

APPENDIX 2: Data of EMI test

Conducted emission

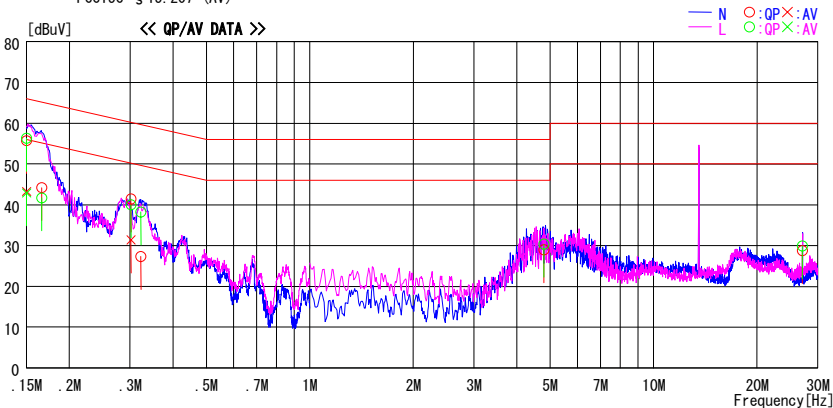
DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.4 Semi Anechoic Chamber
Date : 2006/08/30 14:06:40

Company : Sony Corporation
Kind of EUT : Hard Disk Drive
Model No. : VGP-UHDM10
Serial No. : DVT-073
Report No. : 27AE0172-HO
Power : DC5.0V (PC:AC120V/60Hz)
Temp./Humi. : 25deg. C / 60%
Operator : Hiroka Umeyama

Mode / Remarks : Transmitting 13.56MHz + HDD RW

LIMIT : FCC15C § 15.207 (QP)
FCC15C § 15.207 (AV)



Frequency [MHz]	Reading Level		Corr. Factor	Results		Limit		Margin		Phase
	QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dB]	AV [dB]	
0.15000	56.2	42.8	0.1	56.3	42.9	66.0	56.0	9.7	13.1	L
0.15000	55.7	43.2	0.1	55.8	43.3	66.0	56.0	10.2	12.7	N
0.16600	41.6	—	0.1	41.7	—	65.2	—	23.5	—	L
0.16600	44.1	—	0.1	44.2	—	65.2	—	21.0	—	N
0.30188	39.8	—	0.2	40.0	—	60.2	—	20.2	—	L
0.30188	41.3	31.2	0.2	41.5	31.4	60.2	50.2	18.7	18.8	N
0.32240	38.0	—	0.2	38.2	—	59.6	—	21.4	—	L
0.32240	27.1	—	0.2	27.3	—	59.6	—	32.3	—	N
4.79564	29.9	—	0.5	30.4	—	56.0	—	25.6	—	L
4.79564	28.5	—	0.5	29.0	—	56.0	—	27.0	—	N
27.12415	27.1	—	1.7	28.8	—	60.0	—	31.2	—	N
27.12415	28.2	—	1.7	29.9	—	60.0	—	30.1	—	L

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

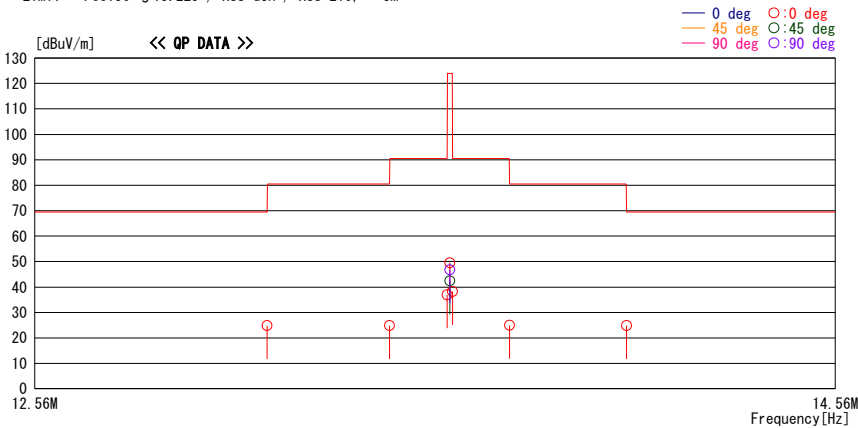
Radiated emission(Fundamental emission and Spectrum Mask)

