

Test report No. : 26IE0394-HO-A-1
Page : 1 of 24
Issued date : June 14, 2006
Revised date : June 19, 2006
FCC ID : AK8DCCFMT50

EMI TEST REPORT

Test Report No.: 26IE0394-HO-A-1

Applicant : Sony Corporation

Type of Equipment : Car FM Stereo Transmitter

Model No. : DCC-FMT50U

Test standard : FCC Part 15 Subpart C

Section 15.239: 2006

FCC ID : AK8DCCFMT50

Test Result : Complied

1. This test report shall not be reproduced in full or partial, without the written approval of UL Apex Co., Ltd.

- 2. The results in this report apply only to the sample tested.
- 3. This equipment is in compliance with above regulation.
- 4. The test results in this report are traceable to the national or international standards.

Date of test:

June 13, 2006

Tested by:

Hiroka Umeyama EMC Services

Approved by:

Naoki Sakamoto Group Leader of

EMC Services



This laboratory is accredited by the NVLAP LAB CODE 200572-0, U.S.A. The tests reported herein have been performed in accordance with its terms of accreditation.

*As for the range of Accreditation in NVLAP, you may refer to the WEB address, http://ulapex.jp/emc/nvlap.htm

UL Apex Co., Ltd. Head Office EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Test report No. : 26IE0394-HO-A-1
Page : 2 of 24
Issued date : June 14, 2006
Revised date : June 19, 2006
FCC ID : AK8DCCFMT50

CONTENTS	PAGE
SECTION 1: Client information	3
SECTION 2: Equipment under test (E.U.T.)	3
SECTION 3: Test specification, procedures & results	
SECTION 4: Operation of E.U.T. during testing	
SECTION 5: 200kHz Band Width and 20 dB Bandwidth	
SECTION 6: Emissions from the Intentional radiator and Spurious Emissions	8
APPENDIX 1: Photographs of test setup	
Spurious Emissions	
Worst Case Position (X-Axis:Horizontal / Y-Axis:Vertical)	
APPENDIX 2:Test instruments	12
APPENDIX 3: Data of EMI test	
200kHz Bandwidth	13
20dB Bandwidth	
Emissions from the Intentional radiators	
Spurious Emissions	18
Spurious Emissions(Band Edge)	24

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Test report No. : 26IE0394-HO-A-1
Page : 3 of 24
Issued date : June 14, 2006
Revised date : June 19, 2006
FCC ID : AK8DCCFMT50

SECTION 1: Client information

Company Name : Sony EMCS Corporation Saitama TEC

Brand name : SONY

Address : Shinagawa INTERCITY C Tower, 2-15-3, Minato-ku, Tokyo,

108-6201 Japan

Telephone Number : +81-3-5769-5640 Facsimile Number : +81-3-5769-5962 Contact Person : Kikuo Murata

SECTION 2: Equipment under test (E.U.T.)

2.1 Identification of E.U.T.

Type of Equipment : Car FM Stereo Transmitter

Model No. : DCC-FMT50U Serial No. : 000000 Rating : DC12/24V

*Tests were performed with DC12V, as the carrier levels were same with

DC 12V and DC24Vat pre-check.

Country of Manufacture : China
Receipt Date of Sample : June 12, 2006
Condition of EUT : Engineering prototype

(Not for Sale: This sample is equivalent to mass-produced items.)

Modification of EUT : No modification by the test lab.

2.2 Product Description

Model No: DCC-FMT50U (referred to as the EUT in this report) is the Car FM Stereo Transmitter.

Equipment Type : Transmitter
Frequency of operation : 88.1-107.9MHz

Other Clock Frequency : DD Converter: 0.1MHz

Micon Clock (LCD): 4.19MHz FM Transmitter IC: 7.6MHz

Type of modulation : FM

Bandwidth & Channel spacing : 200kHz & 0.1MHz

Power control : No
Mode of operation : Simplex
Antenna Type : Lead Antenna
Operating voltage (inner) : DC 5V

UL Apex Co., Ltd. Head Office EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116 Facsimile : +81 596 24 8124

^{*}Sony EMCS Corporation Saitama TEC is on behalf of the applicant: Sony Corporation.

Test report No. : 26IE0394-HO-A-1
Page : 4 of 24
Issued date : June 14, 2006
Revised date : June 19, 2006
FCC ID : AK8DCCFMT50

SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification : FCC Part15 Subpart C : 2006

Title : FCC 47CFR Part15 Radio Frequency Device Subpart C Intentional

Radiators

Section 15.239 Operation in the band 88-108MHz: 2006

FCC 15.31 (e)

This EUT provides stable voltage (DC5V) to the radio part constantly. Therefore, this EUT complies with the requirement.

