# *EXHIBIT B*

## *Test Report*

| | |
|---|---|
| Report No. | U0615531 |
| Specifications<br>Test Method | FCC Part 15.109(g), Class B<br>ANSI C63.4 1992 |
| Applicant<br>address | 3F, No. 3, Lane 538, Chung Cheng Rd.,<br>Hsin Tien, Taipei 231, Taiwan, R.O.C. |
| Applicant | Unixtar Technology Inc. |
| Items tested<br>Model No. | Four Port USB Hub<br>PCUH411 (Sample # U06531) |
| Results<br>Sample received date | **Compliance** (As detailed within this report)<br>03/23/2000 (month / day / year) |
| Prepared by | project engineer |
| Authorized by | General Manager<br>(Frank Tsai) |
| Issue date | *MAR. 27, 2000*<br>(month / day / year) |
| **Modifications**<br>Tested by<br>Office at<br>Open site at | **Appendix C**<br>Training Research Co., Ltd.<br>2, Lane 194, Huan-Ho Street, Hsichih, Taipei Hsien 221, Taiwan<br>No. 15, Lane 530, Pa-Lian RD., Sec. 1, Hsi-Chih, Taipei Hsien, Taiwan, R.O.C. |

***Conditions of issue:***

(1) ***This test report shall not be reproduced except in full, without written approval of TRC. And the test result contained within this report only relate to the sample submitted for testing.***

(2) ***This report must not be used by the client to claim product endorsement by NVLAP or any agency of U.S. Government.***

★ ***FCC ID: NUOPCUH411***

# Contents

# *Chapter 1 Introduction*

## *Description of EUT:*

The EUT is a Universal Serial Bus HUB, which is a USB cable concentrator and a bridge between PC USB host controller and USB devices. It has following features:

1. Connect up to 127 USB devices simultaneously.
2. Hot plug-n-play of USB devices.
3. Transmission bandwidth from 1.5 Mbps to 2.0 Mbps.
4. 1 USB upstream port with 4 USB downstream ports.
5. Self-powered or Bus-powered operation.
6. Over-current protection.
7. Fulfils USB –IF specification Reversion 1.1
8. Stand-alone or clips on 1999/2000 Philips CRT monitor base(s).

## *Connections of EUT:*

(1)The power jack of the EUT is connected with the AC power source via a power adapter.
(2)Connect the upstream port of EUT to USB # 1port of PC via A-to-B cable.
(3)Plug one USB mouse into downstream #1port of EUT.
(4)The other downstream ports are plugged in three USB cables terminal with 100Ω.

