

APPLICATION FOR CERTIFICATION
On Behalf of
Cybiko Inc.
Wireless Entertainment System

Model : CY6411

FCC ID OU2CY6411

Low Power Transceiver / Equipment Code: DXT (FCC Fee \$940)

60 Channel TX 903.2 ~ 926.8 MHz: Certification

60 Channel RX 903.2 ~ 926.8 MHz: Verification

Class B Computing Device Peripheral: DoC

Prepared for : Cybiko Inc.
1582 Lenox CT. Bartlett,
Illinois 60103, U.S.A.

Prepared By : Taiwan Tokin EMC Eng. Corp.
No. 53-11, Tin-Fu Tsun, Lin-Kou,
Taipei Hsien, Taiwan, R.O.C.

Tel: (02) 2609-9301 / 2609-2133

| | |
|----------------|--------------------|
| File Number | ATM-G00020 |
| Report Number | TTEMC-F20008 |
| Date of Test | Jan. 20 / 21, 2000 |
| Date of Report | Jan. 21, 2000 |

TABLE OF CONTENTS

| Description | Page |
|--|-----------|
| Test Report Certification | 3 |
| 1.GENERAL INFORMATION | 4 |
| 1.1. Description of Device (EUT)..... | 4 |
| 1.2. Tested Supporting System Details | 5 |
| 1.3. Description of Test Facility | 6 |
| 2.POWERLINE CONDUCTED TEST | 7 |
| 2.1. Test Equipment | 7 |
| 2.2. Block Diagram of Test Setup..... | 7 |
| 2.3. Powerline Conducted Emission Limit (§15.107)..... | 8 |
| 2.4. EUT's Configuration during Compliance Measurement | 8 |
| 2.5. Operating Condition of EUT | 8 |
| 2.6. Test Procedure | 9 |
| 2.7. Test Results | 9 |
| 2.8. Line Conducted RF Voltage Measurement Results..... | 10 |
| 3.RADIATED EMISSION TEST | 18 |
| 3.1. Test Equipment | 18 |
| 3.2. Test Setup | 18 |
| 3.3. Radiation Limit (§15.249 & §15.109) | 19 |
| 3.4. EUT's Configuration during Compliance Measurement | 20 |
| 3.5. Operating Condition of EUT | 20 |
| 3.6. Test Procedure | 20 |
| 3.7. Test Results | 21 |
| 3.8. Radiated Emission Noise Measurement Results | 22 |
| 4.DEVIATIONS TO TEST SPECIFICATIONS | 38 |
| 5.PHOTOGRAPHS..... | 39 |
| 5.1. Photos of Powerline Conducted Measurement | 39 |
| 5.2. Photos of Radiated Measurement at Open Field Test Site (30~1000MHz) | 41 |
| 5.3. Photos of Radiated Measurement at Open Field Test Site (Above 1GHz) | 45 |
| APPENDIX (Shape of Fundamental Frequency)..... | 46 |

TEST REPORT CERTIFICATION

| | |
|-----------------|-------------------------------|
| Applicant | Cybiko Inc. |
| Manufacturer | Cybiko Inc. |
| FCC ID | OU2CY6411 |
| EUT Description | Wireless Entertainment System |
| | (A) MODEL NO. CY6411 |
| | (B) SERIAL NO. N/A |
| | (C) POWER SUPPLY DC 6V |

Measurement Procedure Used:

FCC RULES AND REGULATIONS PART 15 SUBPART B & C, OCTOBER 1998
AND FCC / ANSI C63.4-1992

The device described above was tested by TAIWAN TOKIN EMC ENG. CORP. to determine the maximum emission levels emanating from the device. The maximum emission levels were compared to the FCC Part 15 subpart B & C limits both radiated and conducted emissions.

The measurement results are contained in this test report and TAIWAN TOKIN EMC ENG. CORP. is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT to be technically compliant with the FCC official limits.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of Taiwan Tokin EMC Eng. corp.

Date of Test : Jan. 20 / 21, 2000

Prepared by :



(CHERRY WANG)

Test Engineer :



(ALLEN WANG)

Approve & Authorized Signer :



(JACKIE DENG)

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

| | |
|---------------------------|---|
| Description | Wireless Entertainment System |
| Model Number | CY6411 |
| FCC ID | OU2CY6411 |
| Applicant | Cybiko Inc. 1582 Lenox CT. Bartlett, Illinois 60103, U.S.A. |
| Manufacturer | Inventec Besta Co., Ltd. 10FL., No. 36, Lane 513, Rui Guang Road, Nei Hu Dist, Taipei 114, Taiwan, R.O.C. |
| Fundamental Frequency | 903.2 ~ 926.8MHz (60 Channels) |
| Signal Cable (link PC) | Non-Shielded, Detachable, 1.0m Bonded two ferrite cores |
| Power Adapter | CYBIKO, M/N CY6411-AD Input: 120V AC, 60Hz Output: 6V DC, 200mA Cord: Non-Shielded, Undetachable, 1.75m Bonded a ferrite core |
| Date of Receipt of Sample | Jan. 12, 2000 |
| Date of Test | Jan. 20 / 21, 2000 |

Remark:

The EUT is a handheld transceiver for entertainment. There are a superheterodyne receiver and a FM transmitter in the same device.

The EUT could be used to transmit and receive message with another same device, and communicated to personal computer through serial port of PC.

60 Channel TX 903.2 ~ 926.8 MHz: Certification
 60 Channel RX 903.2 ~ 926.8 MHz: Verification
 Class B Computing Device Peripheral: DoC

1.2. Tested Supporting System Details

1.2.1. PERSONAL COMPUTER

| | |
|--------------------|--|
| Mother Board | ASUS, M/N P5A FCC ID. By DoC |
| CPU | AMD K6-2 266MHz |
| Case | Enlight, M/N EN7105C |
| S.P.S. | SPI, M/N FSP250-61GT S/N W13562644 |
| Floppy Driver 3.5" | Mitsumi, M/N D353M3 |
| Hard Disk Driver | Seagate, M/N ST34321A S/N VTH85652 |
| VGA Card | ELSA, M/N Gloria-Synergy FCC ID KJGP2EASY |
| Power Cord | Non-Shielded, Detachable, 1.8m |

1.2.2. COLOR MONITOR

| | |
|---------------|----------------------------------|
| Model Number | PM36B |
| Serial Number | W821111454 |
| FCC ID | IIBTC1 |
| Manufacturer | Funai Electric Company of Taiwan |
| Data Cable | Shielded, Undetachable, 1.2m |
| Power Cord | Non-Shielded, Detachable, 1.5m |

1.2.3. KEYBOARD

| | |
|---------------|------------------------------|
| Model Number | 5121 |
| Serial Number | J83300817 |
| FCC ID | E5XKBM104M10UC |
| Manufacturer | Behavior Tech Computer Corp. |
| Data Cable | Shielded, Undetachable, 1.0m |

1.2.4. PRINTER

| | |
|---------------|----------------------------------|
| Model Number | 2225C |
| Serial Number | 2526S40437 |
| FCC ID | BS46XU2225C |
| Manufacturer | Hewlett Packard |
| Power Cord | Non-Shielded, Undetachable, 1.8m |
| Data Cable | Shielded, Detachable, 1.2m |

1.2.5. PS2 MOUSE

| | |
|---------------|----------------------------------|
| Model Number | M-S35 |
| Serial Number | LZA82103128 |
| FCC ID | DZL211029 |
| Manufacturer | Logitech |
| Data Cable | Non-Shielded, Undetachable, 1.8m |

1.2.6. MODEM

| | |
|---------------|--|
| Model Number | DM-1414 |
| Serial Number | 980034400 |
| FCC ID | IFAXDM1414 |
| Manufacturer | Aceex |
| Data Cable | Shielded, Detachable, 1.2m |
| Power Adapter | Amigo, Model AM-91000A Non-Shielded, Undetachable, 1.8m |

1.2.7. USB MOUSE #1

| | |
|---------------|------------------------------|
| Model Number | CREUBB |
| Serial Number | N/A |
| FCC ID | NHM-CREUBE |
| Manufacturer | CRE Technology Co., Ltd. |
| Data Cable | Shielded, Undetachable, 1.8m |

1.2.8. USB MOUSE #2

| | |
|---------------|------------------------------|
| Model Number | CREUBB |
| Serial Number | N/A |
| FCC ID | NHM-CREUBE |
| Manufacturer | CRE Technology Co., Ltd. |
| Data Cable | Shielded, Undetachable, 1.8m |

1.3. Description of Test Facility

| | |
|---------------------------------------|---|
| Site Description (No. 1 Open Site) | Nov. 23, 1999 Re-file on Federal Communication Commission FCC Engineering Laboratory 7435 Oakland Mills Road Columbia, MD 21046, U.S.A. |
| Name of Firm | Taiwan Tokin EMC Eng. Corp. |
| Site Location | No. 53-11, Tin-Fu Tsun, Lin-Kou, Taipei Hsien, Taiwan, R.O.C. |
| NVLAP lab. Code | 200077-0 |

2. POWERLINE CONDUCTED TEST

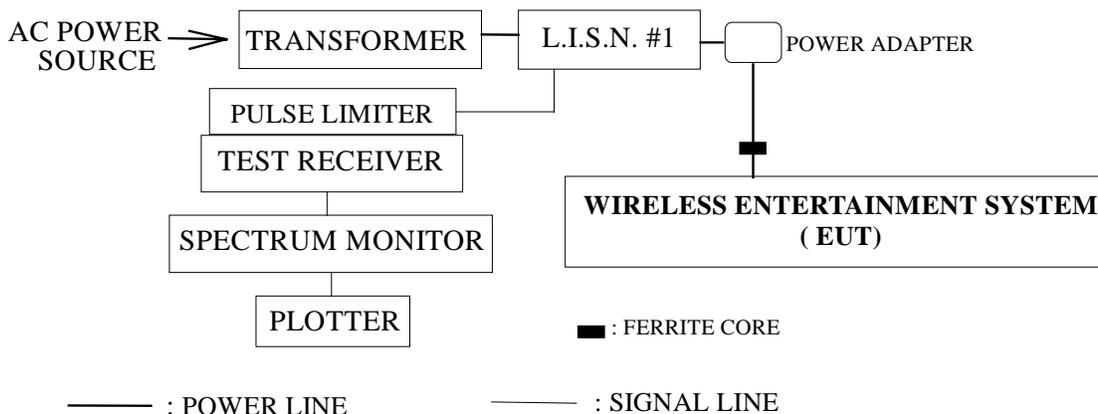
2.1. Test Equipment

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

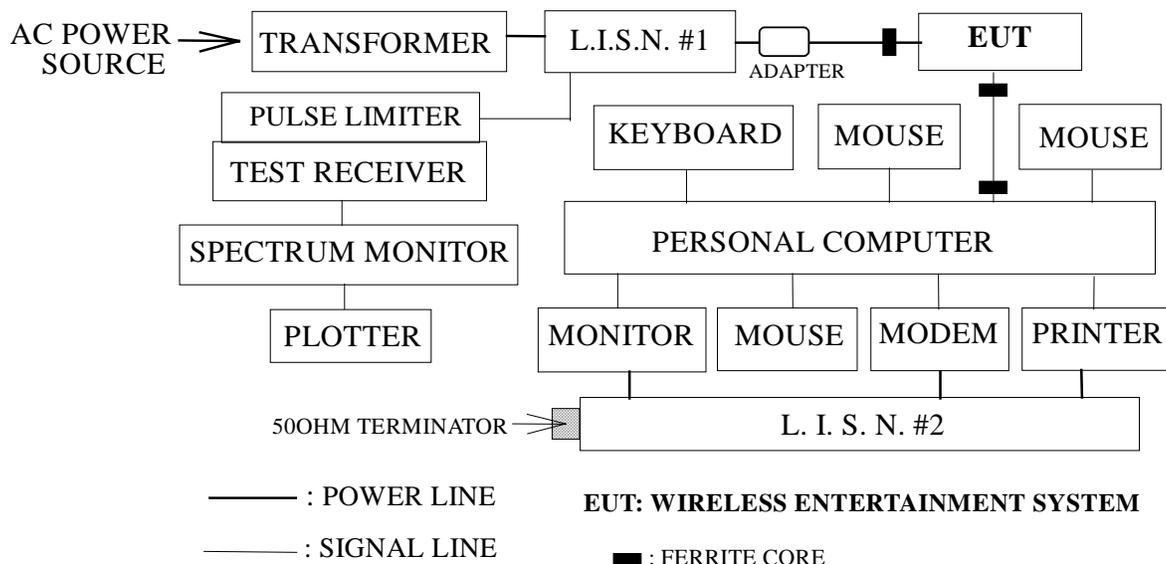
| Item | Type | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|------|---------------|-----------------|-----------|------------|--------------|---------------|
| 1. | Test Receiver | Rohde & Schwarz | ESH3 | 880647/035 | Jun. 19, 99' | 1 Year |
| 2. | L.I.S.N. # 1 | Kyoritsu | KNW-407 | 8-881-13 | Apr. 21, 99' | 1 Year |
| 3. | L.I.S.N. # 2 | Kyoritsu | KNW-407 | 8-855-9 | Apr. 21, 99' | 1 Year |

2.2. Block Diagram of Test Setup

2.2.1. For EUT Only (Transmitting / Receiving Mode)



2.2.2. For EUT Link PC



2.3. Powerline Conducted Emission Limit (§15.107)

| Frequency | Maximum RF Line Voltage | |
|-----------------|-------------------------|------------------------|
| | μV | $\text{dB}\mu\text{V}$ |
| 0.45MHz ~ 30MHz | 250 | 48 |

REMARKS RF LINE VOLTAGE ($\text{dB}\mu\text{V}$) = $20 \log$ RF LINE VOLTAGE (μV)

2.4. EUT's Configuration during Compliance Measurement

The following equipment were installed on RF LINE VOLTAGE measurement to meet the Commission requirement and operating in a manner which tended to maximize its emission characteristics in a normal application.

2.4.1. Wireless Entertainment System (EUT)

| | |
|---------------------------|---|
| Model Number | CY6411 |
| Serial Number | N/A |
| FCC ID. | OU2CY6411 |
| Manufacturer | Inventec Besta Co., Ltd. |
| Signal Cable (link PC) | Non-Shielded, Detachable, 1.0m Bonded two ferrite cores |
| Power Adapter | CYBIKO, M/N CY6411-AD Input: 120V AC, 60Hz Output: 6V DC, 200mA Cord: Non-Shielded, Undetachable, 1.75m Bonded a ferrite core |

2.4.2. Supporting System As in Section 1.2

2.5. Operating Condition of EUT

- 2.5.1. Setup the EUT as shown on 2.2
- 2.5.2. Turn on the power of all equipment.
- 2.5.3. Transmitting Mode: It is made to transmitting situation when measure the conducted voltage.
- 2.5.4. Receiving Mode: It is made to receiving situation when measure the conducted voltage.
- 2.5.5. Link PC: Setup the EUT to link personal computer. The EUT sent out message (Word or Graphic) to personal computer continually.
(The testing program is provided by applicant)

2.6. Test Procedure

The EUT's Power Adapter was connected to the power mains through a line impedance stabilization network (L.I.S.N.# 1). The other peripheral devices power cord connected to the power mains through a line impedance stabilization network (L.I.S.N. # 2). This provided a 50 ohm coupling impedance for the measuring equipment. (Please refer to the block diagram of the test setup and photographs.)

Both sides of A.C. line were checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables were changed according to FCC ANSI C63.4-1992 on conducted measurement.

The bandwidth of the R&S Test Receiver ESH3 was set at 10KHz.

The frequency range from 450KHz to 30MHz was checked.

EUT with four kinds of test modes were done during conducted measurement and all the test results are listed in section 2.8.

