

**Class B Certification Application**

Under part 15, subpart B

**EUT : CARD READER/WRITER**

**MODEL : NetSignia 210**

**FCC ID : JLW-NETSIGNIA210**

SRT REPORT # T9I05-1

**PREPARED FOR :**

**LITRONIC INC.**

2030 MAIN STREET SUITE 1250,

IRVINE, CA 92614,

U.S.A.

# Litronic

Federal Communications Commission  
Authorization and Evaluation Division  
7435 Oakland Mills Road  
Columbia, MD 21046

To whom it may concern:

This is to serve as proper written authorization that Spectrum Research and Testing Laboratory, Inc., 15200 Shady Grove Rd., Rockville, MD 20850, will act as our representative in all matters relating to FCC applications for equipment approval. This includes the signing of all related documents, the transmitting of required fees, and receiving correspondence and notifications from the FCC. All acts performed by Spectrum Research and Testing Laboratory, Inc., especially modifications to our equipment under testing will be carried out on our behalf.

Meantime, the applicant certifies that in the case of an individual applicant (e.g., corporation), no party to the applicant is subject to a denial of federal benefits, that includes FCC denial of federal benefits, that includes FCC benefits, pursuant to Section 5301 of the Anti-Drug Abuse Act of 1998, 21 U.S.C. 862. For a definition of a "party" for these purposes see 47 C.F.R. 1.2002 (b).

If you have a questions regarding our applications for equipment approval, please contact Spectrum Research and Testing Laboratory Inc. by calling (301) 670-2818.

Respectfully,

Ramesh Shah  
Ramesh Shah

Effective Dates:

From 10/13/99 to 10/13/2000

RAMESH. SHAH  
V.P. Operations

DATE: 10/13/99

**EMI TESTING REPORT****EUT** : CARD READER/WRITER**MODEL** : NetSignia 210**FCC ID** : JLW-NETSIGNIA210**PREPARED FOR :**LITRONIC INC.2030 MAIN STREET SUITE 1250,IRVINE, CA 92614,U.S.A.**PREPARED BY :****SPECTRUM RESEARCH & TESTING LABORATORY INC.**NO. 101-10, LING 8, SHAN-TONG LI CHUNG-LI CITY,  
TAOYUAN, TAIWAN, R.O.C.

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## TABLE OF CONTENTS

1. TEST REPORT CERTIFICATION.....	4
2. TEST STATEMENT	
2.1 TEST STATEMENT.....	5
2.2 DEPARTURE FROM DOCUMENT POLICIES, PROCEDURE OR SPECIFICATIONS, TEST STATEMENT.....	5
3. EUT MODIFICATIONS.....	6
4. MODIFICATION LETTER.....	7
5. CONDUCTED POWER LINE TEST	
5.1 TEST EQUIPMENT.....	8
5.2 TEST PROCEDURE.....	8
5.3 TEST SETUP.....	9
5.4 CONFIGURATION OF THE EUT.....	10-11
5.5 EUT OPERATING CONDITION.....	12
5.6 EMISSION LIMIT.....	12
5.7 EMISSION TEST RESULT.....	13
6. RADIATED EMISSION TEST	
6.1 TEST EQUIPMENT.....	14
6.2 TEST PROCEDURE.....	15
6.3 TEST SETUP.....	15-16
6.4 CONFIGURATION OF THE EUT.....	17
6.5 EUT OPERATING CONDITION.....	17
6.6 EMISSION LIMIT.....	17
6.7 RADIATION EMISSION TEST RESULT.....	18
7. PHOTOS OF TESTING.....	19-26

**1. TEST REPORT CERTIFICATION****APPLICANT** : LITRONIC INC.**ADDRESS** : 2030 MAIN STREET SUITE 1250,  
IRVINE, CA 92614,  
U.S.A.**EUT DESCRIPTION** : CARD READER/WRITER(A) POWER SUPPLY : FROM PC KEYBOARD(B) MODEL : NetSignia 210(C) FCC ID : JLW-NETSIGNIA210**FINAL TEST DATE** : 09/07/1999**MEASUREMENT PROCEDURE USED :**

\* PART 15 SUB PART B OF FCC RULES AND REGULATIONS (47 CFR PART 15)

\* ANSI C63.4 - 1992

\* TEST PROCEDURE AND DATA ARE TRACEABLE TO NATIONAL OR INTERNATIONAL STANDARDS.

