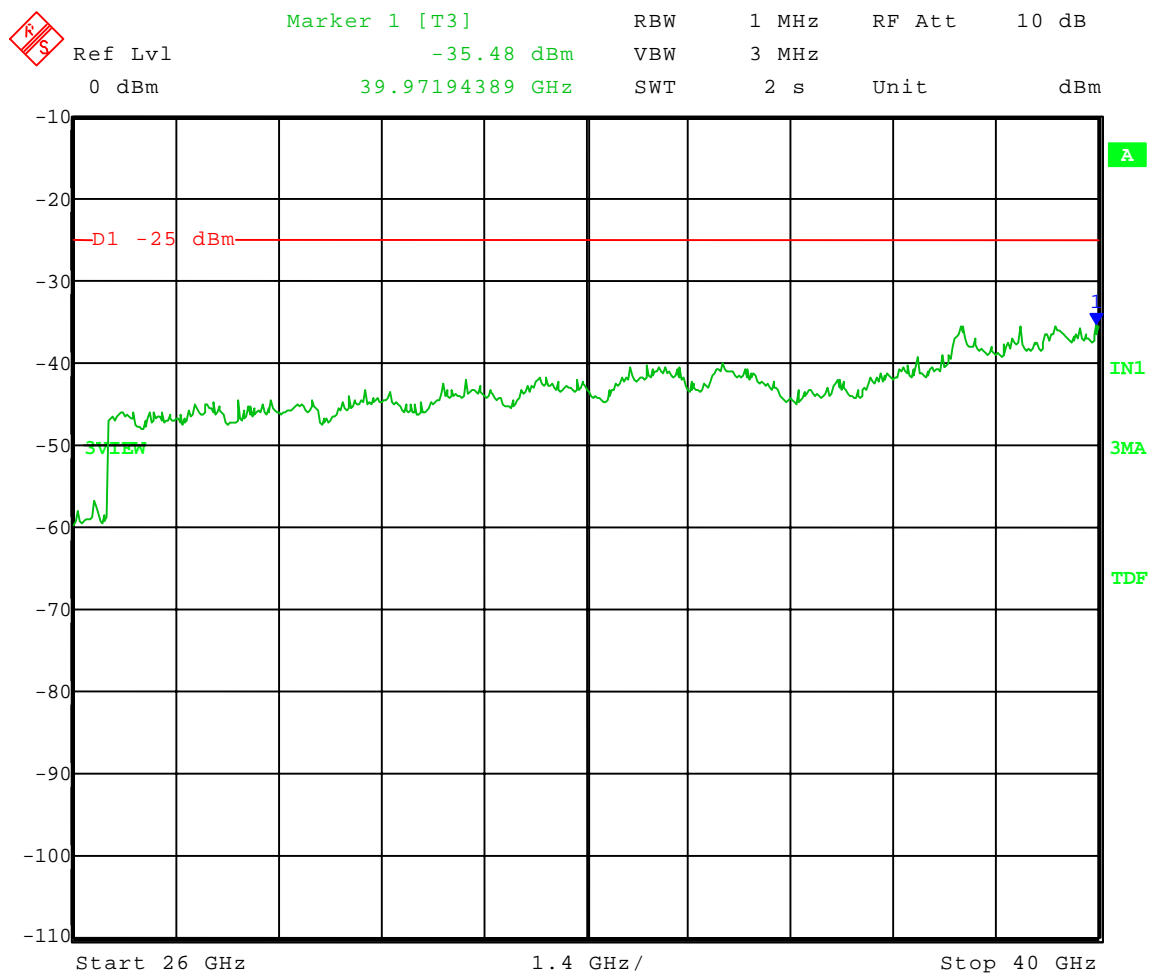


Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: Spurious Emissions - Conducted - Out-of-Band  
Rule Part: FCC Pt. 90.210(m); Pt. 2.1051  
Operator: .....Craig B  
Comment: Low Channel Transmit = 4.940 GHz  
Modulation: 64QAM  
Frequency Range: 26 GHz to 40 GHz  
Limit = -25 dBm



Date: 18.DEC.2008 15:15:39



1250 Peterson Dr., Wheeling, IL 60090

Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

## APPENDIX A

# CONDUCTED EMISSION DATA & CHARTS TAKEN FOR SPURIOUS EMISSION MEASUREMENTS MADE AT THE ANTENNA TERMINALS EIA /TIA-603-C:2004, SECTION 2.2.13 90.210(m) & PART 2.1051 MID CHANNEL MODULATION

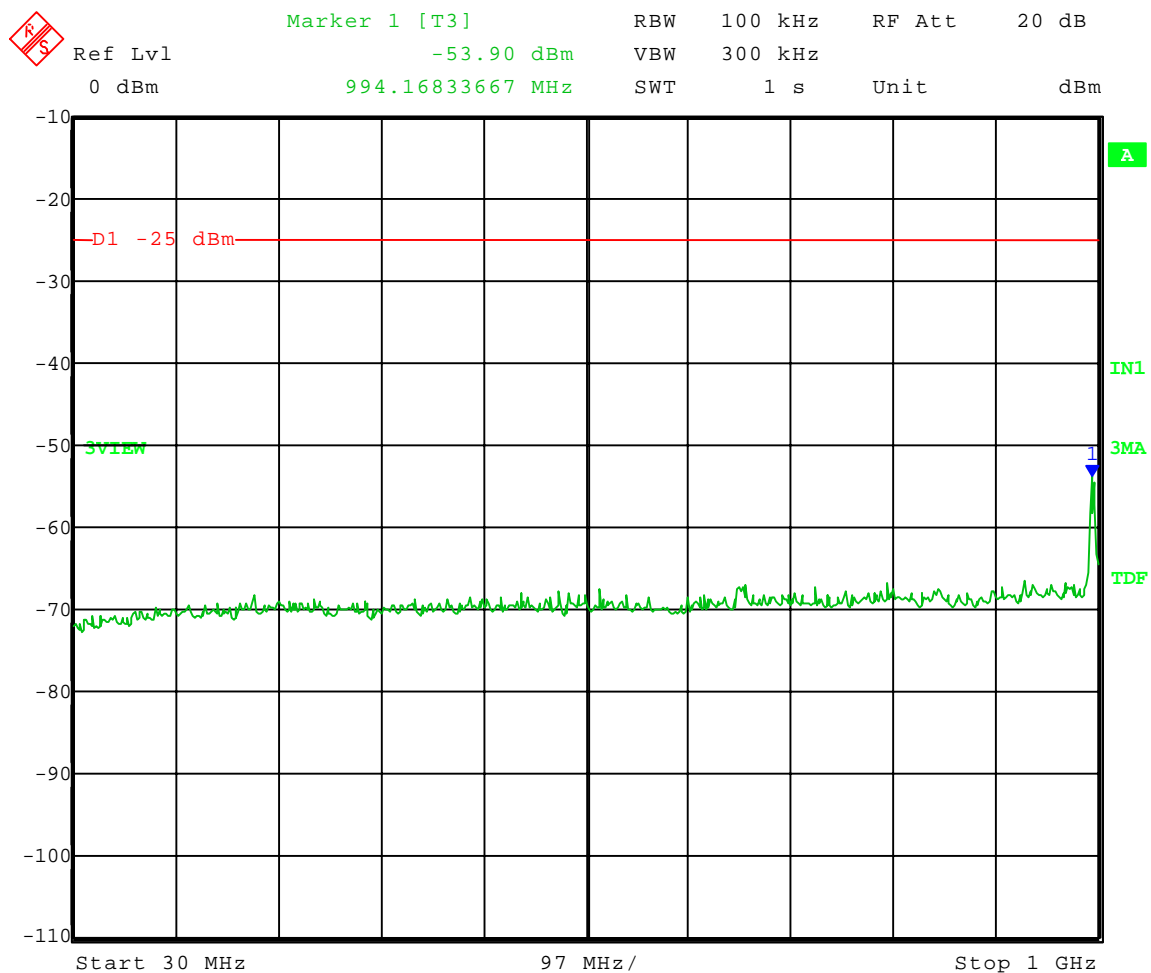


Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: Spurious Emissions - Conducted - Out-of-Band  
Rule Part: FCC Pt. 90.210(m); Pt. 2.1051  
Operator: Craig B  
Comment: Center Channel Transmit = 4.965 GHz  
Modulation: QPSK  
Frequency Range: 30 MHz to 1 GHz  
Limit = -25 dBm



Date: 18.DEC.2008 14:35:28

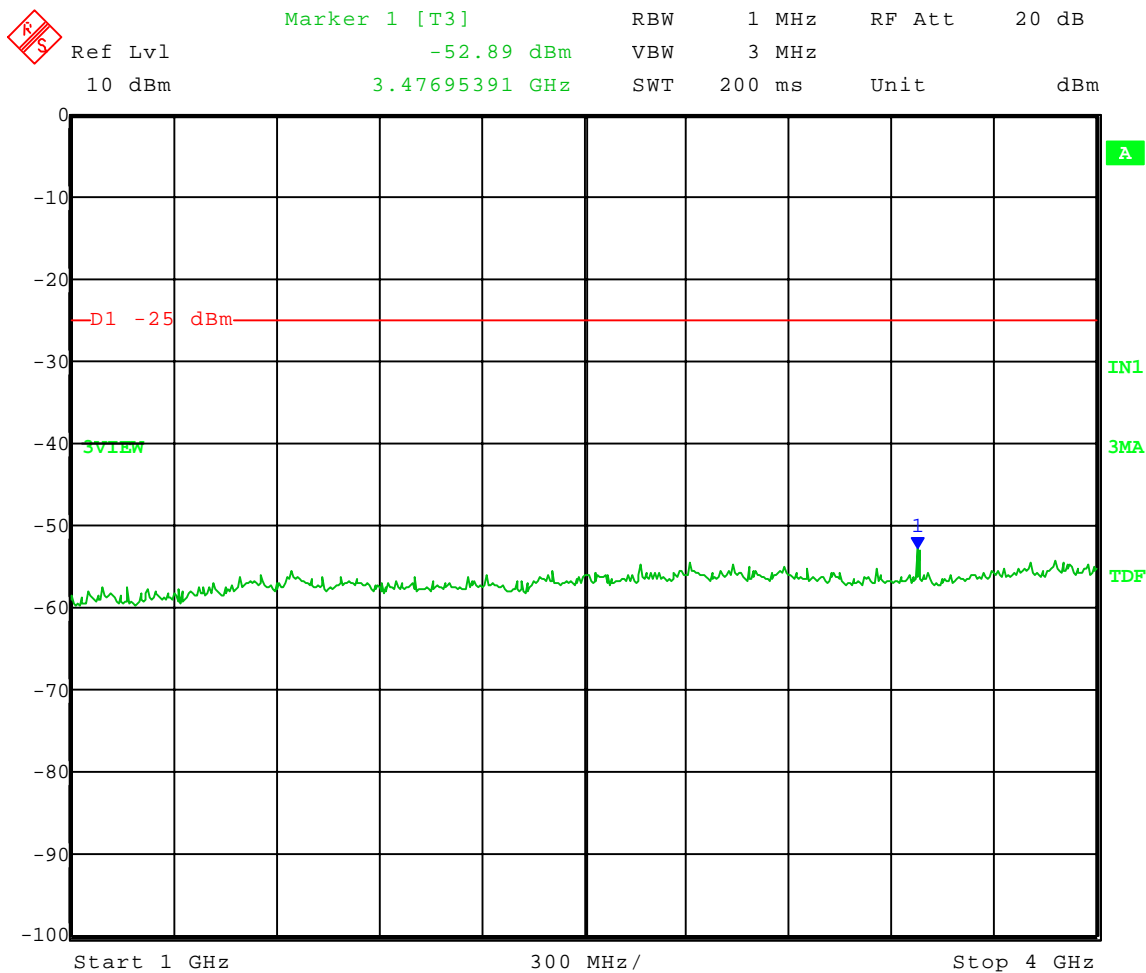


Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: Spurious Emissions - Conducted - Out-of-Band  
Rule Part: FCC Pt. 90.210(m); Pt. 2.1051  
Operator: Craig B  
Comment: Center Channel Transmit = 4.965 GHz  
Modulation: QPSK  
Frequency Range: 1 GHz to 4 GHz  
Limit = -25 dBm



Date: 18.DEC.2008 14:28:02

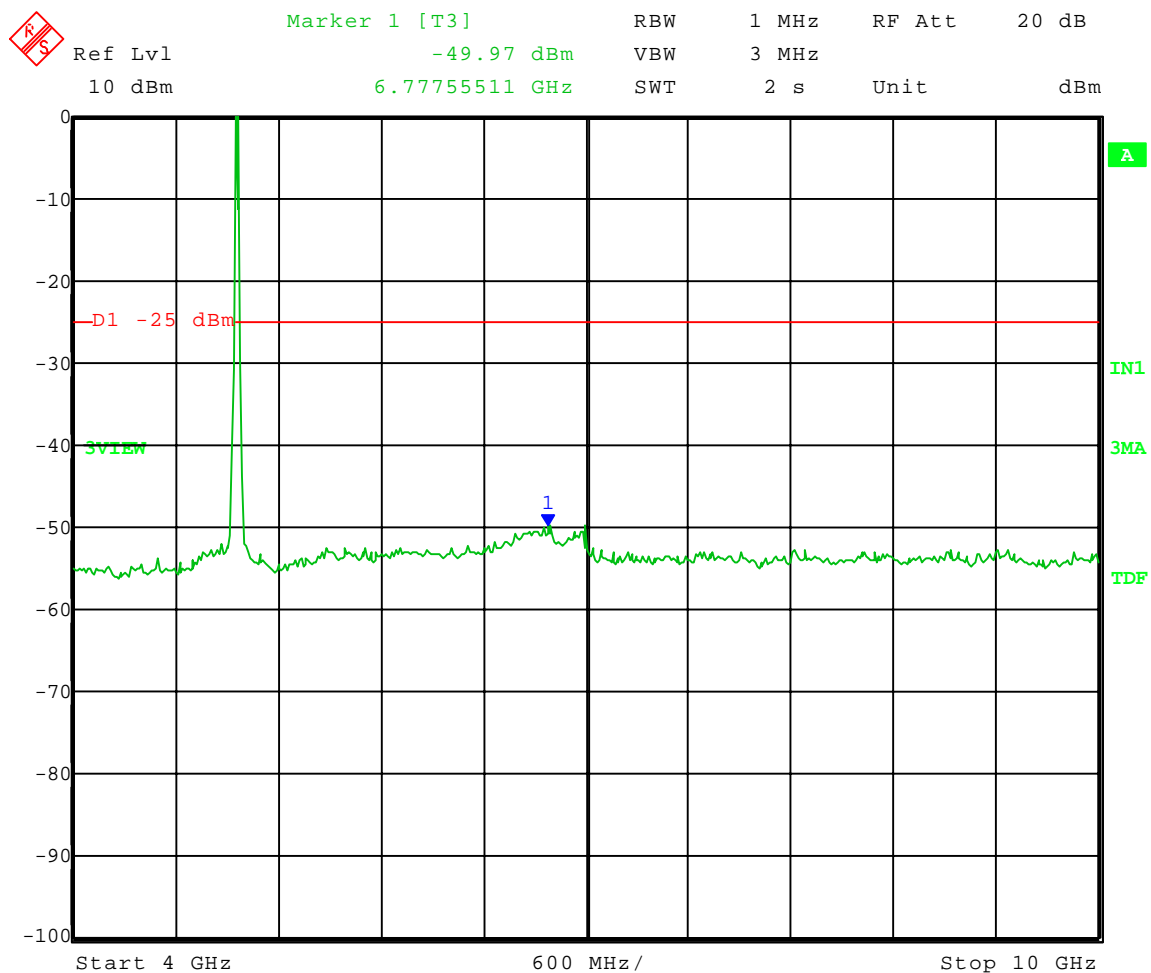


Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: Spurious Emissions - Conducted - Out-of-Band  
Rule Part: FCC Pt. 90.210(m); Pt. 2.1051  
Operator: Craig B  
Comment: Center Channel Transmit = 4.965 GHz  
Modulation: QPSK  
Frequency Range: 4 GHz to 10 GHz  
Limit = -25 dBm



Date: 18.DEC.2008 14:25:22

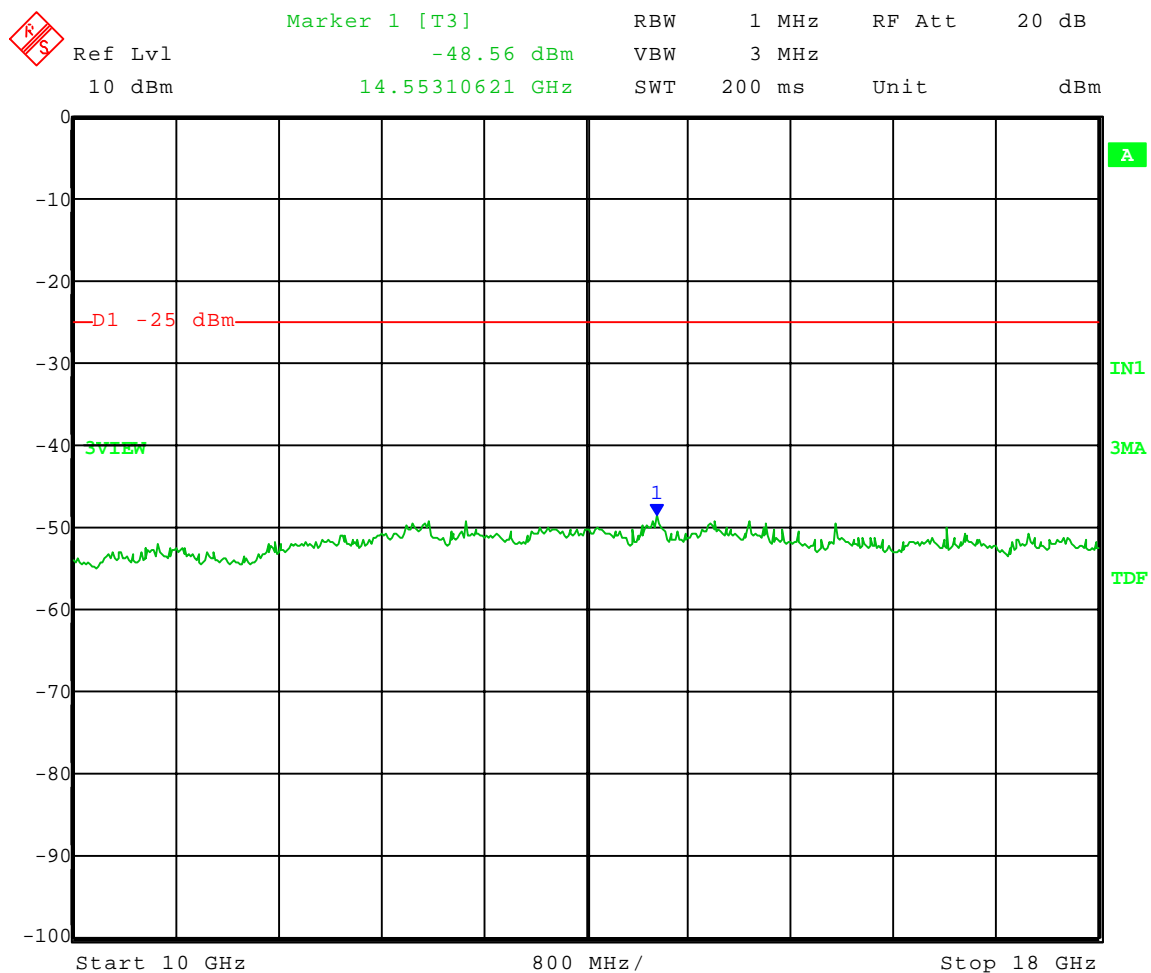


Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: Spurious Emissions - Conducted - Out-of-Band  
Rule Part: FCC Pt. 90.210(m); Pt. 2.1051  
Operator: Craig B  
Comment: Center Channel Transmit = 4.965 GHz  
Modulation: QPSK  
Frequency Range: 10 GHz to 18 GHz  
Limit = -25 dBm



