

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/SM/BH) is connected to a 24V power supply via

shielded Ethernet cable. (Tested at 120 vac, 60 Hz)

Model Number(s): 5700xxx

Model(s) Tested: 5700APC

Serial Number(s): NA

Date of Tests: October 9, 10, 13 & 14, 2006

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



SIGNATURE PAGE

Report By:

more C Now

Arnom C. Rowe Test Engineer EMC-001375-NE

Reviewed By:

William Stumpf OATS Manager

Approved By:

Brian Mattson General Manager

Company Official:

Motorola



TABLE OF CONTENTS

İ.	Cover Page	1
ii.	Signature Page	2
iii. T	able 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
10.0	Conducted Photos Taken During Testing	13
11.0	Results of Tests	15
12.0	Conclusion	15
TAR	I.E. 1 – FOUIPMENT LIST	16



TABLE OF CONTENTS

Apper	ndix A – Electric Field Radiated Emissions Test	18
1.0	Conducted Emission Measurements	19
1.0	Conducted Data and Graph(s) taken during testing.	20
2.0	Spurious Emissions at the Antenna Terminals	25
2.0	Level 2 Conducted Emission Data and Charts made at the Antenna Terminals	26
2.0	Level 4 Conducted Emission Data and Charts made at the Antenna Terminals	42
3.0	Photos Taken During Testing	58
4.0	Restricted Bands	62
5.0	Band Edge and Restrict Band Compliance	62
5.0	Data and Graph(s) taken showing the Band Edge and Restrict Band Compliance	63
6.0	Field Strength of Spurious Emission Measurements	74
6.0	Radiated Data and Graph(s) taken for Field Strength Spurious Emission Measurements	76
7.0	6 dB Bandwidth Graphs taken during testing	86
7.0	20 dB Bandwidth Graphs taken during testing	93
7.0	99% Bandwidth Graphs taken during testing	100
7.0	Conducted Peak Output Power Graphs Taken During testing	107



1250 Peterson Dr., Wheeling, IL 60090

Motorola Company: Model Tested:

5700APC Report Number: 12688



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 Accreditation is granted for specific services, listed on the Scope of Accreditation, for: NIST Handbook 150:2001 and all requirements of ISO/IEC Guide 17025:1999.

ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS

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

2005-10-01 through 2006-09-30

Effective dates

Page -5-



1.0 SUMMARY OF TEST REPORT

It was found that the Canopy 5700 connectorized adj. Power, Model Number(s) 5700APC, "meets" the radio interference conducted and 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.

This test report relates only to the items tested and contains the following number of pages.

Text: 110

2.0 INTRODUCTION

On October 9, 10, 13 & 14, 2006, a series of radio frequency interference measurements was performed on Canopy 5700 connectorized adj. Power, Model Number(s) 5700APC, Serial Number: NA. 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.



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.



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.



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

7.1 Description:

The Canopy 5700 Advanced Logic Wireless Digital FSK Radio is designed for use in the 5.8GHz Band (5735MHz-5840MHz) with 6 separate 20MHz channels. The radio works in conjunction with a 24vDC 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" 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

7.5 DESCRIPTION OF ALL CIRCUIT BOARDS:

1. Radio PN: 84-88701R01 rev A

2. Power Supply PN: ACPSSW-02



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

(See als	so Paragraph 7.0)				
1: There were	no additional descriptions no	oted at the ti	me of test.		
I certify that the manufactured a	ne above, as described in para as stated.	agraph 7.0, o	describes the equipm	ent tested and will b	e
Ву:					
Бу	Signature			Title	
Γ					
For:	Company			Date	



9.0 PHOTO INFORMATION AND TEST SET-UP

Item 0 Canopy 5700 connectorized adj. Power Model Number: 5700APC Serial Number: NA

Item 1 MARS Antenna MA-WCSO-5H

Model Number: M22151020005 SN: 101

Item 2 Shielded Best-Tronics Ethernet Cable with Metal Shells run to computer laptop with DC Power Supply. 10m

Item 3 Gateway Laptop Computer

Model Number: SOLO 2550 SN: B2509470610

Item 4 Motorola AC to DC 24 vdc onto Ethernet Cable Power Supply.

Model Number: PSA15R-240 SN: P60238478A1

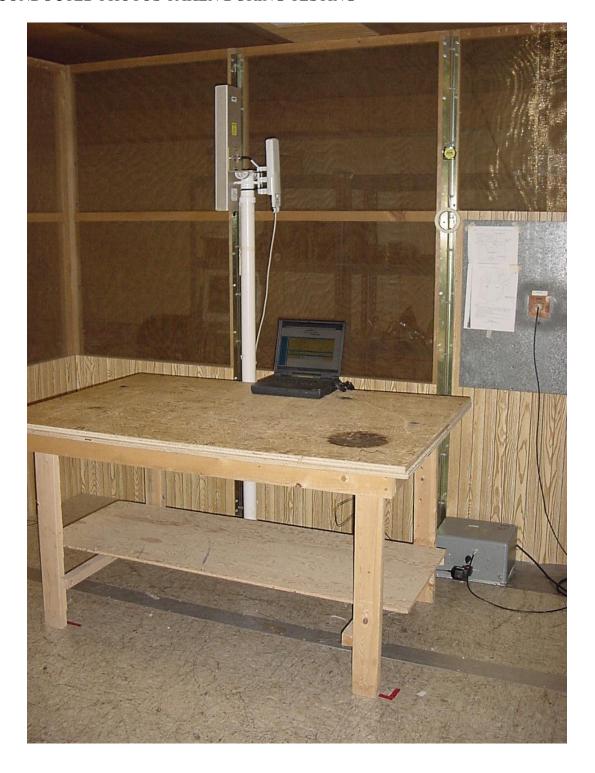


10.0 RADIATED PHOTOS TAKEN DURING TESTING



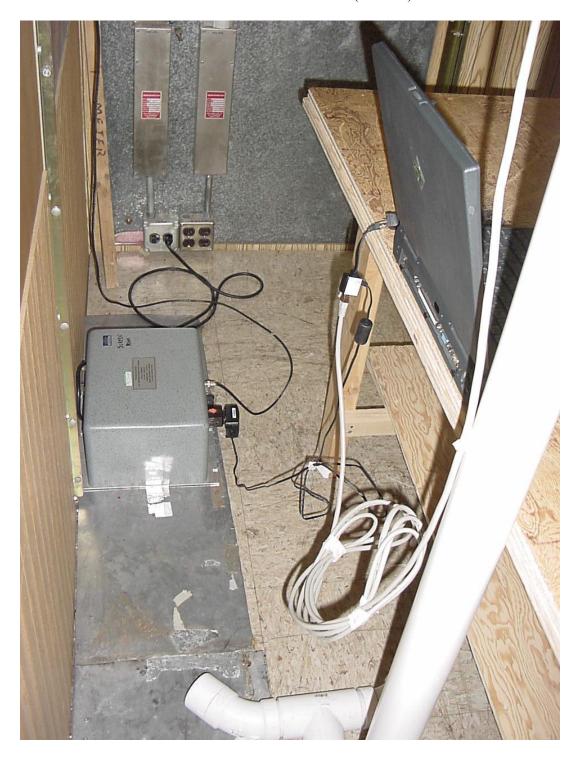


10.0 CONDUCTED PHOTOS TAKEN DURING TESTING





10.0 CONDUCTED PHOTOS TAKEN DURING TESTING (CON'T)





11.0 RESULTS OF TESTS

The radio interference emission charts results 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. Points on the emission charts shown with a yellow mark are background frequencies that were verified during testing.

12.0 CONCLUSION

It was found that the Canopy 5700 connectorized adj. Power, Model Number(s) 5700APC "<u>meets</u>" the radio interference conducted and 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.



TABLE 1 – EQUIPMENT LIST

Test		Model	Serial	Frequency	Cal Due
Equipment	Manufacturer	Number	Number	Range	Dates
Receiver	Rohde & Schwarz	ESI 26	837491/010	20 Hz – 26 GHz	11/06
Receiver	Rohde & Schwarz	ESI 40	837808/006	20 Hz – 40 GHz	12/06
Receiver	Rohde & Schwarz	ESI 40	837808/005	20 Hz – 40 GHz	12/06
Antenna	EMCO	3104C	00054891	20 MHz – 200 MHz	2/07
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	2/07
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	Rohde & Schwarz	HUF-Z1	829381001	20 MHz – 1 GHz	2/07
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.



TABLE 1 – EQUIPMENT LIST

Test		Model	Serial	Frequency	Cal Due
Equipment	Manufacturer	Number	Number	Range	Dates
LISN	Solar	8012-50-R-	8305116	10 MHz – 30 MHz	8/07
		24-BNC			
LISN	Solar	8012-50-R-	814548	10 MHz – 30 MHz	8/07
		24-BNC			
LISN	Solar	9252-50-R-	961019	10 MHz – 30 MHz	12/06
		24-BNC			
LISN	Solar	9252-50-R-	971612	10 MHz – 30 MHz	10/07
		24-BNC			
LISN	Solar	9252-50-R-	92710620	10 MHz – 30 MHz	7/07
		24-BNC			

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



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



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 250 uV (47.96 dBuV) at any frequency between 150 kHz and 30 MHz, as stated in Section 15.207a.

All conducted emissions measurements were made at a test room temperature of **73°F** at **43%** relative humidity.



APPENDIX A

DATA AND GRAPH(S) TAKEN DURING TESTING

PART 15.207

FCC Part 15 Class B

Voltage Mains Test

EUT: Canopy 5700 AL Connectorized

Manufacturer: Motorola

Operating Condition: 73 deg. F, 43% R.H.

Test Site: DLS O.F. Site 1 (Screenroom)

Operator: Jason Lauer

Test Specification: 120 VAC @ 60 Hz (24 VDC from Walwort)
Comment: Line 1 - Tx and Rx on Low Channel

Date: 10-10-2006

SCAN TABLE: "Line Cond Scrn RmFin"

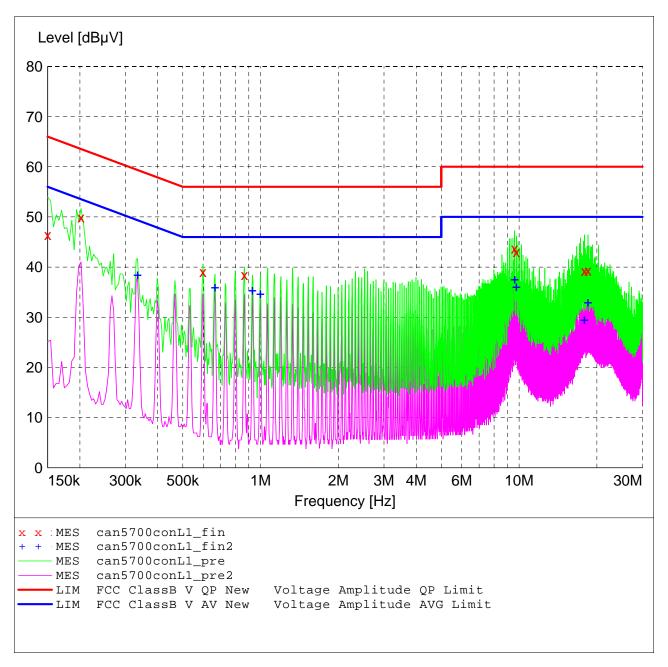
Short Description: Line Conducted Emissions

Start Stop Step Detector Meas. IF Transducer

LISN DLS#128

Frequency Frequency Width Time Bandw. 150.0 kHz 30.0 MHz 4.0 kHz QuasiPeak 2.0 s 9 kHz

CISPR AV



MEASUREMENT RESULT: "can5700conL1_fin"

10	/10/2006	3:30PM						
	Frequency	y Level	Transd	Limit	Margin	Detector	Line	PE
	MH	z dBµV	dB	dΒμV	dB			
	0.150000	3 46.40	11.5	66	19.6	QP		
	0.202000	49.90	10.8	64	13.6	QP		
	0.598000	39.10	10.2	56	16.9	QP		
	0.866000	38.50	10.3	56	17.5	QP		
	9.610000	3 43.70	10.7	60	16.3	QP		
	9.758000	3 43.00	10.7	60	17.0	QP		
	17.890000	39.30	11.2	60	20.7	QP		
	18.482000	39.40	11.2	60	20.6	QP		

MEASUREMENT RESULT: "can5700conL1_fin2"

10/10/2006	3:30PM						
Frequency	y Level	Transd	Limit	Margin	Detector	Line	PE
MH	z dBµV	dВ	dΒμV	dВ			
0.33400	38.60	10.4	49	10.8	CAV		
0.66600	36.00	10.2	46	10.0	CAV		
0.93000	35.50	10.3	46	10.5	CAV		
0.99800	34.80	10.2	46	11.2	CAV		
9.61000	37.70	10.7	50	12.3	CAV		
9.75800	36.20	10.7	50	13.8	CAV		
17.89000	29.60	11.2	50	20.4	CAV		
18.48200	33.10	11.2	50	16.9	CAV		

FCC Part 15 Class B

Voltage Mains Test

EUT: Canopy 5700 AL Connectorized

Manufacturer: Motorola

Operating Condition: 73 deg. F, 43% R.H.

DLS O.F. Site 1 (Screenroom) Test Site:

Operator: Jason Lauer

Test Specification: 120 VAC @ 60 Hz (24 VDC from Walwort) Comment: Line 2 - Tx and Rx on Low Channel

Date: 10-10-2006

SCAN TABLE: "Line Cond Scrn RmFin"

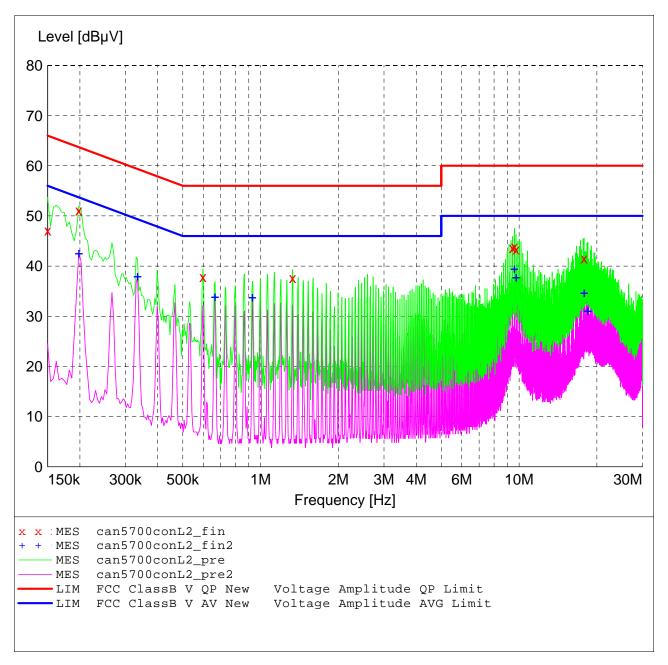
Line Conducted Emissions Short Description:

Start Step Detector Meas. IF Transducer Stop

Frequency Frequency Width 150.0 kHz 30.0 MHz 4.0 kHz Time Bandw.

