

EXHIBIT 4
RFI/EMI TEST REPORT



EMC

TEST REPORT

REPORT NO. : F87100301
MODEL NO. : TSIUSB2.0
DATE OF TEST : Oct. 07, 1998

PREPARED FOR : JOINSOON ELECTRONICS MFG. CO.. LTD.

ADDRESS : 19F, NO. 79 SEC. 1, HSIN TAI WU RD.,
HSI-CHIN CHEN, TAIWAN, R.O.C.

PREPARED BY: ADVANCE DATA TECHNOLOGY CORPORATION



Accredited Laboratory

12F, NO.1, SEC.4, NAN-KING EAST RD.,
TAIPEI, TAIWAN, R.O.C.

This test report consists of 14 pages in total. It may be duplicated completely for legal use with the allowance of the applicant. It shall not be reproduced except in full, without the written approval of our laboratory. It should not be used by the client to claim product endorsement by NVLAP or any agency of the U.S. government. The test result in the report only applies to the tested sample.



TABLE OF CONTENTS

1. CERTIFICATION.....	3
2. GENERAL INFORMATION	4
2.1 GENERAL DESCRIPTION OF EUT	4
2.2 DESCRIPTION OF SUPPORT UNITS	5
2.3 TEST METHODOLOGY AND CONFIGURATION.....	5
3. TEST INSTRUMENTS	6
3.1 TEST INSTRUMENTS (EMISSION).....	6
3.2 LIMITS OF CONDUCTED AND RADIATED EMISSION.....	7
4. TEST RESULTS (EMISSION)	8
4.1 RADIO DISTURBANCE	8
4.1.1 EUT OPERATION CONDITION	8
4.1.2 TEST DATA OF CONDUCTED EMISSION	9
4.1.3 TEST DATA OF RADIATED EMISSION.....	10
5. PHOTOGRAPHS OF THE TEST CONFIGURATION WITH MINIMUM MARGIN.	12
6. ATTACHMENT 1 - TECHNICAL DESCRIPTION OF EUT	14



1.

CERTIFICATION

Issue Date: Oct. 23, 1998

Product : LAPLINK USB CABLE
Trade Name : JEM, TRAVELING SOFTWARE
Model No. : TSIUSB2.0
Applicant : JOINSOON ELECTRONICS MFG. CO., LTD.
Standard : FCC Part 15, Subpart B, Class B
ANSI C63.4-1992
CISPR 22:1993+A1:1995+A2:1997

We hereby certify that one sample of the designation has been tested in our facility on Oct. 07, 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.

TESTED BY:

John Liao

(John Liao)

, DATE:

10/23/98

CHECKED BY:

Yemmy

(Yemmy Soong)

, DATE:

10/23/98

APPROVED BY:

Mike Su

(Mike Su)

, DATE:

10/23/98ADVANCE DATA TECHNOLOGY CORPORATION**NVLAP[®]**

Accredited Laboratory



2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Product	:	LAPLINK USB CABLE
Model No.	:	TSIUSB2.0
Power Supply	:	DC (from PC)
Data Cable	:	2 Shielded cable (@ 1.25m)

Note: The EUT was developed especially for use in making LapLink connections between two computers running Windows 98.