DATA OF MAGNETIC RADIATED EMISSION TEST

UL Apex Co.,LTD. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2006/09/01 03:04:53

Applicant : Sony Corporation
Kind of EUT : Hard Disk Drive
Model No. : VGP-UHDM10
Serial No. : DVT-073
Report No. : 27AE0172-HO
Power : DC5.0V (PC:AC120V/60Hz)
Temp./Humi. : 25deg.C / 60%
Operator : Hiroka Umeyama

Mode / Remarks : Transmitting 13.56MHz + HDD RW
LIMIT : FCC15C § 15.225 / RSS-Gen / RSS-210, 3m



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]	
13.11000	28.3	QP	20.4	4.0	27.9	24.8	69.5	44.7	0deg	168	
13.41000	28.3	QP	20.4	4.0	27.9	24.8	80.5	55.7	0deg	168	
13.55300	40.4	QP	20.5	4.0	27.9	37.0	90.5	53.5	0deg	168	
13.56000	52.8	QP	20.5	4.1	27.9	49.5	124.0	74.5	0deg	168	
13.56000	45.7	QP	20.5	4.1	27.9	42.4	124.0	81.6	45deg	136	
13.56000	50.1	QP	20.5	4.1	27.9	46.7	124.0	77.3	90deg	269	
13.56700	41.5	QP	20.5	4.1	27.9	38.2	90.5	52.3	0deg	168	
13.71000	28.2	QP	20.5	4.1	27.9	24.9	80.5	55.6	0deg	168	
14.01000	28.2	QP	20.5	4.1	27.9	24.8	69.5	44.7	0deg	168	

CHART : WITH FACTOR ANT TYPE : LOOP
CALCULATION : READING + ANT FACTOR + LOSS (CABLE + ATTEN. -AMP.)

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Radiated emission (Spurious emission: below 30MHz)

DATA OF MAGNETIC RADIATED EMISSION TEST

UL Apex Co., LTD. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2006/09/01 03:04:53

Applicant : Sony Corporation
Kind of EUT : Hard Disk Drive
Model No. : VGP-UHDM10
Serial No. : DVT-073

Report No. : 27AE0172-HO
Power : DC5.0V (PC:AC120V/60Hz)
Temp./ Humi. : 25deg.C / 60%
Operator : Hiroka Umeyama

Mode / Remarks : Transmitting 13.56MHz + HDD RW

LIMIT : FCC15C § 15.225 / RSS-Gen / RSS-210, 3m

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]	
27.12000	28.4	QP	21.3	4.6	28.0	26.3	69.5	43.2	0deg	170	
27.12000	36.8	QP	21.3	4.6	28.0	34.7	69.5	34.8	45deg	193	
27.12000	38.9	QP	21.3	4.6	28.0	36.8	69.5	32.7	90deg	148	

CHART : WITH FACTOR ANT TYPE : LOOP
CALCULATION : READING + ANT FACTOR + LOSS (CABLE + ATTEN. -AMP.)

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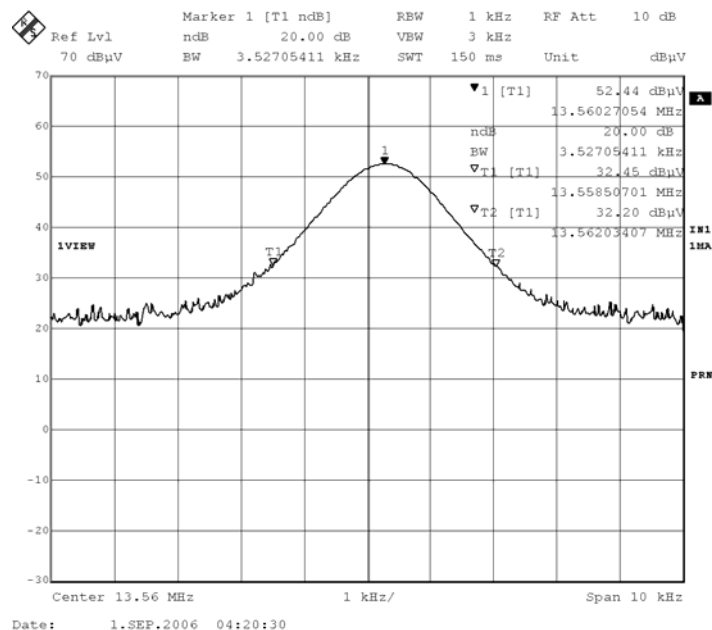
-20dB Bandwidth