*We hereby show that :**The measurement shown in the attachment were made in accordance with the procedures indicated, and the energy emitted by the equipment was found to be within the limits applicable.***TESTING ENGINEER** Wei-Ming Ho DATE 09/07/1999

Wei-Ming Ho

**SUPERVISOR** : Jesse Ho DATE 9/7/99

Jesse Ho

**APPROVED BY** : Johnson Ho DATE 9/7/99

Johnson Ho

**2. TEST STATEMENT****2.1 TEST STATEMENT**

1. This letter is to explain the test condition of this project.  
The EUT be tested as the following status.
2. The data was shown in this report reflects the worst-case data for the condition as listed above.  
Please disregard any other oricessir(s) speed shown in this user manual.
3. EUT Conditions.

W/R the data from Card (the Card include chip).  
Case have display LEDs, display the receiver message of the chip in the Card.  
The EUT power from PC KeyBoard.

4. NVLAP logo is to be approved by management (it is according to NVLAP requirement if it need) before use.

**2.2 DEPARTURE FROM DOCUMENT POLICIES, PROCEDURE OR SPECIFICATIONS, THE STATEMNT**

A. Did have

Any departure from document policies & procedures or from specifications.

Yes \_\_\_\_\_, No \_\_\_\_\_  
If yes, the description as below.

B. The certificate and report shall not be reproduced except in full, without the written approval of SRT laboratory.

C. The report must not be used by the client to claim product endorsement by NVLAP or any agency the government.

D. This product is a prototype product.

E. The effect that the results relate only to the items tested.

### **3. EUT MODIFICATIONS**

The following accessories were added to the EUT during testing :

No modifications by SRT lab.

#### **4. MODIFICATION LETTER**

This section contains the following documents :

- A. Letter of modifications

# Litronic

Federal Communications Commission  
Authorization and Evaluation Division  
7435 Oakland Mills Road  
Columbia, MD 21046

To whom it may concern:

This is to serve as proper notice that our company agrees to make  
all modifications to FCC ID: JLW-NETSIGNA20 as listed in section 3.0 of  
modification to submitted by Spectrum Research and Testing Laboratory, Inc.

Respectfully,

Ramesh Shah  
Ramesh Shah

Effective Dates:

