



EMI TEST REPORT

Test Report No.: 25KE0232-HO-1a

Applicant : Sony Corporation
Type of Equipment : Hard Disk Drive
Model No. : VGP-UHDM08
Test standard : FCC Part 15 Subpart C : 2005
Section 15.207 and 15.225
FCC ID : AK8VGPUHDM08
Test Result : Complied

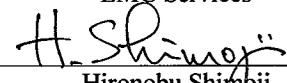
1. This test report shall not be reproduced in full or partial, without the written approval of UL Apex Co., Ltd.
2. The results in this report apply only to the sample tested.
3. This equipment is in compliance with above regulation. We hereby certify that the data contain a true representation of the EMC profile.
4. The test results in this report are traceable to the national or international standards.

Date of test: June 30 to August 17, 2005

Tested by:


Hiroka Umeyama
EMC Services

Approved by :


Hironobu Shimoji
Group Leader of
EMC Services

UL Apex Co., Ltd.

Head Office EMC Lab.

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MF060b(01.06.05)

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SECTION 1: Client information

Company Name : Sony Corporation
Brand or Trade name : SONY
Address : 6-7-35 Kitashinagawa, Shinagawa-ku, Tokyo 141-001 Japan
Telephone Number : +81-3-5448-8716
Facsimile Number : +81-3-5448-8981
Contact Person : Takumi Ozawa

SECTION 2: Equipment under test (E.U.T.)

2.1 Identification of E.U.T.

Type of Equipment : Hard Disk Drive
Model No. : VGP-UHDM08
Serial No. : 1) 310003
For test items: 1, 2, 3, and 5 of Section 3.2 Procedure and results
2) DVT-056
For test items: 1, 4, and 6 of Section 3.2 Procedure and results
Rating : DC5.2V
Country of Manufacture : Japan
Receipt Date of Sample : June 30 and July 26, 2005
Condition of EUT : Engineering prototype
(Not for Sale: This sample is equivalent to mass-produced items.)

2.2 Product Description

Model No: VGP-UHDM08 is the Hard Disk Drive
The clock frequency of EUT is 6, 20, and 24 MHz

Equipment Type : Transceiver
Frequency of Operation : 13.56 MHz
Type of modulation : ASK
Power control : No
Antenna Type : Loop Antenna
Operating Temperature : +5 to 40 deg. C.

FCC 15.31 (e)

The supplied voltage of DC5.2V is converted to DC3.3V in the EUT and the stable voltage of DC3.3V is supplied to RF part. Therefore, this EUT complies with the requirement.

FCC Part 15.203 Antenna requirement

It is impossible for end users to replace the antenna, because the antenna is mounted inside of the EUT. Therefore, the equipment complies with the antenna requirement of Section 15.203.

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SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification : FCC Part15 Subpart C : 2005
Title : FCC 47CFR Part15 Radio Frequency Device Subpart C Intentional Radiators
Section 15.207 Conducted limits
Section 15.225 Operation within the band 13.110-14.010MHz

3.2 Procedures and results

No.	Item	Test Procedure	Specification	Remarks	Deviation	Worst margin	Results
1	Conducted emission	ANSI C63.4:2003 7. AC powerline conducted emission measurements	FCC Section 15.207	-	N/A	8.5dB (0.16300MHz, QP, L)	Complied
2	Electric Field Strength of Fundamental Emission	ANSI C63.4:2003 13. Measurement of intentional radiators	FCC Section 15.225(a)	Radiated	N/A	45.2dB (13.11000MHz, QP)	Complied
3	Spectrum Mask	ANSI C63.4:2003 13. Measurement of intentional radiators	FCC Section 15.225(b)(c)	Radiated	N/A		Complied
4	-20dB Bandwidth	ANSI C63.4:2003 13. Measurement of intentional radiators	FCC Section 15.215(c)	Radiated	N/A	N/A	N/A
5	Electric Field Strength of Spurious Emission	ANSI C63.4:2003 13. Measurement of intentional radiators	FCC Section 15.209, FCC Section 15.225 (d)	Radiated	N/A	2.3dB (54.234MHz, QP, Vert.)	Complied
6	Frequency Tolerance	ANSI C63.4:2003 13. Measurement of intentional radiators	FCC Section 15.225 (e)	Radiated	N/A	See data	Complied

Note: UL Apex's EMI Work Procedures No.QPM05 and QPM15.

Uncertainty:

*In case of the margin below the EMC Head Office's uncertainty.

The data listed in this report meets the limits unless the uncertainty is taken into consideration.

Conducted Emission

The measurement uncertainty (with a 95% confidence level) for this test is ± 1.3 dB.

Spurious Emission (Radiated)

The measurement uncertainty (with a 95% confidence level) for this test using Loop antenna is ± 1.9 dB(3m)/ ± 1.8 dB(10m).

The measurement uncertainty (with a 95% confidence level) for this test using Biconical antenna is ± 4.5 dB(3m)/ ± 4.7 dB(10m).

The measurement uncertainty (with a 95% confidence level) for this test using Logperiodic antenna is ± 5.2 dB(3m)/ ± 3.8 dB(10m).

The measurement uncertainty (with a 95% confidence level) for this test using Horn antenna is ± 6.6 dB.

Other test except Conducted Emission and Spurious Emission (Radiated)

The measurement uncertainty (with a 95% confidence level) for this test is ± 3.0 dB.

*These tests were performed without any deviations from test procedure except for additions or exclusions.

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3.3 Addition to standards

No.	Item	Test Procedure	Specification	Remarks	Deviation	Worst margin	Results
1	99% Occupied Band Width	RSS210(issue 5): 2001 + Amendment:2002 + Amendment2:2003 + Amendment3:2004	RSS210(issue 5): 2001 + Amendment:2002 + Amendment2:2003 + Amendment3:2004	Radiated	N/A	N/A	N/A

3.4 Confirmation

UL Apex Co., Ltd. hereby confirms that E.U.T., in the configuration tested, complies with the specifications FCC Part 15 Subpart C: 2005 Section 15.225.

