



Tokyo-March 2, 2004

HITACHI GLOBAL STORAGE TECHNOLOGIES JAPAN LTD
2880 KOZU
ODAWARA-SHI
KANAGAWA 256-8510 JAPAN

UL Apex Co., Ltd.

Tokushima Office
Technical Center,
Yokohama Business Park,
184 Gode-cho, Hodogaya-ku,
Yokohama-shi, Kanagawa
240-8006 Japan
TEL: 045-342-7111
FAX: 045-342-1600
<http://www.ulapex.jp>

Attention: Mr. Kazuo Isaka Fax: 0485-45-1604 Total Page(s): 1
Our Reference: File E132105, D4SC78003; JQA Reference: 3N1-30173
Volume 2, Section 10
Subject: Addition of Component - Hard Disk Drive, Model H1Ew4230xF9ATy0 (x=01-99, y=0-9,
w=J or N) for UL and C-UL investigation

NOTICE OF AUTHORIZATION TO APPLY THE UL MARK

Dear Mr. Isaka:

This letter is sent on behalf of Underwriters Laboratories Inc. pursuant to the Corporate Services Agreement between UL Apex Co., Ltd. and UL.

As your proposal modification, UL's investigation of your product, which was submitted under the UL/JQA MOU Program, has been completed under the above project number and the subject product was determined to comply with the applicable requirements.

To provide the manufacturer with the intended authorization to use the UL Mark, the addressee must send a copy of this Notice and all attached material to each manufacturing location.

This authorization is effective from the date of this Notice and only for products at the indicated manufacturing locations. Records in the Follow-Up Services Procedure covering the product are now being prepared and will be sent to the indicated manufacturing locations in the near future. Please note that Follow-Up Services Procedures are sent to the manufacturers only unless the Applicant specifically requests this document.

Products that bear the UL Mark shall be identical to those that were evaluated by UL and found to comply with UL's requirements. If changes in construction are discovered, appropriate action will be taken for products not in conformance with UL's requirements and continued use of the UL Mark may be withdrawn.

Very truly yours,

Reviewed by:

Naoki Hashimoto
Naoki Hashimoto (Direct In 045-342-1130)
Project Engineer
Conformity Assessment Services
UL Apex Co., Ltd.

Kuro Kinno
Kuro Kinno (Direct In 045-342-1128)
Senior Project Engineer
Conformity Assessment Services
UL Apex Co., Ltd.

cc: UL Santa Clara - Gary Fujii

THIS MESSAGE IS INTENDED ONLY FOR THE USE OF THE INDIVIDUAL OR ENTITY TO WHICH IT IS ADDRESSED AND MAY CONTAIN INFORMATION THAT IS UNCLASSIFIED, CONFIDENTIAL, AND EXEMPT FROM DISCLOSURE UNDER APPLICABLE LAW. If the reader of this message is not the intended recipient, he or she should not disseminate, distribute, or copy this communication. If you have received this communication in error, please notify us immediately by phone or return fax.

An independent organization working for a safer world with integrity, precision and knowledge.



Zertifikat

Certificate



Zertifikat Nr. Certificate No. Blatt Page
R 25688 58

Ihr Zeichen Client Reference	Unser Zeichen Our Reference	Ausstellungsdatum Date of Issue (day/month)
4K30-EUVSAFETY	ZJ-PPE-0CQ95687 051	24.02.2004

Genehmigungsinhaber License Holder	Fertigungsstätte Manufacturing Plant
Hitachi Global Storage Technologies Japan, Ltd. 2880 Kozu Odawara-shi, Kanagawa 256-8510 Japan	Hitachi Global Storage Technologies Japan, Ltd. 2880 Kozu Odawara-shi, Kanagawa 256-8510 Japan

Prüfzeichen Test Mark



Geprüft nach Tested acc. to
EN 60950:1992+A1+A2+A3+A4+A11
IEC 60950:1991-A1+A2+A3+A4

Zertifiziertes Produkt (Geräteidentifikation)
Certified Product (Product Identification)

Lizenznummer - Einheit
License No. - Unit

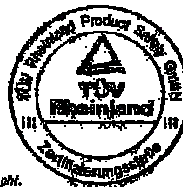
Plattenspeicher Disk Storage

Additional

Type Designation : HEWA210xP9ATy9
x = 01 - 99
y = 0 - 9
w = V AW P

Rated Voltage : DC 5V

Rated Current : 1A



ANLAGE (Appendix): 2.4

Das Zertifikat liegt unserer Prüfung und Zertifizierung zugrunde. Das Produkt entspricht den o.g. Anforderungen, die Herstellung wird überprüft. This certificate is based on our testing and certification regulations. The product fulfills above-mentioned requirements, the production is subject to surveillance.