The details of test modes are as follows:

- (1) Transmitting Mode (Channel 1 Low Frequency 903.2MHz)
- (2) Transmitting Mode (Channel 60 High Frequency 926.8MHz)
- (3) Receiving Mode
- (4) EUT Link PC

2.7. Test Results

PASSED. Please refer to the following pages.

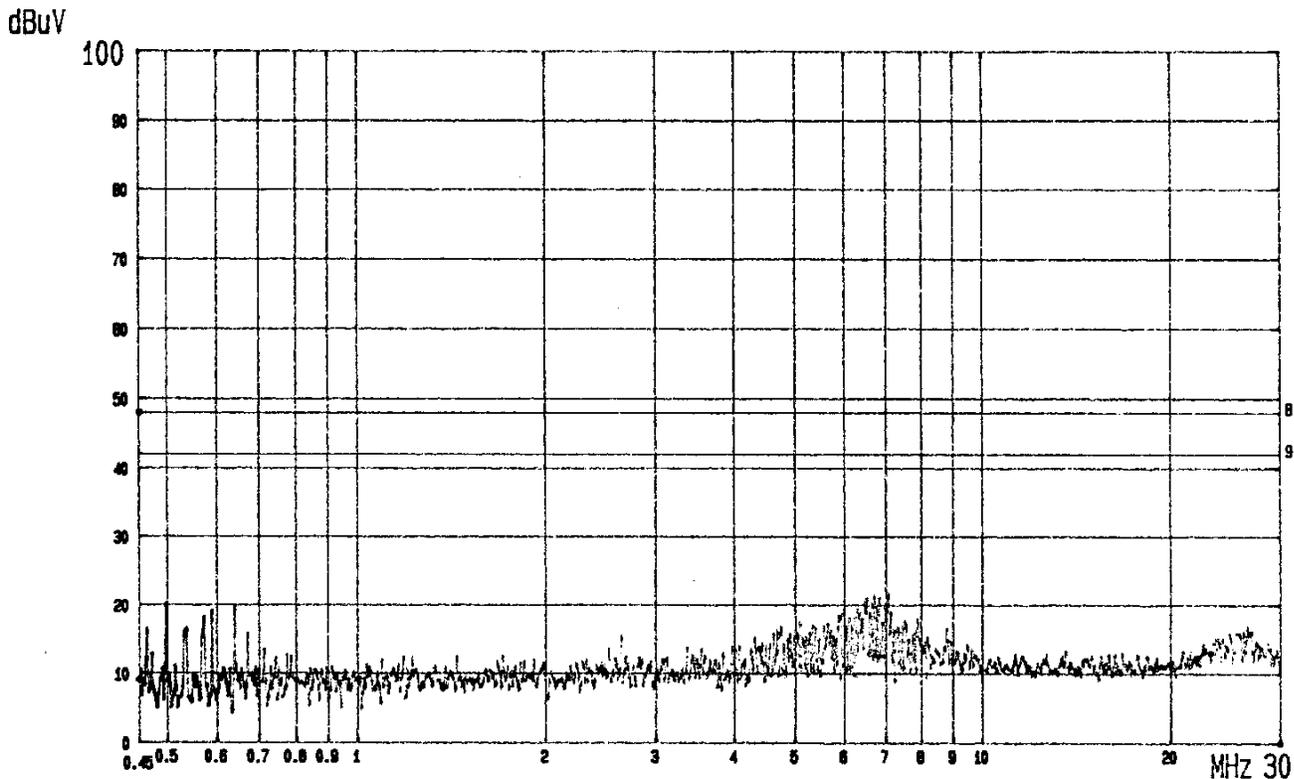
2.8. Line Conducted RF Voltage Measurement Results

The frequency range from 450KHz to 30 MHz was investigated.
All emissions not reported below are too low against the prescribed limits.

| | | | |
|-----------------------|--------------------------------------|-------------|-------------|
| Date of Test | <u>Jan. 20, 2000</u> | Temperature | <u>14.4</u> |
| EUT | <u>Wireless Entertainment System</u> | Humidity | <u>61</u> |
| Test Mode | <u>Transmitting Mode</u> | | |
| Fundamental Frequency | <u>903.2MHz (Channel: 1)</u> | | |

| Frequency (MHz) | Factor dB | Reading (dB μ V) | | Measurement (dB μ V) | | Limits (dB μ V) | Margin dB | |
|--------------------|--------------|-------------------------|------|-----------------------------|------|------------------------|--------------|------|
| | | VA | VB | VA | VB | | VA | VB |
| 0.4852 | 0.5 | 19.3 | 18.9 | 19.8 | 19.4 | 48.0 | 28.2 | 28.6 |
| 0.5336 | 0.5 | 18.2 | * | 18.7 | * | 48.0 | 29.3 | * |
| 0.5349 | 0.5 | * | 17.8 | * | 18.3 | 48.0 | * | 29.7 |
| 0.6184 | 0.5 | 18.0 | * | 18.5 | * | 48.0 | 29.5 | * |
| 0.6208 | 0.5 | * | 17.3 | * | 17.8 | 48.0 | * | 30.2 |
| 0.9395 | 0.5 | 12.4 | * | 12.9 | * | 48.0 | 35.1 | * |
| 0.9407 | 0.5 | * | 12.1 | * | 12.6 | 48.0 | * | 35.4 |
| 5.0338 | 0.8 | 16.6 | * | 17.4 | * | 48.0 | 30.6 | * |
| 5.1134 | 0.8 | * | 16.5 | * | 17.3 | 48.0 | * | 30.7 |
| 6.9877 | 0.8 | 18.8 | * | 19.6 | * | 48.0 | 28.4 | * |
| 7.0085 | 0.8 | * | 18.4 | * | 19.2 | 48.0 | * | 28.8 |

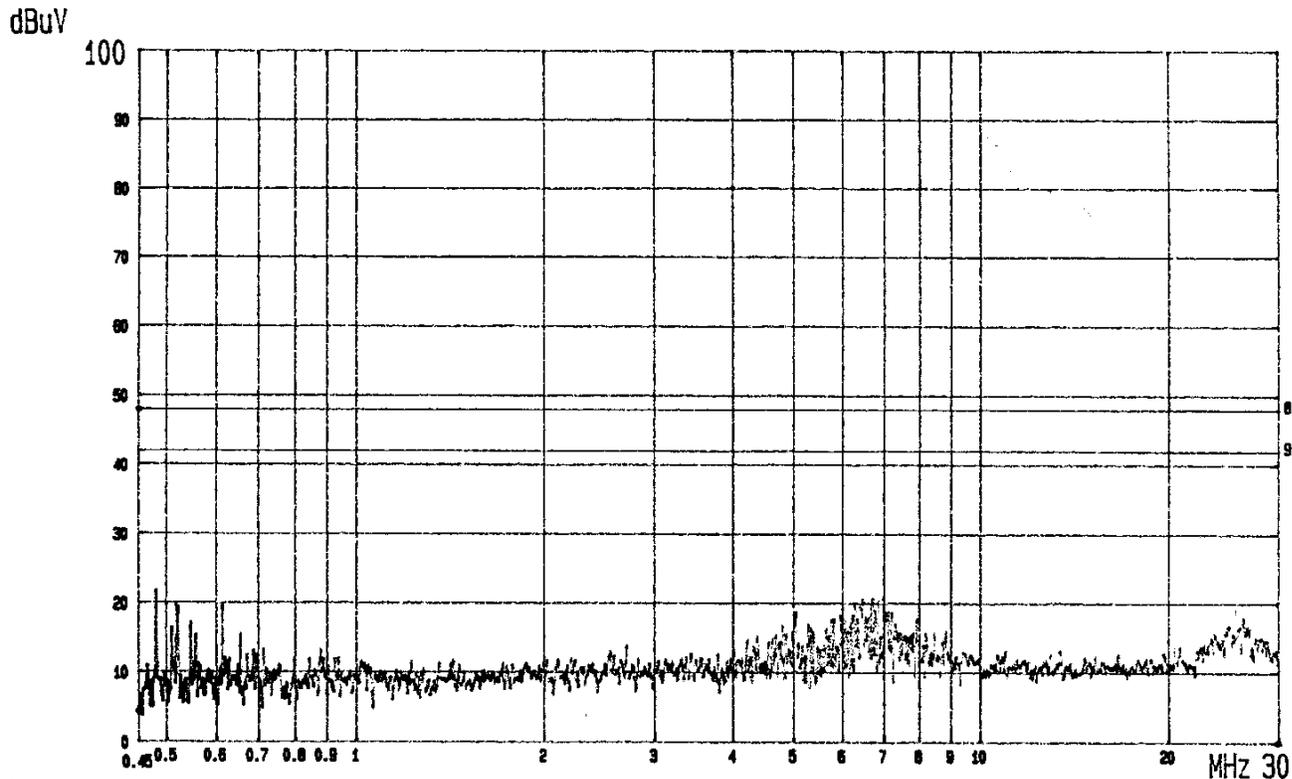
- Remark
1. All reading are Quasi-Peak values.
 2. Factor = Insertion Loss + Cable Loss
 3. The worst emission was detected at 0.4852MHz with corrected signal level of 19.8dB μ V (limit is 48dB μ V) when the VA side of the EUT's power was connected to L.I.S.N.



CYBIKO
LINE: VA.

EUT: WIRELESS ENTERTAINMENT SYSTEM M/N: CY6411
MEMO: TRANSMITTING; CHANNEL 3

120V/60Hz PAGE: 02.
(PEAK VALUE) TTEMC.



CYBIKO
LINE: VB.

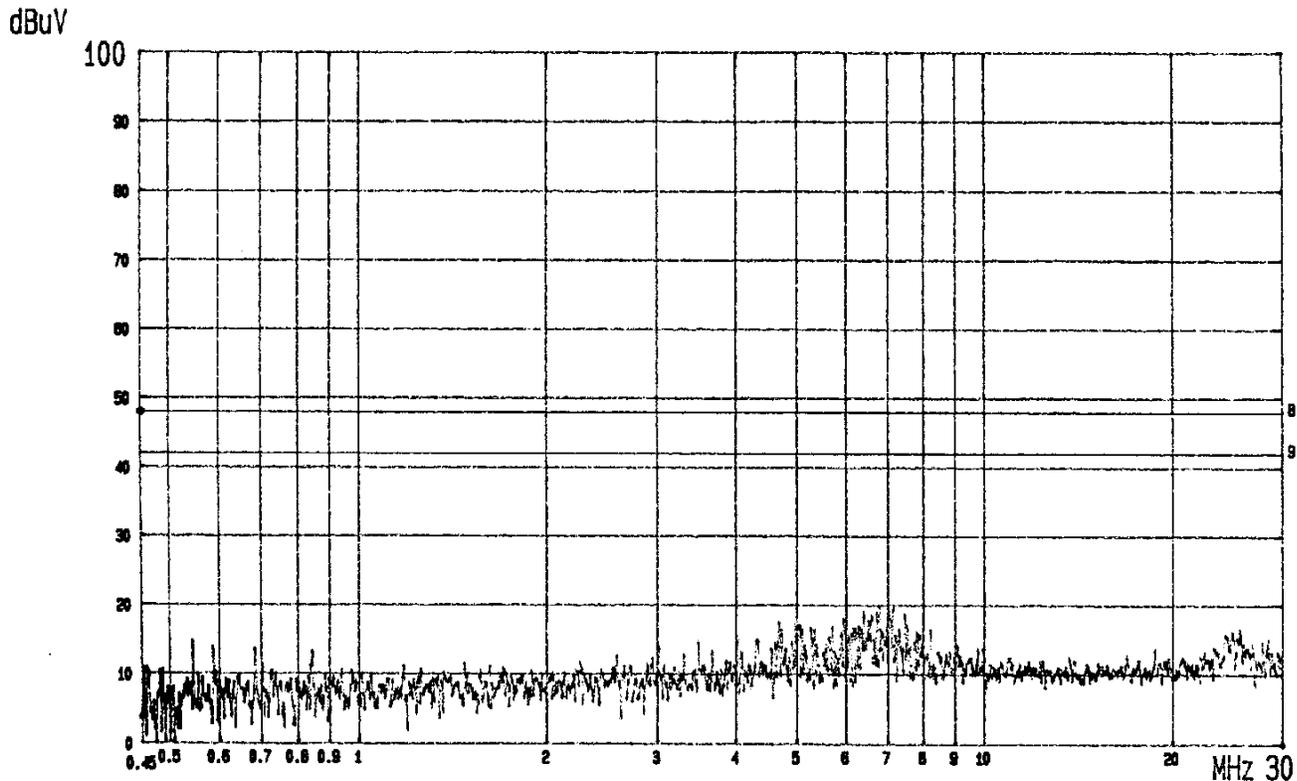
EUT: WIRELESS ENTERTAINMENT SYSTEM M/N: CY6411
MEMO: TRANSMITTING; CHANNEL 3

120V/60Hz PAGE: 01.
(PEAK VALUE) TTEMC.

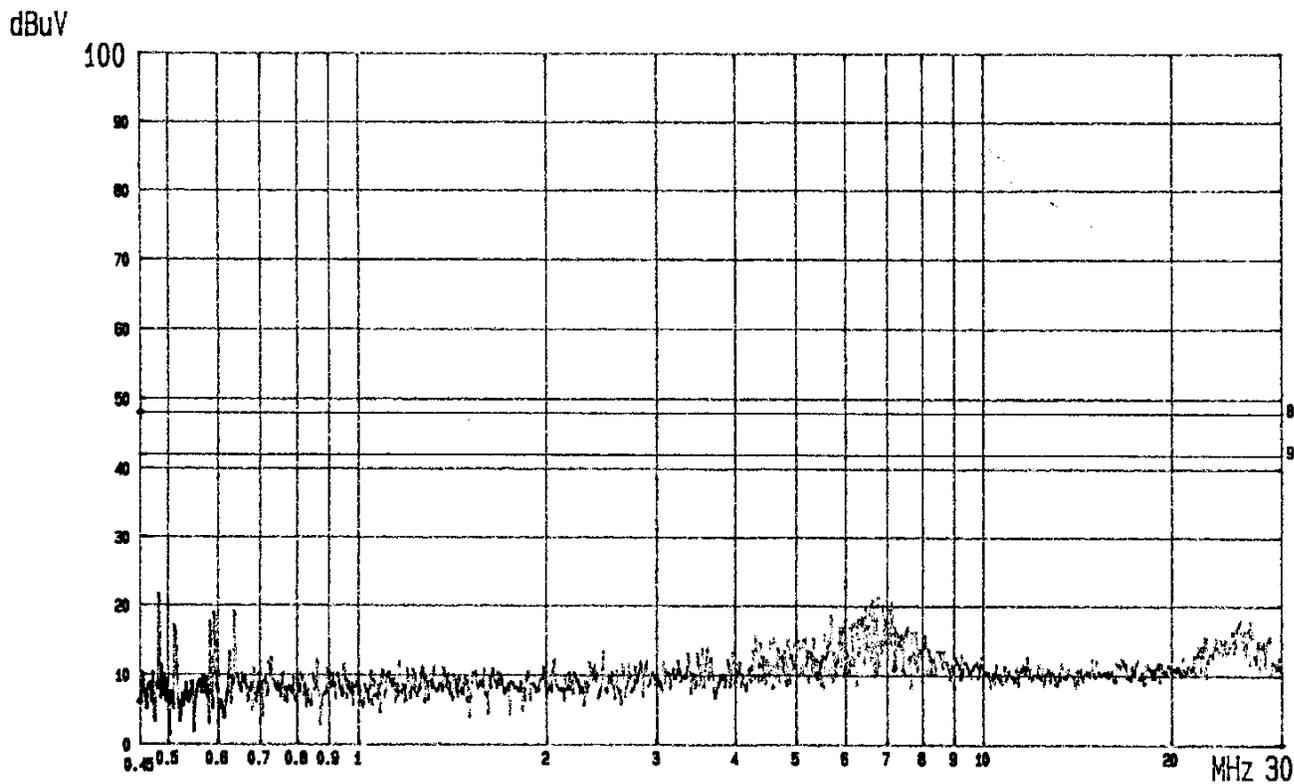
| | | | |
|-----------------------|--------------------------------------|-------------|-------------|
| Date of Test | <u>Jan. 20, 2000</u> | Temperature | <u>14.4</u> |
| EUT | <u>Wireless Entertainment System</u> | Humidity | <u>61</u> |
| Test Mode | <u>Transmitting Mode</u> | | |
| Fundamental Frequency | <u>926.8MHz (Channel: 60)</u> | | |

