# APPLICATION FOR CERTIFICATION
On Behalf of
Dynamco Pty. Ltd.

Remote Relay (Transmitter)

Model : TX24

FCC ID：PJ9TX24

Prepared for : Dynamco Pty. Ltd.
10 Brown Street, East Perth,
Western Australia 6004 Australia

Prepared by : Audix Corporation
Technical Division EMC Department
No. 53-11, Tin-Fu Tsun, Lin-Kou,
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| | | |
|---|---|---|
| File Number | : | EM-G921185 |
| Report Number | : | TTEMC-F92221 |
| Date of Test | : | Nov. 14, 2003 |
| Date of Report | : | Nov. 19, 2003 |

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# TEST REPORT CERTIFICATION

| | | |
|---|---|---|
| Applicant | : | Dynamco Pty. Ltd. |
| Manufacturer | : | Tesor Plus Corp. |
| EUT Description | : | Remote Relay (Transmitter) |
| FCC ID | : | PJ9TX24 |
| | | (A) MODEL NO. : TX24 |
| | | (B) SERIAL NO. : N/A |
| | | (C) POWER SUPPLY : DC 3V Battery |

Measurement Procedure Used:

FCC RULES AND REGULATIONS PART 15 SUBPART C, MAR 2003
AND ANSI C63.4/1992
(FCC CFR 47 Part 15C, §15.231, §15.207 and §15.209)

The device described above was tested by AUDIX COPORATION. to determine the maximum emission levels emanating from the device. The maximum emission levels were compared to the FCC Part 15 subpart C limits both radiated and conducted emissions.

The measurement results are contained in this test report and AUDIX CORPORATION. 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 AUDIX CORPORATION.

Date of Test: Nov. 14, 2003

Prepared by: Cherry Wang Nov. 21, 2003
(Cherry Wang/Assistant Manager)

Test Engineer: Ben Cheng Nov. 21, 2003
(Ben Cheng/Assistant Manager)

Approved & Authorized Signer: Leon Liu for
(Leon Liu/Manager) Nov. 21, 2003

# 1. GENERAL INFORMATION

## 1.1. Description of Device (EUT)

| | | |
|---|---|---|
| Description | : | Remote Relay (Transmitter) |
| Model Number | : | TX24 |
| FCC ID | : | PJ9TX24 |
| Applicant | : | Dynamco Pty. Ltd.<br>10 Brown Street, East Perth,<br>Western Australia 6004 Australia |
| Manufacturer | : | Tesor Plus Corp.<br>37, Lane 136, Chung-Hsing N.St.,<br>San-Chung, Taipei Hsien, Taiwan |
| Fundamental Frequency | : | 433MHz |
| Power Supply | : | DC 3V Battery |
| Date of Receipt of Sample | : | Nov. 12, 2003 |
| Date of Test | : | Nov. 14, 2003 |

Remote Relay (Receiver)
Model No.: NSRGK
FCC ID : By DoC (Report No. TTEMC-F92046)

**Remark:**

Antenna requirement: This EUT's transmitter antenna is design in soldered to a printed circuit board, comply with §15.203 and inform to user that any change and modify is prohibited.

## 1.2. Description of Test Facility

| | | |
|---|---|---|
| Name of Firm | : | Audix Corporation<br>Technical Division EMC Department<br>No. 53-11, Tin-Fu Tsun, Lin-Kou Hsiang,<br>Taipei Hsien 24443, Taiwan, R.O.C. |
| Test Location & Facility (A/C) | : | **Semi-Anechoic Chamber**<br>No. 53-11, Tin-Fu Tsun, Lin-Kou Hsiang,<br>Taipei Hsien 24443, Taiwan, R.O.C.<br><br>May. 16, 2003 Re-File on<br>Federal Communication Commission<br>Registration Number: 90993 |
| NVLAP Lab. Code | : | 200077-0 |

## 1.3. Measurement Uncertainty

| Test Item | Frequency Range | Uncertainty (dB) |
|---|---|---|
| Conduction Test | 150KHz~30MHz | ±2.66dB |
| Radiation Test (Distance: 3m) | 30MHz~300MHz | +4.26dB / –4.22dB |
| | 300MHz~1000MHz | +5.28dB / –4.0dB |

Remark：Uncertainty = $ku_c$ (y)

# 2. POWERLINE CONDUCTED EMISSION MEASUREMENT

【The EUT only employ battery power for operation, no conductive emissions limits are required according to FCC Part 15 Section §15.207】

# 3. RADIATED EMISSION MEASUREMENT

## 3.1. Test Equipment

The following test equipment are used during the radiated emission measurement：

3.1.1. For 30MHz~1000MHz Frequency (at Semi-Anechoic Chamber)

| Item | Type | Manufacturer | Model No. | Serial No. | Last Cal. | Next Cal. |
|---|---|---|---|---|---|---|
| 1. | Spectrum Analyzer | HP | 8593EM | 3826A00248 | Sep.24, 03’ | Sep.23, 04’ |
| 2. | Pre-Amplifier | HP | 8447D | 2944A06305 | Mar.04, 03’ | Mar.03, 04’ |
| 3. | Broadband Antenna | Schwarzbeck | BBA 9106 | A3L | Feb.23, 03‘ | Feb.22, 04‘ |
| 4. | Broadband Antenna | Schwarzbeck | UHALP9108-A | 0138 | Feb.23, 03‘ | Feb.22, 04‘ |

