



1250 Peterson Dr., Wheeling, IL 60090

Company: Motorola, Inc.
Model Tested: 5790SM4 integrated with 10dBi single patch antenna and lens director
Report Number: 15807

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: OFDM Subscriber Module - CSM58430
Kind of Equipment: Point to Point Digital Transmission Transceiver
Frequency Range: 5.73 GHz - 5.845 GHz
Test Configuration: Stand-alone (Tested at 120 vac, 60 Hz)
Model Number(s): 5790SM4, 5791SM4, 5790SM10, 5791SM10, 5790SM20, 5791SM20, 5790SM40, 5791SM40
Model(s) Tested: 5790SM4 integrated with 10dBi single patch antenna and lens director
Serial Number(s): 0A003E3FFEBD
Date of Tests: November 13, 2009
Test Conducted For: Motorola, Inc.
1299 E. Algonquin Rd.
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.

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Company: Motorola, Inc.
Model Tested: 5790SM4 integrated with 10dBi single patch antenna and lens director
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SIGNATURE PAGE

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Reviewed By:

William Stumpf
OATS Manager

Approved By:

Brian Mattson
General Manager



Company: Motorola, Inc.
Model Tested: 5790SM4 integrated with 10dBi single patch antenna and lens director
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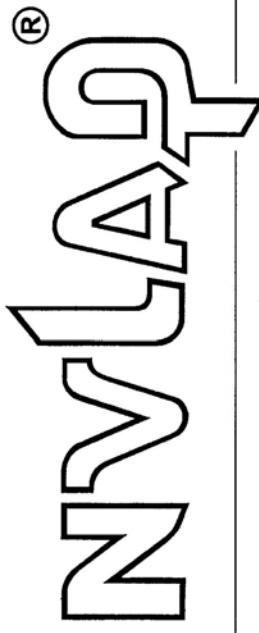
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United States Department of Commerce
National Institute of Standards and Technology



Certificate of Accreditation to ISO/IEC 17025:2005

NVLAP LAB CODE: 100276-0

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

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

ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS

*This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005.
This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality
management system (refer to joint ISO/ILAC-IAF Communiqué dated January 2009).*



2009-10-01 through 2010-09-30
Effective dates

Daryl S. Bruce
For the National Institute of Standards and Technology

NVLAP-01C (REV. 2009-01-28)



Company: Motorola, Inc.
Model Tested: 5790SM4 integrated with 10dBi single patch antenna and lens director
Report Number: 15807

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1.0 SUMMARY OF TEST REPORT

It was found that the OFDM Subscriber Module - CSM58430, Model Number(s) 5790SM4 integrated with 10dBi single patch antenna and lens director **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 test report 15756 (tested on September 24, October 14, 15, & 21, 2009) for AC Power Line conducted emissions tests.

2.0 INTRODUCTION

On November 13, 2009, a series of radio frequency interference measurements was performed on OFDM Subscriber Module - CSM58430, Model Number(s) 5790SM4 integrated with 10dBi single patch antenna and lens director, Serial Number: 0A003E3FFEBD. 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 & the FCC guidance document "Measurement of Digital Transmission Systems Operating under Section 15.247 - March 23, 2005". 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.

Main Test Facility:

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

O.A.T.S. Test Facility:

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

3.0 OBJECT

The purpose of this series of tests was to determine if the test sample could meet the radio frequency interference 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.



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4.0 TEST SET-UP

All emission tests were performed at D.L.S. Electronic Systems, Inc. and set up according to the ANSI C63.4-2003, Annex H or following the guidelines in the FCC's "Measurement of Digital Transmission Systems Operating under Section 15.247 - March 23, 2005". See test report 15756 (tested on September 24, October 14, 15, & 21, 2009) for AC Power Line conducted emissions tests.

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 or following the guidelines in the FCC's "Measurement of Digital Transmission Systems Operating under Section 15.247 - March 23, 2005", as indicated in the test data section of this test report..

5.0 TEST EQUIPMENT (Bandwidths and Detector Function)

All preliminary data below 1000 MHz was automatically plotted using the 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 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 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.



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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 ANSI C63.4-2003.