QuasiPeak 2.0 s 9 kHz LISN DLS#128

CISPR AV



MEASUREMENT RESULT: "can5700conL2_fin"

10/10/2006	3:36PM						
Frequency	/ Level	Transd	Limit	Margin	Detector	Line	PE
MH2	z dBµV	dB	dΒμV	dB			
0.150000	47.10	11.5	66	18.9	QP		
0.198000	51.10	10.9	64	12.6	QP		
0.598000	37.90	10.2	56	18.1	QP		
1.330000	37.60	10.2	56	18.4	QP		
9.438000	43.60	10.7	60	16.4	QP		
9.590000	43.90	10.7	60	16.1	QP		
9.738000	43.30	10.7	60	16.7	QP		
17.850000	41.50	11.2	60	18.5	QP		

MEASUREMENT RESULT: "can5700conL2_fin2"

10/10/2006	3:37PM						
Frequenc	y Level	Transd	Limit	Margin	Detector	Line	PE
MH	z dBµV	dB	dΒμV	dB			
0.19800	0 42.60	10.9	54	11.1	CAV		
0.33400	0 38.10	10.4	49	11.3	CAV		
0.66600	0 34.00	10.2	46	12.0	CAV		
0.93000	0 33.90	10.3	46	12.1	CAV		
9.59000	0 39.50	10.7	50	10.5	CAV		
9.73800	0 37.90	10.7	50	12.1	CAV		
17.85000	0 34.80	11.2	50	15.2	CAV		
18.44200	0 31.20	11.2	50	18.8	CAV		



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 the following pages for the data ad graphs of the actual measurements made:



APPENDIX A

CONDUCTED EMISSION DATA AND GRAPH(S)

TAKEN FOR

SPURIOUS EMISSION MEASUREMENTS MADE

AT THE ANTENNA TERMINALS

PART 15.247(c)

LEVEL 2



1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 10-6-2006 Company: Motorola

EUT: Canopy 5700 AL Connectorized
Test: Spurious Emissions - Conducted

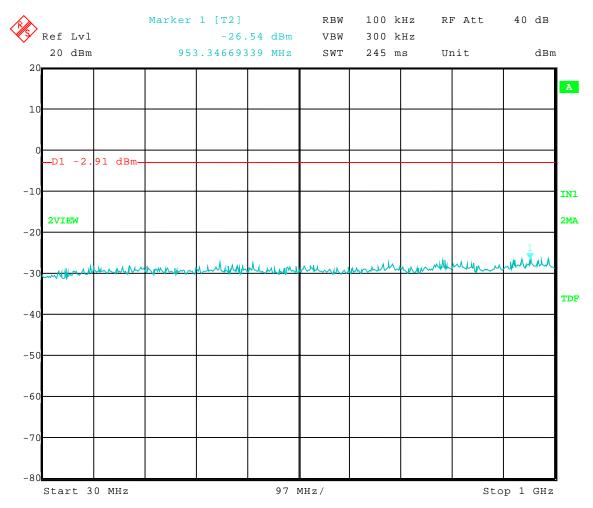
Operator: Jason Lauer

Comment: Low Channel – 5.735 GHz – Level 2

Frequency Range: 30 to 1000 MHz

Limit = -2.91 dBm

All Spurious Emissions at Least 20 dB below Peak Level of In Band Frequency





1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 10-6-2006 Company: Motorola

EUT: Canopy 5700 AL Connectorized
Test: Spurious Emissions - Conducted

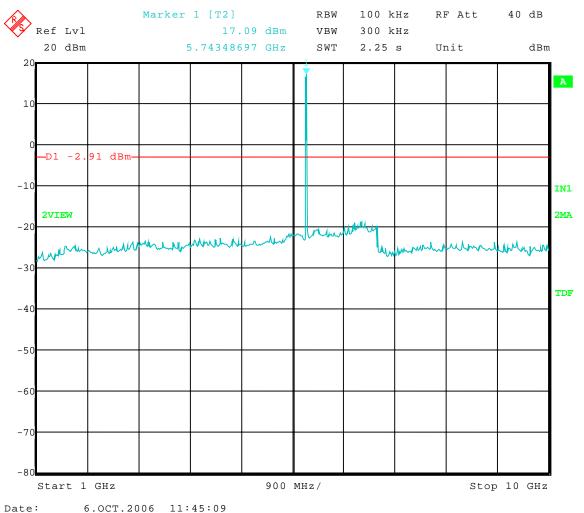
Operator: Jason Lauer

Comment: Low Channel – 5.735 GHz – Level 2

Frequency Range: 1 to 10 GHz

Limit = -2.91 dBm

All Spurious Emissions at Least 20 dB below Peak Level of In Band Frequency





1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 10-6-2006 Company: Motorola

EUT: Canopy 5700 AL Connectorized
Test: Spurious Emissions - Conducted

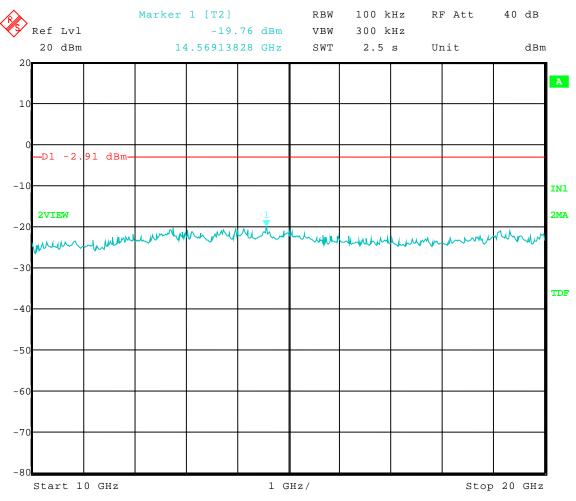
Operator: Jason Lauer

Comment: Low Channel – 5.735 GHz – Level 2

Frequency Range: 10 to 20 GHz

Limit = -2.91 dBm

All Spurious Emissions at Least 20 dB below Peak Level of In Band Frequency



Date: 6.OCT.2006 11:47:16



1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 10-6-2006 Company: Motorola

EUT: Canopy 5700 AL Connectorized
Test: Spurious Emissions - Conducted

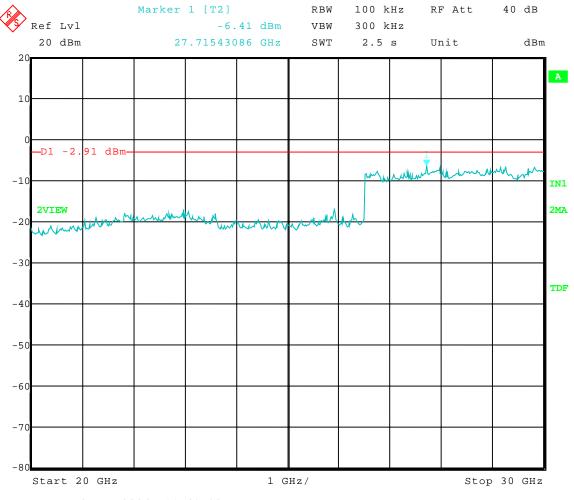
Operator: Jason Lauer

Comment: Low Channel – 5.735 GHz – Level 2

Frequency Range: 20 to 30 GHz

Limit = -2.91 dBm

All Spurious Emissions at Least 20 dB below Peak Level of In Band Frequency





1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 10-6-2006 Company: Motorola

EUT: Canopy 5700 AL Connectorized
Test: Spurious Emissions - Conducted

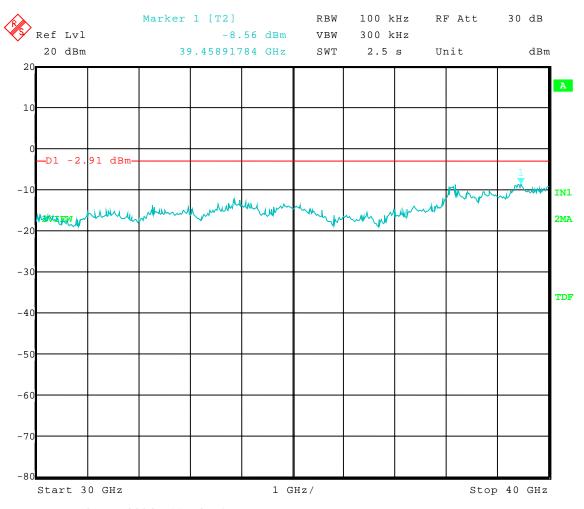
Operator: Jason Lauer

Comment: Low Channel – 5.735 GHz – Level 2

Frequency Range: 30 to 40 GHz

Limit = -2.91 dBm

All Spurious Emissions at Least 20 dB below Peak Level of In Band Frequency



Date: 6.OCT.2006 11:50:59



1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 10-6-2006 Company: Motorola

EUT: Canopy 5700 AL Connectorized
Test: Spurious Emissions - Conducted

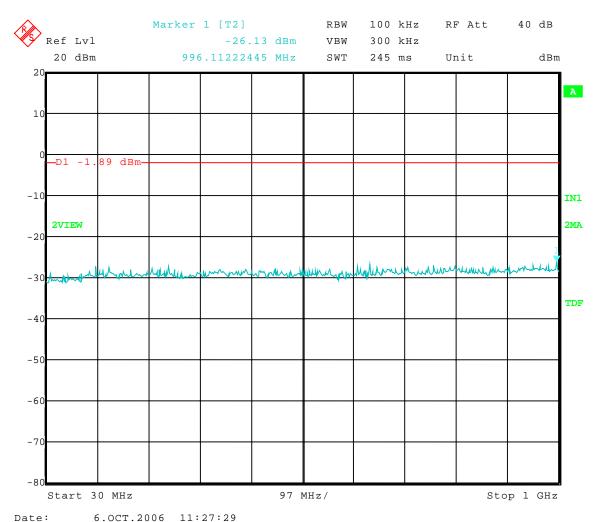
Operator: Jason Lauer

Comment: Middle Channel – 5.785 GHz – Level 2

Frequency Range: 30 to 1000 MHz

Limit = -1.89 dBm

All Spurious Emissions at Least 20 dB below Peak Level of In Band Frequency





1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 10-6-2006 Company: Motorola

EUT: Canopy 5700 AL Connectorized Test: Spurious Emissions - Conducted

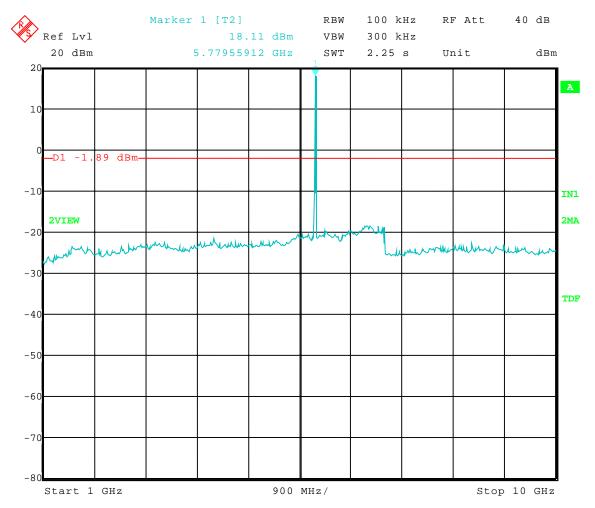
Operator: Jason Lauer

Comment: Middle Channel – 5.785 GHz – Level 2

Frequency Range: 1 to 10 GHz

Limit = -1.89 dBm

All Spurious Emissions at Least 20 dB below Peak Level of In Band Frequency



Date: 6.OCT.2006 11:26:13



1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 10-6-2006 Company: Motorola

EUT: Canopy 5700 AL Connectorized
Test: Spurious Emissions - Conducted

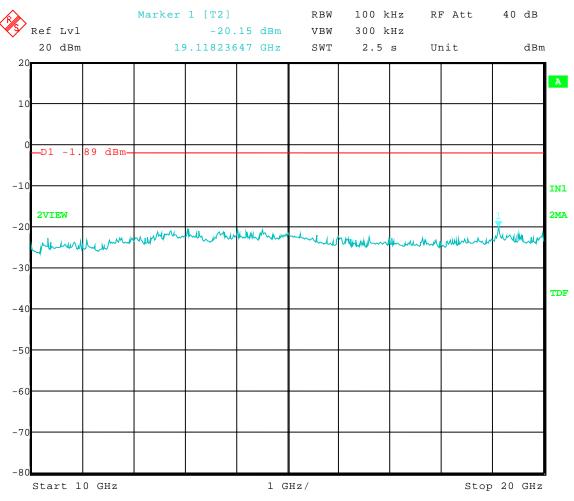
Operator: Jason Lauer

Comment: Middle Channel – 5.785 GHz – Level 2

Frequency Range: 10 to 20 GHz

Limit = -1.89 dBm

All Spurious Emissions at Least 20 dB below Peak Level of In Band Frequency



Date: 6.0CT.2006 11:28:24



1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 10-6-2006 Company: Motorola

EUT: Canopy 5700 AL Connectorized
Test: Spurious Emissions - Conducted

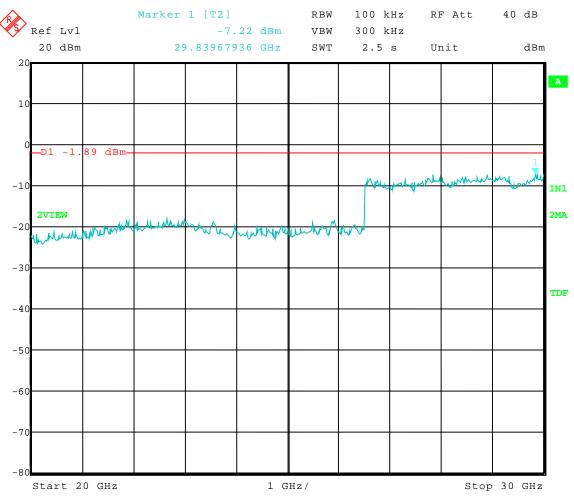
Operator: Jason Lauer

Comment: Middle Channel – 5.785 GHz – Level 2

Frequency Range: 20 to 30 GHz

Limit = -1.89 dBm

All Spurious Emissions at Least 20 dB below Peak Level of In Band Frequency



Date: 6.0CT.2006 11:29:17



1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 10-6-2006 Company: Motorola

