

**APPENDIX 2: Data of EMI test**

**Radiated Emission**

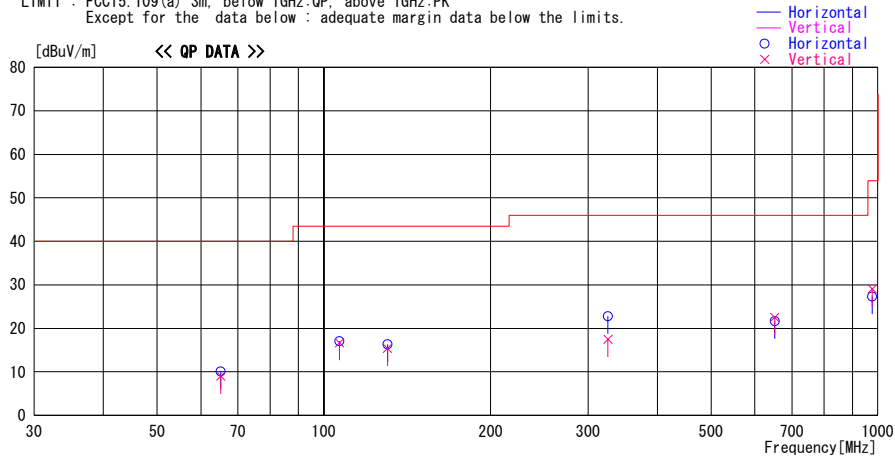
**DATA OF RADIATED EMISSION TEST**

UL Japan, Inc. Head Office EMC Lab. No. 3 Semi Anechoic Chamber  
 Date : 2009/03/18

Company : Alps Electric Co., Ltd. Report No. : 29FE0158-HO-01  
 Kind of EUT : Passive Entry System (Control Unit) Power : DC 12V  
 Model No. : TWD1U778 Temp./Humi. : 21deg. C. / 33%  
 Serial No. : 001 Engineer : Kazuya Yoshioka

Mode / Remarks : Receiving Worst-axis(Hor:X-axis Ver:X-axis)

LIMIT : FCC15.109(a) 3m, below 1GHz:QP, above 1GHz:PK  
 Except for the data below : adequate margin data below the limits.



Frequency [MHz]	Reading [dBuV]	DET	Antenna	Loss&	Level	Angle	Height	Polar.	Limit	Margin	Comment
			Factor [dB/m]	Gain [dB]							
65.140	27.6	QP	6.8	-24.3	10.1	231	324	Hori.	40.0	29.9	
65.140	26.5	QP	6.8	-24.3	9.0	359	228	Vert.	40.0	31.0	
106.758	29.7	QP	10.8	-23.8	16.7	359	279	Vert.	43.5	26.8	
106.758	30.1	QP	10.8	-23.8	17.1	359	280	Hori.	43.5	26.4	
130.280	25.3	QP	13.6	-23.5	15.4	241	100	Vert.	43.5	28.1	
130.280	26.2	QP	13.6	-23.5	16.3	359	197	Hori.	43.5	27.2	
325.700	23.9	QP	15.4	-21.8	17.5	25	100	Vert.	46.0	28.5	
325.700	29.2	QP	15.4	-21.8	22.8	110	100	Hori.	46.0	23.2	
651.400	21.7	QP	19.9	-19.9	21.7	359	100	Hori.	46.0	24.3	
651.400	22.5	QP	19.9	-19.9	22.5	359	100	Vert.	46.0	23.5	
977.100	20.9	QP	23.4	-17.0	27.3	359	100	Hori.	53.9	26.6	
977.100	22.7	QP	23.4	-17.0	29.1	202	100	Vert.	53.9	24.8	

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

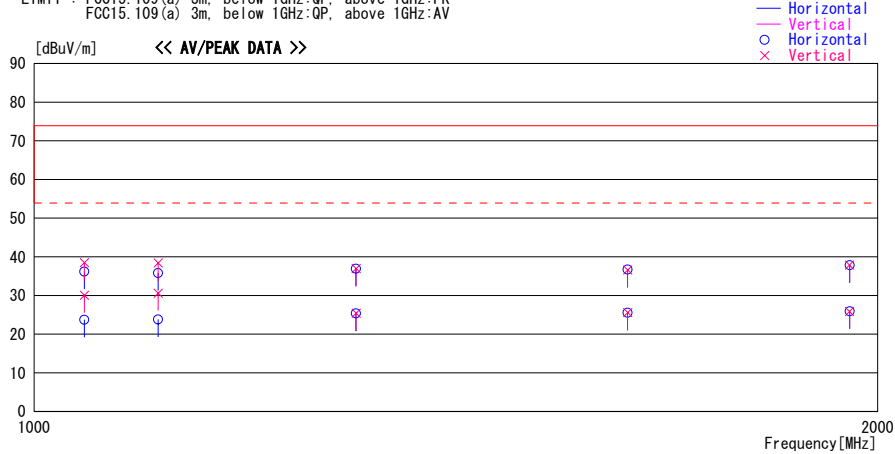
### DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.3 Semi Anechoic Chamber  
Date : 2009/03/18

