

APPENDIX 2: Data of EMI test

Radiated Emission

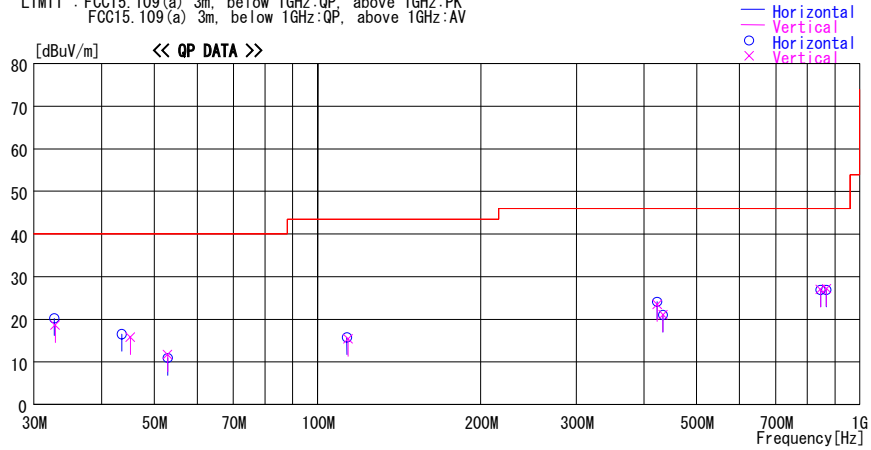
DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.2 Semi Anechoic Chamber
Date : 2008/09/01

Company : Alps Electric Co., Ltd. Report No. : 28LE0167-HO-01
Kind of EUT : TPMS/Keyless TUNER Power : DC5.0V (from BCM)
Model No. : TWC1G124 Temp./Humi. : 24deg. C / 64%
Serial No. : 08082201 Engineer : Satofumi Matsuyama

Mode / Remarks: Receiving mode, Hor:X-axis Ver:X-axis

LIMIT : FCC15.109(a) 3m, below 1GHz:QP, above 1GHz:PK
FCC15.109(a) 3m, below 1GHz:QP, above 1GHz:AV



Frequency [MHz]	Reading [dBuV]	DET	Antenna	Loss	Level	Angle	Height	Polar.	Limit	Margin	Comment
			Factor	Gain							
			[dB/m]	[dB]	[dBuV/m]	[Deg]	[cm]		[dBuV/m]	[dB]	
32.705	24.6	QP	17.5	-21.9	20.2	265	300	Hor.i	40.0	19.8	
32.825	23.0	QP	17.5	-21.9	18.6	289	100	Vert	40.0	21.4	
43.527	26.1	QP	12.2	-21.8	16.5	23	300	Hor.i	40.0	23.5	
45.191	26.0	QP	11.6	-21.8	15.8	225	100	Vert	40.0	24.2	
52.900	23.8	QP	9.6	-21.7	11.7	168	100	Vert	40.0	28.3	
52.900	23.0	QP	9.6	-21.7	10.9	0	300	Hor.i	40.0	29.1	
113.327	25.5	QP	11.2	-20.9	15.8	356	300	Hor.i	43.5	27.7	
113.868	25.0	QP	11.3	-20.9	15.4	283	100	Vert	43.5	28.1	
423.220	25.9	QP	17.4	-19.2	24.1	185	100	Hor.i	46.0	21.9	
423.220	25.3	QP	17.4	-19.2	23.5	192	160	Vert	46.0	22.5	
433.920	22.8	QP	17.4	-19.2	21.0	0	100	Hor.i	46.0	25.0	
433.920	22.9	QP	17.4	-19.2	21.1	0	100	Vert	46.0	24.9	
846.440	22.2	QP	21.8	-17.1	26.9	0	100	Hor.i	46.0	19.1	
846.440	22.3	QP	21.8	-17.1	27.0	0	100	Vert	46.0	19.0	
867.840	22.1	QP	21.8	-17.0	26.9	0	100	Hor.i	46.0	19.1	
867.840	22.4	QP	21.8	-17.0	27.2	0	100	Vert	46.0	18.8	

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)

*The limit is rounded down to one decimal place.

*The test result is rounded off to one or two decimal places, so some differences might be observed.