EUT: Canopy 5700 AL Connectorized
Test: Spurious Emissions - Conducted

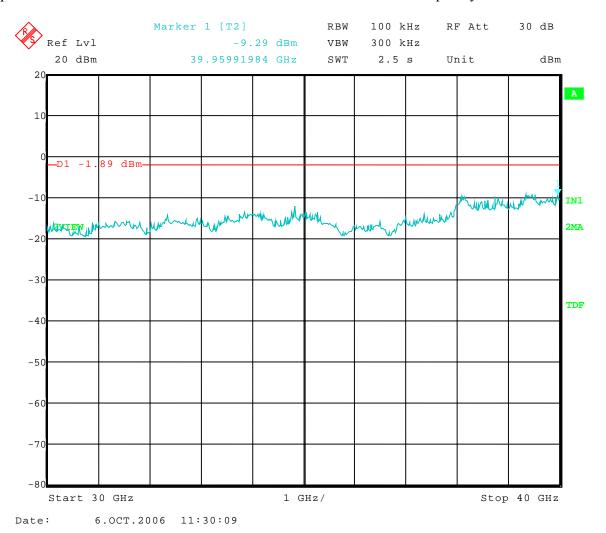
Operator: Jason Lauer

Comment: Middle Channel – 5.785 GHz – Level 2

Frequency Range: 30 to 40 GHz

Limit = -1.89 dBm

All Spurious Emissions at Least 20 dB below Peak Level of In Band Frequency





1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 10-6-2006 Company: Motorola

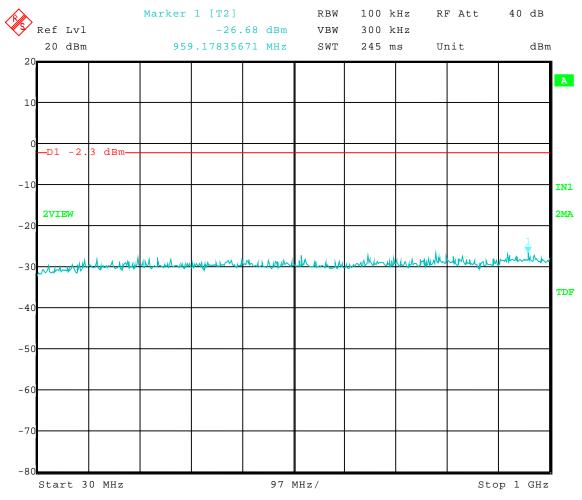
EUT: Canopy 5700 AL Connectorized
Test: Spurious Emissions - Conducted

Operator: Jason Lauer

Comment: High Channel – 5.840 GHz – Level 2

Frequency Range: 30 to 1000 MHz

Limit = -2.3 dBm





1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 10-6-2006 Company: Motorola

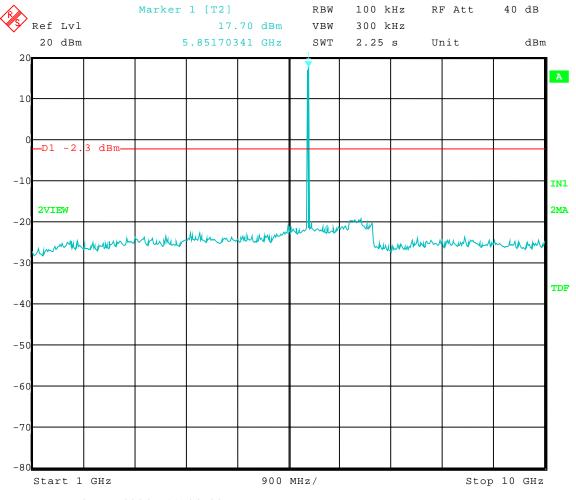
EUT: Canopy 5700 AL Connectorized
Test: Spurious Emissions - Conducted

Operator: Jason Lauer

Comment: High Channel – 5.840 GHz – Level 2

Frequency Range: 1 to 10 GHz

Limit = -2.3 dBm





1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 10-6-2006 Company: Motorola

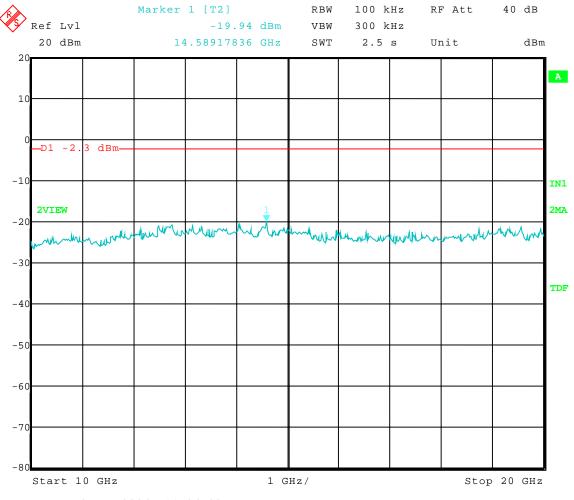
EUT: Canopy 5700 AL Connectorized
Test: Spurious Emissions - Conducted

Operator: Jason Lauer

Comment: High Channel – 5.840 GHz – Level 2

Frequency Range: 10 to 20 GHz

Limit = -2.3 dBm





1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 10-6-2006 Company: Motorola

EUT: Canopy 5700 AL Connectorized
Test: Spurious Emissions - Conducted

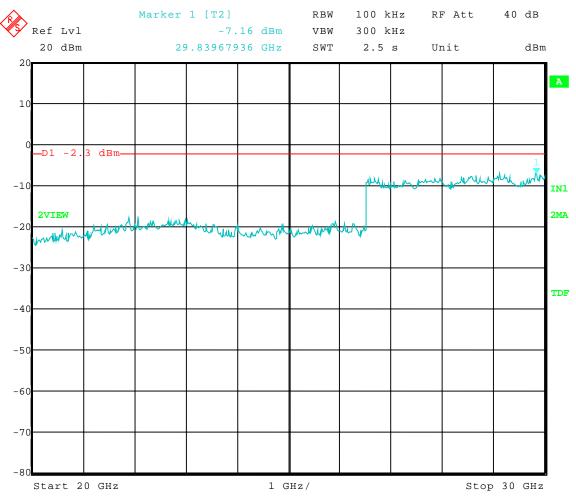
Operator: Jason Lauer

Comment: High Channel – 5.840 GHz – Level 2

Frequency Range: 20 to 30 GHz

Limit = -2.3 dBm

All Spurious Emissions at Least 20 dB below Peak Level of In Band Frequency



Date: 6.OCT.2006 11:07:40



1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 10-6-2006 Company: Motorola

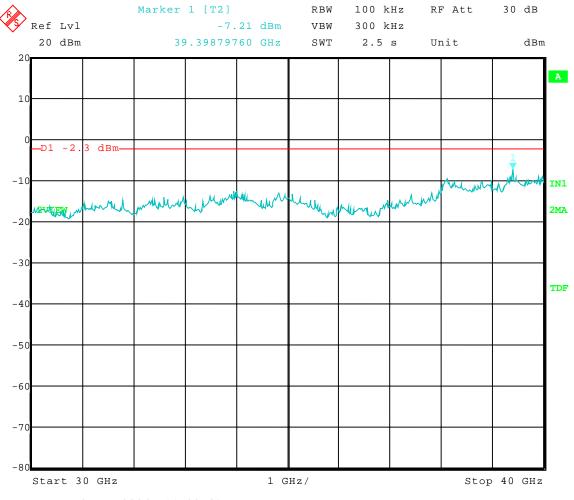
EUT: Canopy 5700 AL Connectorized
Test: Spurious Emissions - Conducted

Operator: Jason Lauer

Comment: High Channel – 5.840 GHz – Level 2

Frequency Range: 30 to 40 GHz

Limit = -2.3 dBm





APPENDIX A

CONDUCTED EMISSION DATA AND GRAPH(S)

TAKEN FOR

SPURIOUS EMISSION MEASUREMENTS MADE

AT THE ANTENNA TERMINALS

PART 15.247(c)

LEVEL 4



1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 10-6-2006 Company: Motorola

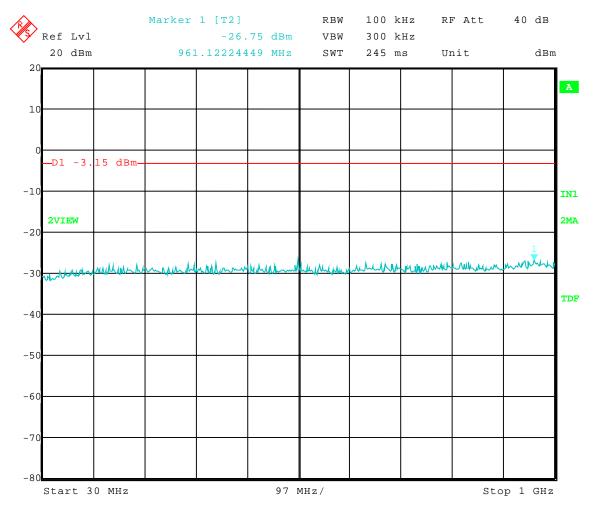
EUT: Canopy 5700 AL Connectorized
Test: Spurious Emissions - Conducted

Operator: Jason Lauer

Comment: Low Channel – 5.735 GHz – Level 4

Frequency Range: 30 to 1000 MHz

Limit = -3.15 dBm





1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 10-6-2006 Company: Motorola

EUT: Canopy 5700 AL Connectorized Test: Spurious Emissions - Conducted

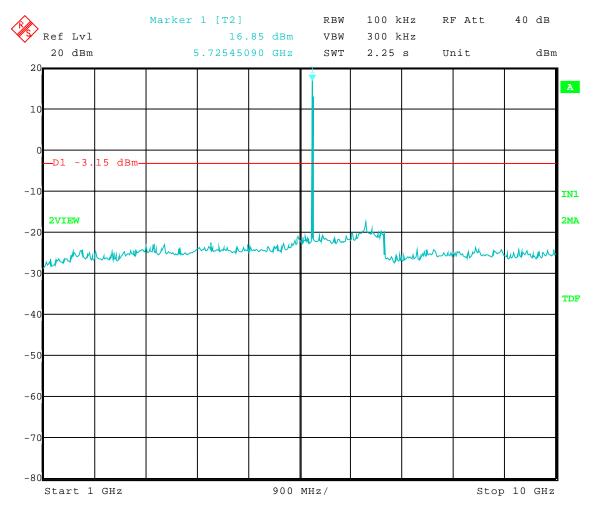
Operator: Jason Lauer

Comment: Low Channel – 5.735 GHz – Level 4

Frequency Range: 1 to 10 GHz

Limit = -3.15 dBm

All Spurious Emissions at Least 20 dB below Peak Level of In Band Frequency



Date: 6.OCT.2006 11:39:57



1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 10-6-2006 Company: Motorola

EUT: Canopy 5700 AL Connectorized
Test: Spurious Emissions - Conducted

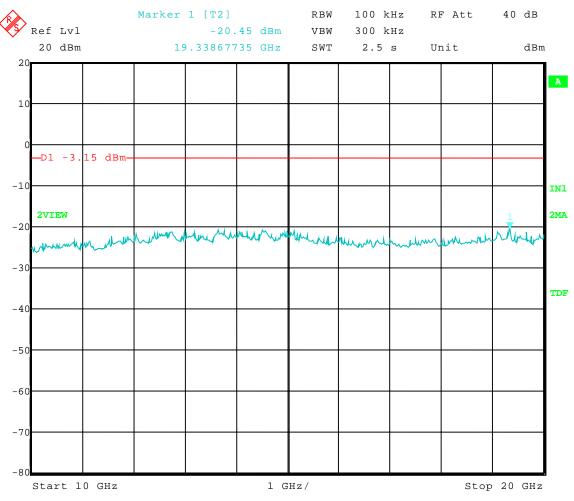
Operator: Jason Lauer

Comment: Low Channel – 5.735 GHz – Level 4

Frequency Range: 10 to 20 GHz

Limit = -3.15 dBm

All Spurious Emissions at Least 20 dB below Peak Level of In Band Frequency



Date: 6.OCT.2006 11:41:52



1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 10-6-2006 Company: Motorola

EUT: Canopy 5700 AL Connectorized
Test: Spurious Emissions - Conducted

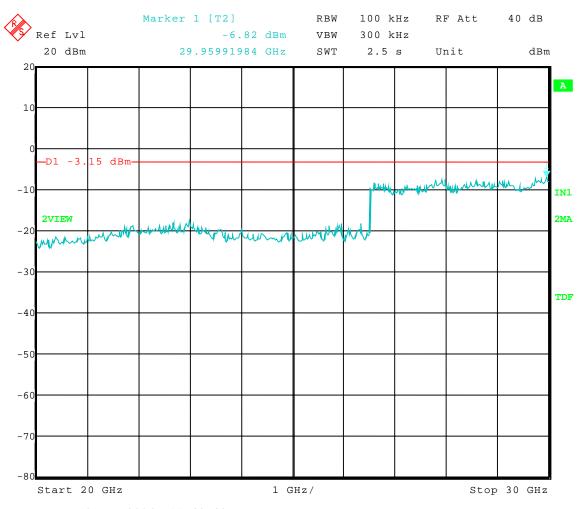
Operator: Jason Lauer

Comment: Low Channel – 5.735 GHz – Level 4

Frequency Range: 20 to 30 GHz

Limit = -3.15 dBm

All Spurious Emissions at Least 20 dB below Peak Level of In Band Frequency



Date: 6.OCT.2006 11:42:42



1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 10-6-2006 Company: Motorola

