



1250 Peterson Dr., Wheeling, IL 60090

Company: Motorola
Model Tested: 5700AP
Report Number: 13111

FCC Rules and Regulations / Intentional Radiators

Operational in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz, Bands

Part 15, Subpart C, Section 15.247

THE FOLLOWING "**MEETS**" THE ABOVE TEST SPECIFICATION

Formal Name: Canopy 5700 connectorized adj. Power

Kind of Equipment: Wireless Digital FSK Transceiver

Test Configuration: The Canopy Radio (AP) is connected to a 24V power supply via shielded Ethernet cable and a sectorized antenna via a 50 ohm RF cable.

Model Number(s): 5700xx

Model(s) Tested: 5700AP

Serial Number(s): 0A003EFA642C

Date of Tests: February 26, 2007

Test Conducted For: Motorola
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- 2006 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.



1250 Peterson Dr., Wheeling, IL 60090

Company: Motorola
Model Tested: 5700AP
Report Number: 13111

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 Official:

Motorola



1250 Peterson Dr., Wheeling, IL 60090

Company: Motorola
Model Tested: 5700AP
Report Number: 13111

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	7
6.0	Ambient Measurements	8
7.0	Description of Test Sample	9
8.0	Additional Description of Test Sample	10
9.0	Photo Information and Test Set-Up	11
10.0	Radiated Photos Taken During Testing	12
11.0	Results of Tests	15
12.0	Conclusion	15
	TABLE 1 – EQUIPMENT LIST	16



1250 Peterson Dr., Wheeling, IL 60090

Company: Motorola
Model Tested: 5700AP
Report Number: 13111

TABLE OF CONTENTS

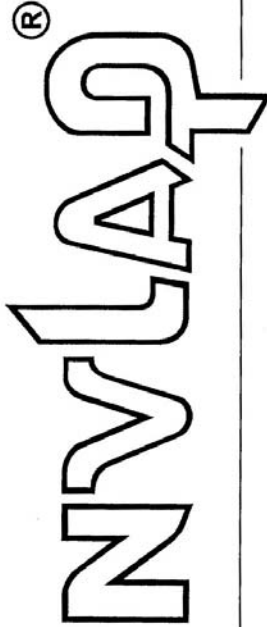
Appendix A – Electric Field Radiated Emissions Test.....	18
1.0 Conducted Emission Measurements.....	19
2.0 Spurious Emissions at the Antenna Terminals	20
3.0 Restricted Bands	21
4.0 Restricted Band Compliance.....	21
4.0 Data and Graph(s) taken showing the Restricted Band Compliance.....	22
5.0 Field Strength of Fundamental and Spurious Emission Measurements	26
5.0 Radiated Data and Graph(s) taken for Fundamental Emission.....	28
5.0 Radiated Data and Graph(s) taken for the Spurious Emission	32



1250 Peterson Dr., Wheeling, IL 60090

Company: Motorola
Model Tested: 5700AP
Report Number: 13111

United States Department of Commerce
National Institute of Standards and Technology



Certificate of Accreditation to ISO/IEC 17025:1999

NVLAP LAB CODE: 100276-0

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

is recognized by the National Voluntary Laboratory Accreditation Program for conformance with criteria set forth in
NIST Handbook 150:2001 and all requirements of ISO/IEC 17025:1999.
Accreditation is granted for specific services, listed on the Scope of Accreditation, for:

ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS

2006-10-01 through 2007-09-30

Effective dates



Dolly S. Buice
For the National Institute of Standards and Technology

NVLAP-01C (REV. 2005-05-19)



1250 Peterson Dr., Wheeling, IL 60090

Company: Motorola
Model Tested: 5700AP
Report Number: 13111

1.0 SUMMARY OF TEST REPORT

It was found that the Canopy 5700 connectorized adj. Power, Model Number(s) 5700AP, "**meets**" the radio interference radiated emission requirements of the FCC "Rules and Regulations", Part 15, Subpart C, Section 15.247 for operational in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz, Bands. See DLS Test Report 12688 for the conducted emissions test data made on October 9, 10, 13 & 14, 2006.

2.0 INTRODUCTION

On February 26, 2007, a series of radio frequency interference measurements was performed on Canopy 5700 connectorized adj. Power, Model Number(s) 5700AP, Serial Number: 0A003EFA642C. The tests were performed according to the procedures of the FCC as stated in the "Methods of Measurement of Radio-Noise Emissions for Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz" found in the American National Standards Institute, ANSI C63.4-2003. 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 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.

3.0 OBJECT

The purpose of this series of tests was to determine if the test sample could meet the radio frequency interference emission requirements of the FCC "Rules and Regulations", Part 15, Subpart C, Sections 15.205, 15.209 & 15.247 for Intentional Radiators operating in the Bands 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz.



1250 Peterson Dr., Wheeling, IL 60090

Company: Motorola
Model Tested: 5700AP
Report Number: 13111

4.0 TEST SET-UP

All emission tests were performed at D.L.S. Electronic Systems, Inc. and set up according to the American National Standards Institute, ANSI C63.4-2003, Section 8, (Figures 11a and 11b).

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 ANSI C63.4-2003, Sections 6 and 8.

5.0 TEST EQUIPMENT (Bandwidths and Detector Function)

All preliminary data below 1000 MHz was automatically plotted using the HP Spectrum Analyzer or ESI 26/40 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 HP Spectrum Analyzer and/or ESI 26/40 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 26/40 Fixed Tuned Receiver as required. Above 1000 MHz, final data was taken using the Average Detector on the Spectrum Analyzer.

The bandwidths shown below are specified by ANSI C63.4-2003, Section 4.2.

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.



1250 Peterson Dr., Wheeling, IL 60090

Company: Motorola
Model Tested: 5700AP
Report Number: 13111

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 emissions that have the highest amplitude relative to the limit. These methods are performed to the specifications in MP-5 or ANSI C63.4-2003, as appropriate.



1250 Peterson Dr., Wheeling, IL 60090

Company: Motorola
Model Tested: 5700AP
Report Number: 13111

7.0 DESCRIPTION OF TEST SAMPLE: (See also Paragraph 8.0)

7.1 Description:

The Canopy 5700 Super Advanced Logic Wireless Digital FSK Radio is designed for use in the 5.8 GHz Band (5735 MHz - 5840 MHz) with 6 separate 20 MHz channels. The radio works in conjunction with a 24 VDC power supply. It has an adjustable output power based on the gain of the antenna that is connected to it. Canopy is a point to multi-point wireless Ethernet distribution system. The back hauls (BH) are point to point links used for connecting multi-point access points to wired Ethernet feeds (Internet Service Providers points of presence, ISP POP).

7.2 PHYSICAL DIMENSIONS OF EQUIPMENT UNDER TEST

Length: 2.75" x Width: 8" x Height: 0.6"

7.3 LINE FILTER USED:

NA

7.4 INTERNAL CLOCK FREQUENCIES:

Switching Power Supply Frequencies:

150 kHz & 132 kHz

Clock Frequencies:

20 MHz, 25 MHz, 40 MHz, 62.5 MHz, 80 MHz, 125 MHz & 160 MHz

7.5 DESCRIPTION OF ALL CIRCUIT BOARDS:

- | | |
|----------------------------|-----------------------|
| 1. Radio SAL5.7 GHz ISS. C | PN: 84-71276n01 iss.c |
| 2. Power Supply PSA15R | PN: ACPSSW-09A |
| 3. Mars Antenna | PN: MA-WC50-5X |

8.0 ADDITIONAL DESCRIPTION OF TEST SAMPLE:
(See also Paragraph 7.0)

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

NOTE:

The Low, Mid and High Channels were tested in continuous transmit and continuous receive.

