TEST REPORT

Ref. Report No.
06-341-002

Name and address of the applicant

Adel Information Co., Ltd.
202, Gwanggaeto-praza, 9B-1L, Dang-dong,
Gunpo City, Gyeonggi-do, Korea

Standard / Test regulation

FCC Part 15, Subpart B

Test result

Pass

Incoming date : January 11, 2006

Test date : January 26, 2006 ~ January 31, 2006

Test item(s) ;

Class B Computing Device Peripheral (Hub)

Model/type ref. ;

CID500

Manufacturer ;

Adel Information Co., Ltd.
202, Gwanggaeto-praza, 9B-1L, Dang-dong,
Gunpo City, Gyeonggi-do, Korea

Additional information ;

-Required Authorization : Certification
-FCC ID. : TXEADL300

Issue date : February 01, 2005

Tested and reported by

Bum-Jong Kim, Engineer

Reviewed by

Won-Seo Cho , Telecommunication Team Manager

KOREA TESTING LABORATORY

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Ⅰ. GENERAL INFORMATION

1. Applicant's Name and Mailing Address : Adel Information Co., Ltd.
202, Gwanggaeto-praza, 9B-1L, Dang-dong,
Gunpo City, Gyeonggi-do, Korea

2. Manufacturer's Name and Mailing Address : Adel Information Co., Ltd.
202, Gwanggaeto-praza, 9B-1L, Dang-dong,
Gunpo City, Gyeonggi-do, Korea

3. Equipment Descriptions

3.1 Test Item : Hub
3.2 I/O port : Serial com port (MAX232)
3.3 Power Supply : DC 8~12 V, 100mA
3.4 Model name : CID500

4. Devices of Test System

Device	Model name	Serial Number	Manufacturer
Personal Computer	DPEP P500	7951/CJN20009	Compaq
Monitor	DP15L/S	DP15HICN102768	Compaq
Mouse	M-S34	166861-001	Compaq
Keyboard	PR235BTWKO	B13BBOT39I7045	Compaq
Printer	2225C+	3145S02416	Hewlett Packard
ID caller	CID100	-	Adel Information
Hub	CID300	-	Adel Information

5. Rules and Regulations : FCC Part 15, Subpart B

6. Measuring Procedure : ANSI C63.10-2004

7. Date of Measurement

7.1 Conducted Emission : Jan 26, 2006
7.2 Radiated Emission : Jan 31, 2006

Ⅱ. GENERAL REQUIREMENTS OF THE EUT

1. Labeling Requirement (Section 15.19)

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

1.1 Location of Label : User's guide manual
1.2 How Applied : Printed

2. Information to User (Section 15.21 and 15.105)

The following or similar statements were provided in the manual for user instruction.
Please refer page 1 of the attached manual for details.

CAUTION : Any changes or modifications in construction of this device which are not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note : This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

3. Special Accessories (Section 15.27)

3.1 Were the special Accessories provided? [ ] yes, [x] no

3.2 If yes, details for the special accessories are as follows :

3.3 If yes, were the appropriate instructions provided on the first page of the text concerned with the device?

[ ] yes, [ ] no

3.4 Are these accessories provided of the type which can be readily obtained from multiple retail outlets ?

[ ] yes, [ ] no

And therefore does the manual specify what additional components or accessories are required to used in order to comply with the Rules?

[ ] yes, [ ] no

Ⅲ. CONDUCTED EMISSION MEASUREMENT (Section 15.107)

1. Test Procedure

Conducted emission measurements on the EUT were performed by "AC Power Line Conducted Emissions Testing" procedure as per ANSI C63.4. The EUT was set up on a wooden table 0.8 meters height, 1.0 by 1.5 meters in size, placed in the shielded enclosed with a side of wall of which constituted a vertical conducting surface of 2.2 m x 3.1 m in size to maintain 40 cm from the rear of EUT

LISN(Line Impedance Stabilization Network, ROHDE & SCHWARZ, ESH3-Z5, 50 ohm / 50 μH) was installed and electrically boned to the conducting ground plane. The EUT was connected to the LISN using a typical power adapter.

One of two 50 ohm output terminals of the LISN was connected to the EMI Receiver (ROHDE & SCHWARZ, ESCI, 9 kHz to 3 GHz) and the other was terminated in 50 ohms. Measurements were again performed after interchanging such a connection oppositely.

The frequency range from 150 kHz to 30 MHz was examined and the remarkable frequencies were measured with Quasi-peak and Average values using the EMI receiver instrument (ROHDE & SCHWARZ, ESI, 9 kHz to 3 GHz ; Detector Function ; CISPR Quasi-Peak & Average). The 6 dB bandwidth of the Receiver was set to 9 kHz

The position of connecting cables of the EUT was changed to find the worst case configuration during measurements. The maximum emission level from the EUT occurred in such configuration as shown in the following photograph.

