FCC ID:BR8UH-200

EMC

TEST REPORT

REPORT NO. : F87052210A
MODEL NO. : UH-200
DATE OF TEST : May 27, 1998

PREPARED FOR : ADI CORP.

ADDRESS : 14TH FL. NO. 1, SEC. 4, NAN-KING E. RD.,
TAIPEI, TAIWAN, R.O.C.

PREPARED BY: ADVANCE DATA TECHNOLOGY CORPORATION

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1.

CERTIFICATION

Issue Date: June 24, 1998

Product	:	USB BOX
Trade Name	:	ADI
Model No.	:	UH-200
Applicant	:	ADI CORP.
Standard	:	FCC Part 15, Subpart B, Class B ANSI C63.4-1992 CISPR 22:1993+A1+A2

We hereby certify that one sample of the designation has been tested in our facility on May 27, 1998. The test record, data evaluation and Equipment Under Test (EUT) configurations represent herein are true and accurate representation of the measurements of the sample's EMC characteristics under the conditions herein specified.

The test results show that the EUT as described in this report is in compliance with the Class B limits of conducted and radiated emission of applicable standards.

PREPARED BY: Sharon Hsiung , DATE: 6/24/98
(Sharon Hsiung)

TESTED BY: Bruce Lu , DATE: 6/24/98
(Bruce Lu)

APPROVED BY: Mike Su , DATE: 6/24/98
(Mike Su)

ADVANCE DATA TECHNOLOGY CORPORATION

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2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Product	:	USB BOX
Model No.	:	UH-200
Power Supply Type	:	Switching
Data Cable to PC	:	Shielded (2m)
DC Cable to monitor	:	Shielded (0.45m)

Note: The EUT is an USB HUB and Monitor control Function device, providing one upstream, four downstream ports and one embedded function for monitor control.

The EUT was tested with an ADI color monitor, model:VD-697. The FCC ID application of this monitor will be sent along this application. The EUT was connected between PC and monitor.

For more detailed features description, please refer to ATTACHMENT 1 - TECHNICAL DESCRIPTION OF EUT and User's Manual.

2.2 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories are used to form representative test configuration during the tests.

No.	Product	Brand	Model No.	FCC ID	I/O Cable
1.	PERSONAL COMPUTER	HP	D4572A	FCC DoC Approved	Nonshielded Power (1.8m)
2.	COLOR MONITOR	ADI	VD-697	BR8VD-697	Shielded Signal (1.2m) Nonshielded Power (1.8m)
3.	KEYBOARD	HP	C3758A	CIGE03633	Shielded Signal (1.5m)
4.	PRINTER	HP	2225C+	DSI6XU2225	Shielded Signal (1.2m) Nonshielded Power (1.9m)
5.	MODEM	ACEEX	1414	IFAXDM144	Shielded Signal (1.2m) Nonshielded Power (1.9m)
6.	MOUSE	HP	M-S34	DZL211029	Shielded Signal (1.2m)
7.	VGA DISPLAY CARD	DAIMOND	ST3D 3000PCI	FTUPC13028	Shielded Signal (1.8m)
8.	SOUND CARD	B&B	A80UND	MA5ASOUND	Shielded Signal (1.8m)
9.	CCD CAMERA	COMPAQ	YC72-CPQ	EDUYC72-CPQ	Shielded Signal (1.8m)
10.	EARPHONE	GAMMA	LH115	N/A	Nonshielded Signal (1.8m)

Note: 1. Support unit 9 was connected to the USB port of EUT.
2. Three USB cables (1.8m) were connected to the three USB ports to form three open loop cables.

2.3 TEST METHODOLOGY AND CONFIGURATION

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4:1992. Radiated testing was performed at an antenna to EUT distance of 10 m on an open area test site. Please refer to the photos of test configuration in Item 5.

3. TEST INSTRUMENTS

3.1 TEST INSTRUMENTS (EMISSION)

RADIATED EMISSION MEASUREMENT

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
HP Spectrum Analyzer	8594A	3144A00308	Sept. 1, 1998
HP Preamplifier	8447D	2944A08119	Aug. 2, 1998
ROHDE & SCHWARZ TEST RECEIVER	ESVP	893496/030	July 17, 1998
SCHWARZBECK Tunable Dipole Antenna	VHA 9103 UHA 9105	E101051 E101055	Nov. 28, 1998
CHASE Bilog Antenna	CBL6112	2086	Dec. 26, 1998
EMCO Turn Table	1060	1195	N/A
EMCO Tower	1051	1163	N/A
Open Field Test Site	Site 2	ADT-R02	Sept. 26, 1998

Note: 1. The measurement uncertainty is less than +/- 3dB, which is calculated as per NAMA's document NIS81.