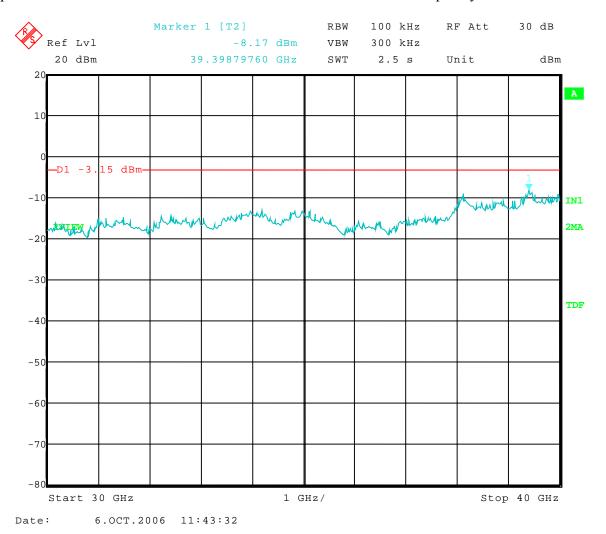
EUT: Canopy 5700 AL Connectorized
Test: Spurious Emissions - Conducted

Operator: Jason Lauer

Comment: Low Channel – 5.735 GHz – Level 4

Frequency Range: 30 to 40 GHz

Limit = -3.15 dBm





1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 10-6-2006 Company: Motorola

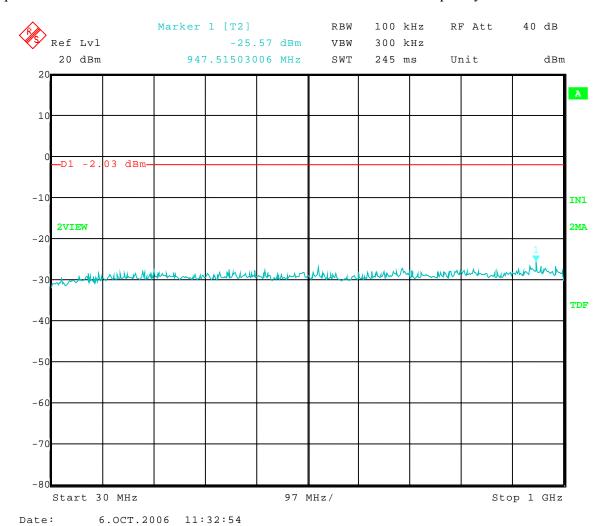
EUT: Canopy 5700 AL Connectorized
Test: Spurious Emissions - Conducted

Operator: Jason Lauer

Comment: Middle Channel – 5.785 GHz – Level 4

Frequency Range: 30 to 1000 MHz

Limit = -2.03 dBm





1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 10-6-2006 Company: Motorola

EUT: Canopy 5700 AL Connectorized
Test: Spurious Emissions - Conducted

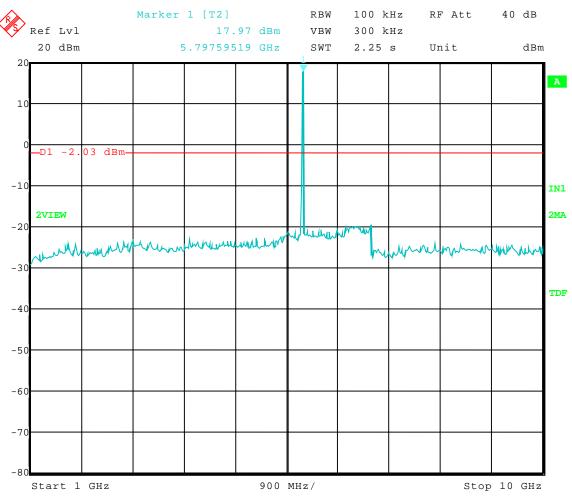
Operator: Jason Lauer

Comment: Middle Channel – 5.785 GHz – Level 4

Frequency Range: 1 to 10 GHz

Limit = -2.03 dBm

All Spurious Emissions at Least 20 dB below Peak Level of In Band Frequency



Date: 6.OCT.2006 11:31:49



1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 10-6-2006 Company: Motorola

EUT: Canopy 5700 AL Connectorized
Test: Spurious Emissions - Conducted

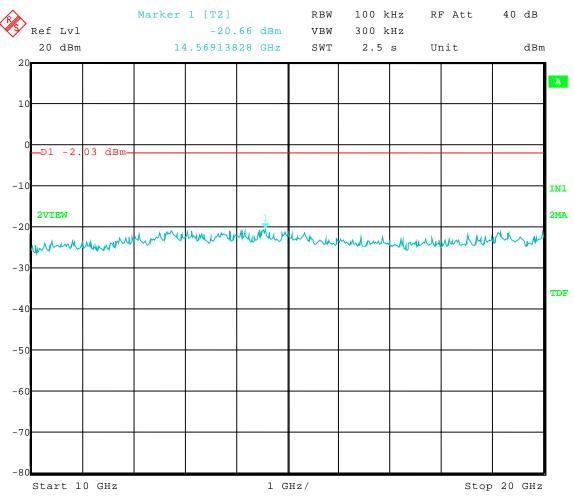
Operator: Jason Lauer

Comment: Middle Channel – 5.785 GHz – Level 4

Frequency Range: 10 to 20 GHz

Limit = -2.03 dBm

All Spurious Emissions at Least 20 dB below Peak Level of In Band Frequency



Date: 6.0CT.2006 11:33:47



1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 10-6-2006 Company: Motorola

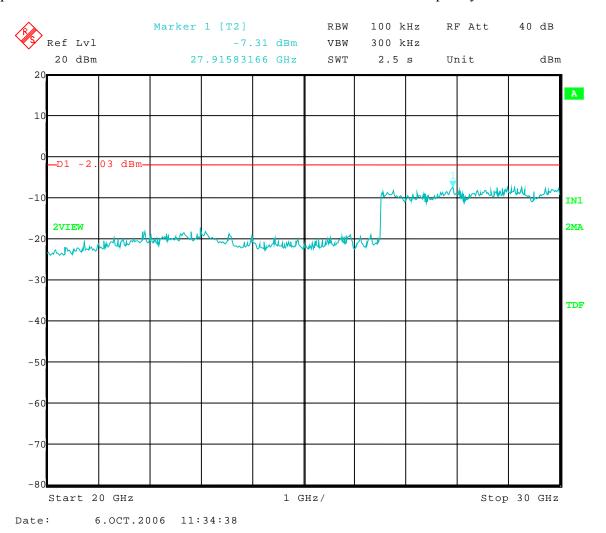
EUT: Canopy 5700 AL Connectorized
Test: Spurious Emissions - Conducted

Operator: Jason Lauer

Comment: Middle Channel – 5.785 GHz – Level 4

Frequency Range: 20 to 30 GHz

Limit = -2.03 dBm





1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 10-6-2006 Company: Motorola

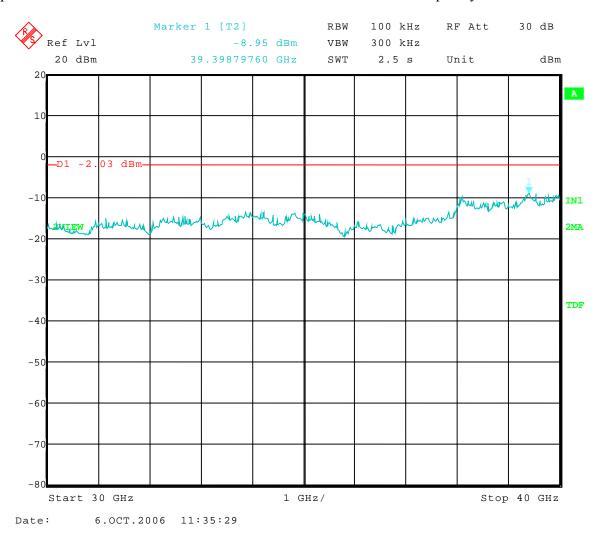
EUT: Canopy 5700 AL Connectorized
Test: Spurious Emissions - Conducted

Operator: Jason Lauer

Comment: Middle Channel – 5.785 GHz – Level 4

Frequency Range: 30 to 40 GHz

Limit = -2.03 dBm





1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 10-6-2006 Company: Motorola

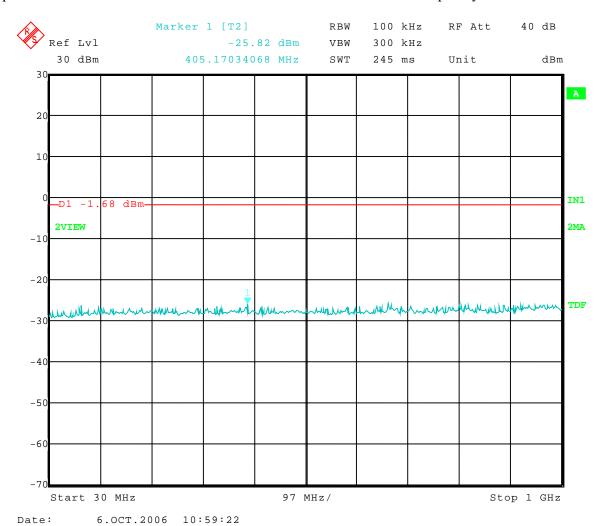
EUT: Canopy 5700 AL Connectorized
Test: Spurious Emissions - Conducted

Operator: Jason Lauer

Comment: High Channel – 5.840 GHz – Level 4

Frequency Range: 30 to 1000 MHz

Limit = -1.68 dBm





1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 10-6-2006 Company: Motorola

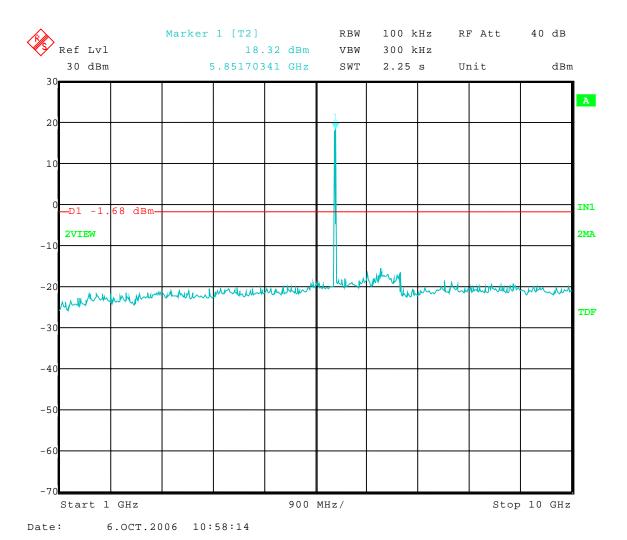
EUT: Canopy 5700 AL Connectorized Test: Spurious Emissions - Conducted

Operator: Jason Lauer

Comment: High Channel – 5.840 GHz – Level 4

Frequency Range: 1 to 10 GHz

Limit = -1.68 dBm





1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 10-6-2006 Company: Motorola

EUT: Canopy 5700 AL Connectorized
Test: Spurious Emissions - Conducted

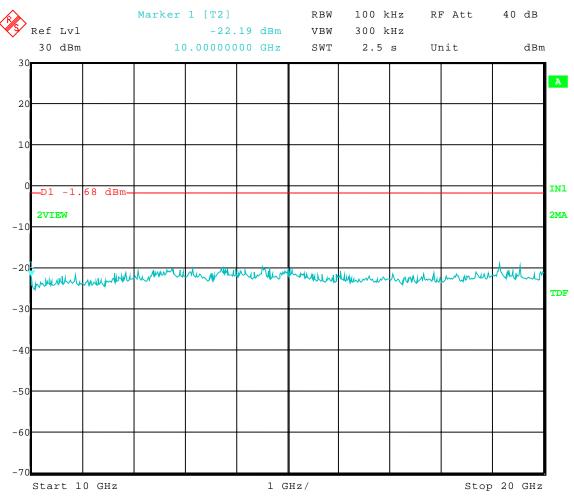
Operator: Jason Lauer

Comment: High Channel – 5.840 GHz – Level 4

Frequency Range: 10 to 20 GHz

Limit = -1.68 dBm

All Spurious Emissions at Least 20 dB below Peak Level of In Band Frequency



Date: 6.OCT.2006 11:00:14



1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 10-6-2006 Company: Motorola

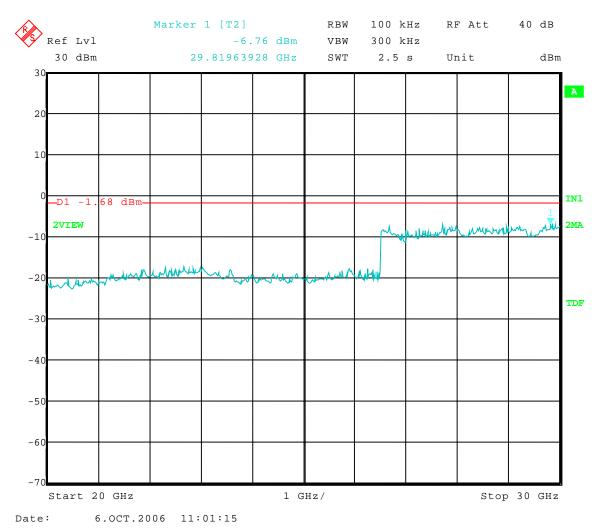
EUT: Canopy 5700 AL Connectorized
Test: Spurious Emissions - Conducted

Operator: Jason Lauer

Comment: High Channel – 5.840 GHz – Level 4

Frequency Range: 20 to 30 GHz

Limit = -1.68 dBm





1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 10-6-2006 Company: Motorola

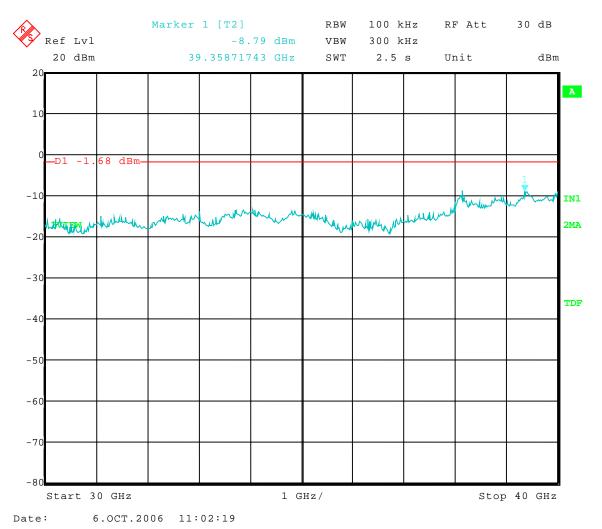
EUT: Canopy 5700 AL Connectorized
Test: Spurious Emissions - Conducted

Operator: Jason Lauer

Comment: High Channel – 5.840 GHz – Level 4

Frequency Range: 30 to 40 GHz

Limit = -1.68 dBm





1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A



HORIZONTAL TEST SETUP



APPENDIX A



200 MHz – 1000 MHz RADIATED EMISSIONS



APPENDIX A



1 GHz – 18 GHz RADIATED EMISSIONS



APPENDIX A



18 GHz – 40 GHz RADIATED EMISSIONS



APPENDIX A

4.0 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	Frequency	Frequency	Frequency		
in MHz	in MHz	in MHz	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.