3.5 Test Location

UL Apex Co., Ltd. Head Office EMC Lab. *NVLAP Lab. code: 200572-0
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	FCC Registration Number	IC Registration Number	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Other rooms
No.1 semi-anechoic chamber	313583	IC4247A	19.2 x 11.2 x 7.7m	7.0 x 6.0m	Preparation room
No.2 semi-anechoic chamber	846015	IC4247A-2	7.5 x 5.8 x 5.2m	4.0 x 4.0m	-
No.3 shielded room	-	-	4.7 x 7.5 x 2.7m	4.7 x 7.5m	-
No.4 measurement room	-	-	3.1 x 5.0 x 2.7m	N/A	-

* Size of vertical conducting plane (for Conducted Emission test) : 2.0 x 2.0m for No.1 and No.2 semi-anechoic and No.3 shielded room.

3.6 Test set up, Test instruments and Data of EMI

Refer to APPENDIX 1 to 3.

SECTION 4: Operation of E.U.T. during testing

4.1 Operating Modes

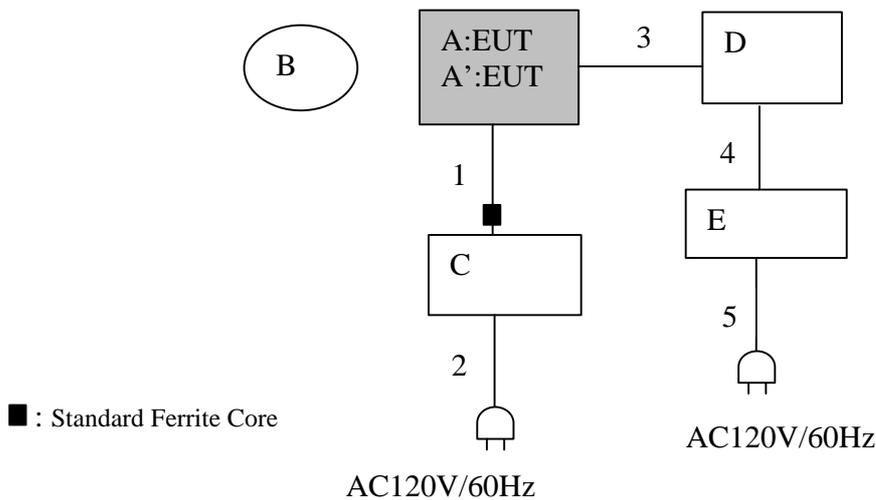
The EUT was operated in a manner similar to typical use during the tests.

The mode is used :
1. Communication mode (Transmitting) with Wireless Key
2. Communication mode (Transmitting) without Wireless Key

[Remarks]

1. Test software are designed and set so that carrier level and modulation remain same regardless of Wireless Key.
2. Power level was checked with Wireless key and without Wireless Key and it is confirmed the level was higher without Wireless Key.
3. All the tests other than -20dB Band Width and 99% OPW were performed without Wireless Key
4. -20dB Band Width and 99% OPW tests were performed both with Wireless Key and without Wireless Key.
5. As for Conducted Emission test, carrier frequency 13.56MHz was excluded.

4.2 Configuration and peripherals



* Cabling was taken into consideration and test data was taken under worse case conditions.

Description of EUT and Support equipment

No.	Item	Model number	Serial number	Manufacturer	FCC ID	Remarks
A	Hard Disk Drive	VGP-UHDM08	310003* ¹	SONY	AK8VGPUHDM08	EUT* ¹
A'	Hard Disk Drive	VGP-UHDM08	DVT-056** ²	SONY	AK8VGPUHDM08	EUT** ²
B	Wireless Key	-	No001	SONY	-	-
C	AC Adapter	VGP-AC5V1	0000419	SONY	-	-
D	Note PC	PCG-351L	UAW-21	SONY	DOC	-
F	AC Adapter	PCGA-AC16V6	1168188	SONY	-	-

*¹ Used for test items: 1, 2, 3, and 5 of Section 3.2 Procedure and results

**² Used for test items: 1, 4, and 6 of Section 3.2 Procedure and results

List of cables used

No.	Name	Length (m)	Shield	Backshell Material
1	DC Cable	1.8	Y	Polyvinyl chloride
2	AC Cable	0.7	N	Polyvinyl chloride
3	USB Cable	1.0	Y	Polyvinyl chloride
4	DC Cable	1.8	Y	Polyvinyl chloride
5	AC Cable	0.7	N	Polyvinyl chloride

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SECTION 5: Conducted emission

5.1 Operating environment

Test place : No.1 semi anechoic chamber.
Temperature : 24 deg. C.
Humidity : 60%

5.2 Test configuration

EUT was placed on a platform of nominal size, 0.5 m by 1.0 m, raised 80cm above the conducting ground plane. The rear of tabletop was located 40cm to the vertical conducting plane. The rear of EUT and its peripherals was aligned and flushed with rear of tabletop. All other surfaces of tabletop were at least 80cm from any other grounded conducting surface. EUT was located 80cm from LISN/AMN and excess AC cable was bundled in center. I/O cables that were connected to the peripherals were bundled in center. They were folded back and forth forming a bundle 30cm to 40cm long and were hanged at a 40cm height to the ground plane. Each EUT current-carrying power lead, except the ground (safety) lead, was individually connected through a LISN/ an AMN to the input power source. All unused 50ohm connectors of the LISN/ AMN were resistively terminated in 50ohm when not connected to the measuring equipment. The AC Mains Terminal Continuous disturbance Voltage has been measured with the EUT on a horizontal conducting plane 4.0 x 4.0m and a vertical conducting plane 2.0 x 2.0m in a No.2 semi Anechoic Chamber. A drawing of the set up is shown in the photos of APPENDIX 1.