I certify that the above, as described in paragraph 7.0, describes the equipment tested and will be manufactured as stated.

By: _____
Signature Title

For: _____
Company Date



Company: Motorola
Model Tested: 5700AP
Report Number: 13111

1250 Peterson Dr., Wheeling, IL 60090

9.0 PHOTO INFORMATION AND TEST SET-UP

Item 0 Canopy 5700 connectorized adj. Power
Model Number: 5700AP Serial Number: 0A003EFA642C

Item 1 Antenna Mars

PN: M218110200015; SN: 1163

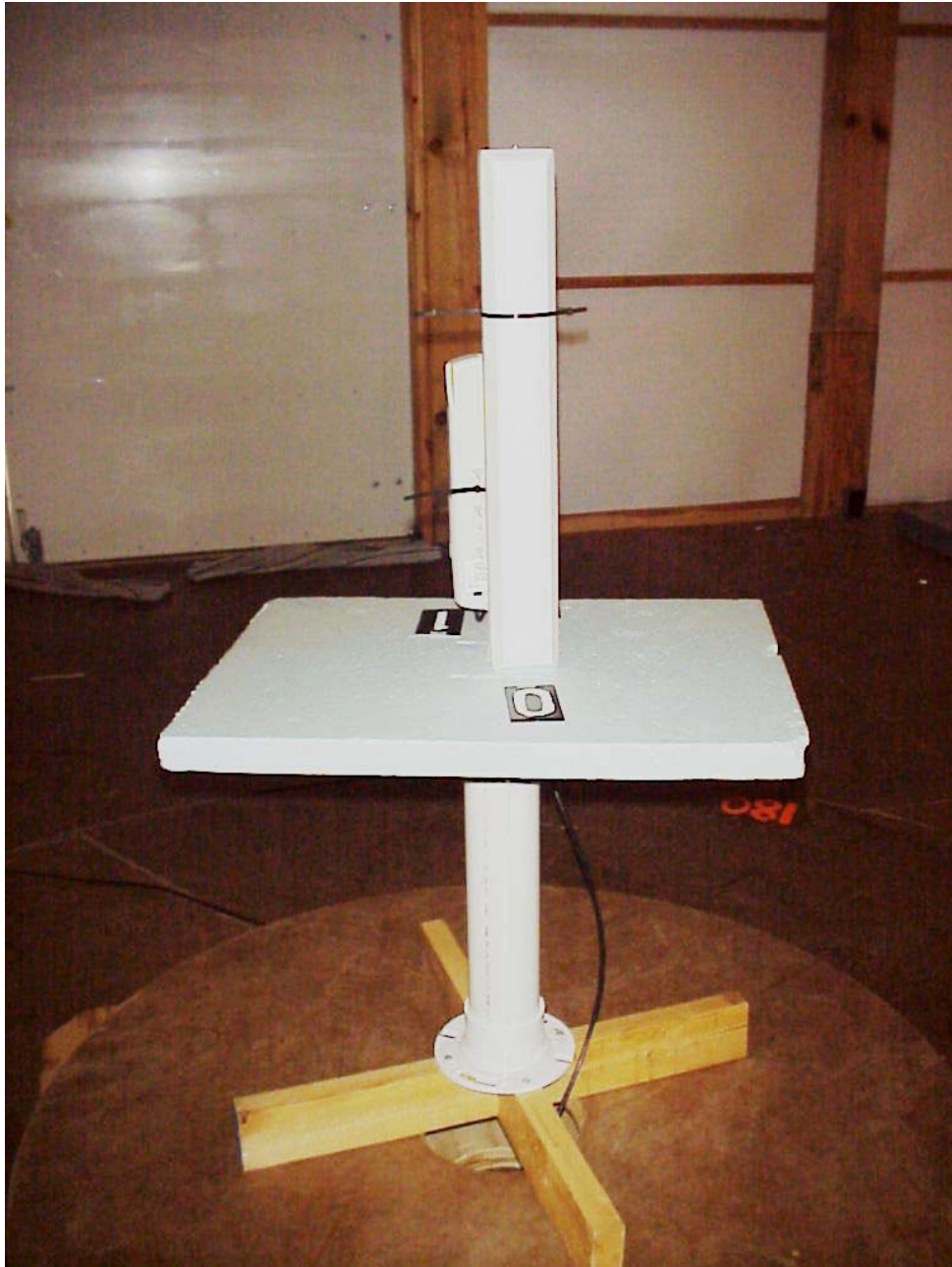
Item 2 Shielded CAT 5 Ethernet Cable with Metal Shells. 100'



Company: Motorola
Model Tested: 5700AP
Report Number: 13111

1250 Peterson Dr., Wheeling, IL 60090

10.0 RADIATED PHOTOS TAKEN DURING TESTING



RADIATED EMISSIONS
FRONT VIEW



Company: Motorola
Model Tested: 5700AP
Report Number: 13111

1250 Peterson Dr., Wheeling, IL 60090

10.0 RADIATED PHOTOS TAKEN DURING TESTING (CON'T)



RADIATED EMISSIONS
SIDE VIEW



1250 Peterson Dr., Wheeling, IL 60090

Company: Motorola
Model Tested: 5700AP
Report Number: 13111

10.0 RADIATED PHOTOS TAKEN DURING TESTING (CON'T)



RADIATED EMISSIONS
REAR VIEW



1250 Peterson Dr., Wheeling, IL 60090

Company: Motorola
Model Tested: 5700AP
Report Number: 13111

11.0 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.

12.0 CONCLUSION

It was found that the Canopy 5700 connectorized adj. Power, Model Number(s) 5700AP "**meets**" the radio interference radiated emission requirements of the FCC "Rules and Regulations", Part 15, Subpart C, Section 15.247 for operational in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz, Bands. See DLS Test Report 12688 for the conducted emissions test data made on October 9, 10, 13 & 14, 2006.



1250 Peterson Dr., Wheeling, IL 60090

Company: Motorola
Model Tested: 5700AP
Report Number: 13111

TABLE 1 – EQUIPMENT LIST

Test Equipment	Manufacturer	Model Number	Serial Number	Frequency Range	Cal Due Dates
Receiver	Rohde & Schwarz	ESI 26	837491/010	20 Hz – 26 GHz	11/07
Receiver	Rohde & Schwarz	ESI 40	837808/006	20 Hz – 40 GHz	12/07
Receiver	Rohde & Schwarz	ESI 40	837808/005	20 Hz – 40 GHz	12/07
Antenna	EMCO	3104C	00054891	20 MHz – 200 MHz	2/08
Antenna	Electrometrics	LPA-25	1114	200 MHz – 1 GHz	3/07
Antenna	EMCO	3104C	00054892	20 MHz – 200 MHz	3/07
Antenna	Electrometrics	3146	1205	200 MHz – 1 GHz	3/07
Antenna	EMCO	3104C	97014785	20 MHz – 200 MHz	2/08
Antenna	EMCO	3146	97024895	200 MHz – 1 GHz	3/07
Antenna	EMCO	3115	2479	1 GHz – 18 GHz	8/07
Antenna	EMCO	3115	99035731	1 GHz – 18 GHz	4/07
Antenna	EMCO	3116	2549	18 GHz – 40 GHz	5/07
Antenna	EMCO	3116	35017	18 GHz – 40 GHz	5/07
Antenna	Rohde & Schwarz	HUF-Z1	829381001	20 MHz – 1 GHz	2/08
Antenna	Rohde & Schwarz	HUF-Z1	829381005	20 MHz – 1 GHz	8/07