From 10/13/99 to 10/13/2000

RAMESH SHAH  
V.P. Operations

DATE: 10/13/99

## 5. CONDUCTED POWER LINE TEST

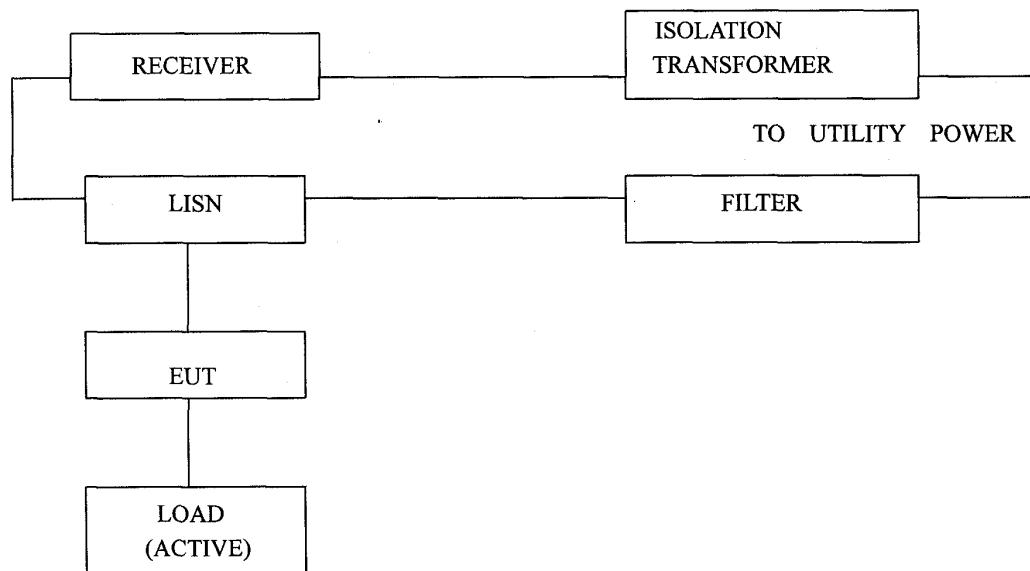
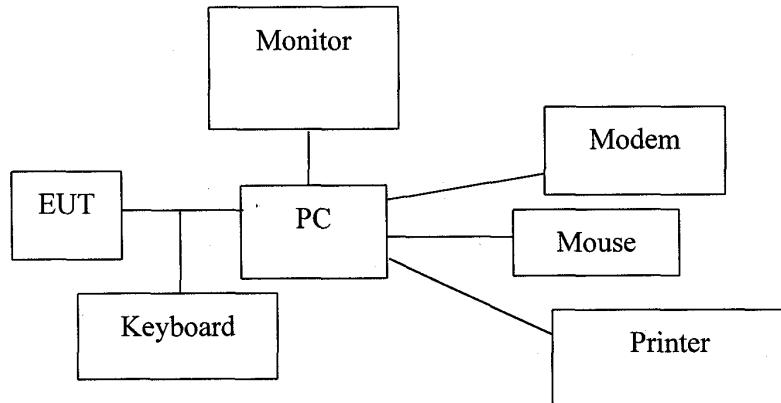
### 5.1 TEST EQUIPMENT

The following test equipment were used during the conducted power line test :

EQUIPMENT/ FACILITIES	SPECIFICATIONS	MANUFACTURER	MODEL#/ SERIAL#	DATE OF CAL. & CAL. CENTER	DU <sup>E</sup> DATE	FINAL TEST
SPECTRUM ANALYZER	9 KHz TO 1 GHz	HP	8590L/ 3624A01317	AUGUST 1999 ETC	1Y	
EMI TEST RECEIVER	9 KHz TO 30 MHz	ROHDE & SCHWARZ	ESHS30/ 826003/008	AUGUST 1999 ETC	1Y	✓
LISN	50 uH, 50 ohm	SOLAR ELECTRONICS	9252-50- R24-BNC/ 951315	AUGUST 1999 ETC	1Y	✓
LISN	50uH, 50 ohm	SOLAR ELECTRONICS	9252-50- R24-BNC/ 951318	AUGUST 1999 ETC	1Y	✓
SIGNAL GENERATOR	9 KHz TO 1080 MHz	ROHDE & SCHWARZ	SMY01/ 841104/019	APRIL 1999 ETC	1Y	✓
POWER CONVERTER	0 TO 300 VAC VAC 47-500 Hz	AFC	AFC-1KW/ 850510	MARCH 1999 ETC	1Y	✓

### 5.2 TEST PROCEDURE

The EUT was tested according to ANSI C63.4 - 1992. The frequency spectrum from 0.45 MHz to 30 MHz was investigated. The LISN used was 50 ohm / 50 uHenry as specified by SECTION 5.1 of ANSI C63.4 - 1992. Cables and peripherals were moved to find the maximum emission levels for each frequency.

**5 . 3 TEST SETUP**

**5.4 CONFIGURATION OF THE EUT**

The EUT was configured according to ANSI C63.4 - 1992. All interface ports were connected to the appropriate peripherals. All peripherals and cables are listed below.

