EMI TEST REPORT

Test Report No. : 27AE0237-HO-A-4

Applicant	:	**DENSO CORPORATION**
Type of Equipment	:	**Tire Pressure Monitoring System (Receiver)**
Model No.	:	**13BCX**
FCC ID	:	**HYQ13BCX**
Test standard	:	**FCC Part 15 Subpart B 2006**
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 the above regulation.
4. The test results in this report are traceable to the national or international standards.

Date of test: October 16 and November 1, 2006

Tested by: M. Imura
Motoya Imura
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

CONTENTS **PAGE**

SECTION 1: Client information

Company Name	:	DENSO CORPORATION
Address	:	1-1 Showa-cho, Kariya-shi, Aichi-ken, 448-8661, Japan

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

2.1 Identification of E.U.T.

Type of Equipment	:	Tire Pressure Monitoring System (Receiver)
Model No.	:	13BCX (Type 1)
Serial No.	:	001
Country of Manufacture	:	Japan
Receipt Date of Sample	:	October 16, 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: 13BCX (Type 1)(referred to as the EUT in this report) is the Tire Pressure Monitoring System (Receiver).

Type of receiver	:	Super Heterodyne
Normal Frequency	:	314.98MHz
Oscillator Frequency	:	38.035MHz (Crystal)
Power supply	:	DC5V (from ECU)
Antenna Type	:	Internal Type (Fixed)

The receiving antenna (of this EUT) is installed on the Tire Pressure Monitoring System, which is not removable. Therefore, this EUT complies with the requirement in section 15.111(b).

<Remarks>
There are samples from Type 1 to Type 4. EUT is Type 1 and the rest of them (from Type 2 to 4) are variant models. The test result of Type 1 is within 3 dB in noise level compared with from Type 2 to Type 4.

For the difference among these types (from Type 1 to 4), please see Appendix 4.

SECTION 3: Test specification, procedures & results

3.1 Test specification

Test Specification : FCC Part 15 Subpart B 2006
Title : FCC 47CFR Part15 Radio Frequency Device
Subpart B Unintentional Radiators

3.2 Procedures and results

Item	Test Procedure	Limits	Deviation	Worst margin	Result
Conducted emission	ANSI C63.4: 2003 7. AC powerline conducted emission measurements	Except for Class A	N/A	N/A *1)	N/A
Radiated emission	ANSI C63.4: 2003 8. Radiated emission measurements	Except for Class A	N/A	<Type 1> 20.0dB 912.840MHz, Horizontal, QP *2)	Complied

*Note: UL Apex's EMI Work Procedure QPM05.
*1) The test is not applicable since the EUT does not have AC Mains.
*2) 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 Loop antenna is ±4.41dB(3m).
The measurement uncertainty (with a 95% confidence level) for this test using Biconical antenna is ±4.59dB(3m).
The measurement uncertainty (with a 95% confidence level) for this test using Logperiodic antenna is ±4.62dB(3m).
The measurement uncertainty (with a 95% confidence level) for this test using Horn antenna is ±5.27dB.
The data listed in this test report has enough margin, more than the site margin.

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

	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	N/A	-
No.6 shielded room	-	-	4.0 x 4.5 x 2.7m	2.0 x 2.0 m	-
No.6 measurement room	-	-	4.75 x 5.4 x 3.0m	4.75 x 5.4 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.7 shielded room.

3.5 Test set up, Data of EMI, and Test instruments

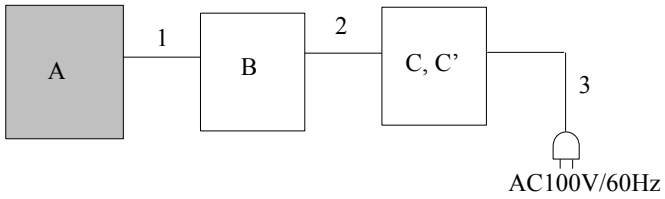
Refer to APPENDIX 1 to 3.

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

4.1 Operating modes

The mode is used : Receiving mode

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	Remark
A	Tire Pressure Monitoring System	13BCX	001 (for Type 1), 002 (for Type 2) Reference data 003 (for Type 3) Reference data 004 (for Type 4) Reference data	DENSO CORPORATION	EUT (*Type 1 only)
B	Checker	-	-	-	-
C	DC Power Supply	PW8-3ATP	09067054	KENWOOD TMI	*1)
C'	DC Power Supply	PW18-1.3AT	08016530	KENWOOD TMI	*2)

*1) Used for EUT (Type 1 and 2)
*2) Used for EUT (Type 3 and 4)

List of cables used

No.	Name	Length (m)	Shield	
			Cable	Connector
1	DC/Signal Cable	1.0	Unshielded	Unshielded
2	DC Cable	1.2	Unshielded	Unshielded
3	AC Cable	2.0	Unshielded	Unshielded

SECTION 5: Radiated Emission

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 wooden table of nominal size, 1.0m by 1.5m, 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

Frequency range : 30MHz – 300MHz (Biconical antenna) / 300MHz – 1000MHz (Logperiodic antenna)
1000 – 2000MHz (Horn antenna)
Test distance : 3m
EUT position : Table top
EUT operation mode : See data

5.4 Test procedure

The height of the measuring 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 with the Test Receiver, or the Spectrum Analyzer (in linear mode).
The test was made with the detector (RBW/VBW) in the following table.
When using Spectrum analyzer, the test was made with adjusting span to zero by using peak hold.

Frequency	Below 1GHz	Above 1GHz
Instrument used	Test Receiver	Spectrum Analyzer
IF Bandwidth	QP: BW 120kHz	PK: RBW:1MHz/VBW: 1MHz AV: RBW:1MHz/VBW:10Hz

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

5.5 Test result

Summary of the test results: Pass

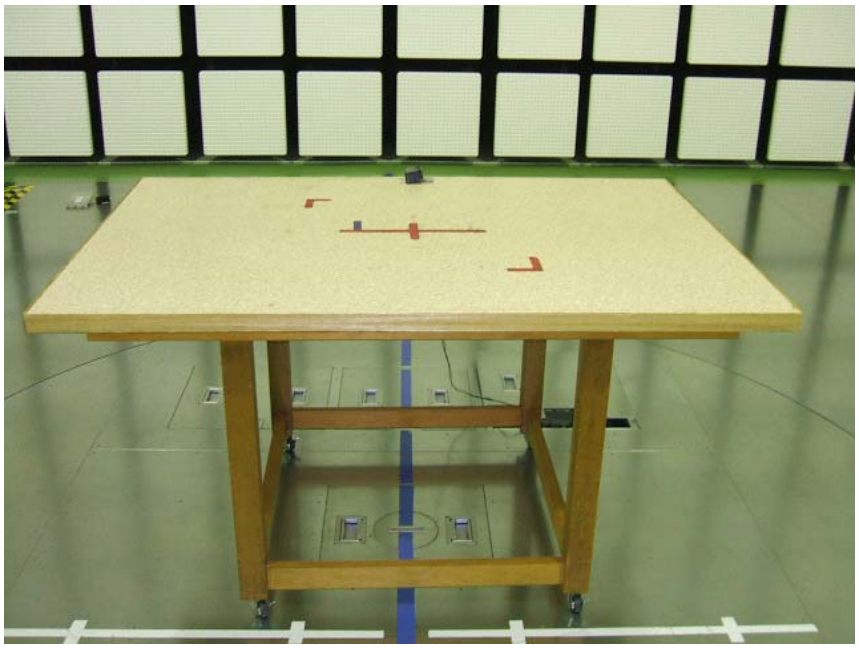
Date: October 16 and November 1, 2006 Test engineer: Motoya Imura