5.0 BAND EDGE AND RESTRICT 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 Band Edge and Restrict Band:



APPENDIX A

DATA AND GRAPH(S) TAKEN SHOWING

THE BAND EDGE AND

RESTRICT BAND COMPLIANCE

PART 15.247(c)



1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 10-5-2006 Company: Motorola

EUT: Canopy 5700 AL Connectorized

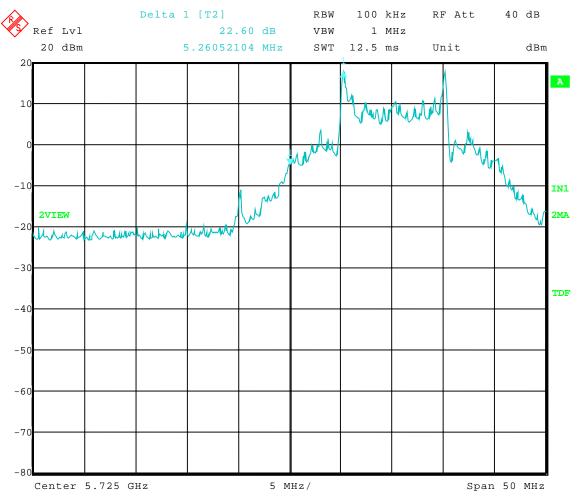
Test: Low Band-Edge Compliance - Conducted

Operator: Jason Lauer

Comment: Low Channel – 5735 MHz – Level 2

Band-Edge Frequency = 5725 MHz

Band-Edge > 20 dB Below Peak In-Band Emission



Date: 5.0CT.2006 16:13:02



1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 10-5-2006 Company: Motorola

EUT: Canopy 5700 AL Connectorized

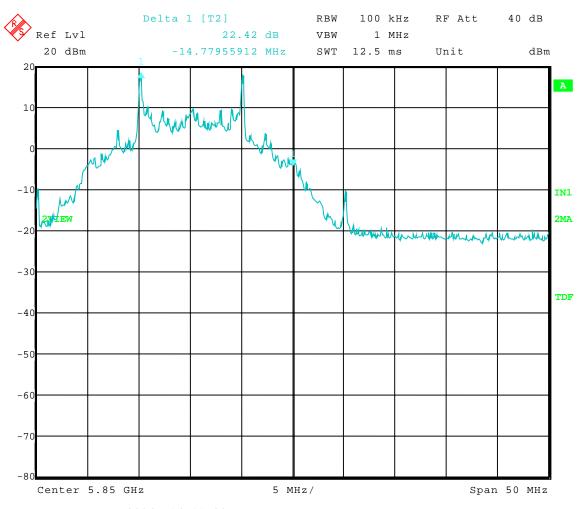
Test: Upper Band-Edge Compliance - Conducted

Operator: Jason Lauer

Comment: High Channel – 5840 MHz – Level 2

Band-Edge Frequency = 5850 MHz

Band-Edge > 20 dB Below Peak In-Band Emission





1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 10-5-2006 Company: Motorola

EUT: Canopy 5700 AL Connectorized

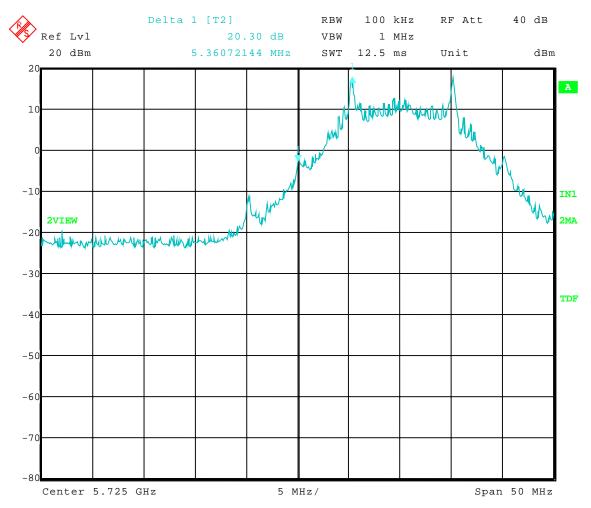
Test: Low Band-Edge Compliance - Conducted

Operator: Jason Lauer

Comment: Low Channel – 5735 MHz – Level 4

Band-Edge Frequency = 5725 MHz

Band-Edge > 20 dB Below Peak In-Band Emission



Date: 5.OCT.2006 16:13:47



1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 10-5-2006 Company: Motorola

EUT: Canopy 5700 AL Connectorized

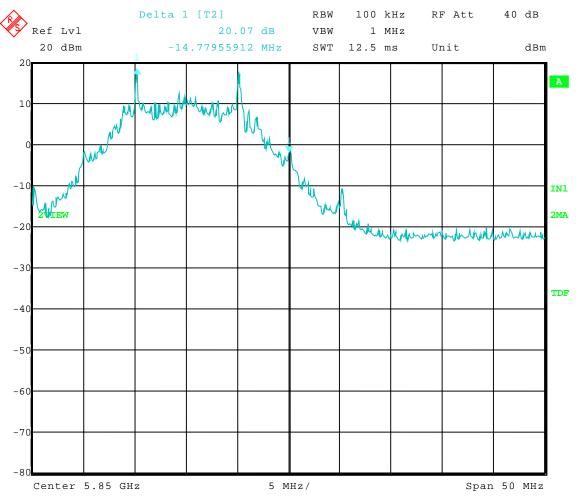
Test: Upper Band-Edge Compliance - Conducted

Operator: Jason Lauer

Comment: High Channel – 5840 MHz – Level 4

Band-Edge Frequency = 5850 MHz

Band-Edge > 20 dB Below Peak In-Band Emission





1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Radiated Spurious Emissions in Restricted Bands (1 GHz to 40 GHz)

Tested at a 3 Meter Distance (1 GHz - 10 GHz) Tested at a 3 Meter Distance (10 GHz - 26.5 GHz) Tested at a 1 Meter Distance (26.5 GHz - 40 GHz)

EUT: Canopy 5700 AL Connectorized

Manufacturer: Motorola

Operating Condition: 72 deg F; 53% R.H.

Test Site: O.F. Site 3 **Operator:** Jason Lauer

Test Specification: FCC Part 15.247(d) and FCC Part 15.205 **Comment:** Continuous Transmit – Level 2 Protocol

Date: 10/09/2006

Notes: (1) Peak measurements taken with RBW = 1 MHz, VBW = 3 MHz, Sweep: Auto

(2) Average measurements taken with RBW = 1 MHz, VBW = 10 Hz, Sweep: Auto

(3) All other restricted band emissions at least 20 dB under the limit.

Low Channel: 5.735GHz

Frequency	Measurement	Ant.	Level	Antenna	System	Total	Limit	Margin	Antenna	EUT	Comment
	Detector	Pol.		Factor	Loss	Level			Height	Angle	
(GHz)			(dBuV)	(dB/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	(Meter)	(deg)	
11.470	Peak	Vert	46.88	38.77	-31.5	54.2	74	19.8	1.9	185	Res. Band
11.470	Average	Vert	34.47	38.77	-31.5	41.8	54	12.2	1.9	185	Res. Band
11.470	Peak	Horz	45.99	38.77	-31.5	53.3	74	20.7	2.1	226	Res. Band
11.470	Average	Horz	34.16	38.77	-31.5	41.5	54	12.5	2.1	226	Res. Band
22.940	Peak	Vert	50.31	46.24	-35.9	60.7	74	13.3	2.2	345	Res. Band
22.940	Average	Vert	38.40	46.24	-35.9	48.8	54	5.2	2.2	345	Res. Band
22.940	Peak	Horz	50.73	46.24	-35.9	61.1	74	12.9	2.0	50	Res. Band
22.940	Average	Horz	38.71	46.24	-35.9	49.1	54	4.9	2.0	50	Res. Band



1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Radiated Spurious Emissions in Restricted Bands (1 GHz to 40 GHz)

Tested at a 3 Meter Distance (1 GHz - 10 GHz) Tested at a 3 Meter Distance (10 GHz - 26.5 GHz) Tested at a 1 Meter Distance (26.5 GHz - 40 GHz)

EUT: Canopy 5700 AL Connectorized

Manufacturer: Motorola

Operating Condition: 72 deg F; 53% R.H.

Test Site: O.F. Site 3 **Operator:** Jason Lauer

Test Specification: FCC Part 15.247(d) and FCC Part 15.205 **Comment:** Continuous Transmit – Level 4 Protocol

Date: 10/09/2006

Notes: (1) Peak measurements taken with RBW = 1 MHz, VBW = 3 MHz, Sweep: Auto

(2) Average measurements taken with RBW = 1 MHz, VBW = 10 Hz, Sweep: Auto

(3) All other restricted band emissions at least 20 dB under the limit.

Low Channel: 5.735GHz

Frequency	Measurement	Ant.	Level	Antenna	System	Total	Limit	Margin	Antenna	EUT	Comment
	Detector	Pol.		Factor	Loss	Level			Height	Angle	
(GHz)			(dBuV)	(dB/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	(Meter)	(deg)	
11.470	Peak	Vert	46.57	38.77	-31.5	53.9	74	20.1	1.9	185	Res. Band
11.470	Average	Vert	34.80	38.77	-31.5	42.1	54	11.9	1.9	185	Res. Band
11.470	Peak	Horz	46.34	38.77	-31.5	53.7	74	20.3	2.1	226	Res. Band
11.470	Average	Horz	34.46	38.77	-31.5	41.8	54	12.2	2.1	226	Res. Band
22.940	Peak	Vert	50.51	46.24	-35.9	60.9	74	13.1	2.2	345	Res. Band
22.940	Average	Vert	38.35	46.24	-35.9	48.7	54	5.3	2.2	345	Res. Band
22.940	Peak	Horz	51.32	46.24	-35.9	61.7	74	12.3	2.0	50	Res. Band
22.940	Average	Horz	38.71	46.24	-35.9	49.1	54	4.9	2.0	50	Res. Band



1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Radiated Spurious Emissions in Restricted Bands (1 GHz to 40 GHz)

Tested at a 3 Meter Distance (1 GHz - 10 GHz) Tested at a 3 Meter Distance (10 GHz - 26.5 GHz) Tested at a 1 Meter Distance (26.5 GHz - 40 GHz)

EUT: Canopy 5700 AL Connectorized

Manufacturer: Motorola

Operating Condition: 72 deg F; 53% R.H.

Test Site: O.F. Site 3 **Operator:** Jason Lauer

Test Specification: FCC Part 15.247(d) and FCC Part 15.205 **Comment:** Continuous Transmit – Level 2 Protocol

Date: 10/09/2006

Notes: (1) Peak measurements taken with RBW = 1 MHz, VBW = 3 MHz, Sweep: Auto

(2) Average measurements taken with RBW = 1 MHz, VBW = 10 Hz, Sweep: Auto

(3) All other restricted band emissions at least 20 dB under the limit.

Middle Channel: 5.785GHz

Frequency	Measurement	Ant.	Level	Antenna	System	Total	Limit	Margin	Antenna	EUT	Comment
	Detector	Pol.		Factor	Loss	Level			Height	Angle	
(GHz)			(dBuV)	(dB/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	(Meter)	(deg)	
11.570	Peak	Vert	48.20	38.84	-31.5	55.6	74	18.4	1.7	175	Res. Band
11.570	Average	Vert	36.04	38.84	-31.5	43.2	54	10.8	1.7	175	Res. Band
11.570	Peak	Horz	48.30	38.84	-31.5	55.7	74	18.3	1.8	125	Res. Band
11.570	Average	Horz	35.88	38.84	-31.5	43.2	54	10.8	1.8	125	Res. Band



1250 Peterson Dr., Wheeling, IL 60090

Company: Motorola Model Tested: 5700APC Report Number: 12688

APPENDIX A

Radiated Spurious Emissions in Restricted Bands (1 GHz to 40 GHz)

Tested at a 3 Meter Distance (1 GHz - 10 GHz) Tested at a 3 Meter Distance (10 GHz - 26.5 GHz) Tested at a 1 Meter Distance (26.5 GHz - 40 GHz)

EUT: Canopy 5700 AL Connectorized

Manufacturer: Motorola

Operating Condition: 72 deg F; 53% R.H.

Test Site: O.F. Site 3 **Operator:** Jason Lauer

Test Specification: FCC Part 15.247(d) and FCC Part 15.205 **Comment:** Continuous Transmit – Level 4 Protocol

Date: 10/09/2006

Notes: (1) Peak measurements taken with RBW = 1 MHz, VBW = 3 MHz, Sweep: Auto

(2) Average measurements taken with RBW = 1 MHz, VBW = 10 Hz, Sweep: Auto

(3) All other restricted band emissions at least 20 dB under the limit.

Middle Channel: 5.785GHz

Frequency	Measurement	Ant.	Level	Antenna	System	Total	Limit	Margin	Antenna	EUT	Comment
	Detector	Pol.		Factor	Loss	Level			Height	Angle	
(GHz)			(dBuV)	(dB/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	(Meter)	(deg)	
11.570	Peak	Vert	48.86	38.84	-31.5	56.2	74	17.8	1.7	175	Res. Band
11.570	Average	Vert	36.22	38.84	-31.5	43.6	54	10.4	1.7	175	Res. Band
11.570	Peak	Horz	48.17	38.84	-31.5	55.5	74	18.5	1.8	125	Res. Band
11.570	Average	Horz	35.91	38.84	-31.5	43.3	54	10.7	1.8	125	Res. Band



1250 Peterson Dr., Wheeling, IL 60090

Company: Motorola Model Tested: 5700APC Report Number: 12688

APPENDIX A

Radiated Spurious Emissions in Restricted Bands (1 GHz to 40 GHz)

Tested at a 3 Meter Distance (1 GHz - 10 GHz) Tested at a 3 Meter Distance (10 GHz - 26.5 GHz) Tested at a 1 Meter Distance (26.5 GHz - 40 GHz)

EUT: Canopy 5700 AL Connectorized

Manufacturer: Motorola

Operating Condition: 72 deg F; 53% R.H.