2. The calibration interval of the above test instruments is 12 months. And the calibrations are traceable to NML/ROC and NIST/USA.

CONDUCTED EMISSION MEASUREMENT

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
ROHDE & SCHWARZ Test Receiver	ESH3	893495/006	July 23, 1998
ROHDE & SCHWARZ Spectrum Monitor	EZM	893787/013	July 24, 1998
ROHDE & SCHWARZ Artificial Mains Network	ESH3-Z5	839135/006	Aug. 1, 1998
EMCO-L.I.S.N.	3825/2	9204-1964	July 22, 1998
Shielded Room	Site 2	ADT-C02	N/A

Note: 1. The measurement uncertainty is less than +/- 2.6dB, which is calculated as per NAMA's document NIS81.

2. The calibration interval of the above test instruments is 12 months. And the calibrations are traceable to NML/ROC and NIST/USA.

3.2 LIMITS OF CONDUCTED AND RADIATED EMISSION

LIMIT OF RADIATED EMISSION OF CISPR 22

FREQUENCY (MHz)	Class A (at 10m) dBuV/m	Class B (at 10m) dBuV/m
30 - 230	40	30
230 - 1000	47	37

LIMIT OF RADIATED EMISSION OF FCC PART 15, SUBPART B FOR FREQUENCY ABOVE 1000 MHz

FREQUENCY (MHz)	Class A (at 10m)		Class B (at 3m)	
	uV/m	dBuV/m	uV/m	dBuV/m
Above 1000	300	49.5	500	54.0

Note: (1) The lower limit shall apply at the transition frequencies.

(2) Emission level (dBuV/m) = 20 log Emission level (uV/m).

(3) All emanation from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

LIMIT OF CONDUCTED EMISSION OF CISPR 22

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	79	66	66 - 56	56 - 46
0.50 - 5.0	73	60	56	46
5.0 - 30.0	73	60	60	50

Note: (1) The lower limit shall apply at the transition frequencies.

(2) The limit decreases linearly with the logarithm of the frequency in the range 0.15 to 0.50 MHz

(3) All emanation from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

4. TEST RESULTS (EMISSION)

4.1 RADIO DISTURBANCE

Frequency Range	:	0.15 - 30 MHz (Conducted Emission)
		30 - 1000 MHz (Radiated Emission)
Input Voltage	:	120 Vac, 60 Hz
Temperature	:	23 ℃
Humidity	:	62 %
Atmospheric Pressure	:	1000 mbar

TEST RESULT	Remarks
PASS	Minimum passing margin of conducted emission: -12.1 dB at 7.855 MHz Minimum passing margin of radiated emission: -2.3 dB at 47.99 MHz

4.1.1 EUT OPERATION CONDITION

1. Turn on the power of all equipments.
2. PC runs a test program to enable all functions.
3. PC reads and writes messages from FDD and HDD.
4. PC sends "H" messages to monitor (EUT) and monitor displays "H" patterns on screen.
5. PC sends "H" messages to modem.
6. PC sends "H" messages to printer, and the printer prints them on paper.
7. PC sends audio messages to earphone.
8. CCD camera captures images and sends image messages to PC via EUT.
9. Repeat steps 3-9.