5.3 Test conditions

Frequency range : 0.15MHz – 30MHz
EUT position : Table top
EUT operation mode : Continuous Transmitting

5.4 Test procedure

The AC Mains Terminal Continuous disturbance Voltage had been measured with the EUT in the semi Anechoic Chamber. The EUT was connected to a Line Impedance Stabilization Network (LISN)/ Artificial Mains Network (AMN). An overview sweep with peak detection has been performed. The measurements had been performed with a quasi-peak detector and if required, with an average detector. The conducted emission measurements were made with the following detector function of the test receiver.

Detector Type : QP and AV
IF Bandwidth : 9kHz

Test result: Pass

SECTION 6: Radiated emission (Fundamental , Spurious Emission and Spectrum Mask)

6.1 Operating environment

The test was carried out in a No.1 semi Anechoic Chamber

Temperature : 24 deg. C.
Humidity : 60%

Test Procedure

The Radiated Electric Field Strength intensity has been measured on No.1 semi anechoic chamber with a ground plane and at a distance of 3m.

Frequency : From 9kHz to 30MHz at distance 3m

The EUT was rotated a full revolution in order to obtain the maximum value of the electric field intensity.

After pre-check with each antenna angle 0deg. , 45deg. and 90deg, measurement was performed with the worst 0 deg angle.

Frequency : From 30MHz to 1GHz at distance 3m

The measuring antenna height was varied between 1 and 4m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field intensity.

The measurements were performed for both vertical and horizontal antenna polarization.

Measurements were performed with a QP, PK, and AV detector.

The radiated emission measurements were made with the following detector function of the test receiver.

	From 9kHz to 90kHz and From 110kHz to 150kHz	From 90kHz to 110kHz	From 150kHz to 490kHz	From 490kHz to 30MHz	From 30MHz to 1GHz
Detector Type	PK/AV	QP	PK/AV	QP	QP
IF Bandwidth	200Hz	200Hz	9kHz	9kHz	120kHz

* Part 15 Section 15.31 (f)(2) (9kHz-30MHz)

9kHz – 490kHz [Limit at 3m]=[Limit at 300m]-40log (3[m]/300[m])

490kHz – 30MHz[Limit at 3m]=[Limit at 30m]-40log (3[m]/30[m])

Test result: Pass

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SECTION 7: -20dB Bandwidth

Test Procedure

The measurement was performed in the antenna height to gain the maximum of Electric field strength.

Test data : APPENDIX 3
Test result : Pass

SECTION 8: 99% Occupied Bandwidth

Test Procedure

The measurement was performed in the antenna height to gain the maximum of Electric field strength.

Test data : APPENDIX 3
Test result : Pass

SECTION 9: Frequency Tolerance

Test Procedure

The measurement was performed in the antenna height to gain the maximum of Electric field strength.

Test data : APPENDIX 3
Test result : Pass

APPENDIX 1: Photographs of test setup

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APPENDIX 2: Test instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Test Item	Calibration Date * Interval(month)
MAEC-01	Anechoic Chamber	TDK	Semi Anechoic Chamber 10m	RE / CE	2004/11/13 * 12
MLPA-02	Loop Antenna	Rohde & Schwarz	HFH2-Z2	RE	2004/12/10 * 12
MPA-04	Pre Amplifier	Agilent	8447D	RE	2005/05/24 * 12
MCC-03	Coaxial Cable	Fujikura/Suhner/Agilent/TSJ	-	RE / CE	2004/12/24 * 12
MCC-31	coaxial cable	ULApex	-	RE	2005/06/02 * 12
MAT-06	Attenuator(6dB)	Weinschel Corp	2	RE	2004/12/16 * 12
MBA-01	Biconical Antenna	Schwarzbeck	BBA9106	RE	2004/10/14 * 12
MLA-01	Logperiodic Antenna	Schwarzbeck	USLP9143	RE	2004/10/14 * 12
MTR-01	Test Receiver	Rohde & Schwarz	ESI40	RE / CE	2004/11/12 * 12
MCC-01	Coaxial Cable 0.1-3000MHz	Suhner/storm/Agilent/TSJ	-	RE	2004/12/19 * 12
MLS-02	LISN(AMN)	Schwarzbeck	NSLK8127	CE(EUT)	2004/11/10 * 12
MLS-03	LISN(AMN)	Schwarzbeck	NSLK8127	CE	2004/11/10 * 12
MSA-04	Spectrum Analyzer	Agilent	E4448A	FT	2005/05/19 * 12
MCH-01	Temperature and Humidity Chamber	Tabai Espec	PL-2KP	FT	2004/12/20 * 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,
- FT: Frequency tolerance

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APPENDIX 3: Data of EMI test

Conducted emission

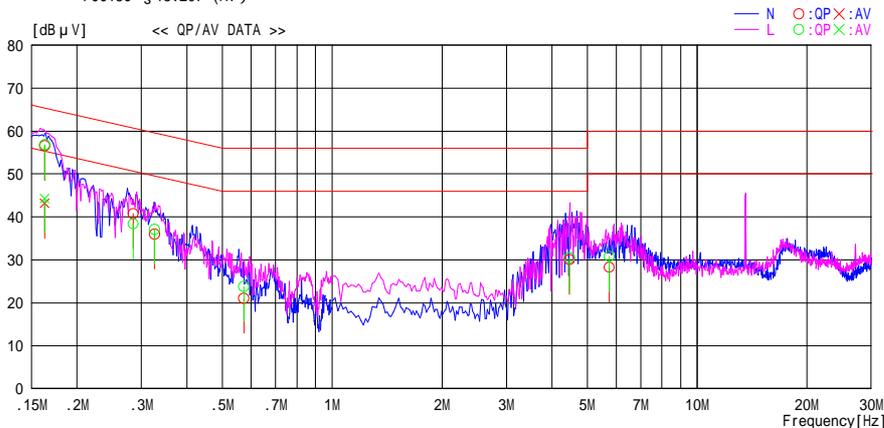
DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber
 Date : 2005/07/01 10:47:27