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



1250 Peterson Dr., Wheeling, IL 60090

Company: Motorola
Model Tested: 5700AP
Report Number: 13111

TABLE 1 – EQUIPMENT LIST

Test Equipment	Manufacturer	Model Number	Serial Number	Frequency Range	Cal Due Dates
LISN	Solar	8012-50-R-24-BNC	8305116	10 MHz – 30 MHz	8/07
LISN	Solar	8012-50-R-24-BNC	814548	10 MHz – 30 MHz	8/07
LISN	Solar	9252-50-R-24-BNC	961019	10 MHz – 30 MHz	12/07
LISN	Solar	9252-50-R-24-BNC	971612	10 MHz – 30 MHz	10/07
LISN	Solar	9252-50-R-24-BNC	92710620	10 MHz – 30 MHz	7/07

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



1250 Peterson Dr., Wheeling, IL 60090

Company: Motorola
Model Tested: 5700AP
Report Number: 13111

APPENDIX A

TEST PROCEDURE

Part 15, Subpart C, Section 15.247 (a-h)

OPERATION WITHIN THE BAND 902-928 MHz,

2400-2483.5 MHz AND 5725-5857 MHz



1250 Peterson Dr., Wheeling, IL 60090

Company: Motorola
Model Tested: 5700AP
Report Number: 13111

APPENDIX A

1.0 CONDUCTED EMISSION MEASUREMENTS

If applicable, the conducted emissions were measured over the frequency range from 150 kHz to 30 MHz in accordance with the power line measurements as specified in the American National Standards Institute, ANSI C63.4-2003, Section 12. Since the device is operated from the public utility lines, the 115 Vac 60 Hz power leads, high and low sides, were to be measured by connecting the measuring equipment to the appropriate meter terminal of the LISN. All signals were then recorded. The allowed levels for Intentional Radiators cannot exceed the following:

Frequency of Emissions (MHz)	Conducted Limits (dBuV)	
	Quasi Peak	Average
.15 to .5	66 to 56	56 to 46
.5 to 5	56	46
5 to 30	60	50

NOTE:

See DLS Test Report 12688 for the data and graphs made on October 9, 10, 13 & 14, 2006 for the actual measurements made:



Company: Motorola
Model Tested: 5700AP
Report Number: 13111

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

2.0 SPURIOUS EMISSIONS AT ANTENNA TERMINALS – PART 15.247(c)

Spurious conducted emissions were measured at the antenna terminals. Plots were made showing the amplitude of each harmonic emission with the equipment operated. As shown by the radiated charts there was no reason to believe that there were any spurious emissions other than the harmonics that were than individually investigated when doing the conducted test at the antenna terminals. Measurements were made up to the 10th harmonic of the fundamental.

The allowed emissions for transmitters operating in the 5725 MHz - 5850 MHz bands for Canopy 5700 connectorized adj. Power equipment are found under Part 15, Section 15.247(c). This paragraph states that in any 100 kHz bandwidth outside the frequency band which the spread spectrum intentional radiator is operating, the radio frequency power produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

NOTE:

See DLS Test Report 12688 for the data and graphs made on October 9, 10, 13 & 14, 2006 for the actual measurements made:



Company: Motorola
Model Tested: 5700AP
Report Number: 13111

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

3.0 RESTRICTED BANDS

As stated in Section 15.205a, the fundamental emission from the Canopy 5700 connectorized adj. Power shall not fall within any of the bands listed below:

Frequency in MHz	Frequency in MHz	Frequency in MHz	Frequency in GHz
.0900 to .1100	162.0125 to 167.17	2310.0 to 2390	9.30 to 9.50
.4900 to .5100	167.7200 to 173.20	2483.5 to 2500	10.60 to 12.70
2.1735 to 2.1905	240.000 to 285.00	2655.0 to 2900	13.25 to 13.40
8.362 to 8.3660	322.200 to 335.40	3260.0 to 3267	14.47 to 14.50
13.36 to 13.410	399.900 to 410.00	3332.0 to 3339	15.35 to 16.20
25.50 to 25.670	608.000 to 614.00	3345.8 to 3358	17.70 to 21.40
37.50 to 38.250	960.000 to 1240.00	3600.0 to 4400	22.01 to 23.13
73.00 to 75.500	1300.000 to 1427.00	4500.0 to 5250	23.60 to 24.00
108.00 to 121.94	1435.000 to 1626.50	5350.0 to 5450	31.20 to 31.80
123.00 to 138.00	1660.000 to 1710.00	7250.0 to 7750	36.43 to 36.50
149.90 to 150.00	1718.800 to 1722.20	8025.0 to 8500	ABOVE 38.60
156.70 to 156.90	2200.000 to 2300.00	9000.0 to 9200	

NOTE:

The noise floor within the Restricted Bands for the EMC Receiver and HP Spectrum Analyzer will typically lay 20 dB below the limit.

4.0 RESTRICTED BAND COMPLIANCE

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the attenuation below the general limits specified in 15.209 is not required.

The field strength of any **radiated emissions** which fall within the restricted bands shall not exceed the general radiated emissions limits as stated Section 15.209.

NOTE: See the following page(s) for the graph(s) made showing compliance for Restricted Band:



1250 Peterson Dr., Wheeling, IL 60090

Company: Motorola
Model Tested: 5700AP
Report Number: 13111

APPENDIX A

DATA AND GRAPH(S) TAKEN SHOWING

THE RESTRICTED BAND COMPLIANCE

PART 15.247(c)



Company: Motorola
Model Tested: 5700AP
Report Number: 13111

1250 Peterson Dr., Wheeling, IL 60090

Radiated Spurious Emissions in Restricted Bands

Tested at a 3 Meter Distance – 1 GHz to 18 GHz

Tested at a 1 Meter Distance – 18 GHz to 40 GHz

EUT: Canopy 5700
Manufacturer: Motorola
Operating Condition: 72 deg F; 27% R.H.
Test Site: Site 3
Operator: Craig Brandt
Test Specification: FCC Part 15.247(d) and FCC Part 15.205
Comment: Continuous Transmit
Date: 02/26/2007

Notes: All other restricted band emissions at least 20 dB under the limit.