4.2 TEST DATA OF CONDUCTED EMISSION

EUT: **USB BOX** MODEL: **UH-200**

6 dB Bandwidth: 10 kHz

TEST PERSONNEL: Bruce Lu

Freq.	L Level		N Level		Limit		Margin [dB (μV)]			
[MHz]	[dB (μV)]		[dB (μV)]		[dB (μV)]		L		N	
	QP	AV	QP	AV	QP	AV	QP	AV	QP	AV
0.191	33.70	-	35.20	-	63.99	53.99	-30.3	-	-28.8	-
0.892	31.70	-	33.10	-	56.00	46.00	-24.3	-	-22.9	-
2.081	31.50	-	33.90	-	56.00	46.00	-24.5	-	-22.1	-
7.855	43.30	-	47.90	-	60.00	50.00	-16.7	-	-12.1	-
10.920	37.50	-	40.50	-	60.00	50.00	-22.5	-	-19.5	-
17.795	30.60	-	30.50	-	60.00	50.00	-29.4	-	-29.5	-

Remarks:
1. "*": Undetectable
2. Q.P. and AV. are abbreviations of quasi-peak and average individually.
3. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
4. The emission level of other frequencies were very low against the limit.
5. Margin value = Emission level - Limit value

ADT CORP. SITE 2

CISPR 22 CLASS B

27. May 98 21:28

EUT:	UH-200
Operator:	Bruce Lu
Test Spec:	LISN : L
Comment:	FULL SYSTEM

Report No. FA8705>>10A

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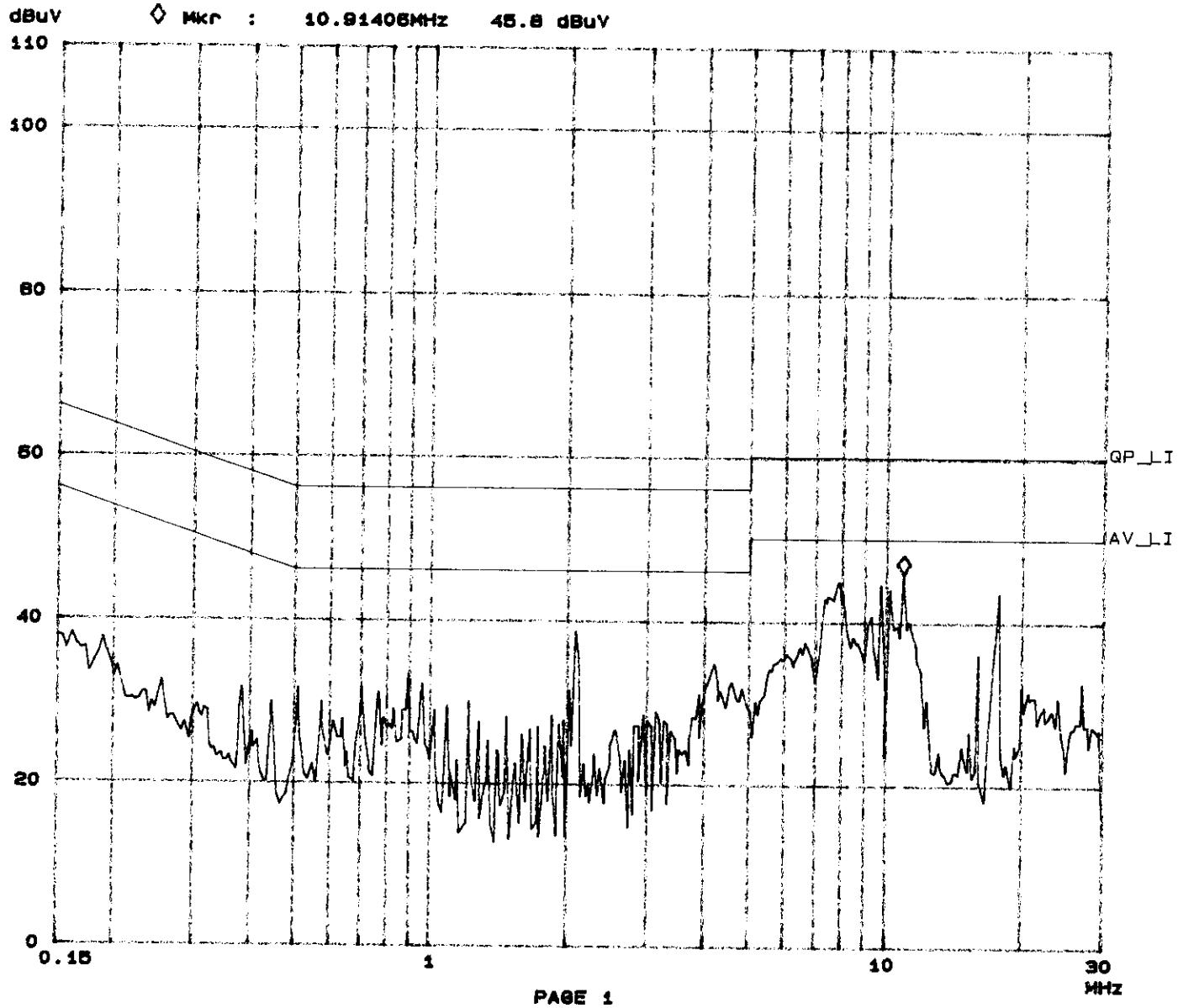
Tested by Bruce Lu