**A. EUT**

DEVICE	MANUFACTURER	MODEL #	ECCID
CARD READER/WRITER	LITRONIC INC.	NetSignia 210	JLW-NETSIGNIA210

**B. INTERNAL DEVICES**

DEVICE	MANUFACTURER	MODEL #	FCCID / DoC
N/A			

**C. PERIPHERALS**

DEVICE	MANUFACTURER	MODEL # SERIAL #	FCCID / DoC	CABLE
PRINTER	HP	2225C	DSI6XU2225	1.8m unshielded power cord 1.6m unshielded data cable
MODEM	TEAM	103/212A	EF56A5103/212A	1.8m unshielded power cord 1.6m unshielded data cable
MONITOR	PHILIPS	14B1320W	A3KM064	1.8m unshielded power cord 1.6m shielded data cable(S2)
KEYBOARD	COMPAQ	286220-AB5	AQ6-71Z15	1.7m unshielded data cable
MOUSE	HP	M-S34	DZL211029	1.8m unshielded data cable
MAIN BOARD	MICRO-STAR	MS-6117	DoC	N/A
POWER SUPPLY	MACASE	MG-255	N/A	N/A
HDD	MAXTOR	90432D2	N/A	N/A
FDD(3.5")	MITSUMI	D353M3	N/A	N/A
CD ROM	MATSUHITA	CR-585-B	N/A	N/A
VGA CARD	MICRO-STAR	MS-4420	DoC	N/A

**- REMARK :**

(1). Cable - S1 : Single point shielding  
 S2 : 360° shielding  
 S3 : Double shielding

(2). Cables - all 1m or greater in length - bundled according to ANSI C63.4 - 1992.

**5 . 5 EUT OPERATING CONDITION**

Operating condition is according to ANSI C63.4 - 1992.

1. EUT power on.
2. "H" pattern sent to the following peripherals :
  - printer
  - monitor
  - modem
3. Test with PC CPU

CPU: Intel Pentium II 300MHz, clock chip: 66MHz

**5 . 6 CONDUCTED POWER LINE EMISSION LIMIT**

FREQUENCY RANGE (MHz)	CLASS B
0 . 45 - 1.705	48.0dBuV
1.705 - 30	48.0dBuV

**NOTE :** In the above table, the tighter limit applies at the band edges.

**5.7 CONDUCTED POWER LINE TEST RESULT**

The frequency spectrum from 0.45 MHz to 30 MHz was investigated.  
 All readings are quasi-peak values with a resolution bandwidth  
 of 9 KHz.

Temperature : 25 °CHumidity : 42 %RH

FREQUENCY (MHz)	LINE1 (dBuV)	LINE2 (dBuV)	LIMIT (dBuV)
0.49	*	32.6	48.0
0.87	23.5	24.4	48.0
1.00	19.1	20.4	48.0
8.82	26.1	*	48.0
9.69	*	27.2	48.0
15.26	33.2	*	48.0
17.65	*	32.2	48.0
22.06	32.4	31.4	48.0

**REMARKS :** (1). \* = measurement does not apply for this frequency  
 (2). uncertainty in conducted emission measured is <+/-2dB  
 (3). any departure from specification : N/A

