

APPENDIX 2: Data of EMI test

Radiated Emission

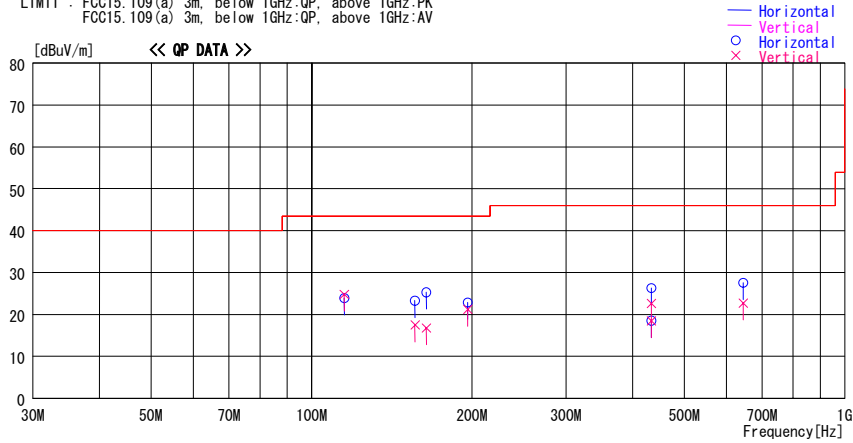
DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.4 Semi Anechoic Chamber
Date : 2008/06/17

Company : Alps Electric Co., Ltd. Report No. : 28IE0063-HO-01
Kind of EUT : Passive Entry System (Tuner) Power : DC12V
Model No. : TWC1G135 Temp./Humi. : 23deg. C. / 64%
Serial No. : 08060601 Engineer : Satofumi Matsuyama

Mode / Remarks : Receiving mode

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					[dBuV/m]	[dB]	
115.150	36.5	QP	12.0	-23.7	24.8	206	100	Vert.	43.5	18.7	
115.159	35.6	QP	12.0	-23.7	23.9	217	300	Hori.	43.5	19.6	
156.272	31.5	QP	15.2	-23.4	23.3	211	115	Hori.	43.5	20.2	
156.278	25.7	QP	15.2	-23.4	17.5	233	100	Vert.	43.5	26.0	
164.292	32.9	QP	15.7	-23.3	25.3	102	175	Hori.	43.5	18.2	
164.294	24.4	QP	15.7	-23.3	16.8	187	100	Vert.	43.5	26.7	
196.347	27.8	QP	16.4	-23.0	21.2	0	100	Vert.	43.5	22.3	
196.343	29.5	QP	16.4	-23.0	22.9	235	164	Hori.	43.5	20.6	
433.692	25.4	QP	18.4	-21.2	22.6	183	134	Vert.	46.0	23.4	
433.694	29.1	QP	18.4	-21.2	26.3	197	100	Hori.	46.0	19.7	
433.920	21.3	QP	18.4	-21.2	18.5	0	100	Hori.	46.0	27.5	
433.920	21.3	QP	18.4	-21.2	18.5	0	100	Vert.	46.0	27.5	
645.136	27.0	QP	20.7	-20.1	27.6	236	100	Hori.	46.0	18.4	
645.135	22.1	QP	20.7	-20.1	22.7	0	100	Vert.	46.0	23.3	

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

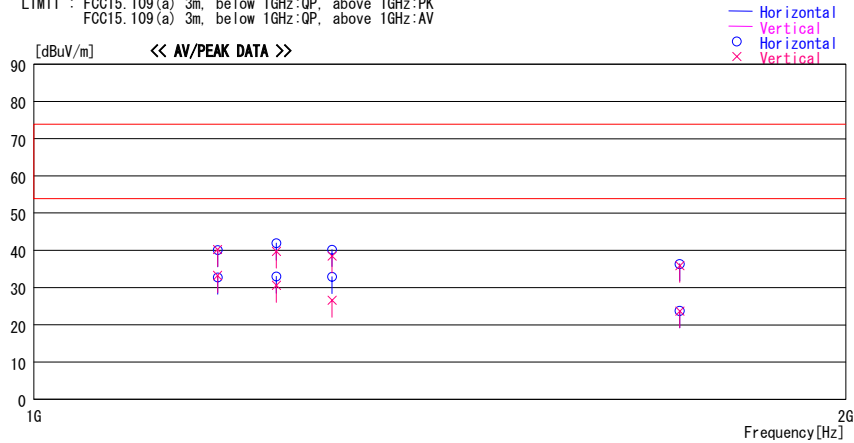
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Mode / Remarks : Receiving mode