Overview Scan Settings (3 Ranges)

Frequencies			Receiver Settings				
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp
150k	1M	3.90625k	9k	PK	10ms	15dBLN	OFF
1M	10M	3.90625k	9k	PK	0.10ms	10dBLN	OFF
10M	30M	3.90625k	9k	PK	0.10ms	10dBLN	OFF



ADT CORP. SITE 2

27. May 98 22:32

CISPR 22 CLASS B

EUT:	UH-200
Operator:	Bruce Lu
Test Spec:	LISN : N
Comment:	FULL SYSTEM
File name:	CNS_4388.SPC

Report No. F8705210A

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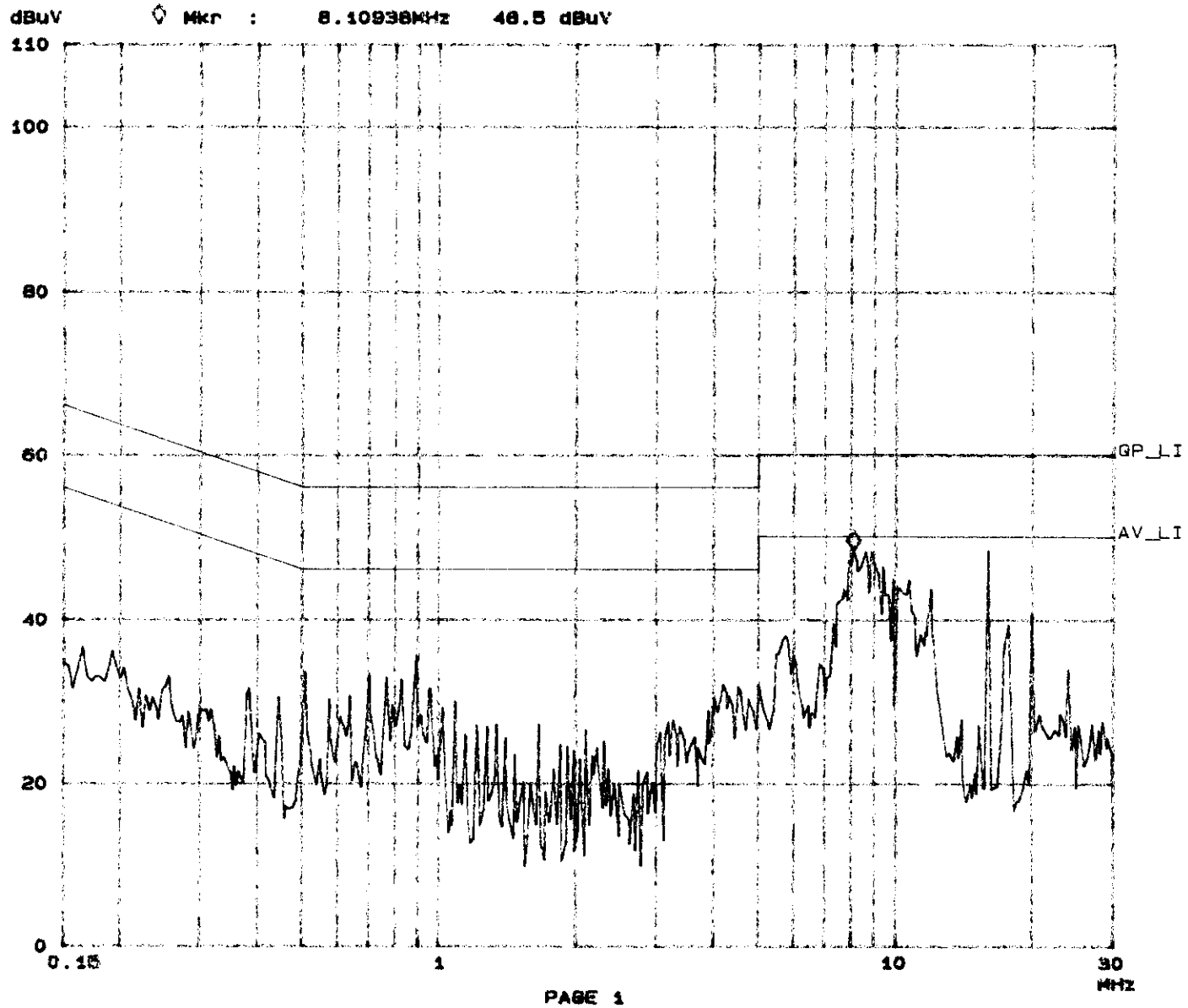
Tested by Bruce Lu