TÜV Rheinland Product Safety GmbH, Am Grasen Stein, D-51109 Köln

Tel. (+49 221) 8 06 - 13 71 Fax (+49 221) 8 06 - 39 31 e-mail: ALG@tda.rwth-aachen.de

Zertifizierungsstelle

W. Nölke

Dipl.-Ing. W. Nölke

HITACHI

DECLARATION OF CONFORMITY

(for CE marking)

We : Hitachi Global Storage Technologies Japan Ltd.
declare under our sole responsibility that the products:

Product : Hard Disk Drive (2.5 inch)

Models : HEw4230xF9ATy0

w= "J " or "N", x= "01" - "99", y= "0" - "9",

manufactured by:

Hitachi Global Storage Technologies Japan Ltd.

2880 Koze, Odawara-shi, Kanagawa-ken, 256-8510, Japan

and

Hitachi Global Storage Technologies Philippines Corp.

Laguna Technopark, Binan Laguna Philippines

to which this declaration relates is in conformity with the following
standards or other normative documents:

EMC : EN 55 022 :1998 / A1:2000 (Class B)

EN 55 024 :1998 / A1:2001 / A2:2003

and therefore conforms with the protection requirements council Directives
89/338/EEC relating to electromagnetic compatibility.

Date: Apr 21 2004

Signed: *Tsuyoshi Arai*

Place:
Hitachi Global Storage Technologies
Japan, Ltd.
2880 Koze, Odawara-shi, Kanagawa-ken,
256-8510, Japan

Tsuyoshi Arai
Senior Manager
2.5" and 1.8" Consumer and Commercial
Business Unit

정보통신기기 인증서

Certificate of Information and Communication Equipment

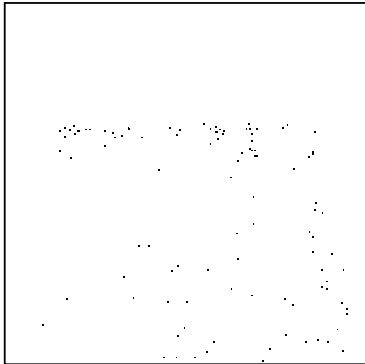
인 증 종 류 전자파직할등록(EMC Registration)
Certification Type
성 명 또는 심 호 히타치글로벌스토리지테크놀로지스아시아파티먼트
Trade Name or Applicant
기 기 의 명 칭 HDD
Equipment Name
기 기 의 모 델 명 HCN423030F9AT00
Model Number of Equipment
인 증 번 호 E-H011-04-1378 (B)
Certification No
제 조 자 및 제 조 국 기 Hitachi Global Storage Technologies Japan, Ltd./Hitachi Global Storage Technologies Philippines Corp./일본, 필리핀
Manufacturer and Country of Origin
인 증 년 월 일 2004년(Year) 04월(Month) 10일(Date)
Date of Certification
기 타
Others

위 기기는 정보통신기기 인증규칙에 의해 인증되었음을 증명합니다.
It is certified that foregoing equipment has been certificated under the provisions of the Regulations on Certification of Information and Communication Equipment.

2004년(Year) 04월(Month) 20일(Date)

전 파 연 구 소
 Director General of Radio Research Laboratory
 Ministry of Information and Communication
 Republic of Korea





No.ENN04007

EMC TEST REPORT

Applicant: Hitachi Global Storage Technologies Japan, Ltd.
Address: 2880, Koze, Odawara-shi, Kanagawa, 256-8510 Japan
Equipment under test: Hard Disk Drive

Test date: February 19&26, 2004
Regulations applied: EN55022(1998) A1(2000) Class B
 EN55024(1998) A1(2001) A2(2003)
Test method used: EN55022(1998) A1(2000) Class B
 EN61000-4-2(1995) A1(1998) A2(2001)
 EN61000-4-3(1996) A1(1998) A2(2001)
 EN61000-4-5(1995) A1(2001)
 EN61000-4-6(1996) A1(2001)
 EN61000-4-11(1994) A1(2001)

Test result: **Pass**

Modification during test: No

Test site: Hitachi Information Technology Co., Ltd. Nakai Test Site
 Address: 456 Sakai, Nakai-machi, Ashigarakami-gun, Kanagawa, 259-0157 Japan
 Tel/Fax: +81-465-81-5928 / +81-465-81-5938

Verified by: Y. Ohgi
 Y. Ohgi Engineer

Approved date: Mar. 01, 2004

Approved by: Y. Moriya
 Y. Moriya Department manager

Notes

- This test report is related only to the equipment described in the cover page.
- This report must not be reproduced in part without written permission of Hitachi Information Technology Co., Ltd.
- The test results are obtained with test facilities which are traceable to national standards and/or international standards.