Applicant : Sony Corporation
 Kind of EUT : Hard Disk Drive
 Model No. : VGP-UHDM08
 Serial No. : DVT-056
 Report No. : 25KE0232-HO
 Power : DC5.2V(PC AC Adapter:AC120/60Hz)
 Temp /Humi% : 25deg.C / 60%
 Operator : Hiroka Uneyama

Mode / Remarks : Transmitting 13.56MHz + HDD RW

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



Frequency [MHz]	Meter Reading (QP) [dB μV]	Meter Reading (Ave.) [dB μV]	Factor [dB]	Level (QP) [dB μV]	Level (Ave.) [dB μV]	Line	Limit (QP) [dB μV]	Limit (Ave.) [dB μV]	Margin (QP) [dB]	Margin (Ave.) [dB]
0.16300	56.2	42.8	0.4	56.6	43.2	N	65.3	55.3	8.7	12.1
0.28519	40.3	----	0.4	40.7	----	N	60.7	50.7	20.0	----
0.32600	35.6	----	0.4	36.0	----	N	59.6	49.6	23.6	----
0.57270	20.4	----	0.6	21.0	----	N	56.0	46.0	35.0	----
4.46940	29.1	----	1.0	30.1	----	N	56.0	46.0	25.9	----
5.74950	27.1	----	1.2	28.3	----	N	60.0	50.0	31.7	----
0.16300	56.4	43.9	0.4	56.8	44.3	L	65.3	55.3	8.5	11.0
0.28519	38.0	----	0.4	38.4	----	L	60.7	50.7	22.3	----
0.32600	36.7	----	0.4	37.1	----	L	59.6	49.6	22.5	----
0.57270	23.2	----	0.6	23.8	----	L	56.0	46.0	32.2	----
4.46940	29.5	----	1.0	30.5	----	L	56.0	46.0	25.5	----
5.74950	29.6	----	1.2	30.8	----	L	60.0	50.0	29.2	----

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.

Conducted emission

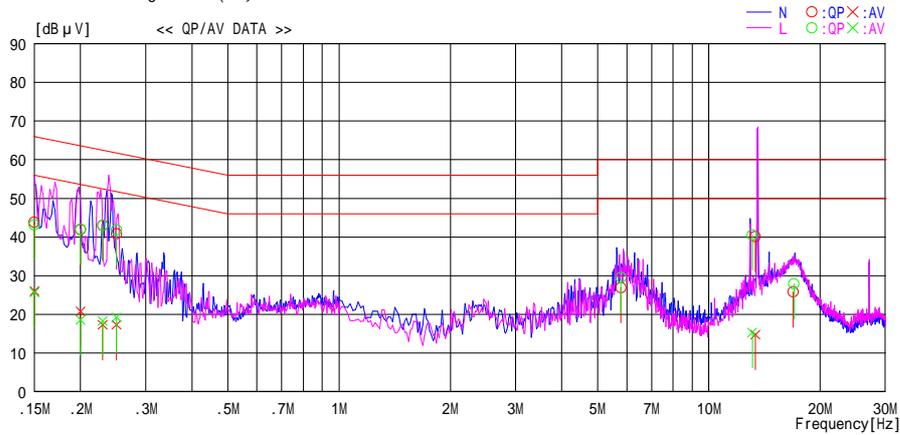
DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2005/07/26 13:17:46

Applicant : Sony Corporation
 Kind of EUT : Hard Disk Drive
 Model No. : VGP-UHDM08
 Serial No. : 31003
 Report No. : 25KE0232-H0
 Power : DC5.2V(PC AC Adapter:AC120/60Hz)
 Temp /Humi% : 24deg.C / 60%
 Operator : Hiroka Umeyama

Mode / Remarks : Transmitting 13.56MHz + HDD RW, with AC Adapter

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 [dBuV]	AV [dBuV]	
0.15000	43.5	25.8	0.3	43.8	26.1	66.0	56.0	22.2	29.9	N
0.15000	42.9	25.4	0.3	43.2	25.7	66.0	56.0	22.8	30.3	L
0.20000	41.3	20.2	0.6	41.9	20.8	63.6	53.6	21.7	32.8	N
0.20000	41.4	18.0	0.6	42.0	18.6	63.6	53.6	21.6	35.0	L
0.22950	42.5	17.8	0.5	43.0	18.3	62.5	52.5	19.5	34.2	L
0.22950	42.5	16.8	0.5	43.0	17.3	62.5	52.5	19.5	35.2	N
0.25000	40.3	16.8	0.5	40.8	17.3	61.8	51.8	21.0	34.5	N
0.25000	41.3	18.7	0.5	41.8	19.2	61.8	51.8	20.0	32.6	L
5.78300	25.7	----	1.2	26.9	----	60.0	----	33.1	----	N
5.78310	28.4	----	1.2	29.6	----	60.0	----	30.4	----	L
13.10500	38.7	13.4	1.9	40.6	15.3	60.0	50.0	19.4	34.7	L
13.35000	38.2	12.9	1.9	40.1	14.8	60.0	50.0	19.9	35.2	N
16.89700	23.6	----	2.2	25.8	----	60.0	----	34.2	----	N
16.97000	25.7	----	2.2	27.9	----	60.0	----	32.1	----	L

CHART: WITH FACTOR, Peak hold data. Data is uncorrected. CALCULATION: 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)