Date: 18.DEC.2008 14:29:20

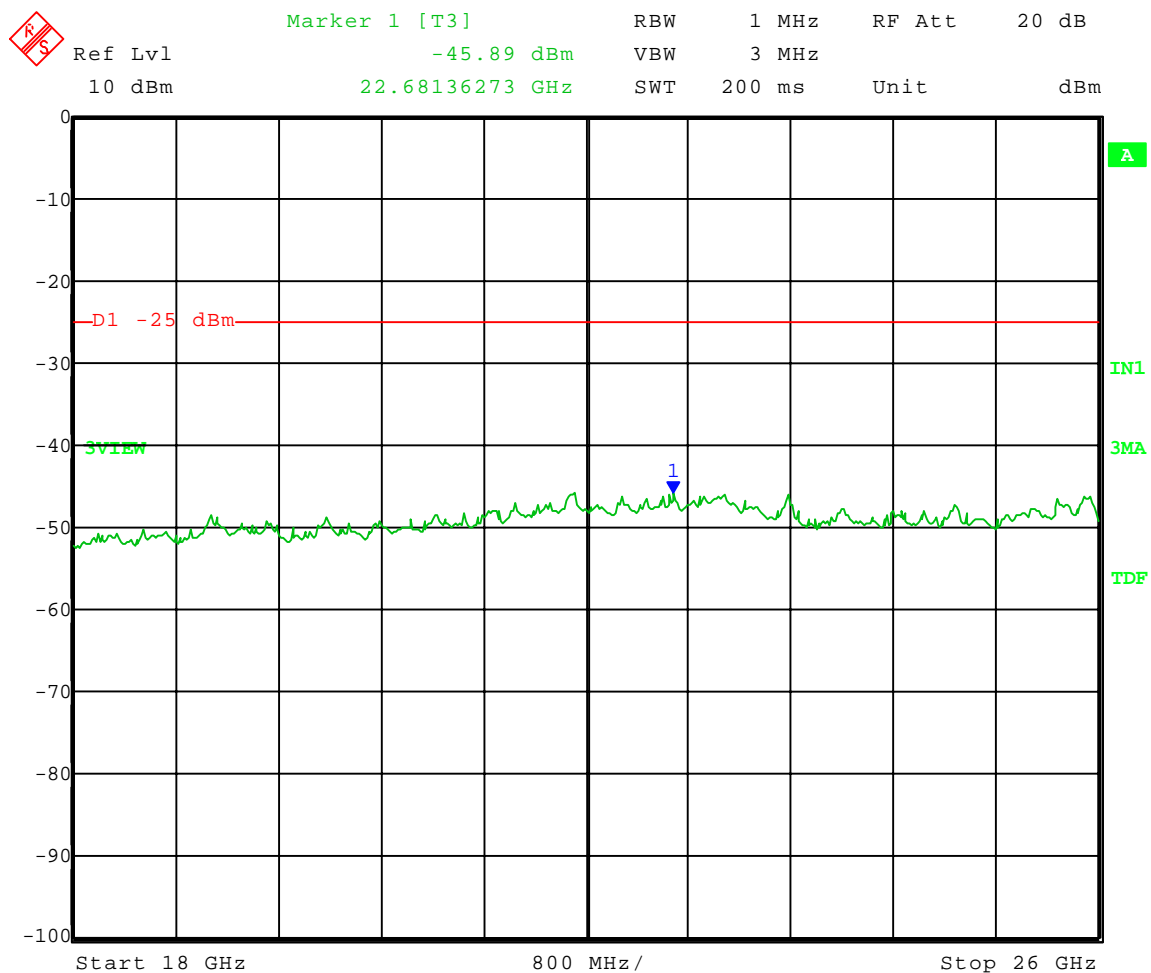


Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: Spurious Emissions - Conducted - Out-of-Band  
Rule Part: FCC Pt. 90.210(m); Pt. 2.1051  
Operator: Craig B  
Comment: Center Channel Transmit = 4.965 GHz  
Modulation: QPSK  
Frequency Range: 18 GHz to 26 GHz  
Limit = -25 dBm



Date: 18.DEC.2008 14:30:46



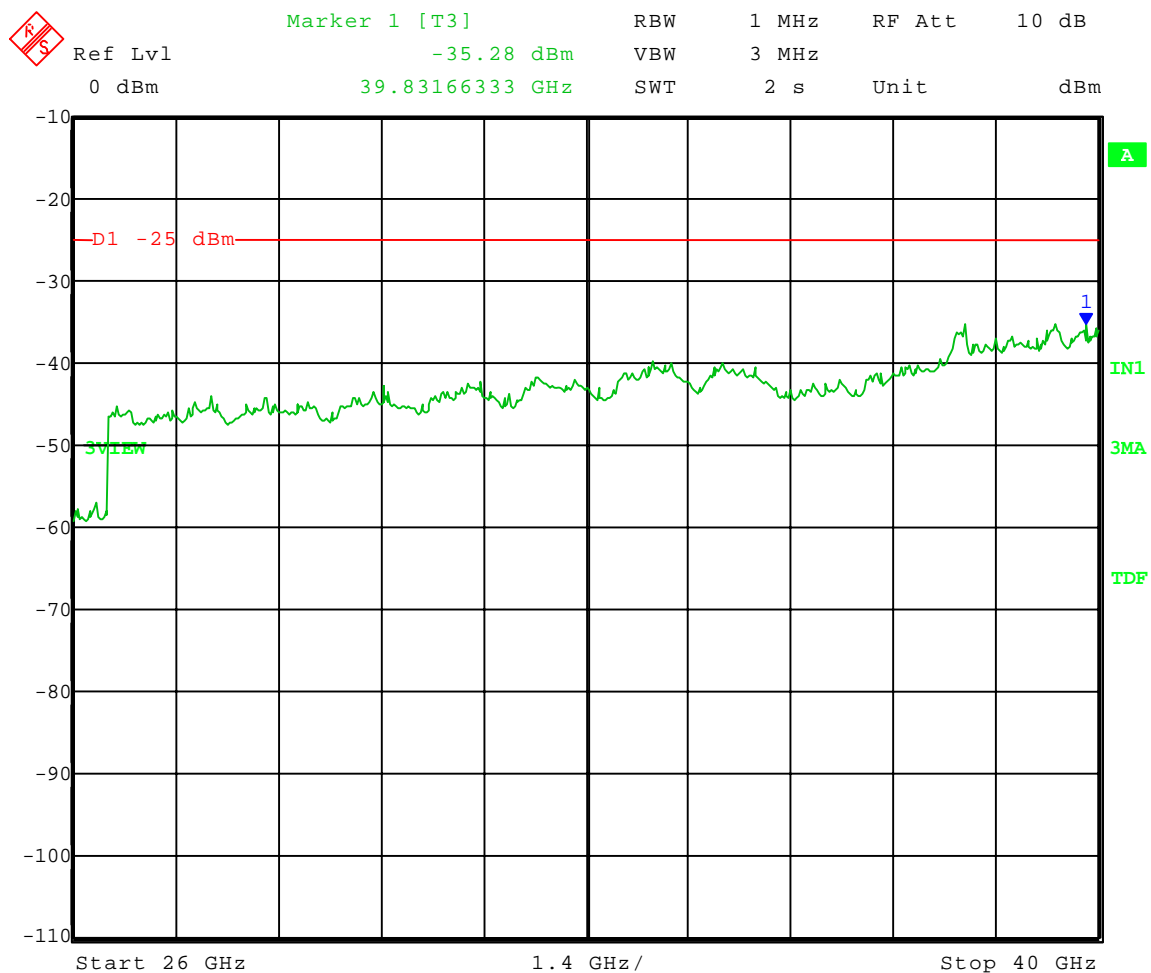


Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: Spurious Emissions - Conducted - Out-of-Band  
Rule Part: FCC Pt. 90.210(m); Pt. 2.1051  
Operator: Craig B  
Comment: Center Channel Transmit = 4.965 GHz  
Modulation: QPSK  
Frequency Range: 26 GHz to 40 GHz  
Limit = -25 dBm



Date: 18.DEC.2008 14:32:54

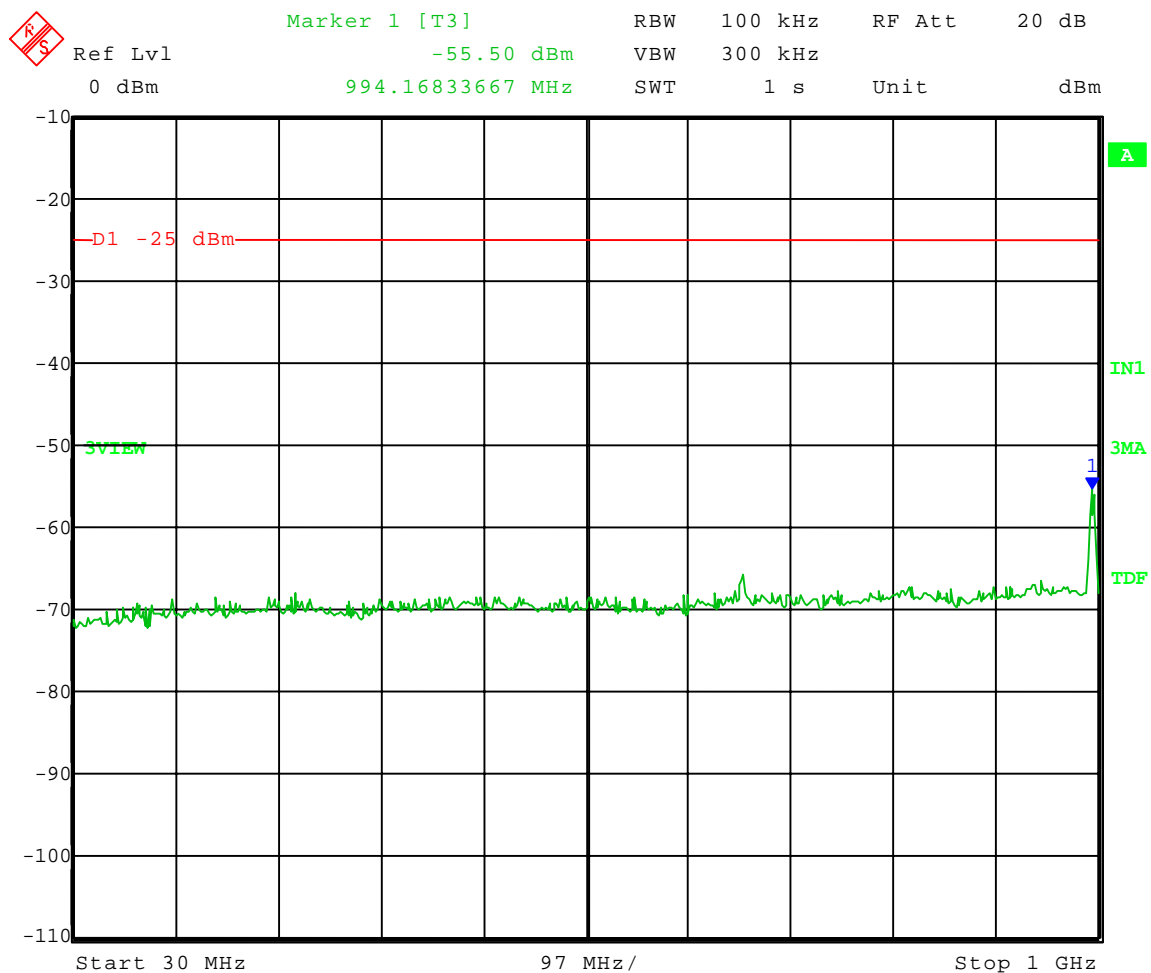


Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: Spurious Emissions - Conducted - Out-of-Band  
Rule Part: FCC Pt. 90.210(m); Pt. 2.1051  
Operator: Craig B  
Comment: Center Channel Transmit = 4.965 GHz  
Modulation: 16QAM  
Frequency Range: 30 MHz to 1 GHz  
Limit = -25 dBm



Date: 18.DEC.2008 14:40:21

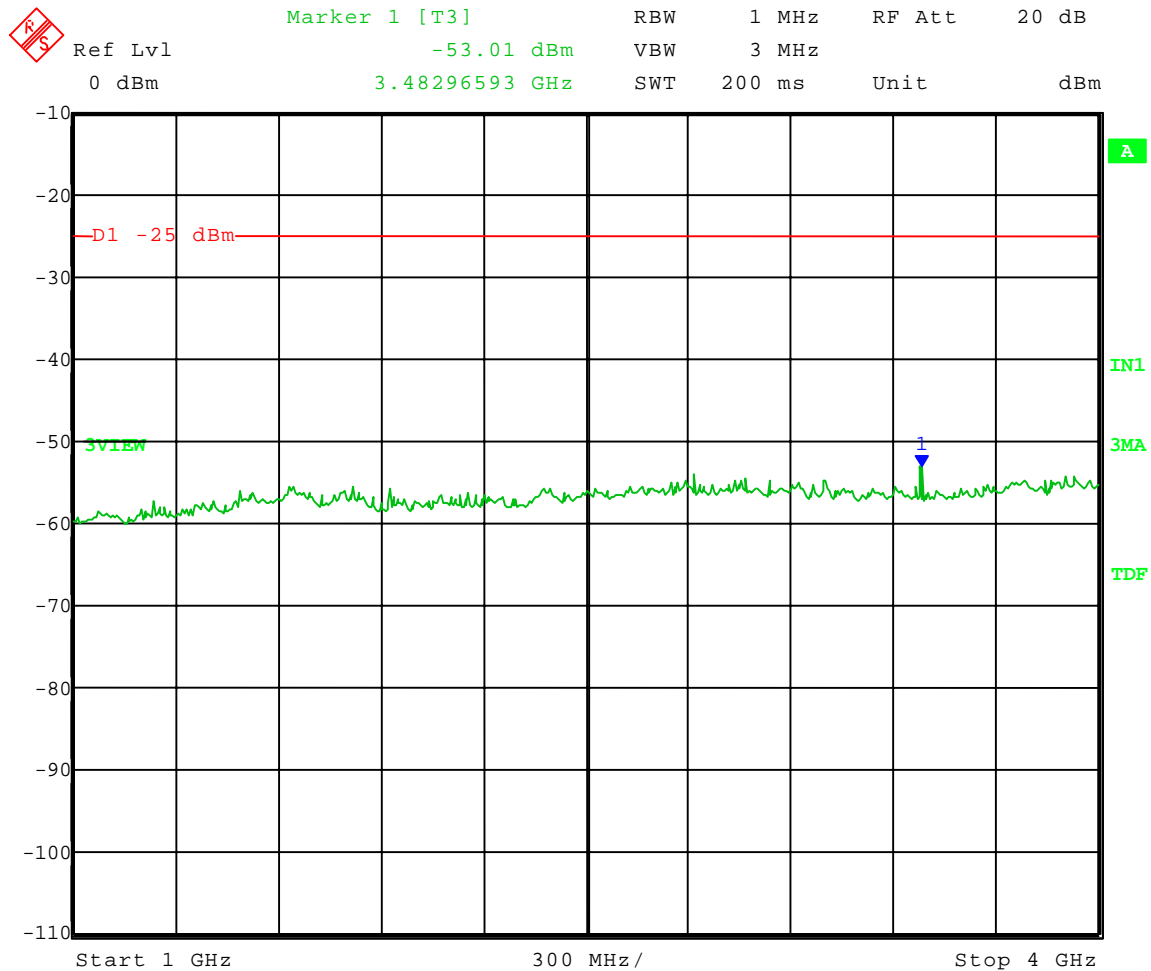


Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: Spurious Emissions - Conducted - Out-of-Band  
Rule Part: FCC Pt. 90.210(m); Pt. 2.1051  
Operator: Craig B  
Comment: Center Channel Transmit = 4.965 GHz  
Modulation: 16QAM  
Frequency Range: 1 GHz to 4 GHz  
Limit = -25 dBm



Date: 18.DEC.2008 14:41:54

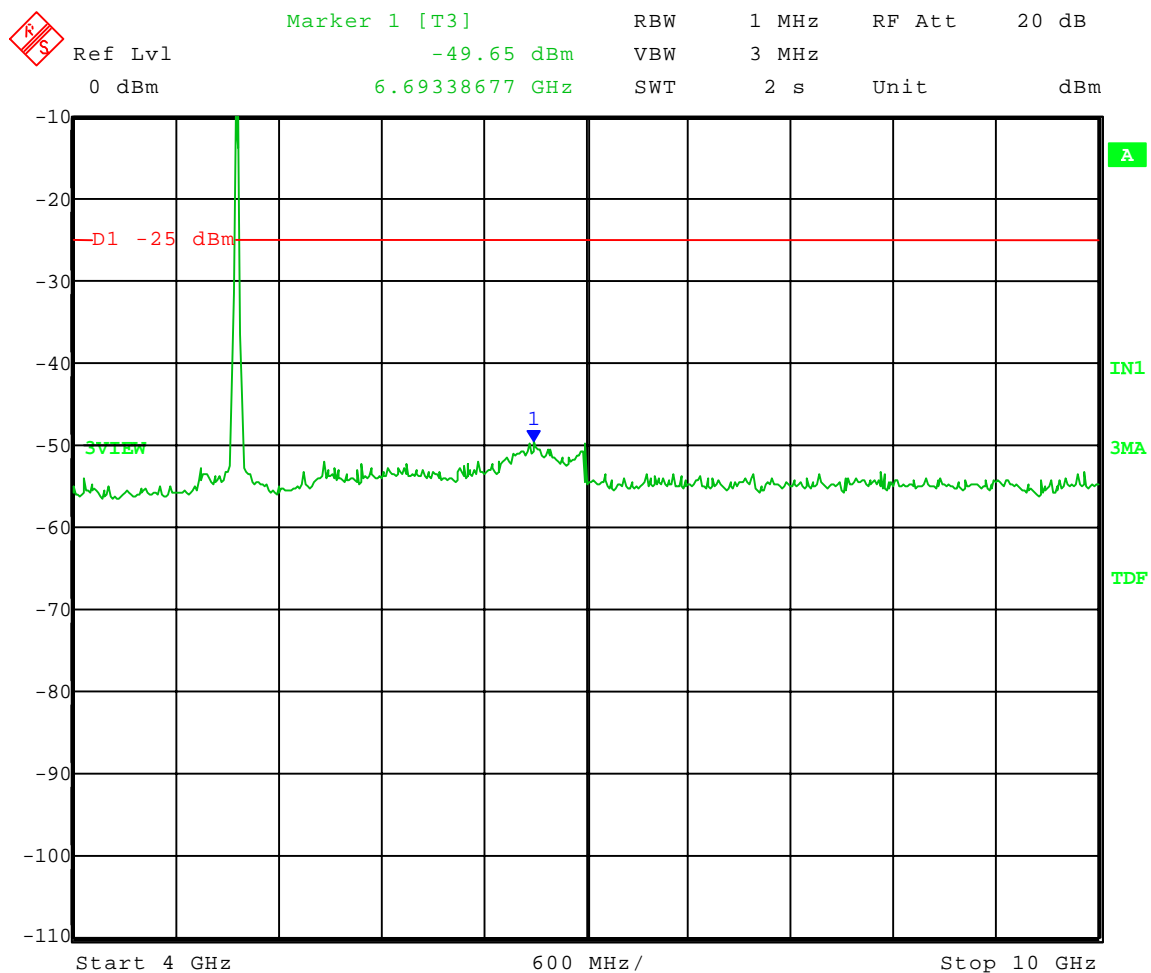


Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: Spurious Emissions - Conducted - Out-of-Band  
Rule Part: FCC Pt. 90.210(m); Pt. 2.1051  
Operator: .....Craig B  
Comment: Center Channel Transmit = 4.965 GHz  
Modulation: 16QAM  
Frequency Range: 4 GHz to 10 GHz  
Limit = -25 dBm