APPENDIX 1: Photographs of test setup

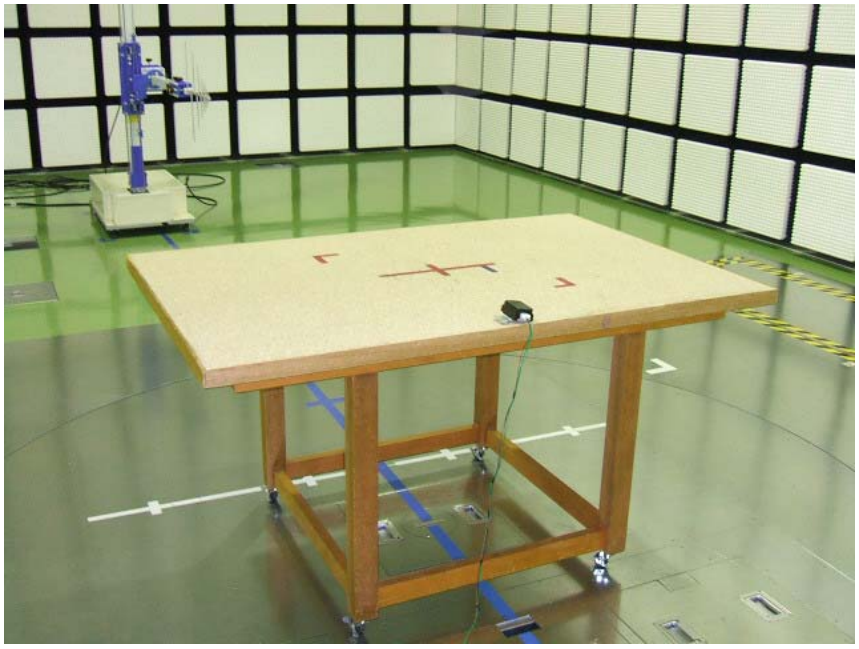
Radiated Emission

(Type1)

Front



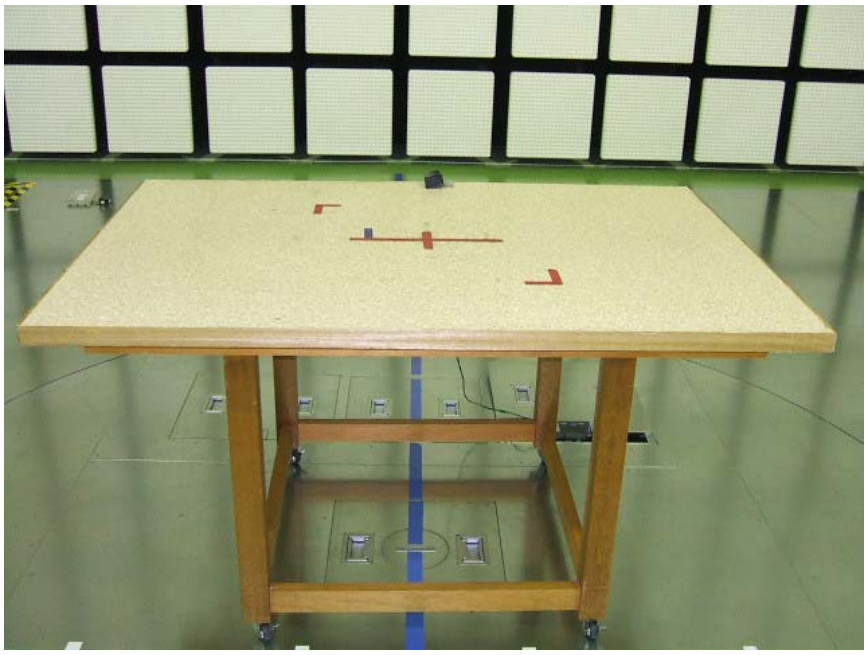
Rear



Radiated Emission

(Type2)

Front



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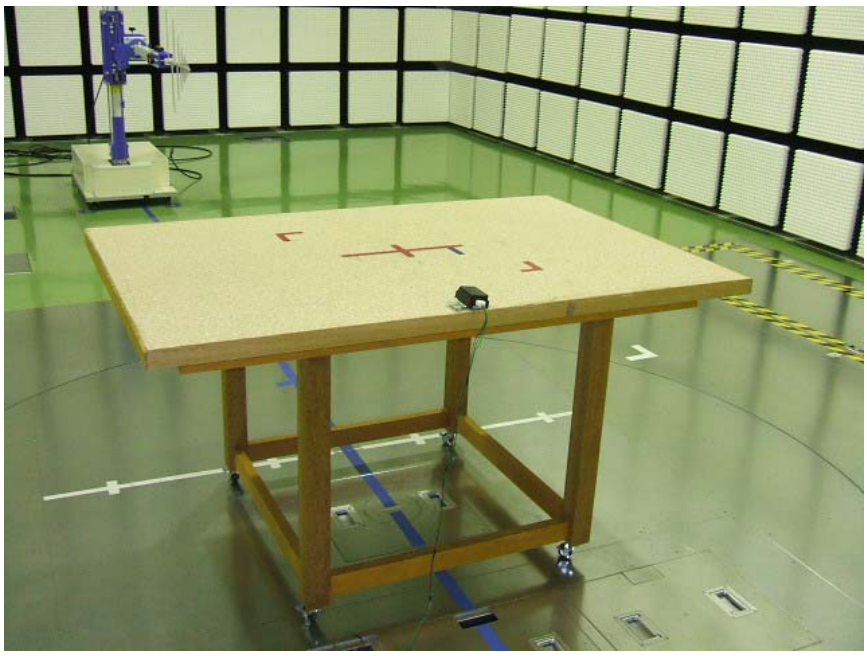
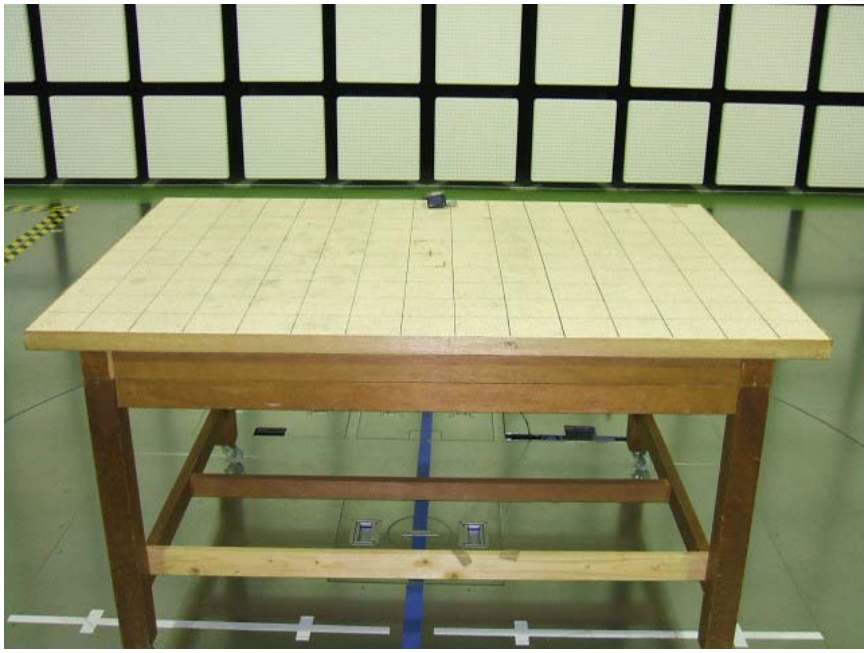


