

APPENDIX 2: 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 / ME	2005/11/14 * 12
MBA-01	Biconical Antenna	Schwarzbeck	BBA9106	RE	2005/10/10 * 12
MLA-01	Logperiodic Antenna	Schwarzbeck	USLP9143	RE	2005/10/14 * 12
MOS-01	Digital Humidity Indicator	N.T	NT-1800	RE / ME	2004/11/25 * 24
MLPA-02	Loop Antenna	Rohde & Schwarz	HFH2-Z2	ME	2005/12/06 * 12
MCC-03	Coaxial Cable	Fujikura/Suhner/Agilent/TSJ	-	ME	2005/12/18 * 12
MCC-31	coaxial cable	ULApex	-	ME	2006/05/29 * 12
MPA-04	Pre Amplifier	Agilent	8447D	RE / ME	2006/05/27 * 12
MAT-06	Attenuator(6dB)	Weinschel Corp	2	RE	2005/12/16 * 12
MTR-01	Test Receiver	Rohde & Schwarz	ESI40	RE / ME	2005/11/10 * 12
MCC-01	Coaxial Cable 0.1-3000MHz	Suhner/storm/Agilent/TSJ	-	RE	2006/02/20 * 12
MSTW-14	EMI measurement program	TSJ	TEPTO-DV	RE / ME	-

All equipment is calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

Test Item:

ME: Spurious emission (9k-30MHz)

RE: Spurious emission (30M-1GHz)

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MF060b(24.05.06)

APPENDIX 3: Data of EMI test

Radiated Emission below 30MHz (Fundamental)

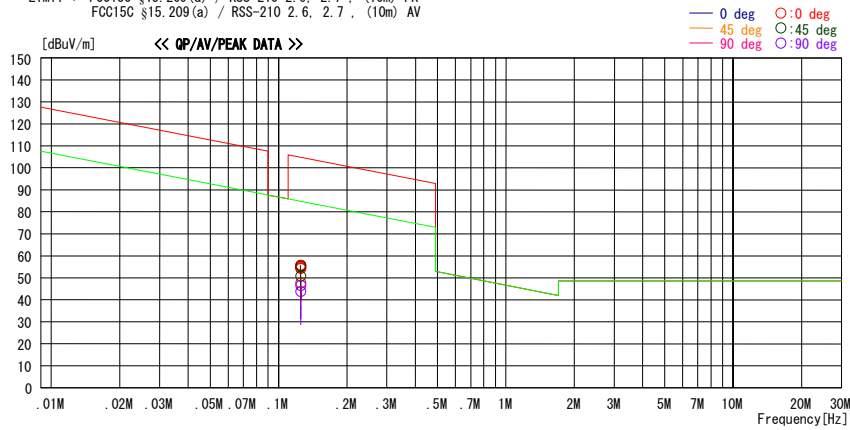
DATA OF MAGNETIC RADIATED EMISSION TEST

UL Apex Co., LTD. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2006/04/15 02:30:36

Applicant : OMRON Corporation
Kind of EUT : ECU
Model No. : G8D-640M-ECU
Serial No. : KU0003
Report No. : 26GE0265-HO
Power : DC 12V (Car Battery)
Temp./Humi. : 20deg.C / 44%
Operator : Norihisa Hashimoto

Mode / Remarks : Transmitting LF(125kHz)

LIMIT : FCC15C §15.209(a) / RSS-210 2.6, 2.7, (10m) PK
FCC15C §15.209(a) / RSS-210 2.6, 2.7, (10m) AV



Freq.	Reading	DET	Ant. Fac	Loss	Gain	Result	Limit	Margin	Antenna	Table	Comment
[MHz]	[dBuV]		[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]		[deg]	
0.12510	62.3	PEAK	19.5	0.2	26.2	55.8	104.7	48.9	0deg	310	X-axis
0.12510	62.2	PEAK	19.5	0.2	26.2	55.7	104.7	49.0	0deg	280	Y-axis
0.12510	54.1	PEAK	19.5	0.2	26.2	47.6	104.7	57.1	0deg	40	Z-axis
0.12510	61.8	PEAK	19.5	0.2	26.2	55.3	104.7	49.4	45deg	280	X-axis
0.12510	53.0	PEAK	19.5	0.2	26.2	46.5	104.7	58.2	90deg	40	X-axis
0.12510	60.8	AV	19.5	0.2	26.2	54.3	84.7	30.4	0deg	310	X-axis
0.12510	57.3	AV	19.5	0.2	26.2	50.8	84.7	33.9	45deg	310	X-axis
0.12510	50.3	AV	19.5	0.2	26.2	43.8	84.7	40.9	90deg	280	X-axis
0.12510	61.2	QP	19.5	0.2	26.2	54.7	104.7	50.0	0deg	310	X-axis

CHART : WITH FACTOR ANT TYPE : LOOP
CALCULATION : READING + ANT FACTOR + LOSS (CABLE + ATTEN. -AMP.)

