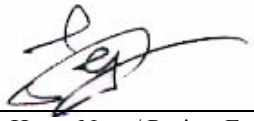
ELECTROMAGNETIC EMISSION COMPLIANCE REPORT FOR FCC CLASS B CERTIFICATION

Test Report No.	**: E057R-025**
Applicant	**: HANA Micron Inc.**
Address	**: #902 Ssangyong IT Twin-Tower 1, 442-17, Sangdaewon1-Dong, Joongwon-Gu, Seongnam-City, Gyeonggi-Do, 462-807, Korea**
Manufacturer	**: HANA Micron Inc.**
Address	**: #902 Ssangyong IT Twin-Tower 1, 442-17, Sangdaewon1-Dong, Joonwon-Gu, Seongnam-City, Gyeonggi-Do, 462-807, Korea**
Type of Equipment	**: USB Flash Drive**
FCC ID	**: QH7BULLET**
Model Name	**: HMDE-01G**
Multiple Model Name	**: HMDE-128, HMDE-256, HMDE-512**
Serial number	**: N/A**
Total page of Report	**: 11 pages (including this page)**
Date of Incoming	**: June 13, 2005**
Date of Issuing	**: July 05, 2005**

SUMMARY

The equipment complies with the requirements of **FCC CFR 47 PART 15 SUBPART B, Class B.**
This test report contains only the results of a single test of the sample supplied for the examination. It is not a general valid assessment of the features of the respective products of the mass-production.

Prepared by: 

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1. VERIFICATION OF COMPLIANCE

-. APPLICANT : HANA Micron Inc.
-. ADDRESS : #902 Ssangyong IT Twin-Tower 1, 442-17, Sangdaewon1-Dong, Joongwon-Gu, Seongnam-City, Gyeonggi-Do, 462-807, Korea
-. CONTACT PERSON : Mr. Jung-Woo, Lee / Technical Manager
-. TELEPHONE NO : +82-31-608-5510
-. FCC ID : QH7BULLET
-. MODEL NO/NAME : HMDE-01G
-. SERIAL NUMBER : N/A
-. DATE : July 05, 2005

DEVICE TYPE	Peripheral Device for Class B Computing Device - Unintentional Radiator
E.U.T. DESCRIPTION	USB Flash Drive
THIS REPORT CONCERNS	ORIGINAL GRANT
MEASUREMENT PROCEDURES	ANSI C63.4: 2003
TYPE OF EQUIPMENT TESTED	PRE-PRODUCTION
KIND OF EQUIPMENT AUTHORIZATION REQUESTED	CERTIFICATION
EQUIPMENT WILL BE OPERATED UNDER FCC RULES PART(S)	FCC PART 15, SECTION 15.101
MODIFICATIONS ON THE EQUIPMENT TO ACHIEVE COMPLIANCE	No
FINAL TEST WAS CONDUCTED ON	3 METER OPEN AREA TEST SITE

-. This device has shown compliance with the conducted emissions limits in 15.107 adopted under FCC 02-107 (ET Docket 98-80). The device may be marketed after July 11, 2005 affected by the 15.37(j) transition provisions.

-. The above equipment was tested by ONETECH Corp. for compliance with the requirement set forth in the FCC Rules and Regulations. This said equipment in the configuration described in this report, shows the maximum emission levels emanating from equipment are within the compliance requirements.

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2. GENERAL INFORMATION

2.1 Product Description

The HANA Micron Inc., Model HMDE-01G (referred to as the EUT in this report) is a USB Flash Drive that is interfaced to personal computer via USB port. Product specification described herein was obtained from product data sheet or user's manual.

CHASSIS TYPE	Plastic
LIST OF EACH OSC. or CRY. FREQ.(FREQ.>=1MHz)	12 MHz
NUMBER OF LAYERS	4 Layers
EXTERNAL CONNECTOR	USB Type A

2.2 Model Differences

-. The difference(s) compared to the EUT is as follows:

	Model Name	Model Differences
Basic Model	HMDE-01G	-
Multiple Model	HMDE-128, HMDE-256, HMDE-512	Only type designation by a memory size and color of the EUT.