For more detailed features description, please refer to ATTACHMENT 1 - TECHNICAL DESCRIPTION OF EUT or 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	NTI	PII-233T	FCC DoC Approved	Nonshielded Power (1.8m)
2	MONITOR	ADI	PD-959	FCC DoC Approved	Shielded Signal (1.5m) Nonshielded Power (1.8m)
3	KEYBOARD	FORWARD	FDA-104GA	F4ZDA-104G	Shielded Signal (1.4m)
4	MOUSE	DEXIN	A2P800A	NIYA2P800A	Shielded Signal (1.5m)
5	VGA CARD	GORDIA	DSV3365	LUT-DSV3365	N/A
6	PERSONAL COMPUTER	NTI	PII-233	FCC DoC Approved	Nonshielded Power (1.8m)
7	MONITOR	ACER	7134T	JVP7134T	Shielded Signal (1.5m) Nonshielded Power (1.8m)
8	KEYBOARD	FORWARD	FDA-104GA	F4ZDA-104G	Shielded Signal (1.5m) Nonshielded Power (1.8m)
9	MOUSE	LOGITECH	M-M30	DZL210569	Shielded Signal (1.8m)
10	VGA CARD	GORDIA	DSV3365	LUT-DSV3365	N/A
11	PRINTER	HP	2225C+	DSI6XU2225	Shielded Signal (1.2m) Nonshielded Power (1.9m)
12	MODEM	ACEEX	1414	IFAXDM1414	Shielded Signal (1.2m) Nonshielded Power (1.9m)

Note: 1. The support unit 1-5 acted as SERVER PC and communicated with support units 6-12 which acted as HOST PC and partners of communication via the EUT.

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 3/10 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	8594E	3412A01132	Sept. 24, 1999
CHASE Preamplifier	CPA9231A/4	3215	Oct. 31, 1998
ROHDE & SCHWARZ TEST RECEIVER	ESVS 30	841977/002	Jan. 08, 1999
SCHWARZBECK Tunable Dipole Antenna	VHA 9103 UHA 9105	E101051 E101055	Nov. 28, 1998
CHASE BILOG Antenna	CBL6112	2074	Dec. 25, 1998
CHANCE Turn Table & Tower Controller	ACS-I	N/A	N/A
Open Field Test Site	Site 6	ADT-R06	Dec. 23, 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	ESHS30	828109/007	July 22, 1999
ROHDE & SCHWARZ Artificial Mains Network	ESH2-Z5	892107/003	July 20, 1999
EMCO L.I.S.N.	3825/2	9504-2359	July 20, 1999
Shielded Room	Site 3	ADT-C03	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)	Class B (at 10m)
	dBuV/m	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 : 25 °C
Humidity : 80 %
Atmospheric Pressure : 1000 mbar

TEST RESULT	Remarks
PASS	Minimum passing margin of conducted emission: -10.7 dB at 3.475 MHz Minimum passing margin of radiated emission: -3.9 dB at 48.02 MHz

4.1.1 EUT OPERATION CONDITION

1. Turn on the power of all equipment.
2. PCs run a test program to enable all functions.
3. PCs read and write messages from FDD and HDD.
4. PCs send "H" messages & picture messages to monitors and monitors display them on screen.
5. PCs send "H" messages to modem.
6. PCs send "H" messages to printer, and printer prints them on paper.
7. Host PC sends to or receives messages from server PC via USB cable.
8. Repeat steps 3-8.



4.1.2 TEST DATA OF CONDUCTED EMISSION

EUT: LAPLINK USB CABLEMODEL: TSIUSB2.06 dB Bandwidth: 10 kHzTEST PERSONNEL: John Liao

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
0.153	45.80	-	46.00	-	65.84	55.84	-20.0	-	-19.8	-
0.229	39.10	-	39.20	-	62.47	52.47	-23.4	-	-23.3	-
0.630	39.50	-	39.60	-	56.00	46.00	-16.5	-	-16.4	-
3.475	45.30	-	45.20	-	56.00	46.00	-10.7	-	-10.8	-
7.139	37.60	-	38.40	-	60.00	50.00	-22.4	-	-21.6	-
15.360	28.40	-	29.00	-	60.00	50.00	-31.6	-	-31.0	-

- 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 levels of other frequencies were very low against the limit.
 5. Margin value = Emission level - Limit value