Test Site: O.F. Site 3 **Operator:** Jason Lauer

Test Specification: FCC Part 15.247(d) and FCC Part 15.205 **Comment:** Continuous Transmit – Level 2 Protocol

Date: 10/09/2006

Notes: (1) Peak measurements taken with RBW = 1 MHz, VBW = 3 MHz, Sweep: Auto

(2) Average measurements taken with RBW = 1 MHz, VBW = 10 Hz, Sweep: Auto

(3) All other restricted band emissions at least 20 dB under the limit.

High Channel: 5.840GHz

Frequency	Measurement	Ant.	Level	Antenna	System	Total	Limit	Margin	Antenna	EUT	Comment
	Detector	Pol.		Factor	Loss	Level			Height	Angle	
(GHz)			(dBuV)	(dB/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	(Meter)	(deg)	
11.680	Peak	Vert	47.40	38.91	-31.0	55.3	74	18.7	190	1.7	Res. Band
11.680	Average	Vert	34.37	38.91	-31.0	42.3	54	11.7	190	1.7	Res. Band
11.680	Peak	Horz	47.81	38.91	-31.0	55.8	74	18.2	210	1.9	Res. Band
11.680	Average	Horz	34.55	38.91	-31.0	42.5	54	11.5	210	1.9	Res. Band



1250 Peterson Dr., Wheeling, IL 60090

Company: Motorola Model Tested: 5700APC Report Number: 12688

APPENDIX A

Radiated Spurious Emissions in Restricted Bands (1 GHz to 40 GHz)

Tested at a 3 Meter Distance (1 GHz - 10 GHz) Tested at a 3 Meter Distance (10 GHz - 26.5 GHz) Tested at a 1 Meter Distance (26.5 GHz - 40 GHz)

EUT: Canopy 5700 AL Connectorized

Manufacturer: Motorola

Operating Condition: 72 deg F; 53% R.H.

Test Site: O.F. Site 3 **Operator:** Jason Lauer

Test Specification: FCC Part 15.247(d) and FCC Part 15.205 **Comment:** Continuous Transmit – Level 4 Protocol

Date: 10/09/2006

Notes: (1) Peak measurements taken with RBW = 1 MHz, VBW = 3 MHz, Sweep: Auto

(2) Average measurements taken with RBW = 1 MHz, VBW = 10 Hz, Sweep: Auto

(3) All other restricted band emissions at least 20 dB under the limit.

High Channel: 5.840GHz

Frequency	Measurement	Ant.	Level	Antenna	System	Total	Limit	Margin	Antenna	EUT	Comment
	Detector	Pol.		Factor	Loss	Level			Height	Angle	
(GHz)			(dBuV)	(dB/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	(Meter)	(deg)	
11.680	Peak	Vert	46.93	38.91	-31.0	54.9	74	19.1	190	1.7	Res. Band
11.680	Average	Vert	34.45	38.91	-31.0	42.4	54	11.6	190	1.7	Res. Band
11.680	Peak	Horz	46.66	38.91	-31.0	54.6	74	19.4	210	1.9	Res. Band
11.680	Average	Horz	34.53	38.91	-31.0	42.5	54	11.5	210	1.9	Res. Band



APPENDIX A

6.0 FIELD STRENGTH OF SPURIOUS EMISSION MEASUREMENTS

The radiated measurements made at D.L.S. Electronic Systems, Inc., for the Canopy 5700 connectorized adj. Power, Model Number: 5700APC, 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 5840 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.



APPENDIX A

6.0 FIELD STRENGTH OF 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 **68°F** at **44%** relative humidity.



APPENDIX A

RADIATED DATA AND GRAPH(S) TAKEN FOR

FIELD STRENGTH

SPURIOUS EMISSION MEASUREMENTS

PART 15.247

FCC Part 15 Class B

Electric Field Strength

EUT: Canopy 5700 AL Connectorized

Manufacturer: Motorola

Operating Condition: 68 deg. F; 44% R.H. Test Site: DLS O.F. Site 3 Operator: Jason Lauer Test Specification: 120 VAC @ 60 Hz

Comment: Tx mode; Rx mode; Low, Mid, High Channels

Date: 10-10-2006

TEXT: "Site 3 MidV 3M"

Short Description: Test Set-up Vert30-1000MHz

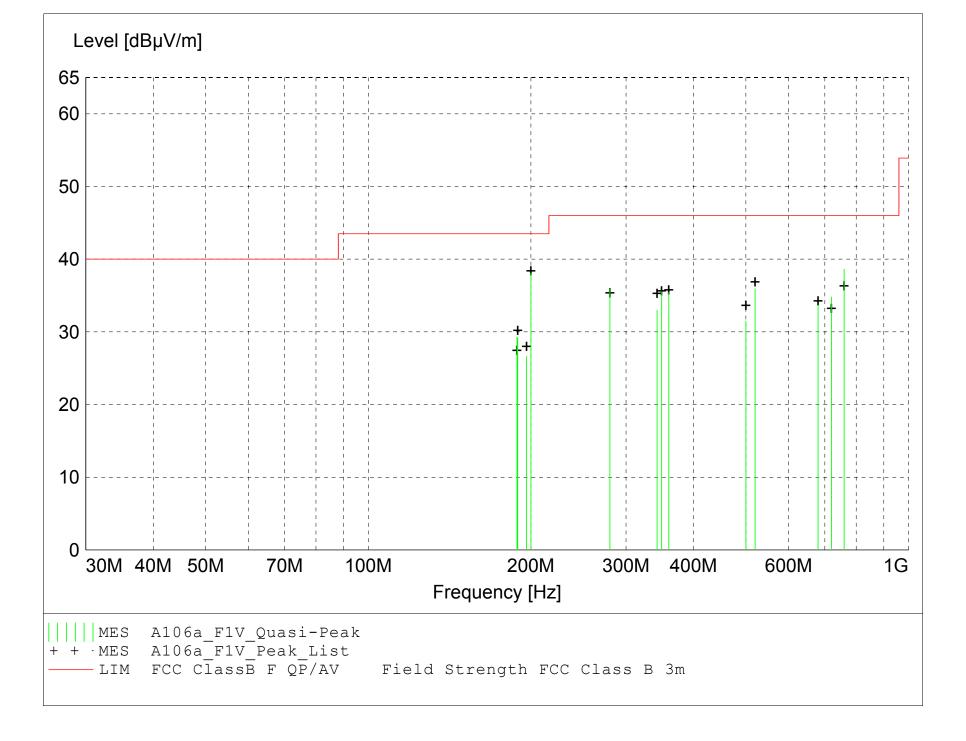
TEST EQUIPMENT: Receiver --- Rohde&Schwarz ESI 40 SN: 837808/005

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: "A106a_F1V_Final"

10/10/2006 11	:18AM									
Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EuT	Final	Comment
		Factor	Loss	Level			Ant.	Angle	Detector	
MHz	dΒμV	dBμV/m	dB	dBμV/m	dBμV/m	dB	m	deg		
199.980000	44.70	15.88	-22.5	38.1	43.5	5.4	1.80	0	QUASI-PEAK	None
760.040000	36.30	20.78	-18.4	38.6	46.0	7.4	1.70	240	QUASI-PEAK	None
520.010000	38.69	18.00	-20.7	35.9	46.0	10.1	1.90	130	QUASI-PEAK	None
280.020000	44.93	12.83	-21.9	35.9	46.0	10.1	1.00	175	QUASI-PEAK	None
349.090000	42.72	14.30	-21.5	35.5	46.0	10.5	1.70	170	QUASI-PEAK	None
359.980000	42.66	14.33	-21.6	35.4	46.0	10.6	1.70	170	QUASI-PEAK	None
720.000000	32.88	20.56	-18.7	34.8	46.0	11.2	1.90	225	QUASI-PEAK	None
680.010000	32.64	20.63	-19.6	33.7	46.0	12.3	1.30	170	QUASI-PEAK	None
342.460000	39.91	14.48	-21.4	33.0	46.0	13.0	2.00	185	QUASI-PEAK	None
188.500000	35.58	16.35	-22.7	29.3	43.5	14.2	1.80	0	QUASI-PEAK	None
189.070000	35.44	16.37	-22.6	29.2	43.5	14.3	1.80	0	QUASI-PEAK	None
500.000000	34.66	17.49	-20.7	31.5	46.0	14.5	1.90	215	QUASI-PEAK	None
196.370000	32.85	16.27	-22.5	26.6	43.5	16.9	1.80	0	QUASI-PEAK	None

FCC Part 15 Class B

Electric Field Strength

EUT: Canopy 5700 AL Connectorized

Manufacturer: Motorola

Operating Condition: 68 deg. F; 44% R.H. Test Site: DLS O.F. Site 3 Operator: Jason Lauer Test Specification: 120 VAC @ 60 Hz

Comment: Tx mode; Rx mode; Low, Mid, High Channels

Date: 10-10-2006

TEXT: "Site 3 MidH 3M"

Short Description: Test Set-up Horz30-1000MHz

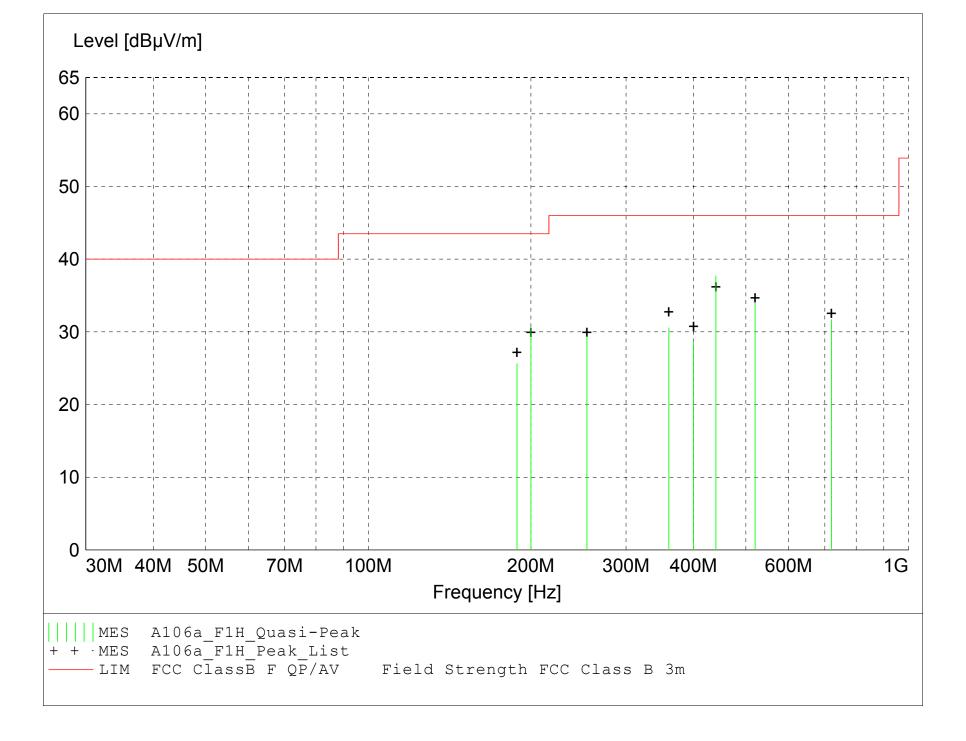
TEST EQUIPMENT: Receiver --- Rohde&Schwarz ESI 40 SN: 837808/005

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: "A106a_F1H_Final"

10/10/2006 11:	:36AM									
Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EuT	Final	Comment
		Factor	Loss	Level			Ant.	Angle	Detector	
MHz	dΒμV	dBµV/m	dB	dBµV/m	dBµV/m	dB	m	deg		
440.00000	42.74	16.07	-21.1	37.7	46.0	8.3	1.00	125	QUASI-PEAK	None
520.010000	36.71	18.00	-20.7	34.0	46.0	12.0	1.00	270	QUASI-PEAK	None
199.990000	37.20	15.87	-22.5	30.6	43.5	12.9	2.10	0	QUASI-PEAK	None
719.990000	29.79	20.56	-18.7	31.7	46.0	14.3	1.50	85	QUASI-PEAK	None
360.050000	37.78	14.33	-21.6	30.5	46.0	15.5	1.30	200	QUASI-PEAK	None
253.920000	39.62	12.02	-22.2	29.4	46.0	16.6	2.10	300	QUASI-PEAK	None
400.020000	34.57	15.40	-21.2	28.7	46.0	17.3	1.30	50	QUASI-PEAK	None
188.510000	31.93	16.35	-22.7	25.6	43.5	17.9	2.10	0	QUASI-PEAK	None



1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

DLS Electronic Systems, Inc.

Company: Motorola Operator: Jason Lauer Date of test: 10-5-2006 Temperature: 72 deg. F Humidity: 77% R.H.

EIRP - Substitution Method

EIRI - Substitution Method											
Model: Canopy 5700 Connectorized											
Channel: Low											
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)	Signal Gen.	Gain of subst. antenna (dBi)	Strength of emission [EIRP] (dBm)	Limit (dBm)	Margin (dB)	Strength of emission [EIRP] (mW)			
5735 vertical	108.68	-1.87	3.46	11.30	5.97	36.00	30.03	3.95			
5735 horizontal	131.60	25.01	3.46	11.30	32.85	36.00	3.15	1927.52			

EIRP = Signal generator output - cable loss + antenna gain

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

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



APPENDIX A

DLS Electronic Systems, Inc.

Company: Motorola Operator: Jason Lauer Date of test: 10-5-2006 Temperature: 72 deg. F Humidity: 47% R.H.

EIRP - Substitution Method

ETKI - Substitution Method										
Model: Canopy 5700 Connectorized										
Channel: Middle										
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)		
5785 vertical	110.66	-1.42	3.44	11.40	6.54	36.00	29.46	4.51		
5785 horizontal	130.87	24.30	3.44	11.40	32.26	36.00	3.74	1682.67		

EIRP = Signal generator output - cable loss + antenna gain

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

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



1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

DLS Electronic Systems, Inc.