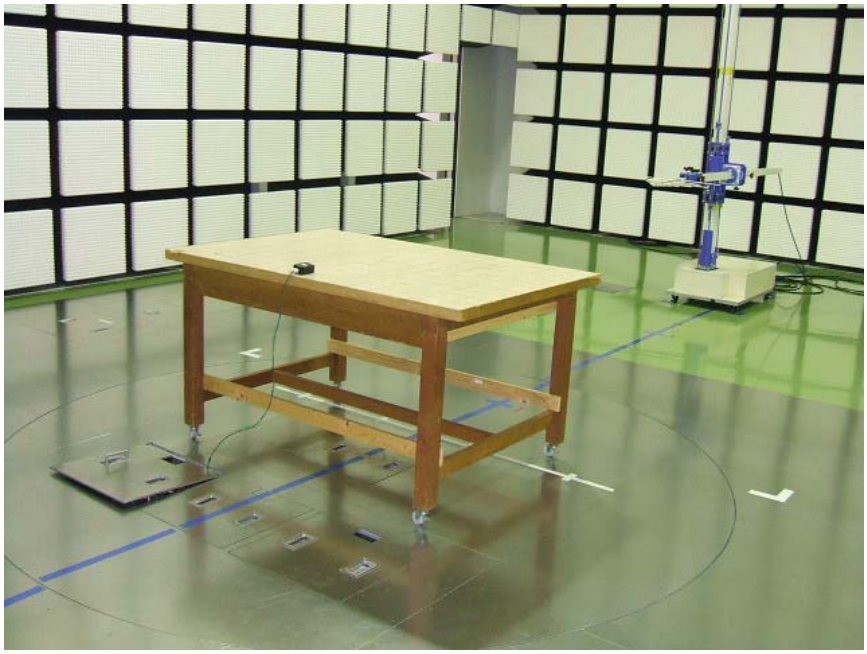
Radiated Emission

(Type3)

Front



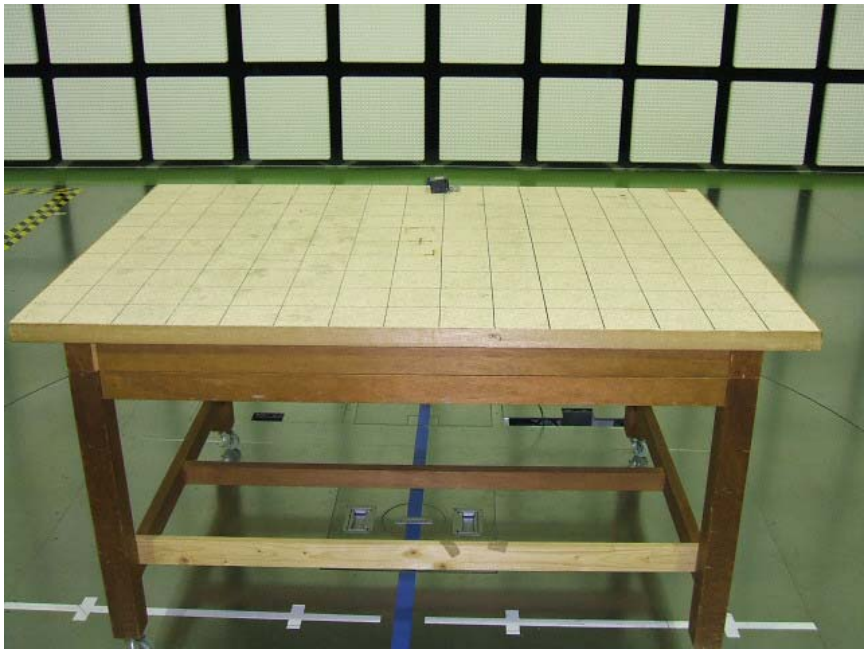
Rear



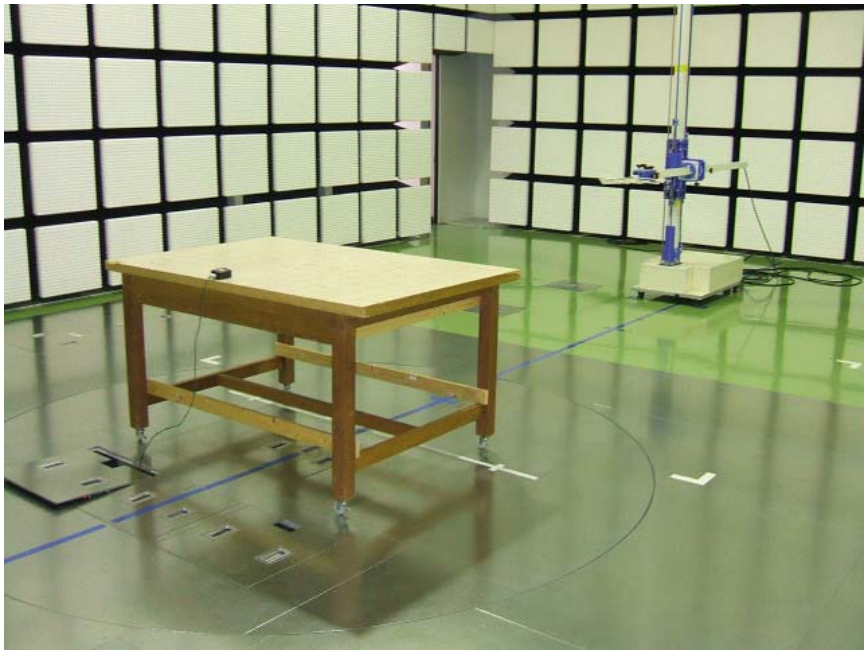
Radiated Emission

(Type4)