## *Test method:*

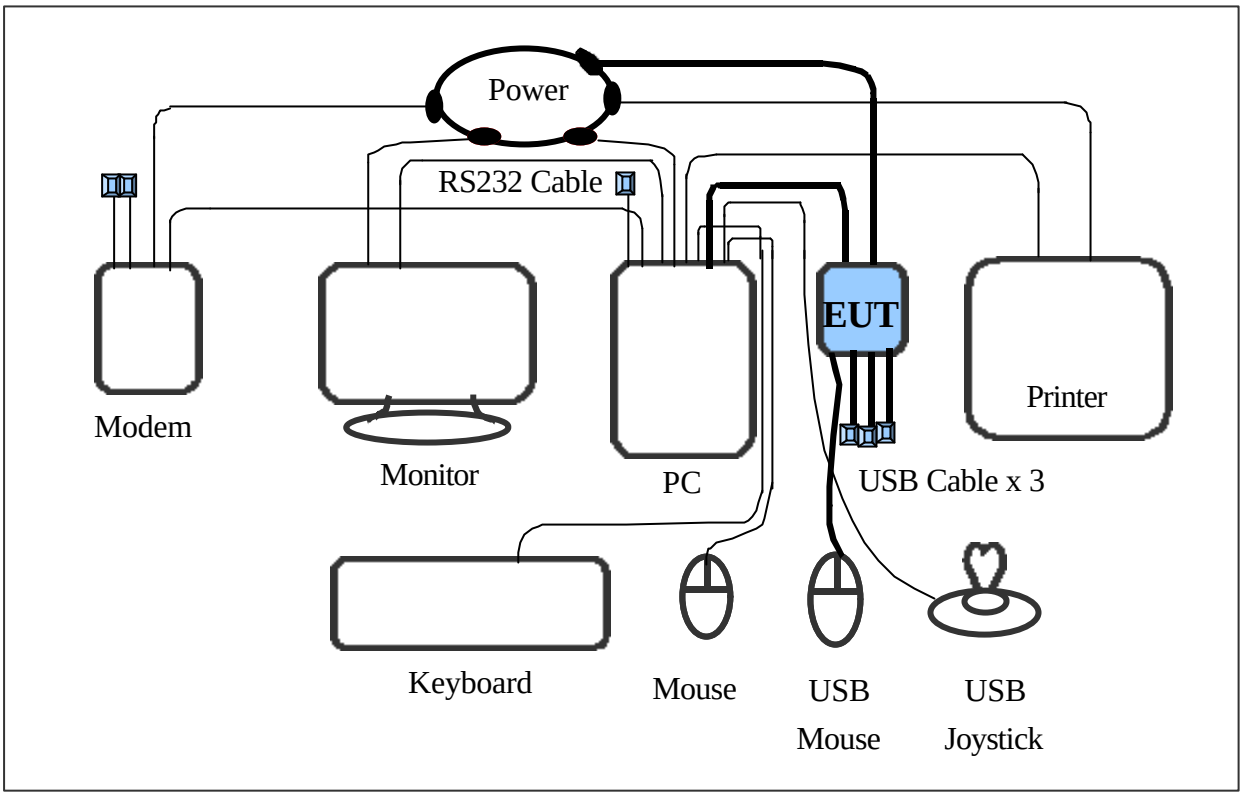
Pretest was found that the emission of operating mode is worse than standby mode. So, The final test is made at the operating mode.

During testing, the EUT was operated at “transmitting” and “receiving” mode simultaneously.

The test placement as the photographs showed is the worst case emission placed. (If the emission is close to the ambient, the resolution BW and view resolution will be reduced and the data will be recorded by detection of maximum hold peak mode.)

***The testing configuration of test setup is showing in the next page.***

## *Configuration of test setup*




## ***Connections:***

### ***PC:***

*Serial A port --- a external modem with 76 cm shielded RS-232 cable

*Serial B port --- a shielded RS232 cable with 76cm long, no ferrite bead

*Printer port --- a Printer with 1.2m length data cable

*Keyboard port --- a Keyboard with 1m length data cable

*Mouse port --- a Mouse with 0.7m long of data cable

*USB A port --- **EUT**

*USB B port --- a USB joystick with 1.5m long, shielded, no ferrite bead data cable

*Monitor port --- a monitor with 1m length data cable

(Each port on PC is connected with suitable device)

***EUT:***

*Upstream port ---via a 1.2m long, shielded, no ferrite bead, USB cable to the USB A port of PC

*Downstream ports --- mouse: with 1.9m long, shielded, no ferrite bead, data cable
--- The others: connected 3 USB cables which 1.2m long, shielded, no ferrite bead

*Power port --- via a 1.9m long, non-shielded, no ferrite bead, power cable to the AC power source.

## *List of support equipment*

## Conducted (Radiated) test:

| | | |
|---|---|---|
| **PC** | **:** | **HP Brio 85xx 6/350** |
| Model No. | : | D6928A |
| Serial No. | : | SG91801443 |
| FCC ID | : | N/A, Doc Approved |
| Power type | : | AC 110~120 / 220~240 VAC, Switching |
| Power cord | : | non-Shielded, 1.7m long, Plastic, no ferrite core |

| | | |
|---|---|---|
| **Monitor** | **:** | **HP** |
| Model No. | : | D2821 |
| Serial No. | : | TW 73512262 (TW 73147163) |
| FCC ID | : | A3KMO64 |
| Power type | : | AC 110~120 / 220~240 VAC, Switching |
| Power cord | : | Non-Shielded, 3m long, no ferrite core |
| Data cable | : | Shielded, 1.8m long, with ferrite core |