Radiated Emission

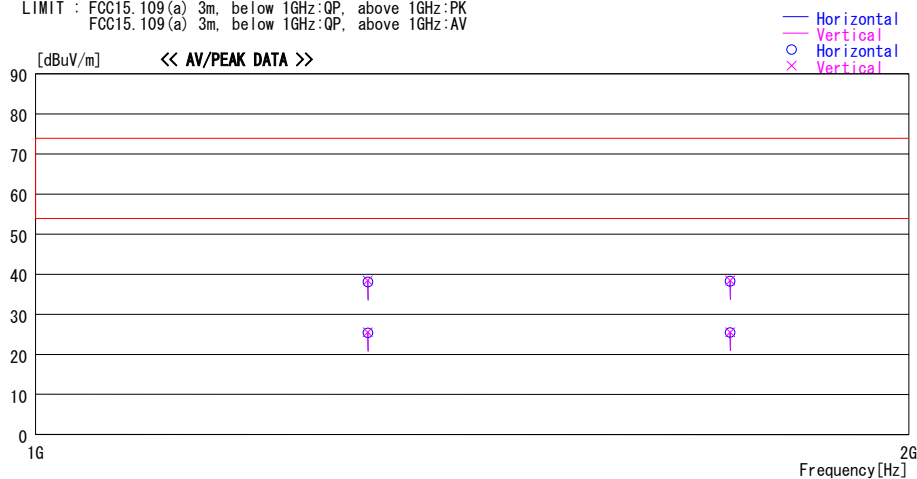
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LIMIT : FCC15.109(a) 3m, below 1GHz:QP, above 1GHz:PK
FCC15.109(a) 3m, below 1GHz:QP, above 1GHz:AV



Frequency [MHz]	Reading [dBuV]	DET	Antenna		Level [dBuV/m]	Angle [Deg]	Height [cm]	Polar.	Limit		Comment
			Factor [dB/m]	Loss& Gain [dB]					[dBuV/m]	[dB]	
1301.760	44.3	PK	24.9	-31.1	38.1	183	100	Hori.	73.9	35.8	
1301.760	44.6	PK	24.9	-31.1	38.4	183	100	Vert.	73.9	35.5	
1301.760	31.6	AV	24.9	-31.1	25.4	183	100	Hori.	53.9	28.5	
1301.760	31.7	AV	24.9	-31.1	25.5	183	100	Vert.	53.9	28.4	
1735.680	43.1	PK	25.5	-30.3	38.3	183	100	Hori.	73.9	35.6	
1735.680	43.2	PK	25.5	-30.3	38.4	183	100	Vert.	73.9	35.5	
1735.680	30.3	AV	25.5	-30.3	25.5	183	100	Hori.	53.9	28.4	
1735.680	30.3	AV	25.5	-30.3	25.5	183	100	Vert.	53.9	28.4	

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)

*The limit is rounded down to one decimal place.

*The test result is rounded off to one or two decimal places, so some differences might be observed.

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APPENDIX 3: Test instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Test Item	Calibration Date * Interval(month)
MAEC-02	Anechoic Chamber	TDK	Semi Anechoic Chamber 3m	RE	2008/04/17 * 12
MOS-22	Thermo-Hygrometer	Custom	CTH-201	RE	2007/12/27 * 12
MJM-05	Measure	PROMART	SEN1955	RE	-
MSTW-14	EMI measurement program	TSJ	TEPTO-DV	RE	-
MRENT-62	Spectrum Analyzer	Agilent	E4448A	RE	2007/11/27 * 12
MTR-03	Test Receiver	Rohde & Schwarz	ESCI	RE	2008/04/02 * 12
MBA-02	Biconical Antenna	Schwarzbeck	BBA9106	RE	2007/10/21 * 12
MLA-02	Logperiodic Antenna	Schwarzbeck	USLP9143	RE	2007/10/21 * 12
MCC-12	Coaxial Cable	Fujikura/Agilent	-	RE	2008/02/15 * 12
MAT-07	Attenuator(6dB)	Weinschel Corp	2	RE	2007/11/13 * 12
MPA-09	Pre Amplifier	Agilent	8447D	RE	2007/09/13 * 12
MHA-06	Horn Antenna	Schwarzbeck	BBHA9120D	RE	2008/01/19 * 12
MCC-47	Microwave Cable 1G-26.5GHz	Suhner	SUCOFLEX104	RE	2008/05/12 * 12
MPA-10	Pre Amplifier	Agilent	8449B	RE	2007/09/27 * 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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