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

7.1 Description:

5.7GHz ISM transciever Motorola OFDM Subscriber Module with lens director

7.2 PHYSICAL DIMENSIONS OF EQUIPMENT UNDER TEST

Length: 12 in x Width: 3 in x Height: 1 in

7.3 LINE FILTER USED:

N/A

7.4 INTERNAL CLOCK FREQUENCIES:

Switching Power Supply Frequencies:

150 kHz

Clock Frequencies:

25 MHz & 20 MHz

7.5 DESCRIPTION OF ALL CIRCUIT BOARDS:

1. Zoltar 5.7G Issue A PC Board	PN: 84010081001
2. Patch Antenna	PN: 85010088001
3. Lens director	PN: AN500A



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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 unit was tested while transmitting continuously. Tested with QPSK modulation. Each type of modulation was looked at and QPSK was found to be worst-case. Low, Mid, and High channels were tested.

Receiver emissions were tested with the unit in continuous receive mode. Low, Mid and High channels were tested.

The unit was tested using the same power settings used during the original filing

9.0 PHOTO INFORMATION AND TEST SET-UP

Item 0 OFDM Subscriber Module - CSM58430

Model Number: 5790SM4 integrated with 10dBi single patch antenna and lens director Serial Number: 0A003E3FFEBD

Item 1 15 meter non-shielded Power/Ethernet CAT 5e communications cable.

