

APPENDIX 2: Data of EMI test

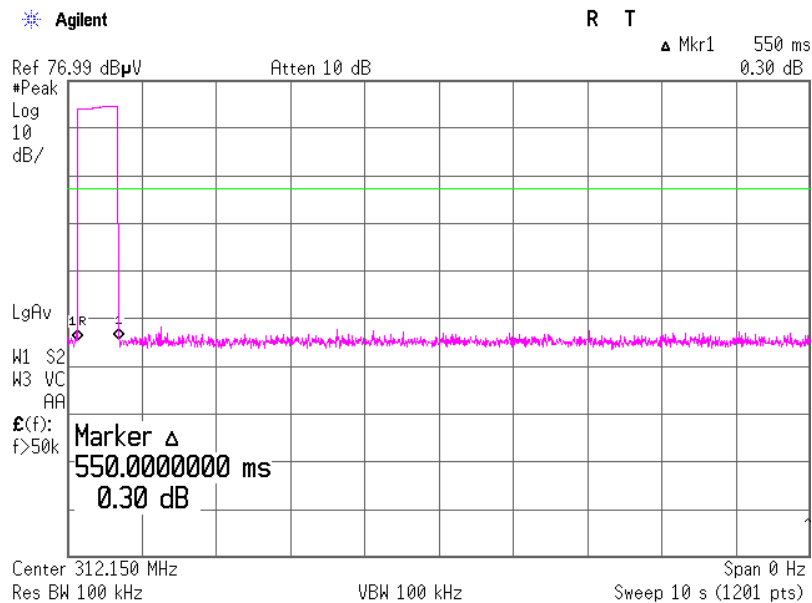
Automatically deactivate

UL Japan, Inc.
Head Office EMC Lab. No.1 Semi Anechoic Chamber

COMPANY : DENSO CORPORATION
EQUIPMENT : Electronic Key
MODEL : 14ADF
S/N : 2
POWER : DC 3.0V (CR1632)
Mode : Normal use mode
Axis : -

REPORT NO : 28FE0180-HO
REGULATION : FCC Part 15 Subpart C 15.231(a)(1)
TEST DISTANCE : -
DATE : 02/14/2008
TEMPERATURE : 21 deg.C.
HUMIDITY : 25%
ENGINEER : Kazufumi Nakai

Time of Transmitting [sec]	Limit [sec]	Result
0.55	5.00	Pass



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Radiated Emission (Electric Field Strength of Fundamental and Spurious Emission)

UL Japan, Inc.
Head Office EMC Lab. No.1 Semi Anechoic Chamber

COMPANY : DENSO CORPORATION
EQUIPMENT : Electronic Key
MODEL : 14ADF
S/N : 1
POWER : DC 3.0V (CR1632)
Mode : Transmitting mode
Axis : Hor.: X-axis , Ver.: Z-axis

REPORT NO : 28FE0180-HO
REGULATION : FCC Part15 Subpart C 15.231(b) / 15.205 / 15.209
TEST DISTANCE : 3m
DATE : 02/14/2008
TEMPERATURE : 21 deg.C.
HUMIDITY : 25%
ENGINEER : Kazufumi Nakai

QP DETECT (BW 120kHz)

No.	FREQ [MHz]	T/R READING		ANT Factor [dB/m]	AMP GAIN [dB]	LOSS [dB]	Duty Factor [dB]	RESULT		Limit [dBuV/m]	MARGIN	
		HOR [dBuV]	VER					HOR [dBuV/m]	VER		HOR [dB]	VER [dB]
1	312.15	72.2	69.5	13.9	27.2	10.5	-	69.4	66.7	75.4	6.0	8.7
2	624.30	31.7	32.6	19.3	28.1	12.5	-	35.4	36.3	55.4	20.0	19.1
3	936.45	25.4	24.1	22.4	27.2	14.1	-	34.7	33.4	55.4	20.7	22.0

PK DETECT (RBW: 1MHz, VBW: 1MHz)