2.3 Related Submittal(s) / Grant(s)

-. Original submittal only

2.4 Test System Details

The model numbers for all the equipments that were used in the tested system is:

Model	Manufacturer	FCC ID	Description	Connected to
HMDE-01G	HANA Micron Inc.	QH7BULLET	USB Flash Drive (EUT)	PC
DHP	DELL COMPUTER CORP.	DoC	PERSONAL COMPUTER	-
E551	DELL COMPUTER CORP.	DoC	MONITOR	PC
DGM-4800	CHIC TECHNOLOG CORP.	N/A	MOUSE	PC
SKR-2033	SEJIN ELECTRON INC.	N/A	KEYBOARD	PC
2225C	HP	DSI6XU2225	PRINTER	PC
020-0470	CARDINAL	GDE0196	MODEM	PC

2.5 Test Methodology

Both conducted and radiated testing was performed according to the procedures in ANSI C63.4: 2003. Radiated testing was performed at a distance of 3 meters from the EUT to the antenna.

2.6 Test Facility

The open area test site and conducted measurement facilities are located on at 426-1 Daessangryung-Ri, Chowol-Eup, Kwangju-City, Kyunggi-Do, 464-080, Korea. Description details of test facilities were submitted to the Commission on April 04, 2003. (Registration Number: 340658)

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3. SYSTEM TEST CONFIGURATION

3.1 Justification

This device was configured for testing in a typical way as a normal customer is supposed to be used. During the test, the following components were installed inside of the EUT.

DEVICE TYPE	MANUFACTURER	MODEL/PART NUMBER	FCC ID
MAIN B'D	N/A	N/A	N/A

3.2 EUT exercise Software

After connecting the EUT to a personal computer, data were continuously read and written from the HDD of the personal computer to the EUT.

3.3 Cable Description

	Power Cord Shielded (Y/N)	I/O cable Shielded (Y/N)	Length (M)
USB Flash Drive (EUT)	N/A	N/A	-
PERSONAL COMPUTER	N	-	1.8(P)
MONITOR	N	Y	1.5(P), 1.2(D)
MOUSE	N/A	N	1.2(D)
KEYBOARD	N/A	N	1.2(D)
PRINTER	N	Y	1.8(P), 1.2(D)
MODEM	N	Y	1.8(P), 1.2(D)

* The marked "(P)" means the Power Cable and "D" means the I/O Cable.

3.4 Noise Suppression Parts on Cable

	Ferrite Bead (Y/N)	Location	Metal Hood (Y/N)	Location
USB Flash Drive (EUT)	N	N/A	N	N/A
PERSONAL COMPUTER	N/A	N/A	N/A	-
MONITOR	Y	PC END	Y	PC END
MOUSE	N	N/A	Y	PC END
KEYBOARD	N	N/A	Y	PC END
PRINTER	N	N/A	Y	BOTH END
MODEM	N	N/A	Y	BOTH END

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3.5 Equipment Modifications

To achieve compliance to CLASS B levels, the following change(s) was made by ONETECH Corp. during compliance testing:

"There were no Modified items during EMI test"

3.6 Configuration of Test System

Line Conducted Test : The EUT was inserted to USB port of the PC and the power line of PC was connected to LISN. All supporting equipments were connected to another LISN. Preliminary Power line Conducted Emission test was performed by using the procedure in ANSI C63.4: 2003 7.2.3 to determine the worse operating conditions.

Radiated Emission Test : Preliminary radiated emission test was conducted using the procedure in ANSI C63.4: 2003 8.3.1.1 to determine the worse operating conditions. Final radiated emission test was conducted at 3 meters open area test site.

4. PRELIMINARY TEST

4.1 AC Power line Conducted Emission Test

During Preliminary Test, the following operating mode was investigated

Operation Mode	The Worse operating condition (Please check one only)
Data were continuously read and write via USB	X

4.2 Radiated Emission Test

During Preliminary Test, the following operating mode was investigated

Operation Mode	The Worse operating condition (Please check one only)
Data were continuously read and write via USB	X

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5. FINAL RESULT OF MEASURMENT

Preliminary test was done in normal operation mode. And the final measurement was selected for the maximized emission level

5.1 Conducted Emission Test

Humidity Level : 44 % Temperature: 21 °C

Limits apply to : FCC CFR 47, PART 15, SUBPART B, SECTION 15.107 (a)

Type of Test : CLASS B

Result : PASSED BY –14.05 dB at 0.16 MHz

EUT : USB Flash Drive Date: June 17, 2005

Operating Condition : Data were continuously read and written.