Overview Scan Settings (3 Ranges)

Frequencies			Receiver Settings				
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp
150K	1M	3.90625k	9k	PK	10ms	10dBLN	OFF
1M	10M	3.90625k	9k	PK	0.05ms	10dBLN	OFF
10M	30M	3.90625k	9k	PK	0.05ms	10dBLN	OFF



4.3 TEST DATA OF RADIATED EMISSION

EUT: **USB BOX** MODEL: **UH-200**

ANTENNA: CHASE BILOG CBL6112 POLARITY: Horizontal

DETECTOR FUNCTION: Quasi-peak 6 dB BANDWIDTH: 120 kHz

FREQUENCY RANGE: 30-1000 MHz MEASURED DISTANCE: 10 M

TEST PERSONNEL: Bruce Lu

Frequency (MHz)	Correction Factor (dB/m)	Reading Data (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
47.99	11.4	12.7	24.1	30.0	-5.9
95.97	12.0	10.8	22.8	30.0	-7.2
120.00	15.1	9.0	24.1	30.0	-5.9
132.00	14.5	9.7	24.2	30.0	-5.8
192.00	12.8	12.5	25.3	30.0	-4.7
216.00	14.1	10.1	24.2	30.0	-5.8
216.64	14.1	7.3	21.4	30.0	-8.6
228.00	14.6	8.3	22.9	30.0	-7.1

REMARKS :
1. Emission level (dBuV/m) = Correction Factor(dB/m) +Meter Reading (dBuV).
2. Correction Factor(dB/m) = Ant. Factor(dB/m)+Cable loss(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level - Limit value

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TEST DATA OF RADIATED EMISSION

EUT: **USB BOX** MODEL: **UH-200**

ANTENNA: CHASE BILOG CBL6112 POLARITY: Vertical

DETECTOR FUNCTION: Quasi-peak 6 dB BANDWIDTH: 120 kHz

FREQUENCY RANGE: 30-1000 MHz MEASURED DISTANCE: 10 M

TEST PERSONNEL: Bruce Lu

Frequency (MHz)	Correction Factor (dB/m)	Reading Data (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
47.99	10.7	17.0	27.7	30.0	-2.3
72.00	7.3	16.0	23.3	30.0	-6.7
81.23	8.4	19.2	27.6	30.0	-2.4
96.00	11.1	14.0	25.1	30.0	-4.9
108.02	12.7	12.6	25.3	30.0	-4.7
132.00	15.3	12.0	27.3	30.0	-2.7
192.00	13.2	13.3	26.5	30.0	-3.5
228.02	14.7	10.0	24.7	30.0	-5.3

REMARKS :
1. Emission level (dBuV/m) = Correction Factor(dB/m) +Meter Reading (dBuV).
2. Correction Factor(dB/m) = Ant. Factor(dB/m)+Cable loss(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level - Limit value

6. ATTACHMENT I -TECHNICAL DESCRIPTION OF EUT

SPECIFICATIONS:

Self Power Hub	Yes
Downstream Overcurrent Protection	Yes
Upstream Port	1
Downstream Port	4
Downstream Output Current	500 mA (max)
Ambient Temperature	Operating : 0° C to 40° C Storage : -20° C to 65° C
Humidity	Operating : 20% to 95% Storage : 10% to 95%
Dimension	120mm *89mm *27.5mm
Net weight	217 g
Compliance with USB Hub Specification Version	1.0