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Radiated Emission below 30MHz (Spurious Emission)

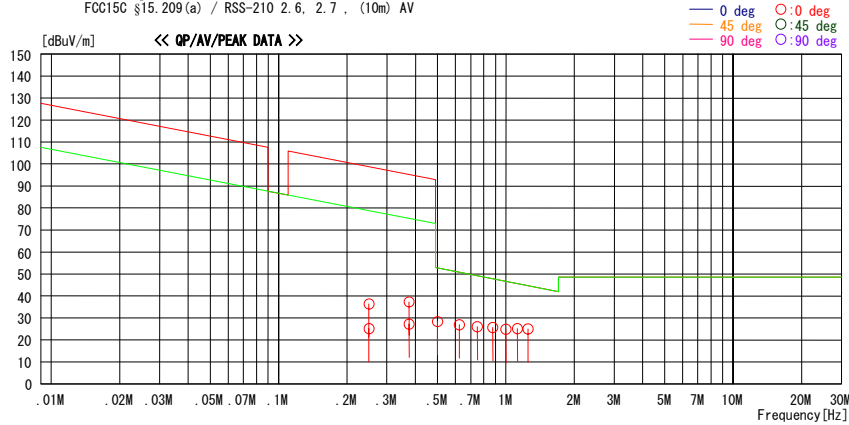
DATA OF MAGNETIC RADIATED EMISSION TEST

UL Apex Co., LTD. Head Office EMC Lab. No. 1 Semi Anechoic Chamber
Date : 2006/04/15 02:30:36

Applicant : OMRON Corporation
Kind of EUT : ECU
Model No. : G8D-640M-ECU
Serial No. : KU0003
Report No. : 26GE0265-HO
Power : DC 12V (Car Battery)
Temp./Humi. : 20deg C / 44%
Operator : Norihisa Hashimoto

Mode / Remarks : Transmitting LF(125kHz) (Max-axis:X)

LIMIT : FCC15C §15.209(a) / RSS-210 2.6. 2.7 . (10m) PK
FCC15C §15.209(a) / RSS-210 2.6. 2.7 . (10m) AV



Freq.	Reading	DET	Ant. Fac	Loss	Gain	Result	Limit	Margin	Antenna	Table	Comment
[MHz]	[dBuV]		[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]		[deg]	
0.25000	43.9	PEAK	19.5	0.3	27.3	36.4	98.7	62.3	0deg	310	X-axis
0.25000	32.6	AV	19.5	0.3	27.3	25.1	78.7	53.6	0deg	310	X-axis
0.37500	45.2	PEAK	19.5	0.3	27.7	37.3	95.2	57.9	0deg	200	X-axis
0.37500	35.1	AV	19.5	0.3	27.7	27.2	75.2	48.0	0deg	200	X-axis
0.50000	36.3	OP	19.5	0.4	27.8	28.4	52.7	24.3	0deg	310	X-axis
0.62500	35.0	OP	19.5	0.3	27.9	26.9	50.8	23.9	0deg	310	X-axis
0.75000	34.1	OP	19.5	0.3	27.9	26.0	49.2	23.2	0deg	310	X-axis
0.87500	33.6	OP	19.5	0.4	27.9	25.6	47.8	22.2	0deg	310	X-axis
1.00000	33.1	OP	19.5	0.2	27.9	24.9	46.7	21.8	0deg	310	X-axis
1.12500	33.2	OP	19.5	0.3	27.9	25.1	45.7	20.6	0deg	310	X-axis
1.25000	32.9	OP	19.6	0.4	27.9	25.0	44.7	19.7	0deg	310	X-axis

CHART : WITH FACTOR ANT TYPE : LOOP
CALCULATION : READING + ANT FACTOR + LOSS (CABLE + ATTEN. -AMP.)

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Radiated Emission above 30MHz (Spurious Emission)

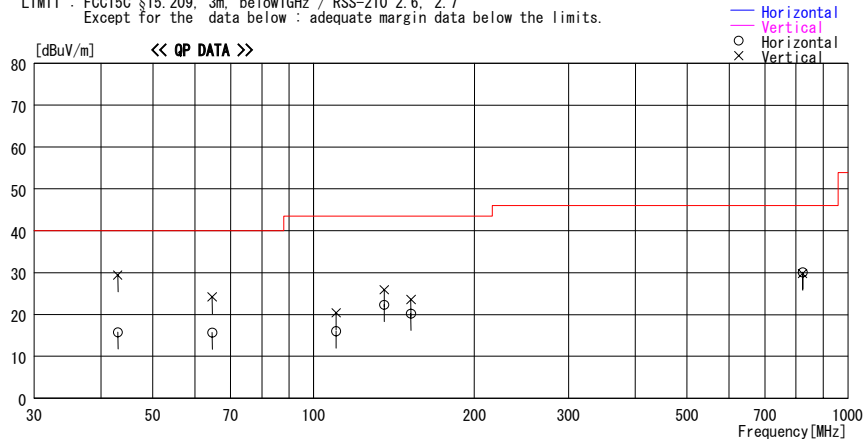
DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2006/04/15 04:26:49

Company : OMRON Corporation Report No. : 26GE0265-HO
Kind of EUT : ECU Power : DC12V (Car Battery)
Model No. : 68D-640M-ECU Temp./Humi. : 20deg.C / 44%
Serial No. : KU0003 Operator : Norihisa Hashimoto

Mode / Remarks : Transmitting LF (125kHz) Max-axis(X)

LIMIT : FCC15C §15.209, 3m, below1GHz / RSS-210 2.6, 2.7
Except for the data below : adequate margin data below the limits.