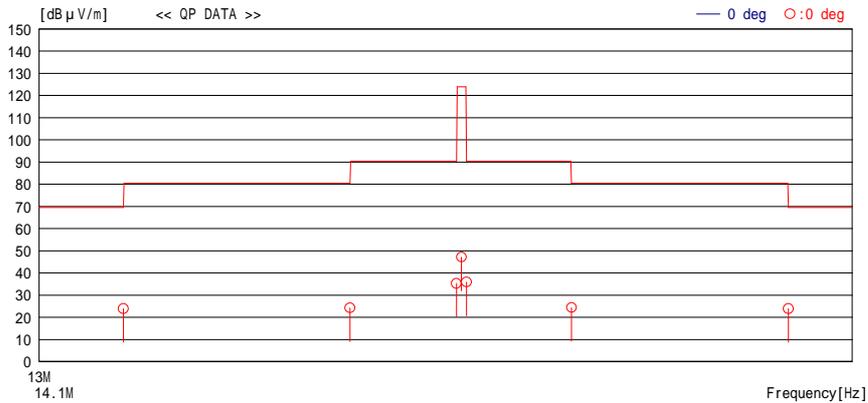
DATA OF MAGNETIC RADIATED EMISSION TEST

UL Apex Co.,LTD. Head Office EMC Lab. No.1 Semi Anechoic Chamber

Applicant : Sony Corporation
 Kind of EUT : Hard Disk Drive
 Model No. : VGP-UHDM08
 Serial No. : 310003
 Report No. : 25KE0232-HO
 Power : DC5.2V
 Temp./ Humi. : 24deg.C / 60%
 Operator : Hiroka Umeyama

Mode / Remarks : Transmitting 13.56MHz + HDD RW

LIMIT : FCC15C §15.225 3m



Freq.	Reading	DET	Ant.Fac	Loss	Gain	Result	Limit	Margin	Antenna	Table
[MHz]	[dBμV]		[dB/m]	[dB]	[dB]	[dBμV/m]	[dBμV/m]	[dB]	[deg]	
13.11000	24.8	QP	20.0	7.0	27.9	23.9	69.5	45.6	0deg	176
13.41000	25.1	QP	20.0	7.0	27.9	24.2	80.5	56.3	0deg	176
13.55300	36.2	QP	20.0	7.0	27.9	35.3	90.4	55.1	0deg	176
13.56000	48.0	QP	20.0	7.1	27.9	47.2	123.9	76.7	0deg	176
13.56700	36.8	QP	20.0	7.1	27.9	36.0	90.4	54.4	0deg	176
13.71000	25.2	QP	20.0	7.1	27.9	24.4	80.5	56.1	0deg	176
14.01000	24.8	QP	20.0	7.1	27.9	24.0	69.5	45.5	0deg	176

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

Page:

Radiated emission (Fundamental emission and Spectrum Mask)

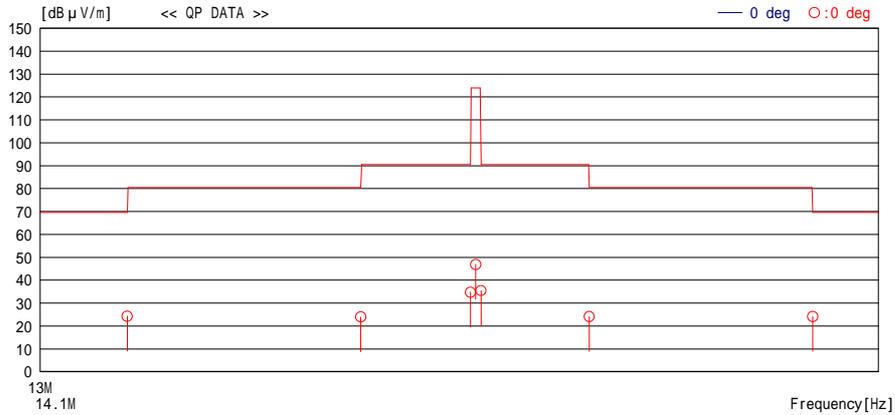
DATA OF MAGNETIC RADIATED EMISSION TEST

UL Apex Co.,LTD. Head Office EMC Lab. No.1 Semi Anechoic Chamber

Applicant : Sony Corporation	Report No. : 25KE0232-HO
Kind of EUT : Hard Disk Drive	Power : DC5.2V
Model No. : VGP-UHDM08	Temp./ Humi. : 24deg.C / 60%
Serial No. : 310003	Operator : Hiroka Umeyama

Mode / Remarks : Transmitting 13.56MHz + HDD RW , with AC Adapter

LIMIT : FCC15C §15.225 3m



Freq.	Reading	DET	Ant.Fac	Loss	Gain	Result	Limit	Margin	Antenna	Table
[MHz]	[dBuV]		[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]		[deg]
13.11000	25.2	QP	20.0	7.0	27.9	24.3	69.5	45.2	0deg	175
13.41000	24.9	QP	20.0	7.0	27.9	24.0	80.5	56.5	0deg	175
13.55300	35.6	QP	20.0	7.0	27.9	34.7	90.4	55.7	0deg	175
13.56000	47.6	QP	20.0	7.1	27.9	46.8	123.9	77.1	0deg	175
13.56700	36.3	QP	20.0	7.1	27.9	35.5	90.4	54.9	0deg	175
13.71000	24.9	QP	20.0	7.1	27.9	24.1	80.5	56.4	0deg	175
14.01000	24.9	QP	20.0	7.1	27.9	24.1	69.5	45.4	0deg	175

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

Page:

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

Applicant : Sony Corporation
 Kind of EUT : Hard Disk Drive
 Model No. : VGP-UHDM08
 Serial No. : 310003
 Report No. : 25KE0232-HO
 Power : DC5.2V
 Temp./ Humi. : 24deg.C / 60%
 Operator : Hiroka Umeyama

Mode / Remarks : Transmitting 13.56MHz + HDD RW

LIMIT : FCC15C §15.225 3m

Freq.	Reading	DET	Ant.Fac	Loss	Gain	Result	Limit	Margin	Antenna	Table
[MHz]	[dBuV]		[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	[deg]	[deg]
27.12000	24.5	QP	19.9	7.7	28.0	24.1	69.5	45.4	0deg	176

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

Page:

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

Applicant : Sony Corporation
 Kind of EUT : Hard Disk Drive
 Model No. : VGP-UHDM08
 Serial No. : 310003
 Report No. : 25KE0232-HO
 Power : DC5.2V
 Temp./ Humi. : 24deg.C / 60%
 Operator : Hiroka Umeyama