Item 2 Optional Motorola LENS

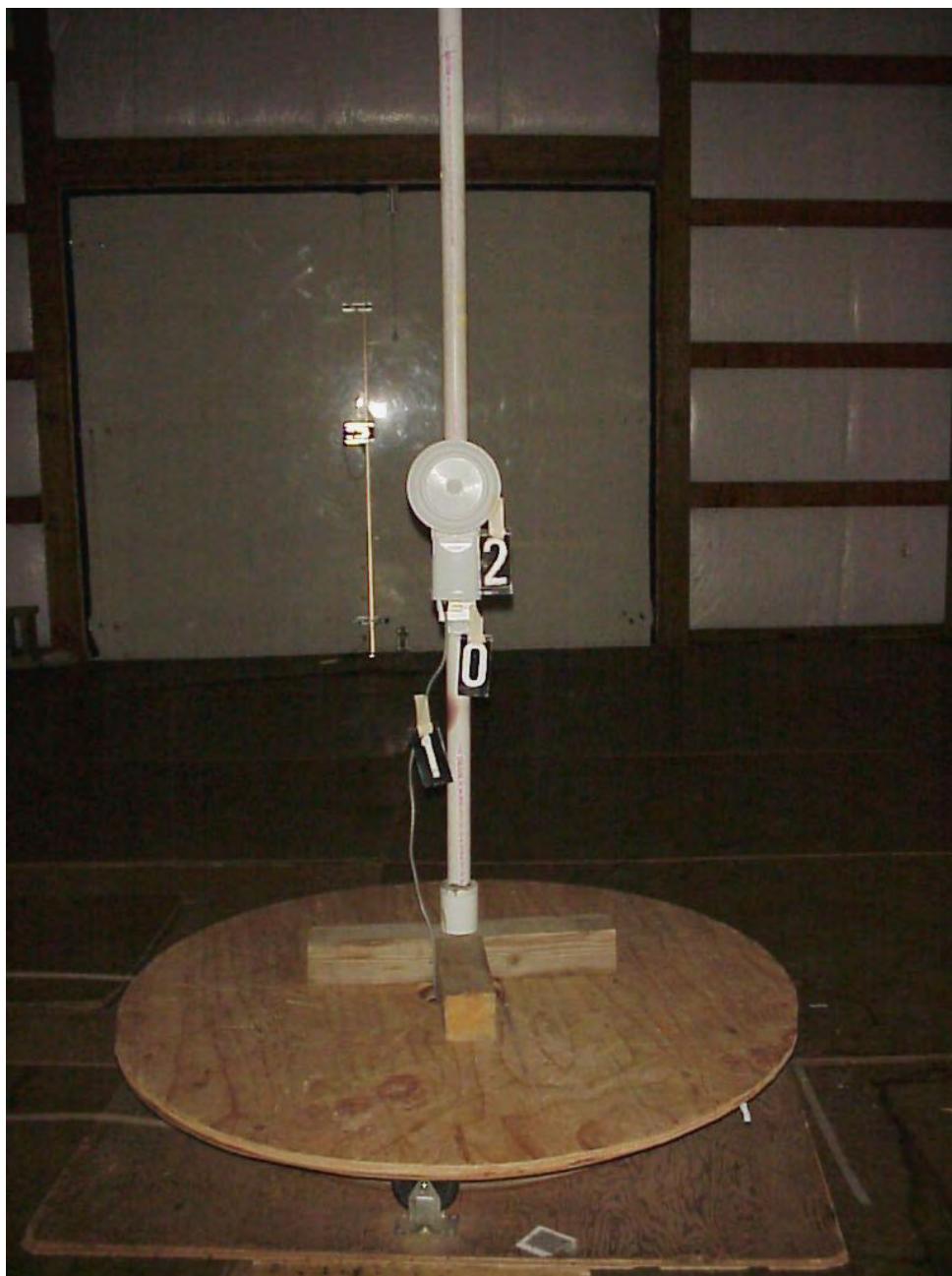
Model Number: AN500A; Serial Number NA



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10.0 RADIATED PHOTOS TAKEN DURING TESTING