The test site is appointed by TÜV Rheinland Japan Ltd.
 This test report will be accepted by TÜV Rheinland Japan Ltd.

Hitachi Information Technology Co., Ltd.



1 of 10 sheets

No.ENN04007

5. EMI test (conducted emission, radiated emission)

5.1 Test specifications

Regulations applied: EN55022(1998) A1(2000) Class B

Test distance: 10m

Frequency range: 150kHz–30MHz for conducted emission, 30MHz–1GHz for radiated emission

5.2 Test procedure

1. Measurement of wide range frequencies using spectrum analyzer

Spectrum analyzer settings (frequency range, reference level, resolution bandwidth and others) were optimized for this test.

2. Selection of the frequencies

The frequencies showing high noise levels were chosen from the data on spectrum analyzer.

3. Measurement by receiver for selected frequencies

Receiver settings (IF bandwidth and detection mode) were in accordance with standards.

Radiated emission was measured at maximum radiation point obtained by operating the turn table and the antenna mast.

5.3 Calculation of measurement results

Measurement results are calculated by EMI measurement software as shown below. Values of the factor and the cable loss at frequencies not selected for measurement are calculated by natural spline interpolation of the third degree.

5.3.1 Conducted emission

Measurement result = Measurement (receiver reading) + Correction factor (c.f.)

Correction factor (c.f.) = Factor of LISN + Cable loss for conducted emission

5.3.2 Radiated emission

Measurement result = Measurement (receiver reading) + Correction factor (c.f.)

Correction factor (c.f.) = Factor of antenna + Cable loss for radiated emission

5.4 Uncertainty of EMI measurement

The actual test results may contain measurement uncertainty and do not mean to assure complete repeatability and reproducibility. Our lab uses the UKAS procedure NIS81 to calculate the measurement uncertainty as shown below.

Our lab measurement uncertainty (k=2, 95% confidence level):

• Conducted emission: +2.02dB and -2.08dB at 9kHz-150kHz, +1.80dB and -1.80dB at 150kHz-30MHz

• Radiated emission:

	Biconical antenna	Log-periodic antenna
3m	+3.62dB and -3.58dB	+4.22dB and -2.40dB
10m	+4.16dB and -4.16dB	+2.68dB and -2.62dB

5.5 Test results

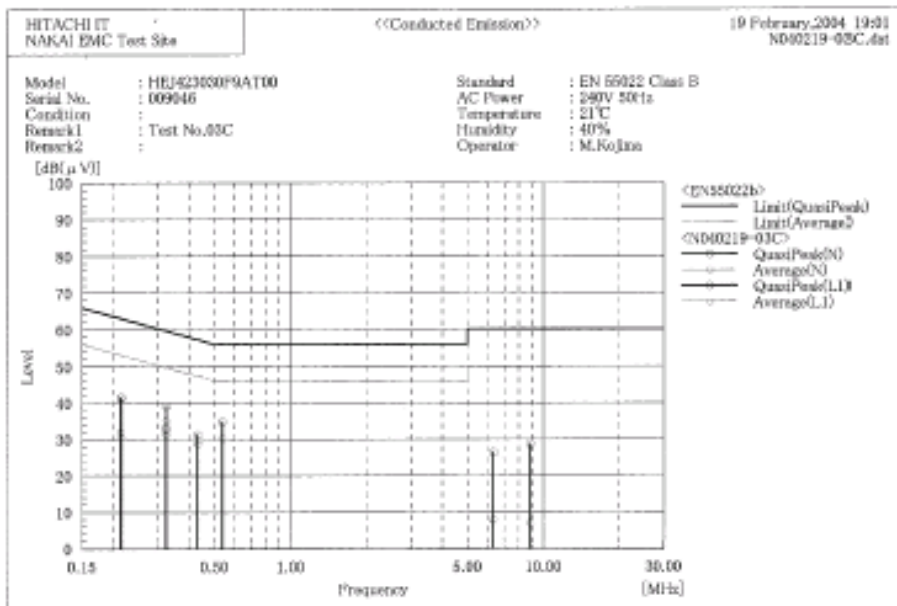
Test item	Minimum margin	Result
Conducted emission (AC port)	0.3239MHz Value of AV 14.3dB	Pass
Radiated emission	135.476MHz Vertical 7.8dB	Pass

Refer to appendix 1 for details of the test result.