Detector : CISPR Quasi-Peak (6 dB Bandwidth: 9 kHz)

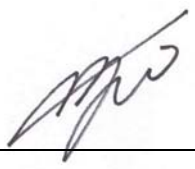
Frequency (MHz)	Line	Peak (dBuV)		Margin (dB)
		Emission level	Q.P Limits	
0.16	H	51.41	65.46	-14.05
0.18	N	47.43	64.26	-16.83
0.23	H	43.14	62.27	-19.13
0.32	N	39.82	59.58	-19.76
0.39	H	37.68	58.06	-20.38
9.57	H	40.84	60.00	-19.16
Frequency (MHz)	**Line**	**Average (dBuV)**		**Margin (dB)**
		Emission level	**Limits**	
-				
-				

Line Conducted Emission Tabulated Data

Remark : "H": Hot Line, "N": Neutral line

Average mode was not measured, because peak values were under the Average limit.

See next page for an overview sweep performed with peak detector.



Tested by: Eung-Chan, Kim / Test Engineer

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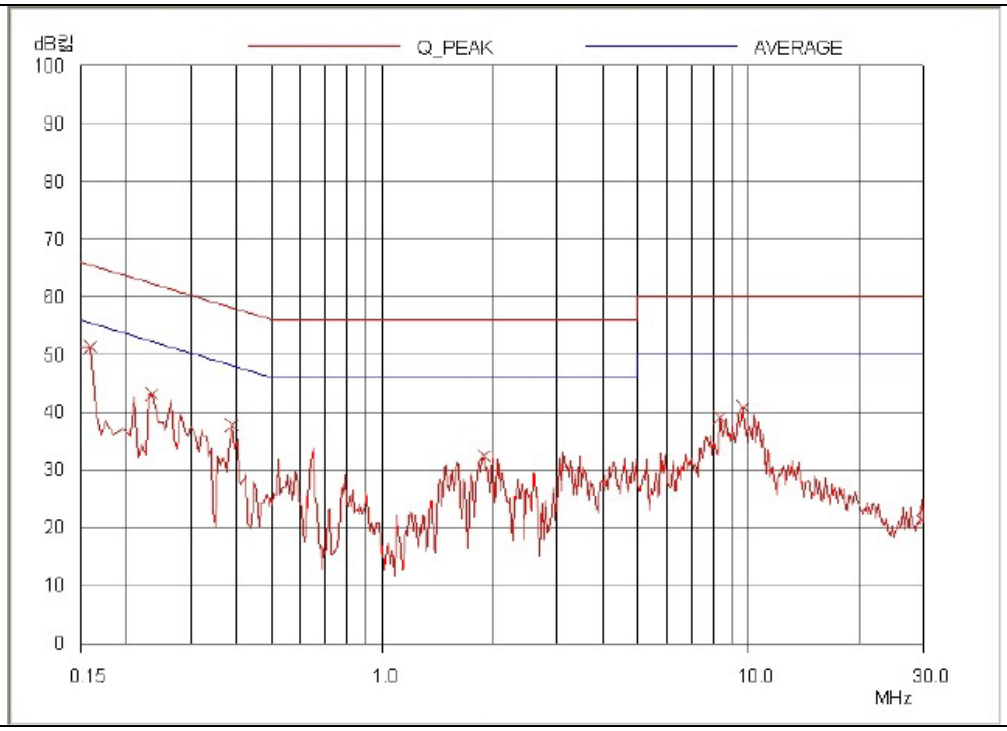
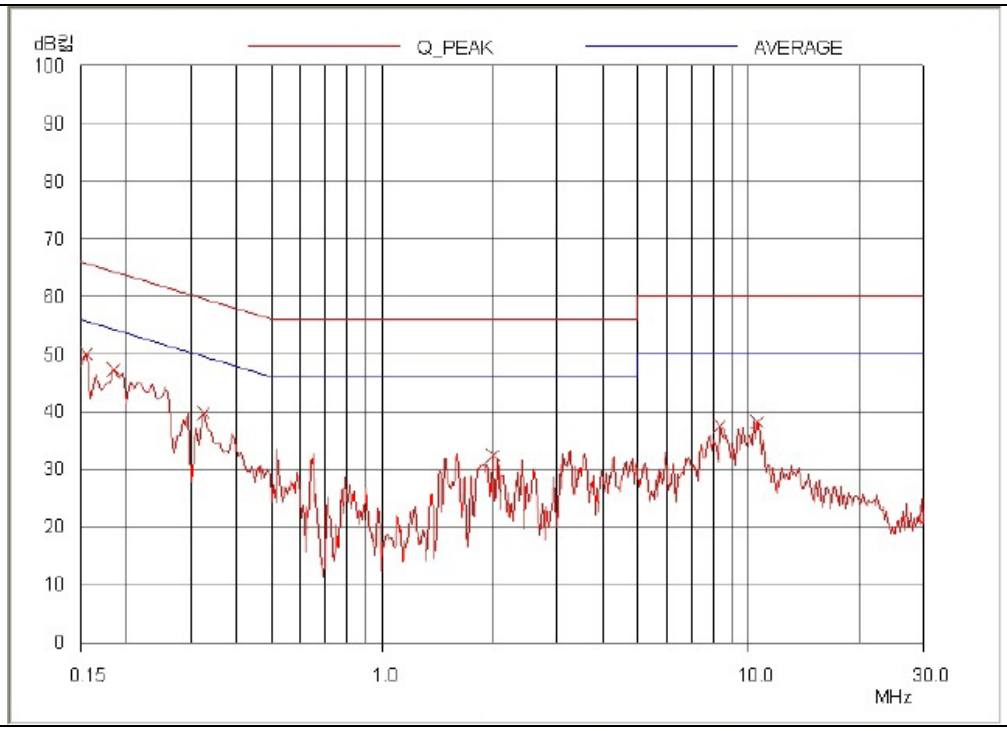