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	LOSS [dB]	Duty Factor [dB]	RESULT		Limit [dBuV/m]	MARGIN	
		HOR [dBuV]	VER					HOR [dBuV/m]	VER		HOR [dB]	VER [dB]
5	1560.75	45.1	45.2	25.2	36.7	2.4	-	36.0	36.1	73.9	37.9	37.8
8	2497.20	45.3	44.3	27.1	36.4	3.0	-	39.0	38.0	73.9	34.9	35.9
9	2809.35	43.2	43.5	27.7	36.5	3.1	-	37.5	37.8	73.9	36.4	36.1

AV (PK DETECT) (RBW: 1MHz, VBW: 10Hz)

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	LOSS [dB]	Duty Factor [dB]	RESULT		Limit [dBuV/m]	MARGIN	
		HOR [dBuV]	VER					HOR [dBuV/m]	VER		HOR [dB]	VER [dB]
5	1560.75	31.7	31.6	25.2	36.7	2.4	-	22.6	22.5	53.9	31.3	31.4
8	2497.20	30.9	30.9	27.1	36.4	3.0	-	24.6	24.6	53.9	29.3	29.3
9	2809.35	30.0	30.0	27.7	36.5	3.1	-	24.3	24.3	53.9	29.6	29.6

PK DETECT (RBW: 1MHz, VBW: 1MHz)

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	LOSS [dB]	Duty Factor [dB]	RESULT		Limit [dBuV/m]	MARGIN	
		HOR [dBuV]	VER					HOR [dBuV/m]	VER		HOR [dB]	VER [dB]
4	1248.60	45.5	45.8	24.8	36.9	2.3	-	35.7	36.0	75.4	39.7	39.4
6	1872.90	45.9	45.3	25.7	36.5	2.6	-	37.7	37.1	75.4	37.7	38.3
7	2185.05	44.0	44.6	26.3	36.4	2.8	-	36.7	37.3	75.4	38.7	38.1
10	3121.50	44.4	43.6	28.2	36.5	3.4	-	39.5	38.7	75.4	35.9	36.7

AV (PK DETECT) (RBW: 1MHz, VBW: 10Hz)

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	LOSS [dB]	Duty Factor [dB]	RESULT		Limit [dBuV/m]	MARGIN	
		HOR [dBuV]	VER					HOR [dBuV/m]	VER		HOR [dB]	VER [dB]
4	1248.60	32.2	32.3	24.8	36.9	2.3	-	22.4	22.5	55.4	33.0	32.9
6	1872.90	31.6	31.6	25.7	36.5	2.6	-	23.4	23.4	55.4	32.0	32.0
7	2185.05	30.8	30.7	26.3	36.4	2.8	-	23.5	23.4	55.4	31.9	32.0
10	3121.50	30.2	30.1	28.2	36.5	3.4	-	25.3	25.2	55.4	30.1	30.2

REMARKS ANTENNA TYPE:30-300MHz Biconical / 300-1000MHz Logperiodic / 1-3.2GHz Horn
CALCULATION RESULT=Reading + ANT Factor - Amp Gain + LOSS (Cable+ ATTEN.)+Duty factor

- *In the frequency over the 4th harmonic, the noise from the EUT was not seen. The data above is its base noise.
 - * The result is rounded off to the second decimal place, so some differences might be observed.
 - *The limit was converted from V to dBuV, and it is rounded off to the second decimal place.
 - *Except for the above table : All other spurious emissions were less than 20dB for the limit.
- The carrier level (or, noise levels) was (or were) measured at each position of all three axes X, Y and Z,
and the position that has the maximum noise was determined. With the position, the noise levels of all the frequencies was measured.