2. Photograph for the test configuration

3. Sample Calculation

The emission level measured in decibels above one microvolt (dBμV) was converted into microvolt (μV) as shown in following sample calculation.

For example :

	Measured Value at	0.17 MHz	38.7 dBμV @ Q-Peak mode
+	Cable Losses *		0.0 dB
=	Conducted Emission		38.7 dBμV

* In case of RG214/ RF cable 15 Ft, the loss is about 0.17 dB at the frequency of 30 MHz which is negligible.

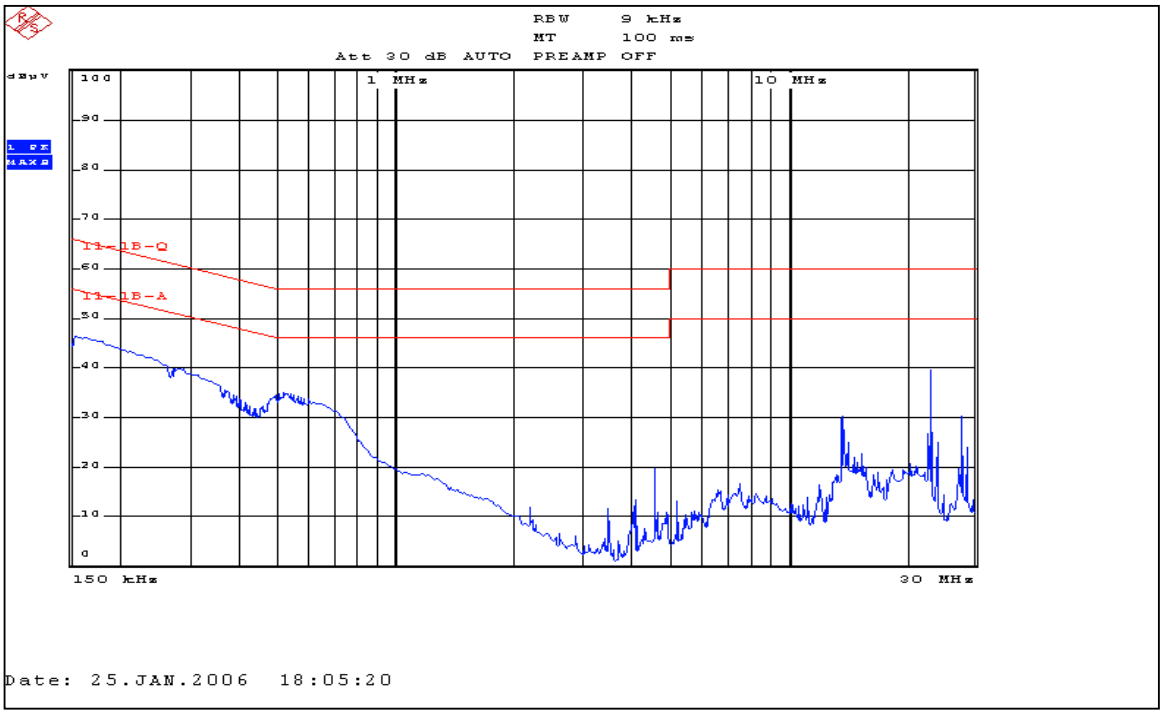
4. Measurement Data

- Resolution Bandwidth : x CISPR Quasi-Peak (6dB Bandwidth : 9 kHz)
  x Average (6dB Bandwidth : 9 kHz)