UL Apex Co., Ltd.
Head Office EMC Lab. No1 Semi Anechoic Chamber

COMPANY : Sony Corporation
EQUIPMENT : Hard Disk Drive
MODEL : VGP-UHDM10
S/ N : DVT-073
POWER : DC5.0V (PC AC-Adapter AC120V/60Hz)
MODE : Transmitting

REPORT NO. : 27AE0172-HO
REGULATION : FCC 15.215(c)
TEST DISTANCE : 3m
DATE : August 31, 2006
TEMPERATURE : 25deg.C
HUMIDITY : 60 %
ENGINEER : Hiroka Umeyama

FREQ [MHz]	-20dB Bandwidth [kHz]
13.56	3.53



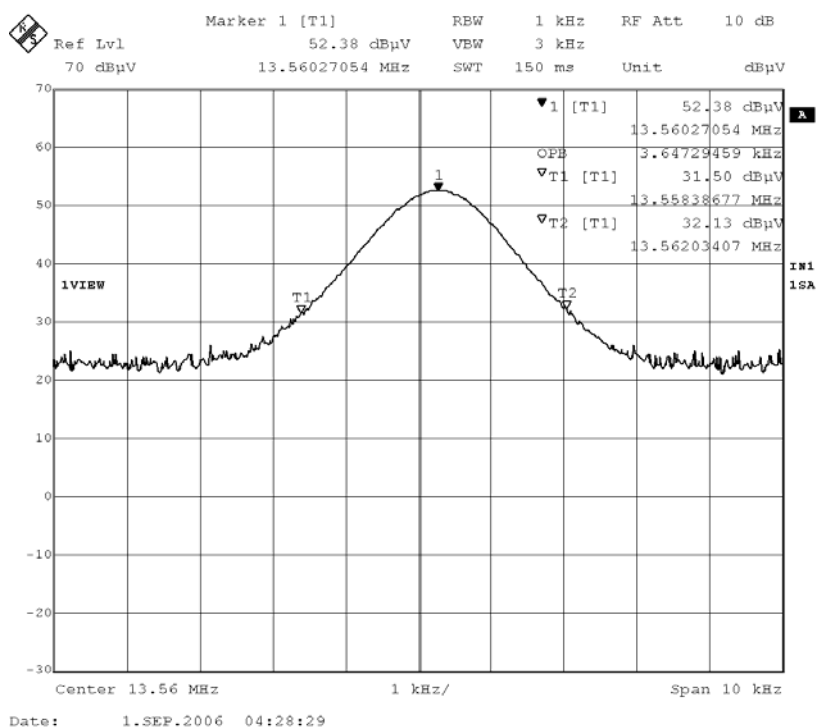
99% Occupied Bandwidth

UL Apex Co., Ltd.
Head Office EMC Lab. No1 Semi Anechoic Chamber

COMPANY : Sony Corporation
EQUIPMENT : Hard Disk Drive
MODEL : VGP-UHDM10
S/ N : DVT-073
POWER : DC5.0V (PC AC-Adapter AC120V/60Hz)
MODE : Transmitting

REPORT NO. : 27AE0172-HO
REGULATION : RSS-Gen
TEST DISTANCE : 3m
DATE : August 31, 2006
TEMPERATURE : 25deg.C
HUMIDITY : 60 %
ENGINEER : Hiroka Umeyama

FREQ [MHz]	99% Occpied Bandwidth [kHz]
13.56	3.65



Frequency Tolerance

UL Apex Co., Ltd.
Head Office EMC Lab. No7 shielded room

COMPANY : Sony Corporation
EQUIPMENT : Hard Disk Drive
MODEL : VGP-UHDM10
S/ N : DVT-073
POWER : DC5.0V (PC AC-Adapter AC120V/60Hz)
MODE : Transmitting

REPORT NO. : 27AE0172-HO
REGULATION : FCC 15.225
TEST DISTANCE : -
DATE : September 01, 2006
TEMPERATURE : 25deg.C
HUMIDITY : 60 %
ENGINEER : Hiroka Umeyama