Date: 18.DEC.2008 14:42:49



Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

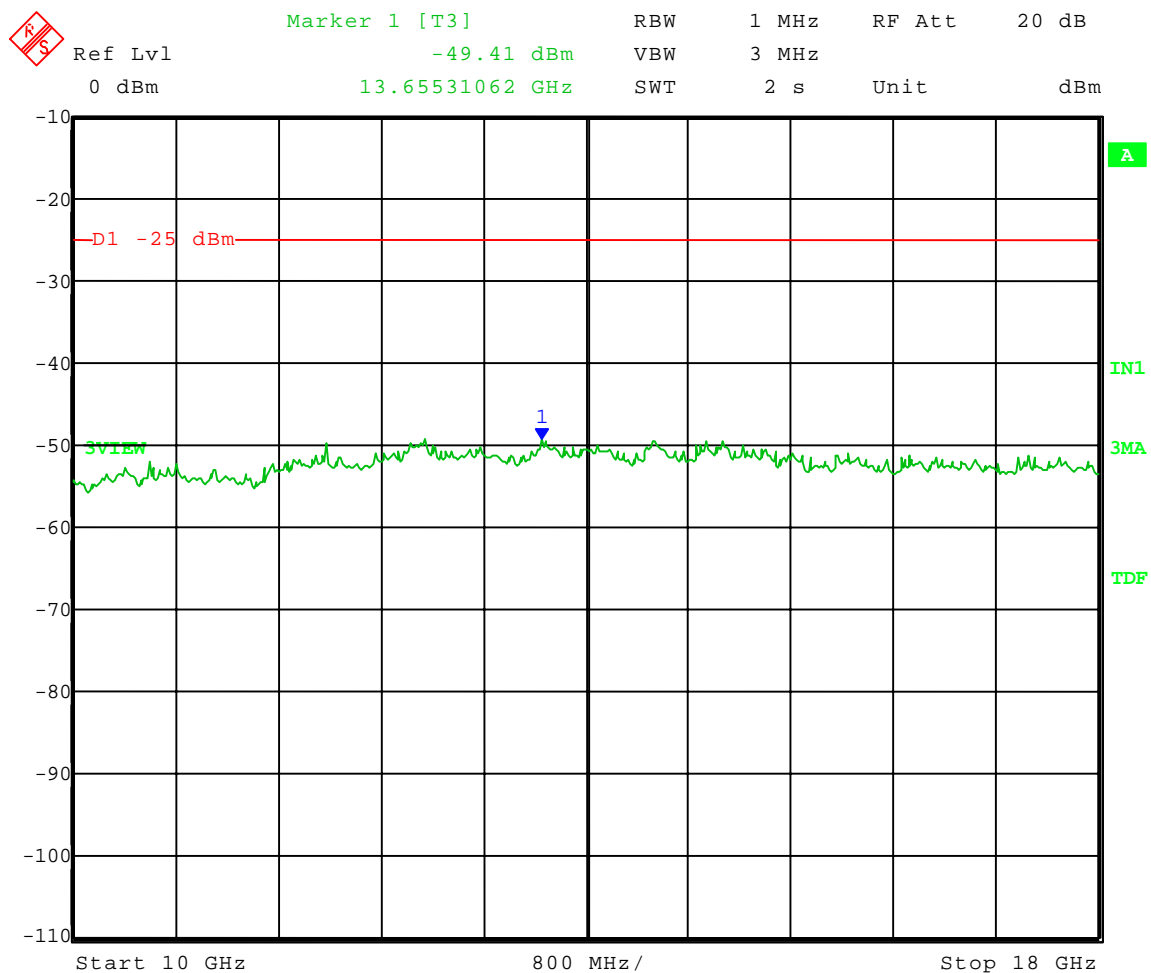
1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: Spurious Emissions - Conducted - Out-of-Band  
Rule Part: FCC Pt. 90.210(m); Pt. 2.1051  
Operator: Craig B  
Comment: Center Channel Transmit = 4.965 GHz

Modulation: 16QAM

Frequency Range: 10 GHz to 18 GHz  
Limit = -25 dBm



Date: 18.DEC.2008 14:43:33

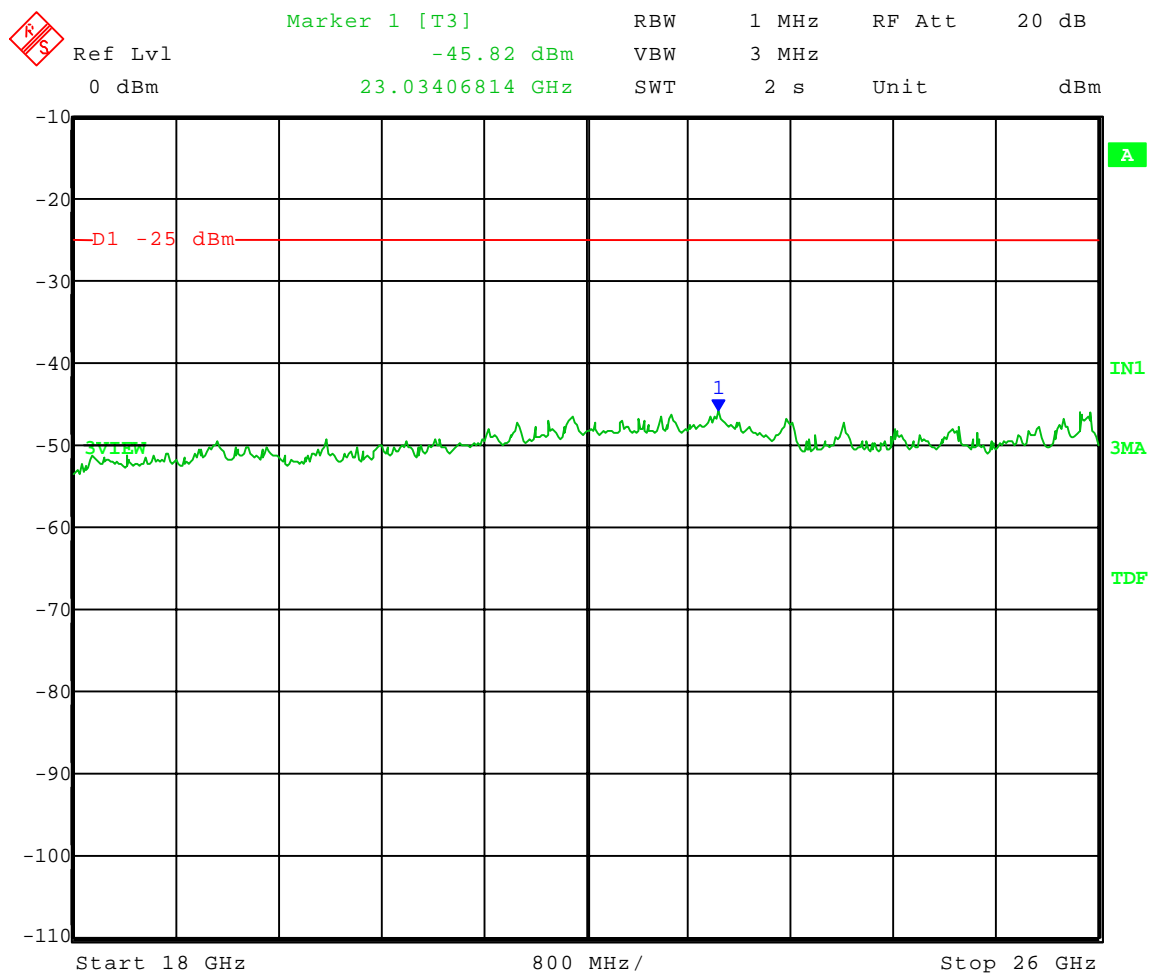


Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: Spurious Emissions - Conducted - Out-of-Band  
Rule Part: FCC Pt. 90.210(m); Pt. 2.1051  
Operator: Craig B  
Comment: Center Channel Transmit = 4.965 GHz  
Modulation: 16QAM  
Frequency Range: 18 GHz to 26 GHz  
Limit = -25 dBm



Date: 18.DEC.2008 14:44:20

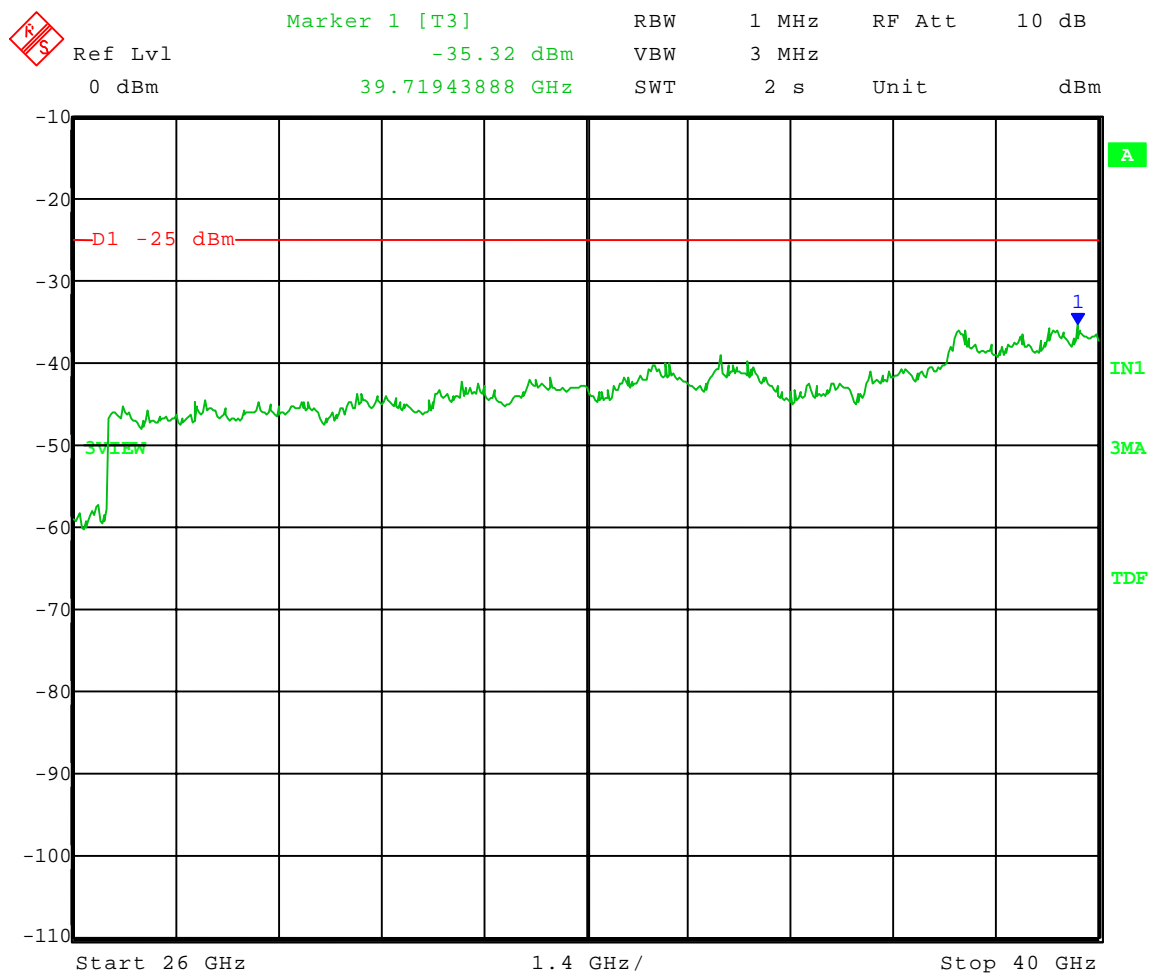


Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: Spurious Emissions - Conducted - Out-of-Band  
Rule Part: FCC Pt. 90.210(m); Pt. 2.1051  
Operator: Craig B  
Comment: Center Channel Transmit = 4.965 GHz  
Modulation: 16QAM  
Frequency Range: 26 GHz to 40 GHz  
Limit = -25 dBm



Date: 18.DEC.2008 14:45:14

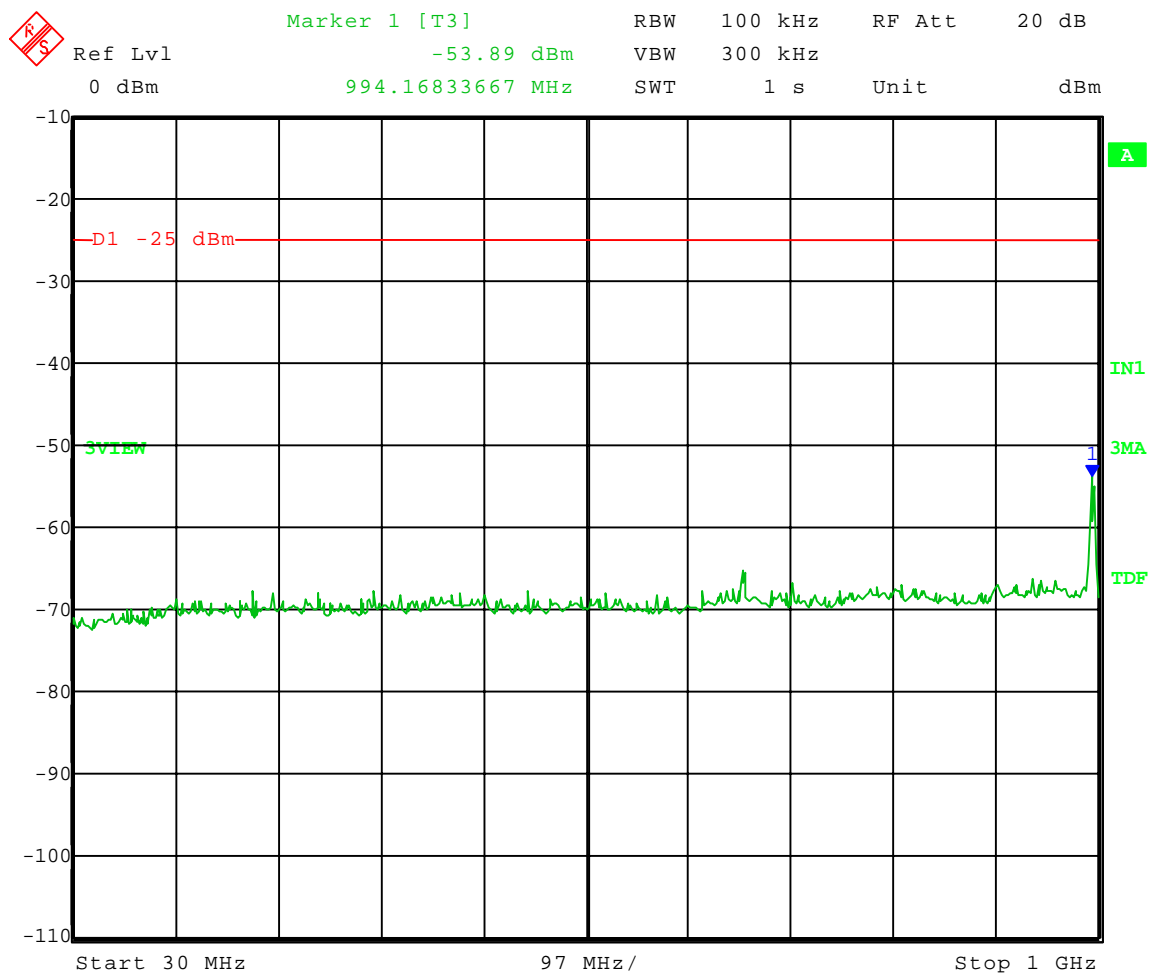


Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: Spurious Emissions - Conducted - Out-of-Band  
Rule Part: FCC Pt. 90.210(m); Pt. 2.1051  
Operator: Craig B  
Comment: Center Channel Transmit = 4.965 GHz  
Modulation: 64QAM  
Frequency Range: 30 MHz to 1 GHz  
Limit = -25 dBm