Mode / Remarks : Transmitting 13.56MHz + HDD RW , with AC Adapter

LIMIT : FCC15C § 15.225 3m

Freq.	Reading	DET	Ant.Fac	Loss	Gain	Result	Limit	Margin	Antenna	Table
[MHz]	[dBuV]		[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]		[deg]
27.12000	24.2	QP	19.9	7.7	28.0	23.8	69.5	45.7	0deg	175

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

Page:

Radiated emission (Spurious emission: above 30MHz)

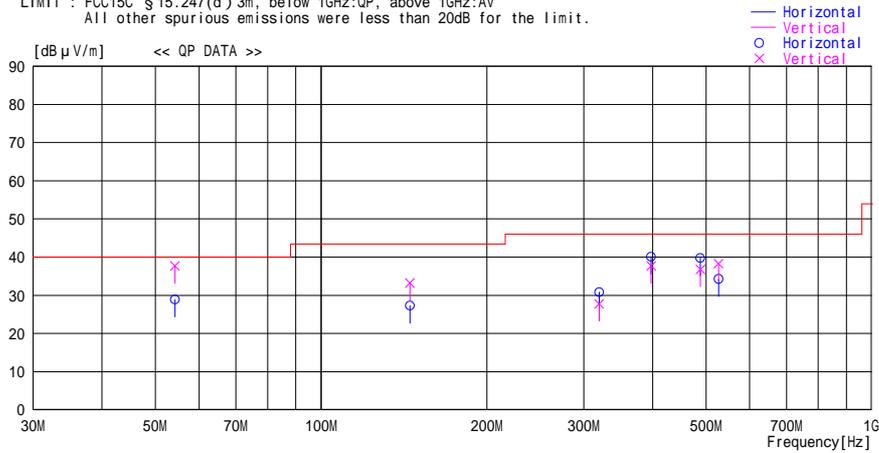
DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber
 Date : 2005/07/26 10:10:49

Applicant : Sony Corporation
 Kind of EUT : Hard Disk Drive
 Model No. : VGP-UHDM08
 Serial No. : 310003
 Report No. : 25KE0232-HO
 Power : DC5.2V
 Temp /Humi% : 24deg.C / 60%
 Operator : Hiroka Umeyama

Mode / Remarks : Transmitting 13.56MHz + HDD RW

LIMIT : FCC15C § 15.247(d) 3m, below 1GHz:QP, above 1GHz:AV
 All other spurious emissions were less than 20dB for the limit.



Frequency	Reading	DET	Antenna		Level	Angle	Height	Polar.	Limit	Margin
			Factor	Loss& Gain						
[MHz]	[dBuV]		[dB/m]	[dB]	[dBuV/m]	[Deg]	[cm]		[dBuV/m]	[dB]
54.234	40.1	QP	9.3	-20.5	28.9	140	245	Hori.	40.0	11.1
54.234	48.9	QP	9.3	-20.5	37.7	75	100	Vert.	40.0	2.3
145.000	31.6	QP	14.7	-19.0	27.3	35	290	Hori.	43.5	16.2
145.000	37.5	QP	14.7	-19.0	33.2	40	100	Vert.	43.5	10.3
320.020	32.5	QP	15.4	-17.1	30.8	0	100	Hori.	46.0	15.2
320.020	29.5	QP	15.4	-17.1	27.8	211	147	Vert.	46.0	18.2
397.280	39.3	QP	17.9	-17.1	40.1	0	100	Hori.	46.0	5.9
397.280	36.9	QP	17.9	-17.1	37.7	190	185	Vert.	46.0	8.3
488.150	38.4	QP	18.5	-17.2	39.7	307	100	Hori.	46.0	6.3
488.150	35.5	QP	18.5	-17.2	36.8	359	100	Vert.	46.0	9.2
527.254	32.5	QP	19.0	-17.2	34.3	293	385	Hori.	46.0	11.7
527.254	36.5	QP	19.0	-17.2	38.3	308	200	Vert.	46.0	7.7

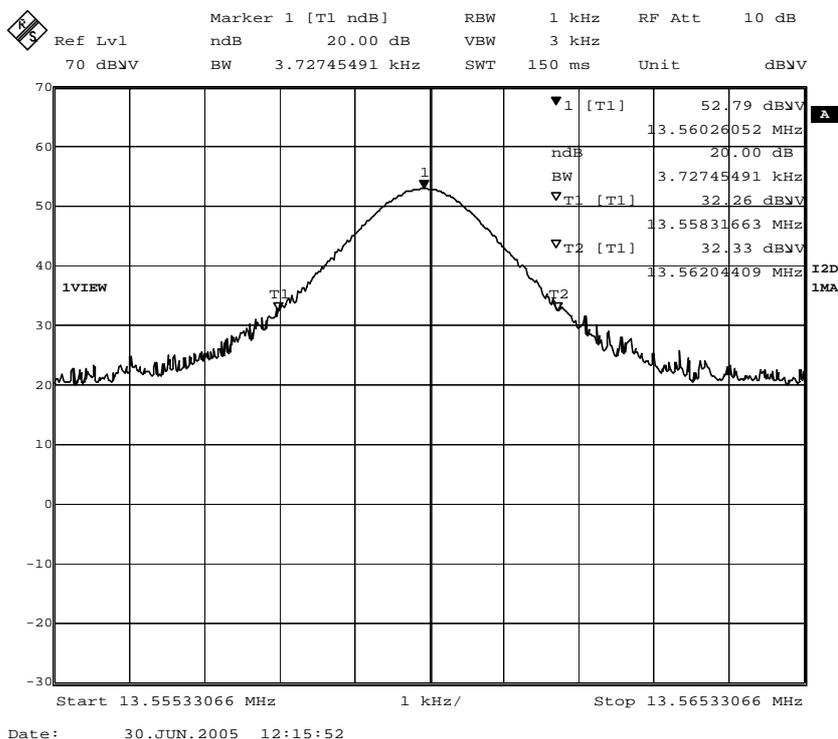
CHART:WITHOUT FACTOR ANT TYPE : -30MHz LOOP,30-300MHz BICONICAL,300MHz-1000MHz Dipole,1000MHz- HORN
 CALCULATION : READING + ANT FACTOR + LOSS(CABLE+ATTEN.) - AMP.GAIN
 Page:

