



EMI TEST REPORT

Test Report No.: 27IE0314-HO-A-R1

Applicant : Sony Corporation
Type of Equipment : Car FM Stereo Transmitter
Model No. : DCC-FMT50UD
Test standard : FCC Part 15 Subpart C
Section 15.239: 2007
FCC ID : AK8FMT50UD
Test Result : Complied

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2. The results in this report apply only to the sample tested. <http://uljapan.co.jp/emc/nvlap.htm>
3. This sample tested is in compliance with above regulation.
4. The test results in this report are traceable to the national or international standards.
5. Original test report number of this report is 27IE0314-HO-A.

Date of test:

May 10 and 11, 2007

Tested by:

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NVLAP[®]

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SECTION 1: Client information

Company Name : Sony Corporation
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-FMT50UD
Serial No. : U1
Rating : DC12/24V
*Tests were performed with DC12V, as the carrier levels were same with
DC12V and DC24Vat pre-check.
Country of Manufacture : China
Receipt Date of Sample : May 5, 2007
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-FMT50UD (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 (for power supply)
Micon Clock (LCD) : 4.19MHz
FM Transmitter IC : 7.6MHz
Type of modulation : FM
Bandwidth & Channel spacing : 200kHz & 0.1MHz
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 : 2007
Title : FCC 47CFR Part15 Radio Frequency Device Subpart C Intentional Radiators
Section 15.239 Operation in the band 88-108MHz: 2007

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	104.6kHz 98.0MHz, Ver.	Complied
2	Emissions from the Intentional radiators	FCC Part 2 Section 2.1046	Section 15.239(b)	N/A	1.5dB, AV 107.900MHz, Ver.	Complied
3	Spurious Emissions	FCC Part 2 Section 2.1053	Section 15.239 (c)	N/A	5.6dB, QP 108.000MHz, Ver.	Complied
4	20dB Bandwidth	ANSI C63.4:2003	Section 15.215(c)	N/A	N/A	Complied

Note: UL Japan, Inc.'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.

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3.3 Uncertainty

The following uncertainties have been calculated to provide a confidence level of 95% using a coverage factor k=2.

Radiated emission

The measurement uncertainty 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 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 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.

3.4 Test Location

UL Japan, Inc. Head Office EMC Lab. *NVLAP Lab. code: 200572-0

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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 semi-anechoic chamber	-	-	6.0 x 6.0 x 3.9m	6.0 x 6.0m	-
No.6 shielded room	-	-	4.0 x 4.5 x 2.7m	4.75 x 5.4 m	-
No.6 measurement room	-	-	4.75 x 5.4 x 3.0m	4.75 x 4.15 m	-
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.3 and No.4 shielded rooms.

3.5 Test set up, Test instruments and Data of EMI

Refer to APPENDIX 1 to 3.

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

4.1 Operating Modes

The mode is used :

- 1) ipod (A1199) Transmitting mode (88.1/98.0/107.9 MHz)
- 2) ipod (A1199) Transmitting mode (88.1/98.0/107.9 MHz) + Charging mode
- 3) ipod (A1136) Transmitting mode (88.1/98.0/107.9 MHz)
- 4) ipod (A1136) Transmitting mode (88.1/98.0/107.9 MHz) + Charging mode
- 5) Network Walkman (NW-A805) Transmitting mode (88.1/98.0/107.9 MHz)
- 6) Network Walkman (NW-A805) Transmitting mode (88.1/98.0/107.9 MHz) + Charging mode

*Emissions from the Intentional radiators and Spurious emission tests were performed at each mode. Other tests were performed at Transmitting mode only as it was the worst condition according to the result of pre-test.

- * The test was performed with the maximum Audio Signal of a typical audio file.
- * The EUT does not have user power control function.
- * The test was performed with the same range as tuning range (88.1 – 107.9MHz)
- * The output level was confirmed with and without modulation.
As the result, there was no difference in the output level.

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

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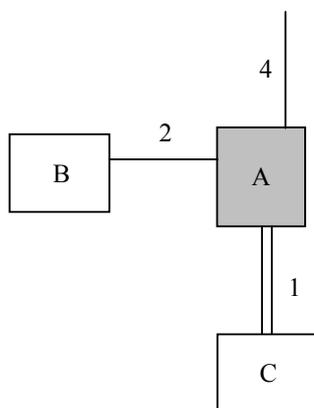
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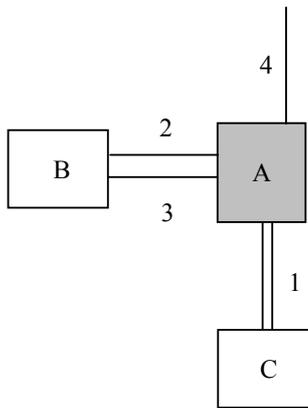
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4.2 Configuration and peripherals

[Transmitting mode]



[Transmitting + Charging mode]



Description of EUT and Support equipment

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	Car FM Stereo Transmitter	DCC-FMT50UD	U1	SONY	EUT
B	ipod	A1199	5U706S3CVQ5	Apple Computer, Inc.	*1)
B	ipod	A1136	9C6525S4V9K	Apple Computer, Inc.	*2)
B	Network Walkman	NW-A805	1034656	SONY	*3)
C	Battery	40B19L	A030402	YUASA	DC12V

*1) Used for ipod(A1199) Transmitting mode and ipod(A1199) Transmitting + Charging mode.

*2) Used for ipod(A1136) Transmitting mode and ipod(A1136) Transmitting + Charging mode.

*3) Used for Network Walkman (NW-A805) Transmitting mode and Network Walkman (NW-A805) Transmitting + Charging mode .

List of cables used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	DC Cable	1.5	Unshielded	Unshielded	-
2	Audio Cable	1.1	Unshielded	Unshielded	-
3	USB Cable	1.0	Unshielded	Unshielded	-
4	Antenna Cable	1.5	Unshielded	Unshielded	-

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SECTION 5: 200kHz Band Width and 20 dB Bandwidth

5.1 Operating environment

Test date	: 05/10/2007	,	05/11/2007
Test place	: No.4 semi anechoic chamber	,	No.3 semi anechoic chamber
Temperature	: 24 deg.C.	,	21 deg. C.
Humidity	: 42 %	,	37%

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.

The settings of the spectrum analyzer:

Resolution BW	: 10kHz
Video BW	: 30kHz
Detector	: Positive peak
Trace mode	: Max hold
Span	: 200kHz

5.5 Results

Summary of the test results: Pass

Date: May 10 and 11, 2007

Tested by: Takumi Shimada / Motoya Imura

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SECTION 6: Emissions from the Intentional radiator and Spurious Emissions

6.1 Operating environment

Test date : 05/10/2007 , 05/11/2007
Test place : No.4 semi anechoic chamber , No.3 semi anechoic chamber
Temperature : 24 deg.C. , 21 deg. C.
Humidity : 42 % , 37%

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 in 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: May 10 and 11, 2007

Tested by: Takumi Shimada / Motoya Imura