ADT CO. Shielded Room 3
CISPR 22 CLASS B

07. Oct 98 16:09

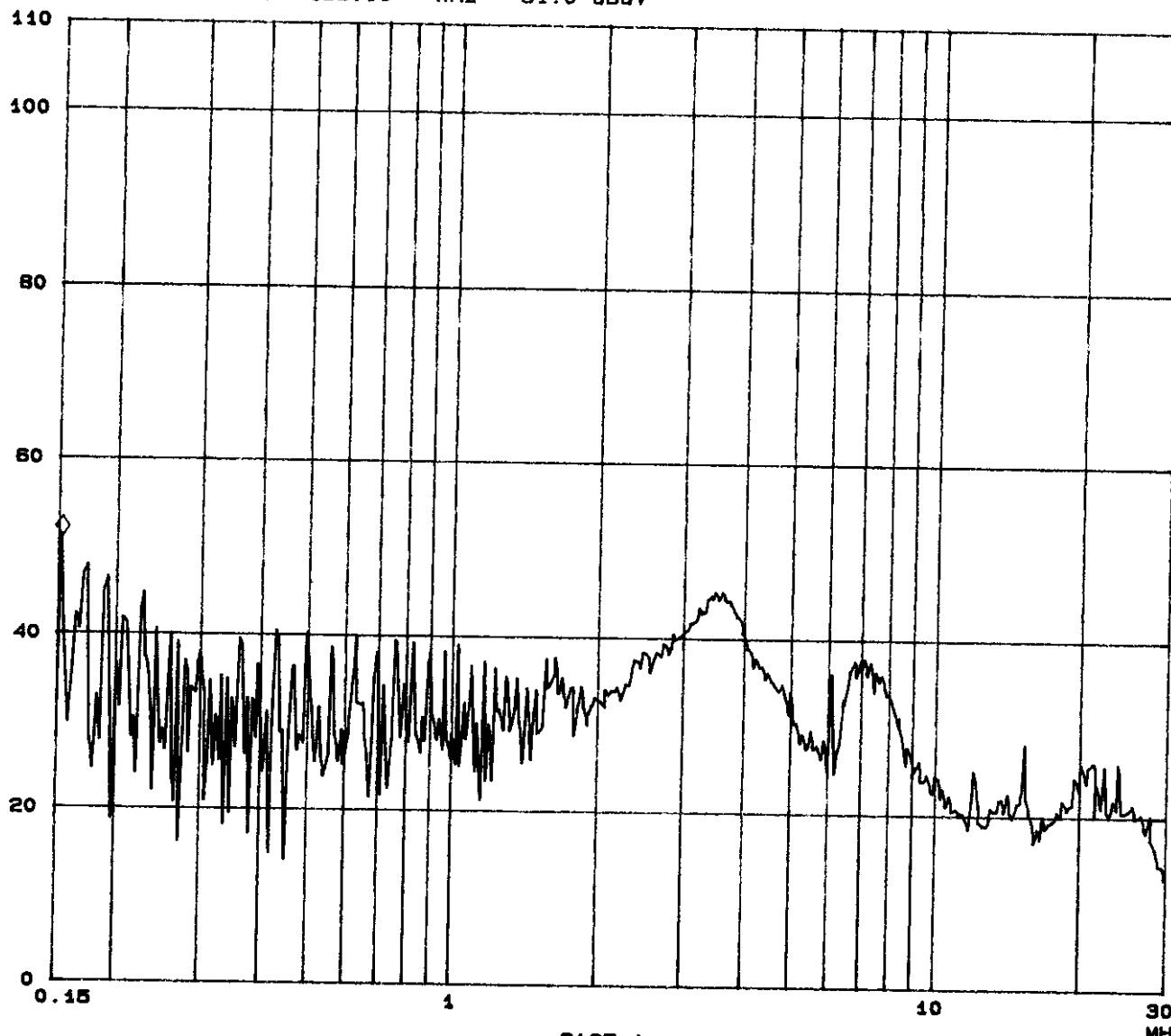
EUT: MODEL: TSIUSB2.0
Test Spec: LISN: L
Comment: FULL SYSTEM

Report No. F87100301
Page 9-1
Tested by John Liao

Fast Scan Settings (3 Ranges)