| | | |
|---|---|---|
| **Keyboard** | **:** | **Digital** |
| Model No. | : | KB-5923 |
| Serial No. | : | 9S74904837 (9S74904665) |
| FCC ID | : | E8HKB-5923 |
| Power type | : | By PC |
| Data cable | : | Shielded, 1.8m long, with ferrite core |

| | | |
|---|---|---|
| **Printer** | **:** | **HP** |
| Model No. | : | C2642A |
| Serial No. | : | SG69A196GV |
| FCC ID | : | B94C2642X |
| Power type | : | 220VAC, 50Hz |
| Power cord | : | Non-shielded, 2m long, no ferrite core |
| Data cable | : | Shielded, 1.84m long, no ferrite core (1.7m) |

| | | |
|---|---|---|
| **Modem** | **:** | **ACEEX** |
| Model No. | : | XDM-9624 |
| FCC ID | : | IFAXDM-9624 |
| Power type | : | 220VAC, 50Hz / 9VAC, 1A |
| Power cord | : | Non-shielded, 1.9m long, no ferrite cord |
| Data cable | : | RS232, Shielded, 1.2m long, no ferrite core |
| | | RJ11C x 2, 7’ long non-shielded, no ferrite core |

| | | |
|---|---|---|
| **Modem** | **:** | **ACEEX** |
| Model No. | : | DM-56V14 |
| FCC ID | : | IFADM-56V14 |
| Power type | : | 220VAC, 50Hz / 9VAC, 1A |
| Power cord | : | Non-shielded, 1.9m long, no ferrite cord |
| Data cable | : | RS232, Shielded, 1.2m long, no ferrite core |
| | | RJ11C x 2, 7’ long non-shielded, no ferrite core |

| | | |
|---|---|---|
| **Mouse** | **:** | **Hewlett Packard Mouse** |
| Model No. | : | C3751B |
| Serial No. | : | LCA52707170 |
| FCC ID | : | DZL210582 |
| Power type | : | Powered by PC |
| Power Cable | : | Non – Shielded. 5.5' long, Plastic hoods, No ferrite bead |

| | | |
|---|---|---|
| **Joystick** | **:** | **Padix** |
| Model | : | QF-305U, (QF-606U) |
| FCC ID | : | DoC Approval |
| Power Type | : | By PC |

| | | |
|---|---|---|
| **USB Mouse** | **:** | **Philips** |
| Model | : | PCUM01 ( DoC Approval ) |
| Power Type | : | By PC |
| Data Cable | : | 1.9m long, shielded, no ferrite bead, data cable |

# *Chapter 2 Conducted emission test*

## *Test condition and setup:*

All the equipment is placed and setup according to the CISPR 22.
The EUT is assembled on a wooden table that is 80 cm high, is placed 40 cm from the back-wall that is a vertical conducting plane. One LISN is for EUT, the other LISN is for support equipment. They are all placed on the conductive ground. The EUT's LISN connect a line switch box for selecting L1 or L2, then connect to a preamplifier and spectrum.

The spectrum scans from 150KHz to 30MHz. Conducted emission levels are detected at max. peak mode. But if the max. peak mode failed, it will be measured by CISPR's quasi-peak detection mode.

While testing, there is the worst-emission plot printed at peak detection mode, and there are more than 6 highest emissions relative to limit recorded. The plot is kept as the original data, not included in test report.