SIGNED BY TESTING ENGINEER : Wei-Ming

**6. RADIATED EMISSION TEST****6.1 TEST EQUIPMENT**

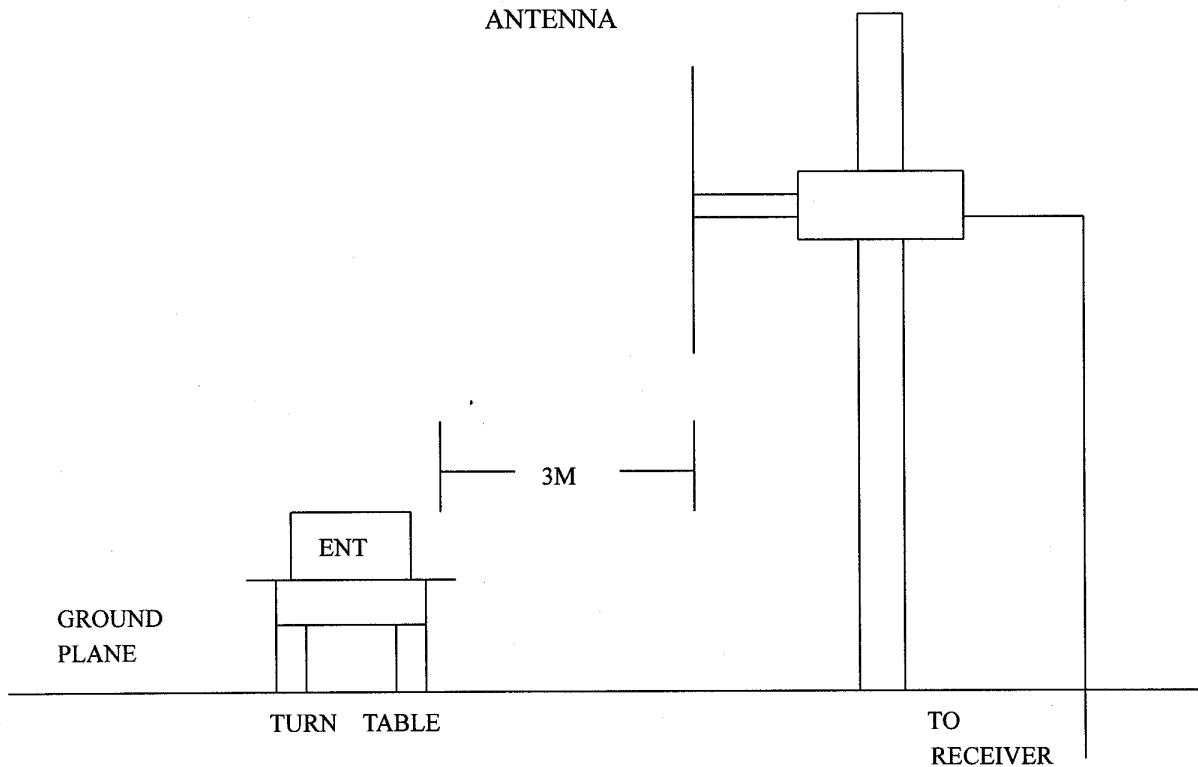
The following test equipment were used during the radiated emission test :

EQIPMENT / FACILITIES	SPECIFICA- TIONS	MANUFACTUR- ER	MODEL # / SERIAL #	DATE OF CAL. & CAL. CENTER	DU <sup>E</sup> DATE	FINAL TEST
RECEIVER	20 MHz TO 1000 MHz	R & S	ESVS30/ 841977/003	APRIL 1999 ETC	1Y	✓
SPECTRUM ANALYZER	100 Hz TO 1500 MHz	HP	8568B/ 3019A05294	OCT. 1998 ETC	1Y	
SPECTRUM ANALYZER	9 KHz TO 22 GHz	HP	8593E/ 3322A00670	MAY 1999 ETC	1Y	
SPECTRUM ANALYZER	100 Hz TO 1000 MHz	IFR	A-7550/ 2684/1248	JULY 1999 ETC	1Y	
SIGNAL GENERATOR	9 KHz TO 1080 MHz	ROHDE & SCHWARZ	SMY01/ 841104/019	APRIL 1999 ETC	1Y	✓
DIPOLE ANTENNA	28 MHz TO 1000 MHz	EMCO	3121C/ 9003-534	MAR. 1999 SRT	1Y	
DIPOLE ANTENNA	28 MHz TO 1000 MHz	EMCO	3121C/ 9611-1239	SEP. 1998 SRT	1Y	
BI-LOG ANTENNA	26 MHz TO 2000 MHz	EMCO	3142/ 9608-1073	SEP. 1998 SRT	1Y	✓
BI-LOG ANTENNA	26 MHz TO 1100 MHz	EMCO	3143/ 9509-1152	SEP. 1998 SRT	1Y	
PRE-AMPLIFIER	0.1 MHz TO 1300 MHz	HP	8447D/ 2944A08402	APRIL 1999 ETC	1Y	
PRE-AMPLIFIER	0.1 MHz TO 1300 MHz	HP	8447D/ 2944A06412	AUGUST 1999 ETC	1Y	
HORN ANTENNA	1 GHz TO 18 GHz	EMCO	3115/ 9012-3619	JAN. 1999 EMCO	1Y	