-20dB Bandwidth

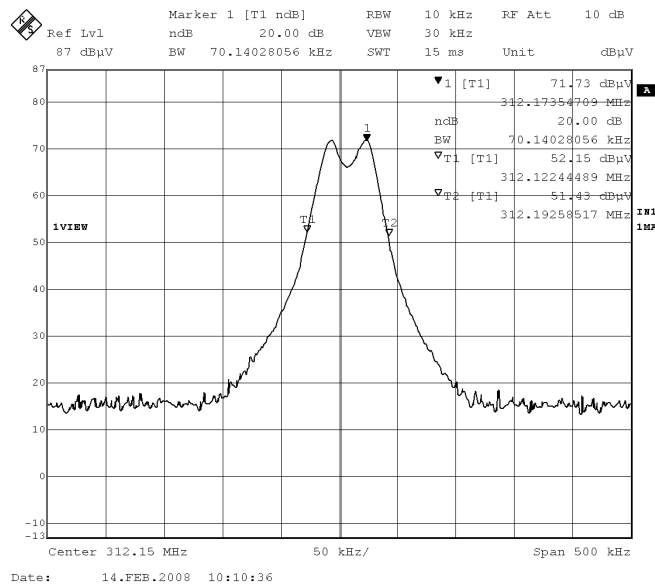
UL Japan, Inc.
 Head Office EMC Lab. No.1 Semi Anechoic Chamber

COMPANY : DENSO CORPORATION
 EQUIPMENT : Electronic Key
 MODEL : 14ADF
 S/N : 1
 POWER : DC 3.0V (CR1632)
 Mode : Transmitting mode
 Axis : Hor.: X-axis

REPORT NO : 28FE0180-HO
 REGULATION : FCC Part 15 Subpart C 15.231(c)
 TEST DISTANCE : 3m
 DATE : 02/14/2008
 TEMPERATURE : 21 deg.C.
 HUMIDITY : 25%
 ENGINEER : Kazufumi Nakai

Bandwidth Limit : Fundamental Frequency 312.15 MHz X 0.25% = 780.38 kHz

-20dB Bandwidth	Bandwidth Limit	Result
[kHz]	[kHz]	
70.14	780.38	Pass



99% Occupied Bandwidth

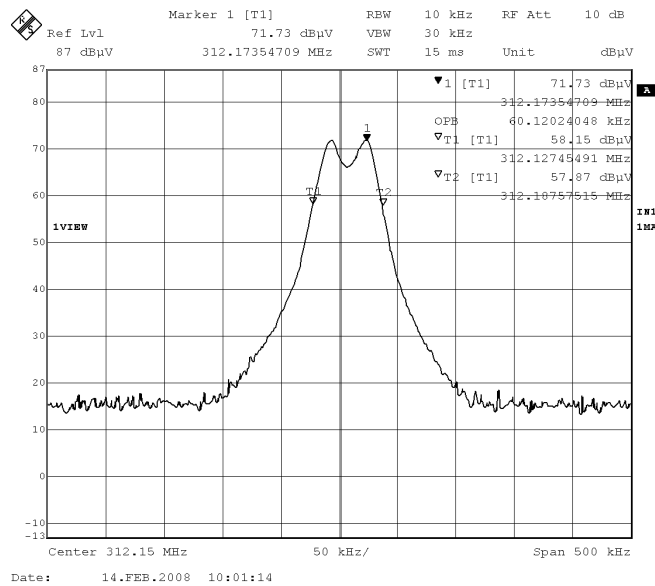
UL Japan, Inc.
Head Office EMC Lab. No.1 Semi Anechoic Chamber

COMPANY : DENSO CORPORATION
EQUIPMENT : Electronic Key
MODEL : 14ADF
S/N : 1
POWER : DC 3.0V (CR1632)
Mode : Transmitting mode
Axis : Hor.: X-axis

REPORT NO : 28FE0180-HO
REGULATION : RSS-210 A1.1.3
TEST DISTANCE : 3m
DATE : 02/14/2008
TEMPERATURE : 21 deg.C.
HUMIDITY : 25%
ENGINEER : Kazufumi Nakai