HOT LINE



NEUTRAL LINE

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5.2 Radiated Emission Test

The following table shows the highest levels of radiated emission on both polarizations of horizontal and vertical.

Humidity Level : 41 % Temperature: 23 °C

Limits apply to : FCC CFR 47, PART 15, SUBPART B, SECTION 15.109 (a)

Type of Test : CLASS B

Result : PASSED BY -4.35 dB at 400.20 MHz

EUT : USB Flash Drive Date: June 15, 2005

Operating Condition : Data were continuously read and written.

Detector : CISPR Quasi-Peak (6 dB Bandwidth: 120 kHz)

Frequency Range : 30 MHz – 1000 MHz

Distance : 3 Meter

Radiated Emissions		Ant	Correction Factors		Total	FCC CLASS B	
Freq. (MHz)	Amp. (dBuV)	Pol.	Ant. (dBuV/m)	Cable (dB)	Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
72.10	24.00	H	5.78	1.54	31.32	40.00	-8.68
304.00	23.20	H	13.80	3.83	40.83	46.02	-5.19
356.40	20.50	H	14.48	4.23	39.21	46.02	-6.81
400.20	21.80	H	15.47	4.40	41.67	46.02	-4.35
433.00	20.00	V	16.32	4.47	40.79	46.02	-5.23
664.00	16.00	V	19.63	5.90	41.53	46.02	-4.49

Radiated Emissions Tabulated Data

Tested by: Eung-Chan, Kim / Test Engineer

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6. FIELD STRENGTH CALCULATION

Meter readings are compared to the specification limit correcting for antenna and cable losses

+	Meter reading	(dBuV)
+	Cable Loss	(dB)
+	Antenna Factor (Loss)	(dB/meter)
=	Corrected Reading	(dBuV/meter)
-	Specification Limit	(dBuV/meter)
=	dB Relative to Spec	(+/- dB)

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7. LIST OF TEST EQUIPMENT

No.	EQUIPMENTS	MFR.	MODEL	SER. NO.	LAST CAL	DUE CAL	USE
1.	Test receiver	R/S	ESVS10	827864/005	DEC/04	12MONTH	■
2.	Test receiver	R/S	ESHS 10	834467/007	MAY/05	12MONTH	■
3.	Spectrum analyzer	HP	8566B	3407A08547	JUL/04	12MONTH	
4.	Spectrum analyzer	HP	8568B	3109A05456	MAR/05	12MONTH	■
5.	RF preselector	HP	85685A	3107A01264	MAR/05	12MONTH	■
6.	Quasi-Peak Adapter	HP	85650A	3107A01542	MAR/05	12MONTH	■
7.	TRILOG Broadband Antenna	Schwarzbeck	VULB9163	VULB9163 166	FEB/05	12MONTH	
8.	Biconical antenna	EMCO	3104C	9109-4443	MAY/04	12MONTH	
		Schwarzbeck	VHA9103	91031852	JAN/05		■
9.	Log Periodic antenna	EMCO	3146	9109-3213	FEB/05	12MONTH	
				9109-3217	MAY/04		
		Schwarzbeck	9108-A(494)	62281001	JAN/05		■
10.	LISN	EMCO	3825/2	9109-1867	JUL/04	12MONTH	■
				9109-1869	OCT/04		■
11.	Position Controller	HD GmbH	HD100	N/A	N/A	N/A	■
12.	Turn Table	HD GmbH	DS420S	N/A	N/A	N/A	■
13.	Antenna Master	HD GmbH	MA240	N/A	N/A	N/A	■

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