



EMI TEST REPORT

Test Report No.: 28IE0153-HO-01-A-R1

Applicant : Sony Corporation
Type of Equipment : Car FM Stereo Transmitter
Model No. : DCC-NWFMT1
Test regulation : FCC Part 15 Subpart C: 2008
Section 15.239
FCC ID : AK8DCCNWFMT1
Test Result : Complied

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2. The results in this report apply only to the sample tested.
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. This test report must not be used by the customer to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.
6. Original test report number of this report is 28IE0153-HO-01-A.

Date of test:

May 7, 2008

Tested by:

Kazufumi Nakai
EMC Services

Approved by :

Mitsuru Fujimura
Assistant Manager of EMC Services



NVLAP LAB CODE: 200572-0

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UL Japan, Inc.

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

CONTENTS	PAGE
SECTION 1: Customer information	3
SECTION 2: Equipment under test (E.U.T.)	3
SECTION 3: Test specification, procedures & results	4
SECTION 4: Operation of E.U.T. during testing	7
SECTION 5: 200kHz Bandwidth and 20 dB Bandwidth	8
SECTION 6: Emissions from the Intentional radiators and Spurious Emissions	9
APPENDIX 1: Photographs of test setup	10
Spurious Emissions.....	10
Worst Case Position.....	11
APPENDIX 2: Data of EMI test	12
200kHz Bandwidth	12
20dB Bandwidth	14
Emissions from the Intentional radiators.....	16
Spurious Emissions.....	17
APPENDIX 3: Test instruments.....	23

SECTION 1: Customer information

Company Name : Sony Corporation
Address : Shinagawa INTERCITY C Tower, 2-15-3 Konan, Minato-ku, Tokyo,
108-6201, Japan
Telephone Number : +81-3-5769-5640
Facsimile Number : +81-3-5769-5085
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-NWFMT1
Serial No. : 001
Rating : DC12V
Receipt Date of Sample : May 1, 2008
Country of Mass-production : China
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-NWFMT1 (referred to as the EUT in this report) is Car FM Stereo Transmitter.

Equipment Type : Transmitter
Frequency of operation : 88.1-107.9MHz
Other Clock Frequency : Transmitter IC: 7.6MHz
Microcomputer Clock: 4.19MHz
Type of modulation : FM
Bandwidth & Channel spacing : 200kHz & 0.1MHz
Antenna Type : Leaky twist cable 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: 2008, final revised on May 19, 2008
Title : FCC 47CFR Part15 Radio Frequency Device Subpart C Intentional Radiators
Section 15.239 Operation in the band 88-108MHz

*The revision on May 19, 2008 does not influence the test specification applied to the EUT.

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	Results
1	Conducted emission	ANSI C63.4:2003	Section 15.207	N/A	N/A *1)	N/A
2	200kHz Bandwidth	FCC Part 2 Section 2.1049	Section 15.239(a)	N/A	106kHz (98.0MHz)	Complied
3	Emissions from the Intentional radiators	FCC Part 2 Section 2.1046	Section 15.239(b)	N/A	6.0dB (107.900MHz AV, Hor.)	Complied
4	Spurious Emissions	FCC Part 2 Section 2.1053	Section 15.239(c)	N/A	6.2dB (176.200MHz, QP, Hor.)	Complied
5	20dB Bandwidth	ANSI C63.4:2003	Section 15.215(c)	N/A	N/A	N/A

Note: UL Japan, Inc.'s EMI Work Procedures No. QPM05 and QPM15.

*1) The test is not applicable since the EUT is not the device that is designed to be connected to the public utility (AC) power line.

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

3.3 Addition to standards

No.	Item	Test Procedure	Specification	Remarks	Deviation	Worst margin	Results
1	99% Occupied Bandwidth	<IC> RSS-Gen 4.6.1	<IC> RSS-210 A1.1.3	Radiated	N/A	N/A	N/A

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3.4 Uncertainty

EMI

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

Test room	Conducted emission	Radiated emission (10m*)			Radiated emission (3m*)			Radiated emission (3m*)	
	150kHz-30MHz	9kHz-30MHz	30MHz-300MHz	300MHz-1GHz	9kHz-30MHz	30MHz-300MHz	300MHz-1GHz	1GHz-18GHz	18GHz-40GHz
No.1 semi-anechoic chamber (±)	3.7dB	3.1dB	4.7dB	4.4dB	3.2dB	3.7dB	4.4dB	5.9dB	6.1dB
No.2 semi-anechoic chamber (±)	3.7dB	-	-	-	3.2dB	4.3dB	3.9dB	5.9dB	6.1dB
No.3 semi-anechoic chamber (±)	3.7dB	-	-	-	3.2dB	4.2dB	4.4dB	5.9dB	6.1dB
No.4 semi-anechoic chamber (±)	3.7dB	-	-	-	3.2dB	4.2dB	4.4dB	5.9dB	6.1dB

*10m/3m = Measurement distance

Radiated emission test(3m)

The data listed in this test report has enough margin, more than the site margin.