**Appendix 1
Test results**

**Conducted emission data
(150kHz-30MHz, port PC)**

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Final Result

--- X Phase ---

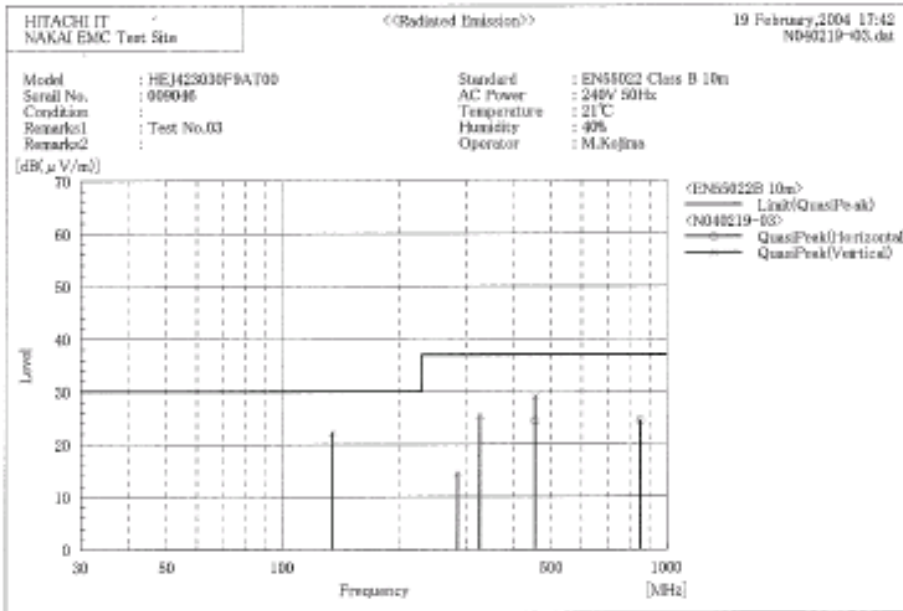
No.	Frequency [MHz]	Reading QP [dB(μV)]	Reading AV [dB(μV)]	c.f. [dB]	Result QP [dB(μV)]	Result AV [dB(μV)]	Limit QP [dB(μV)]	Limit AV [dB(μV)]	Margin QP [dB]	Margin AV [dB]
1	0.21389	31.9	22.4	9.5	41.4	31.9	63.1	53.1	21.7	21.2
2	0.32161	23.4	21.7	9.6	33.0	31.3	59.7	49.7	26.7	18.4
3	0.42988	21.6	19.1	9.6	31.2	29.7	57.3	47.3	26.1	18.6
4	8.355	16.1	-2.5	10.3	26.4	7.8	60.0	50.0	33.6	42.2
5	8.955	18.2	-3.4	10.4	28.6	7.0	60.0	50.0	31.4	43.0

--- L1 Phase ---

No.	Frequency [MHz]	Reading QP [dB(μV)]	Reading AV [dB(μV)]	c.f. [dB]	Result QP [dB(μV)]	Result AV [dB(μV)]	Limit QP [dB(μV)]	Limit AV [dB(μV)]	Margin QP [dB]	Margin AV [dB]
1	0.21479	32.0	20.7	9.5	41.5	30.2	63.0	53.0	21.6	22.8
2	0.32239	29.6	25.7	9.6	39.2	35.3	59.6	49.6	20.5	14.3
3	0.42823	25.1	20.6	9.6	34.7	30.2	56.0	46.0	21.3	15.8

Radiated emission data
(30MHz-1GHz)

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Final Result

— Horizontal Polarization (QP)—

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]
1	453.452	40.3	-15.9	24.4	37.0	12.6	220.0	52.0
2	853.180	33.8	-9.3	24.5	37.0	12.5	107.0	54.0

— Vertical Polarization (QP)—

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]
1	135.476	42.2	-20.0	22.2	30.0	7.8	100.0	133.0
2	285.121	29.1	-14.6	14.5	37.0	22.5	100.0	1.0
3	328.128	44.4	-19.0	25.4	37.0	11.6	100.0	195.0
4	453.379	45.0	-15.9	29.1	37.0	7.9	343.0	16.0