Channel: Low (5735 MHz)

Frequency (GHz)	Measurement Type	Ant. Pol.	Level (dBuV)	Antenna Factor (dB/m)	System Loss (dB)	Total Level (dBuV/m)	Duty Cycle Correction (dB)	Final Corrected (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Ant. Height (m)	EUT Angle (deg)	Comment
11.47	Average	Vert	35.84	40.61	-29.4	47.0	---	47.0	54	7.0	2.00	90	Res. Band
11.47	Max Peak	Vert	47.46	40.61	-29.4	58.7	---	58.7	74	15.3	2.00	90	Res. Band
11.47	Average	Horz	35.78	40.61	-29.4	47.0	---	47.0	54	7.0	1.20	315	Res. Band
11.47	Max Peak	Horz	48.02	40.61	-29.4	59.2	---	59.2	74		1.20	315	Res. Band
22.94	Average	Vert	49.48	46.24	-36.3	59.5	---	59.5	64	4.5	1.00	0	Res. Band
22.94	Max Peak	Vert	56.32	46.24	-36.3	66.3	---	66.3	84	17.7	1.00	0	Res. Band
22.94	Average	Horz	52.39	46.24	-36.3	62.4	---	62.4	64	1.6	1.00	290	Res. Band
22.94	Max Peak	Horz	57.99	46.24	-36.3	68.0	---	68.0	84	16.0	1.00	290	Res. Band



Company: Motorola
Model Tested: 5700AP
Report Number: 13111

1250 Peterson Dr., Wheeling, IL 60090

Radiated Spurious Emissions in Restricted Bands

Tested at a 3 Meter Distance – 1 GHz to 18 GHz

Tested at a 1 Meter Distance – 18 GHz to 40 GHz

EUT: Canopy 5700
Manufacturer: Motorola
Operating Condition: 72 deg F; 27% R.H.
Test Site: Site 3
Operator: Craig Brandt
Test Specification: FCC Part 15.247(d) and FCC Part 15.205
Comment: Continuous Transmit
Date: 02/26/2007

Notes: All other restricted band emissions at least 20 dB under the limit.

Channel: Mid (5790 MHz)

Frequency (GHz)	Measurement Type	Ant. Pol.	Level (dBuV)	Antenna Factor (dB/m)	System Loss (dB)	Total Level (dBuV/m)	Duty Cycle Correction (dB)	Final Corrected (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Ant. Height (m)	EUT Angle (deg)	Comment
11.58	Average	Vert	35.18	40.56	-30	45.8	---	45.8	54	8.2	1.00	330	Res. Band
11.58	Max Peak	Vert	47.18	40.56	-30	57.8	---	57.8	74	16.2	1.00	330	Res. Band
11.58	Average	Horz	34.95	40.56	-30	45.5	---	45.5	54	8.5	2.50	315	Res. Band
11.58	Max Peak	Horz	47.46	40.56	-30	58.0	---	58.0	74	16.0	2.50	315	Res. Band



Company: Motorola
Model Tested: 5700AP
Report Number: 13111

1250 Peterson Dr., Wheeling, IL 60090

Radiated Spurious Emissions in Restricted Bands

Tested at a 3 Meter Distance – 1 GHz to 18 GHz

Tested at a 1 Meter Distance – 18 GHz to 40 GHz

EUT: Canopy 5700
Manufacturer: Motorola
Operating Condition: 72 deg F; 27% R.H.
Test Site: Site 3
Operator: Craig Brandt
Test Specification: FCC Part 15.247(d) and FCC Part 15.205
Comment: Continuous Transmit
Date: 02/26/2007

Notes: All other restricted band emissions at least 20 dB under the limit.

Channel: High (5840 MHz)

Frequency (GHz)	Measurement Type	Ant. Pol.	Level (dBuV)	Antenna Factor (dB/m)	System Loss (dB)	Total Level (dBuV/m)	Duty Cycle Correction (dB)	Final Corrected (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Ant. Height (m)	EUT Angle (deg)	Comment
11.68	Average	Vert	34.41	40.38	-30.0	44.8	---	44.8	54	9.2	2.50	330	Res. Band
11.68	Max Peak	Vert	47.18	40.38	-30.0	57.6	---	57.6	74	16.4	2.50	330	Res. Band
11.68	Average	Horz	34.34	40.38	-30.0	44.7	---	44.7	54	9.3	1.30	0	Res. Band
11.68	Max Peak	Horz	47.60	40.38	-30.0	58.0	---	58.0	74	16.0	1.30	0	Res. Band



Company: Motorola
Model Tested: 5700AP
Report Number: 13111

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

5.0 FIELD STRENGTH OF FUNDAMENTAL AND SPURIOUS EMISSION MEASUREMENTS

The radiated measurements made at D.L.S. Electronic Systems, Inc., for the Canopy 5700 connectorized adj. Power, Model Number: 5700AP, are shown in tabulated and graph form. Preliminary radiation measurements were performed at a 3 meter test distance with the limits adjusted linearly when required. The frequency range from 30 MHz to over 960 MHz, depending upon the fundamental frequency as stated in Part 15.33a, was automatically scanned and plotted at various angles.

Measurements for the Canopy 5700 connectorized adj. Power were made up to 40000 MHz, in accordance with Section 15.33a for Intentional Radiators with a fundamental frequency of 5800 MHz. For intentional radiators, the frequency range to be investigated is determined by the lowest radio frequency generated by the device without going below 30 MHz, up to at least the tenth harmonic of the highest fundamental frequency or 10 GHz, whichever is lower. At those frequencies where significant signals were detected, measurements were made over the entire frequency range specified in FCC Part 15, Subpart C, Section 15.247 at the open field test site, located at Genoa City, Wisconsin, FCC file number **31040/SIT**. When required, levels were extrapolated from 10 meters to 3 meters using a linear extrapolation.

All signals in the frequency range of 30 MHz to 2000 MHz were measured with a Biconical Antenna or tuned dipoles and from 200 MHz to 1000 MHz, a Log Periodic or Tuned Dipoles were used. From 1000 MHz to 25 GHz Horn Antennas were used. During the test the equipment was rotated and the antenna was raised and lowered from 1 meter to 4 meters to find the maximum level of emissions. In order to find maximum emissions, the cables were moved through all the positions the equipment would be expected to experience in the field. The EUT, peripheral equipment and cables were configured to meet the conditions in ANSI C63.4-2003, Clauses 6 & 8. Tests were made with the receive antenna(s) in both the horizontal and vertical planes of polarization. In each case, the table was rotated to find the maximum emissions.



Company: Motorola
Model Tested: 5700AP
Report Number: 13111

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

5.0 FIELD STRENGTH OF FUNDAMENTAL AND SPURIOUS EMISSION MEASUREMENTS (CON'T)

As stated in Section 15.247(b) the allowed maximum peak output power of the transmitter shall not exceed 1 Watt. In any 100 kHz bandwidth outside these frequency bands (the power that is produced by the modulation products of the spreading sequence), the information sequence and the carrier frequency shall be either at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power. Attenuation below the general limits specified in 15.209 is not required.

Field strength limits are at a distance of 3 meters. The emission limits shown are based on measurement instrumentation employing an average detector.

Emissions radiated outside of the specified frequency bands, except for harmonics are attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

Preliminary radiated emission measurements were performed at a 3 meter test distance. The frequency range from 30 MHz to 1000 MHz was automatically scanned and plotted at various angles.

NOTE:

All radiated emissions measurements were made at a test room temperature of 72°F at 27% relative humidity.



1250 Peterson Dr., Wheeling, IL 60090

Company: Motorola
Model Tested: 5700AP
Report Number: 13111

RADIATED DATA AND GRAPH(S) TAKEN FOR

FIELD STRENGTH OF FUNDAMENTAL

EMISSION MEASUREMENTS

PART 15.247



Company: Motorola
Model Tested: 5700AP
Report Number: 13111

1250 Peterson Dr., Wheeling, IL 60090

DLS Electronic Systems, Inc.