Date: 18.DEC.2008 14:47:32



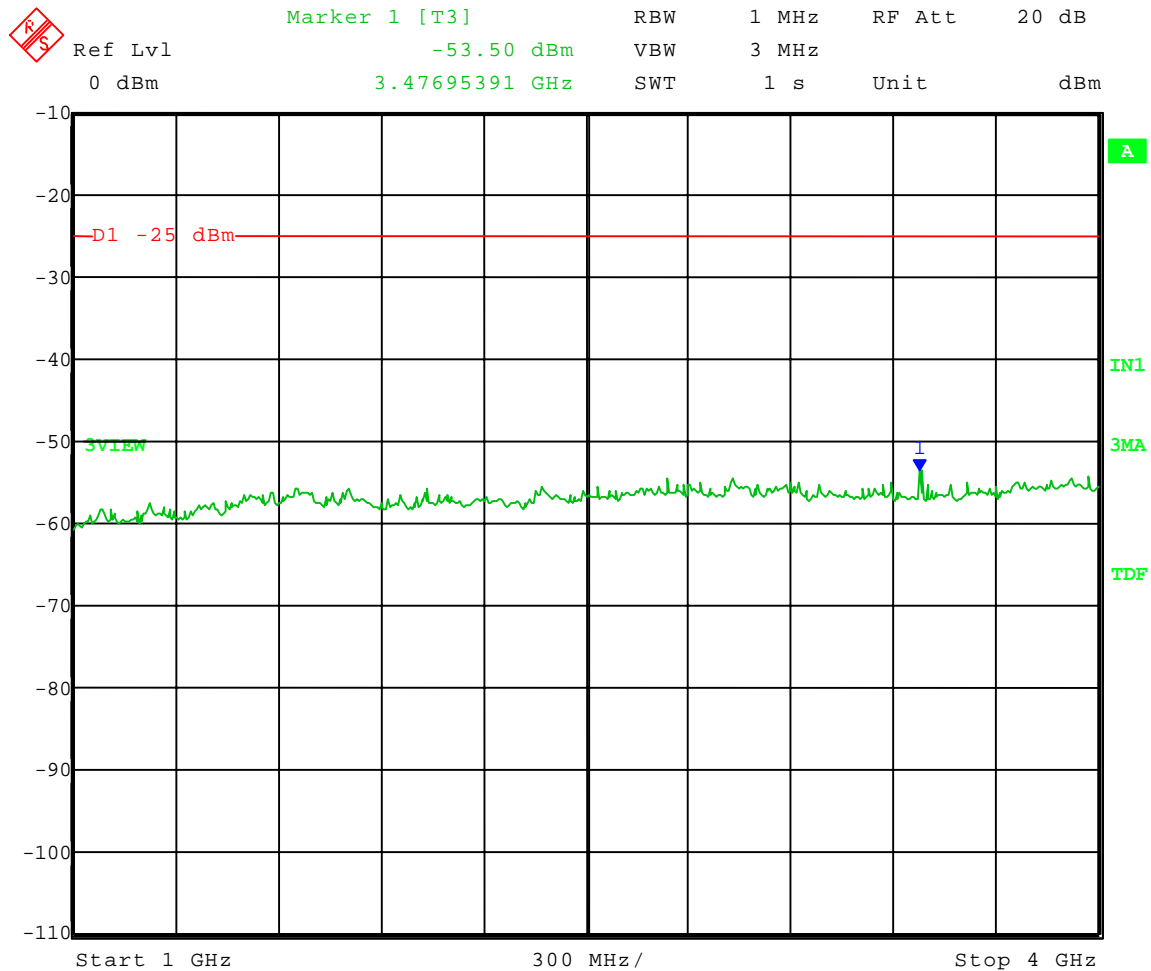


Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: Spurious Emissions - Conducted - Out-of-Band  
Rule Part: FCC Pt. 90.210(m); Pt. 2.1051  
Operator: Craig B  
Comment: Center Channel Transmit = 4.965 GHz  
Modulation: 64QAM  
Frequency Range: 1 GHz to 4 GHz  
Limit = -25 dBm



Date: 18.DEC.2008 14:48:26

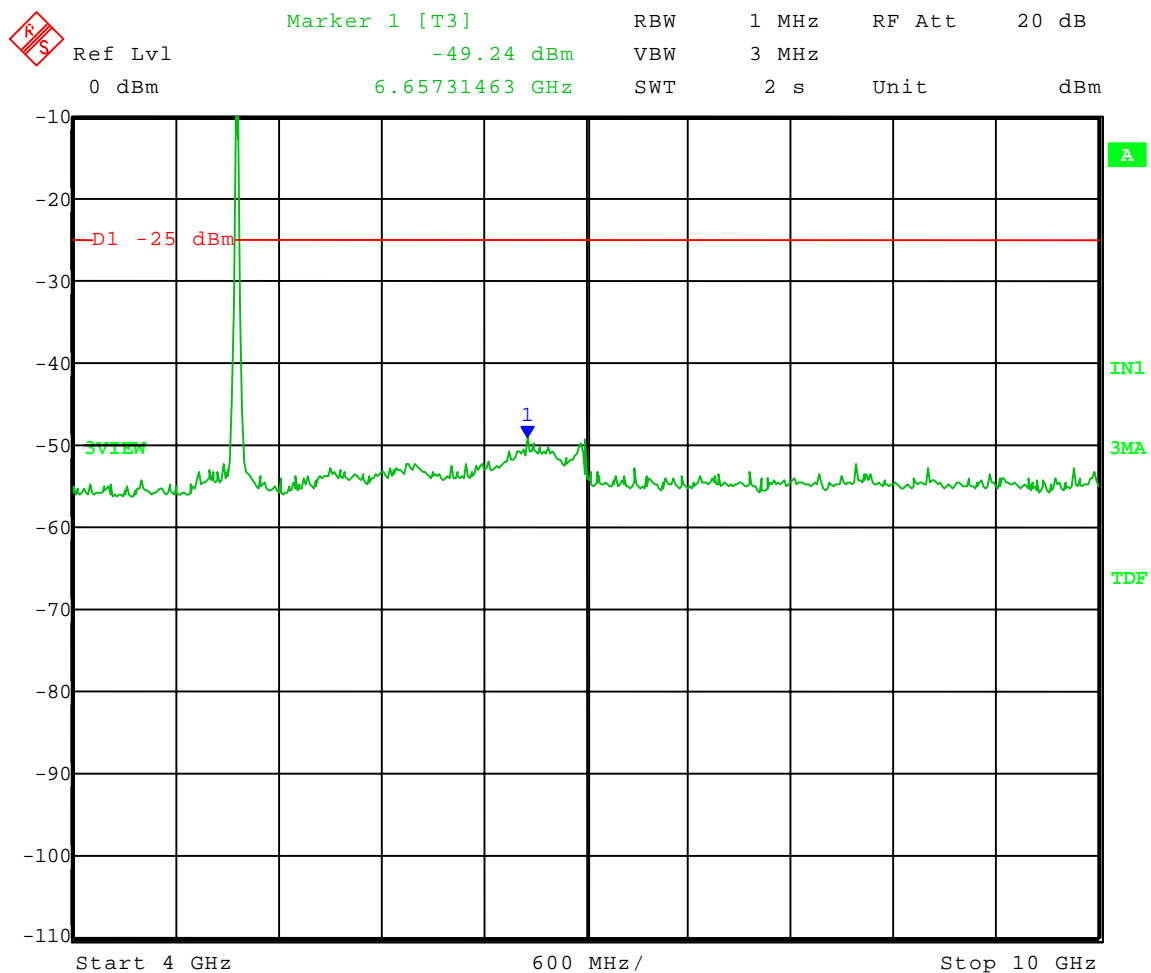


Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: Spurious Emissions - Conducted - Out-of-Band  
Rule Part: FCC Pt. 90.210(m); Pt. 2.1051  
Operator: Craig B  
Comment: Center Channel Transmit = 4.965 GHz  
Modulation: 64QAM  
Frequency Range: 4 GHz to 10 GHz  
Limit = -25 dBm



Date: 18.DEC.2008 14:49:14

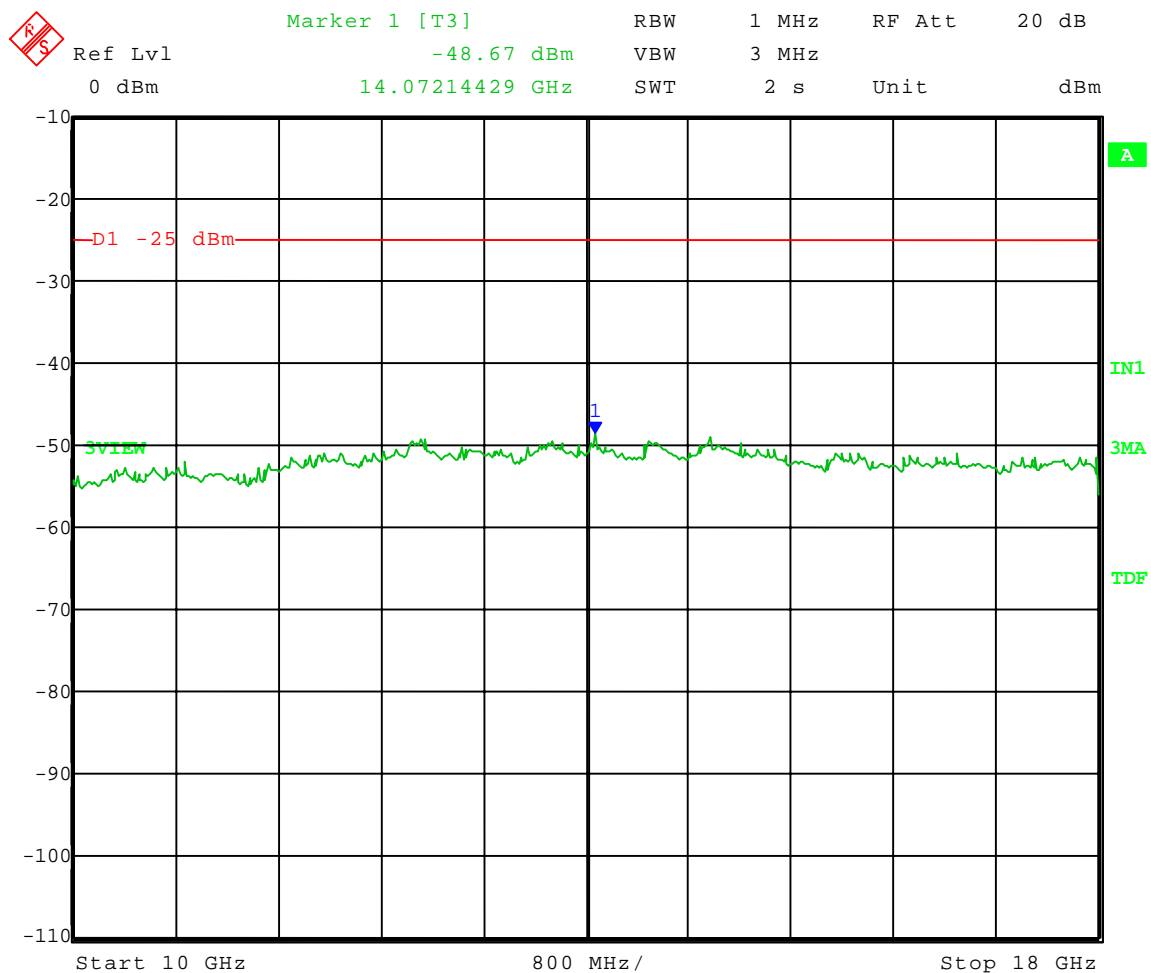


Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: Spurious Emissions - Conducted - Out-of-Band  
Rule Part: FCC Pt. 90.210(m); Pt. 2.1051  
Operator: Craig B  
Comment: Center Channel Transmit = 4.965 GHz  
Modulation: 64QAM  
Frequency Range: 10 GHz to 18 GHz  
Limit = -25 dBm



Date: 18.DEC.2008 14:50:06

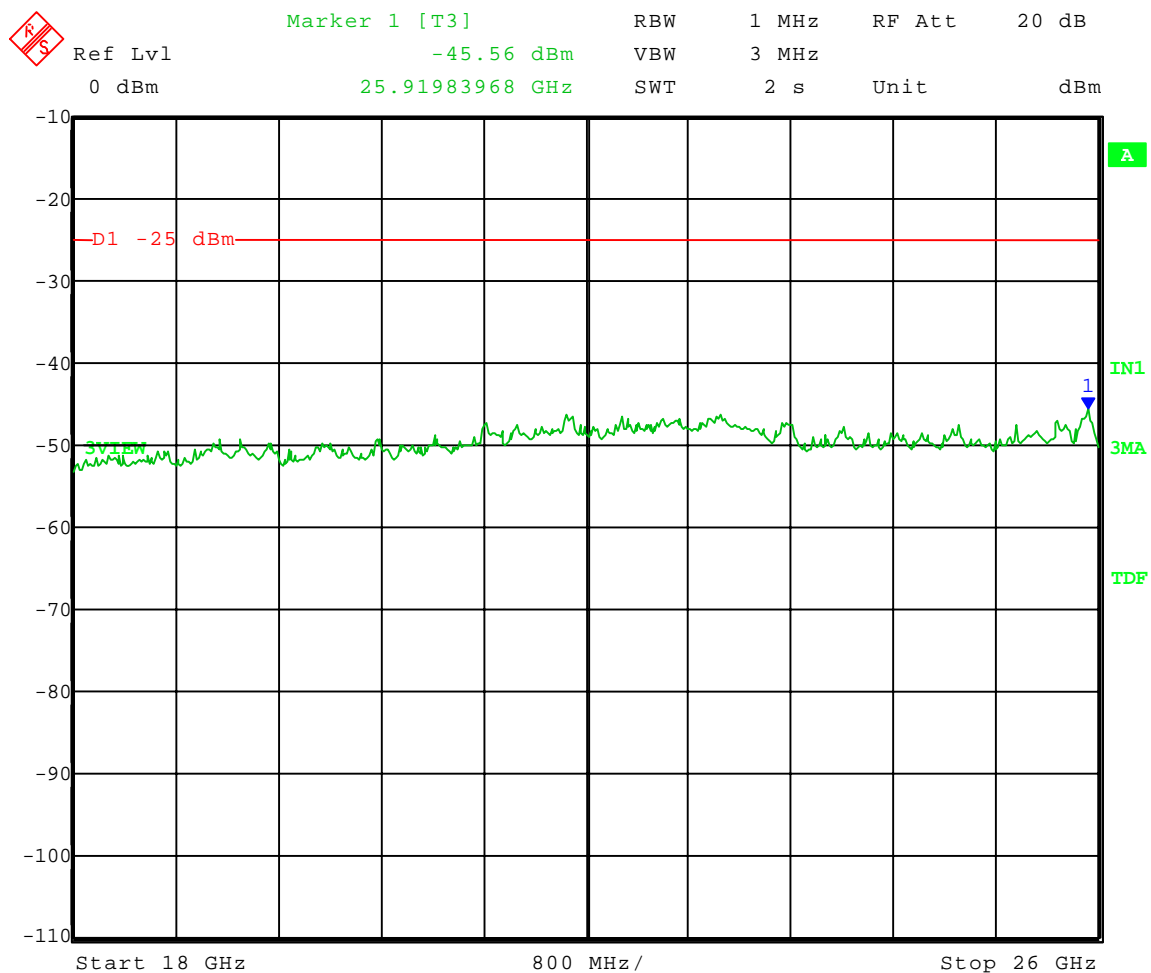


Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: Spurious Emissions - Conducted - Out-of-Band  
Rule Part: FCC Pt. 90.210(m); Pt. 2.1051  
Operator: Craig B  
Comment: Center Channel Transmit = 4.965 GHz  
Modulation: 64QAM  
Frequency Range: 18 GHz to 26 GHz  
Limit = -25 dBm



Date: 18.DEC.2008 14:50:57

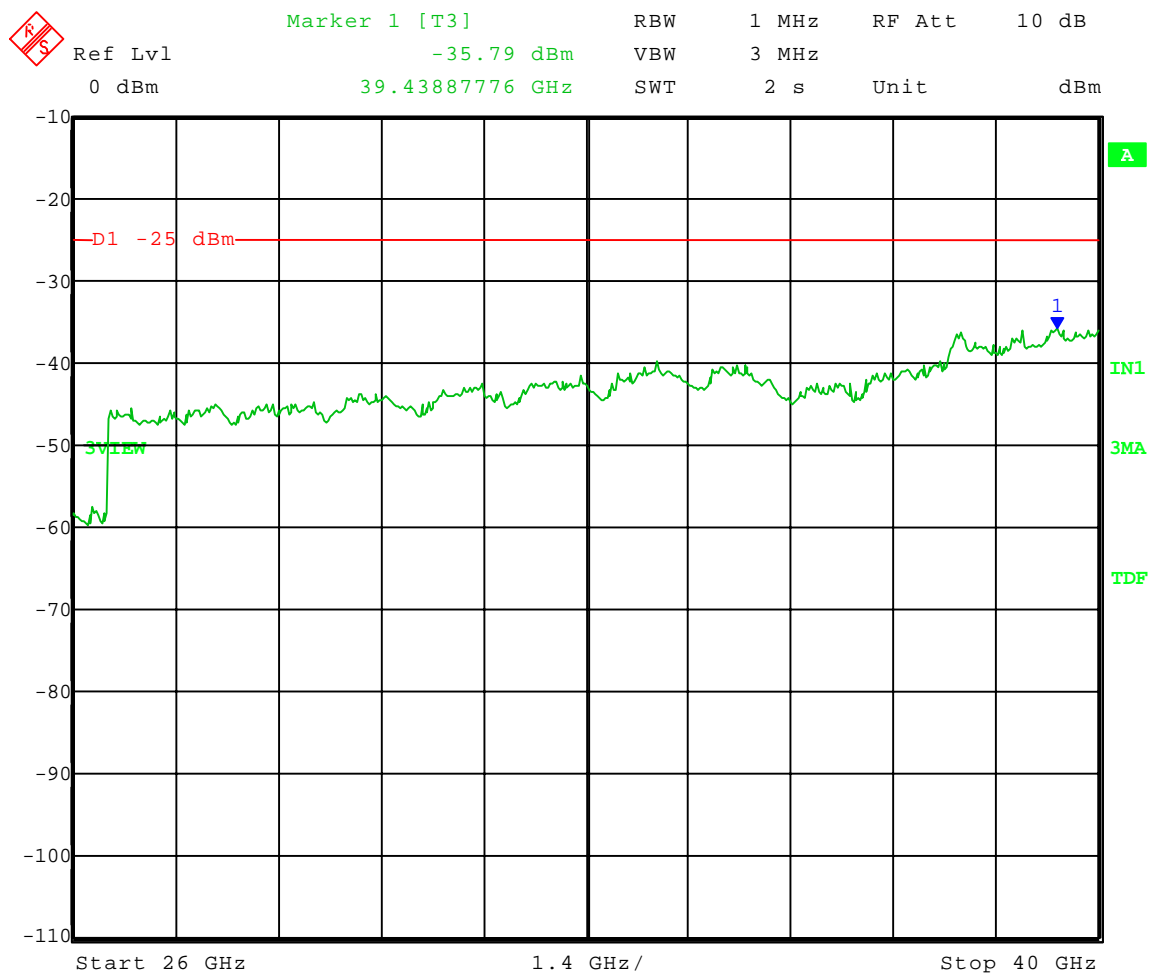


Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: Spurious Emissions - Conducted - Out-of-Band  
Rule Part: FCC Pt. 90.210(m); Pt. 2.1051  
Operator: Craig B  
Comment: Center Channel Transmit = 4.965 GHz  
Modulation: 64QAM  
Frequency Range: 26 GHz to 40 GHz  
Limit = -25 dBm



Date: 18.DEC.2008 14:51:53



1250 Peterson Dr., Wheeling, IL 60090

Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

## APPENDIX A

# CONDUCTED EMISSION DATA & CHARTS TAKEN FOR SPURIOUS EMISSION MEASUREMENTS MADE AT THE ANTENNA TERMINALS EIA /TIA-603-C:2004, SECTION 2.2.13 90.210(m) & PART 2.1051 HIGH CHANNEL MODULATION