Company : Alps Electric Co., Ltd. Report No. : 29FE0158-HO-01  
Kind of EUT : Passive Entry System (Control Unit) Power : DC 12V  
Model No. : TWD1U778 Temp./Humi. : 21deg.C. / 33%  
Serial No. : 001 Engineer : Kazuya Yoshioka

Mode / Remarks : Receiving Worst-axis(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 [dB/m]	Gain [dB]							
1042.240	47.6	PK	24.2	-33.3	38.5	214	100	Vert.	73.9	35.4	
1042.240	39.2	AV	24.2	-33.3	30.1	214	100	Vert.	53.9	23.8	
1042.240	45.3	PK	24.2	-33.3	36.2	359	100	Hori.	73.9	37.7	
1042.240	32.8	AV	24.2	-33.3	23.7	359	100	Hori.	53.9	30.2	
1107.380	44.4	PK	24.5	-33.1	35.8	359	181	Hori.	73.9	38.1	
1107.380	32.4	AV	24.5	-33.1	23.8	359	181	Hori.	53.9	30.1	
1107.380	47.0	PK	24.5	-33.1	38.4	242	100	Vert.	73.9	35.5	
1107.380	39.2	AV	24.5	-33.1	30.6	242	100	Vert.	53.9	23.3	
1302.800	44.1	PK	25.1	-32.3	36.9	359	100	Hori.	73.9	37.0	
1302.800	32.6	AV	25.1	-32.3	25.4	359	100	Hori.	53.9	28.5	
1302.800	44.2	PK	25.1	-32.3	37.0	359	100	Vert.	73.9	36.9	
1302.800	32.6	AV	25.1	-32.3	25.4	359	100	Vert.	53.9	28.5	
1628.500	42.3	PK	25.8	-31.4	36.7	359	100	Hori.	73.9	37.2	
1628.500	31.2	AV	25.8	-31.4	25.6	359	100	Hori.	53.9	28.3	
1628.500	42.2	PK	25.8	-31.4	36.6	359	100	Vert.	73.9	37.3	
1628.500	31.2	AV	25.8	-31.4	25.6	359	100	Vert.	53.9	28.3	
1954.200	42.6	PK	25.8	-30.6	37.8	359	100	Hori.	73.9	36.1	
1954.200	30.7	AV	25.8	-30.6	25.9	359	100	Hori.	53.9	28.0	
1954.200	42.7	PK	25.8	-30.6	37.9	359	100	Vert.	73.9	36.0	
1954.200	30.7	AV	25.8	-30.6	25.9	359	100	Vert.	53.9	28.0	

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**

#### **EMI test equipment**

<b>Control No.</b>	<b>Instrument</b>	<b>Manufacturer</b>	<b>Model No</b>	<b>Serial No</b>	<b>Test Item</b>	<b>Calibration Date * Interval(month)</b>
MAEC-03	Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-10005	RE	2009/02/02 * 12
MOS-13	Thermo-Hygrometer	Custom	CTH-180	-	RE	2009/02/06 * 12
MJM-06	Measure	PROMART	SEN1955	-	RE	-
CUST-MSTW-14	EMI measurement program	TSJ	TEPTO-DV	-	RE	-
MSA-09	Spectrum Analyzer	Advantest	R3273	95090115	RE	2008/12/24 * 12
MTR-08	Test Receiver	Rohde & Schwarz	ESCI	100767	RE	2008/06/12 * 12
MBA-03	Biconical Antenna	Schwarzbeck	BBA9106	1915	RE	2009/01/19 * 12
MLA-03	Logperiodic Antenna	Schwarzbeck	USLP9143	174	RE	2009/01/10 * 12
MCC-51	Coaxial cable	UL Japan	-	-	RE	2008/07/18 * 12
MAT-30	Attenuator(6dB)	TME	UFA-01	-	RE	2009/03/02 * 12
MPA-13	Pre Amplifier	SONOMA INSTRUMENT	310	260834	RE	2009/03/18 * 12
MHA-20	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	258	RE	2008/04/23 * 12
MCC-56	Microwave Cable 1G-26.5GHz	Suhner	SUCOFLEX104	174410(1m) / 284655(5m)	RE	2009/01/07 * 12
MPA-11	MicroWave System Amplifier	Agilent	83017A	MY39500779	RE	2008/03/13 * 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.**

**Head Office EMC Lab.**

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124