Company: Motorola
Operator: Craig Brandt
Date of test: 02-26-2007
Temperature: 72 deg. F
Humidity: 27% R.H.

Power set to 70001084 D1000000

EIRP - Substitution Method

Model: Canopy 5700								
Channel: Low - 5735 MHz								
Frequency and Polarization (MHz)	Max. Field Strength of EUT @ 3 meters (dBuV/m)	Output of Signal Generator when field strength equals that of EUT (dBm)	Correction factor for cable between Signal Gen. and subst. antenna (dB)	Gain of subst. antenna (dBi)	Strength of emission [EIRP] (dBm)	Limit (dBm)	Margin (dB)	Strength of emission [EIRP] (mW)
5735 vertical	134.35	27.44	2.74	11.28	35.98	36	0.02	3962.78
5735 horizontal	115.51	9	2.74	11.28	17.54	36	18.46	56.75
					0		0	

EIRP = Signal generator output - cable loss + antenna gain

$ERP_{(ref. \text{ to } \frac{1}{2}\lambda \text{ dipole})} = \text{Signal generator output} - \text{cable loss} + \text{antenna gain} - 2.15$

(Ref. ITU-R SM.329-8 Annex 1[1])



1250 Peterson Dr., Wheeling, IL 60090

Company: Motorola
Model Tested: 5700AP
Report Number: 13111

DLS Electronic Systems, Inc.

Company: Motorola
Operator: Craig Brandt
Date of test: 02-26-2007
Temperature: 72 deg. F
Humidity: 27% R.H.

Power set to 70001084 D1000000

EIRP - Substitution Method

Model: Canopy 5700								
Channel: Mid - 5790 MHz								
Frequency and Polarization (MHz)	Max. Field Strength of EUT @ 3 meters (dBuV/m)	Output of Signal Generator when field strength equals that of EUT (dBm)	Correction factor for cable between Signal Gen. and subst. antenna (dB)	Gain of subst. antenna (dBi)	Strength of emission [EIRP] (dBm)	Limit (dBm)	Margin (dB)	Strength of emission [EIRP] (mW)
5790 vertical	134.27	27.34	2.75	11.35	35.94	36	0.06	3926.45
5790 horizontal	115.3	8.4	2.75	11.35	17	36	19	50.12

EIRP = Signal generator output - cable loss + antenna gain

$ERP_{(ref. to \frac{1}{2}\lambda \text{ dipole})} = \text{Signal generator output} - \text{cable loss} + \text{antenna gain} - 2.15$
(Ref. ITU-R SM.329-8 Annex 1[1])



Company: Motorola
Model Tested: 5700AP
Report Number: 13111

1250 Peterson Dr., Wheeling, IL 60090

DLS Electronic Systems, Inc.

Company: Motorola
Operator: Craig Brandt
Date of test: 02-26-2007
Temperature: 72 deg. F
Humidity: 27% R.H.

Power set to 70001084 D1000000

EIRP - Substitution Method

Model: Canopy 5700								
Channel: High - 5840 MHz								
Frequency and Polarization (MHz)	Max. Field Strength of EUT @ 3 meters (dBuV/m)	Output of Signal Generator when field strength equals that of EUT (dBm)	Correction factor for cable between Signal Gen. and subst. antenna (dB)	Gain of subst. antenna (dBi)	Strength of emission [EIRP] (dBm)	Limit (dBm)	Margin (dB)	Strength of emission [EIRP] (mW)
5840 vertical	134.05	26.84	2.77	11.41	35.48	36	0.52	3531.83
5840 horizontal	115.08	8.5	2.77	11.41	17.14	36	18.86	51.76

EIRP = Signal generator output - cable loss + antenna gain

$ERP_{(ref. to \frac{1}{2}\lambda \text{ dipole})} = \text{Signal generator output} - \text{cable loss} + \text{antenna gain} - 2.15$
(Ref. ITU-R SM.329-8 Annex 1[1])



1250 Peterson Dr., Wheeling, IL 60090

Company: Motorola
Model Tested: 5700AP
Report Number: 13111

RADIATED DATA AND GRAPH(S) TAKEN FOR

FIELD STRENGTH OF

SPURIOUS EMISSION MEASUREMENTS

PART 15.247

FCC Part 15 Class B

Electric Field Strength

EUT: Canapy 5700
Manufacturer: Motorola
Operating Condition: 72 deg. F; 40% R.H.
Test Site: DLS O.F. Site 3
Operator: Craig Brandt
Test Specification: 120 V 60 Hz
Comment: Rx & Tx, Low, Mid & High channels
Date: 02-26-2007

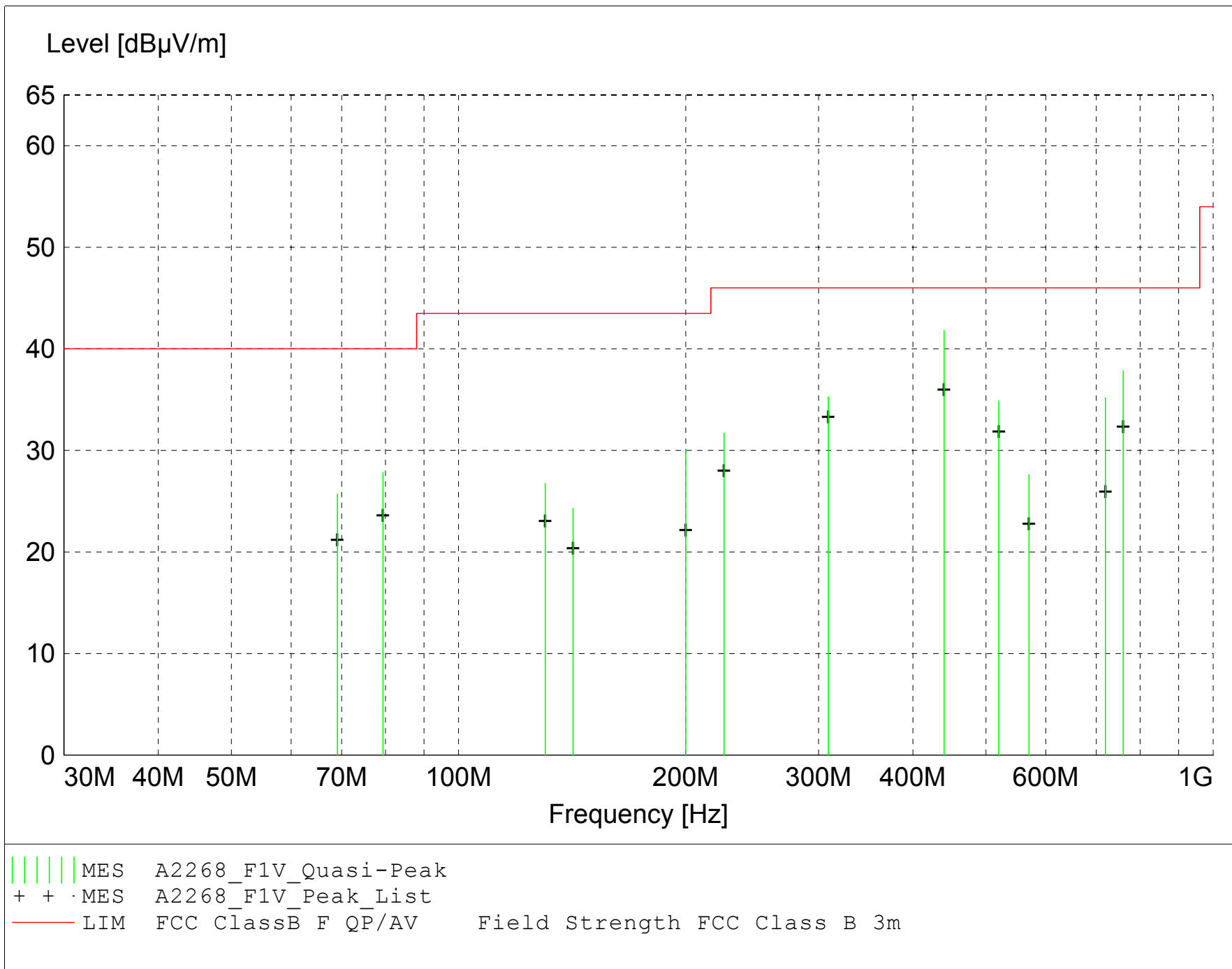
TEXT: "Site 3 MidV 3M"