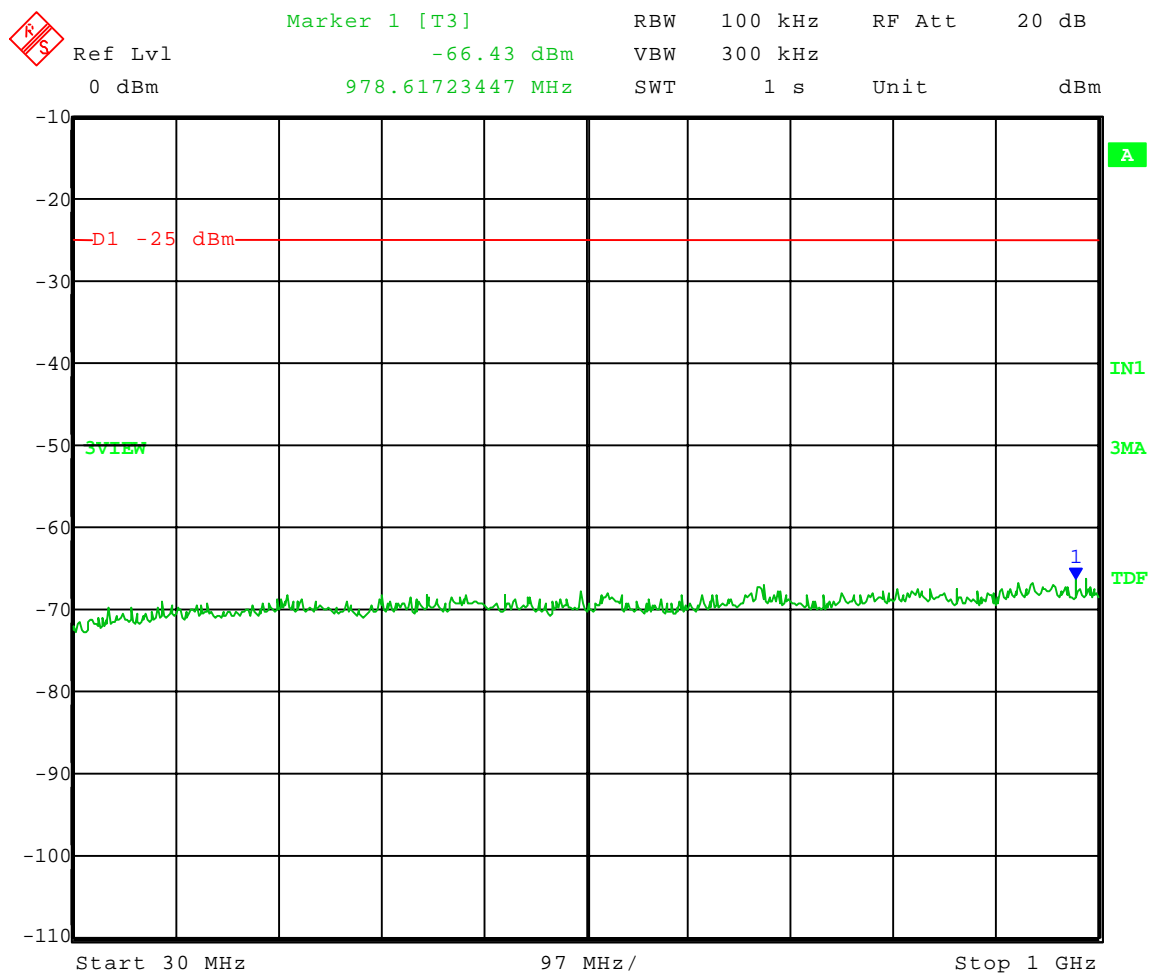


Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: Spurious Emissions - Conducted - Out-of-Band  
Rule Part: FCC Pt. 90.210(m); Pt. 2.1051  
Operator: Craig B  
Comment: ..... High Channel Transmit = 4.990 GHz  
Modulation: QPSK  
Frequency Range: 30 MHz to 1 GHz  
Limit = -25 dBm



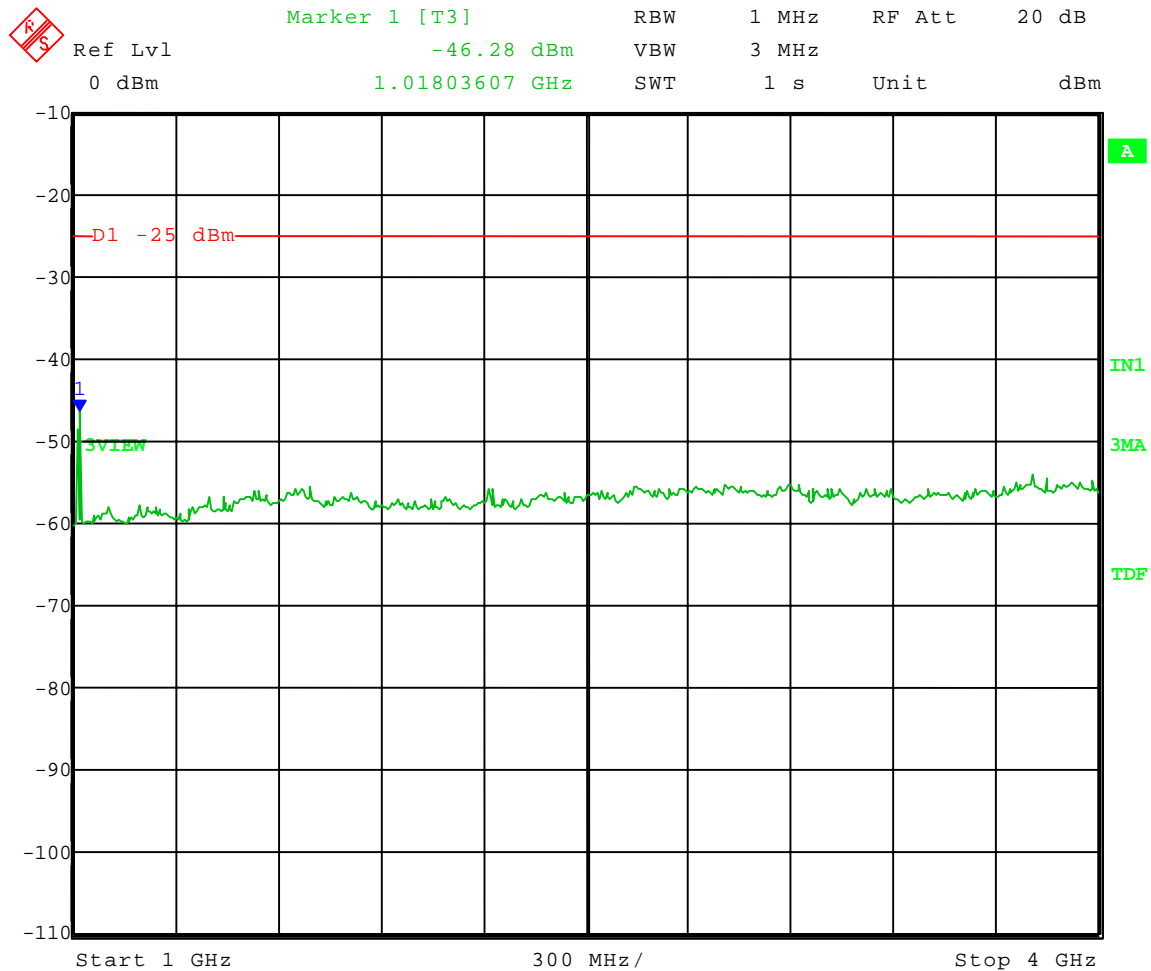


Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: Spurious Emissions - Conducted - Out-of-Band  
Rule Part: FCC Pt. 90.210(m); Pt. 2.1051  
Operator: Craig B  
Comment: High Channel Transmit = 4.990 GHz  
Modulation: QPSK  
Frequency Range: 1 GHz to 4 GHz  
Limit = -25 dBm



Date: 18.DEC.2008 15:19:38



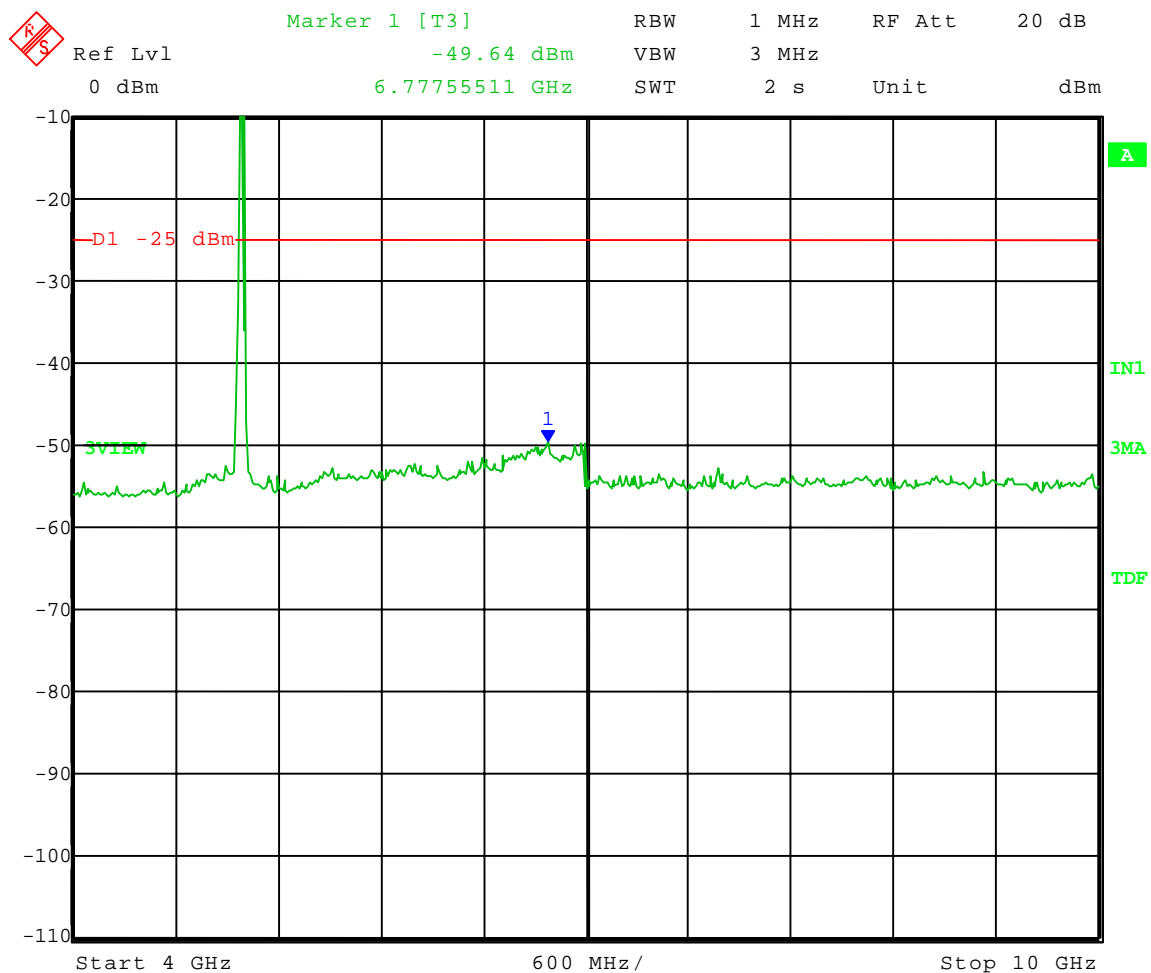


Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: Spurious Emissions - Conducted - Out-of-Band  
Rule Part: FCC Pt. 90.210(m); Pt. 2.1051  
Operator: Craig B  
Comment: High Channel Transmit = 4.990 GHz  
Modulation: QPSK  
Frequency Range: 4 GHz to 10 GHz  
Limit = -25 dBm



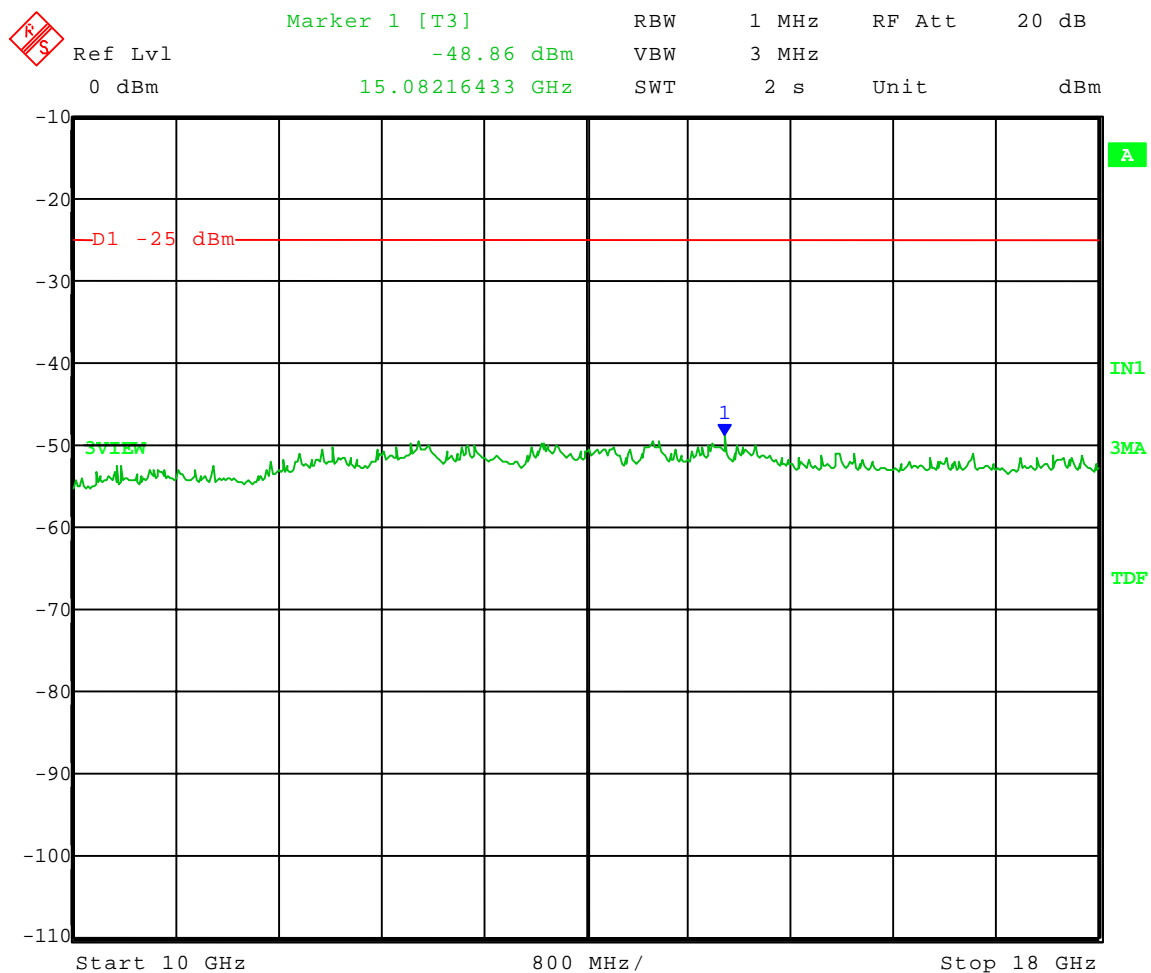


Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: Spurious Emissions - Conducted - Out-of-Band  
Rule Part: FCC Pt. 90.210(m); Pt. 2.1051  
Operator: Craig B  
Comment: High Channel Transmit = 4.990 GHz  
Modulation: QPSK  
Frequency Range: 10 GHz to 18 GHz  
Limit = -25 dBm



Date: 18.DEC.2008 15:21:08

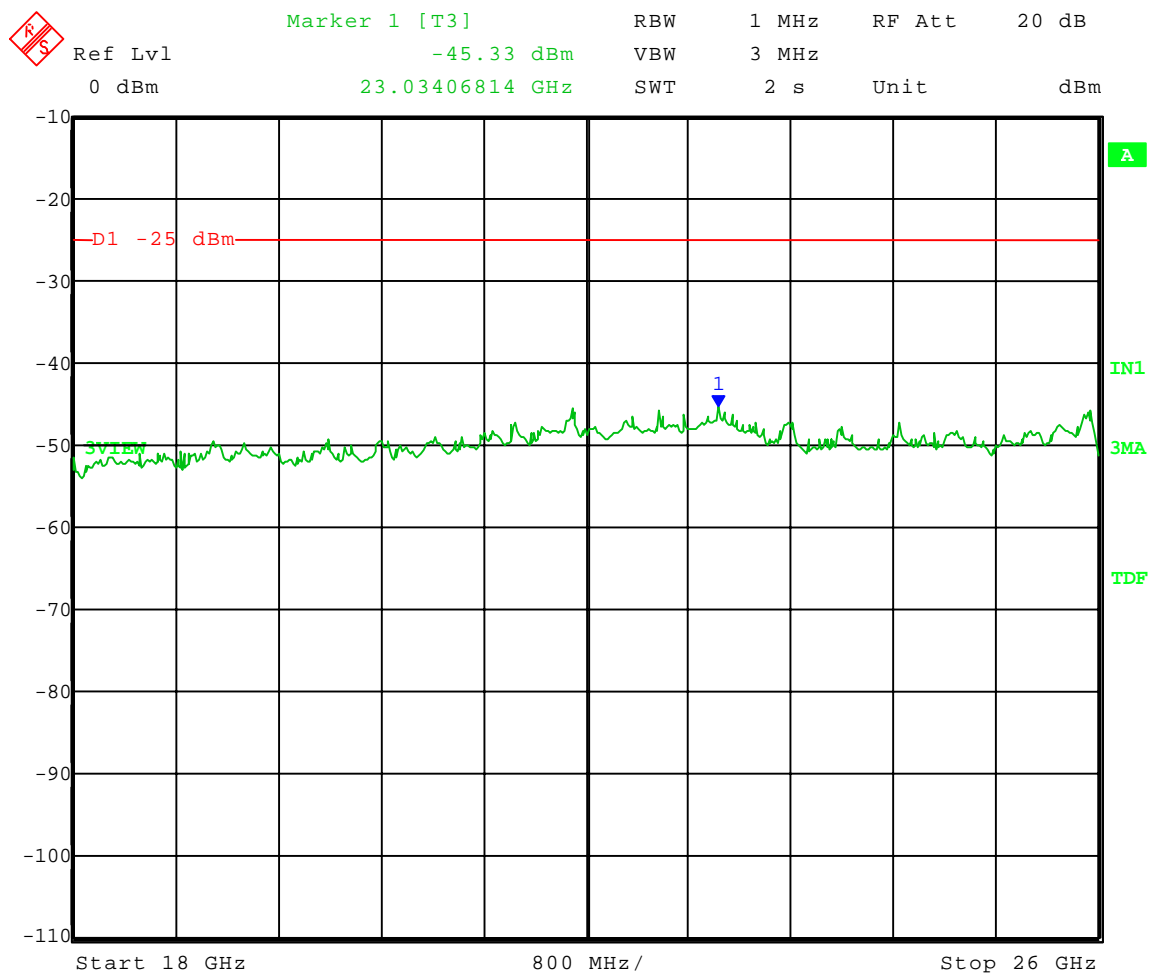


Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: Spurious Emissions - Conducted - Out-of-Band  
Rule Part: FCC Pt. 90.210(m); Pt. 2.1051  
Operator: Craig B  
Comment: High Channel Transmit = 4.990 GHz  
Modulation: QPSK  
Frequency Range: 18 GHz to 26 GHz  
Limit = -25 dBm