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

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Facsimile : +81 596 24 8124

3.5 Test Location

UL Japan, Inc. 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

	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	IC4247	19.2 x 11.2 x 7.7m	7.0 x 6.0m	No.1 Power source room
No.2 semi-anechoic chamber	655103	IC4247-2	7.5 x 5.8 x 5.2m	4.0 x 4.0m	-
No.3 semi-anechoic chamber	148738	IC4247-3	12.0 x 8.5 x 5.9m	6.8 x 5.75m	No.3 Preparation room
No.3 shielded room	-	-	4.0 x 6.0 x 2.7m	N/A	-
No.4 semi-anechoic chamber	134570	IC4247-4	12.0 x 8.5 x 5.9m	6.8 x 5.75m	No.4 Preparation room
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	-
No.9 measurement room	-	-	8.0 x 4.5 x 2.8m	2.0 x 2.0m	-
No.10 measurement room	-	-	2.6 x 2.8 x 2.5m	2.4 x 2.4m	-
No.11 measurement room	-	-	3.1 x 3.4 x 3.0m	2.4 x 3.4m	-

* 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.

3.6 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 mode : Transmitting mode (88.1/98.0/107.9 MHz) with audio signal of a typical audio file from a typical device

The test was performed with the maximum Audio input level.

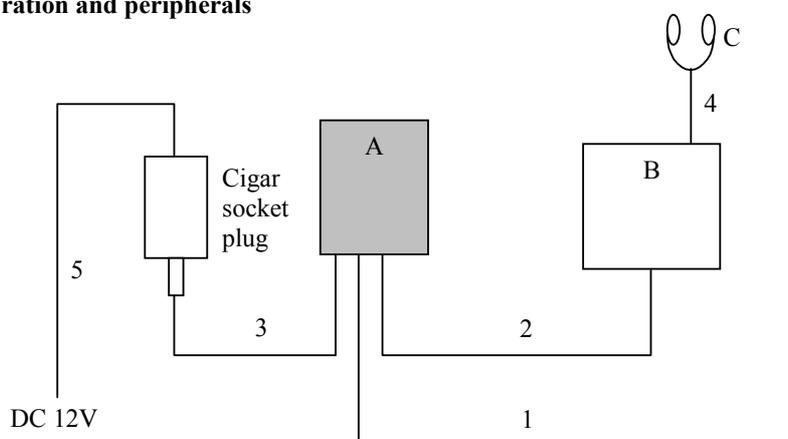
When the volume of a sound source is changed, the transmitted sound is stable based on its specification.

This EUT does not have user power control function.

The test was performed with the same range as turning range (88.1-107.9MHz)

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-NWFMT1	001	Sony Corporation	EUT
B	Portable Media	NW-S615F	5080740	Sony Corporation	-
C	Headphone	-	-	Panasonic	-

List of cables used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	Lead Antenna	1.5	Unshielded	Unshielded	-
2	WM Port Cable	1.0	Unshielded	Unshielded	-
3	DC Cable	1.5	Unshielded	Unshielded	-
4	Headphone Cable	1.0	Unshielded	Unshielded	-
5	DC Cable	0.8	Unshielded	Unshielded	-

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SECTION 5: 200kHz Bandwidth and 20 dB Bandwidth

5.1 Operating environment

Test place : No.3 semi anechoic chamber
Temperature : See data
Humidity : See data

5.2 Test configuration

EUT was placed on a urethane platform of nominal size, 1.0m by 1.5m, raised 80cm above the conducting ground plane.
EUT was set on the edge of the tabletop.
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 were measured with a spectrum analyzer.

5.5 Results

Summary of the test results: Pass

Date: May 7, 2008

Tested by: Kazufumi Nakai

SECTION 6: Emissions from the Intentional radiators and Spurious Emissions

6.1 Operating environment

Test place : No.3 semi anechoic chamber
Temperature : See data
Humidity : See data

6.2 Test configuration

EUT was placed on a urethane platform of nominal size, 1.0m by 1.5m, raised 80cm above the conducting ground plane. EUT was set on the edge 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-2000MHz
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 a 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) *1)
Detector Type	Average/Peak	Quasi-Peak	Average/Peak
IF Bandwidth	120kHz	120kHz	PK: RBW:1MHz/VBW: 1MHz AV: RBW:1MHz/VBW:10Hz

*1) The Spectrum Analyzer was used in 3dB resolution bandwidth.

- The carrier and noise levels were confirmed at each position of X, Y, and Z axes of EUT, and 0 deg. and 90 deg. of Antenna 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 7, 2008

Tested by: Kazufumi Nakai

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