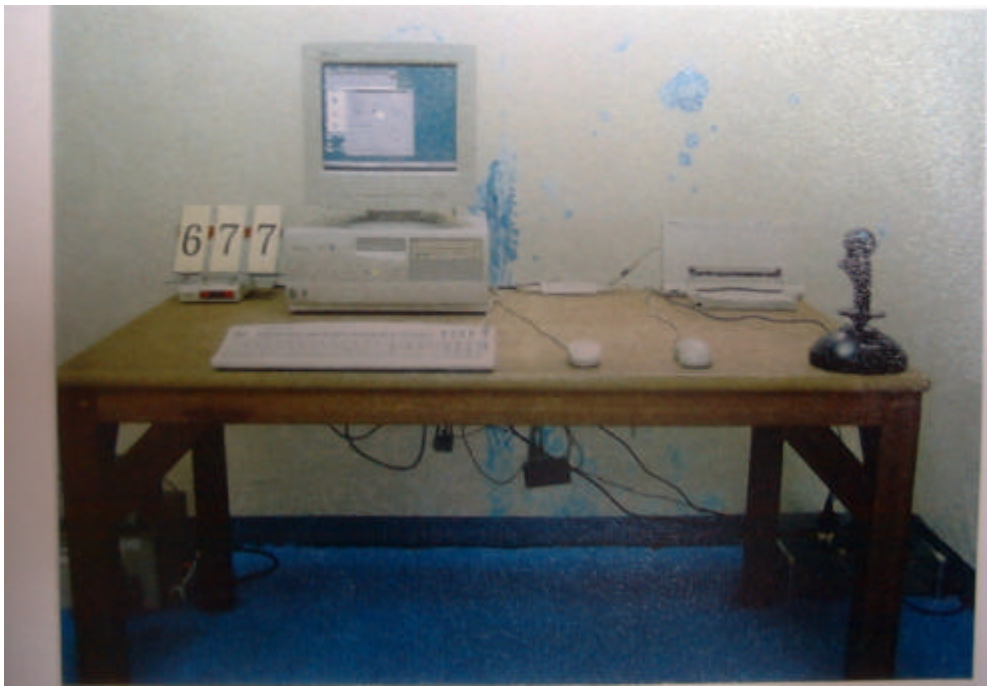
## *List of test Instrument:*

| | | | | **Calibration Date** | |
|---|---|---|---|---|---|
| Instrument Name | Model No. | Brand | Serial No. | Last time | Next time |
| Spectrum analyzer | 8594EM | H P | 3710A00279 | 01/07/99 | 01/07/00 |
| LISN (EUT) | 3825/2 | EMCO | 9411-2284 | 05/20/99 | 05/20/00 |
| LISN (Support E.) | AC3-001 | TRC | - - - - - - - - - | 05/20/99 | 05/20/00 |
| Preamplifier | AC3-002 | TRC | - - - - - - - - - | 05/20/99 | 05/20/00 |
| Line switch box | AC3-003 | TRC | - - - - - - - - - | 05/20/99 | 05/20/00 |

The level of confidence of 95%, the uncertainty of measurement of conducted emission is ± 2.4 dB.

***Test Result: Pass (Appendix A)***

## *Conducted Test Placement: (Photographs)*




# *Chapter 3 Radiated emission test*

## *Test condition and setup:*

***Pretest:*** Prior to the final test (OATS test), the EUT is placed in a anechoic chamber and scan from 30MHz to 1GHz. This is done to ensure the radiation exactly emits form the EUT.

***Final test:*** Final radiation measurements are made on a **10 - meter,** open-field test site. The EUT is placed on a nonconductive table that is 0.8m height, the top surface is 1.0 x 1.5 meter. The placement is according to CISPR 22.

The spectrum is examined from 30 MHz to 1000 MHz measured by HP spectrum.

The EMCO whole range Antenna is used to measure frequency from 30 MHz to 1GHz. The final test is used the spectrum HP 8594EM.

Measure more than six top marked frequencies generated form pretest by computer step by step at each frequency. The EUT is rotated 360 degrees, and antenna is raised and lowered from 1 to 4 meters to find the maximum emission levels. The antenna is used with both horizontal and vertical polarization.

Appropriated preamplifier that is made by TRC is used for improving sensitivity and precautions is taken to avoid overloading. The spectrum analyzer's 6dB bandwidth is set to 120 KHz, and the EUT is measured at quasi-peak mode.

If the emission is close to the frequency band of ambient, the data will be rechecked by the tester and the corrected data will be written in the test data sheet. If the emission is just within the ambient, the data from anechoic chamber will be taken as the final data.