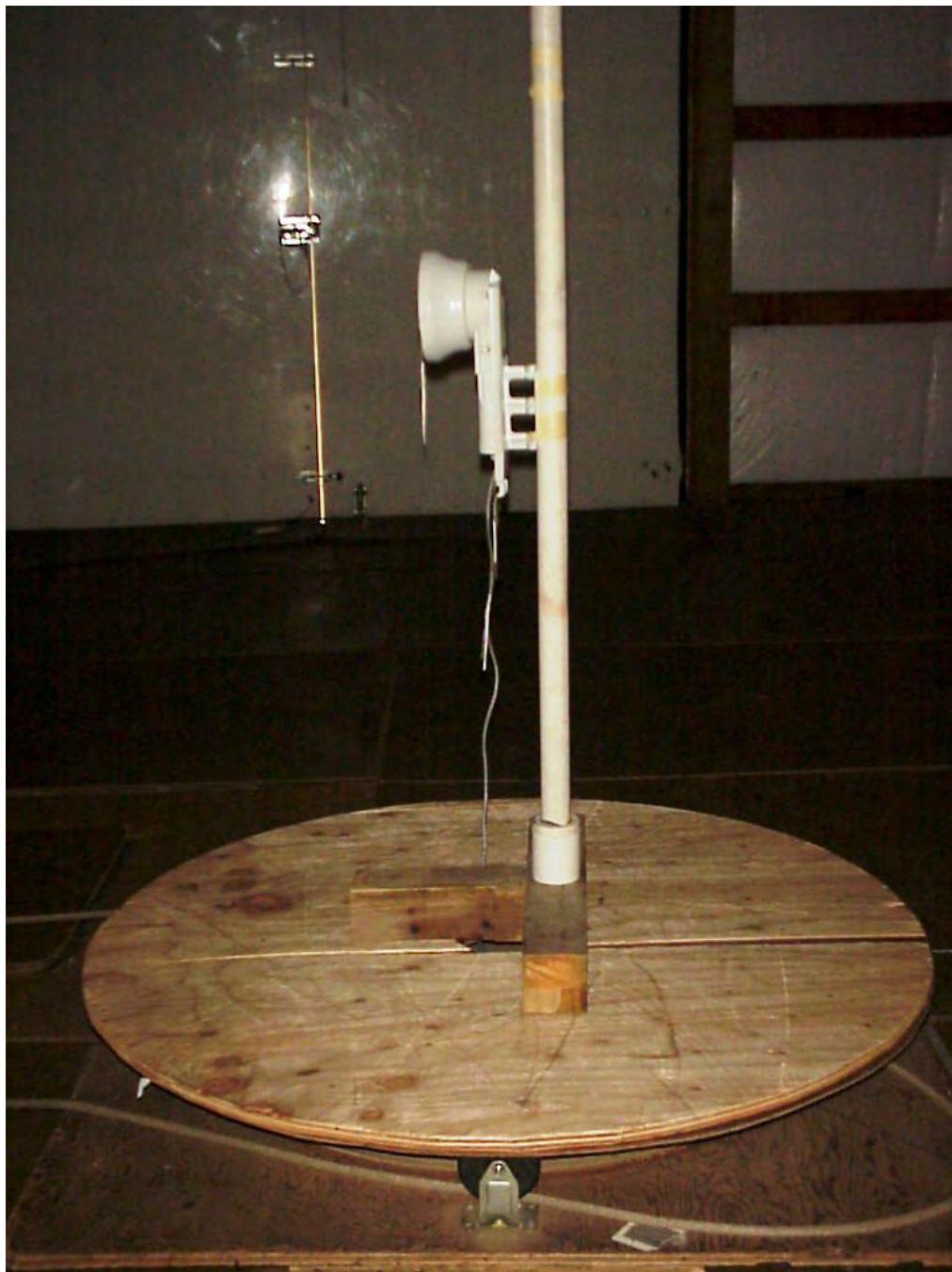
Radiated Front



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10.0 RADIATED PHOTOS TAKEN DURING TESTING (CON'T)



Radiated Side



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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 OFDM Subscriber Module - CSM58430, Model Number(s) 5790SM4 integrated with 10dBi single patch antenna and lens director **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 test report 15756 (tested on September 24, October 14, 15, & 21, 2009) for AC Power Line conducted emissions tests.



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TABLE 1 – EQUIPMENT LIST

Description	Manufacturer	Model Number	Serial Number	Frequency Range	Cal Due Dates
Preamp	Ciao	CA118-4010	101	1GHz-18GHz	1/10
Horn Antenna	EMCO	3115	9903-5731	1-18GHz	6/11
High Pass Filter	Planar	HP8G-7G8-CD-SFF	PF1225/0728	7-26 GHz	7/10
Preamp	Miteq	AMF-8B-180265-40-10P-H/S	438727	18GHz-26GHz	8/10
Horn Antenna	EMCO	3116	2549	18 – 40GHz	8/10
High Pass Filter	Planar	CL22500-9000-CD-SS	PF1229/0728	15-40 GHz	7/10
Preamp	Rohde & Schwarz	TS-PR40	052002/025	26GHz-40GHz	8/10

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



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APPENDIX A

TEST PROCEDURE

Part 15, Subpart C, Section 15.207

ANSI C63.4-2003



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APPENDIX «EMISSION_APPENDIX»

1.0 AC POWER LINE 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 test report 15756 (tested on September 24, October 14, 15, & 21, 2009) for AC Power Line conducted emissions tests.



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APPENDIX B

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**

ANSI C63.4-2003

AND

KDB Publication No. 558074 (DTS)

NOTE:

Per the FCC's guidance document "Measurement of Digital Transmission Systems Operating under Section 15.247 - March 23, 2005", as indicated in the test data section of this test report.



Company: «COMPANY»
Model Tested: «MODELS_TESTED»
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APPENDIX B

1.0 SPURIOUS EMISSIONS AT ANTENNA TERMINALS – PART 15.247(d), 15.203 & FCC Guidance Document "Measurement of Digital Transmission Systems Operating under Section 15.247 - March 23, 2005".

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.

As stated in 15.203 the OFDM Subscriber Module - CSM58430 was designed to ensure that no antenna other than that furnished by Motorola Inc will be used with the EUT. The use of a permanently attached antenna or antenna that uses an unique coupling to the intentional radiator was considered to comply with section 15.203.

The allowed emissions for transmitters operating in the 5725 MHz - 5850 MHz bands for OFDM Subscriber Module - CSM58430 equipment are found under Part 15, Section 15.247(d). 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 test report 15756 (tested on September 24, October 14, 15, & 21, 2009) for spurious conducted emissions measured at the antenna terminals.

2.0 RF CONDUCTED EMISSIONS (ANTENNA TERMINAL) PHOTOS TAKEN DURING TESTING

NOTE:

See test report 15756 (tested on September 24, October 14, 15, & 21, 2009) for spurious conducted emissions measured at the antenna terminals.