| Frequency (MHz) | Factor dB | Reading (dB μ V) | | Measurement (dB μ V) | | Limits (dB μ V) | Margin dB | |
|--------------------|--------------|-------------------------|-------------|-----------------------------|-------------|------------------------|--------------|-------------|
| | | VA | VB | VA | VB | | VA | VB |
| 0.4833 | 0.5 | * | 19.2 | * | 19.7 | 48.0 | * | 28.3 |
| 0.5298 | 0.5 | * | 16.8 | * | 17.3 | 48.0 | * | 30.7 |
| 0.5450 | 0.5 | 17.6 | * | 18.1 | * | 48.0 | 29.9 | * |
| 0.5904 | 0.5 | * | 17.2 | * | 17.7 | 48.0 | * | 30.3 |
| 0.6003 | 0.5 | 16.5 | * | 17 | * | 48.0 | 31 | * |
| 0.6417 | 0.5 | * | 17.3 | * | 17.8 | 48.0 | * | 30.2 |
| 0.6895 | 0.5 | 15.8 | * | 16.3 | * | 48.0 | 31.7 | * |
| 0.8345 | 0.5 | 13.9 | * | 14.4 | * | 48.0 | 33.6 | * |
| 5.9894 | 0.8 | 18.5 | * | 19.3 | * | 48.0 | 28.7 | * |
| 6.0105 | 0.8 | * | 18.2 | * | 19 | 48.0 | * | 29 |
| 6.8847 | 0.8 | * | 18.5 | * | 19.3 | 48.0 | * | 28.7 |
| 7.2330 | 0.8 | 17.2 | * | 18 | * | 48.0 | 30 | * |

- Remark
1. All reading are Quasi-Peak values.
 2. Factor = Insertion Loss + Cable Loss
 3. The worst emission was detected at 0.4833MHz with corrected signal level of 19.7dB μ V (limit is 48dB μ V) when the VB side of the EUT's power was connected to L.I.S.N.



| ---
 CYBIKO EUT: WIRELESS ENTERTAINMENT SYSTEM M/N: CY6411 120V/60Hz PAGE: 03.
 LINE: VA. MEMO: TRANSMITTING; CHANNEL 62 (PEAK VALUE) TTEMC.

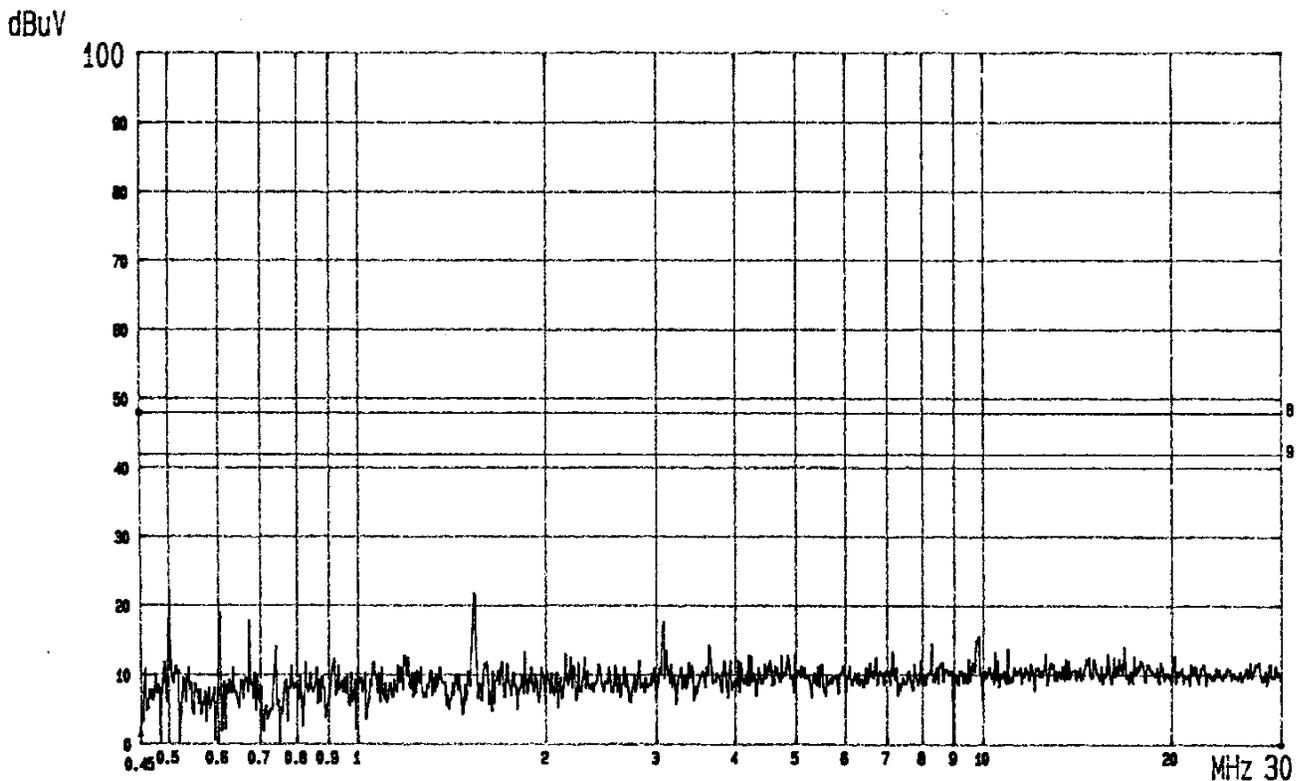


| ---
 CYBIKO EUT: WIRELESS ENTERTAINMENT SYSTEM M/N: CY6411 120V/60Hz PAGE: 04.
 LINE: VB. MEMO: TRANSMITTING; CHANNEL 62 (PEAK VALUE) TTEMC.

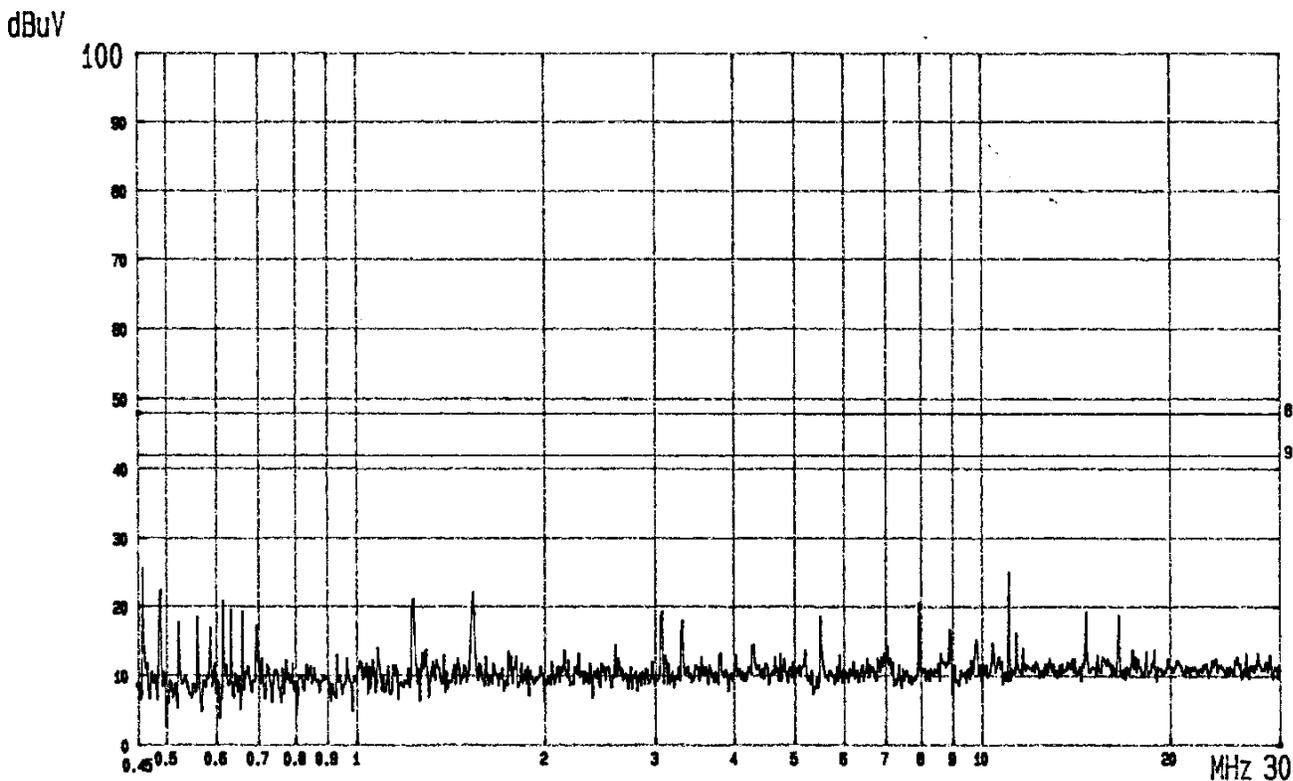
| | | | |
|--------------|-------------------------------|-------------|----|
| Date of Test | Jan. 21, 2000 | Temperature | 16 |
| EUT | Wireless Entertainment System | Humidity | 66 |
| Test Mode | Receiving Mode | | |

| Frequency (MHz) | Factor dB | Reading (dB μ V) | | Measurement (dB μ V) | | Limits (dB μ V) | Margin dB | |
|--------------------|--------------|-------------------------|-------------|-----------------------------|-------------|------------------------|--------------|-------------|
| | | VA | VB | VA | VB | | VA | VB |
| 0.5001 | 0.5 | 14.6 | * | 15.1 | * | 48.0 | 32.9 | * |
| 0.5024 | 0.5 | * | 11.5 | * | 12 | 48.0 | * | 36 |
| 0.6089 | 0.5 | 13.7 | * | 14.2 | * | 48.0 | 33.8 | * |
| 0.6174 | 0.5 | * | 13.7 | * | 14.2 | 48.0 | * | 33.8 |
| 0.6498 | 0.5 | 9.9 | * | 10.4 | * | 48.0 | 37.6 | * |
| 0.9236 | 0.5 | * | 18.0 | * | 18.5 | 48.0 | * | 29.5 |
| 1.5368 | 0.5 | * | 17.0 | * | 17.5 | 48.0 | * | 30.5 |
| 1.5781 | 0.5 | 4.8 | * | 5.3 | * | 48.0 | 42.7 | * |
| 3.0686 | 0.5 | 3.9 | * | 4.4 | * | 48.0 | 43.6 | * |
| 8.8368 | 0.8 | * | 2.4 | * | 3.2 | 48.0 | * | 44.8 |
| 10.0043 | 1.0 | 3.5 | * | 4.5 | * | 48.0 | 43.5 | * |
| 11.0595 | 1.0 | * | 23.1 | * | 24.1 | 48.0 | * | 23.9 |

- Remark
1. All reading are Quasi-Peak values.
 2. Factor = Insertion Loss + Cable Loss
 3. The worst emission was detected at 11.0595MHz with corrected signal level of 24.1dB μ V (limit is 48dB μ V) when the VB side of the EUT's power was connected to L.I.S.N.



CYBIKO EUT: WIRELESS ENTERTAINMENT SYSTEM M/N: CY6411 120V/60Hz PAGE: 08.
LINE: VA. MEMO: RECEIVER (PEAK VALUE) TTEMC.

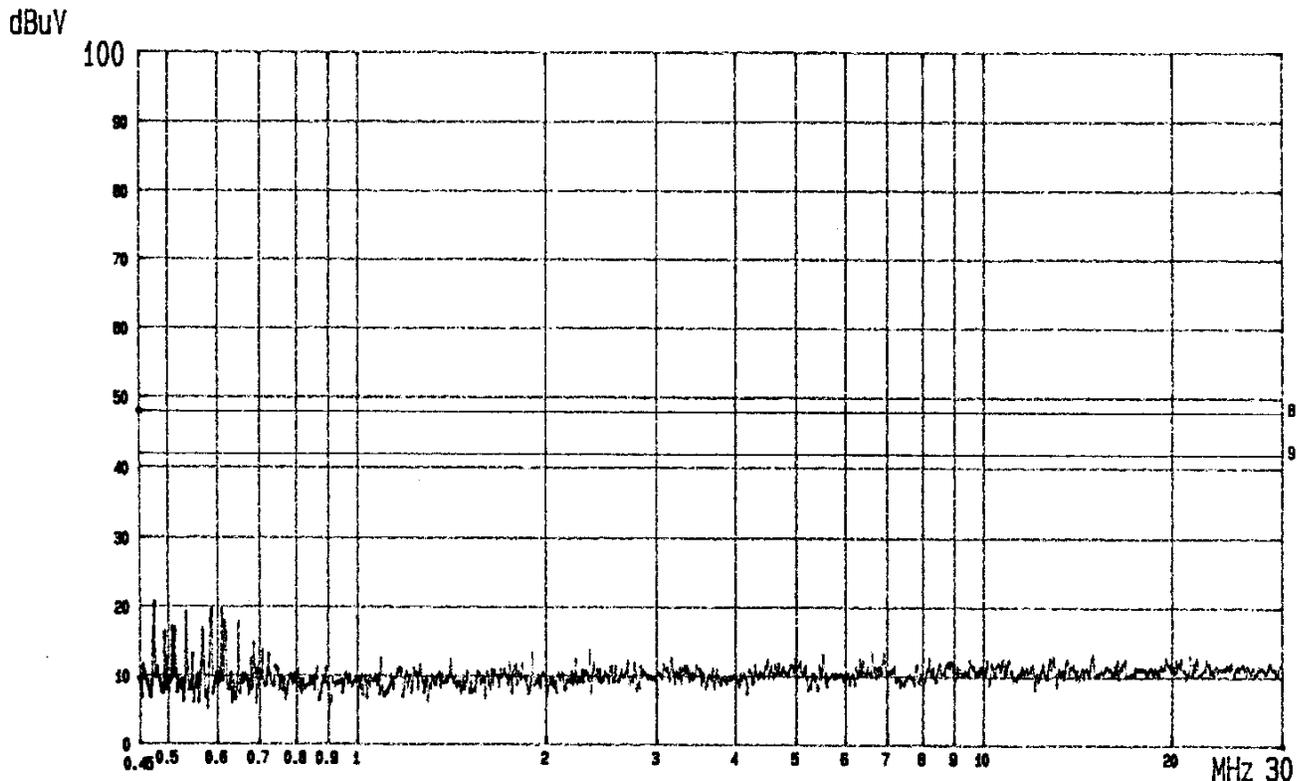


CYBIKO EUT: WIRELESS ENTERTAINMENT SYSTEM M/N: CY6411 120V/60Hz PAGE: 07.
LINE: VB. MEMO: RECEIVER (PEAK VALUE) TTEMC.