Company: Motorola Operator: Jason Lauer Date of test: 10-5-2006 Temperature: 72 deg. F Humidity: 47% R.H.

EIRP - Substitution Method

ETKI - Substitution Method											
Model: Canopy 5700 Connectorized											
Channel: High											
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)	Signal Gen.	Gain of subst. antenna (dBi)	Strength of emission [EIRP] (dBm)	Limit (dBm)	Margin (dB)	Strength of emission [EIRP] (mW)			
5840 vertical	105.26	-1.97	3.48	11.50	6.05	36.00	29.95	4.03			
5840 horizontal	130.09	23.24	3.48	11.50	31.26	36.00	4.74	1336.60			

EIRP = Signal generator output - cable loss + antenna gain

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

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



APPENDIX A

6 dB BANDWIDTH GRAPHS

PART 15.247



1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

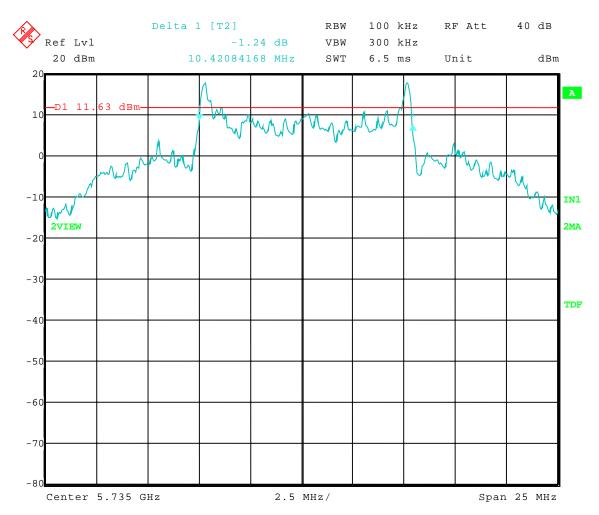
Test Date: 10-5-2006 Company: Motorola

EUT: Canopy 5700 AL Connectorized Test: 6 dB Bandwidth - Conducted

Operator: Jason Lauer

Comment: Low Channel – 5735 MHz – Level 2

6 dB Bandwidth = 10.42 MHz



Date: 5.OCT.2006 15:43:19



1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

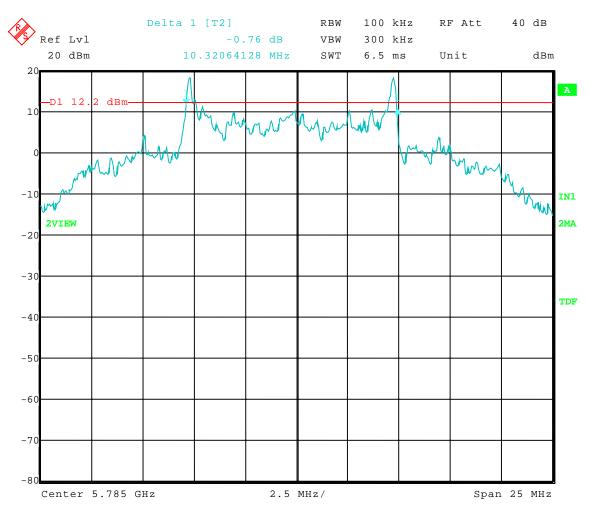
Test Date: 10-5-2006 Company: Motorola

EUT: Canopy 5700 AL Connectorized Test: 6 dB Bandwidth - Conducted

Operator: Jason Lauer

Comment: Middle Channel – 5785 MHz – Level 2

6 dB Bandwidth = 10.32 MHz



Date: 5.OCT.2006 16:00:48



1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

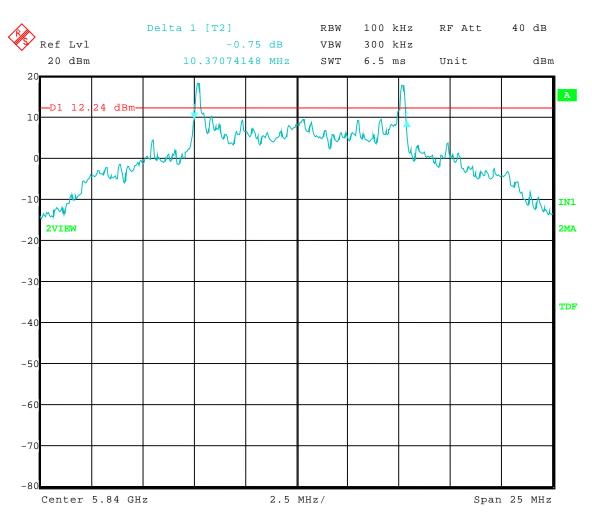
Test Date: 10-5-2006 Company: Motorola

EUT: Canopy 5700 AL Connectorized Test: 6 dB Bandwidth - Conducted

Operator: Jason Lauer

Comment: High Channel – 5840 MHz – Level 2

6 dB Bandwidth = 10.37 MHz



Date: 5.OCT.2006 15:54:04



1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

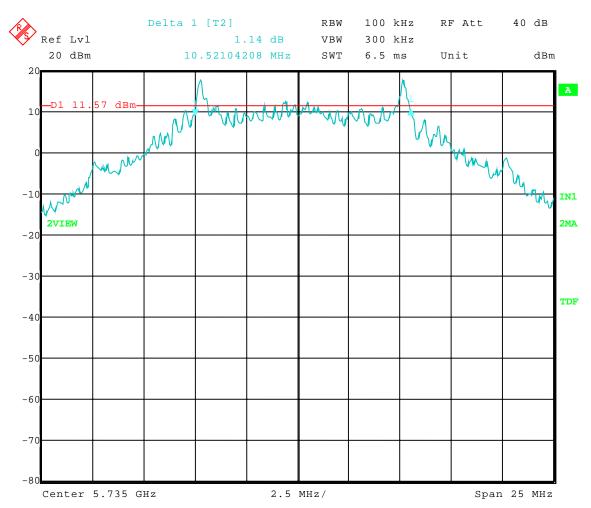
Test Date: 10-5-2006 Company: Motorola

EUT: Canopy 5700 AL Connectorized Test: 6 dB Bandwidth - Conducted

Operator: Jason Lauer

Comment: Low Channel – 5735 MHz – Level 4

6 dB Bandwidth = 10.52 MHz



Date: 5.0CT.2006 15:51:25



1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

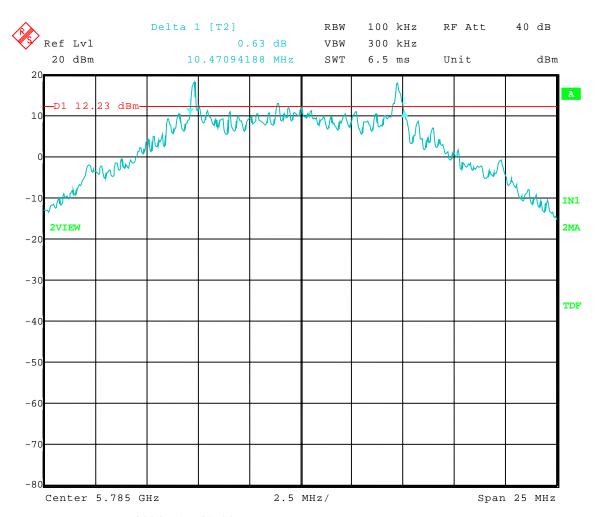
Test Date: 10-5-2006 Company: Motorola

EUT: Canopy 5700 AL Connectorized Test: 6 dB Bandwidth - Conducted

Operator: Jason Lauer

Comment: Middle Channel – 5785 MHz – Level 4

6 dB Bandwidth = 10.47 MHz



Date: 5.OCT.2006 15:41:38



1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

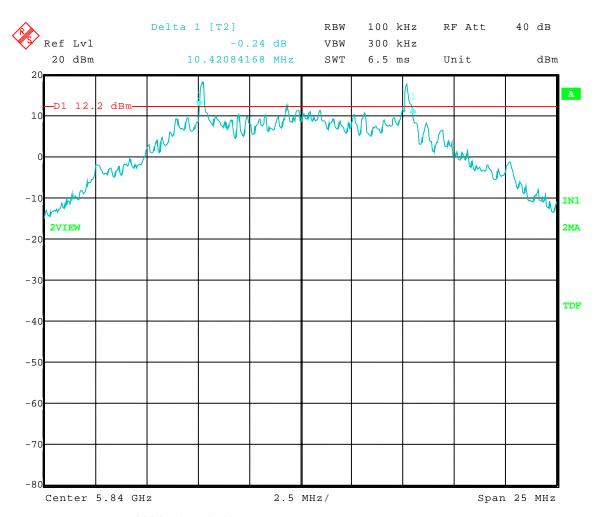
Test Date: 10-5-2006 Company: Motorola

EUT: Canopy 5700 AL Connectorized Test: 6 dB Bandwidth - Conducted

Operator: Jason Lauer

Comment: High Channel – 5840 MHz – Level 4

6 dB Bandwidth = 10.42 MHz



Date: 5.OCT.2006 15:59:19



APPENDIX A

20 dB BANDWIDTH GRAPHS

PART 15.247



1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

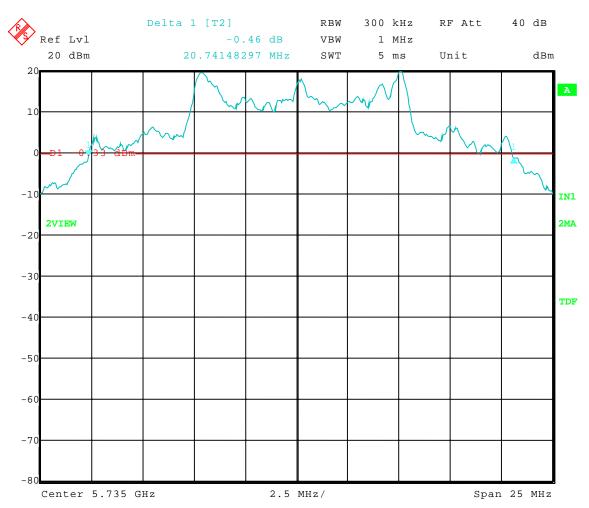
Test Date: 10-5-2006 Company: Motorola

EUT: Canopy 5700 AL Connectorized Test: 20 dB Bandwidth - Conducted

Operator: Jason Lauer

Comment: Low Channel – 5735 MHz – Level 2

20 dB Bandwidth = 20.74 MHz



Date: 5.0CT.2006 15:45:35



1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

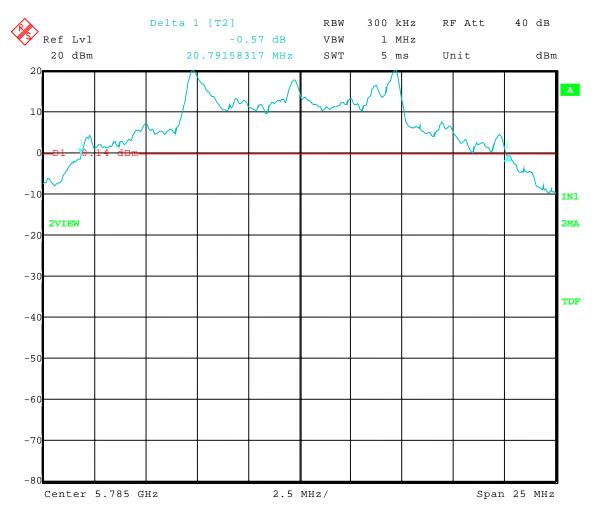
Test Date: 10-5-2006 Company: Motorola

EUT: Canopy 5700 AL Connectorized Test: 20 dB Bandwidth - Conducted

Operator: Jason Lauer

Comment: Middle Channel – 5785 MHz – Level 2

20 dB Bandwidth = 20.79 MHz



Date: 5.0CT.2006 15:31:34



1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

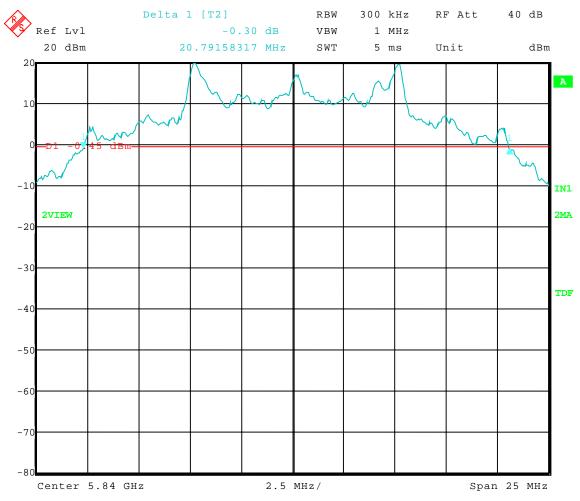
Test Date: 10-5-2006 Company: Motorola

EUT: Canopy 5700 AL Connectorized Test: 20 dB Bandwidth - Conducted

Operator: Jason Lauer

Comment: High Channel – 5840 MHz – Level 2