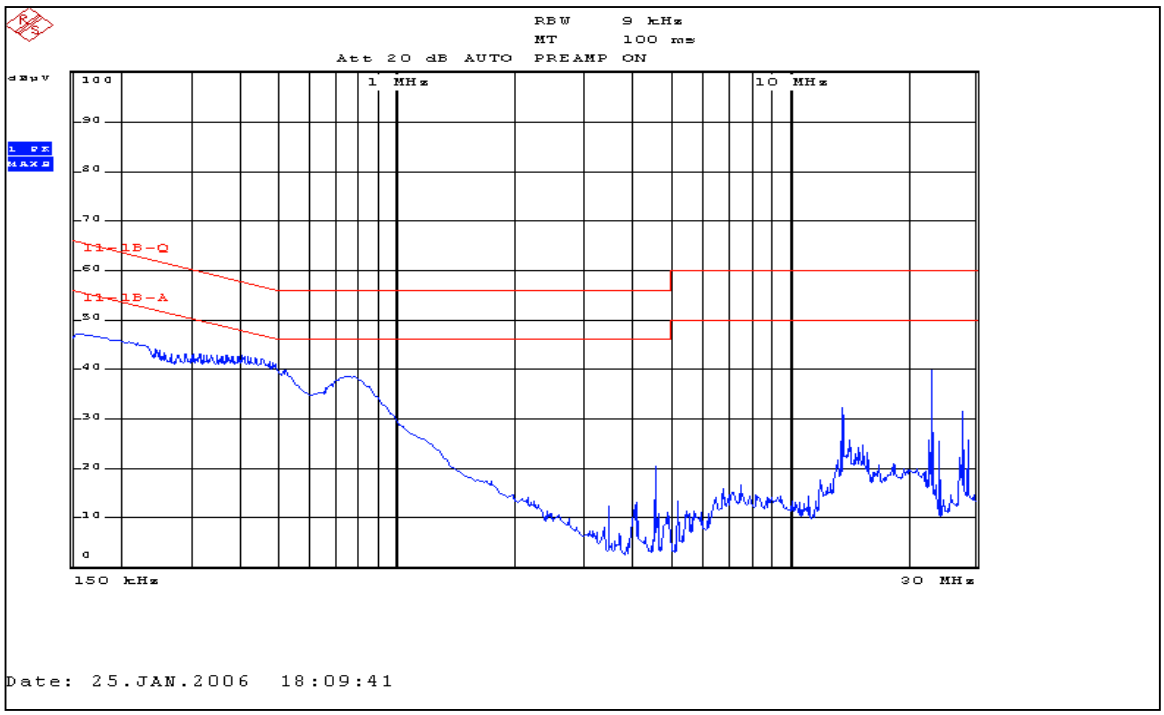
Power Lead Tested	Frequency (MHz)	Emission Level		Limit		(*) Margin	
		Q-Peak (dBμV)	Average (dBμV)	Q-Peak (dBμV)	Average (dBμV)	Q-Peak (dBμV)	Average (dBμV)
Live to Ground	0.17	38.7	8.8	65.0	55.0	-26.3	-46.2
	0.47	34.0	5.1	56.5	46.5	-22.5	-41.4
	4.59	19.1	17.0	56.0	46.0	-36.9	-29.0
	13.76	29.8	25.1	60.0	50.0	-30.2	-24.9
	14.32	31.8	29.3	60.0	50.0	-28.2	-20.7
	22.95	33.1	23.6	60.0	50.0	-26.9	-26.4
	27.52	30.5	26.4	60.0	50.0	-29.5	-23.6
Neutral to Ground	0.16	37.9	8.2	65.5	55.5	-27.6	-47.3
	0.52	27.6	3.5	56.0	46.0	-28.4	-42.5
	4.59	18.5	16.4	56.0	46.0	-37.5	-29.6
	14.32	29.7	27.3	60.0	50.0	-30.3	-22.7
	22.93	37.3	33.7	60.0	50.0	-22.7	-16.3
	27.51	28.9	25.0	60.0	50.0	-31.1	-25.0
	28.63	26.8	25.7	60.0	50.0	-33.2	-24.3

Note : Refer to measured graphs on next page.

* Margin(dB) : Emission Level (dB) - Limit (dB)



(Test side: Live-Ground side)



(Test side: Neutral-Ground side)

Ⅳ. RADIATED EMISSION MEASUREMENT (Section 15.109)

1. Test Procedure

1.1 Preliminary Testing for Reference

Preliminary testing was performed in a KTL absorber-lined room to determine the emission characteristics of the EUT. The EUT was placed on the wooden table which has dimensions of 0.8 meters in height, 1 meter in length and 1.5 meters in width. Receiving antenna (Biconi-Log antenna : 30 to 1000 MHz or Horn Antenna : 1 to 18 GHz) was placed at the distance of 1 meter from the EUT.

An attempt was made to maximize the emission level with the various configurations of the EUT while rotating the table and varying antenna height.

Emissions level from the EUT with various configurations were examined on a Spectrum Analyzer connected with an RF amplifier and graphed by a plotter.

1.2 Final Radiated Emission Test at an Absorber-Lined Room

The final measurement of radiated field strength was carried out in a KTL Absorber-Lined Room that was listed up at FCC according to the "Radiated Emissions Testing" procedure specified by ANSI C63.4.

Based on the test results in preliminary test, measurement was made in same test set up and configuration which produced maximum emission level. Receiving antenna was installed at 3-meter distance from the EUT, and was connected to an EMI receiver.

Turntable was rotated through 360 degrees and receiving antenna height was varied from 1 to 4 meters above the ground plane to read maximum emission level.

If necessary, the radiated emission measurements could be performed at a closer distance than specified distance to ensure higher accuracy and their results were extrapolated to the specified distance using an inverse linear distance extrapolation factor (20 dB/decade) as per Section 15.31(f).

The maximum emission level from the EUT occurred in such configuration as shown in the following photograph.