| | | | |
|--------------|-------------------------------|-------------|------|
| Date of Test | Jan. 20, 2000 | Temperature | 14.4 |
| EUT | Wireless Entertainment System | Humidity | 61 |
| Test Mode | EUT Link PC | | |

| Frequency (MHz) | Factor dB | Reading (dB μ V) | | Measurement (dB μ V) | | Limits (dB μ V) | Margin dB | |
|--------------------|--------------|-------------------------|------|-----------------------------|------|------------------------|--------------|------|
| | | VA | VB | VA | VB | | VA | VB |
| 0.4748 | 0.5 | * | 18.5 | * | 19 | 48.0 | * | 29 |
| 0.4750 | 0.5 | 18.7 | * | 19.2 | * | 48.0 | 28.8 | * |
| 0.5297 | 0.5 | * | 16.4 | * | 16.9 | 48.0 | * | 31.1 |
| 0.5302 | 0.5 | 16.6 | * | 17.1 | * | 48.0 | 30.9 | * |
| 0.5894 | 0.5 | 16.9 | * | 17.4 | * | 48.0 | 30.6 | * |
| 0.5903 | 0.5 | * | 16.7 | * | 17.2 | 48.0 | * | 30.8 |
| 0.6125 | 0.5 | 15.8 | * | 16.3 | * | 48.0 | 31.7 | * |
| 0.6155 | 0.5 | * | 15.4 | * | 15.9 | 48.0 | * | 32.1 |
| 0.6508 | 0.5 | 15.1 | * | 15.6 | * | 48.0 | 32.4 | * |
| 0.6560 | 0.5 | * | 14.8 | * | 15.3 | 48.0 | * | 32.7 |
| 0.9396 | 0.5 | 11.2 | * | 11.7 | * | 48.0 | 36.3 | * |
| 0.407 | 0.5 | * | 10.8 | * | 11.3 | 48.0 | * | 36.7 |

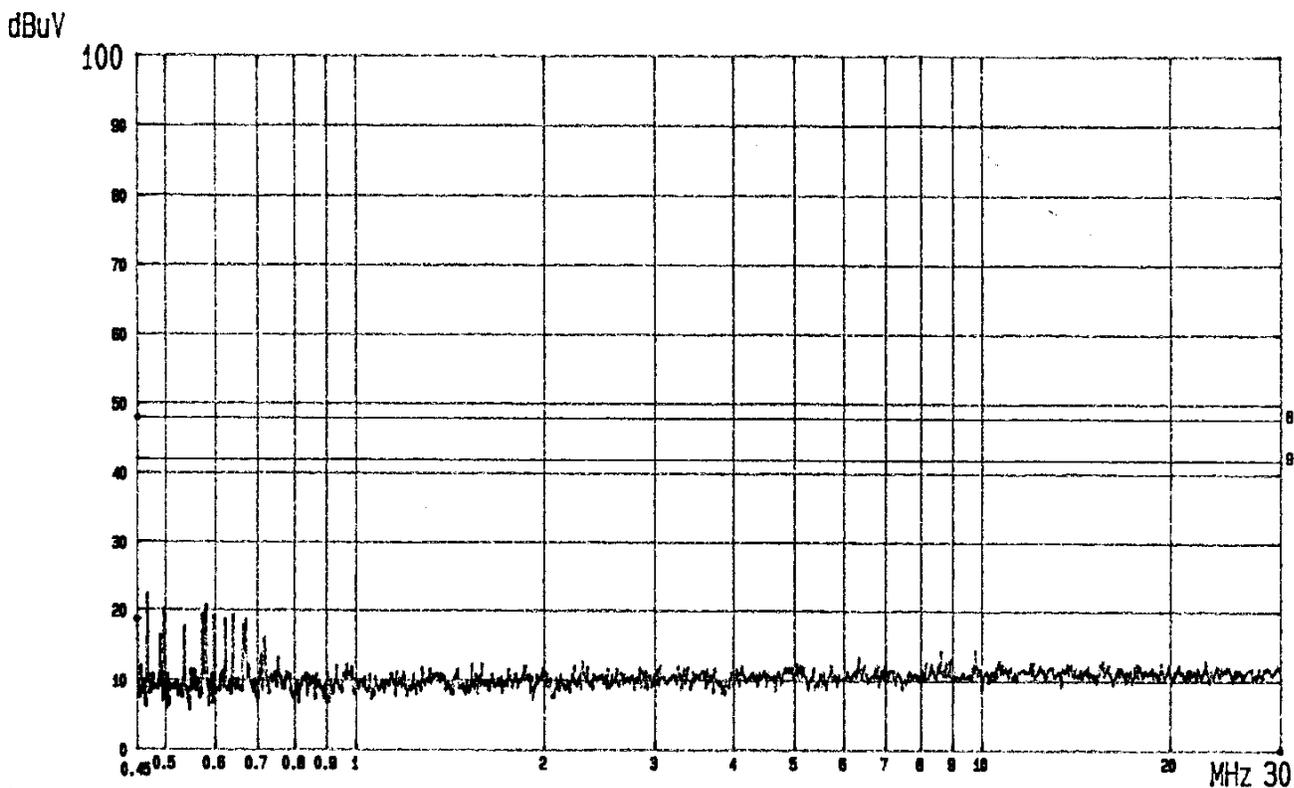
- Remark
1. All reading are Quasi-Peak values.
 2. Factor = Insertion Loss + Cable Loss
 3. The worst emission was detected at 0.4750MHz with corrected signal level of 19.2dB μ V (limit is 48dB μ V) when the VA side of the EUT's power was connected to L.I.S.N.



CYBIKO
LINE: VA.

EUT: WIRELESS ENTERTAINMENT SYSTEM M/N: CY6411
MEMO: PC LINK

120V/60Hz PAGE: 06.
(PEAK VALUE) TTEMC.



CYBIKO
LINE: VB.

EUT: WIRELESS ENTERTAINMENT SYSTEM M/N: CY6411
MEMO: PC LINK

120V/60Hz PAGE: 05.
(PEAK VALUE) TTEMC.

3. RADIATED EMISSION TEST

3.1. Test Equipment

The following test equipment are used during the radiated emission tests

| Item | Type | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|------|-----------------------------------|-----------------|-----------|------------|--------------|---------------|
| 1. | Test Receiver | Rohde & Schwarz | ESVP | 893202/001 | May 13, 99' | 1 Year |
| 2. | Broadband Antenna | Schwarzbeck | BBA9106 | A1L | Feb. 02, 99' | 1 Year |
| 3. | Broadband Antenna | Chase | UPA6109 | 1039 | Feb. 02, 99' | 1 Year |
| 4. | Pre-Amplifier (above 1GHz) | HP | 8449B | 3008A00529 | Jan.27, 99' | 1 Year |
| 5. | Spectrum Analyzer (above 1GHz) | HP | 8593A | 3212A01727 | Jul. 29, 99' | 1Year |
| 6. | Double Ridge Horn. Antenna | EMCO | 3115 | 9112-3775 | Apr.03, 99' | 1 Year |

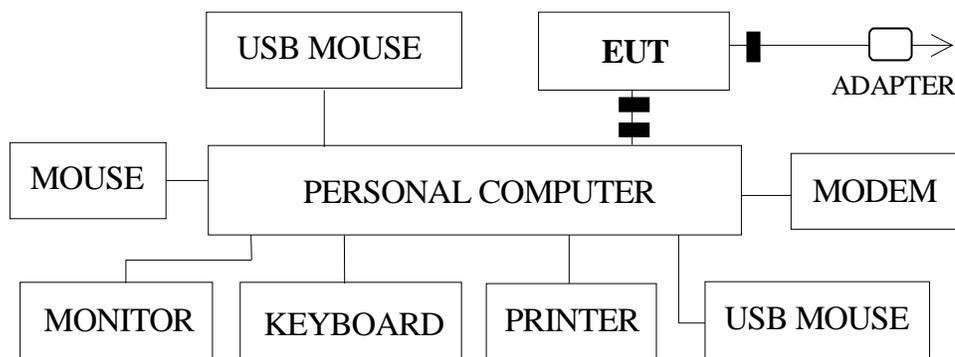
3.2. Test Setup

3.2.1. Block Diagram of connection between EUT and simulators

(1) For EUT Only (Transmitting / Receiving Mode)



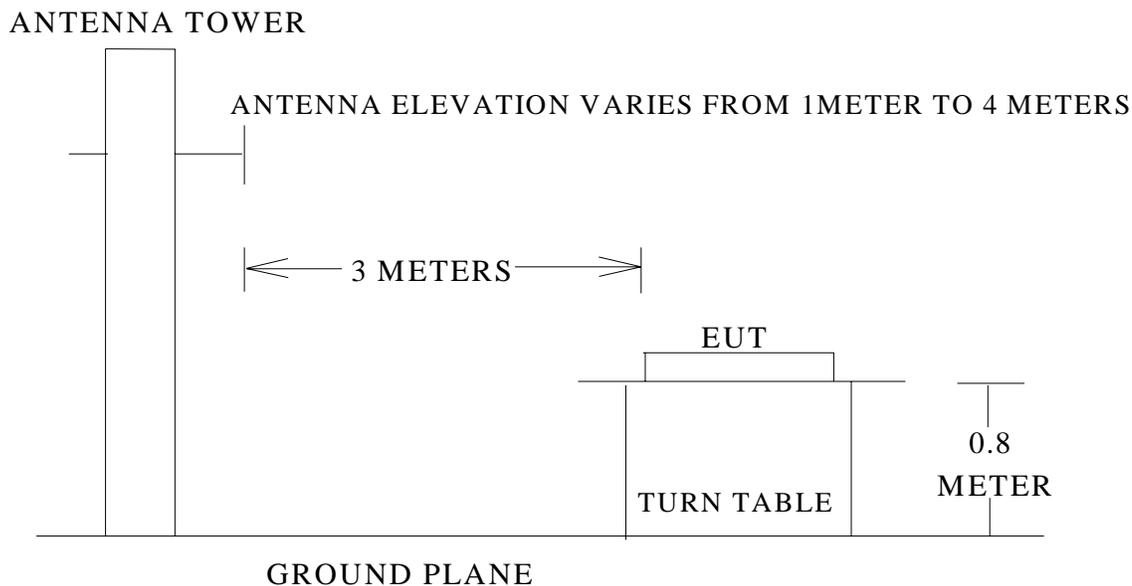
(2) For EUT Only (Transmitting / Receiving Mode)



EUT : WIRELESS ENTERTAINMENT SYSTEM

■ : FERRITE CORE

3.2.2. Open Field Test Site Setup Diagram (30MHz ~ 10GHz, 3m)



3.3. Radiation Limit (§15.249 & §15.109)

3.3.1. §15.249 Radiated Emission Limits (Transmitter, Part 15C)

| FREQUENCY MHz | DISTANCE Meters | FIELD STRENGTHS LIMITS | |
|-------------------|--------------------|------------------------|---------------------------------|
| | | $\mu\text{V}/\text{M}$ | $\text{dB}\mu\text{V}/\text{M}$ |
| Fundamental Freq. | 3 | 50000 | 93.97 (Quasi-Peak) |
| Harmonic Emission | 3 | 500 | 73.97 (Peak) |

- Remark: (1) Emission level ($\text{dB}\mu\text{V}/\text{M}$) = $20 \log$ Emission level ($\mu\text{V}/\text{M}$)
 (2) For frequency above 1000MHz, the limits are based on average limits as description in §15.35(b), and the peak limits shall not exceed the maximum permitted average limits by more than 20dB under any condition of modulation as description in 15.249(b).

3.3.2. §15.109 Radiated Emission Limits (Receiver, Part 15B)

| FREQUENCY MHz | DISTANCE Meters | FIELD STRENGTHS LIMITS | |
|------------------|--------------------|------------------------|---------------------------------|
| | | $\mu\text{V}/\text{M}$ | $\text{dB}\mu\text{V}/\text{M}$ |
| 30 ~ 88 | 3 | 100 | 40.0 |
| 88 ~ 216 | 3 | 150 | 43.5 |
| 216 ~ 960 | 3 | 200 | 46.0 |
| Above 960 | 3 | 500 | 54.0 |

- Remark (1) Emission level ($\text{dB}\mu\text{V}/\text{M}$) = $20 \log$ Emission level ($\mu\text{V}/\text{M}$)
 (2) The tighter limit applies at the edge between two frequency bands.
 (3) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

3.4. EUT's Configuration during Compliance Measurement

The configuration of EUT and its simulators were same as those used in conducted measurement. Please refer to 2.4.

3.5. Operating Condition of EUT

3.5.1. Setup the EUT as shown on 3.2

3.5.2. Turn on the power of all equipment.

3.5.3. Transmitting Mode: It is made to transmitting situation when measure the field strength. There are 3 positions (Stand Side Lie) to measure and transmitted signal is carrier only.

3.5.4. Receiving Mode: It is made to receiving situation when measure the field strength.

3.5.5. Link PC: Setup the EUT to link personal computer. The EUT sent out message (Word or Graphic) to personal computer continually.
(The testing program is provided by applicant)

3.6. Test Procedure

The EUT and its simulators were placed on a turn table which was 0.8 meter above the ground. The turn table rotated 360 degrees to determine the position of the maximum emission level. For 30MHz to 10GHz frequency range, EUT was set 3 meters away from the receiving antenna which was mounted on a antenna tower. The antenna moved up and down between 1 to 4 meters for 30MHz to 10GHz frequency range to find out the maximum emission level. Broadband antenna such as calibrated biconical and log- periodical antenna or horn antenna were used as a receiving antenna. Both horizontal and vertical polarization of the antenna were set on measurement. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.4-1992 regulation.

The bandwidth of test receiver was set at 120KHz and resolution bandwidth of spectrum analyzer was set at 1MHz.

The frequency range from 30MHz to 10GHz was checked.

EUT with eight kinds of test modes were during radiated measurement and all the test results are listed in section 3.8.

The details of test modes are as follows:

- (1) EUT on Stand, Transmitting Mode (Channel 1: 903.2MHz)
- (2) EUT on Side, Transmitting Mode (Channel 1: 903.2MHz)
- (3) EUT on Lie, Transmitting Mode (Channel 1: 903.2MHz)
- (4) EUT on Stand, Transmitting Mode (Channel 60: 926.8MHz)
- (5) EUT on Side, Transmitting Mode (Channel 60: 926.8MHz)
- (6) EUT on Lie, Transmitting Mode (Channel 60: 926.8MHz)
- (7) Receiving Mode
- (8) EUT Link PC

3.7. Test Results

PASSED. Please refer to the following pages.