## 6 . 2 TEST PROCEDURE

- (1).The EUT was tested according to ANSI C63.4 - 1992. The radiated test was performed at SRT lab's open site. this site is on file with the FCC laboratory division, reference 31040 / SIT.
- (2).The EUT, peripherals were put on the turntable which table size is 1m x 1.5 m, table high 0.8 m. All set up is according to ANSI C63.4-1992.
- (3).The frequency spectrum from 30 MHz to 1 GHz was investigated. All readings from 30 MHz to 1 GHz are quasi-peak values with a resolution bandwidth of 120 KHz. All readings are above 1 GHz, peak values with a resolution bandwidth of 1 MHz. Measurements were made at 3 meters.
- (4).The antenna height were varied from 1 m to 4 m high to find the maximum emission for each frequency.
- (5). The antenna polarization : Vertical polarization and horizontal polarization.

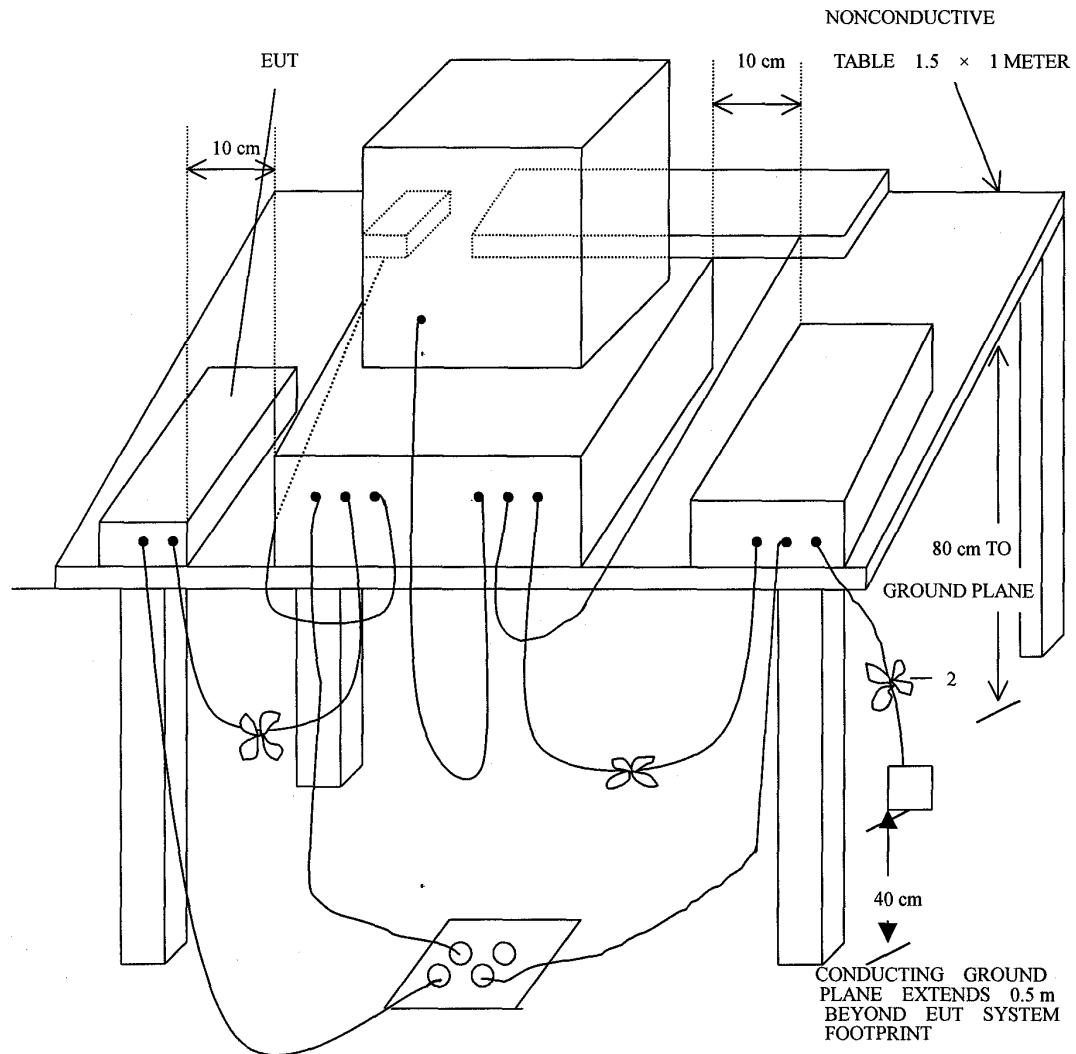
## 6 . 3 RADIATED TEST SET-UP



**6 . 3 RADIATED TEST SET-UP**

ANSI

ELECTRICAL AND ELECTRONIC EQUIPMENT IN THE RANGE IN THE RANGE OF 9 KHz TO 40 GHz C63.4-1992



**6.4 CONFIGURATION OF THE THE EUT**

Same as section 5.4 of this report

**6.5 EUT OPERATING CONDITION**

Same as section 5.5 of this report.

**6.6 RADIATED EMISSION LIMIT**

All emission from a digital device, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strength specified below :

**CLASS B**

FREQUENCY (MHz)	DISTANCE (m)	FIELD STRENGTH (dBuV/m)