FCC Part 15.203 Antenna requirement

The antenna is not removable from EUT. Therefore, the equipment complies with the antenna requirement of Section 15.203.

3.2 Procedures and results

No.	Item	Test Procedure	Specification	Deviation	Worst margin *0)	Results
1	200kHz Bandwidth	FCC Part 2 Section 2.1049	Section 15.239(a)	N/A	69.2kHz (98.0MHz, Ver.)	Complied
1)	Emissions from the Intentional radiators	FCC Part 2 Section 2.1046	Section 15.239(b)	N/A	2.0dB (88.100MHz AV, Hor.)	Complied
3	Spurious Emissions	FCC Part 2 Section 2.1053	Section 15.239 (c)	N/A	12.0dB (196.000MHz, QP, Ver.)	Complied
4	20dB Bandwidth	ANSI C63.4:2003	Section 15.215(c)	N/A	N/A	Complied

Note: UL Apex's EMI Work Procedures No. QPM05 and QPM15.

3.3 Uncertainty

Radiated emission

The measurement uncertainty (with a 95% confidence level) for this test using Biconical antenna is ± 4.59 dB(3m)/ ± 4.58 dB(10m).

The measurement uncertainty (with a 95% confidence level) for this test using Logperiodic antenna is $\pm 4.62 dB(3m)/\pm 4.60 dB(10m)$.

The measurement uncertainty (with a 95% confidence level) for this test using Horn antenna is $\pm 5.27 dB$.

The data listed in this report meets the limits unless the uncertainty is taken into consideration.

UL Apex Co., Ltd. Head Office EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116 Facsimile : +81 596 24 8124

^{*0)} The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.

^{*}These tests were performed without any deviations from test procedure except for additions or exclusions.

Test report No. : 26IE0394-HO-A-1
Page : 5 of 24
Issued date : June 14, 2006
Revised date : June 19, 2006
FCC ID : AK8DCCFMT50

3.4 Test Location

UL Apex Co., Ltd. Head Office EMC Lab. *NVLAP Lab. code: 200572-0 4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone: +81 596 24 8116 Facsimile: +81 596 24 8124

Telephone: 01 5/0 2 1 0110 Telephone: 01 5/0 2 1 012 1					
	FCC	IC Registration	Width x Depth x	Size of	Other
	Registration	Number	Height (m)	reference ground plane (m) /	rooms
	Number			horizontal conducting plane	
No.1 semi-anechoic chamber		IC4247A	19.2 x 11.2 x 7.7m	7.0 x 6.0m	Preparation room
No.2 semi-anechoic chamber		IC4247A-2	7.5 x 5.8 x 5.2m	4.0 x 4.0m	1
No.3 semi-anechoic chamber	148738	IC4247A-3	12.0 x 8.5 x 5.9m	6.8 x 5.75m	
No.3 shielded room	-	ı	4.0 x 6.0 x 2.7m	N/A	ı
No.4 semi-anechoic chamber	134570	IC4247A-4	12.0 x 8.5 x 5.9m	6.8 x 5.75m	-
No.4 shielded room	-	-	4.0 x 6.0 x 2.7m	N/A	-
No.5 shielded room	-	-	6.0 x 6.0 x 3.9m	N/A	-
No.6 shielded room	-	-	4.0 x 4.5 x 2.7m	N/A	-
No.6 measurement room	-	-	4.75 x 5.4 x 3.0m	N/A	-
No.7 shielded room	-	-	4.7 x 7.5 x 2.7m	4.7 x 7.5m	-
No.8 measurement room	-	-	3.1 x 5.0 x 2.7m	N/A	-

^{*} Size of vertical conducting plane (for Conducted Emission test): 2.0 x 2.0m for No.1, No.2, No.3 and No.4 semi-anechoic chambers and No.7 shielded room.

3.5 Test set up, Test instruments and Data of EMI

Refer to APPENDIX 1 to 3.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Test report No. : 26IE0394-HO-A-1
Page : 6 of 24
Issued date : June 14, 2006
Revised date : June 19, 2006
FCC ID : AK8DCCFMT50

SECTION 4: Operation of E.U.T. during testing

4.1 Operating Modes

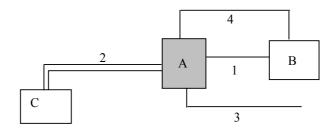
The EUT was operating in a manner similar to typical use during the tests.