3.8. Radiated Emission Noise Measurement Results

The frequency spectrum from 30 MHz to 10GHz is investigated. All the emissions not reported below are too low against the FCC part 15 subpart C limit.

| | | | |
|-----------------------|--|-------------|-----------|
| Date of Test | <u>Jan. 20, 2000</u> | Temperature | <u>15</u> |
| EUT | <u>Wireless Entertainment System</u> | Humidity | <u>65</u> |
| Test Mode | <u>EUT on Stand, Transmitting Mode</u> | | |
| Fundamental Frequency | <u>903.2MHz (Channel: 1)</u> | | |

| Emission Frequency MHz | Antenna Factor dB/m | Cable Loss dB | Pre-Amp Factor dB | Meter Reading Horizontal dB μ V | RF Voltage Horizontal dB μ V/m | Limits dB μ V/m |
|---------------------------------------|------------------------|------------------|----------------------|---|--|------------------------|
| ----- | | | | | | |
| Fundamental Freq. (Quasi-Peak Values) | | | | | | |
| 903.20 | 22.59 | 6.26 | 00.00 | 58.40 | 87.25 | 93.97 |
| Harmonic (Peak Values) | | | | | | |
| 1806.00 | 26.48 | 5.41 | 32.84 | 45.12 | 44.17 | 73.97 |
| 2709.00 | 29.29 | 6.67 | 32.77 | 36.43 | 39.62 | 73.97 |
| 3613.00 | 31.72 | 7.98 | 32.48 | 33.91 | 41.13 | 73.97 |
| 4516.00 | 32.13 | 8.91 | 32.58 | 34.48 | 42.94 | 73.97 |
| 5419.00 | 34.25 | 9.94 | 32.95 | 33.68 | 44.92 | 73.97 |
| 6322.00 | 34.12 | 11.38 | 33.16 | 33.78 | 46.12 | 73.97 |
| 7225.00 | 35.78 | 11.67 | 33.21 | 34.25 | 48.49 | 73.97 |
| 8129.00 | 36.64 | 11.94 | 33.07 | 35.60 | 51.11 | 73.97 |
| 9032.00 | 37.80 | 12.17 | 33.26 | 34.79 | 51.50 | 73.97 |
| 9935.00 | 38.05 | 13.19 | 33.25 | 35.28 | 53.27 | 73.97 |

- | | |
|--------|---|
| Remark | <ol style="list-style-type: none"> 1. Readings below 1000MHz are Quasi-Peak values, and which above 1000MHz are Peak values. 2. Measurement up to 10th harmonic (9GHz). |
|--------|---|

| | | | |
|-----------------------|---------------------------------|-------------|----|
| Date of Test | Jan. 20, 2000 | Temperature | 15 |
| EUT | Wireless Entertainment System | Humidity | 65 |
| Test Mode | EUT on Stand, Transmitting Mode | | |
| Fundamental Frequency | 903.2MHz (Channel: 1) | | |

| Emission Frequency MHz | Antenna Factor dB/m | Cable Loss dB | Pre-Amp Factor dB | Meter Reading Vertical dB μ V | RF Voltage Vertical dB μ V/m | Limits dB μ V/m |
|---------------------------------------|------------------------|------------------|----------------------|---|--|------------------------|
| ----- | | | | | | |
| Fundamental Freq. (Quasi-Peak Values) | | | | | | |
| 903.20 | 23.03 | 6.26 | 00.00 | 62.70 | 91.99 | 93.97 |
| Harmonic (Peak Values) | | | | | | |
| 1806.00 | 26.48 | 5.41 | 32.84 | 46.23 | 45.08 | 73.97 |
| 2709.00 | 29.29 | 6.67 | 32.77 | 37.04 | 40.23 | 73.97 |
| 3613.00 | 31.72 | 7.98 | 32.48 | 34.12 | 41.34 | 73.97 |
| 4516.00 | 32.13 | 8.91 | 32.58 | 34.02 | 42.48 | 73.97 |
| 5419.00 | 34.25 | 9.94 | 32.95 | 34.33 | 45.57 | 73.97 |
| 6322.00 | 34.12 | 11.38 | 33.16 | 34.35 | 46.69 | 73.97 |
| 7225.00 | 35.78 | 11.67 | 33.21 | 34.25 | 48.49 | 73.97 |
| 8129.00 | 36.64 | 11.94 | 33.07 | 35.77 | 51.28 | 73.97 |
| 9032.00 | 37.80 | 12.17 | 33.26 | 34.82 | 51.53 | 73.97 |
| 9935.00 | 38.05 | 13.19 | 33.25 | 35.03 | 53.02 | 73.97 |
| ----- | | | | | | |

- Remark
1. Readings below 1000MHz are Quasi-Peak values, and which above 1000MHz are Peak values.
 2. Measurement up to 10th harmonic (9GHz).

| | | | |
|-----------------------|---------------------------------------|-------------|-----------|
| Date of Test | <u>Jan. 20, 2000</u> | Temperature | <u>15</u> |
| EUT | <u>Wireless Entertainment System</u> | Humidity | <u>65</u> |
| Test Mode | <u>EUT on Side, Transmitting Mode</u> | | |
| Fundamental Frequency | <u>903.2MHz (Channel: 1)</u> | | |

| Emission Frequency MHz | Antenna Factor dB/m | Cable Loss dB | Pre-Amp Factor dB | Meter Reading Horizontal dB μ V | RF Voltage Horizontal dB μ V/m | Limits dB μ V/m |
|---------------------------------------|------------------------|------------------|----------------------|---|--|------------------------|
| ----- | | | | | | |
| Fundamental Freq. (Quasi-Peak Values) | | | | | | |
| 903.20 | 22.59 | 6.26 | 00.00 | 54.00 | 82.85 | 93.97 |
| Harmonic (Peak Values) | | | | | | |
| 1806.00 | 26.48 | 5.41 | 32.84 | 48.62 | 47.67 | 73.97 |
| 2709.00 | 29.29 | 6.67 | 32.77 | 42.24 | 45.43 | 73.97 |
| 3613.00 | 31.72 | 7.98 | 32.48 | 34.10 | 41.32 | 73.97 |
| 4516.00 | 32.13 | 8.91 | 32.58 | 34.60 | 43.06 | 73.97 |
| 5419.00 | 34.25 | 9.94 | 32.95 | 33.87 | 45.11 | 73.97 |
| 6322.00 | 34.12 | 11.38 | 33.16 | 33.44 | 45.78 | 73.97 |
| 7225.00 | 35.78 | 11.67 | 33.21 | 34.56 | 48.80 | 73.97 |
| 8129.00 | 36.64 | 11.94 | 33.07 | 35.91 | 51.42 | 73.97 |
| 9032.00 | 37.80 | 12.17 | 33.26 | 35.70 | 52.41 | 73.97 |
| 9935.00 | 38.05 | 13.19 | 33.25 | 35.47 | 53.46 | 73.97 |

- Remark
1. Readings below 1000MHz are Quasi-Peak values, and which above 1000MHz are Peak values.
 2. Measurement up to 10th harmonic (9GHz).

| | | | |
|-----------------------|--------------------------------|-------------|----|
| Date of Test | Jan. 20, 2000 | Temperature | 15 |
| EUT | Wireless Entertainment System | Humidity | 65 |
| Test Mode | EUT on Side, Transmitting Mode | | |
| Fundamental Frequency | 903.2MHz (Channel: 1) | | |

| Emission Frequency MHz | Antenna Factor dB/m | Cable Loss dB | Pre-Amp Factor dB | Meter Reading Vertical dB μ V | RF Voltage Vertical dB μ V/m | Limits dB μ V/m |
|---------------------------------------|------------------------|------------------|----------------------|--------------------------------------|-------------------------------------|------------------------|
| ----- | | | | | | |
| Fundamental Freq. (Quasi-Peak Values) | | | | | | |
| 903.20 | 23.03 | 6.26 | 00.00 | 56.00 | 85.29 | 93.97 |
| Harmonic (Peak Values) | | | | | | |
| 1806.00 | 26.48 | 5.41 | 32.84 | 45.53 | 44.58 | 73.97 |
| 2709.00 | 29.29 | 6.67 | 32.77 | 36.49 | 39.68 | 73.97 |
| 3612.00 | 31.72 | 7.98 | 32.48 | 34.17 | 41.39 | 73.97 |
| 4516.00 | 32.13 | 8.91 | 32.58 | 34.12 | 42.58 | 73.97 |
| 5419.00 | 34.25 | 9.94 | 32.95 | 33.71 | 44.95 | 73.97 |
| 6322.00 | 34.12 | 11.38 | 33.16 | 33.54 | 45.88 | 73.97 |
| 7225.00 | 35.78 | 11.67 | 33.21 | 34.65 | 48.89 | 73.97 |
| 8128.00 | 36.64 | 11.94 | 33.07 | 36.24 | 51.75 | 73.97 |
| 9032.00 | 37.80 | 12.17 | 33.26 | 35.26 | 51.97 | 73.97 |
| 9935.00 | 38.05 | 13.19 | 33.25 | 34.72 | 52.71 | 73.97 |
| ----- | | | | | | |

- Remark
1. Readings below 1000MHz are Quasi-Peak values, and which above 1000MHz are Peak values.
 2. Measurement up to 10th harmonic (9GHz).

| | | | |
|-----------------------|--------------------------------------|-------------|-----------|
| Date of Test | <u>Jan. 20, 2000</u> | Temperature | <u>15</u> |
| EUT | <u>Wireless Entertainment System</u> | Humidity | <u>65</u> |
| Test Mode | <u>EUT on Lie, Transmitting Mode</u> | | |
| Fundamental Frequency | <u>903.2MHz (Channel: 1)</u> | | |

| Emission Frequency MHz | Antenna Factor dB/m | Cable Loss dB | Pre-Amp Factor dB | Meter Reading Horizontal dB μ V | RF Voltage Horizontal dB μ V/m | Limits dB μ V/m |
|---------------------------------------|------------------------|------------------|----------------------|---|--|------------------------|
| ----- | | | | | | |
| Fundamental Freq. (Quasi-Peak Values) | | | | | | |
| 903.20 | 22.59 | 6.26 | 00.00 | 58.70 | 87.55 | 93.97 |
| Harmonic (Peak Values) | | | | | | |
| 1806.00 | 26.48 | 5.41 | 32.84 | 44.00 | 43.05 | 73.97 |
| 2709.00 | 29.29 | 6.67 | 32.77 | 36.73 | 39.92 | 73.97 |
| 3612.00 | 31.72 | 7.98 | 32.48 | 33.39 | 40.61 | 73.97 |
| 4516.00 | 32.13 | 8.91 | 32.58 | 34.39 | 42.85 | 73.97 |
| 5419.00 | 34.25 | 9.94 | 32.95 | 33.52 | 44.76 | 73.97 |
| 6322.00 | 34.12 | 11.38 | 33.16 | 33.94 | 46.28 | 73.97 |
| 7225.00 | 35.78 | 11.67 | 33.21 | 34.28 | 48.52 | 73.97 |
| 8128.00 | 36.64 | 11.94 | 33.07 | 35.74 | 51.25 | 73.97 |
| 9032.00 | 37.80 | 12.17 | 33.26 | 34.85 | 51.56 | 73.97 |
| 9935.00 | 38.05 | 13.19 | 33.25 | 34.97 | 52.96 | 73.97 |

- Remark
1. Readings below 1000MHz are Quasi-Peak values, and which above 1000MHz are Peak values.
 2. Measurement up to 10th harmonic (9GHz).

| | | | |
|-----------------------|--------------------------------------|-------------|-----------|
| Date of Test | <u>Jan. 20, 2000</u> | Temperature | <u>15</u> |
| EUT | <u>Wireless Entertainment System</u> | Humidity | <u>65</u> |
| Test Mode | <u>EUT on Lie, Transmitting Mode</u> | | |
| Fundamental Frequency | <u>903.2MHz (Channel: 1)</u> | | |

| Emission Frequency MHz | Antenna Factor dB/m | Cable Loss dB | Pre-Amp Factor dB | Meter Reading Vertical dB μ V | RF Voltage Vertical dB μ V/m | Limits dB μ V/m |
|---------------------------------------|------------------------|------------------|----------------------|---|--|------------------------|
| ----- | | | | | | |
| Fundamental Freq. (Quasi-Peak Values) | | | | | | |
| 903.20 | 23.03 | 6.26 | 00.00 | 58.00 | 87.29 | 93.97 |
| Harmonic (Peak Values) | | | | | | |
| 1806.00 | 26.48 | 5.41 | 32.84 | 47.25 | 46.30 | 73.97 |
| 2709.00 | 29.29 | 6.67 | 32.77 | 37.06 | 40.25 | 73.97 |
| 3612.00 | 31.72 | 7.98 | 32.48 | 33.53 | 40.75 | 73.97 |
| 4516.00 | 32.13 | 8.91 | 32.58 | 33.97 | 42.43 | 73.97 |
| 5419.00 | 34.25 | 9.94 | 32.95 | 34.05 | 45.29 | 73.97 |
| 6322.00 | 34.12 | 11.38 | 33.16 | 33.64 | 45.98 | 73.97 |
| 7225.00 | 35.78 | 11.67 | 33.21 | 33.83 | 48.07 | 73.97 |
| 8128.00 | 36.64 | 11.94 | 33.07 | 35.34 | 50.85 | 73.97 |
| 9032.00 | 37.80 | 12.17 | 33.26 | 34.35 | 51.06 | 73.97 |
| 9935.00 | 38.05 | 13.19 | 33.25 | 34.80 | 52.79 | 73.97 |

- Remark
1. Readings below 1000MHz are Quasi-Peak values, and which above 1000MHz are Peak values.
 2. Measurement up to 10th harmonic (9GHz).

| | | | |
|-----------------------|--|-------------|-----------|
| Date of Test | <u>Jan. 20, 2000</u> | Temperature | <u>15</u> |
| EUT | <u>Wireless Entertainment System</u> | Humidity | <u>65</u> |
| Test Mode | <u>EUT on Stand, Transmitting Mode</u> | | |
| Fundamental Frequency | <u>926.8MHz (Channel: 60)</u> | | |

| Emission Frequency MHz | Antenna Factor dB/m | Cable Loss dB | Pre-Amp Factor dB | Meter Reading Horizontal dB μ V | RF Voltage Horizontal dB μ V/m | Limits dB μ V/m |
|---------------------------------------|------------------------|------------------|----------------------|---|--|------------------------|
| ----- | | | | | | |
| Fundamental Freq. (Quasi-Peak Values) | | | | | | |
| 926.80 | 23.07 | 6.24 | 00.00 | 54.20 | 83.51 | 93.97 |
| Harmonic (Peak Values) | | | | | | |
| 1853.00 | 26.56 | 5.49 | 32.80 | 44.41 | 43.66 | 73.97 |
| 2780.00 | 29.61 | 6.77 | 32.78 | 44.42 | 48.02 | 73.97 |
| 3707.00 | 31.93 | 8.13 | 32.44 | 42.35 | 49.97 | 73.97 |
| 4634.00 | 32.47 | 9.07 | 32.64 | 43.45 | 52.35 | 73.97 |
| 5560.00 | 34.39 | 10.13 | 32.99 | 41.60 | 53.13 | 73.97 |
| 6487.00 | 34.02 | 11.55 | 33.18 | 42.33 | 54.72 | 73.97 |
| 7414.00 | 36.55 | 11.75 | 33.16 | 42.47 | 57.61 | 73.97 |
| 8341.00 | 36.89 | 12.06 | 33.12 | 44.45 | 60.28 | 73.97 |
| 9268.00 | 37.75 | 12.46 | 33.26 | 42.30 | 59.25 | 73.97 |
| 10194.00 | 38.14 | 13.36 | 32.23 | 43.20 | 62.47 | 73.97 |
| ----- | | | | | | |

- Remark
1. Readings below 1000MHz are Quasi-Peak values, and which above 1000MHz are Peak values.
 2. Measurement up to 10th harmonic (10GHz).

| | | | |
|-----------------------|--|-------------|-----------|
| Date of Test | <u>Jan. 20, 2000</u> | Temperature | <u>15</u> |
| EUT | <u>Wireless Entertainment System</u> | Humidity | <u>65</u> |
| Test Mode | <u>EUT on Stand, Transmitting Mode</u> | | |
| Fundamental Frequency | <u>926.8MHz (Channel: 60)</u> | | |

| Emission Frequency MHz | Antenna Factor dB/m | Cable Loss dB | Pre-Amp Factor dB | Meter Reading Vertical dB μ V | RF Voltage Vertical dB μ V/m | Limits dB μ V/m |
|---------------------------------------|------------------------|------------------|----------------------|---|--|------------------------|
| ----- | | | | | | |
| Fundamental Freq. (Quasi-Peak Values) | | | | | | |
| 926.80 | 23.57 | 6.24 | 00.00 | 63.50 | 93.31 | 93.97 |
| Harmonic (Peak Values) | | | | | | |
| 1853.00 | 26.56 | 5.49 | 32.80 | 45.96 | 45.20 | 73.97 |
| 2780.00 | 29.61 | 6.77 | 32.78 | 43.90 | 47.50 | 73.97 |
| 3707.00 | 31.93 | 8.13 | 32.44 | 41.43 | 49.06 | 73.97 |
| 4634.00 | 32.47 | 9.07 | 32.64 | 41.95 | 50.84 | 73.97 |
| 5560.00 | 34.39 | 10.13 | 32.99 | 41.74 | 53.27 | 73.97 |
| 6487.00 | 34.02 | 11.55 | 33.18 | 42.31 | 54.70 | 73.97 |
| 7414.00 | 36.55 | 11.75 | 33.16 | 42.84 | 57.98 | 73.97 |
| 8340.00 | 36.89 | 12.06 | 33.12 | 43.33 | 59.16 | 73.97 |
| 9267.00 | 37.75 | 12.46 | 33.26 | 43.12 | 60.08 | 73.97 |
| 10194.00 | 38.14 | 13.36 | 32.23 | 42.92 | 62.19 | 73.97 |
| ----- | | | | | | |