Date: 18.DEC.2008 15:21:45

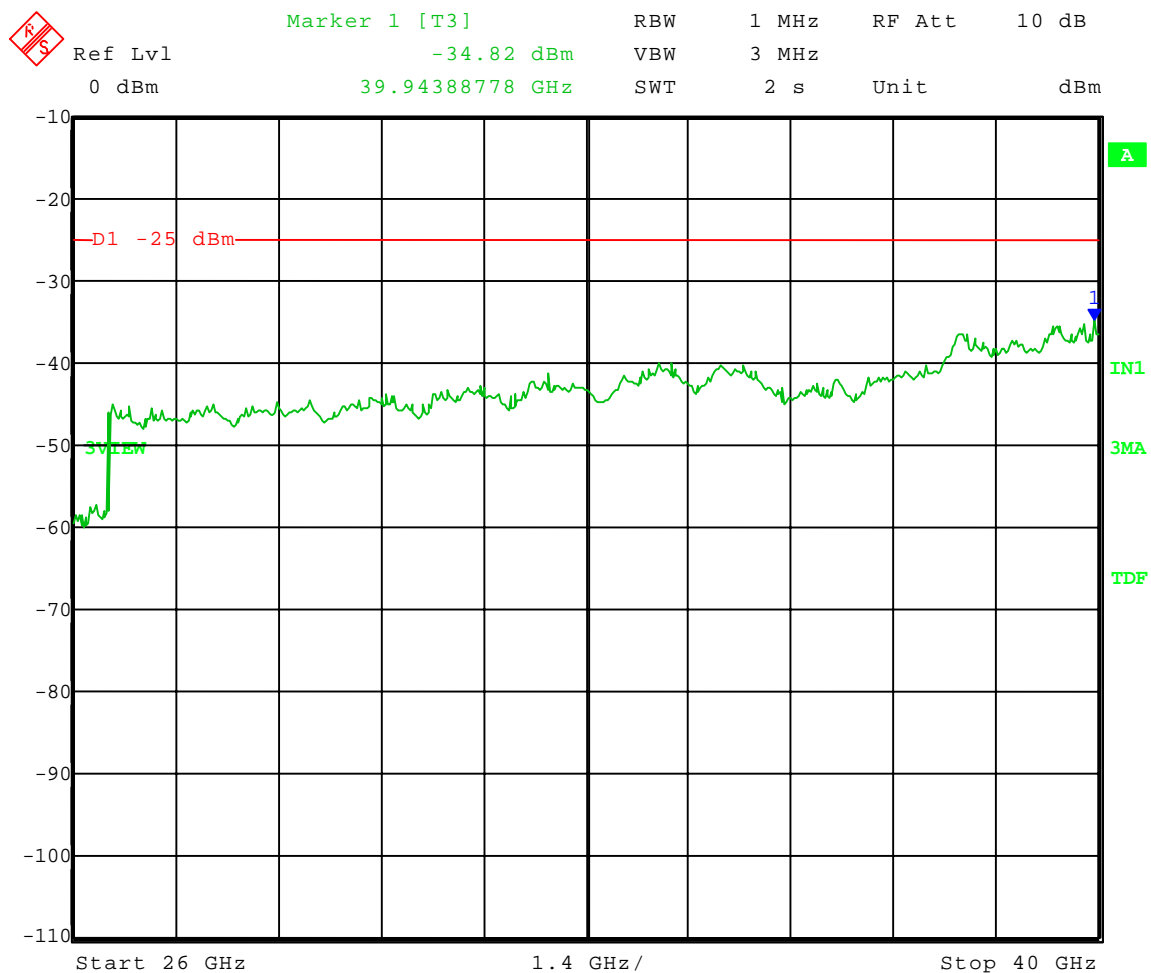


Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: Spurious Emissions - Conducted - Out-of-Band  
Rule Part: FCC Pt. 90.210(m); Pt. 2.1051  
Operator: Craig B  
Comment: High Channel Transmit = 4.990 GHz  
Modulation: QPSK  
Frequency Range: 26 GHz to 40 GHz  
Limit = -25 dBm



Date: 18.DEC.2008 15:22:26

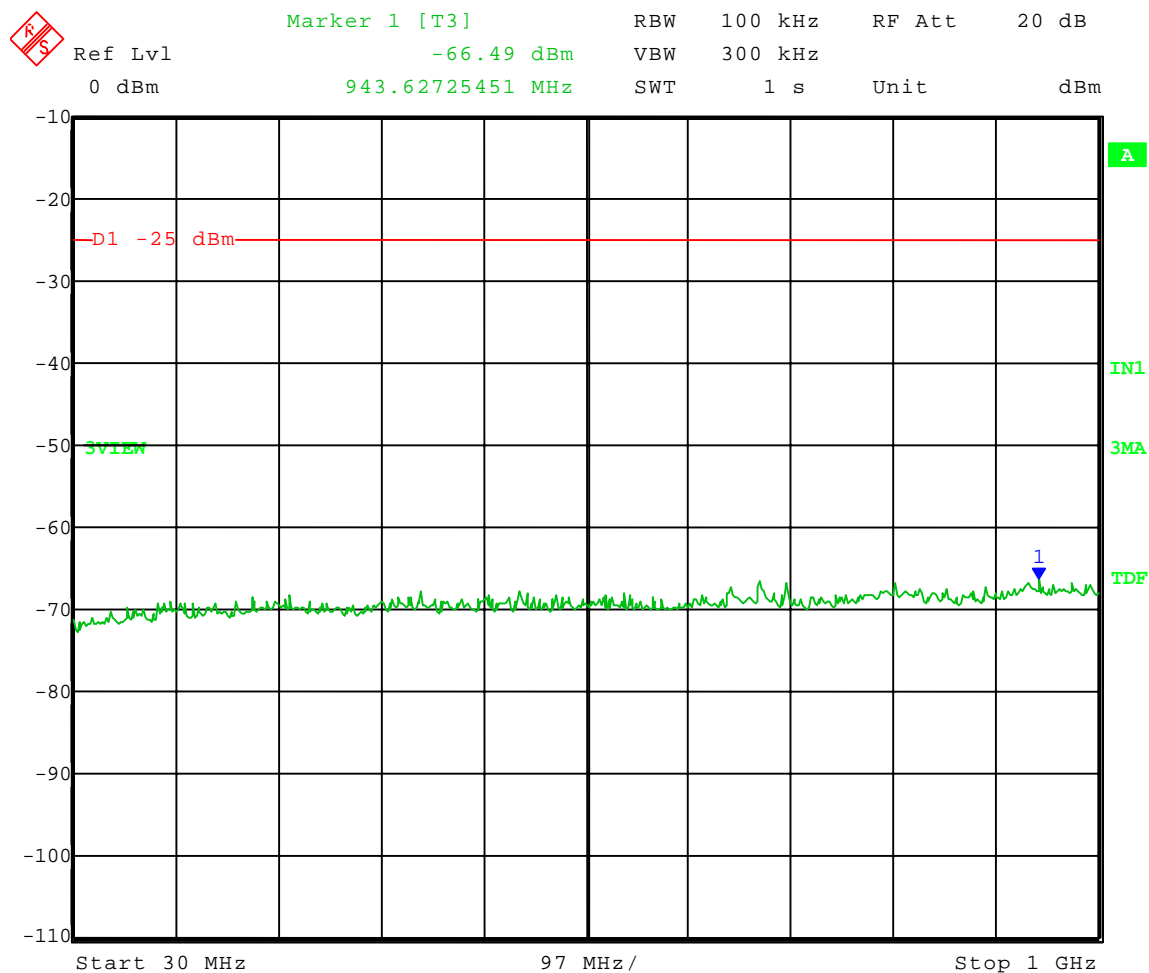


Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: Spurious Emissions - Conducted - Out-of-Band  
Rule Part: FCC Pt. 90.210(m); Pt. 2.1051  
Operator: Craig B  
Comment: High Channel Transmit = 4.990 GHz  
Modulation: 16QAM  
Frequency Range: 30 MHz to 1 GHz  
Limit = -25 dBm



Date: 18.DEC.2008 15:25:18

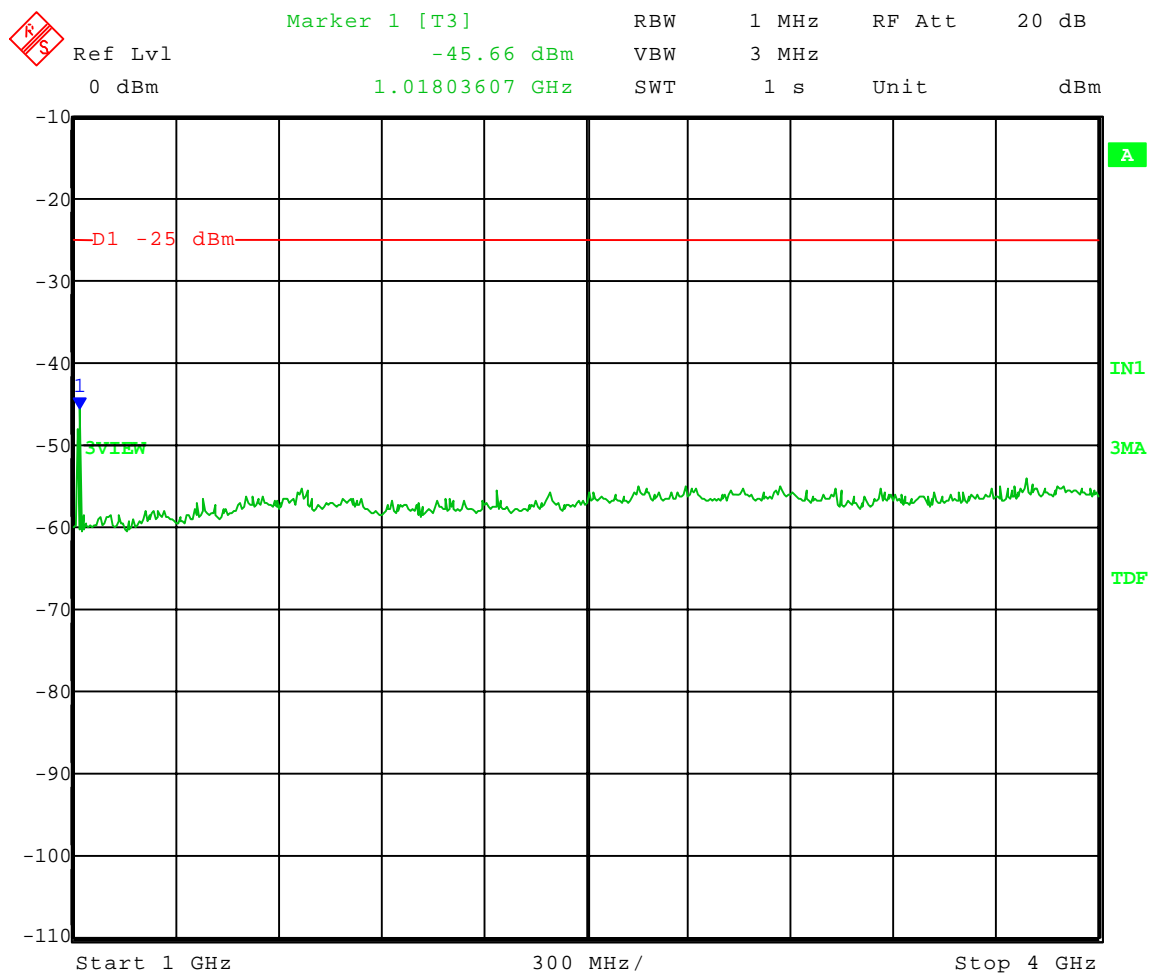


Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: Spurious Emissions - Conducted - Out-of-Band  
Rule Part: FCC Pt. 90.210(m); Pt. 2.1051  
Operator: Craig B  
Comment: High Channel Transmit = 4.990 GHz  
Modulation: 16QAM  
Frequency Range: 1 GHz to 4 GHz  
Limit = -25 dBm



Date: 18.DEC.2008 15:25:56

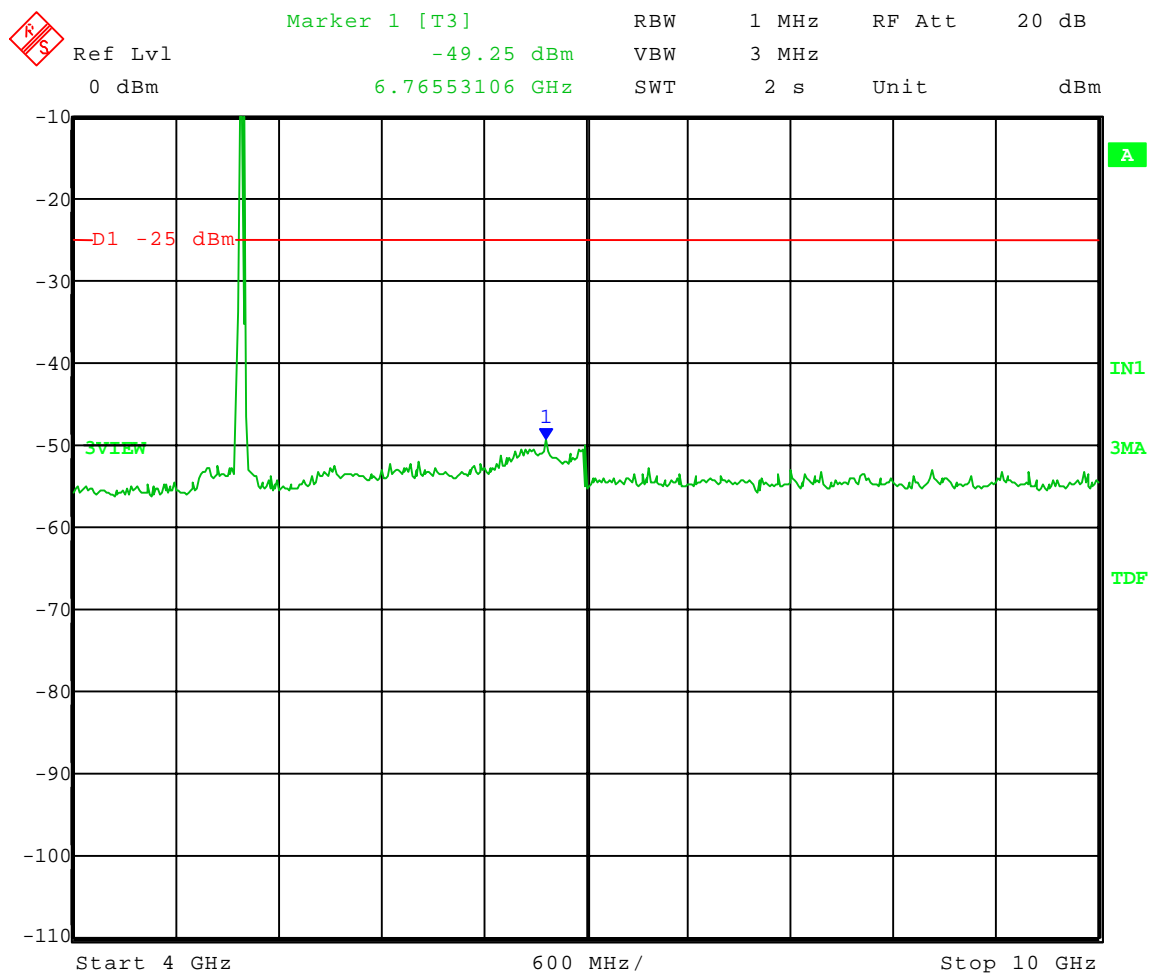


Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: Spurious Emissions - Conducted - Out-of-Band  
Rule Part: FCC Pt. 90.210(m); Pt. 2.1051  
Operator: Craig B  
Comment: High Channel Transmit = 4.990 GHz  
Modulation: 16QAM  
Frequency Range: 4 GHz to 10 GHz  
Limit = -25 dBm



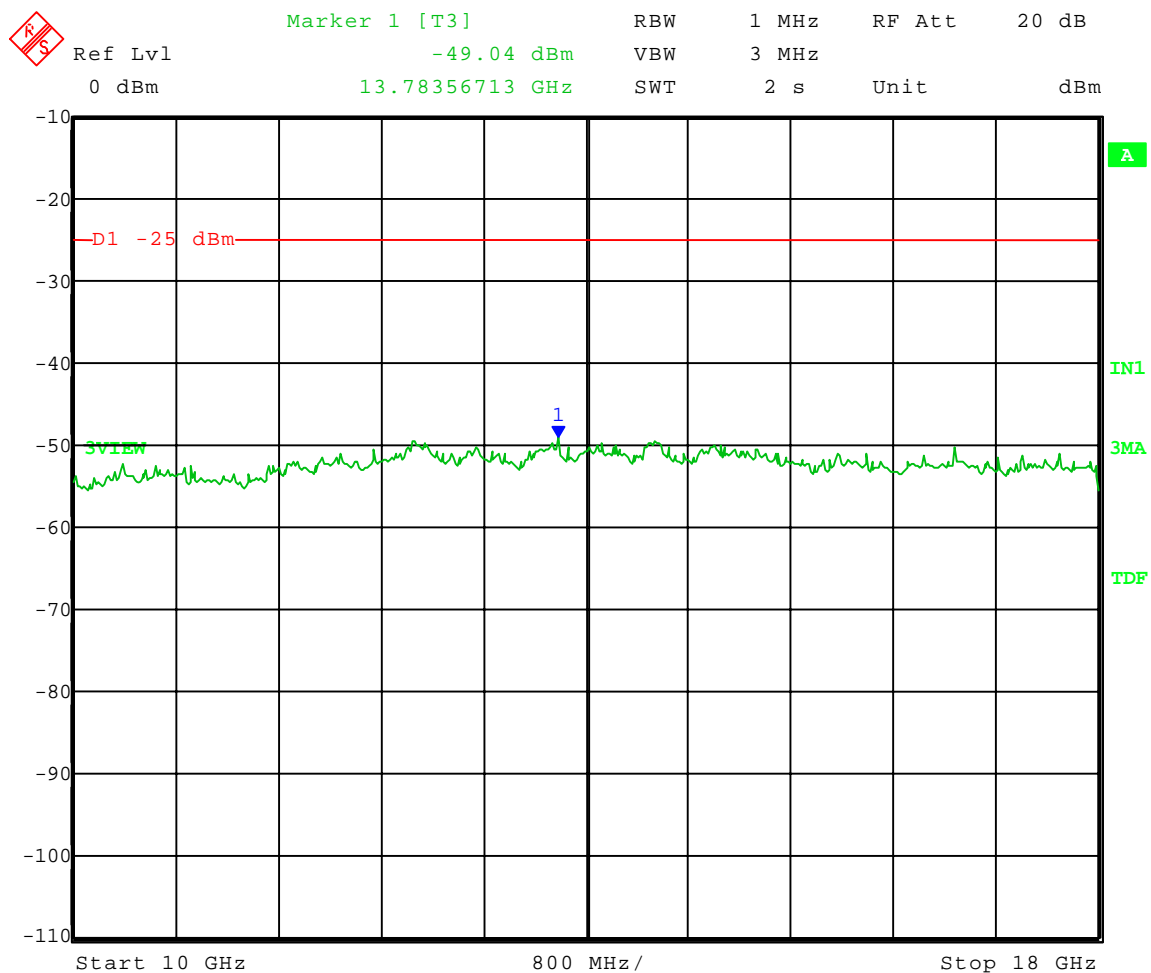


Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: Spurious Emissions - Conducted - Out-of-Band  
Rule Part: FCC Pt. 90.210(m); Pt. 2.1051  
Operator: Craig B  
Comment: High Channel Transmit = 4.990 GHz  
Modulation: 16QAM  
Frequency Range: 10 GHz to 18 GHz  
Limit = -25 dBm