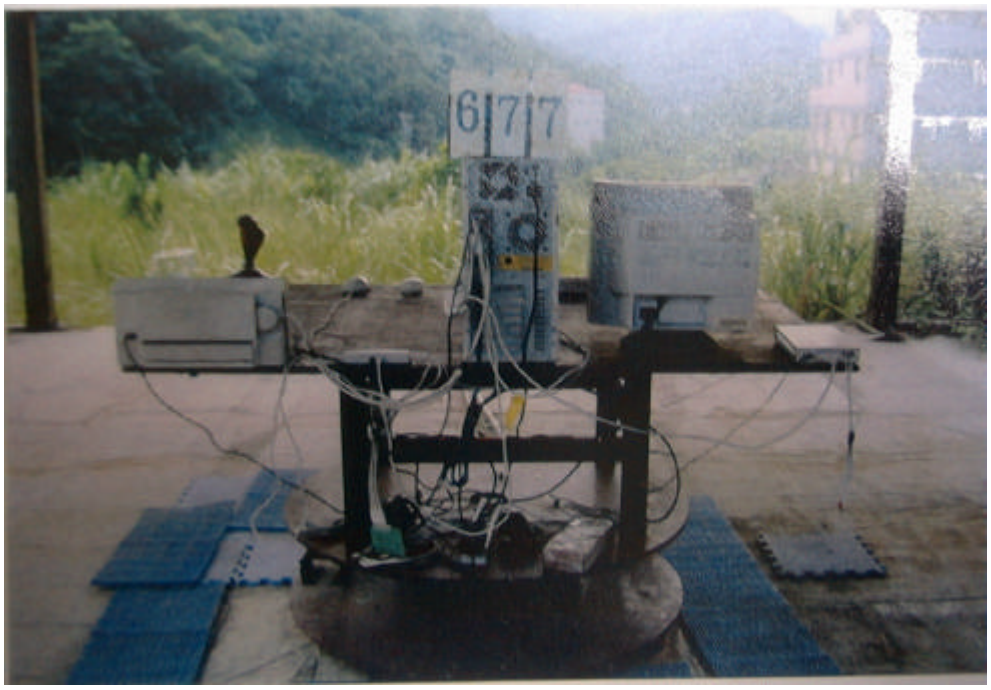
## *List of test Instrument:*

| | | | | **Calibration Date** | |
|---|---|---|---|---|---|
| Instrument Name | Model No. | Brand | Serial No. | Last time | Next time |
| Spectrum analyzer | 8594EM | H P | 3619A00198 | 11/17/98 | 11/17/99 |
| RF Pre-selector | AC4-001 | TRC | - - - - - - - - - | 05/20/99 | 05/20/00 |
| Antenna (30M-2G Hz) | 3141 | EMCO | 9711-1076 | 12/17/98 | 12/17/99 |
| Open test side (Antenna, Amplify, cable calibrated together) | | | | 05/20/99 | 05/20/00 |

The level of confidence of 95%, the uncertainty of measurement of radiated emission is ± 4.96 dB.

***Test Result: Pass (Appendix B)***

## *Radiated Test Placement: (Photographs)*

# *Appendix A*

## *Conducted Emission Test Result: (Power: AC Adpapter)*

Testing room : Temperature : 26 ° C Humidity : 60 % RH

***Line 1***

| FREQUENCY ( KHz) | READING AMPLITUDE | | | LIMIT | | MARGIN ( dB ) |
|---|---|---|---|---|---|---|
| | Peak (dBμV/m) | Quasi-peak (dBμV/m) | Average (dBμV/m) | Quasi-Peak (dBμV/m) | Average (dBμV/m) | |
| 223 | 41.66 | ***.** | ***.** | 63.91 | 53.91 | -12.25 |
| 446 | 39.58 | ***.** | ***.** | 57.54 | 47.54 | -7.96 |
| 671 | 35.47 | ***.** | ***.** | 56.00 | 46.00 | -10.53 |
| 1120 | 36.26 | ***.** | ***.** | 56.00 | 46.00 | -9.74 |
| 1340 | 36.72 | ***.** | ***.** | 56.00 | 46.00 | -9.28 |
| 1564 | 35.69 | ***.** | ***.** | 56.00 | 46.00 | -10.31 |
| 2000 | 36.37 | ***.** | ***.** | 56.00 | 46.00 | -9.63 |
| 3560 | 35.38 | ***.** | ***.** | 56.00 | 46.00 | -10.62 |
| 3780 | 32.55 | ***.** | ***.** | 56.00 | 46.00 | -13.45 |
| 12100 | 36.50 | ***.** | ***.** | 60.00 | 50.00 | -13.50 |