- Remark
1. Readings below 1000MHz are Quasi-Peak values, and which above 1000MHz are Peak values.
 2. Measurement up to 10th harmonic (10GHz).

| | | | |
|-----------------------|---------------------------------------|-------------|-----------|
| Date of Test | <u>Jan. 20, 2000</u> | Temperature | <u>15</u> |
| EUT | <u>Wireless Entertainment System</u> | Humidity | <u>65</u> |
| Test Mode | <u>EUT on Side, Transmitting Mode</u> | | |
| Fundamental Frequency | <u>926.8MHz (Channel: 60)</u> | | |

| Emission Frequency MHz | Antenna Factor dB/m | Cable Loss dB | Pre-Amp Factor dB | Meter Reading Horizontal dB μ V | RF Voltage Horizontal dB μ V/m | Limits dB μ V/m |
|---------------------------------------|------------------------|------------------|----------------------|---|--|------------------------|
| ----- | | | | | | |
| Fundamental Freq. (Quasi-Peak Values) | | | | | | |
| 926.80 | 23.07 | 6.24 | 00.00 | 63.60 | 92.91 | 93.97 |
| Harmonic (Peak Values) | | | | | | |
| 1853.00 | 26.56 | 5.49 | 32.80 | 47.37 | 46.62 | 73.97 |
| 2780.00 | 29.61 | 6.77 | 32.78 | 43.85 | 47.45 | 73.97 |
| 3707.00 | 31.93 | 8.13 | 32.44 | 42.09 | 49.71 | 73.97 |
| 4634.00 | 32.47 | 9.07 | 32.64 | 42.97 | 51.87 | 73.97 |
| 5560.00 | 34.39 | 10.13 | 32.99 | 40.95 | 52.48 | 73.97 |
| 6487.00 | 34.02 | 11.55 | 33.18 | 42.29 | 54.68 | 73.97 |
| 7414.00 | 36.55 | 11.75 | 33.16 | 42.77 | 57.91 | 73.97 |
| 8341.00 | 36.89 | 12.06 | 33.12 | 43.69 | 59.52 | 73.97 |
| 9268.00 | 37.75 | 12.46 | 33.26 | 42.99 | 59.94 | 73.97 |
| 10194.00 | 38.14 | 13.36 | 32.23 | 42.69 | 61.96 | 73.97 |
| ----- | | | | | | |

- Remark
1. Readings below 1000MHz are Quasi-Peak values, and which above 1000MHz are Peak values.
 2. Measurement up to 10th harmonic (10GHz).

| | | | |
|-----------------------|---------------------------------------|-------------|-----------|
| Date of Test | <u>Jan. 20, 2000</u> | Temperature | <u>15</u> |
| EUT | <u>Wireless Entertainment System</u> | Humidity | <u>65</u> |
| Test Mode | <u>EUT on Side, Transmitting Mode</u> | | |
| Fundamental Frequency | <u>926.8MHz (Channel: 60)</u> | | |

| Emission Frequency MHz | Antenna Factor dB/m | Cable Loss dB | Pre-Amp Factor dB | Meter Reading Vertical dB μ V | RF Voltage Vertical dB μ V/m | Limits dB μ V/m |
|---------------------------------------|------------------------|------------------|----------------------|---|--|------------------------|
| ----- | | | | | | |
| Fundamental Freq. (Quasi-Peak Values) | | | | | | |
| 926.80 | 23.57 | 6.24 | 00.00 | 55.50 | 85.31 | 93.97 |
| Harmonic (Peak Values) | | | | | | |
| 1853.00 | 26.56 | 5.49 | 32.80 | 45.18 | 44.43 | 73.97 |
| 2780.00 | 29.61 | 6.77 | 32.78 | 45.00 | 48.60 | 73.97 |
| 3707.00 | 31.93 | 8.13 | 32.44 | 41.23 | 48.85 | 73.97 |
| 4634.00 | 32.47 | 9.07 | 32.64 | 41.67 | 50.57 | 73.97 |
| 5560.00 | 34.39 | 10.13 | 32.99 | 41.22 | 52.75 | 73.97 |
| 6487.00 | 34.02 | 11.55 | 33.18 | 42.52 | 54.91 | 73.97 |
| 7414.00 | 36.55 | 11.75 | 33.16 | 41.44 | 56.58 | 73.97 |
| 8341.00 | 36.89 | 12.06 | 33.12 | 43.02 | 58.85 | 73.97 |
| 9280.00 | 37.75 | 12.46 | 33.26 | 42.95 | 59.90 | 73.97 |
| 10194.00 | 38.14 | 13.36 | 32.23 | 42.45 | 61.72 | 73.97 |
| ----- | | | | | | |

- Remark
1. Readings below 1000MHz are Quasi-Peak values, and which above 1000MHz are Peak values.
 2. Measurement up to 10th harmonic (10GHz).

| | | | |
|-----------------------|--------------------------------------|-------------|-----------|
| Date of Test | <u>Jan. 20, 2000</u> | Temperature | <u>15</u> |
| EUT | <u>Wireless Entertainment System</u> | Humidity | <u>65</u> |
| Test Mode | <u>EUT on Lie, Transmitting Mode</u> | | |
| Fundamental Frequency | <u>926.8MHz (Channel: 60)</u> | | |

| Emission Frequency MHz | Antenna Factor dB/m | Cable Loss dB | Pre-Amp Factor dB | Meter Reading Horizontal dB μ V | RF Voltage Horizontal dB μ V/m | Limits dB μ V/m |
|---------------------------------------|------------------------|------------------|----------------------|---|--|------------------------|
| ----- | | | | | | |
| Fundamental Freq. (Quasi-Peak Values) | | | | | | |
| 926.80 | 23.07 | 6.24 | 00.00 | 63.60 | 92.91 | 93.97 |
| Harmonic (Peak Values) | | | | | | |
| 1853.00 | 26.56 | 5.49 | 32.80 | 43.56 | 42.81 | 73.97 |
| 2780.00 | 29.61 | 6.77 | 32.78 | 44.64 | 48.24 | 73.97 |
| 3707.00 | 31.93 | 8.13 | 32.44 | 42.50 | 50.12 | 73.97 |
| 4633.00 | 32.47 | 9.07 | 32.64 | 42.25 | 51.15 | 73.97 |
| 5560.00 | 34.39 | 10.13 | 32.99 | 42.32 | 53.85 | 73.97 |
| 6487.00 | 34.02 | 11.55 | 33.18 | 42.53 | 54.92 | 73.97 |
| 7414.00 | 36.55 | 11.75 | 33.16 | 42.71 | 57.85 | 73.97 |
| 8341.00 | 36.89 | 12.06 | 33.12 | 43.62 | 59.45 | 73.97 |
| 9267.00 | 37.75 | 12.46 | 33.26 | 43.29 | 60.24 | 73.97 |
| 10194.00 | 38.14 | 13.36 | 32.23 | 42.08 | 61.35 | 73.97 |
| ----- | | | | | | |

- Remark
1. Readings below 1000MHz are Quasi-Peak values, and which above 1000MHz are Peak values.
 2. Measurement up to 10th harmonic (10GHz).

| | | | |
|-----------------------|--------------------------------------|-------------|-----------|
| Date of Test | <u>Jan. 20, 2000</u> | Temperature | <u>15</u> |
| EUT | <u>Wireless Entertainment System</u> | Humidity | <u>65</u> |
| Test Mode | <u>EUT on Lie, Transmitting Mode</u> | | |
| Fundamental Frequency | <u>926.8MHz (Channel: 60)</u> | | |

| Emission Frequency MHz | Antenna Factor dB/m | Cable Loss dB | Pre-Amp Factor dB | Meter Reading Vertical dB μ V | RF Voltage Vertical dB μ V/m | Limits dB μ V/m |
|---------------------------------------|------------------------|------------------|----------------------|--------------------------------------|-------------------------------------|------------------------|
| ----- | | | | | | |
| Fundamental Freq. (Quasi-Peak Values) | | | | | | |
| 926.80 | 23.57 | 6.24 | 00.00 | 54.10 | 83.91 | 93.97 |
| Harmonic (Peak Values) | | | | | | |
| 1853.00 | 26.56 | 5.49 | 32.80 | 46.43 | 45.68 | 73.97 |
| 2780.00 | 29.61 | 6.77 | 32.78 | 46.03 | 49.63 | 73.97 |
| 3707.00 | 31.93 | 8.13 | 32.44 | 41.67 | 49.29 | 73.97 |
| 4634.00 | 32.47 | 9.07 | 32.64 | 42.11 | 51.01 | 73.97 |
| 5560.00 | 34.39 | 10.13 | 32.99 | 41.32 | 52.85 | 73.97 |
| 6487.00 | 34.02 | 11.55 | 33.18 | 41.67 | 54.06 | 73.97 |
| 7414.00 | 36.55 | 11.75 | 33.16 | 42.09 | 57.23 | 73.97 |
| 8341.00 | 36.89 | 12.06 | 33.12 | 43.25 | 59.08 | 73.97 |
| 9280.00 | 37.75 | 12.46 | 33.26 | 43.26 | 60.21 | 73.97 |
| 10194.00 | 38.14 | 13.36 | 32.23 | 43.57 | 62.84 | 73.97 |
| ----- | | | | | | |

- Remark
1. Readings below 1000MHz are Quasi-Peak values, and which above 1000MHz are Peak values.
 2. Measurement up to 10th harmonic (10GHz).

The frequency spectrum from 30 MHz to 9GHz is investigated. All the emissions not reported below are too low against the FCC part 15 subpart B limit.

| | | | |
|--------------|--------------------------------------|-------------|-----------|
| Date of Test | <u>Jan. 20, 2000</u> | Temperature | <u>15</u> |
| EUT | <u>Wireless Entertainment System</u> | Humidity | <u>65</u> |
| Test Mode | <u>Receiving Mode</u> | | |

| Antenna Cable | | Meter Reading | | Emission Level | | Limits | Margin |
|------------------|----------------|---------------|--------------------------|----------------------------|-------|--------|--------|
| Frequency MHz | Factor dB/m | Loss dB | Horizontal dB μ V | Horizontal dB μ V/m | | | |
| 42.945 | 21.49 | 1.45 | - 6.11 | 16.83 | 40.00 | 23.17 | |
| 85.898 | 14.18 | 1.88 | 0.83 | 16.89 | 40.00 | 23.11 | |
| 114.565 | 18.82 | 2.06 | 4.60 | 25.48 | 43.50 | 18.02 | |
| 128.856 | 19.86 | 2.17 | 1.75 | 23.78 | 43.50 | 19.72 | |
| 143.768 | 20.36 | 2.30 | 2.03 | 24.69 | 43.50 | 18.81 | |
| 165.885 | 21.46 | 2.56 | - 1.07 | 22.95 | 43.50 | 20.55 | |
| 188.000 | 21.98 | 2.82 | 0.08 | 24.88 | 43.50 | 18.62 | |
| 221.190 | 22.85 | 3.04 | 2.84 | 28.73 | 46.00 | 17.27 | |
| 237.796 | 23.47 | 3.20 | 4.29 | 30.96 | 46.00 | 15.04 | |
| 243.311 | 23.62 | 3.20 | 1.38 | 28.20 | 46.00 | 17.80 | |
| 287.539 | 24.87 | 3.59 | 1.25 | 29.71 | 46.00 | 16.29 | |
| 309.671 | 13.66 | 3.60 | 14.00 | 31.26 | 46.00 | 14.74 | |
| 331.797 | 14.86 | 3.64 | 10.09 | 28.59 | 46.00 | 17.41 | |
| 376.095 | 15.69 | 3.96 | 7.20 | 26.85 | 46.00 | 19.15 | |
| 420.267 | 15.78 | 4.09 | 8.00 | 27.87 | 46.00 | 18.13 | |
| 453.445 | 16.38 | 4.35 | 5.89 | 26.62 | 46.00 | 19.38 | |
| 530.861 | 17.96 | 4.82 | 3.91 | 26.69 | 46.00 | 19.31 | |
| 641.457 | 20.02 | 5.18 | 4.20 | 29.40 | 46.00 | 16.60 | |
| 884.644 | 22.79 | 6.13 | 4.80 | 33.72 | 46.00 | 12.28 | |

- Remark
1. All readings are Quasi-Peak values.
 2. Measurement up to 10th harmonic (9GHz) but the emissions level above 1GHz were too low against the official limit and not reported.

| | | | |
|--------------|-------------------------------|-------------|----|
| Date of Test | Jan. 20, 2000 | Temperature | 15 |
| EUT | Wireless Entertainment System | Humidity | 65 |
| Test Mode | Receiving Mode | | |

| Frequency MHz | Antenna Cable Meter Reading | | Emission Level | | Limits dB μ V/m | Margin dB |
|------------------|-----------------------------|------------|------------------------|--------------------------|------------------------|--------------|
| | Factor dB/m | Loss dB | Vertical dB μ V | Vertical dB μ V/m | | |
| 85.902 | 14.48 | 1.88 | 7.68 | 24.04 | 40.00 | 15.96 |
| 114.556 | 16.50 | 2.06 | 11.56 | 30.12 | 43.50 | 13.38 |
| 128.856 | 18.97 | 2.17 | 9.86 | 31.00 | 43.50 | 12.50 |
| 193.550 | 20.89 | 2.94 | 7.97 | 31.80 | 43.50 | 11.70 |
| 199.091 | 22.13 | 2.94 | 4.66 | 29.73 | 43.50 | 13.77 |
| 215.648 | 23.51 | 3.00 | 6.26 | 32.77 | 43.50 | 10.73 |
| 221.184 | 22.85 | 3.04 | 8.08 | 33.97 | 46.00 | 12.03 |
| 232.257 | 23.15 | 3.16 | 10.20 | 36.51 | 46.00 | 9.49 |
| 237.792 | 22.83 | 3.20 | 10.50 | 36.53 | 46.00 | 9.47 |
| 265.416 | 24.86 | 3.31 | 5.04 | 33.21 | 46.00 | 12.79 |
| 298.598 | 26.32 | 3.61 | - 3.37 | 26.56 | 46.00 | 19.44 |
| 309.673 | 13.80 | 3.60 | 10.00 | 27.40 | 46.00 | 18.60 |
| 320.730 | 13.97 | 3.62 | 8.40 | 25.99 | 46.00 | 20.01 |
| 364.968 | 14.75 | 3.94 | 5.00 | 23.69 | 46.00 | 22.31 |
| 420.267 | 15.71 | 4.09 | 6.90 | 26.70 | 46.00 | 19.30 |
| 508.684 | 17.60 | 4.57 | 0.40 | 22.57 | 46.00 | 23.43 |
| 552.982 | 18.17 | 4.67 | 1.30 | 24.14 | 46.00 | 21.86 |
| 619.345 | 18.89 | 4.91 | - 1.40 | 22.40 | 46.00 | 23.60 |
| 873.628 | 22.02 | 6.11 | - 0.50 | 27.63 | 46.00 | 18.37 |

