



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



NVLAP LAB CODE: 200572-0

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>

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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

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

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

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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
2	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.

*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.

3.3 Uncertainty

Radiated emission

The measurement uncertainty (with a 95% confidence level) for this test using Biconical antenna is $\pm 4.59\text{dB}(3\text{m})/\pm 4.58\text{dB}(10\text{m})$.

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

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

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

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3.4 Test Location

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	FCC Registration Number	IC Registration Number	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Other rooms
No.1 semi-anechoic chamber	313583	IC4247A	19.2 x 11.2 x 7.7m	7.0 x 6.0m	Preparation room
No.2 semi-anechoic chamber	655103	IC4247A-2	7.5 x 5.8 x 5.2m	4.0 x 4.0m	-
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	-	-	4.0 x 6.0 x 2.7m	N/A	-
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.

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.

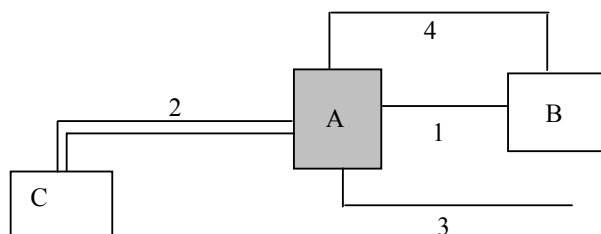
The mode is used :

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

*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.

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 Transmitter	DCC-FMT50U	000000	Sony EMCS Corp. Saitama TEC	EUT
B	Portable Music Player	NW-A1000	5023102	Sony Corp.	-
C	Car Battery	B19L	161001C	Panasonic	-

List of cables used

No.	Name	Length (m)	Shield		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	-

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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

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

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