Front



Rear



Worst Case Position
(Horizontal : X-axis/ Vertical: X-axis)

X-axis

Y-axis

Z-axis

APPENDIX 2: Data of EMI test

Radiated Emission
(Type1)

DATA OF RADIATED EMISSION TEST

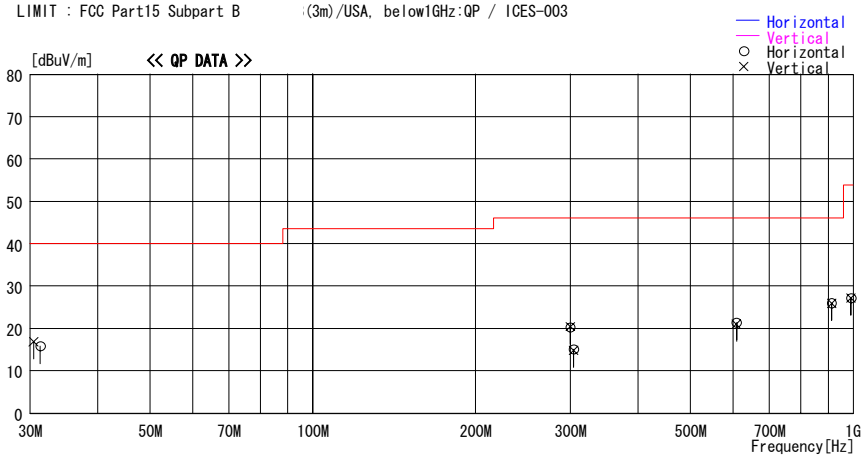
UL Apex Co., Ltd. Head Office EMC Lab. No.3 Semi Anechoic Chamber
Date : 2006/10/16 16:41:31

Applicant : DENSO CORPORATION
Kind of EUT : Tire Pressure Monitoring System
Model No. : 13BCX (Type1)
Serial No. : 001

Report No. : 27AE0237-HO
Power : DC5V
Temp./Humi. : 23.6deg.C / 50%
Operator : Motoya Imura

Mode / Remarks : Receving mode

LIMIT : FCC Part15 Subpart B (3m)/USA, below1GHz:QP / ICES-003



Frequency [MHz]	Reading [dBuV]	DET	Antenna Factor [dB/m]	Loss& Gain [dB]	Level [dBuV/m]	Angle [Deg]	Height [cm]	Polar.	Limit [dBuV/m]	Margin [dB]
30.450	22.0	QP	19.8	-25.0	16.8	3	100	Vert.	40.0	23.2
31.350	21.8	QP	19.1	-25.1	15.8	359	300	Hori.	40.0	24.2
304.280	22.5	QP	14.6	-22.3	14.8	0	100	Vert.	46.0	31.2
304.280	22.8	QP	14.6	-22.3	15.1	261	300	Hori.	46.0	30.9
299.870	22.1	QP	20.5	-22.2	20.4	355	100	Vert.	46.0	25.6
299.958	21.9	QP	20.5	-22.2	20.2	30	300	Hori.	46.0	25.8
608.560	21.9	QP	19.8	-20.7	21.0	0	100	Vert.	46.0	25.0
608.560	22.3	QP	19.8	-20.7	21.4	150	100	Hori.	46.0	24.6
912.840	22.4	QP	21.8	-18.2	26.0	327	100	Hori.	46.0	20.0
912.840	22.3	QP	21.8	-18.2	25.9	0	100	Vert.	46.0	20.1
991.870	21.2	QP	23.4	-17.4	27.2	171	100	Hori.	53.9	26.7
992.345	21.2	QP	23.4	-17.4	27.2	9	100	Vert.	53.9	26.7

CHART:WITH FACTOR ANT TYPE : -30MHz LOOP, 30-300MHz BICONICAL, 300MHz-1000MHz LOGPERIODIC, 1000MHz- HORN

Radiated Emission
(Type1)

DATA OF RADIATED EMISSION TEST

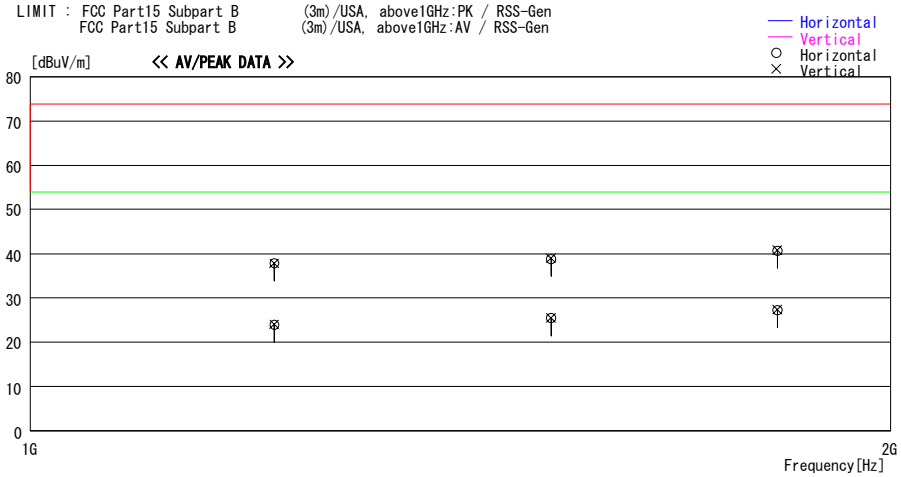
UL Apex Co., Ltd. Head Office EMC Lab. No.3 Semi Anechoic Chamber
Date : 2006/10/16 16:07:06

Applicant : DENSO CORPORATION
Kind of EUT : Tire Pressure Monitoring System
Model No. : 13BCX (Type1)
Serial No. : 001

Report No. : 27AE0237-HO
Power : DC5V
Temp./Humi. : 23.6deg.C / 50%
Operator : Motoya Imura

Mode / Remarks : Receving mode

LIMIT : FCC Part15 Subpart B (3m)/USA, above1GHz:PK / RSS-Gen
FCC Part15 Subpart B (3m)/USA, above1GHz:AV / RSS-Gen



