

## APPENDIX 2: Data of EMI test

### Conducted Emission (CMC-BC)

#### DATA OF CONDUCTED EMISSION TEST

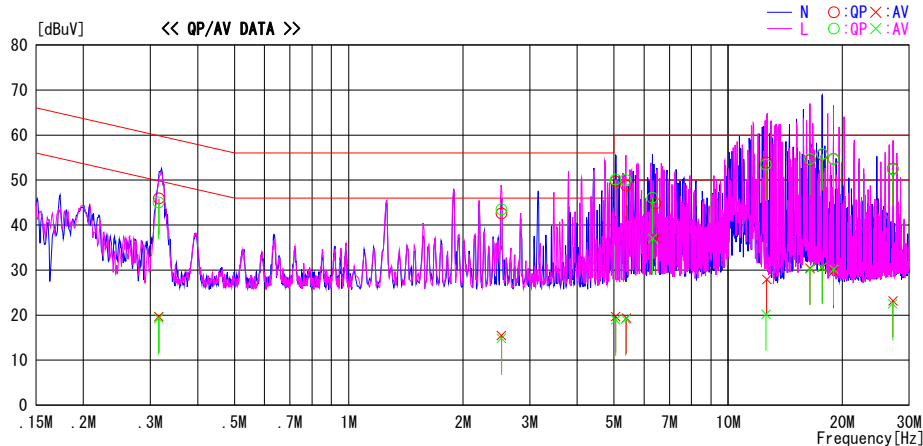
UL Japan, Inc. Head Office EMC Lab. No.3 Semi Anechoic Chamber  
Date : 2011/03/30

Report No. : 31EE0097-H0

Temp./Humi. : 20deg. C. / 35%  
Engineer : Motoya Imura

Mode / Remarks : Continuous Operation mode

LIMIT : FCC15.207 QP  
FCC15.207 AV



Frequency [MHz]	Reading Level		Corr. Factor	Results		Limit		Margin		Phase	Comment
	QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dB]	AV [dB]		
0.31586	32.6	6.4	13.3	45.9	19.7	59.8	49.8	13.9	30.1	N	
2.52643	29.2	2.1	13.4	42.6	15.5	56.0	46.0	13.4	30.5	N	
5.05241	36.0	6.0	13.7	49.7	19.7	60.0	50.0	10.3	30.3	N	
5.38799	35.0	5.7	13.7	48.7	19.4	60.0	50.0	11.3	30.6	N	
6.44528	31.0	23.2	13.8	44.8	37.0	60.0	50.0	15.2	13.0	N	
12.63167	39.8	13.8	14.1	53.9	27.9	60.0	50.0	6.1	22.1	N	
16.42061	40.0	16.0	14.4	54.4	30.4	60.0	50.0	5.6	19.6	N	
17.68429	41.2	16.2	14.4	55.6	30.6	60.0	50.0	4.4	19.4	N	
18.94754	40.2	15.2	14.5	54.7	29.7	60.0	50.0	5.3	20.3	N	
27.16230	37.8	8.5	14.7	52.5	23.2	60.0	50.0	7.5	26.8	N	
0.31578	31.7	6.0	13.3	45.0	19.3	59.8	49.8	14.8	30.5	L	
2.52642	30.1	1.4	13.4	43.5	14.8	56.0	46.0	12.5	31.2	L	
5.05247	36.4	5.3	13.7	50.1	19.0	60.0	50.0	9.9	31.0	L	
5.36833	36.3	5.4	13.7	50.0	19.1	60.0	50.0	10.0	30.9	L	
6.31562	32.3	23.3	13.8	46.1	37.1	60.0	50.0	13.9	12.9	L	
12.58460	39.3	6.1	14.1	53.4	20.2	60.0	50.0	6.6	29.8	L	
16.42110	40.2	15.9	14.4	54.6	30.3	60.0	50.0	5.4	19.7	L	
17.68420	41.4	16.3	14.4	55.8	30.7	60.0	50.0	4.2	19.3	L	
18.95247	40.1	15.7	14.5	54.6	30.2	60.0	50.0	5.4	19.8	L	
27.14920	37.7	7.8	14.7	52.4	22.5	60.0	50.0	7.6	27.5	L	

CHART: WITH FACTOR, Peak hold data. CALCULATION: RESULT=READING+C.F (LISN LOSS+CABLE LOSS+ATTEN LOSS)  
Except for the above table: adequate margin data below the limits.