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APPENDIX B

3.0 RESTRICTED BANDS

As stated in Section 15.205a, the fundamental emission from the OFDM Subscriber Module - CSM58430 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 will typically lay 20 dB below the limit.

4.0 RESTRICTED BAND AND BAND EDGE 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 and Band Edge Compliance:



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APPENDIX B

DATA AND GRAPH(S) TAKEN SHOWING

THE RESTRICTED BAND COMPLIANCE

PART 15.247(d) & 15.205



Company: «COMPANY»
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APPENDIX B

Radiated Spurious Emissions in Restricted Bands - 1 GHz to 40 GHz 1 GHz to 18 GHz: Tested at a 3 Meter Distance and 18 GHz to 40 GHz: Tested at a 1 Meter Distance

EUT: OFDM Subscriber Module CSM 58430 Model: 5790SM4 with LENS
Manufacturer: Motorola
Operating Condition: 70 deg F; 40% R.H.
Test Site: Site 2
Operator: Craig B
Test Specification: FCC Part 15.247(d) and FCC Part 15.205
Comment: Continuous transmit.
Date: 11/13/2009

Notes: (1) Peak measurements were taken with RBW = 1 MHz, VBW = 3 MHz
(2) Average measurements were taken with RBW = 1 MHz, VBW = 10 Hz
(3) All other restricted band emissions at least 20 dB under the limit.
(4) Tested with QPSK modulation. Each type of modulation was looked at and QPSK was found to be worst-case.

Low Channel (5730 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)	Comment
11.46	Average	Vert	43.01	40.63	-30.8	52.8	---	52.8	54	1.2	Res. Band
11.46	Max Peak	Vert	59.50	40.63	-30.8	69.3	---	69.3	74	4.7	Res. Band
11.46	Average	Horz	37.62	40.63	-30.8	47.5	---	47.5	54	6.6	Res. Band
11.46	Max Peak	Horz	53.40	40.63	-30.8	63.2	---	63.2	74	10.8	Res. Band



Company: «COMPANY»
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APPENDIX B

Radiated Spurious Emissions in Restricted Bands - 1 GHz to 40 GHz 1 GHz to 18 GHz: Tested at a 3 Meter Distance and 18 GHz to 40 GHz: Tested at a 1 Meter Distance

EUT: OFDM Subscriber Module CSM 58430 Model: 5790SM4 with LENS
Manufacturer: Motorola
Operating Condition: 70 deg F; 40% R.H.
Test Site: Site 2
Operator: Craig B
Test Specification: FCC Part 15.247(d) and FCC Part 15.205
Comment: Continuous transmit.
Date: 11/13/2009

Notes: (1) Peak measurements were taken with RBW = 1 MHz, VBW = 3 MHz
(2) Average measurements were taken with RBW = 1 MHz, VBW = 10 Hz
(3) All other restricted band emissions at least 20 dB under the limit.
(4) Tested with QPSK modulation. Each type of modulation was looked at and QPSK was found to be worst-case.

Mid Channel (5775 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)	Comment
11.55	Average	Vert	40.14	40.68	-30.7	50.1	---	50.1	54	3.9	Res. Band
11.55	Max Peak	Vert	56.77	40.68	-30.7	66.8	---	66.8	74	7.3	Res. Band
11.55	Average	Horz	36.34	40.68	-30.7	46.3	---	46.3	54	7.7	Res. Band
11.55	Max Peak	Horz	51.71	40.68	-30.7	61.7	---	61.7	74	12.3	Res. Band



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APPENDIX B

Radiated Spurious Emissions in Restricted Bands - 1 GHz to 40 GHz 1 GHz to 18 GHz: Tested at a 3 Meter Distance and 18 GHz to 40 GHz: Tested at a 1 Meter Distance

EUT: OFDM Subscriber Module CSM 58430 Model: 5790SM4 with LENS
Manufacturer: Motorola
Operating Condition: 70 deg F; 40% R.H.
Test Site: Site 2
Operator: Craig B
Test Specification: FCC Part 15.247(d) and FCC Part 15.205
Comment: Continuous transmit.
Date: 11/13/2009

Notes: (1) Peak measurements were taken with RBW = 1 MHz, VBW = 3 MHz
(2) Average measurements were taken with RBW = 1 MHz, VBW = 10 Hz
(3) All other restricted band emissions at least 20 dB under the limit.
(4) Tested with QPSK modulation. Each type of modulation was looked at and QPSK was found to be worst-case.