Short Description: Test Set-up Vert30-1000MHz
TEST EQUIPMENT: Receiver --- Rohde&Schwarz ESI 40 SN: 837808/005

Antennas ---
Biconical -- EMCO 3104C SN: 9701-4785
Log Periodic -- EMCO 3146 SN: 9702-4895

Pre-Amp --- Rohde&Schwarz TS-PR10 SN: 032001/005

TEST SET-UP: EUT Measured at 3 Meters with VERTICAL Antenna Polarization



MEASUREMENT RESULT: "A2268_F1V_Final"

2/26/2007 5:29PM

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EuT	Final	Comment
MHz	dBμV	Factor	Loss	Level			Ant.	Angle	Detector	
		dBμV/m	dB	dBμV/m	dBμV/m	dB	m	deg		
440.000000	46.84	16.07	-21.1	41.8	46.0	4.2	1.90	250	QUASI-PEAK	None
760.000000	35.51	20.78	-18.4	37.9	46.0	8.1	1.30	110	QUASI-PEAK	None
309.090000	41.59	15.63	-21.9	35.3	46.0	10.7	1.40	250	QUASI-PEAK	None
720.010000	33.28	20.56	-18.7	35.2	46.0	10.8	1.20	135	QUASI-PEAK	None
520.000000	37.59	18.00	-20.7	34.8	46.0	11.2	1.00	60	QUASI-PEAK	None
79.405000	44.87	6.73	-23.7	27.8	40.0	12.2	1.30	0	QUASI-PEAK	None
200.000000	36.65	15.87	-22.5	30.0	43.5	13.5	1.00	90	QUASI-PEAK	None
224.860000	43.29	10.56	-22.2	31.7	46.0	14.3	1.00	70	QUASI-PEAK	None
69.080000	41.93	7.64	-23.9	25.7	40.0	14.3	1.00	0	QUASI-PEAK	None
130.320000	37.37	12.51	-23.1	26.8	43.5	16.7	1.00	315	QUASI-PEAK	None
570.000000	29.62	18.42	-20.4	27.6	46.0	18.4	1.00	260	QUASI-PEAK	None
141.850000	35.98	11.44	-23.1	24.3	43.5	19.2	1.00	135	QUASI-PEAK	None

FCC Part 15 Class B

Electric Field Strength

EUT: Canapy 5700
Manufacturer: Motorola
Operating Condition: 72 deg. F; 40% R.H.
Test Site: DLS O.F. Site 3
Operator: Craig Brandt
Test Specification: 120 V 60 Hz
Comment: Rx & Tx, Low, Mid, & High channels
Date: 02-26-2007

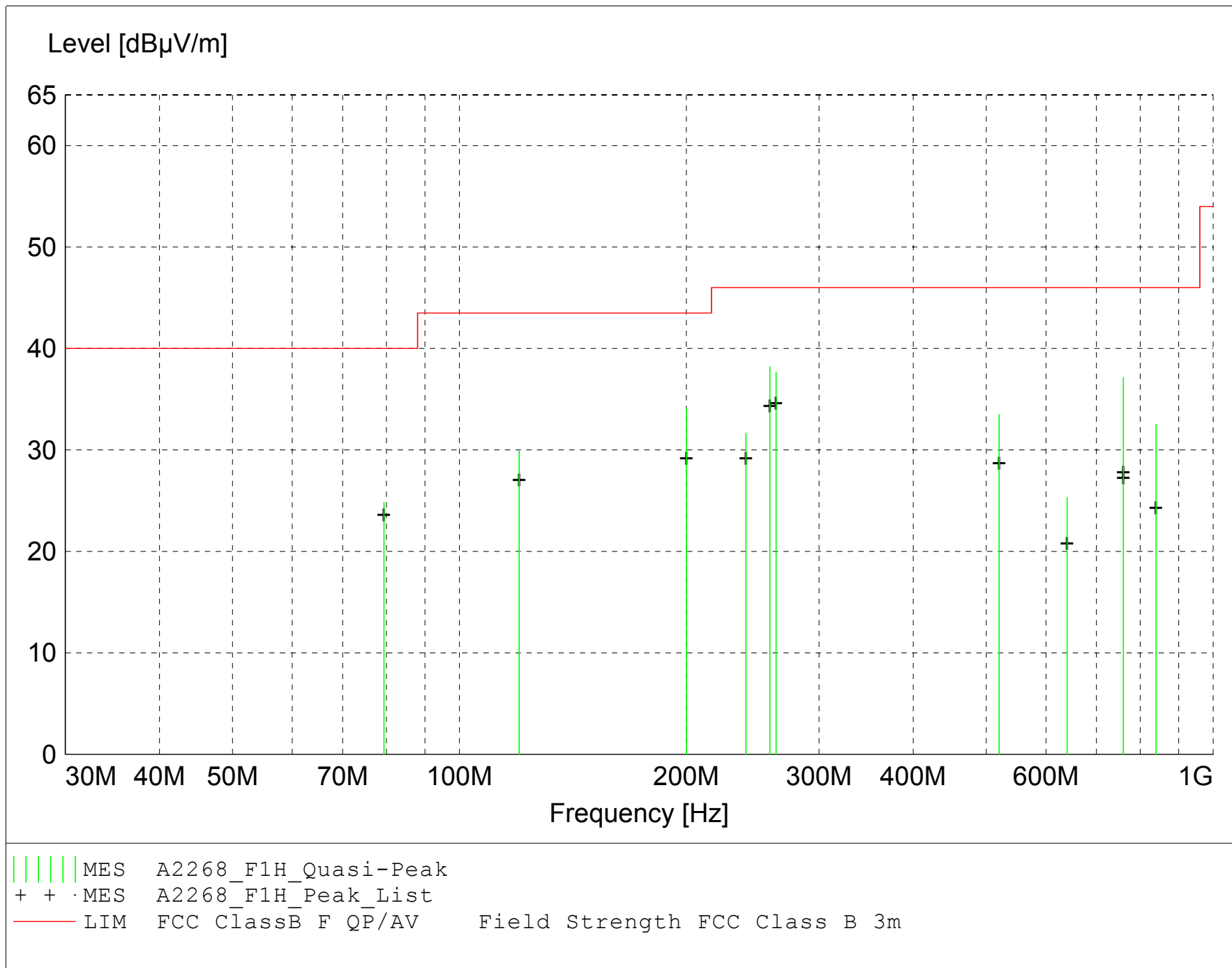
TEXT: "Site 3 MidH 3M"