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

## Conducted Emission (CMC-BM)

### DATA OF CONDUCTED EMISSION TEST

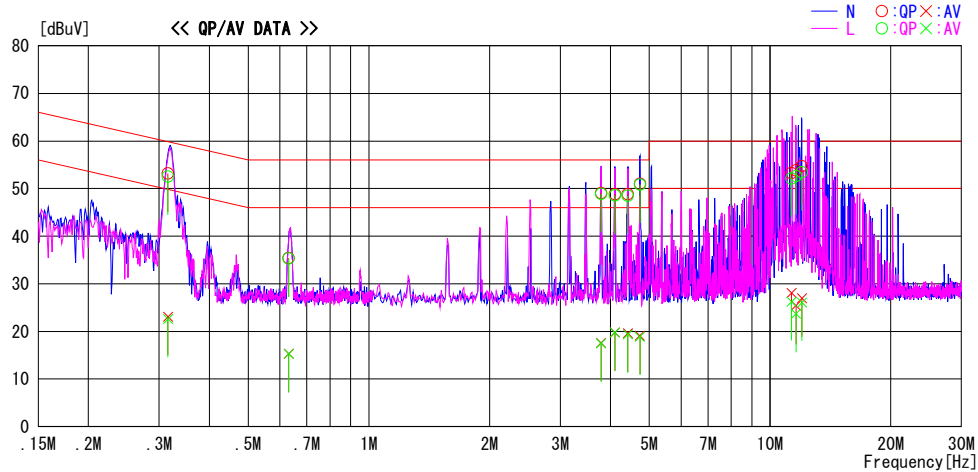
UL Japan, Inc. Head Office EMC Lab. No. 3 Semi Anechoic Chamber  
Date : 2011/03/30

Report No. : 31EE0097-HO

Temp./Humi. : 20deg. C. / 35%  
Engineer : Motoya Imura

Mode / Remarks : Continuous Operation mode

LIMIT : FCC15.207 QP  
FCC15.207 AV



Frequency [MHz]	Reading Level		Corr. Factor [dB]	Results		Limit		Margin		Phase	Comment
	QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dB]	AV [dB]		
0.31580	39.9	9.8	13.3	53.2	23.1	59.8	49.8	6.6	26.7	N	
0.63143	22.1	2.0	13.3	35.4	15.3	56.0	46.0	20.6	30.7	N	
3.78992	35.5	4.0	13.6	49.1	17.6	56.0	46.0	6.9	28.4	N	
4.10524	35.2	6.2	13.6	48.8	19.8	56.0	46.0	7.2	26.2	N	
4.42097	35.2	6.0	13.6	48.8	19.6	56.0	46.0	7.2	26.4	N	
4.73694	37.4	5.5	13.6	51.0	19.1	56.0	46.0	5.0	26.9	N	
11.31822	39.2	14.0	14.1	53.3	28.1	60.0	50.0	6.7	21.9	N	
11.60562	39.7	11.3	14.1	53.8	25.4	60.0	50.0	6.2	24.6	N	
12.00590	40.6	12.9	14.1	54.7	27.0	60.0	50.0	5.3	23.0	N	
0.31564	39.2	9.3	13.3	52.5	22.6	59.8	49.8	7.3	27.2	L	
0.63138	22.0	2.0	13.3	35.3	15.3	56.0	46.0	20.7	30.7	L	
3.78952	35.3	3.9	13.6	48.9	17.5	56.0	46.0	7.1	28.5	L	
4.10511	35.0	6.2	13.6	48.6	19.8	56.0	46.0	7.4	26.2	L	
4.42142	34.9	5.8	13.6	48.5	19.4	56.0	46.0	7.5	26.6	L	
4.73720	37.2	5.3	13.6	50.8	18.9	56.0	46.0	5.2	27.1	L	
11.31820	38.0	12.1	14.1	52.1	26.2	60.0	50.0	7.9	23.8	L	
11.60560	38.5	9.6	14.1	52.6	23.7	60.0	50.0	7.4	26.3	L	
12.00960	39.3	12.0	14.1	53.4	26.1	60.0	50.0	6.6	23.9	L	

CHART: WITH FACTOR, Peak hold data. CALCULATION: RESULT=READING+C.F (LISN LOSS+CABLE LOSS+ATTEN LOSS)  
Except for the above table : adequate margin data below the limits.