- Remark
1. All readings are Quasi-Peak values.
 2. Measurement up to 10th harmonic (9GHz) but the emissions level above 1GHz were too low against the official limit and not reported.

| | | | |
|--------------|-------------------------------|-------------|----|
| Date of Test | Jan. 20, 2000 | Temperature | 15 |
| EUT | Wireless Entertainment System | Humidity | 65 |
| Test Mode | EUT Link PC | | |

| Frequency MHz | Antenna Cable Meter Reading | | Emission Level | | Limits dB μ V/m | Margin dB |
|------------------|-----------------------------|-------------|--------------------------|----------------------------|------------------------|--------------|
| | Factor dB/m | Loss dB | Horizontal dB μ V | Horizontal dB μ V/m | | |
| 42.945 | 21.49 | 1.45 | - 1.11 | 21.83 | 40.00 | 18.17 |
| 85.898 | 14.18 | 1.88 | 6.83 | 22.89 | 40.00 | 17.11 |
| 114.565 | 18.82 | 2.06 | 10.60 | 31.48 | 43.50 | 12.02 |
| 128.856 | 19.86 | 2.17 | 7.75 | 29.78 | 43.50 | 13.72 |
| 143.768 | 20.36 | 2.30 | 3.03 | 25.69 | 43.50 | 17.81 |
| 165.885 | 21.46 | 2.56 | 0.93 | 24.95 | 43.50 | 18.55 |
| 188.000 | 21.98 | 2.82 | 2.08 | 26.88 | 43.50 | 16.62 |
| 221.190 | 22.85 | 3.04 | 4.84 | 30.73 | 46.00 | 15.27 |
| 237.796 | 23.47 | 3.20 | 7.29 | 33.96 | 46.00 | 12.04 |
| 243.311 | 23.62 | 3.20 | 4.38 | 31.20 | 46.00 | 14.80 |
| 287.539 | 24.87 | 3.59 | 3.25 | 31.71 | 46.00 | 14.29 |
| 309.671 | 13.66 | 3.60 | 16.00 | 33.26 | 46.00 | 12.74 |
| 331.797 | 14.86 | 3.64 | 10.09 | 28.59 | 46.00 | 17.41 |
| 376.095 | 15.69 | 3.96 | 9.20 | 28.85 | 46.00 | 17.15 |
| 420.267 | 15.78 | 4.09 | 9.00 | 28.87 | 46.00 | 17.13 |
| 453.445 | 16.38 | 4.35 | 7.89 | 28.62 | 46.00 | 17.38 |
| 530.861 | 17.96 | 4.82 | 5.91 | 28.69 | 46.00 | 17.31 |
| 641.457 | 20.02 | 5.18 | 6.20 | 31.40 | 46.00 | 14.60 |
| *884.644 | 22.79 | 6.13 | 6.80 | 35.72 | 46.00 | 10.28 |

- Remark:
- All readings are Quasi-Peak values.
 - The worst emission was detected at 884.644MHz with corrected signal level of 35.72dB μ V/m (limit was 46.0dB μ V/m) when the antenna was at horizontal polarization and was at 3.5m high and the turn table was at 225°
 - 0° was the table front facing the antenna. Degree is calculated from 0° clockwise facing the antenna.

| | | | |
|--------------|-------------------------------|-------------|----|
| Date of Test | Jan. 20, 2000 | Temperature | 15 |
| EUT | Wireless Entertainment System | Humidity | 65 |
| Test Mode | EUT Link PC | | |

| Frequency MHz | Antenna Cable Meter Reading | | Emission Level | | Limits dB μ V/m | Margin dB |
|------------------|-----------------------------|-------------|------------------------|--------------------------|------------------------|--------------|
| | Factor dB/m | Loss dB | Vertical dB μ V | Vertical dB μ V/m | | |
| 85.902 | 14.48 | 1.88 | 10.68 | 27.04 | 40.00 | 12.96 |
| 114.556 | 16.50 | 2.06 | 18.56 | 37.12 | 43.50 | 6.38 |
| 128.856 | 18.97 | 2.17 | 12.86 | 34.00 | 43.50 | 9.50 |
| 193.550 | 20.89 | 2.94 | 10.97 | 34.80 | 43.50 | 8.70 |
| 199.091 | 22.13 | 2.94 | 7.66 | 32.73 | 43.50 | 10.77 |
| 215.648 | 23.51 | 3.00 | 9.26 | 35.77 | 43.50 | 7.73 |
| 221.184 | 22.85 | 3.04 | 11.08 | 36.97 | 46.00 | 9.03 |
| 232.257 | 23.15 | 3.16 | 14.20 | 40.51 | 46.00 | 5.49 |
| *237.792 | 22.83 | 3.20 | 14.50 | 40.53 | 46.00 | 5.47 |
| 265.416 | 24.86 | 3.31 | 8.04 | 36.21 | 46.00 | 9.79 |
| 298.598 | 26.32 | 3.61 | 2.63 | 32.56 | 46.00 | 13.44 |
| 309.673 | 13.80 | 3.60 | 14.00 | 31.40 | 46.00 | 14.60 |
| 320.730 | 13.97 | 3.62 | 11.40 | 28.99 | 46.00 | 17.01 |
| 364.968 | 14.75 | 3.94 | 5.00 | 23.69 | 46.00 | 22.31 |
| 420.267 | 15.71 | 4.09 | 8.90 | 28.70 | 46.00 | 17.30 |
| 508.684 | 17.60 | 4.57 | 2.40 | 24.57 | 46.00 | 21.43 |
| 552.982 | 18.17 | 4.67 | 1.30 | 24.14 | 46.00 | 21.86 |
| 619.345 | 18.89 | 4.91 | - 2.40 | 21.40 | 46.00 | 24.60 |
| 873.628 | 22.02 | 6.11 | 1.50 | 29.63 | 46.00 | 16.37 |

- Remark:
- All readings are Quasi-Peak values.
 - The worst emission was detected at 237.792MHz with corrected signal level of 40.53dB μ V/m (limit was 46.0dB μ V/m) when the antenna was at vertical polarization and was at 1m high and the turn table was at 45°
 - 0° was the table front facing the antenna. Degree is calculated from 0° clockwise facing the antenna.