Frequencies			Receiver Settings				
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp OpRge
150k	450k	3k	10k	PK	1ms	10dB	LN OFF 60dB
450k	5M	3k	10k	PK	1ms	10dB	LN OFF 60dB
5M	30M	3k	10k	PK	1ms	10dB	LN OFF 60dB

dBuV \diamond Mkr : 153.00 kHz 51.0 dBuV



ADT CO. Shielded Room 3
CISPR 22 CLASS B

07. Oct 98 16:20

EUT: MODEL: TSIUSB2.0
Test Spec: LISN : N
Comment: FULL SYSTEM

Report No. F87100301

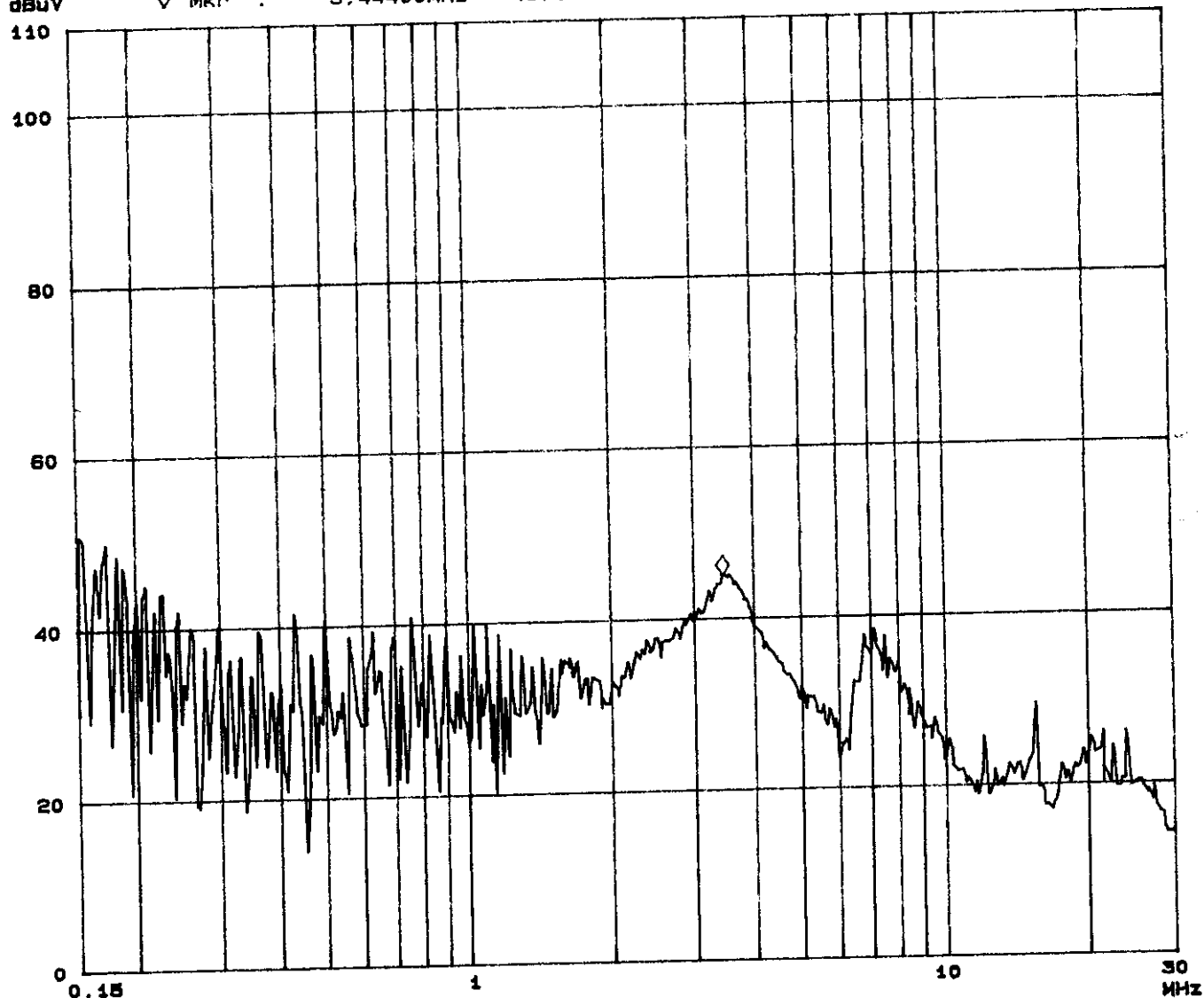
Page 9-2

Tested by John Liao

Fast Scan Settings (3 Ranges)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
150k	450k	3k	10K	PK	1ms	10dBLN	OFF	60dB
450k	5M	3k	10k	PK	1ms	10dBLN	OFF	60dB
5M	30M	3k	10K	PK	1ms	10dBLN	OFF	60dB

dBuV ◇ Mkr : 3.44400MHz 45.1 dBuV





4.1.3 TEST DATA OF RADIATED EMISSION

EUT: LAPLINK USB CABLEMODEL: TSIUSB2.0ANTENNA: CHASE BILOG CBL 6112POLARITY: HorizontalDETECTOR FUNCTION: Quasi-peak6 dB BANDWIDTH: 120 kHzFREQUENCY RANGE: 30-1000 MHzMEASURED DISTANCE: 10 MTEST PERSONNEL: John Liao

Frequency (MHz)	Correction Factor (dB/m)	Reading Data (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
84.01	10.8	8.6	19.4	30.0	-10.6
120.00	15.6	7.4	23.0	30.0	-7.0
132.01	14.1	6.2	20.3	30.0	-9.7
144.01	12.7	4.7	17.4	30.0	-12.6
168.02	10.9	7.9	18.8	30.0	-11.2
180.59	10.7	6.3	17.0	30.0	-13.0
201.15	10.5	8.8	19.3	30.0	-10.7