High Channel (5845 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)	Comment
11.69	Average	Vert	36.51	40.51	-30.7	46.3	---	46.3	54	7.7	Res. Band
11.69	Max Peak	Vert	51.54	40.51	-30.7	61.4	---	61.4	74	12.7	Res. Band
11.69	Average	Horz	35.77	40.51	-30.7	45.6	---	45.6	54	8.4	Res. Band
11.69	Max Peak	Horz	51.07	40.51	-30.7	60.9	---	60.9	74	13.1	Res. Band



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DATA AND GRAPH(S) TAKEN SHOWING

THE BAND EDGE CONDUCTED COMPLIANCE

PART 15.247

NOTE:

See test report 15756 (tested on September 24, October 14, 15, & 21, 2009) for Band Edge Conducted Compliance.



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Model Tested: 5790SM4 integrated with 10dBi single patch antenna and lens director
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DATA AND GRAPH(S) TAKEN SHOWING

THE LOWER BAND EDGE

PART 15.247

BAND EDGE FALLS ON THE RESTRICTED FREQUENCY BAND

NOTE:

See test report 15756 (tested on September 24, October 14, 15, & 21, 2009) for Lower Band Edge Conducted Compliance.



1250 Peterson Dr., Wheeling, IL 60090

Company: Motorola, Inc.
Model Tested: 5790SM4 integrated with 10dBi single patch antenna and lens director
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DATA AND GRAPH(S) TAKEN SHOWING

UPPER BAND EDGE

COMPLIANCE WITH RESTRICTED BAND

PART 15.247

NOTE:

See test report 15756 (tested on September 24, October 14, 15, & 21, 2009) for Upper Band Edge Conducted Compliance.



1250 Peterson Dr., Wheeling, IL 60090

Company: Motorola, Inc.
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Report Number: 15807

5.0 FIELD STRENGTH OF FUNDAMENTAL AND SPURIOUS EMISSION MEASUREMENTS

The radiated measurements made at D.L.S. Electronic Systems, Inc., for the OFDM Subscriber Module - CSM58430, Model Number: 5790SM4 integrated with 10dBi single patch antenna and lens director, 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 OFDM Subscriber Module - CSM58430 were made up to 40000 MHz, in accordance with Section 15.33a for Intentional Radiators with a fundamental frequency of 5730 - 5845 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, limits were extrapolated 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, Test procedures for the radiated field strength of spurious emissions is per FCC Guidance Document "Measurement of Digital Transmission Systems Operating under Section 15.247 - March 23, 2005". 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.



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Company: Motorola, Inc.
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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:

See test report 15756 (tested on September 24, October 14, 15, & 21, 2009) for Fundamental and Spurious Emission Measurements.



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TRANSMITTER DUTY CYCLE GRAPHS

PART 15.35(c)

NOTE:

See test report 15756 (tested on September 24, October 14, 15, & 21, 2009) for Transmitter Duty Cycle Graphs.



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Company: Motorola, Inc.
Model Tested: 5790SM4 integrated with 10dBi single patch antenna and lens director
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6 dB BANDWIDTH GRAPHS

PART 15.247

NOTE:

See test report 15756 (tested on September 24, October 14, 15, & 21, 2009) for 6 dB Bandwidth Graphs.



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CONDUCTED PEAK OUTPUT POWER GRAPHS

PART 15.247

NOTE:

See test report 15756 (tested on September 24, October 14, 15, & 21, 2009) for Conducted Peak Output Power Graphs.



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PEAK POWER SPECTRAL DENSITY GRAPHS

PART 15.247

NOTE:

See test report 15756 (tested on September 24, October 14, 15, & 21, 2009) for Peak Power Spectral Density Graphs.