Frequency	Reading	DET	Antenna Factor	Loss& Gain	Level	Angle	Height	Polar.	Limit	Margin
[MHz]	[dBuV]		[dB/m]	[dB]	[dBuV/m]	[Deg]	[cm]		[dBuV/m]	[dB]
1217.120	45.1	PK	25.9	-33.1	37.9	0	100	Hori.	73.9	36.0
1217.120	45.0	PK	25.9	-33.1	37.8	0	100	Vert.	73.9	36.1
1217.120	31.2	AV	25.9	-33.1	24.0	0	100	Hori.	53.9	29.9
1217.120	31.2	AV	25.9	-33.1	24.0	0	100	Vert.	53.9	29.9
1521.400	44.8	PK	26.2	-32.2	38.8	0	100	Hori.	73.9	35.1
1521.400	45.0	PK	26.2	-32.2	39.0	0	100	Vert.	73.9	34.9
1521.400	31.5	AV	26.2	-32.2	25.5	0	100	Hori.	53.9	28.4
1521.400	31.5	AV	26.2	-32.2	25.5	0	100	Vert.	53.9	28.4
1825.680	44.3	PK	27.8	-31.3	40.8	0	100	Vert.	73.9	33.1
1825.680	44.2	PK	27.8	-31.3	40.7	0	100	Hori.	73.9	33.2
1825.680	30.9	AV	27.8	-31.3	27.4	0	100	Vert.	53.9	26.5
1825.680	30.8	AV	27.8	-31.3	27.3	0	100	Hori.	53.9	26.6

CHART:WITH FACTOR ANT TYPE : -30MHz LOOP,30-300MHz BICONICAL,300MHz-1000MHz LOGPERIODIC,1000MHz- HORN

Radiated Emission

(Type2: Reference data)

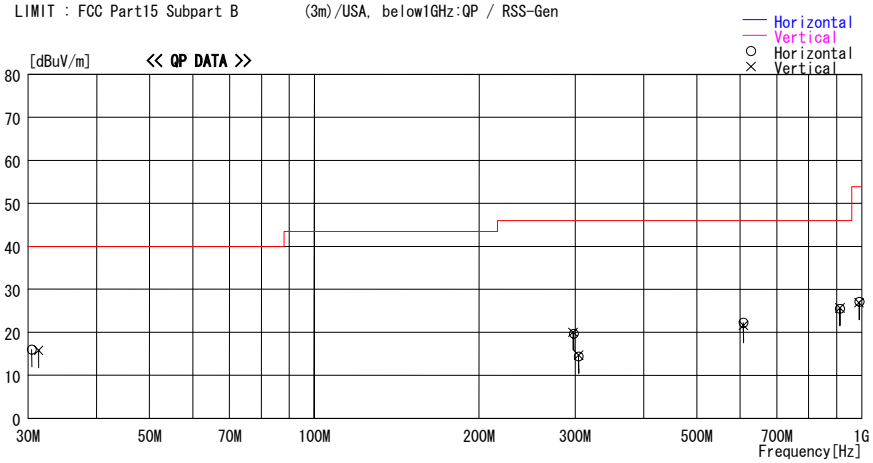
DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber
Date : 2006/10/16 17:17:16

Applicant	: DENSO CORPORATION	Report No.	: 27AE0237-HO
Kind of EUT	: Tire Pressure Monitoring System	Power	: DC5V
Model No.	: 13BCX (Type2)	Temp./Humi.	: 23.6deg.C / 50%
Serial No.	: 002	Operator	: Motoya Imura

Mode / Remarks : Receving mode

LIMIT : FCC Part15 Subpart B (3m)/USA, below1GHz:QP / RSS-Gen



Frequency [MHz]	Reading [dBuV]	DET	Antenna Factor [dB/m]	Loss& Gain [dB]	Level [dBuV/m]	Angle [Deg]	Height [cm]	Polar.	Limit [dBuV/m]	Margin [dB]
30.450	21.2	QP	19.8	-25.0	16.0	0	300	Hori.	40.0	24.0
31.350	21.8	QP	19.1	-25.1	15.8	359	100	Vert.	40.0	24.2
304.280	22.1	QP	14.6	-22.3	14.4	0	300	Hori.	46.0	31.6
304.280	22.4	QP	14.6	-22.3	14.7	130	100	Vert.	46.0	31.3
298.200	21.5	QP	20.4	-22.2	19.7	0	300	Hori.	46.0	26.3
296.980	21.9	QP	20.4	-22.3	20.0	359	100	Vert.	46.0	26.0
608.560	22.5	QP	19.8	-20.7	21.6	162	100	Vert.	46.0	24.4
608.560	23.1	QP	19.8	-20.7	22.2	0	100	Hori.	46.0	23.8
912.840	22.1	QP	21.8	-18.2	25.7	191	100	Vert.	46.0	20.3
912.840	21.9	QP	21.8	-18.2	25.5	242	100	Hori.	46.0	20.5
991.230	21.1	QP	23.4	-17.4	27.1	0	100	Hori.	53.9	26.8
989.507	20.9	QP	23.4	-17.4	26.9	62	100	Vert.	53.9	27.0

CHART:WITH FACTOR ANT TYPE : -30MHz LOOP,30-300MHz BICONICAL,300MHz-1000MHz LOGPERIODIC,1000MHz- HORN

Radiated Emission
(Type2: Reference data)

DATA OF RADIATED EMISSION TEST

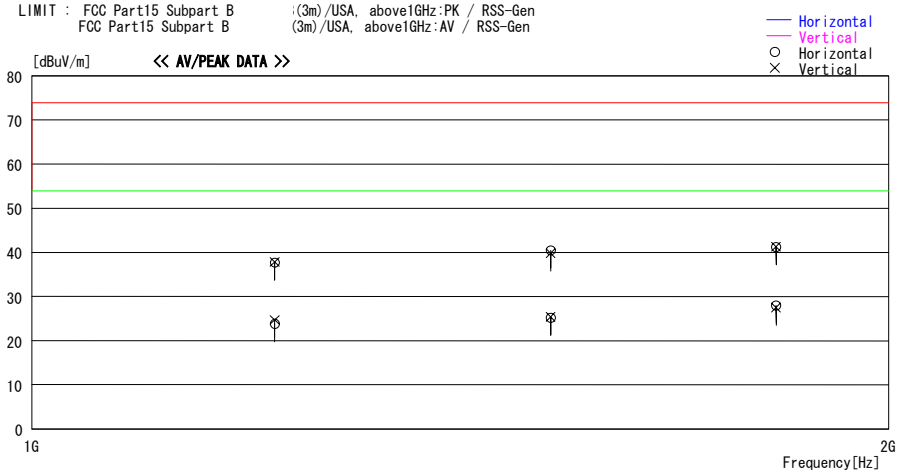
UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber
Date : 2006/10/16 14:51:39