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

## Radiated Emission below 30MHz (Fundamental and Spurious Emission)

### DATA OF RADIATED EMISSION TEST

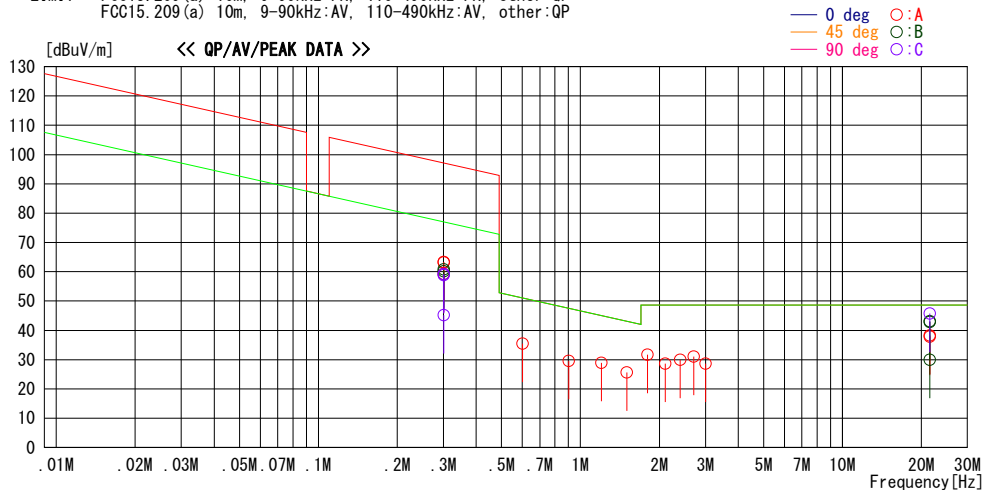
UL Japan, Inc. Head Office EMC Lab. No.1 Semi Anechoic Chamber  
Date : 2011/01/10

Report No. : 31EE0097-H0

Temp. / Humi. : 24deg. C / 31%  
Engineer : Tomotaka Sasagawa

Mode / Remarks : Continuous Operation mode

LIMIT : FCC15. 209 (a) 10m, 9-90kHz:PK, 110-490kHz:PK, other:QP  
FCC15. 209 (a) 10m, 9-90kHz:AV, 110-490kHz:AV, other:QP



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]	[deg]	
0.30075	66.8	PEAK	20.0	6.1	32.1	60.8	97.0	36.2	45	B	157
0.30075	65.3	PEAK	20.0	6.1	32.1	59.3	97.0	37.7	90	C	347
0.30075	69.3	PEAK	20.0	6.1	32.1	63.3	97.0	33.7	0	A	222
0.30075	69.2	QP	20.0	6.1	32.1	63.2	97.0	33.8	0	A	222
0.30075	65.2	AV	20.0	6.1	32.1	59.2	77.0	17.8	0	A	222
0.30075	66.2	PEAK	20.0	6.1	32.1	60.2	97.0	36.8	135	B	144
0.30075	64.9	PEAK	20.0	6.1	32.1	58.9	97.0	38.1	180	C	321
0.30075	51.2	PEAK	20.0	6.1	32.1	45.2	97.0	51.8	0	C	0 HOR
0.60150	41.5	QP	19.9	6.2	32.1	35.5	51.0	15.5	0	A	213
0.90225	35.4	QP	19.9	6.2	32.0	29.5	47.5	18.0	0	A	243
1.20300	34.9	QP	19.9	6.2	32.0	28.9	45.0	16.1	0	A	0
1.50375	31.4	QP	19.9	6.3	32.0	25.6	43.1	17.5	0	A	0
1.80450	37.4	QP	19.9	6.3	32.0	31.6	48.6	17.0	0	A	0
2.10525	34.5	QP	19.9	6.3	32.0	28.7	48.6	19.9	0	A	198
2.40600	35.6	QP	19.9	6.4	32.0	29.9	48.6	18.7	0	A	176
2.70675	36.8	QP	19.9	6.4	32.0	31.1	48.6	17.5	0	A	0
3.00750	34.2	QP	20.0	6.5	32.0	28.7	48.6	19.9	0	A	0
21.50561	47.2	QP	20.6	7.4	32.1	43.1	48.6	5.5	45	B	259
21.50561	49.8	QP	20.6	7.4	32.1	45.7	48.6	2.9	90	C	5
21.50561	42.0	QP	20.6	7.4	32.1	37.9	48.6	10.7	180	A	112
21.50561	46.9	QP	20.6	7.4	32.1	42.8	48.6	5.8	135	B	43
21.50561	42.3	QP	20.6	7.4	32.1	38.2	48.6	10.4	0	A	52
21.50561	34.1	QP	20.6	7.4	32.1	30.0	48.6	18.6	0	B	0 HOR

CHART: WITH FACTOR, ANT TYPE: LOOP Except for the data below: adequate margin data below the limits.  
CALCULATION: RESULT = READING + ANT FACTOR + LOSS (CABLE + ATTEN.) - GAIN (AMP.)