Short Description: Test Set-up Horz30-1000MHz
TEST EQUIPMENT: Receiver --- Rohde&Schwarz ESI 40 SN: 837808/005

Antennas ---
Biconical -- EMCO 3104C SN: 9701-4785
Log Periodic -- EMCO 3146 SN: 9702-4895

Pre-Amp --- Rohde&Schwarz TS-PR10 SN: 032001/005

TEST SET-UP: EUT Measured at 3 Meters with HORIZONTAL Antenna Polarization



MEASUREMENT RESULT: "A2268_F1H_Final"

2/26/2007 5:17PM

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EuT	Final	Comment
MHz	dBμV	Factor	Loss	Level			Ant.	Angle	Detector	
		dBμV/m	dB	dBμV/m	dBμV/m	dB	m	deg		
258.160000	48.07	12.26	-22.1	38.2	46.0	7.8	1.00	270	QUASI-PEAK	None
263.060000	47.30	12.45	-22.1	37.7	46.0	8.3	1.00	270	QUASI-PEAK	None
760.000000	34.79	20.78	-18.4	37.1	46.0	8.9	1.00	110	QUASI-PEAK	None
200.000000	40.74	15.87	-22.5	34.1	43.5	9.4	1.80	90	QUASI-PEAK	None
520.000000	36.23	18.00	-20.7	33.5	46.0	12.5	1.30	135	QUASI-PEAK	None
840.000000	29.56	21.91	-18.9	32.5	46.0	13.5	1.00	0	QUASI-PEAK	None
120.010000	40.80	12.31	-23.2	29.9	43.5	13.6	2.90	225	QUASI-PEAK	None
240.000000	42.86	11.11	-22.3	31.6	46.0	14.4	1.30	30	QUASI-PEAK	None
79.400000	41.85	6.73	-23.7	24.8	40.0	15.2	2.50	90	QUASI-PEAK	None
640.000000	25.91	19.37	-20.0	25.3	46.0	20.7	1.00	260	QUASI-PEAK	None



1250 Peterson Dr., Wheeling, IL 60090

Company: Motorola
Model Tested: 5700AP
Report Number: 13111

CONDUCTED PEAK OUTPUT POWER GRAPHS

PART 15.247

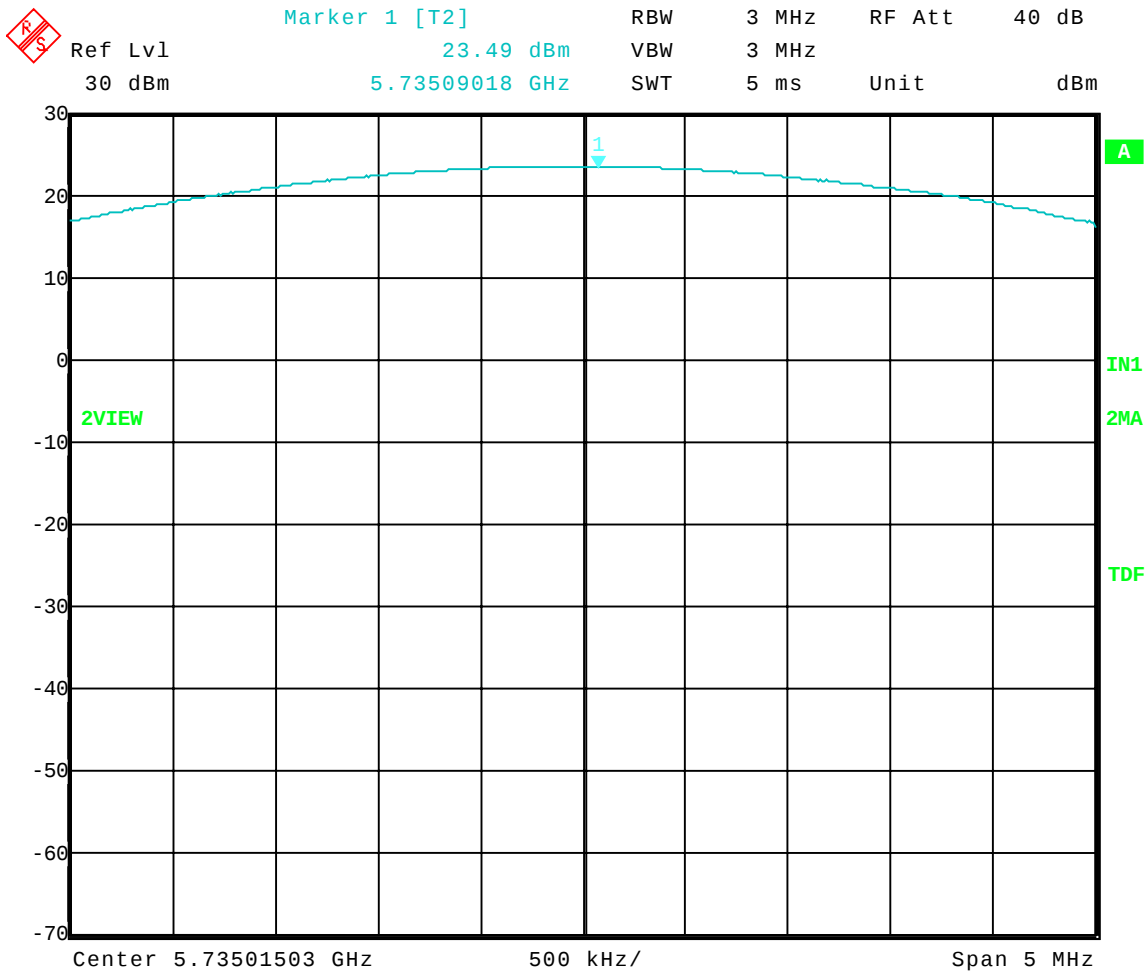


Company: Motorola
Model Tested: 5700AP
Report Number: 13111

1250 Peterson Dr., Wheeling, IL 60090

Test Date: 10-5-2006
Company: Motorola
EUT: Canopy 5700 AL Connectorized
Test: Peak Output Power - Conducted
Operator: Jason Lauer
Comment: Low Channel – 5735 MHz