Test Condition	Test Timing	Measured freq [MHz]	Freq error [MHz]	Result [ppm]	Limit (+/- 0.01%) [+/- ppm]	Margin [ppm]
T nom 20deg.C Vnom DC5.0V	Power on	13.56027325	0.00027325	20.15	100.00	79.85
	on 2min.	13.56027019	0.00027019	19.93	100.00	80.07
	on 5min.	13.56027474	0.00027474	20.26	100.00	79.74
	on 10min.	13.56027601	0.00027601	20.35	100.00	79.65
T max 50°C Vnom DC5.0V	Power on	13.56021178	0.00021178	15.62	100.00	84.38
	on 2min.	13.56020888	0.00020888	15.40	100.00	84.60
	on 5min.	13.56020864	0.00020864	15.39	100.00	84.61
	on 10min.	13.56020550	0.00020550	15.15	100.00	84.85
T min -20deg.C Vnom DC5.0V	Power on	13.56030801	0.00030801	22.71	100.00	77.29
	on 2min.	13.56031119	0.00031119	22.95	100.00	77.05
	on 5min.	13.56031460	0.00031459	23.20	100.00	76.80
	on 10min.	13.56030673	0.00030673	22.62	100.00	77.38
T min -30deg.C Vnom DC5.0V *(IC only)	Power on	13.56024030	0.00024029	17.72	100.00	82.28
	on 2min.	13.56023956	0.00023956	17.67	100.00	82.33
	on 5min.	13.56023740	0.00023740	17.51	100.00	82.49
	on 10min.	13.56023504	0.00023504	17.33	100.00	82.67

Limit : 13.56 MHz +/-0.01 % (+/- 100ppm)
+/- 0.001356 MHz

* For IC application (RSS-Gen 4.5 requirement)

APPENDIX 3: Test instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Test Item	Calibration Date * Interval(month)
MAEC-04	Anechoic Chamber	TDK	Semi Anechoic Chamber 3m	RE/CE	2006/03/06 * 12
MSTW-14	EMI measurement program	TSJ	TEPTO-DV	RE/CE	-
MOS-15	Thermo-Hygrometer	Custom	CTH-180	RE/CE	2006/01/19 * 24
MBA-05	Biconical Antenna	Schwarzbeck	BBA9106	RE	2006/01/29 * 12
MLA-08	Logperiodic Antenna	Schwarzbeck	UKLP9140-A	RE	2006/01/29 * 12
MAT-31	Attenuator(6dB)	TME	UFA-01	RE	2006/03/11 * 12
MPA-14	Pre Amplifier	SONOA INSTRUMENT	310	RE	2006/03/25 * 12
MLS-06	LISN(AMN)	Schwarzbeck	NSLK8127	CE (EUT)	2006/02/06 * 12
MTR-02	Test Receiver	Rohde & Schwarz	ESCS30	RE/CE	2006/02/02 * 12
MSA-05	Spectrum Analyzer	Advantest	R3273	RE/CE	2006/05/20 * 12
MCC-50	Coaxial cable	UL Apex	-	RE/CE	2006/03/09 * 12
MAEC-01	Anechoic Chamber	TDK	Semi Anechoic Chamber 10m	RE	2005/11/14 * 12
MOS-01	Digital Humidity Indicator	N.T	NT-1800	RE	2004/11/25 * 24
MLPA-02	Loop Antenna	Rohde & Schwarz	HFH2-Z2	RE	2005/12/06 * 12
MAT-02	Attenuator(3dB)	Weinschel Corp	2	RE	2005/12/16 * 12
MPA-04	Pre Amplifier	Agilent	8447D	RE	2006/05/27 * 12
MCC-03	Coaxial Cable	Fujikura/Suhner/Agilent/TSJ	-	RE	2005/12/18 * 12
MCC-30	coaxial cable	ULApex	-	RE	2006/05/29 * 12
MTR-01	Test Receiver	Rohde & Schwarz	ESI40	RE	2005/11/10 * 12
MCH-01	Temperature and Humidity Chamber	Tabai Espec	PL-2KP	RE	2005/12/19 * 12

All equipment is calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

Test Item :

CE: Conducted emission,
RE: Radiated emission,

UL Apex Co., Ltd.

Head Office EMC Lab.

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