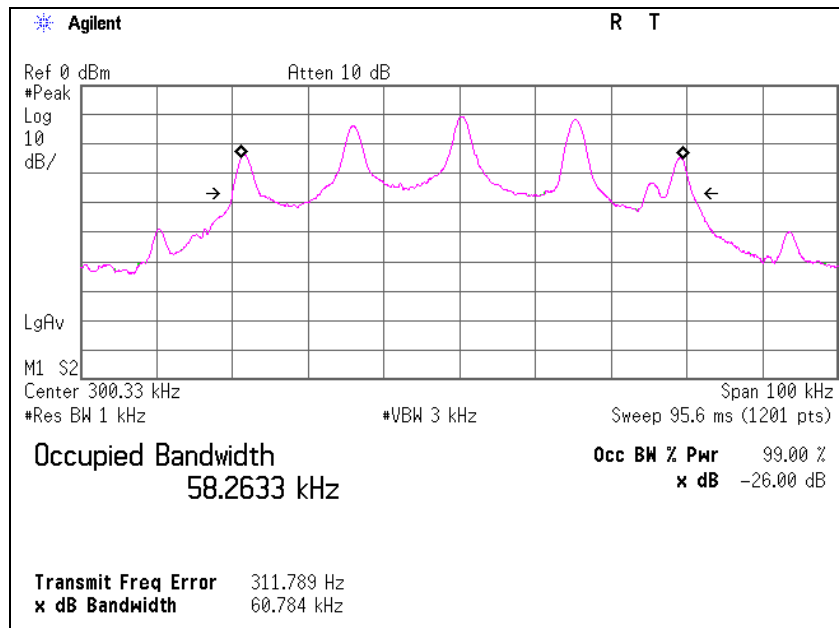
\*The test result is rounded off to one or two decimal places, so some differences might be observed.



### -26dB Bandwidth

Test place Head Office EMC Lab. No.1 Semi Anechoic Chamber  
Report No. 31EE0097-HO  
Date 01/10/2011  
Temperature/ Humidity 23 deg.C./ 32%  
Engineer Tomotaka Sasagawa  
Mode Transmitting 300.33kHz

FREQ [kHz]	-26dB Bandwidth [kHz]
300.33	60.784



### APPENDIX 3: Test instruments

#### EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
MAEC-01	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 10m	DA-06881	RE	2010/07/02 * 12
MOS-01	Digital Humidity Indicator	N.T	NT-1800	MOS01	RE	2010/02/09 * 12
MJM-01	Measure	KDS	ES19-55	-	RE	-
MTR-01	Test Receiver	Rohde & Schwarz	ESI40	100084	RE	2010/12/07 * 12
KBA-05	Biconical Antenna	Schwarzbeck	BBA9106	2513	RE	2010/10/15 * 12
KLA-04	Logperiodic Antenna	Schwarzbeck	USLP9143	361	RE	2010/10/16 * 12
MAT-08	Attenuator(6dB)	Weinschel Corp	2	BK7971	RE	2010/11/05 * 12
MCC-01	Coaxial Cable 0.1-3000MHz	Suhner/storm/Agilent/T SJ	-	-	RE	2010/10/14 * 12
MPA-20	Pre Amplifier	Elena	EPA-4020YA	030801	RE	2010/03/23 * 12
MLPA-02	Loop Antenna	Rohde & Schwarz	HFH2-Z2	836553/009	RE	2010/12/08 * 12
MCC-31	Coaxial cable	UL Japan	-	-	RE	2010/07/20 * 12
MPA-14	Pre Amplifier	SONOMA INSTRUMENT	310	260833	RE	2010/03/05 * 12
MSA-10	Spectrum Analyzer	Agilent	E4448A	MY46180655	RE	2010/02/03 * 12
MAEC-03	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-10005	CE	2011/02/22 * 12
MOS-13	Thermo-Hygrometer	Custom	CTH-180	-	CE	2011/02/23 * 12
MJM-06	Measure	PROMART	SEN1955	-	CE	-
COTS-MEMI	EMI measurement program	TSJ	TEPTO-DV	-	CE/RE	-
MSA-09	Spectrum Analyzer	Advantest	R3273	95090115	CE	2010/11/18 * 12
MTR-08	Test Receiver	Rohde & Schwarz	ESCI	100767	CE	2010/08/23 * 12
MLS-07	LISN(AMN)	Schwarzbeck	NSLK8127	8127364	CE(EUT)	2011/02/22 * 12
MLS-06	LISN(AMN)	Schwarzbeck	NSLK8127	8127363	CE(AE)	2011/02/20 * 12
MTA-31	Terminator	TME	CT-01	-	CE	2011/01/05 * 12
MCC-112	Coaxial cable	Fujikura/Suhner/TSJ	5D-2W(10m)/SFM141(3m)/suciform141-PE(1m)/421-010(1.5m)/RFM-E321(Switcher)	-/00640	CE	2010/07/23 * 12
MAT-66	Attenuator(13dB)	JFW Industries, Inc.	50FP-013H2 N	-	CE	2011/02/22 * 12
MTA-29	Terminator	TME	CT-01	-	CE	2011/01/05 * 12
MLS-02	LISN(AMN)	Schwarzbeck	NSLK8127	8127383	CE(AE)	2010/07/04 * 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:

CE: Conducted emission

RE: Radiated emission

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