-20dB Bandwidth

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

COMPANY : Sony Corporation	REPORT NO. : 25KE0232-HO
EQUIPMENT : Hard Disk Drive	REGULATION : FCC 15.225
MODEL : VGP-UHDM08	TEST DISTANCE : 3m
S/ N : DVT-056	DATE : June 30, 2005
POWER : DC5.2V	TEMPERATURE : 24deg.C
MODE : Transmitting	HUMIDITY : 60 %
: without Wireless Key	ENGINEER : Hiroka Umeyama

FREQ [MHz]	-20dB Bandwidth [kHz]
13.56	3.72



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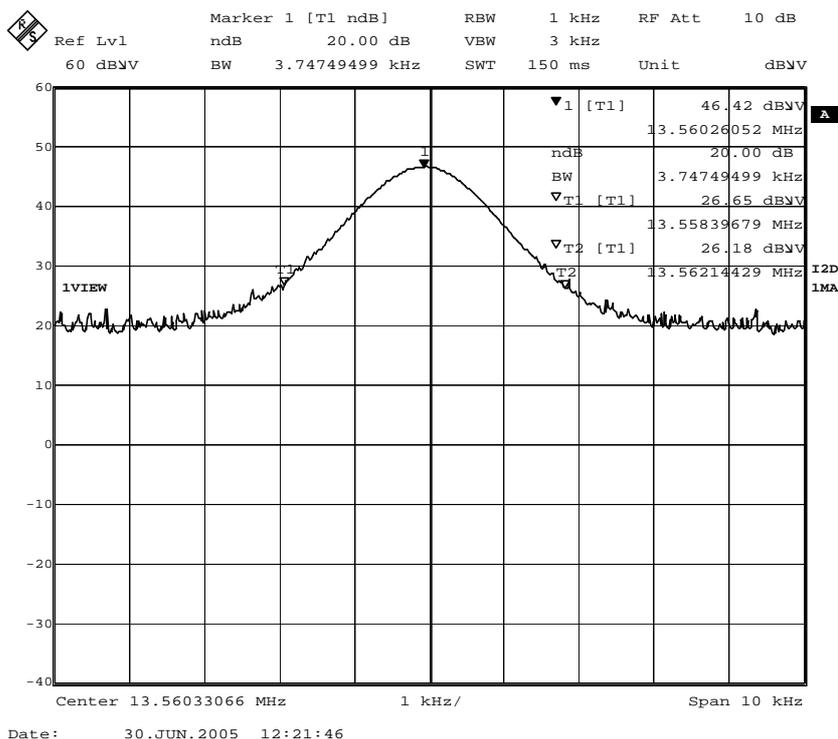
-20dB Bandwidth

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

COMPANY : Sony Corporation
 EQUIPMENT : Hard Disk Drive
 MODEL : VGP-UHDM08
 S/N : DVT-056
 POWER : DC5.2V
 MODE : Transmitting
 : with Wireless Key

REPORT NO. : 25KE0232-HO
 REGULATION : FCC 15.225
 TEST DISTANCE : 3m
 DATE : June 30, 2005
 TEMPERATURE : 24deg.C
 HUMIDITY : 60 %
 ENGINEER : Hiroka Umeyama

FREQ [MHz]	-20dB Bandwidth [kHz]
13.56	3.74



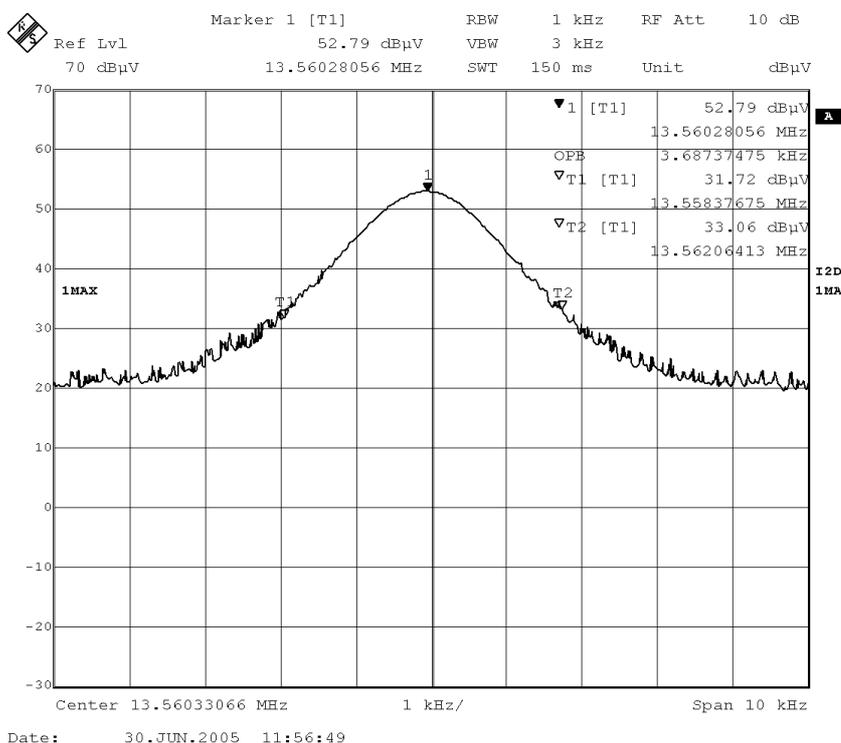
99% Occupied Bandwidth

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

COMPANY : Sony Corporation
 EQUIPMENT : Hard Disk Drive
 MODEL : VGP-UHDM08
 S/N : DVT-056
 POWER : DC5.2V
 MODE : Transmitting
 : without Wireless Key

REPORT NO. : 25KE0232-HO
 REGULATION : FCC 15.225
 TEST DISTANCE : 3m
 DATE : June 30, 2005
 TEMPERATURE : 24deg.C
 HUMIDITY : 60 %
 ENGINEER : Hiroka Umeyama