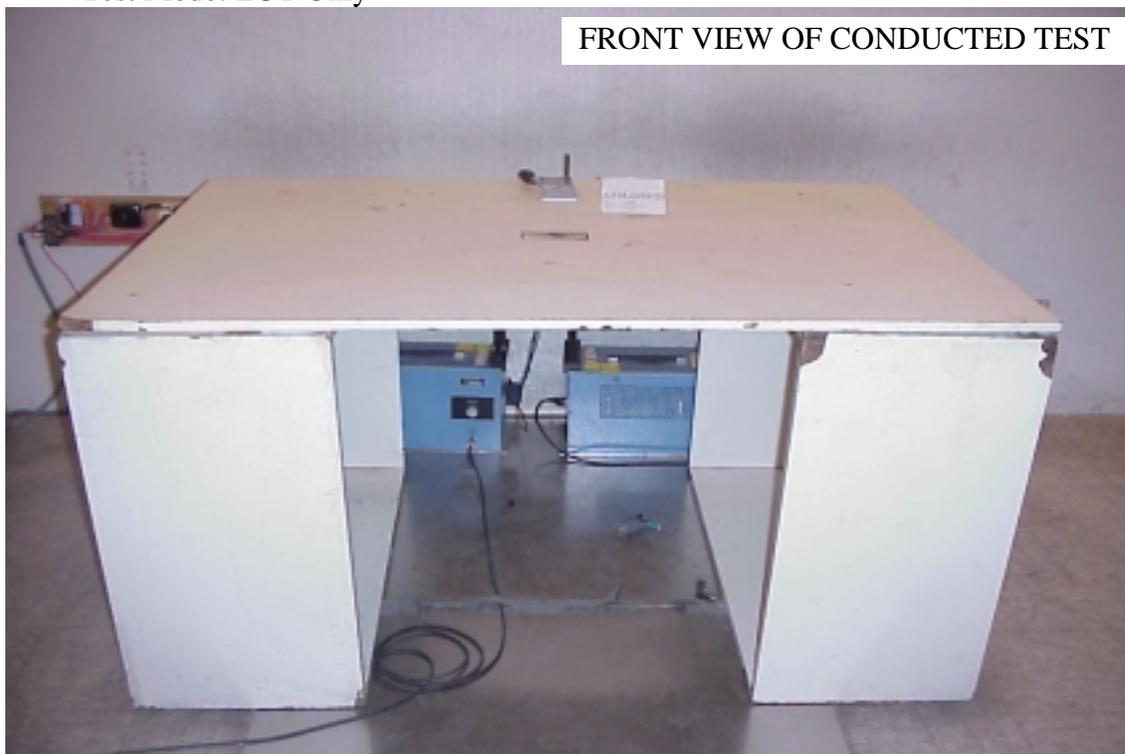
4. DEVIATIONS TO TEST SPECIFICATIONS

NONE

5. PHOTOGRAPHS

5.1. Photos of Powerline Conducted Measurement

Test Mode: EUT Only

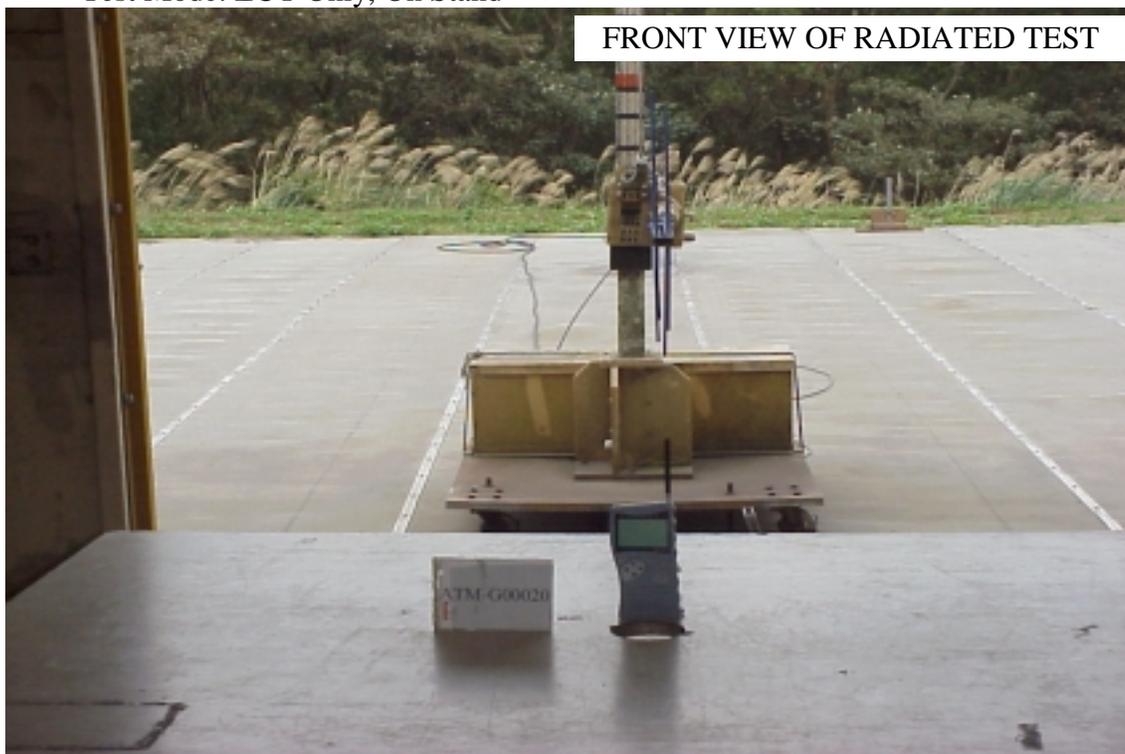


Test Mode: EUT Link PC

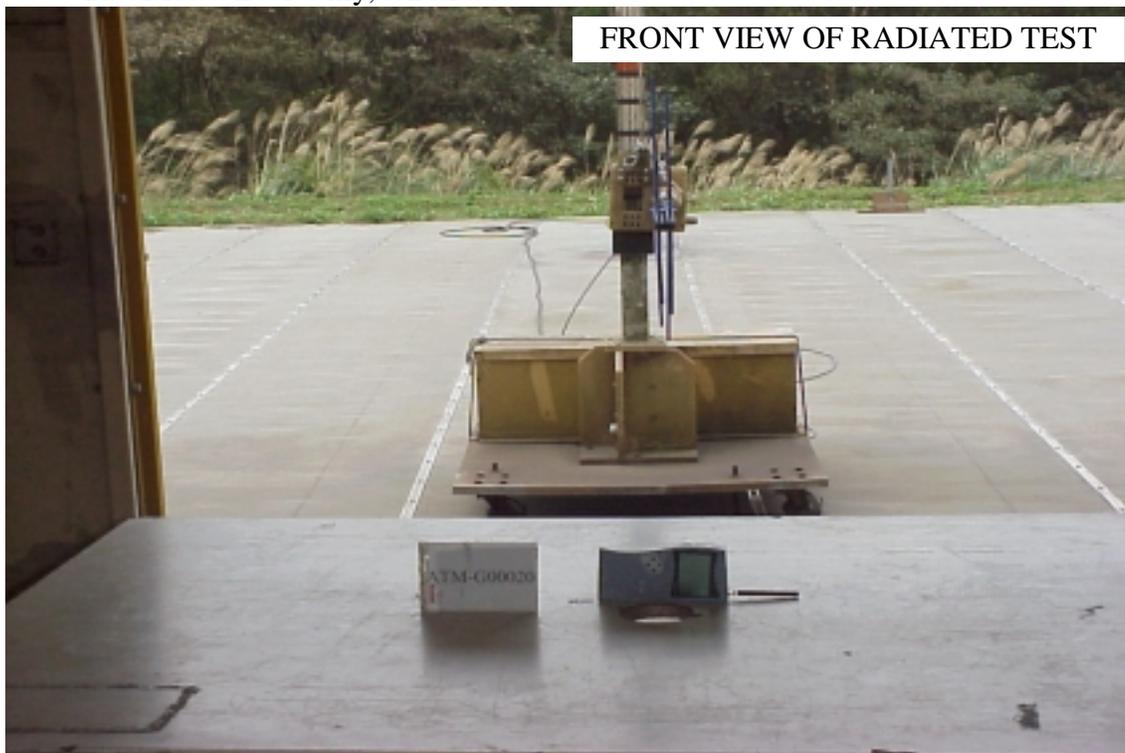


5.2. Photos of Radiated Measurement at Open Field Test Site (30~1000MHz)

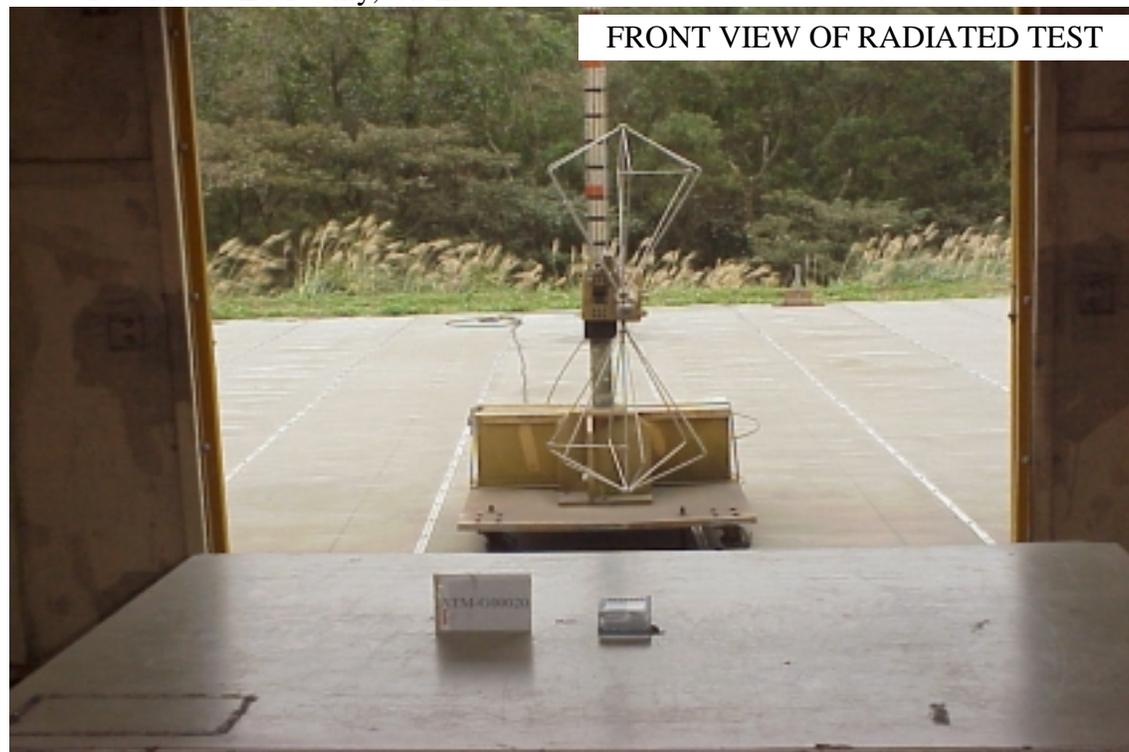
Test Mode: EUT Only, On Stand



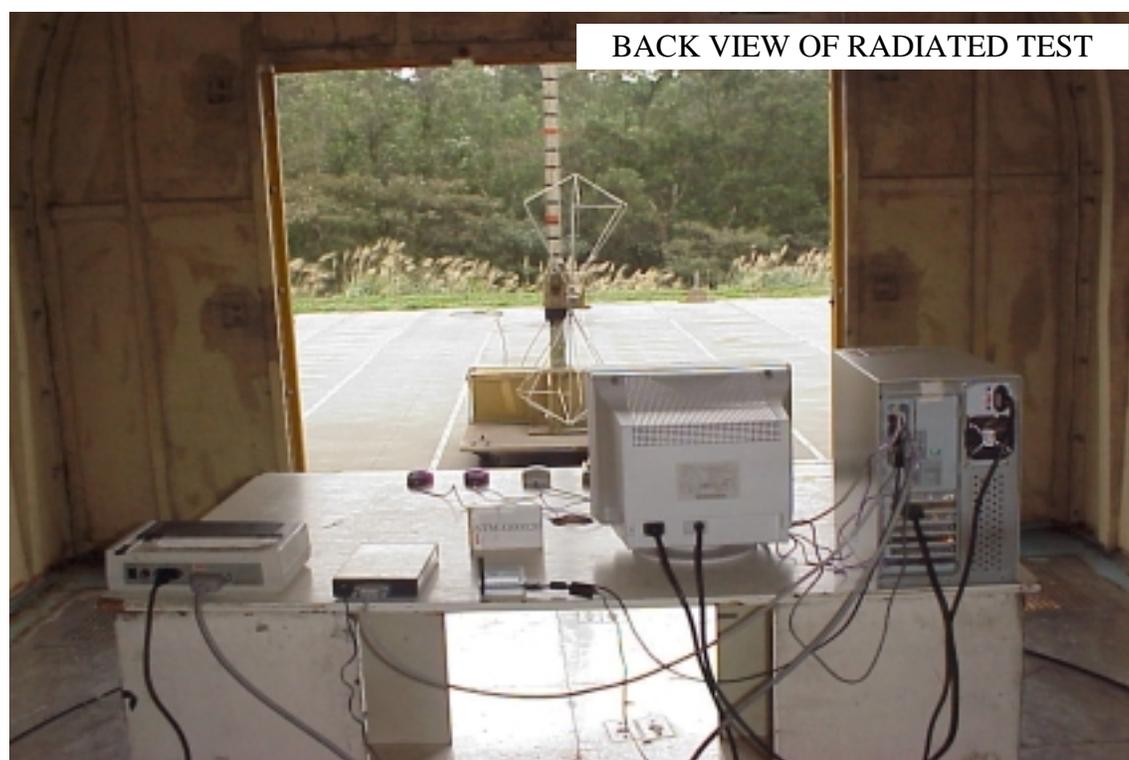
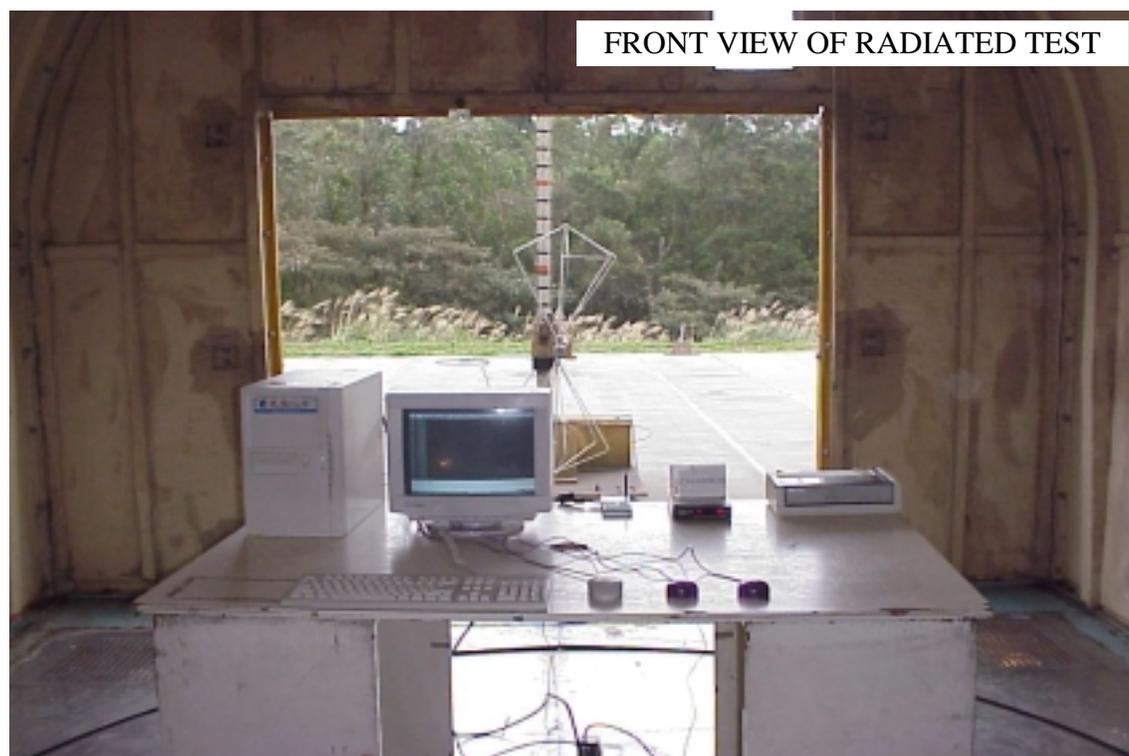
Test Mode: EUT Only, On Side



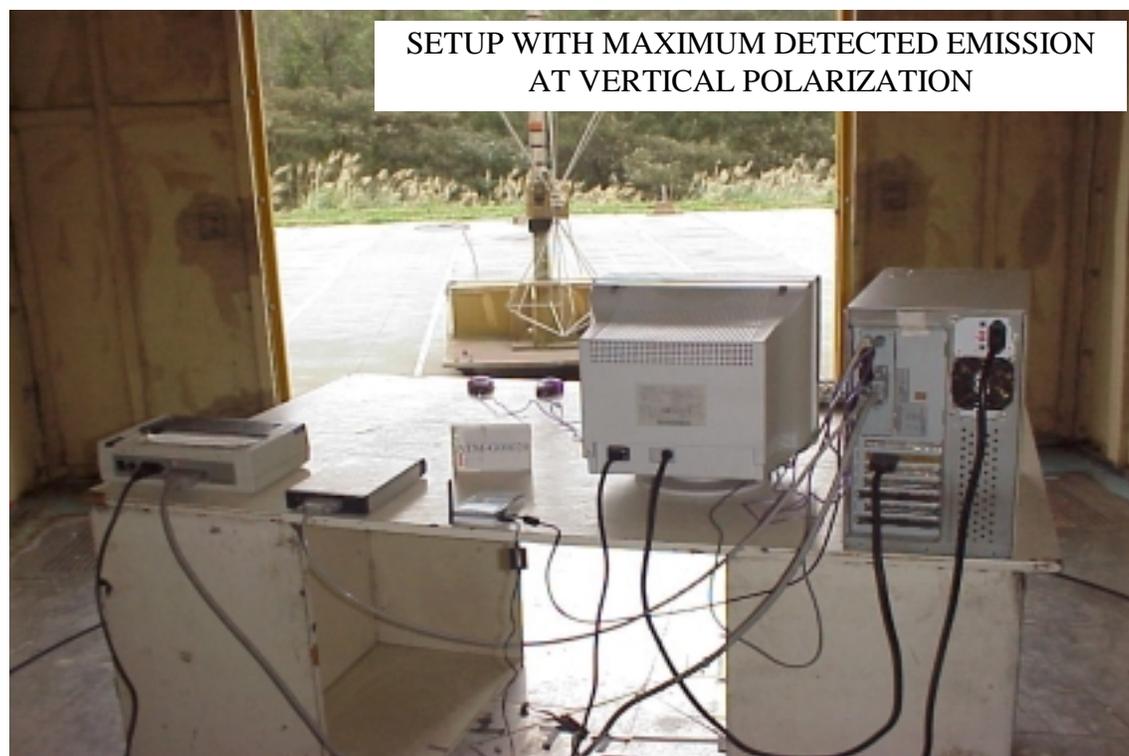
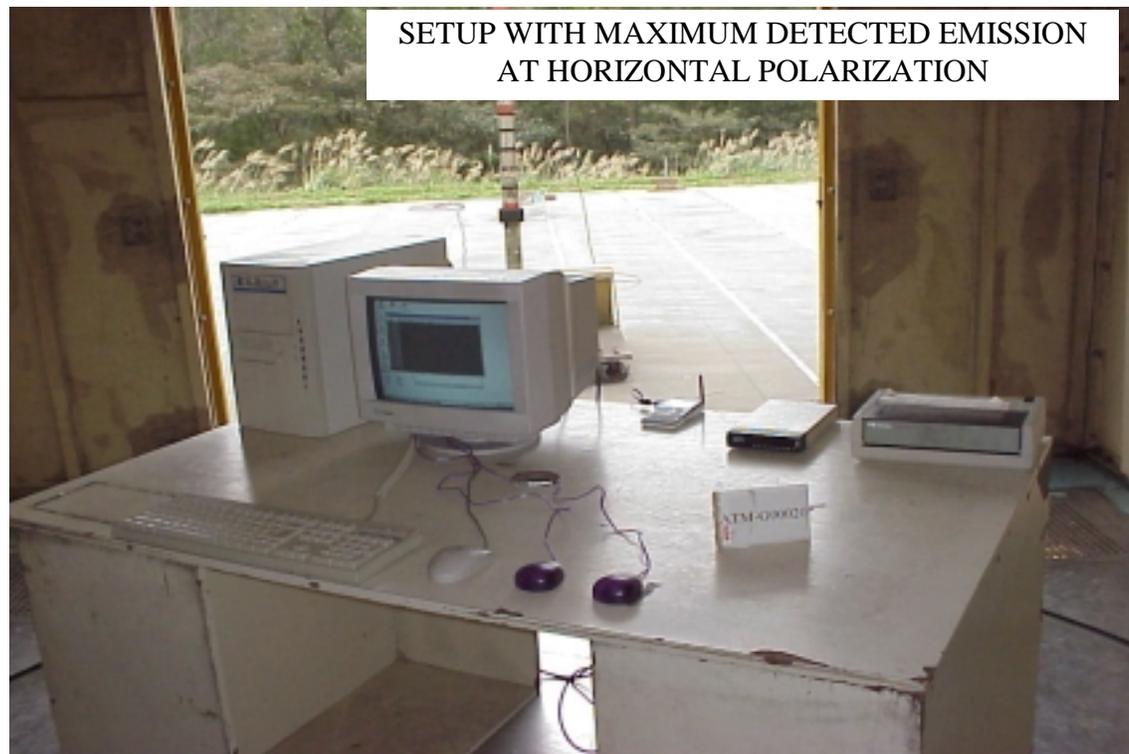
Test Mode: EUT Only, On Lie



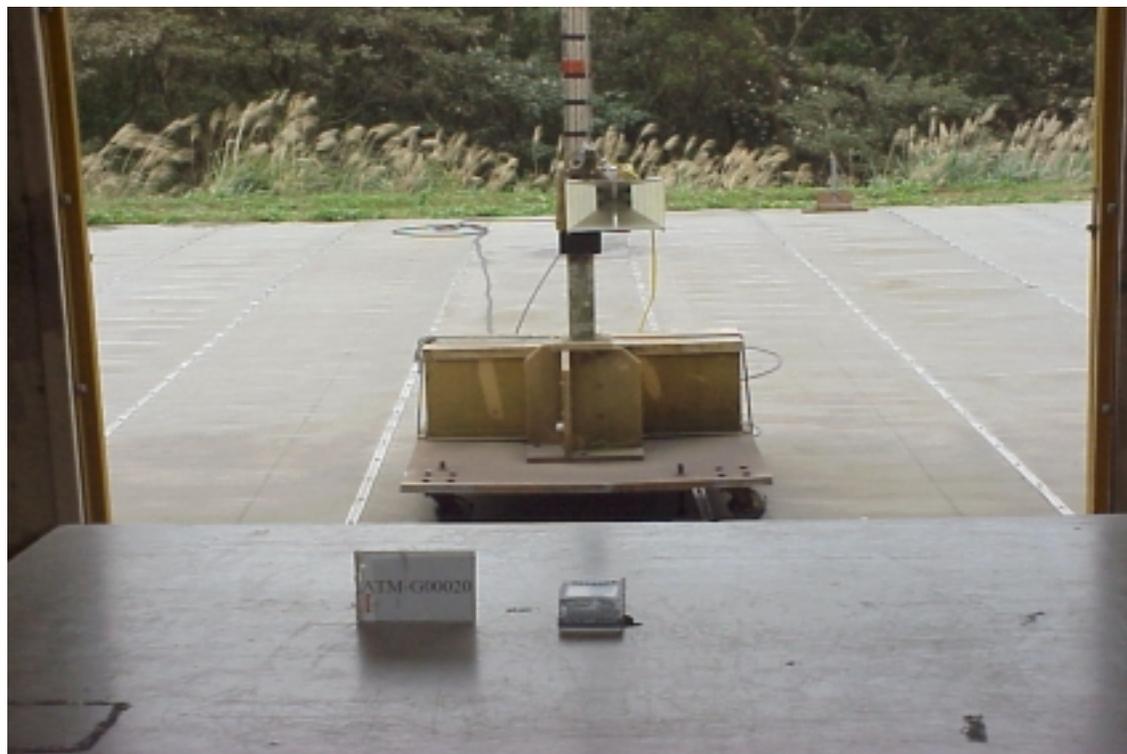
Test Mode: EUT Link PC



Test Mode: EUT Link PC



5.3. Photos of Radiated Measurement at Open Field Test Site (Above 1GHz)



APPENDIX

Shape of Fundamental Frequency

(Total Page: 1)