Applicant : DENSO CORPORATION
Kind of EUT : Tire Pressure Monitoring System
Model No. : 13BCX (Type2)
Serial No. : 002

Report No. : 27AE0237-HO
Power : DC5V
Temp./Humi. : 23.6deg.C / 50%
Operator : Motoya Imura

Mode / Remarks : Receving mode

LIMIT : FCC Part15 Subpart B (3m)/USA, above1GHz:PK / RSS-Gen
FCC Part15 Subpart B (3m)/USA, above1GHz:AV / RSS-Gen



Frequency	Reading	DET	Antenna Factor	Loss& Gain	Level	Angle	Height	Polar.	Limit	Margin
[MHz]	[dBuV]		[dB/m]	[dB]	[dBuV/m]	[Deg]	[cm]		[dBuV/m]	[dB]
1217.120	44.9	PK	25.9	-33.1	37.7	0	100	Hori.	73.9	36.2
1217.120	45.0	PK	25.9	-33.1	37.8	0	100	Vert.	73.9	36.1
1217.120	31.0	AV	25.9	-33.1	23.8	0	100	Hori.	53.9	30.1
1217.120	31.9	AV	25.9	-33.1	24.7	0	100	Vert.	53.9	29.2
1521.400	46.5	PK	26.2	-32.2	40.5	0	100	Hori.	73.9	33.4
1521.400	45.8	PK	26.2	-32.2	39.8	0	100	Vert.	73.9	34.1
1521.400	31.4	AV	26.2	-32.2	25.4	0	100	Vert.	53.9	28.5
1521.400	31.2	AV	26.2	-32.2	25.2	0	100	Hori.	53.9	28.7
1825.680	44.8	PK	27.8	-31.3	41.3	0	100	Vert.	73.9	32.6
1825.680	44.7	PK	27.8	-31.3	41.2	0	100	Hori.	73.9	32.7
1825.680	31.0	AV	27.8	-31.3	27.5	0	100	Vert.	53.9	26.4
1825.680	31.5	AV	27.8	-31.3	28.0	0	100	Hori.	53.9	25.9

CHART:WITH FACTOR ANT TYPE : -30MHz LOOP,30-300MHz BICONICAL,300MHz-1000MHz LOGPERIODIC,1000MHz- HORN

Radiated Emission
(Type3: Reference data)

DATA OF RADIATED EMISSION TEST

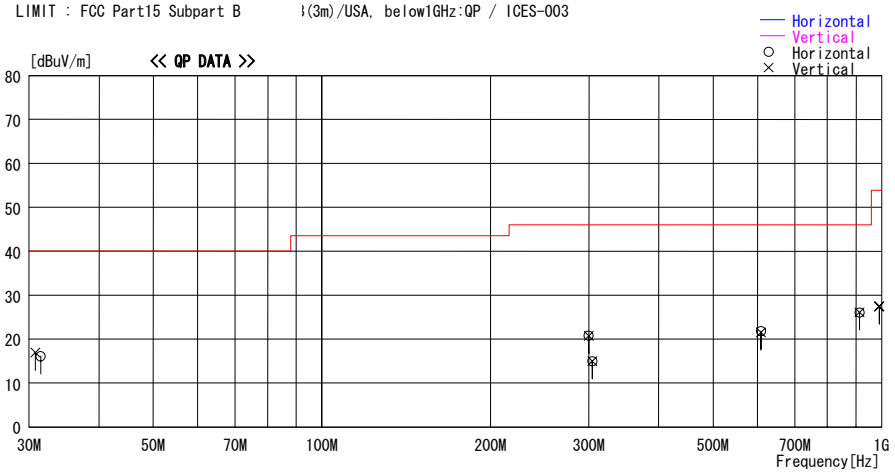
UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber
Date : 2006/11/01 20:48:39

Applicant : DENSO CORPORATION
Kind of EUT : Tire Pressure Monitoring System
Model No. : 13BCX (Type3)
Serial No. : 003

Report No. : 27AE0237-HO
Power : DC5V
Temp./Humi. : 24.5deg.C / 50%
Operator : Motoya Imura

Mode / Remarks : Receiving mode

LIMIT : FCC Part15 Subpart B (3m)/USA, below1GHz:QP / ICES-003



Frequency [MHz]	Reading [dBuV]	DET	Antenna Factor [dB/m]	Loss& Gain [dB]	Level [dBuV/m]	Angle [Deg]	Height [cm]	Polar.	Limit [dBuV/m]	Margin [dB]
31.450	22.1	QP	19.1	-25.1	16.1	0	0	Hori.	40.0	23.9
30.780	22.4	QP	19.5	-25.0	16.9	0	0	Vert.	40.0	23.1
299.875	22.4	QP	20.5	-22.2	20.7	0	0	Vert.	46.0	25.3
299.550	22.5	QP	20.5	-22.2	20.8	0	0	Hori.	46.0	25.2
304.280	22.7	QP	14.6	-22.3	15.0	0	0	Hori.	46.0	31.0
304.280	22.7	QP	14.6	-22.3	15.0	0	0	Vert.	46.0	31.0
608.560	22.4	QP	19.8	-20.7	21.5	0	0	Vert.	46.0	24.5
608.560	22.7	QP	19.8	-20.7	21.8	0	0	Hori.	46.0	24.2
912.840	22.5	QP	21.8	-18.2	26.1	0	0	Hori.	46.0	19.9
912.840	22.5	QP	21.8	-18.2	26.1	0	0	Vert.	46.0	19.9
990.200	21.4	QP	23.4	-17.4	27.4	0	0	Vert.	53.9	26.5
991.200	21.5	QP	23.4	-17.4	27.5	0	0	Vert.	53.9	26.4

CHART:WITH FACTOR ANT TYPE : -30MHz LOOP, 30-300MHz BICONICAL, 300MHz-1000MHz LOGPERIODIC, 1000MHz- HORN

Radiated Emission
(Type3: Reference data)