***Line 2***

| FREQUENCY ( KHz) | READING AMPLITUDE | | | LIMIT | | MARGIN ( dB ) |
|---|---|---|---|---|---|---|
| | Peak (dBμV/m) | Quasi-peak (dBμV/m) | Average (dBμV/m) | Quasi-Peak (dBμV/m) | Average (dBμV/m) | |
| 225 | 48.13 | ***.** | ***.** | 63.86 | 53.86 | -5.73 |
| 446 | 44.52 | ***.** | ***.** | 57.54 | 47.54 | -3.02 |
| 675 | 41.59 | ***.** | ***.** | 56.00 | 46.00 | -4.41 |
| 898 | 38.58 | ***.** | ***.** | 56.00 | 46.00 | -7.42 |
| 1120 | 42.11 | ***.** | ***.** | 56.00 | 46.00 | -3.89 |
| 1340 | 40.44 | ***.** | ***.** | 56.00 | 46.00 | -5.56 |
| 1564 | 33.05 | ***.** | ***.** | 56.00 | 46.00 | -12.95 |
| 2000 | 38.49 | ***.** | ***.** | 56.00 | 46.00 | -7.51 |
| 3560 | 35.31 | ***.** | ***.** | 56.00 | 46.00 | -10.69 |
| 24120 | 36.56 | ***.** | ***.** | 60.00 | 50.00 | -13.44 |

* The reading amplitudes are all under average limit.

## *Conducted Emission Test Result: (Power: USB port of PC)*

Testing room : Temperature : 26 ° C Humidity : 60 % RH

### ***Line 1***

| FREQUENCY ( KHz) | READING AMPLITUDE | | | LIMIT | | MARGIN ( dB ) |
|---|---|---|---|---|---|---|
| | Peak (dBμV/m) | Quasi-peak (dBμV/m) | Average (dBμV/m) | Quasi-Peak (dBμV/m) | Average (dBμV/m) | |
| 197 | 45.10 | ***.** | ***.** | 64.66 | 54.66 | -9.56 |
| 299 | 37.05 | ***.** | ***.** | 61.74 | 51.74 | -14.69 |
| 310 | 34.95 | ***.** | ***.** | 61.43 | 51.43 | -16.48 |
| 496 | 28.18 | ***.** | ***.** | 56.11 | 46.11 | -17.93 |
| 593 | 29.68 | ***.** | ***.** | 56.00 | 46.00 | -16.32 |
| 692 | 27.68 | ***.** | ***.** | 56.00 | 46.00 | -18.32 |
| 828 | 27.67 | ***.** | ***.** | 56.00 | 46.00 | -18.33 |
| 1084 | 27.66 | ***.** | ***.** | 56.00 | 46.00 | -18.34 |
| 1478 | 27.44 | ***.** | ***.** | 56.00 | 46.00 | -18.56 |
| 12100 | 39.37 | ***.** | ***.** | 60.00 | 50.00 | -10.63 |