Date: 18.DEC.2008 15:27:31



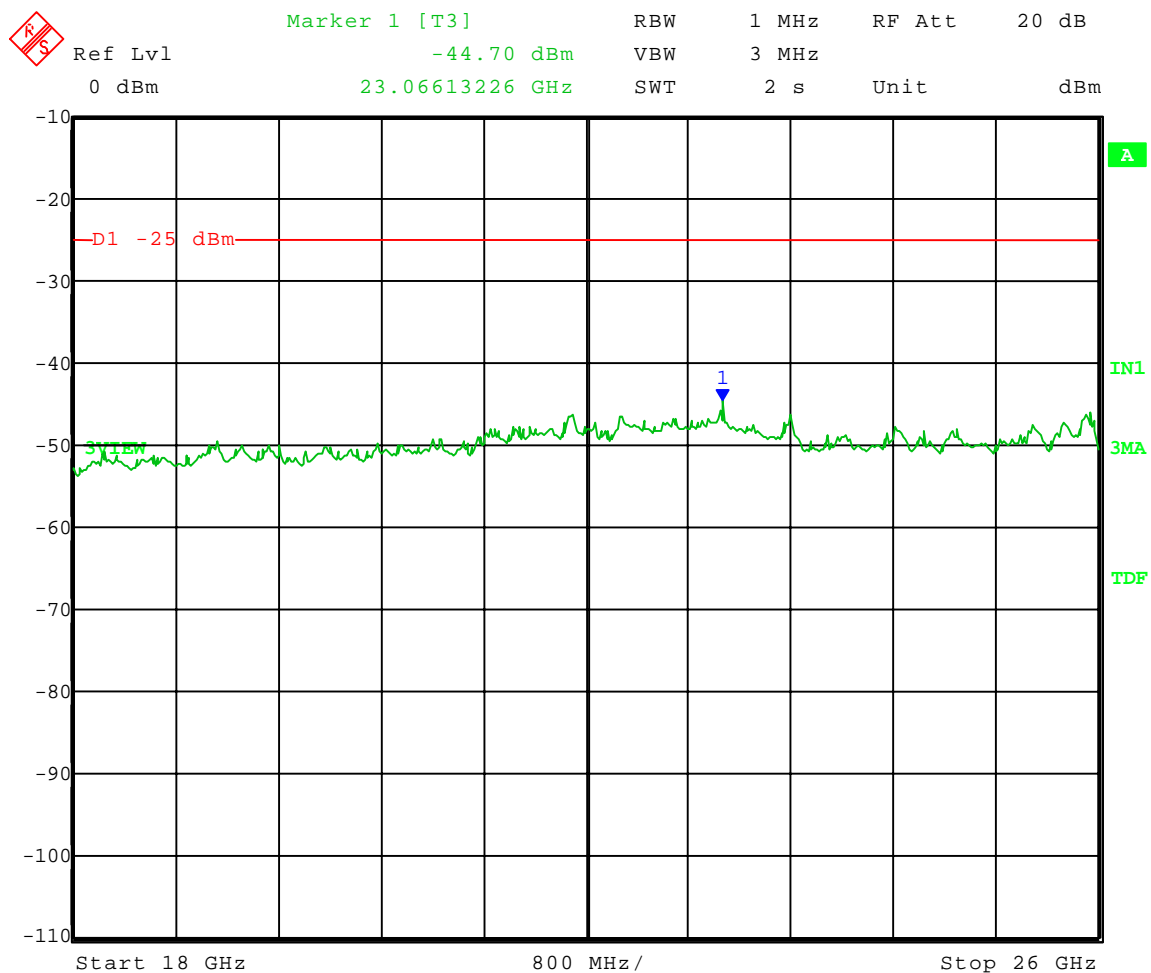


Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: Spurious Emissions - Conducted - Out-of-Band  
Rule Part: FCC Pt. 90.210(m); Pt. 2.1051  
Operator: Craig B  
Comment: High Channel Transmit = 4.990 GHz  
Modulation: 16QAM  
Frequency Range: 18 GHz to 26 GHz  
Limit = -25 dBm



Date: 18.DEC.2008 15:28:07

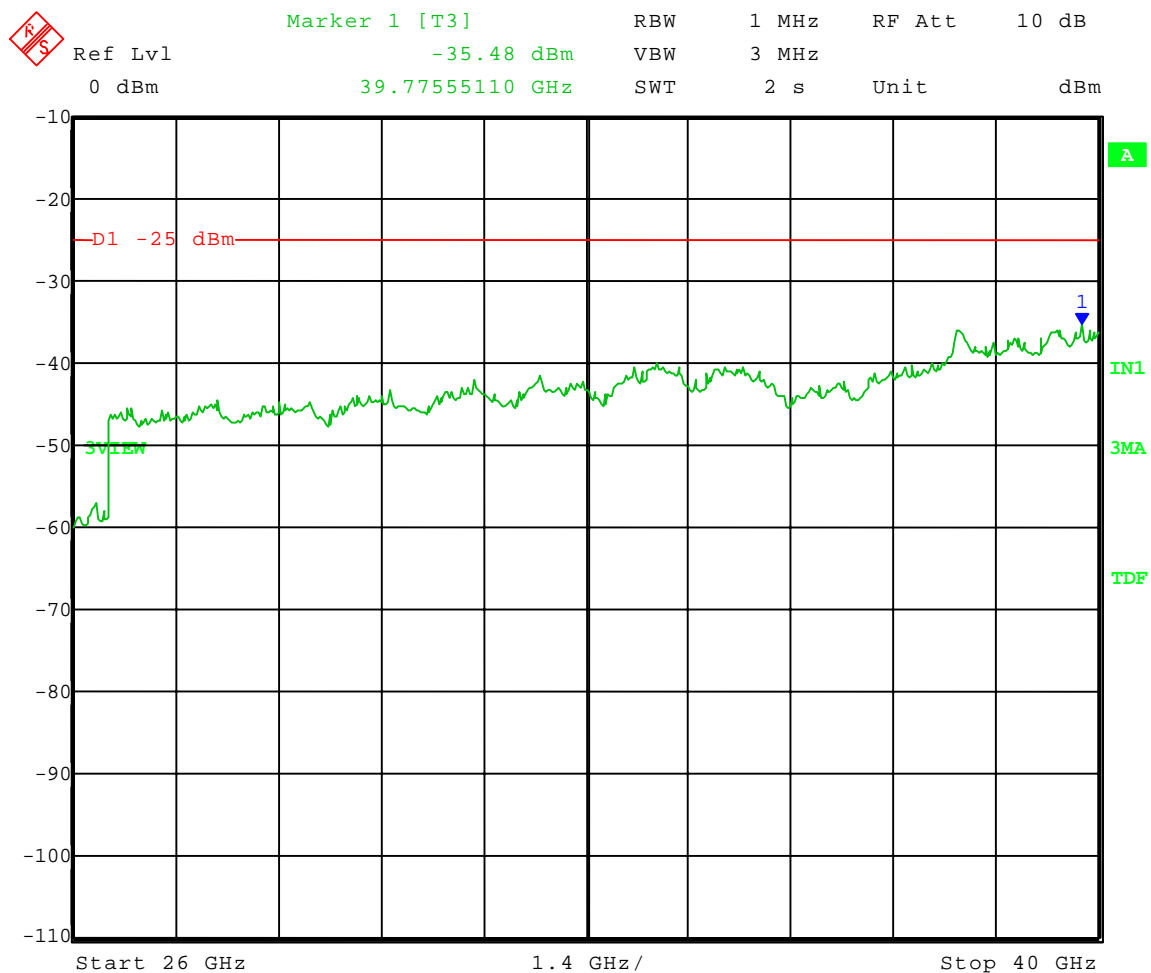


Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: Spurious Emissions - Conducted - Out-of-Band  
Rule Part: FCC Pt. 90.210(m); Pt. 2.1051  
Operator: Craig B  
Comment: High Channel Transmit = 4.990 GHz  
Modulation: 16QAM  
Frequency Range: 26 GHz to 40 GHz  
Limit = -25 dBm



Date: 18.DEC.2008 15:28:56

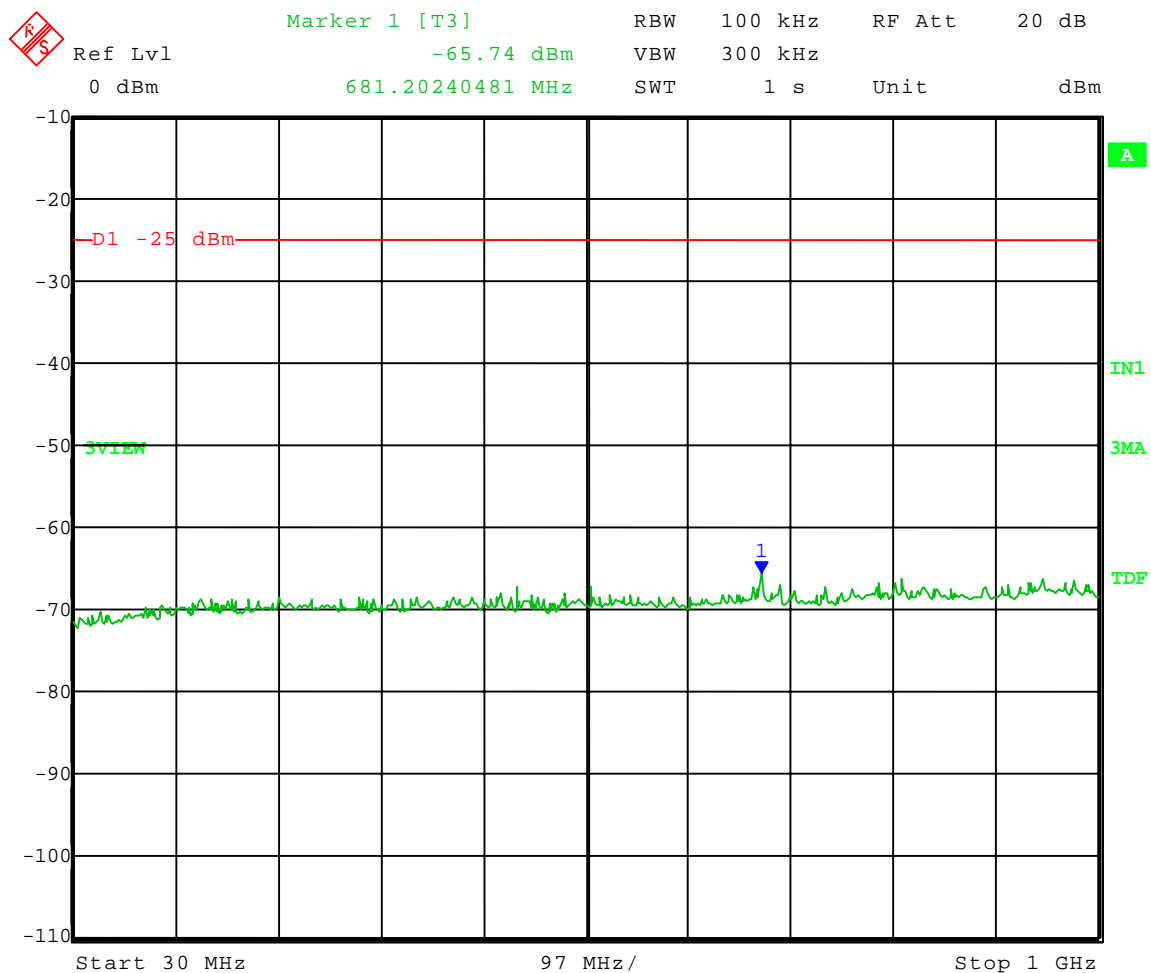


Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: Spurious Emissions - Conducted - Out-of-Band  
Rule Part: FCC Pt. 90.210(m); Pt. 2.1051  
Operator: Craig B  
Comment: High Channel Transmit = 4.990 GHz  
Modulation: 64QAM  
Frequency Range: 30 MHz to 1 GHz  
Limit = -25 dBm



Date: 18.DEC.2008 15:46:57

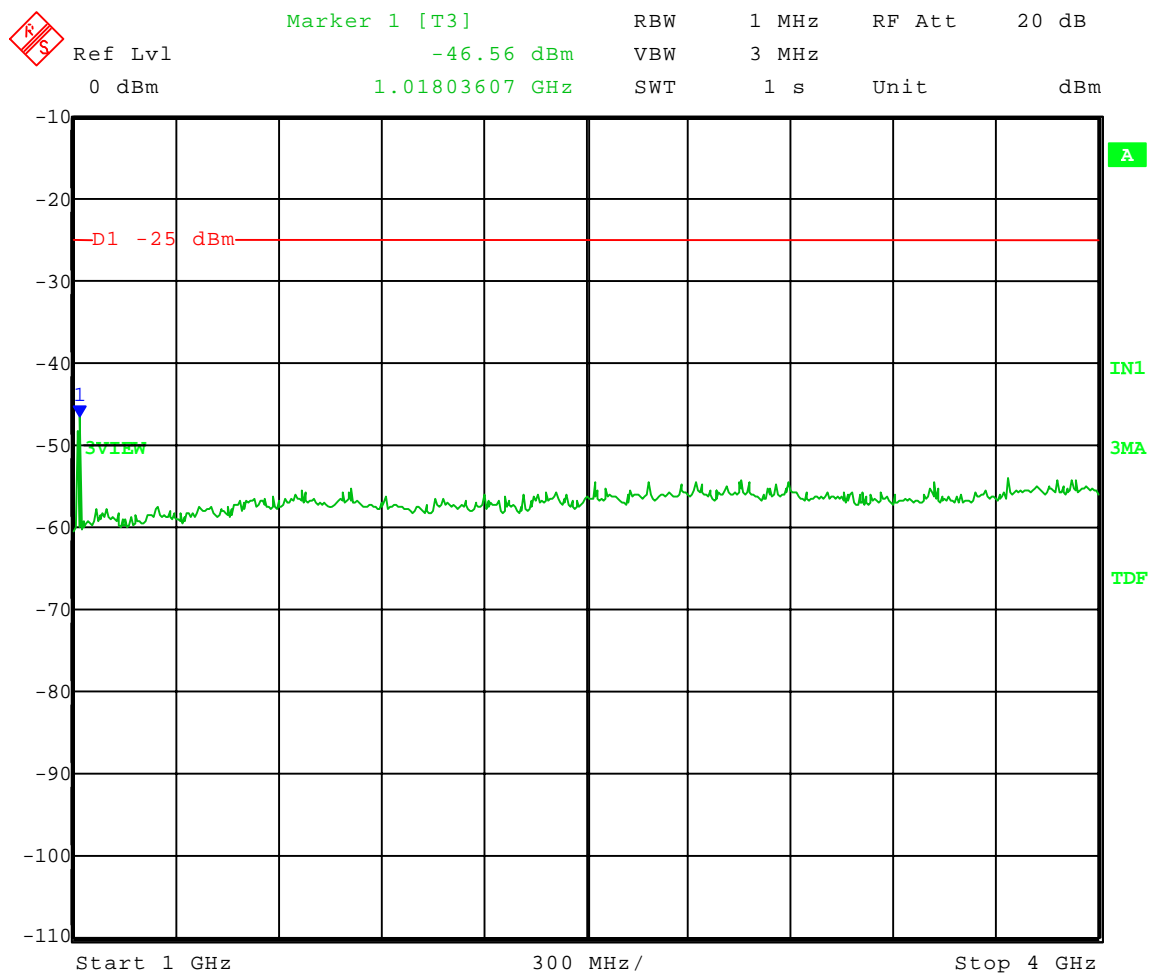


Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: Spurious Emissions - Conducted - Out-of-Band  
Rule Part: FCC Pt. 90.210(m); Pt. 2.1051  
Operator: Craig B  
Comment: High Channel Transmit = 4.990 GHz  
Modulation: 64QAM  
Frequency Range: 1 GHz to 4 GHz  
Limit = -25 dBm



Date: 18.DEC.2008 15:47:56

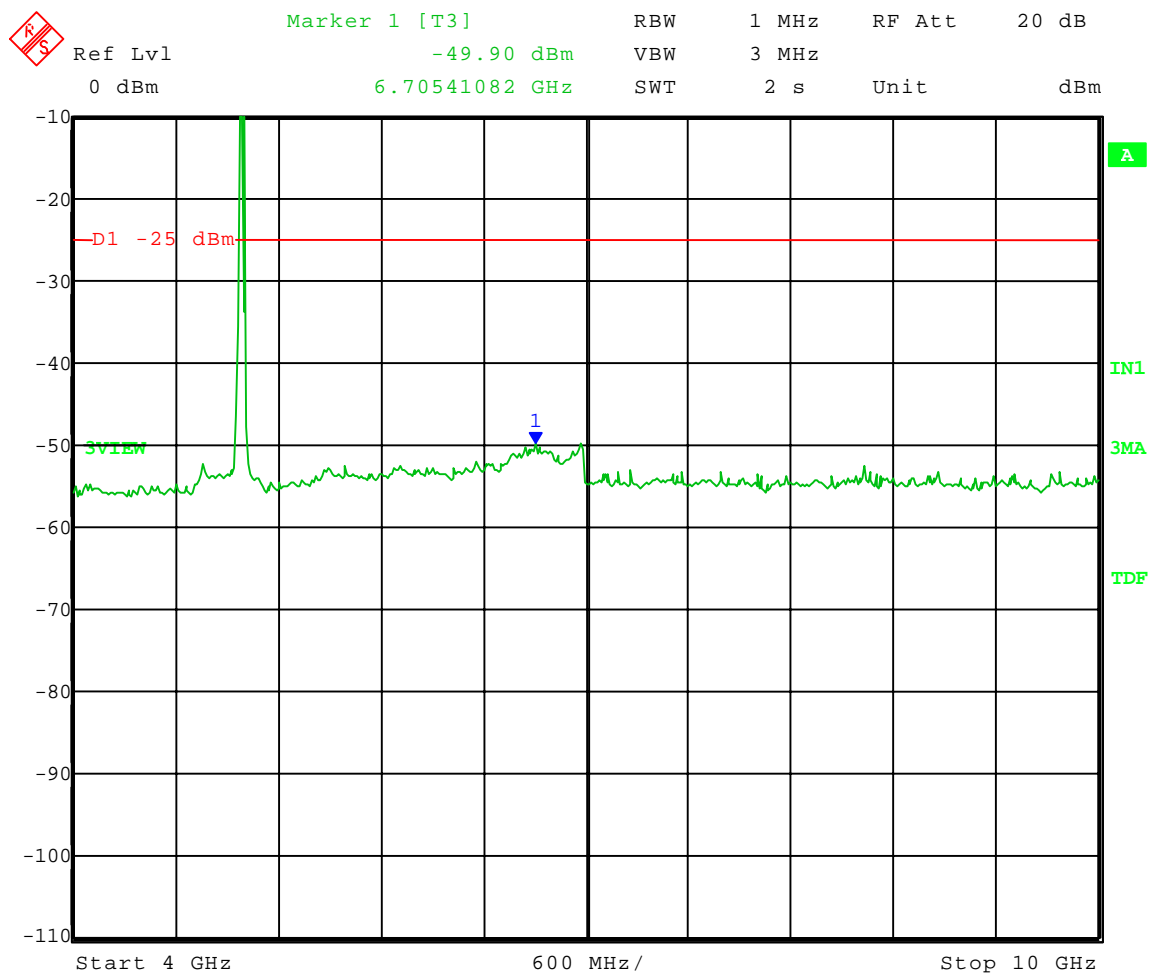


Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: Spurious Emissions - Conducted - Out-of-Band  
Rule Part: FCC Pt. 90.210(m); Pt. 2.1051  
Operator: Craig B  
Comment: High Channel Transmit = 4.990 GHz  
Modulation: 64QAM  
Frequency Range: 4 GHz to 10 GHz  
Limit = -25 dBm