Frequency [MHz]	Reading [dBuV]	DET	Antenna	Loss&	Level [dBuV/m]	Angle [Deg]	Height [cm]	Polar.	Limit [dBuV/m]	Margin [dB]
			Factor [dB/m]	Gain [dB]						
43.002	23.3	OP	12.9	-20.4	15.8	170	200	Hori.	40.0	24.2
43.002	36.9	OP	12.9	-20.4	29.4	172	117	Vert.	40.0	10.6
64.620	27.8	OP	7.8	-19.9	15.7	166	300	Hori.	40.0	24.3
64.620	36.3	OP	7.8	-19.9	24.2	180	120	Vert.	40.0	15.8
110.256	27.6	OP	11.9	-19.1	20.4	50	100	Vert.	43.5	23.1
110.256	23.2	OP	11.9	-19.1	16.0	194	300	Hori.	43.5	27.5
135.609	26.5	OP	14.4	-18.6	22.3	160	300	Hori.	43.5	21.2
135.609	30.1	OP	14.4	-18.6	25.9	340	100	Vert.	43.5	17.6
152.285	23.0	OP	15.5	-18.3	20.2	300	300	Hori.	43.5	23.3
152.285	26.4	OP	15.5	-18.3	23.6	314	100	Vert.	43.5	19.9
823.220	23.2	OP	21.4	-14.5	30.1	0	100	Hori.	46.0	15.9
823.220	22.9	OP	21.4	-14.5	29.8	312	100	Vert.	46.0	16.2

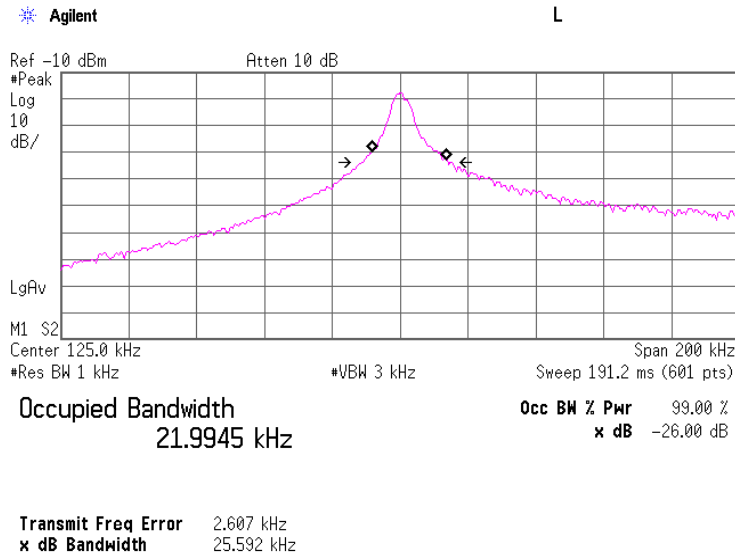
CHART: WITH FACTOR ANT TYPE : -30MHz LOOP, 30-300MHz BICONICAL, 300MHz-1000MHz LOGPERIODIC, 1000MHz- HORN
CALCULATION: RESULT = READING + ANT FACTOR + LOSS (CABLE+ATTEN.) - GAIN (AMP)

-26dB Bandwidth

UL Apex Co., Ltd.
Head Office EMC Lab. No.1 Semi Anechoic Chamber

COMPANY	: OMRON Corporation	REPORT NO	: 26GE0265-HO
EQUIPMENT	: ECU	REGULATION	: Reference data
MODEL	: G8D-640M-ECU	TEST DISTANCE	: 3m
S/ N	: KU0003	DATE	: 04/14/2006
POWER	: DC 12V	TEMPERATURE	: 22 deg.C
MODE	: Tx	HUMIDITY	: 32 %
	: Ant-Max	Engineer	: Norihisa Hashimoto

FREQ	-26dB Bandwidth
[kHz]	[kHz]
125.0	25.592



99% Occupied Bandwidth

UL Apex Co., Ltd.
 Head Office EMC Lab. No.1 Semi Anechoic Chambe

COMPANY : OMRON Corporation	REPORT NO : 26GE0265-HO
EQUIPMENT : ECU	REGULATION : RSS-Gen 4.4.1
MODEL : G8D-640M-ECU	TEST DISTANCE : 3m
S/N : KU0003	DATE : 04/14/2006
POWER : DC 12V	TEMPERATURE : 22 deg.C
MODE : Tx	HUMIDITY : 32 %
: Ant-Max	Engineer : Norihisa Hashimoto

	FREQ	99% Occupid Bandwidth
	[kHz]	[kHz]
	125.0	21.995