FREQ [MHz]	99% Occupied Bandwidth [kHz]
13.56	3.69



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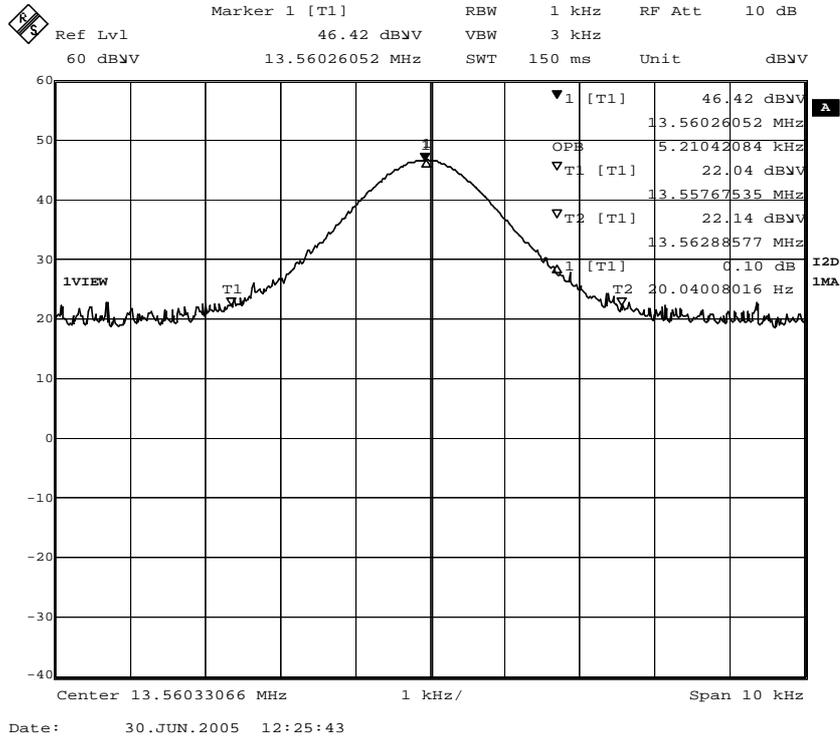
99% Occupied Bandwidth

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

COMPANY : Sony Corporation
 EQUIPMENT : Hard Disk Drive
 MODEL : VGP-UHDM08
 S/N : DVT-056
 POWER : DC5.2V
 MODE : Transmitting
 : with Wireless Key

REPORT NO. : 25KE0232-HO
 REGULATION : FCC 15.225
 TEST DISTANCE : 3m
 DATE : June 30, 2005
 TEMPERATURE : 24deg.C
 HUMIDITY : 60 %
 ENGINEER : Hiroka Umeyama

FREQ [MHz]	99% Occupied Bandwidth [kHz]
13.56	5.21



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Frequency Tolerance

UL Apex Co., Ltd.
Head Office EMC Lab. No3 Measurement Room

COMPANY : Sony Corporation	REPORT NO. : 25KE0232-HO
EQUIPMENT : Hard Disk Drive	REGULATION : FCC 15.225
MODEL : VGP-UHDM08	TEST DISTANCE : 3m
S/N : DVT-056	DATE : July 1, 2005 and August 17, 2005
POWER : DC5.2V (New Battery)	TEMPERATURE : 24deg.C and 25deg.C
: AC120V/60Hz (AC Adapter)	HUMIDITY : 60 % and 60%
MODE : Transmitting	ENGINEER : Hiroka Umeyama

Test Condition	Test Timing	Measured freq [MHz]	Freq error [MHz]	Result [ppm]	Limit (+/- 0.01%) [+/- ppm]	Margin [ppm]
T nom 20 Vnom DC5.2V	Power on	13.56021549	0.00021549	15.89	100.00	84.11
	on 2min.	13.56021585	0.00021585	15.92	100.00	84.08
	on 5min.	13.56021306	0.00021306	15.71	100.00	84.29
	on 10min.	13.56021306	0.00021306	15.71	100.00	84.29
T min -20 Vnom DC5.2V	Power on	13.56023267	0.00023267	17.16	100.00	82.84
	on 2min.	13.56023563	0.00023563	17.38	100.00	82.62
	on 5min.	13.56023395	0.00023395	17.25	100.00	82.75
	on 10min.	13.56022734	0.00022734	16.77	100.00	83.23
T max 50 Vnom DC5.2V	Power on	13.56021376	0.00021376	15.76	100.00	84.24
	on 2min.	13.56021245	0.00021244	15.67	100.00	84.33
	on 5min.	13.56021105	0.00021105	15.56	100.00	84.44
	on 10min.	13.56020861	0.00020861	15.38	100.00	84.62

Test Condition	Test Timing	Measured freq [MHz]	Freq error [MHz]	Result [ppm]	Limit (+/- 0.01%) [+/- ppm]	Margin [ppm]
T nom 20 Vnom AC120V	Power on	13.56018080	0.00018080	13.33	100.00	86.67
	on 2min.	13.56018020	0.00018019	13.29	100.00	86.71
	on 5min.	13.56018071	0.00018071	13.33	100.00	86.67
	on 10min.	13.56017918	0.00017918	13.21	100.00	86.79
T nom 20 Vmin 85%	Power on	13.56017890	0.00017890	13.19	100.00	86.81
	on 2min.	13.56017892	0.00017892	13.19	100.00	86.81
	on 5min.	13.56017851	0.00017851	13.16	100.00	86.84
	on 10min.	13.56017867	0.00017867	13.18	100.00	86.82
T nom 20 Vmax 115%	Power on	13.56017937	0.00017937	13.23	100.00	86.77
	on 2min.	13.56017886	0.00017886	13.19	100.00	86.81
	on 5min.	13.56017904	0.00017904	13.20	100.00	86.80
	on 10min.	13.56017870	0.00017870	13.18	100.00	86.82

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