### ***Line 2***

| FREQUENCY ( KHz) | READING AMPLITUDE | | | LIMIT | | MARGIN ( dB ) |
|---|---|---|---|---|---|---|
| | Peak (dBμV/m) | Quasi-peak (dBμV/m) | Average (dBμV/m) | Quasi-Peak (dBμV/m) | Average (dBμV/m) | |
| 197 | 43.21 | ***.** | ***.** | 64.66 | 54.66 | -11.45 |
| 211 | 37.29 | ***.** | ***.** | 64.26 | 54.26 | -16.97 |
| 215 | 37.95 | ***.** | ***.** | 64.14 | 54.14 | -16.19 |
| 299 | 34.04 | ***.** | ***.** | 61.74 | 51.74 | -17.70 |
| 331 | 32.03 | ***.** | ***.** | 60.83 | 50.83 | -18.80 |
| 828 | 29.37 | ***.** | ***.** | 56.00 | 46.00 | -16.63 |
| 1882 | 27.11 | ***.** | ***.** | 56.00 | 46.00 | -18.89 |
| 1974 | 28.93 | ***.** | ***.** | 56.00 | 46.00 | -17.07 |
| 12100 | 38.42 | ***.** | ***.** | 60.00 | 50.00 | -11.58 |
| 18080 | 31.97 | ***.** | ***.** | 60.00 | 50.00 | -18.03 |

* The reading amplitudes are all under average limit.

# *Appendix B*

## *Radiated Emission Test Result: (Horizontal)*

Test Conditions:

Testing room : Temperature : 26 ° C Humidity : 30 % RH

Testing site : Temperature : 24 ° C Humidity : 41 % RH

| Frequency | Reading Amplitude | Ant. Heigh | Table | Correction Factors | Corrected Amplitude | Class B limit | Margin |
|---|---|---|---|---|---|---|---|
| MHz | dBμV | m | degree | dB/m | dBμV/m | dBμV/m | dB |
| 46.290 | 36.70 | 2.55 | 78 | -22.06 | 14.64 | 30.00 | -15.36 |
| 96.100 | 49.48 | 0.99 | 60 | -24.56 | 24.92 | 30.00 | -5.08 |
| *** | | | | | | | |
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| | | | | | | | |

Note:

1.Margin = Amplitude - limit, if margin is minus means under limit.

2.Corrected Amplitude = Reading Amplitude + Correction Factors

3.Correction factor = Antenna factor + ( Cable Loss - Amplitude gain)

(For example: 30MHz correction factor = 15.5 + (-15.26) = 0.24 dB/m)

## *Radiated Emission Test Result: (Vertical)*

| Frequency | Reading Amplitude | Ant. Heigh | Table | Correction Factors | Corrected Amplitude | Class B limit | Margin |
|---|---|---|---|---|---|---|---|
| MHz | dBμV | m | degree | dB/m | dBμV/m | dBμV/m | dB |
| 30.910 | 42.47 | 0.99 | 162 | -23.43 | 19.04 | 30.00 | -10.96 |
| 36.260 | 44.84 | 0.99 | 210 | -23.02 | 21.82 | 30.00 | -8.18 |
| 48.100 | 39.92 | 2.50 | 97 | -21.93 | 17.99 | 30.00 | -12.01 |
| 120.230 | 45.28 | 0.99 | 328 | -22.01 | 23.27 | 30.00 | -6.73 |
| 142.000 | 44.85 | 2.50 | 3 | -20.95 | 23.90 | 30.00 | -6.10 |
| 144.470 | 44.59 | 4.02 | 341 | -20.69 | 23.90 | 30.00 | -6.10 |
| *** | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

***Final statement:***

***This test report, measurements made by TRC are traceable to the NIST.***

美芙
李維彬 先生
To: 碩訊

# *Appendix C*

## *Modification List:*

1. C9 remove, but layout can reserved, or make modify connect ground of C9 to Pin 7 or Pin 27.
2. Insert a TOKIN N2012Z601 between Pin 3/25 of U2 and VCC-33.
3. Insert a TOKIN N2012Z601 just from the collector of Q5.
4. L19, L18, L16, L12 = TOKIN N2012Z601

***Please refer to the photograph of EUT***

## *Statement of Applicant:*

***I acknowledge that the modifications made to the EUT for compliance during testing will be incorporated into mass production units.***

***Mfg.: Unixtar Technology Inc.***

**By :** Landy Lee ***Mr. 李維彬*** ***Date: MAR. 27, 2000***

***Signature***