30 - 88	3	40.0
88 - 216	3	43.5
216 - 960	3	46.0
ABOVE 960	3	54.0

**NOTE :** 1. In the emission tables above, the tighter limit applies at the band edges.  
2. Distance refers to the distance between measuring instrument, antenna, and the closest point of any part of the device or system.

**6.7 RADIATED EMISSION TEST RESULT**

The frequency spectrum from 30 MHz to 1 GHz was investigated. All readings from 30 MHz to 1 GHz are quasi-peak values with a resolution bandwidth of 120 KHz. Measurements were made at 3 meters.

Temperature : 28 °CHumidity : 45 %RH

FREQ. (MHz)	FACTOR (Db)	ANT. FACTOR (dB/m)	READING (dBuV)		EMISSION (dBuV/m)		LIMITS (dBuV/m)
			HORIZ	VERT	HORIZ	VERT	
167.05	1.1	10.3	24.6	23.8	26.0	25.2	43.5
171.82	1.1	10.0	25.4	25.1	36.5	36.2	43.5
467.74	1.7	17.6	18.0	20.3	37.3	39.6	46.0
534.56	1.8	19.8	16.8	18.2	38.4	39.8	46.0
601.74	2.1	23.2	17.6	16.4	42.9	41.7	46.0
921.53	2.9	24.3	13.8	*	41.0	*	46.0

**REMARKS :**

- (1). \*= Measurement does not apply for this frequency.
- (2). Uncertainty in radiated emission measured is <+-4dB
- (3). Any departure from specification : N/A
- (4). Factor will include cable loss and correction factor.
- (5). Sample calculation

$$20 \log (\text{emission}) \text{ uV/m} = \text{Factor(dB)} + \text{Ant. factor(dB/m)} + \text{reading(dBuV)}$$

SIGNED BY TESTING ENGINEER : Wei-Ming

