

APPENDIX 2: Data of EMI test

Radiated Emission

DATA OF RADIATED EMISSION TEST

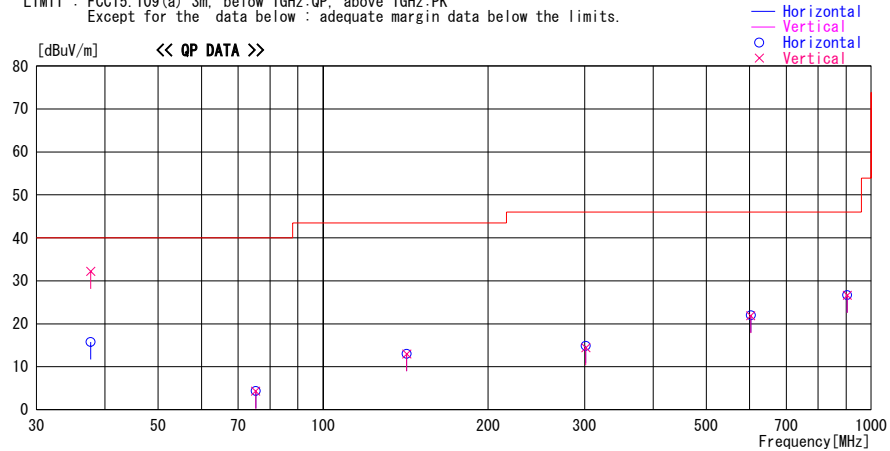
UL Japan, Inc. Head Office EMC Lab. No.3 Semi Anechoic Chamber
Date : 2010/10/05

Report No. : 31BE0178-HO-01

Temp./Humi. : 23deg.C. / 63%
Engineer : Hiroyuki Furutaka

Mode / Remarks : Receiving mode (312.15MHz) Worst Axis(Hor:Z, Ver:Z)

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		Level [dBuV/m]	Angle [Deg]	Height [cm]	Polar.	Limit [dBuV/m]	Margin [dB]	Comment
			Factor [dB/m]	Gain [dB]							
37.681	25.9	QP	14.9	-25.0	15.8	316	243	Hori.	40.0	24.2	
37.681	42.3	QP	14.9	-25.0	32.2	244	100	Vert.	40.0	7.8	
75.363	22.4	QP	6.4	-24.4	4.4	0	300	Hori.	40.0	35.6	
75.363	22.3	QP	6.4	-24.4	4.3	0	100	Vert.	40.0	35.7	
142.100	22.0	QP	14.5	-23.5	13.0	0	300	Hori.	43.5	30.5	
142.100	22.0	QP	14.5	-23.5	13.0	0	100	Vert.	43.5	30.5	
301.450	21.9	QP	14.3	-21.8	14.4	149	100	Vert.	46.0	31.6	
301.450	22.4	QP	14.3	-21.8	14.9	9	100	Hori.	46.0	31.1	
602.900	22.6	QP	19.5	-20.1	22.0	15	100	Hori.	46.0	24.0	
602.900	22.5	QP	19.5	-20.1	21.9	10	100	Vert.	46.0	24.1	
904.350	21.7	QP	22.5	-17.5	26.7	0	100	Hori.	46.0	19.3	
904.350	21.6	QP	22.5	-17.5	26.6	0	100	Vert.	46.0	19.4	

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.

Radiated Emission

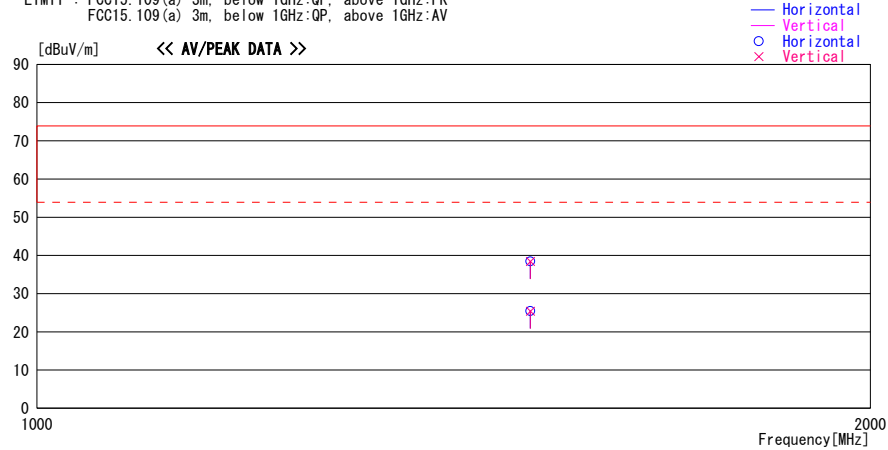
DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.3 Semi Anechoic Chamber
Date : 2010/10/05

Report No. : 31BE0178-HO-01
Temp./Humi. : 23deg. C. / 63%
Engineer : Hiroyuki Furutaka

Mode / Remarks : Receiving mode (312.15MHz) Worst Axis(Hor:Z , Ver:Z)

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 [dBuV/m]	Angle [Deg]	Height [cm]	Polar.	Limit [dBuV/m]	Margin [dB]	Comment
			Factor	Gain							
1507.250	43.2	PK	26.9	-31.6	38.5	0	100	Hori.	73.9	35.4	
1507.250	43.1	PK	26.9	-31.6	38.4	0	100	Vert.	73.9	35.5	
1507.250	30.1	AV	26.9	-31.6	25.4	0	100	Vert.	53.9	28.5	
1507.250	30.2	AV	26.9	-31.6	25.5	0	100	Hori.	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.

APPENDIX 3: Test instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
MAEC-03	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-10005	RE	2010/02/01 * 12
MOS-13	Thermo-Hygrometer	Custom	CTH-180	-	RE	2010/02/09 * 12
MJM-06	Measure	PROMART	SEN1955	-	RE	-
COTS-MEMI	EMI measurement program	TSJ	TEPTO-DV	-	RE	-
MSA-03	Spectrum Analyzer	Agilent	E4448A	MY44020357	RE	2009/11/20 * 12
MTR-08	Test Receiver	Rohde & Schwarz	ESCI	100767	RE	2010/08/23 * 12
MBA-03	Biconical Antenna	Schwarzbeck	BBA9106	1915	RE	2010/01/23 * 12
MLA-03	Logperiodic Antenna	Schwarzbeck	USLP9143	174	RE	2010/01/23 * 12
MCC-51	Coaxial cable	UL Japan	-	-	RE	2010/07/06 * 12
MAT-09	Attenuator(6dB)	Weinschel Corp	2	BK7973	RE	2009/11/12 * 12
MPA-13	Pre Amplifier	SONOMA INSTRUMENT	310	260834	RE	2010/03/23 * 12
MHA-20	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	258	RE	2010/05/07 * 12
MCC-56	Microwave Cable	Suhner	SUCOFLEX104	174410(1m) / 284655(5m)	RE	2010/01/25 * 12
MPA-11	MicroWave System Amplifier	Agilent	83017A	MY39500779	RE	2010/03/03 * 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