Peak Output Power = 23.49 dBm = 223.36 mW



Date: 5.OCT.2006 15:04:31

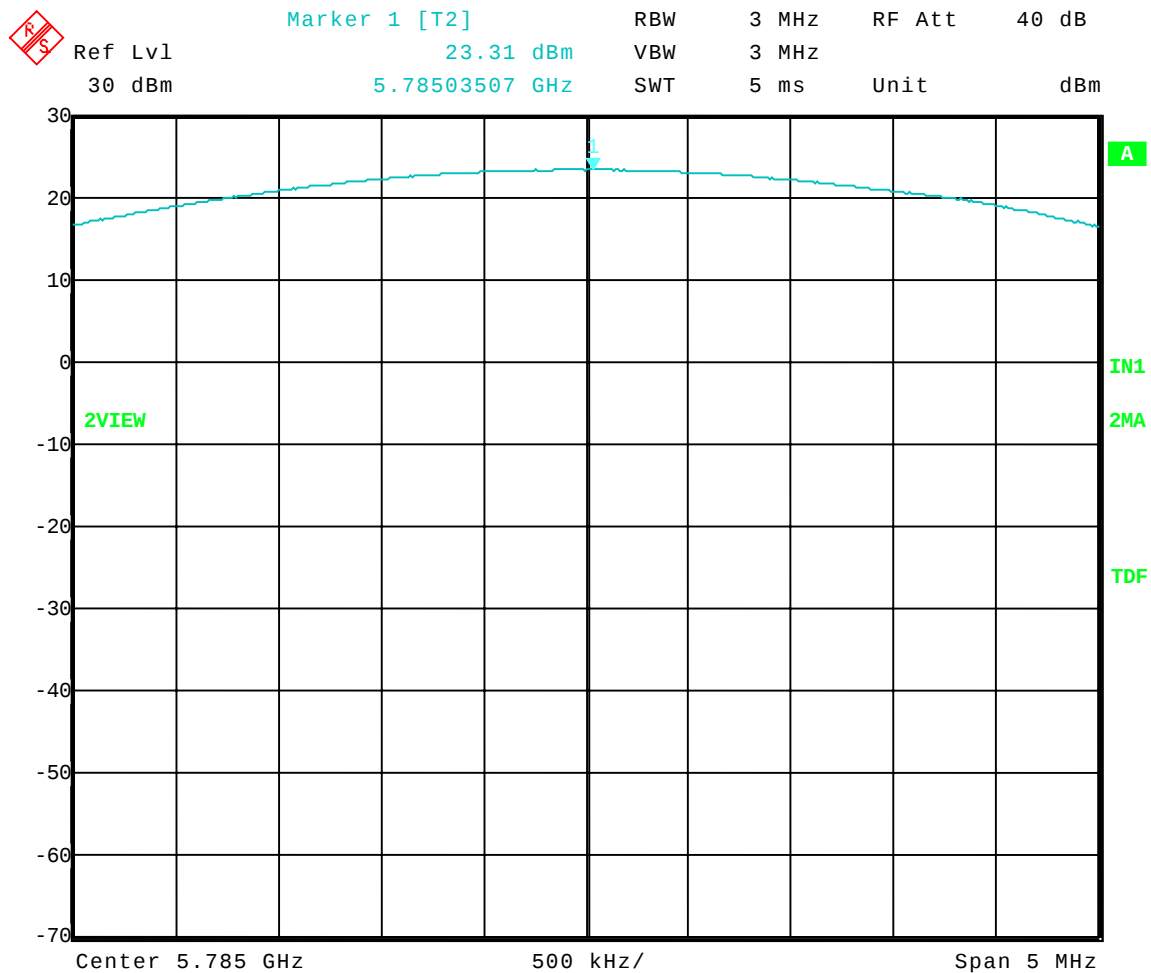


Company: Motorola
Model Tested: 5700AP
Report Number: 13111

1250 Peterson Dr., Wheeling, IL 60090

Test Date: 10-5-2006
Company: Motorola
EUT: Canopy 5700 AL Connectorized
Test: Peak Output Power - Conducted
Operator: Jason Lauer
Comment: Middle Channel – 5785 MHz

Peak Output Power = 23.31 dBm = 214.29 mW



Date: 5.OCT.2006 15:05:43

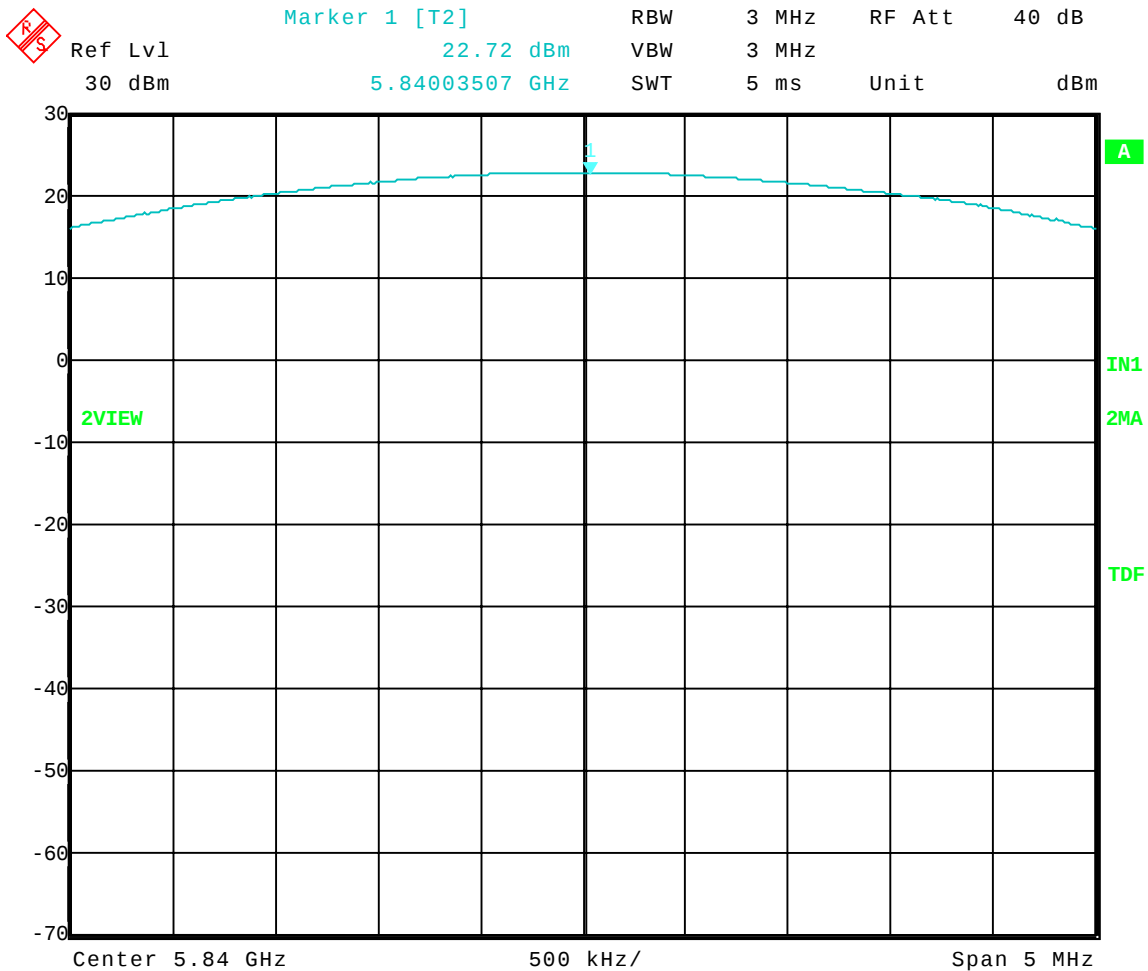


Company: Motorola
Model Tested: 5700AP
Report Number: 13111

1250 Peterson Dr., Wheeling, IL 60090

Test Date: 10-5-2006
Company: Motorola
EUT: Canopy 5700 AL Connectorized
Test: Peak Output Power - Conducted
Operator: Jason Lauer
Comment: High Channel – 5840 MHz

Peak Output Power = 22.72 dBm = 187.07 mW



Date: 5.OCT.2006 15:06:55