216.04	11.9	10.1	22.0	30.0	-8.0
234.74	13.7	12.3	26.0	37.0	-11.0
240.06	14.2	15.5	29.7	37.0	-7.3
528.11	21.6	8.0	29.6	37.0	-7.4
624.13	22.1	8.5	30.6	37.0	-6.4

- 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



TEST DATA OF RADIATED EMISSION

EUT: LAPLINK USB CABLEMODEL: TSIUSB2.0ANTENNA: CHASE BILOG CBL 6112POLARITY: VerticalDETECTOR FUNCTION: Quasi-peak6 dB BANDWIDTH: 120 kHzFREQUENCY RANGE: 30-1000 MHzMEASURED DISTANCE: 10 MTEST PERSONNEL: John Liao

Frequency (MHz)	Correction Factor (dB/m)	Reading Data (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
48.02	10.7	15.4	26.1	30.0	-3.9
84.02	8.7	16.5	25.2	30.0	-4.8
120.05	14.3	8.9	23.2	30.0	-6.8
144.03	13.1	9.8	22.9	30.0	-7.1
168.03	11.2	12.3	23.5	30.0	-6.5
180.60	9.7	10.6	20.3	30.0	-9.7
182.43	9.9	14.8	24.7	30.0	-5.3
192.01	11.0	8.9	19.9	30.0	-10.1
201.17	11.9	12.1	24.0	30.0	-6.0
216.05	12.5	8.5	21.0	30.0	-9.0
301.68	15.4	15.2	30.6	37.0	-6.4

- 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 1 - TECHNICAL DESCRIPTION OF EUT

Specifications:

* Ports	USB type A / USB type A
* Physical Dimensions	4 feet x 2 USB type A, 120 mm x 27 mm x 22 mm
* Environmental	Operating temperature : 0°C to 40°C Storage temperature : -20°C to 70°C Humidity : 0 to 95%, non-condensing
* Transfer Rate	12 MHz