The mode is used:

- 1. Transmitting mode (88.1/98.0/107.9 MHz) with Audio Signal 1kHz
- 2. Transmitting mode (88.1/98.0/107.9 MHz) with Audio Signal 1kHz + Charging mode with USB Cable

Justification: The system was configured in typical fashion (as a customer would normally use it) for testing.

4.2 Configuration and peripherals



^{*} Cabling and setup were taken into consideration and test data was taken under worse case conditions.

Description of EUT and Support equipment

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	Car FM Stereo	DCC-FMT50U	000000	Sony EMCS Corp.	EUT
	Transmitter			Saitama TEC	
В	Portable Music Player	NW-A1000	5023102	Sony Corp.	-
С	Car Battery	B19L	161001C	Panasonic	-

List of cables used

List of cubics used					
No.	Name	Length (m)	Sł	Remarks	
			Cable	Connector	
1	USB Cable	0.9	Shielded	Shielded	-
2	DC Cable	1.6	Unshielded	Unshielded	-
3	Antenna Cable	1.5	Unshielded	Unshielded	-
4	Stereo Mini Plug	1.1	Unshielded	Unshielded	-

UL Apex Co., Ltd. Head Office EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

^{*}Spurious emission measurements was performed at both 1 and 2 modes. Other measurements were performed at mode 1 only as it was the worst condition according to the result of pre-test.

Test report No. : 26IE0394-HO-A-1
Page : 7 of 24
Issued date : June 14, 2006
Revised date : June 19, 2006
FCC ID : AK8DCCFMT50

SECTION 5: 200kHz Band Width and 20 dB Bandwidth

5.1 Operating environment

Test place : No.2 semi anechoic chamber

Temperature : 25 deg.C. Humidity : 60 %

5.2 Test configuration

EUT was placed on a urethane platform of nominal size, 0.5m by 1.0m, raised 80cm above the conducting ground plane. The EUT was set on the center of the tabletop.

Test was made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna was varied in height above the conducting ground plane to obtain the maximum signal strength.

A drawing of the set up is shown in the photos of APPENDIX 1.

5.3 Test conditions

Test distance : 3m
EUT position : Table top
EUT operation mode : See Clause 4.1

5.4 Test procedure

The 200kHz Bandwidth and 20dB Bandwidth was measured with a spectrum analyzer.

5.5 Results

Summary of the test results: Pass

Date: June 13, 2006 Tested by: Hiroka Umeyama

UL Apex Co., Ltd. Head Office EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116 Facsimile : +81 596 24 8124

Test report No. : 26IE0394-HO-A-1
Page : 8 of 24
Issued date : June 14, 2006
Revised date : June 19, 2006
FCC ID : AK8DCCFMT50

SECTION 6: Emissions from the Intentional radiator and Spurious Emissions

6.1 Operating environment

Test place : No.2 semi anechoic chamber

Temperature : 25 deg.C. Humidity : 60 %

6.2 Test configuration

EUT was placed on a urethane platform of nominal size, 0.5m by 1.0m, raised 80cm above the conducting ground plane. The EUT was set on the center of the tabletop.

Test was made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna was varied in height above the conducting ground plane to obtain the maximum signal strength.

A drawing of the set up is shown in the photos of APPENDIX 1.

6.3 Test conditions

Frequency range : 30MHz-1080MHz

Test distance : 3m
EUT position : Table top
EUT operation mode : See Clause 4.1

6.4 Test procedure

The Radiated Electric Field Strength intensity has been measured on No.2 semi anechoic chamber with a ground plane and at a distance of 3m.

The measuring antenna height varied between 1 and 4m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field intensity.

The measurements were performed for both vertical and horizontal antenna polarization.

The radiated emission measurements were made with the following detector function of the test receiver.

	Emissions from intentional radiator	Spurious Emissions (below 1GHz)	Spurious Emissions (above 1GHz)
Detector Type	Average/Peak	Quasi-Peak	Average/Peak
IF Bandwidth	120kHz	120kHz	PK: RBW:1MHz/VBW: 1MHz AV: RBW:1MHz/VBW:10Hz

⁻ The carrier and noise levels were confirmed at each position of X, Y, and Z axes of EUT to detect the position of maximum noise, and the test was made at the position that has the maximum emission.

6.5 Results

Summary of the test results: Pass

Date: June 13, 2006 Tested by: Hiroka Umeyama

UL Apex Co., Ltd. Head Office EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116 Facsimile : +81 596 24 8124