Date: 18.DEC.2008 15:48:46

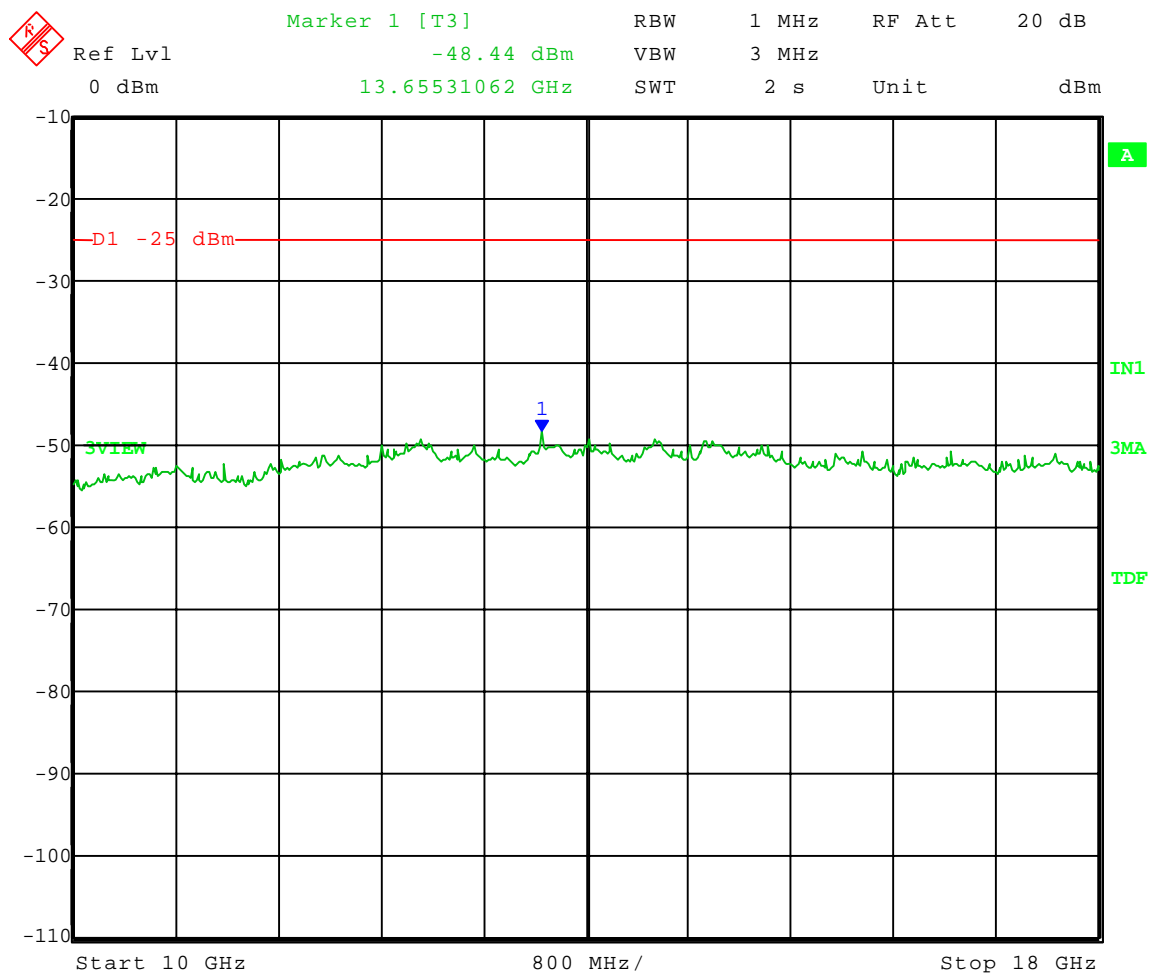


Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: Spurious Emissions - Conducted - Out-of-Band  
Rule Part: FCC Pt. 90.210(m); Pt. 2.1051  
Operator: Craig B  
Comment: High Channel Transmit = 4.990 GHz  
Modulation: 64QAM  
Frequency Range: 10 GHz to 18 GHz  
Limit = -25 dBm



Date: 18.DEC.2008 15:49:24

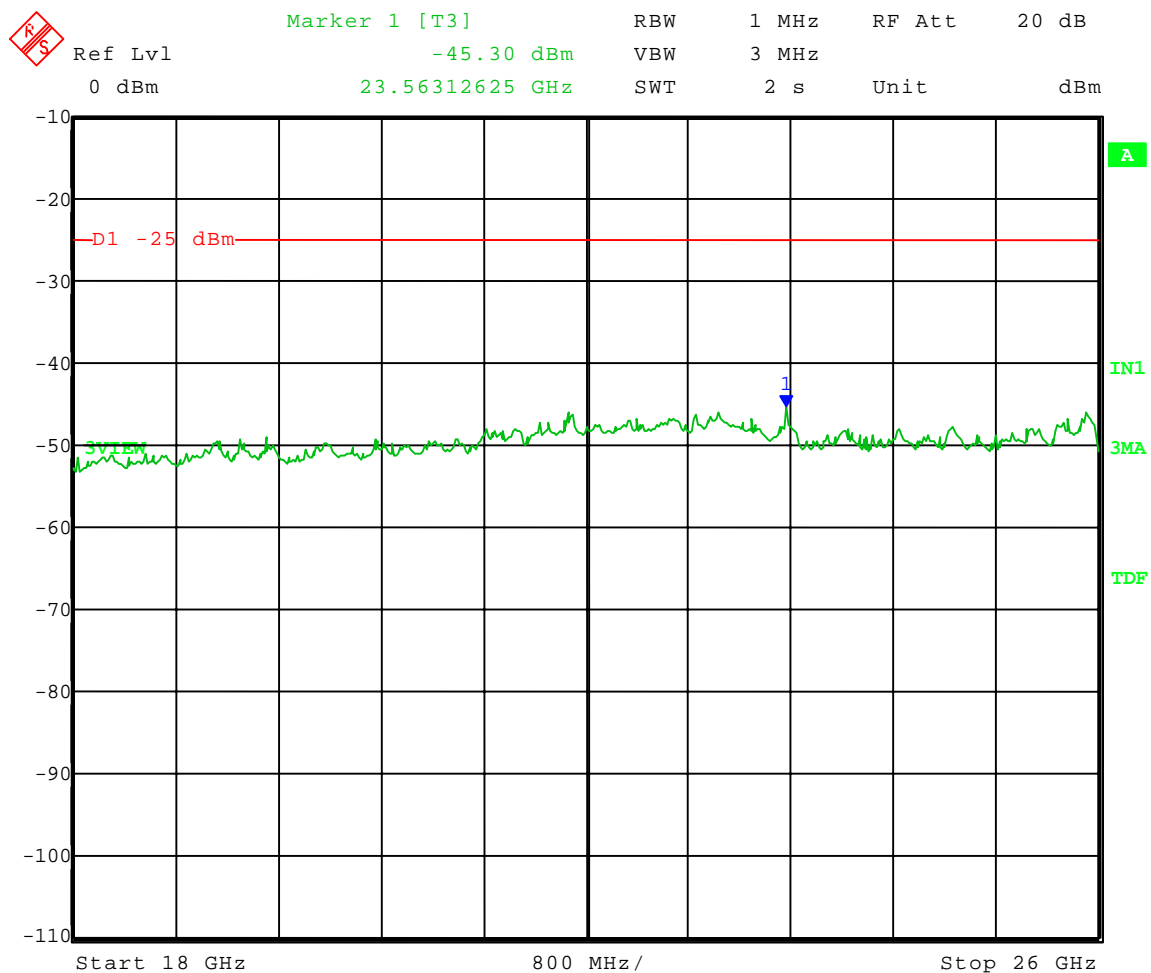


Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: Spurious Emissions - Conducted - Out-of-Band  
Rule Part: FCC Pt. 90.210(m); Pt. 2.1051  
Operator: Craig B  
Comment: High Channel Transmit = 4.990 GHz  
Modulation: 64QAM  
Frequency Range: 18 GHz to 26 GHz  
Limit = -25 dBm



Date: 18.DEC.2008 15:50:14

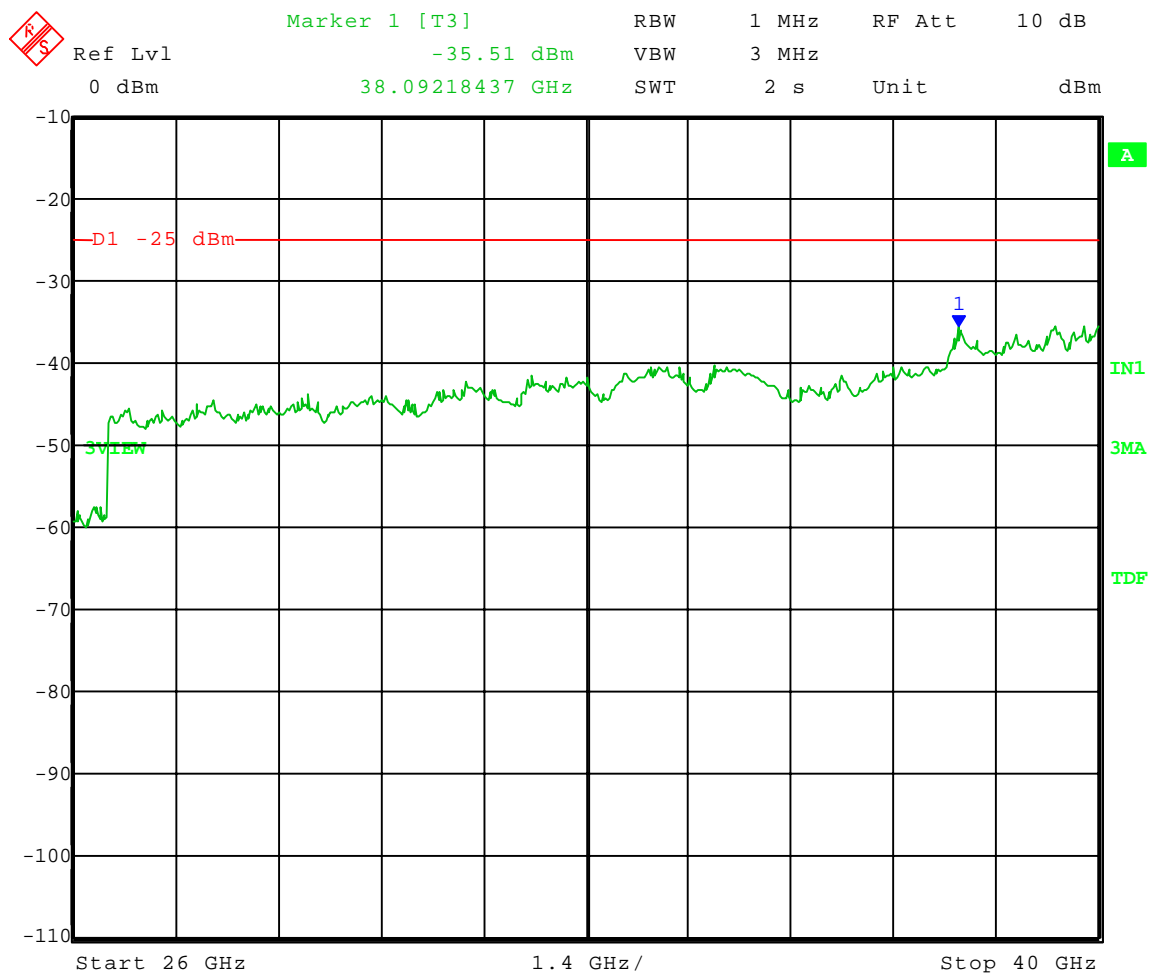


Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## APPENDIX A

Test Date: 12-18-2008  
Company: Motorola  
EUT: Canopy 4.9 GHz OFDM Radio  
Test: Spurious Emissions - Conducted - Out-of-Band  
Rule Part: FCC Pt. 90.210(m); Pt. 2.1051  
Operator: Craig B  
Comment: High Channel Transmit = 4.990 GHz  
Modulation: 64QAM  
Frequency Range: 26 GHz to 40 GHz  
Limit = -25 dBm



Date: 18.DEC.2008 15:51:05





1250 Peterson Dr., Wheeling, IL 60090

Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

## APPENDIX A

### 7.0 FIELD STRENGTH OF SPURIOUS EMISSION MEASUREMENTS – PART 2.1053 and EIA /TIA-603-C:2004, SECTION 2.2.12

Radiated measurements were performed scanning the frequency range from 200 MHz to at least the 10<sup>th</sup> harmonic of the fundamental frequency.

For the Canopy 4.9 GHz OFDM Radio, the highest fundamental frequency is 4940 MHz - 4990 MHz so the scans were made up to 40 GHz, to cover the tenth harmonic.

All signals in the frequency range of 30 MHz to 200 MHz were measured with a Biconical Antenna and from 200 MHz to 1000 MHz a Log Periodic Antenna was used as the pickup devices. From 1000 MHz to 40 GHz, a Double Ridge Horn Antenna was used. The cables and equipment were placed and moved within the range of positions likely to find their maximum emissions. Tests were made in both the horizontal and vertical planes of polarization.

The allowed emissions for transmitters operating in the 4990 - 4990 MHz bands for Canopy 4.9 GHz OFDM Radio are found under Part 74, Section 90.210, Paragraph m for Low Power Auxiliary Stations for Regulations Governing Licensing in the 4940 - 4990 MHz Band. This paragraph states that the mean power of the emissions shall be attenuated below the mean output power of the transmitter in accordance with the following schedule:

- (1) On any frequency removed from the assigned frequency between 0-45% of the authorized bandwidth (BW): 0dB.
- (2) On any frequency removed from the assigned frequency between 45-50% of the authorized bandwidth:  $56.8 \log (\% \text{ of (BW)/45})$  dB.
- (3) On any frequency removed from the assigned frequency between 50-55% of the authorized bandwidth:  $26 + 14.5 \log (\% \text{ of (BW)/50})$  dB.
- (4) On any frequency removed from the assigned frequency between 55-100% of the authorized bandwidth:  $32 + 3.1 \log (\% \text{ of (BW)/55})$  dB.
- (5) On any frequency removed from the assigned frequency between 100-150% of the authorized bandwidth:  $40 + 5.7 \log (\% \text{ of (BW)/100})$  dB.
- (6) On any frequency removed from the assigned frequency above 150% of the authorized bandwidth: 50 dB or  $55 + 10 \log P$  dB, whichever is the lesser attenuation.

**There were no spurious emissions detected from 30 MHz to 40 GHz.**



1250 Peterson Dr., Wheeling, IL 60090

Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

## APPENDIX A

# RADIATED EMISSION DATA TAKEN FOR SPURIOUS EMISSIONS USING THE SUBSTITUTION METHOD EIA /TIA-603-C:2004, SECTION 2.2.12

**There were no spurious emissions detected from 30 MHz to 40 GHz.**



Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

DLS Electronic Systems, Inc.

Company: Motorola  
Operator: Craig B  
Date of test: 12-18-2008  
Temperature: 70 deg. F.  
Humidity: 23% R.H.  
Limit = -25 dBm

Power setting: 70

Radiated Spurious Emissions (e.r.p. substitution method) FCC Part 90.210(m); FCC Part 2.1053								
EUT: Canopy 4.9 GHz OFDM Radio Low, Mid, and High channels; 16QAM, 64QAM and QPSK modulation types								
Frequency GHz	Field Strength Level dBuV/m	Factor to Convert to dBm	Power ERP dBm	Limit dBm	Margin dB	Receive Antenna Polarization	EUT Antenna Orientation	Receive Antenna Height (m)

**Note: NO SPURIOUS EMISSIONS DETECTED FROM 30 MHz TO 40 GHz**



1250 Peterson Dr., Wheeling, IL 60090

Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

## APPENDIX A

### 8.0 FREQUENCY STABILITY (TEMPERATURE)– PART 2.1055(a1)

The frequency stability was measured from  $-30^{\circ}$  to  $+50^{\circ}$  centigrade at intervals of  $10^{\circ}$  centigrade throughout the range. Prior to each frequency measurement, the equipment was left alone for a sufficient period of time (approximately 30 minutes or more) to allow the components of the Wireless Boundary Microphone oscillator circuitry to stabilize.

See the following page for the data taken during testing.

### 9.0 FREQUENCY STABILITY (VOLTAGE VARIATION)– PART 2.1055(d2)

The frequency stability of Canopy 4.9 GHz OFDM Radio was measured by reducing the primary supply voltage to the battery end point specified by the manufacturer.

See the following page for the data taken during testing.



1250 Peterson Dr., Wheeling, IL 60090

Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

## APPENDIX A

# DATA TAKEN FOR FREQUENCY STABILITY WHEN VARYING THE TEMPERATURE AND PRIMARY SUPPLY VOLTAGE VARIATION PART 2.1055a(1) & PART 2.1055d(d2)



Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

DLS Electronic Systems, Inc.

Company: Motorola  
Operator: Craig B  
Date of test: 12-18-2008  
Test: Frequency Stability FCC Pt. 90.213; Pt. 2.1055  
Model: Canopy 4.9 GHz OFDM Radio  
Limit = 2 ppm (9.88 kHz)

Nominal Frequency (MHz)	Measured Frequency									
	+50 deg. C	Error (kHz)	+40 deg. C	Error (kHz)	+30 deg. C	Error (kHz)	+20 deg. C	Error (kHz)	+10 deg. C	Error (kHz)
4965.000	4965.003590	<b>3.590</b>	4965.002910	<b>2.910</b>	4965.003990	<b>3.990</b>	4965.004790	<b>4.790</b>	4965.004990	<b>4.990</b>

Nominal Frequency (MHz)	Measured Frequency									
	0 deg. C	Error (kHz)	-10 deg. C	Error (kHz)	-20 deg. C	Error (kHz)	-30 deg. C	Error (kHz)		
4965.000	4965.004910	<b>4.910</b>	4965.005430	<b>5.430</b>	4965.005550	<b>5.550</b>	4965.005230	<b>5.230</b>		

Nominal Frequency (MHz)	Measured Frequency									
	47.6 Volts	Error (kHz)	56.0 Volts	Error (kHz)	64.4 Volts	Error (kHz)				
4965.000	4965.005010	<b>5.010</b>	4965.004790	<b>4.790</b>	4965.005050	<b>5.050</b>				



Company: Motorola, Inc.  
Model Tested: 4940AP  
Report Number: 15001

1250 Peterson Dr., Wheeling, IL 60090

## 10.0 FREQUENCY STABILITY PHOTOS TAKEN DURING TESTING