Bandwidth Limit : Fundamental Frequency 312.15 MHz X 0.25% = 780.38 kHz

99% Occupied Bandwidth	Bandwidth Limit	Result
[kHz]	[kHz]	
60.12	780.38	Pass



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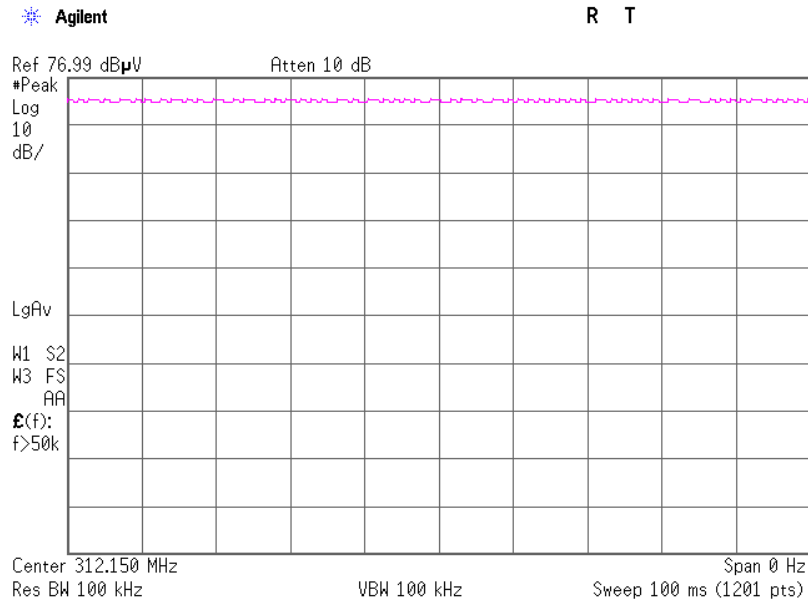
Duty Cycle(Fundamental)

UL Japan, Inc.
Head Office EMC Lab. No.1 Semi Anechoic Chamber

COMPANY : DENSO CORPORATION	REPORT NO : 28FE0180-HO
EQUIPMENT : Electronic Key	REGULATION : FCC 15.231(b) / 15.35(c)
MODEL : 14ADF	TEST DISTANCE : -
S/N : 1	DATE : 02/14/2008
POWER : DC 3.0V (CR1632)	TEMPERATURE : 21 deg.C
Mode : Transmitting mode	HUMIDITY : 25%
Axis : -	ENGINEER : Kazufumi Nakai

ON time [ms]	Cycle [ms]	Duty (On time/Cycle)	Duty [dB]
100.00	100.00	1.00	0.0

*3)Duty = 20log₁₀(ON time/Cycle)



APPENDIX 3: Test Instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Test Item	Calibration Date * Interval(month)
MAEC-01	Anechoic Chamber	TDK	Semi Anechoic Chamber 10m	RE	2007/11/23 * 12
MBA-01	Biconical Antenna	Schwarzbeck	BBA9106	RE	2007/10/21 * 12
MLA-09	Logperiodic Antenna	Schwarzbeck	USLP9143B	RE	2008/01/12 * 12
MAT-06	Attenuator(6dB)	Weinschel Corp	2	RE	2007/11/14 * 12
MCC-01	Coaxial Cable 0.1-3000MHz	Suhner/storm/Agilent/ TSJ	-	RE	2007/12/27 * 12
MPA-04	Pre Amplifier	Agilent	8447D	RE	2007/07/11 * 12
MTR-01	Test Receiver	Rohde & Schwarz	ESI40	RE	2007/10/19 * 12
MHA-05	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	RE	2008/01/19 * 12
MCC-18	Microwave Cable 1G-26.5GHz 5m	Suhner	SUCOFLEX 104	RE	2008/02/08 * 12
MCC-15	Microwave Cable 1G-26.5GHz 1m	Suhner	SUCOFLEX 104	RE	2008/02/08 * 12
MPA-01	Pre Amplifier	Agilent	8449B	RE	2008/02/12 * 12
MOS-01	Digital Humidity Indicator	N.T	NT-1800	RE	2007/11/12 * 12
MJM-01	Measure	KDS	ES19-55	RE	-
MSTW-14	EMI measurement program	TSJ	TEPTO-DV	RE	-
MRENT-62	Spectrum Analyzer	Agilent	E4448A	RE	2007/11/27 * 12

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.

As for some calibrations performed after the tested dates, those test equipment have been controlled by means of an unbroken chains of calibrations.

Test Item:

RE: Radiated emission

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