2. Photograph for the test configuration

3. Sample Calculation

The emission level measured in decibels above one microvolt (dB μV) was converted into microvolt per meter (μV/m) as shown in following sample calculation.

For example :

	Measured Value at	39.06 MHz	7.1 dB μV
+	Antenna Factor		13.0 dB/m
+	Cable Loss		0.8 dB
−	Preamplifier		0.0 dB
−	Distance Correction Factor *		0.0 dB
=	Radiated Emission		20.9dB μV/m
			(= 11.1 μV/m)

* Extrapolated from the measured distance to the specified distance by an inverse linear distance extrapolation.

4. Measurement Data

- Resolution Bandwidth : x CISPR Quasi-Peak (6 dB Bandwidth : 120 kHz)
  _____ Peak (3 dB Bandwidth : 100 kHz)
- Measurement Distance : 3 Meter
- Measurement Frequency : 30 MHz ~ 1000 MHz

Frequency (MHz)	* D.M.	* A.P.	Measured Value (dBμV)	* A.F. + C.L (dB/m)	* A.G. (dB)	* D.C.F. (dB)	Emission Level		Limit (dBμV/m)	** Margin (dB)
							(dBμV/m)	(μV/m)		
39.06	Q	V	7.1	13.8	-	-	20.9	11.1	40.0	-19.1
48.29	Q	V	21.6	14.4	-	-	36.0	63.1	40.0	-4.0
81.72	Q	V	15.5	9.5	-	-	25.0	17.8	40.0	-15.0
150.48	Q	H	9.8	14.4	-	-	24.2	16.2	43.5	-19.3
209.24	Q	H	25.6	11.1	-	-	36.7	68.7	43.5	-6.8
407.96	Q	H	8.4	17.9	-	-	26.3	20.7	46.0	-19.7
610.80	Q	H	11.1	22.7	-	-	33.8	49.0	46.0	-12.2
-	-	-	-	-	-	-	-	-	-	-

Note

The observed EMI receiver(ESVS30) noise floor level was 2.0 dBμV. And all other emissions not reported on data were more than 25 dB below the permitted level.

* D.M. : Detect Mode (P : Peak, Q : Quasi-Peak, A : Average)
A.P. : Antenna Polarization (H : Horizontal, V : Vertical)
A.F. : Antenna Factor
C.L. : Cable Loss
A.G. : Amplifier Gain
D.C.F. : Distance Correction Factor
< : Less than

** Margin (dB) = Emission Level (dB) - Limit (dB)

Ⅴ. TEST EQUIPMENT USED FOR MEASUREMENTS

Equipment	Model No.	Manufacturer	Serial No.	Effective Cal. Duration
[x] EMI Receiver (20 MHz-1 GHz)	ESVS30	R & S	830516/002	03/14/05-03/14/06
[x] EMI Receiver (9 kHz-3 GHz)	ESCI	R & S	100076	10/18/05-10/18/06
[x] Spectrum Analyzer (9 kHz-26.5 GHz)	8563A	H. P.	3222A02069	11/17/05-11/17/06
[x] Spectrum Analyzer (3 Hz-50 GHz)	E4448A	Agilent	MY43360322	03/16/05-03/16/06
[ ] Test Receiver (9 kHz-30 MHz)	ESH3	R & S	860905/001	06/18/05-06/18/06
[x] Pre-Amplifier (0.1-3000 MHz, 30 dB)	8347A	H. P.	2834A00543	05/19/05-05/19/06
[ ] Pre-Amplifier (1-26.5 GHz, 35 dB)	8449B	H. P.	3008A00302	06/22/05-06/22/06
[x] LISN(50 Ω , 50 μH) (10 kHz-100 MHz)	ESH3-Z5	R & S	826789/009	05/16/05-05/16/06
[ ] Tuned Dipole Ant. (30 MHz-300 MHz)	VHA 9103	Schwarzbeck	-	*
[ ] Tuned Dipole Ant. (300 MHz-1 GHz)	UHA 9105	Schwarzbeck	-	*
[ ] Biconical Ant. (30 MHz-300 MHz)	BBA 9106	Schwarzbeck	-	*
[x] Biconi-Log Ant. (30 MHz-1000 MHz)	VULB9168	Schwarzbeck	9168-167	*
[ ] Log Periodic Ant. (200 MHz-1 GHz)	3146	EMCO	-	*
[ ] Horn Ant. (1 GHz-18 GHz)	3115	EMCO	-	*
[ ] Active Loop Ant. (9 kHz-30 MHz)	6502	EMCO	2532	*
[x] Shielded Room (5.0 m x 4.5 m)	-	SIN-MYUNG	-	-

* Each set of antennas has been calibrated to ensure correlation with ANSI C63.5 standard. The calibration of antennas is traceable to Korea Standard Research Institute(KSRI).