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 [dBuV/m]	Margin [dB]	Comment
			Factor [dB/m]	Loss&Gain [dB]							
1170.003	47.3	PK	24.9	-32.0	40.2	260	188	Vert.	73.9	33.7	
1170.003	40.3	AV	24.9	-32.0	33.2	260	188	Vert.	53.9	20.7	
1170.006	39.8	AV	24.9	-32.0	32.7	110	114	Hori.	53.9	21.2	
1170.006	47.2	PK	24.9	-32.0	40.1	110	114	Hori.	73.9	33.8	
1230.002	46.5	PK	25.0	-31.8	39.7	43	100	Vert.	73.9	34.2	
1230.002	37.4	AV	25.0	-31.8	30.6	43	100	Vert.	53.9	23.3	
1230.003	39.8	AV	25.0	-31.8	33.0	269	116	Hori.	53.9	20.9	
1230.003	48.7	PK	25.0	-31.8	41.9	269	116	Hori.	73.9	32.0	
1290.006	44.9	PK	25.2	-31.6	38.5	137	100	Vert.	73.9	35.4	
1290.006	33.0	AV	25.2	-31.6	26.6	137	100	Vert.	53.9	27.3	
1290.008	39.3	AV	25.2	-31.6	32.9	183	100	Hori.	53.9	21.0	
1290.008	46.6	PK	25.2	-31.6	40.2	183	100	Hori.	73.9	33.7	
1735.680	40.6	PK	25.7	-30.4	35.9	0	100	Vert.	73.9	38.0	
1735.680	41.1	PK	25.7	-30.4	36.4	0	100	Hori.	73.9	37.5	
1735.680	28.4	AV	25.7	-30.4	23.7	0	100	Vert.	53.9	30.2	
1735.680	28.4	AV	25.7	-30.4	23.7	0	100	Hori.	53.9	30.2	

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)

*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.

APPENDIX 3: Test instruments

Control No.	Instrument	Manufacturer	Model No	Test Item	Calibration Date * Interval(month)
MAEC-04	Anechoic Chamber	TDK	Semi Anechoic Chamber 3m	RE	2008/03/27 * 12
MOS-15	Thermo-Hygrometer	Custom	CTH-180	RE	2008/01/10 * 12
MJM-07	Measure	PROMART	SEN1955	RE	-
MSTW-14	EMI measurement program	TSJ	TEPTO-DV	RE	-
MSA-05	Spectrum Analyzer	Advantest	R3273	RE	2007/06/30 * 12
MTR-07	Test Receiver	Rohde & Schwarz	ESCI	RE	2007/09/14 * 12
MBA-05	Biconical Antenna	Schwarzbeck	BBA9106	RE	2008/01/12 * 12
MLA-08	Logperiodic Antenna	Schwarzbeck	UKLP9140-A	RE	2008/01/12 * 12
MCC-50	Coaxial cable	UL Japan	-	RE	2008/03/17 * 12
MAT-31	Attenuator(6dB)	TME	UFA-01	RE	2008/03/10 * 12
MPA-14	Pre Amplifier	SONOMA INSTRUMENT	310	RE	2008/03/06 * 12
MHA-21	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	RE	2007/08/16 * 12
MCC-57	Microwave Cable 1G-26.5GHz	Suhner	SUCOFLEX104	RE	2008/03/05 * 12
MPA-12	MicroWave System Amplifier	Agilent	83017A	RE	2008/03/13 * 12
MRENT-67	Spectrum Analyzer	Agilent	E4448A	RE	2008/04/02 * 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

UL Japan, Inc.

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