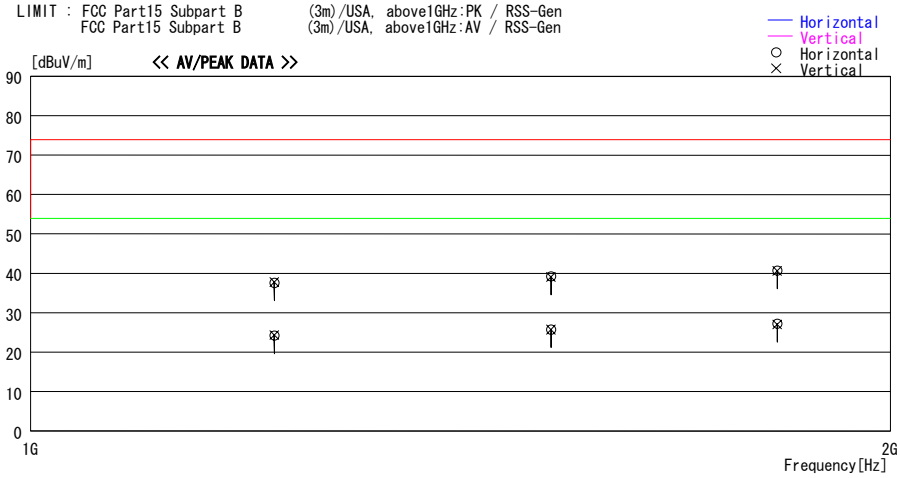
DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber
Date : 2006/11/01 22:43:17

Applicant	: DENSO CORPORATION	Report No.	: 27AE0237-HO
Kind of EUT	: Tire Pressure Monitoring System	Power	: DC5V
Model No.	: 13BCX (Type3)	Temp./Humi.	: 23.6deg.C / 50%
Serial No.	: 003	Operator	: Motoya Imura

Mode / Remarks : Receving mode

LIMIT : FCC Part15 Subpart B (3m)/USA, above1GHz:PK / RSS-Gen
FCC Part15 Subpart B (3m)/USA, above1GHz:AV / RSS-Gen



Frequency [MHz]	Reading [dBuV]	DET	Antenna Factor [dB/m]	Loss& Gain [dB]	Level [dBuV/m]	Angle [Deg]	Height [cm]	Polar.	Limit [dBuV/m]	Margin [dB]
1217.120	44.8	PK	25.9	-33.1	37.6	0	0	Hori.	73.9	36.3
1217.120	45.0	PK	25.9	-33.1	37.8	0	0	Vert.	73.9	36.1
1217.120	31.4	AV	25.9	-33.1	24.2	0	0	Hori.	53.9	29.7
1217.120	31.5	AV	25.9	-33.1	24.3	0	0	Vert.	53.9	29.6
1521.400	45.2	PK	26.2	-32.2	39.2	0	0	Hori.	73.9	34.7
1521.400	45.1	PK	26.2	-32.2	39.1	0	0	Vert.	73.9	34.8
1521.400	31.7	AV	26.2	-32.2	25.7	0	0	Hori.	53.9	28.2
1521.400	31.7	AV	26.2	-32.2	25.7	0	0	Vert.	53.9	28.2
1825.680	44.2	PK	27.8	-31.3	40.7	0	0	Hori.	73.9	33.2
1825.680	44.1	PK	27.8	-31.3	40.6	0	0	Vert.	73.9	33.3
1825.680	30.7	AV	27.8	-31.3	27.2	0	0	Hori.	53.9	26.7
1825.680	30.5	AV	27.8	-31.3	27.0	0	0	Vert.	53.9	26.9

CHART:WITH FACTOR ANT TYPE : -30MHz LOOP,30-300MHz BICONICAL,300MHz-1000MHz LOGPERIODIC,1000MHz- HORN

Radiated Emission

(Type4: Reference data)

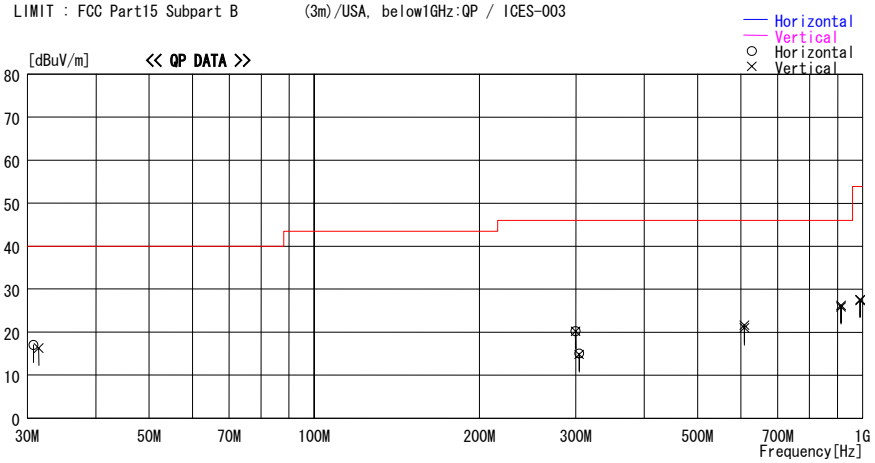
DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber
Date : 2006/11/01 22:09:19

Applicant	: DENSO CORPORATION	Report No.	: 27AE0237-HO
Kind of EUT	: Tire Pressure Monitoring System	Power	: DC5V
Model No.	: 13BCX (Type4)	Temp./Humi.	: 23.6deg.C / 50%
Serial No.	: 004	Operator	: Motoya Imura

Mode / Remarks : Receiving mode

LIMIT : FCC Part15 Subpart B (3m)/USA, below1GHz:QP / ICES-003



Frequency [MHz]	Reading [dBuV]	DET	Antenna Factor [dB/m]	Loss& Gain [dB]	Level [dBuV/m]	Angle [Deg]	Height [cm]	Polar.	Limit [dBuV/m]	Margin [dB]
30.770	22.5	QP	19.5	-25.0	17.0	0	0	Hori.	40.0	23.0
31.450	22.3	QP	19.1	-25.1	16.3	0	0	Vert.	40.0	23.7
299.850	21.9	QP	20.5	-22.2	20.2	0	0	Vert.	46.0	25.8
299.550	21.9	QP	20.5	-22.2	20.2	0	0	Hori.	46.0	25.8
304.280	22.8	QP	14.6	-22.3	15.1	0	0	Hori.	46.0	30.9
304.280	22.5	QP	14.6	-22.3	14.8	0	0	Vert.	46.0	31.2
608.560	22.5	QP	19.8	-20.7	21.6	0	0	Hori.	46.0	24.4
608.560	21.9	QP	19.8	-20.7	21.0	0	0	Vert.	46.0	25.0
912.840	22.6	QP	21.8	-18.2	26.2	0	0	Hori.	46.0	19.8
912.840	22.3	QP	21.8	-18.2	25.9	0	0	Vert.	46.0	20.1
990.450	21.6	QP	23.4	-17.4	27.6	0	0	Hori.	53.9	26.3
989.760	21.4	QP	23.4	-17.4	27.4	0	0	Vert.	53.9	26.5

CHART:WITH FACTOR ANT TYPE : -30MHz LOOP, 30-300MHz BICONICAL, 300MHz-1000MHz LOGPERIODIC, 1000MHz- HORN

Radiated Emission
(Type4: Reference data)