20 dB Bandwidth = 20.79 MHz



Date: 5.OCT.2006 15:55:33



1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

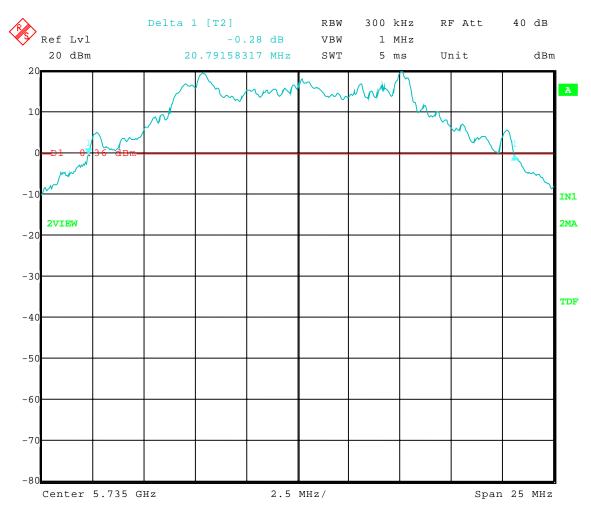
Test Date: 10-5-2006 Company: Motorola

EUT: Canopy 5700 AL Connectorized Test: 20 dB Bandwidth - Conducted

Operator: Jason Lauer

Comment: Low Channel – 5735 MHz – Level 4

20 dB Bandwidth = 20.79 MHz



Date: 5.OCT.2006 15:48:57



1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

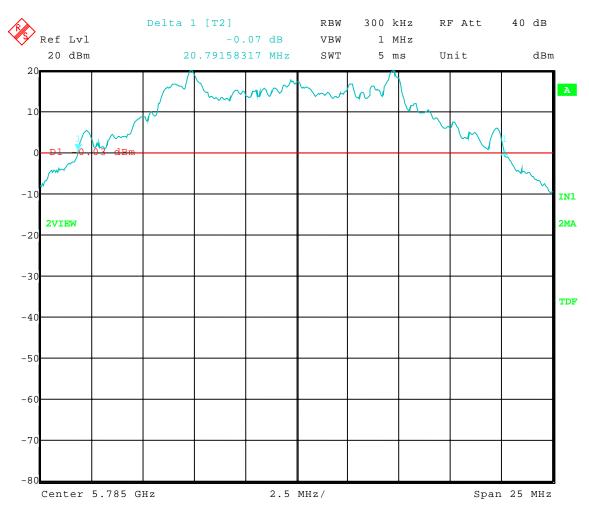
Test Date: 10-5-2006 Company: Motorola

EUT: Canopy 5700 AL Connectorized Test: 20 dB Bandwidth - Conducted

Operator: Jason Lauer

Comment: Middle Channel – 5785 MHz – Level 4

20 dB Bandwidth = 20.79 MHz



Date: 5.0CT.2006 15:39:30



1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

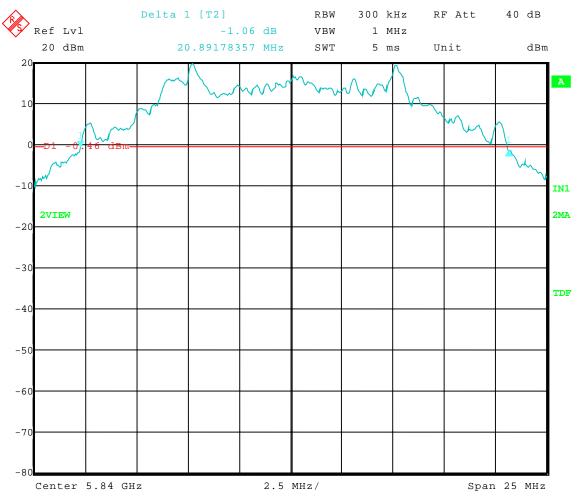
Test Date: 10-5-2006 Company: Motorola

EUT: Canopy 5700 AL Connectorized Test: 20 dB Bandwidth - Conducted

Operator: Jason Lauer

Comment: High Channel – 5840 MHz – Level 4

20 dB Bandwidth = 20.89 MHz



Date: 5.0CT.2006 15:57:58



APPENDIX A

99% BANDWIDTH GRAPHS

PART 15.247



1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

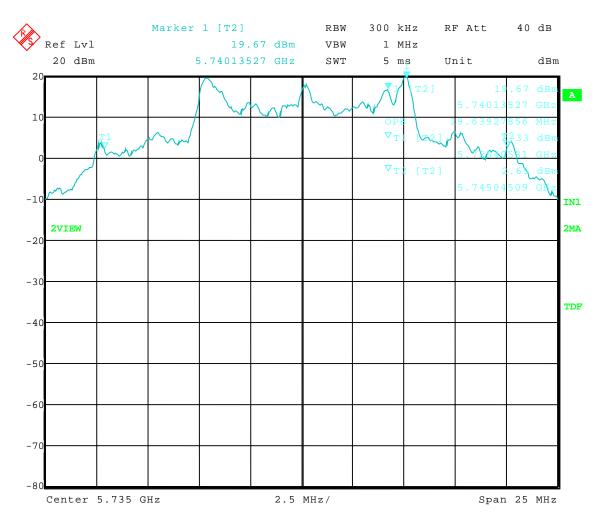
Test Date: 10-5-2006 Company: Motorola

EUT: Canopy 5700 AL Connectorized Test: 99 % Bandwidth - Conducted

Operator: Jason Lauer

Comment: Low Channel – 5735 MHz – Level 2

99 % Bandwidth = 19.64 MHz



Date: 5.OCT.2006 15:46:29



1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

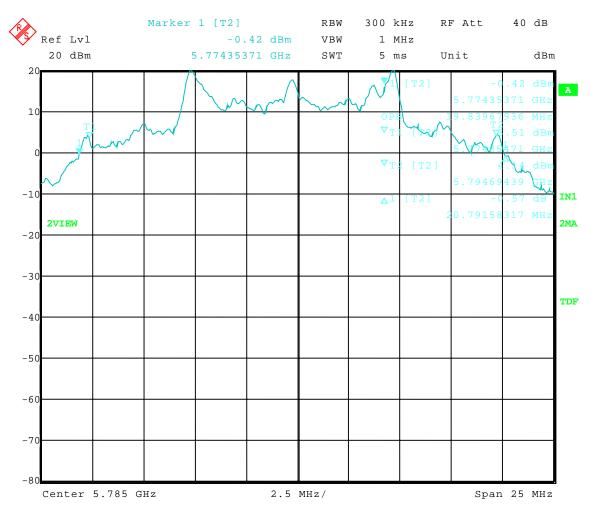
Test Date: 10-5-2006 Company: Motorola

EUT: Canopy 5700 AL Connectorized Test: 99 % Bandwidth – Conducted

Operator: Jason Lauer

Comment: Middle Channel – 5785 MHz – Level 2

99 % Bandwidth = 19.84 MHz



Date: 5.OCT.2006 15:32:38



1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

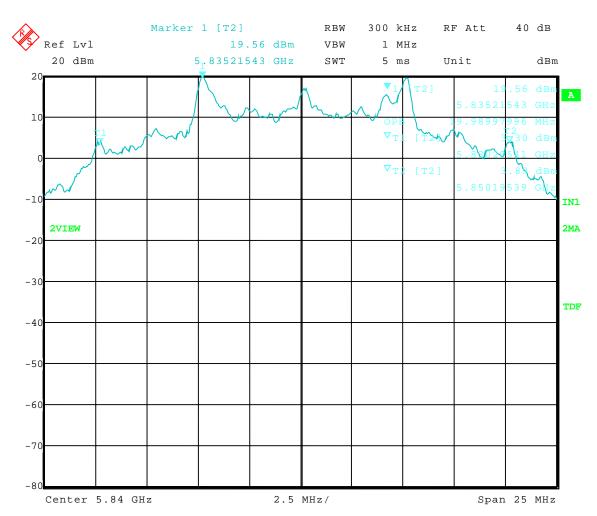
Test Date: 10-5-2006 Company: Motorola

EUT: Canopy 5700 AL Connectorized Test: 99 % Bandwidth - Conducted

Operator: Jason Lauer

Comment: High Channel – 5840 MHz – Level 2

99 % Bandwidth = 19.99 MHz



Date: 5.OCT.2006 15:56:08



1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

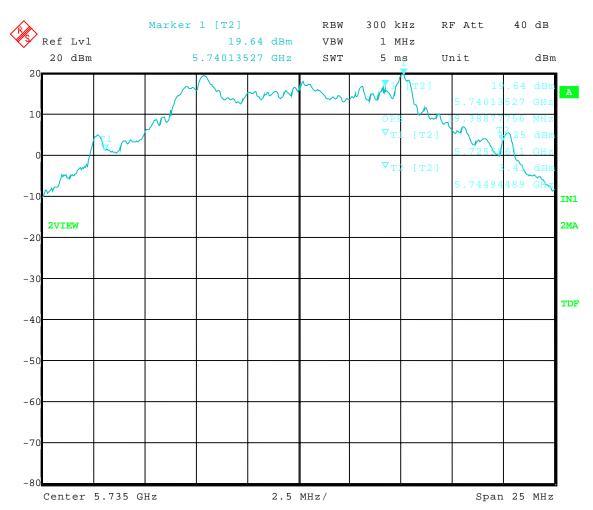
Test Date: 10-5-2006 Company: Motorola

EUT: Canopy 5700 AL Connectorized Test: 99 % Bandwidth - Conducted

Operator: Jason Lauer

Comment: Low Channel – 5735 MHz – Level 4

99 % Bandwidth = 19.39 MHz



Date: 5.OCT.2006 15:47:39



1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

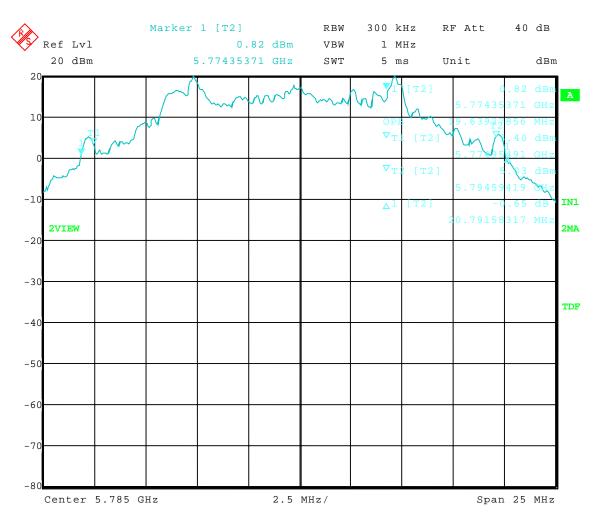
Test Date: 10-5-2006 Company: Motorola

EUT: Canopy 5700 AL Connectorized Test: 99 % Bandwidth – Conducted

Operator: Jason Lauer

Comment: Middle Channel – 5785 MHz – Level 4

99 % Bandwidth = 19.64 MHz



Date: 5.OCT.2006 15:34:15



1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

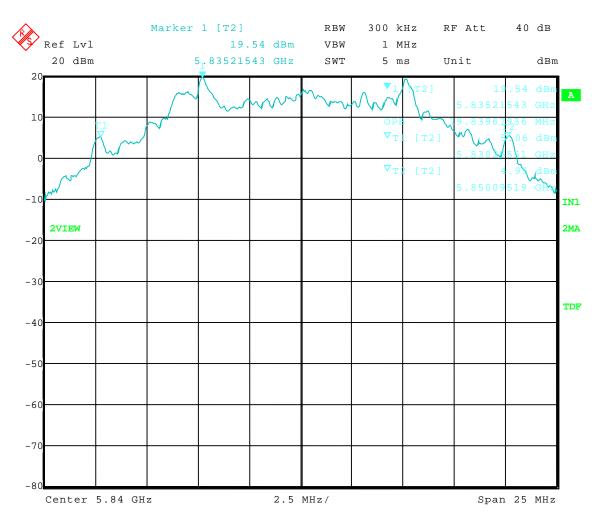
Test Date: 10-5-2006 Company: Motorola

EUT: Canopy 5700 AL Connectorized Test: 99 % Bandwidth - Conducted

Operator: Jason Lauer

Comment: High Channel – 5840 MHz – Level 4

99 % Bandwidth = 19.84 MHz



Date: 5.OCT.2006 15:57:06



APPENDIX A

CONDUCTED PEAK OUTPUT POWER GRAPHS

PART 15.247



1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

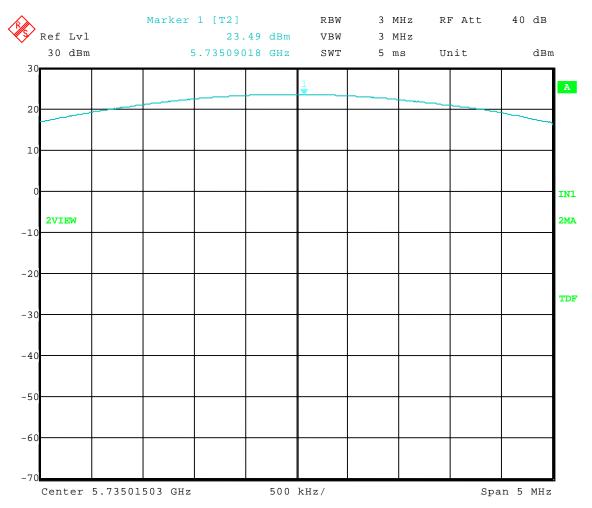
Test Date: 10-5-2006 Company: Motorola

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



1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

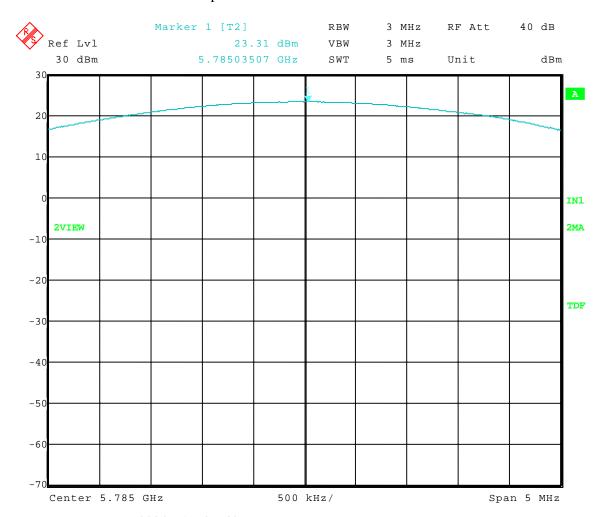
Test Date: 10-5-2006 Company: Motorola

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



1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

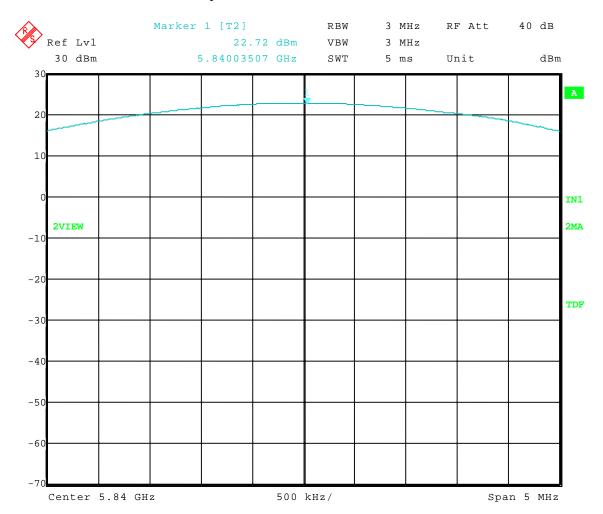
Test Date: 10-5-2006 Company: Motorola

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