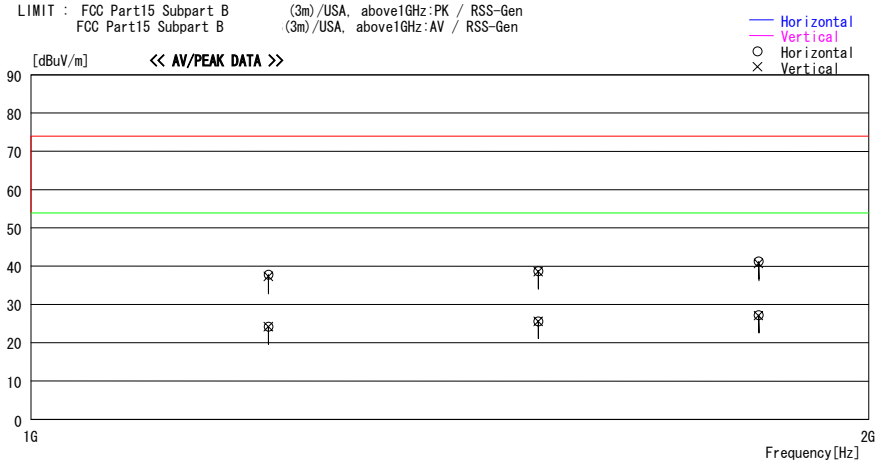
DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber
Date : 2006/11/01 22:47:32

Applicant	: DENSO CORPORATION	Report No.	: 27AE0237-HO
Kind of EUT	: Tire Pressure Monitoring System	Power	: DC5V
Model No.	: 13BCX(Type4)	Temp./Humi.	: 23.6deg.C / 50%
Serial No.	: 004	Operator	: Motoya Imura

Mode / Remarks : Receving mode

LIMIT : FCC Part15 Subpart B (3m)/USA, above1GHz:PK / RSS-Gen
FCC Part15 Subpart B (3m)/USA, above1GHz:AV / RSS-Gen



Frequency	Reading	DET	Antenna Factor	Loss& Gain	Level	Angle	Height	Polar.	Limit	Margin
[MHz]	[dBuV]		[dB/m]	[dB]	[dBuV/m]	[Deg]	[cm]		[dBuV/m]	[dB]
1217.120	45.0	PK	25.9	-33.1	37.8	0	0	Hori.	73.9	36.1
1217.120	44.5	PK	25.9	-33.1	37.3	0	0	Vert.	73.9	36.6
1217.120	31.4	AV	25.9	-33.1	24.2	0	0	Hori.	53.9	29.7
1217.120	31.4	AV	25.9	-33.1	24.2	0	0	Vert.	53.9	29.7
1521.400	44.7	PK	26.2	-32.2	38.7	0	0	Hori.	73.9	35.2
1521.400	44.5	PK	26.2	-32.2	38.5	0	0	Vert.	73.9	35.4
1521.400	31.6	AV	26.2	-32.2	25.6	0	0	Hori.	53.9	28.3
1521.400	31.6	AV	26.2	-32.2	25.6	0	0	Vert.	53.9	28.3
1825.680	44.7	PK	27.8	-31.3	41.2	0	0	Hori.	73.9	32.7
1825.680	44.2	PK	27.8	-31.3	40.7	0	0	Vert.	73.9	33.2
1825.680	30.7	AV	27.8	-31.3	27.2	0	0	Hori.	53.9	26.7
1825.680	30.6	AV	27.8	-31.3	27.1	0	0	Vert.	53.9	26.8

CHART:WITH FACTOR ANT TYPE : -30MHz LOOP,30-300MHz BICONICAL,300MHz-1000MHz LOGPERIODIC,1000MHz- HORN

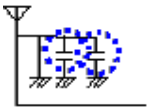
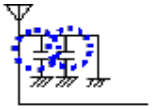
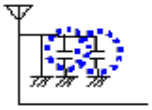
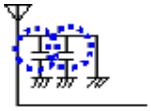
APPENDIX 3: Test instruments

Control No.	Instrument	Manufacturer	Model No	Test Item	Calibration Date * Interval(month)
MBA-03	Biconical Antenna	Schwarzbeck	BBA9106	RE	2006/01/29 * 12
MLA-03	Logperiodic Antenna	Schwarzbeck	USLP9143	RE	2006/01/29 * 12
MAT-30	Attenuator(6dB)	TME	UFA-01	RE	2006/03/11 * 12
MCC-51	Coaxial cable	UL Apex	-	RE	2006/03/11 * 12
MPA-13	Pre Amplifier	SONOA INSTRUMENT	310	RE	2006/03/25 * 12
MHA-20	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	RE	2006/04/06 * 12
MCC-56	Microwave Cable 1G-26.5GHz	Suhner	SUCOFLEX104	RE	2006/04/15 * 12
MPA-11	MicroWave System Amplifier	Agilent	83017A	RE	2006/03/27 * 12
MSA-04	Spectrum Analyzer	Agilent	E4448A	RE	2006/06/02 * 12
MSTW-14	EMI measurement program	TSJ	TEPTO-DV	RE	-
MOS-12	Thermo-Hygrometer	Custom	CTH-180	RE	2006/01/19 * 24
MBM-07	Barometer	SATO	Aneroid(7610-20)	RE	2006/06/02 * 36
MDPS-05	DC Power Supply	KENWOOD TMI	PW8-3ATP	RE	Pre Check
TR-07	Test Receiver	Rohde & Schwarz	ESCS30	RE	2006/09/12 * 12
MAEC-03	Anechoic Chamber	TDK	Semi Anechoic Chamber 3m	RE	2006/03/03 * 12
MJM-06	Measure	PROMART	SEN1955	RE	-
MDPS-04	DC Power Supply	KENWOOD TMI	PW18-1.3AT	RE	Pre Check

The expiration date of the calibration is the end of the expired month.
All equipment is calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
Test Item:
RE: Radiated emission

APPENDIX 4: Information of Type 1 to 4

Detail of variations

	Type 1	Type 2	Type 3	Type 4
Capacitor	Nothing	Nothing	Nothing, 0.5-100pF or 1-100nH	Nothing, 0.5-100pF or 1-100nH
	Nothing	Nothing	Nothing, 0.5-100pF or 1-100nH	Nothing, 0.5-100pF or 1-100nH
Fig.				

Difference between Type 1 and Type 2
Ground points are different.

Difference between Type 1 and Type 3
Type 1 has vacant terminals, and Type 3 has elements on them.

Difference between Type 1 and Type 4
Ground points are different.
Type 1 has vacant terminals, and Type 4 has elements on them.

*Remarks:
Difference between Type 3 and Type 4
Ground points are different.

Refer to the attached photo of variations in the next page.

Photos of variations