3.1.2. For 1GHz~5GHz frequency (at Semi-Anechoic Chamber)

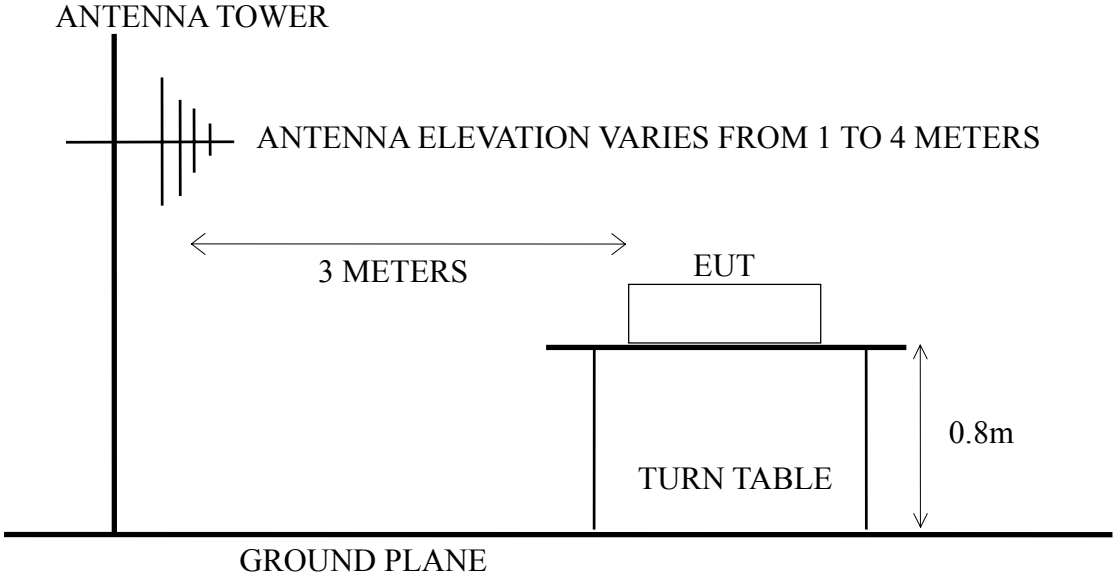
| | | | | | | |
|---|---|---|---|---|---|---|
| 1. | Spectrum Analyzer | HP | 8593EM | 3826A00248 | Sep.24, 03’ | Sep.23, 04’ |
| 2. | Pre-Amplifier | HP | 8449B | 3008A00529 | Jan.07, 03’ | Jan.06, 04’ |
| 3. | Horn Antenna | EMCO | 3115 | 9112-3775 | Apr.21, 03’ | Apr.20, 04’ |

## 3.2. Test Setup

3.2.1. Block Diagram of connection between EUT and simulators

**REMOTE RELAY (TRANSMITTER)**
**(EUT)**

3.2.2. Semi-Anechoic Chamber (3m) Setup Diagram



## 3.3. Radiation Limit (§15.231)

| FREQUENCY MHz | DISTANCE Meters | FIELD STRENGTHS LIMITS | |
|---|---|---|---|
| | | μV/m | dBμV/m |
| Fundamental Freq. | 3 | 4383.34 | 72.83 (Quasi-Peak) |
| Spurious Emission | 3 | 438.3 | 52.83 (Quasi-Peak) |
| Above 1GHz *(6) | 3 | --- | 74 (Peak) |
| Above 1GHz *(6) | 3 | --- | 54 (Average) |

Remark： (1) Emission level (dBμV/m) = 20 log Emission level (μV/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.
(4) Where limit of Fundamental Freq. is calculated by:
16.6667x433-2833.3333= 4383.35μV/m= 72.83dBμV/m
limit of spurious emission is 72.83dBμV/m–20dB= 52.83dBμV/m
(5) The limits in this table are based on CFR 47 Part 15.205(a)(b) and Part 15.209 (a) and Part 15.231(e).
(6) The over 1GHz limit, FCC limit is used based on CFR 47 Part 15.35 (b) and Part 15.205(b) & Part 15.209(e) & Part 15.231(a)-(3).

## 3.4. EUT's Configuration during Compliance Measurement

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

### 3.4.1. Remote Relay (Transmitter) (EUT)

| | | |
|---|---|---|
| Model Number | : | TX24 |
| Serial Number | : | N/A |
| Manufacturer | : | Tesor Plus Corp. |
| FCC ID. | : | PJ9TX24 |
| Fundamental Frequency | : | 433MHz |

## 3.5. Operating Condition of EUT

3.5.1. Setup the EUT and simulator as shown on 3.2.
3.5.2. Turned on the power of all equipment.
3.5.3. The EUT [Remote Relay (Transmitter)] was emitted the fundamental frequency at the stand, side and lie conditions.
3.5.4. The EUT was at worked on maximum transmitting status during all testing.

## 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 5GHz 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 5GHz 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 FCC ANSI C63.4-1992 regulation.

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

EUT with three kinds of position (on Stand、Side、Lie) were done during radiated measurement and all the test results are listed in section 3.7.

## 3.7. Radiated Emission Noise Measurement Results

### 3.7.1. 30MHz to 1GHz Frequency Range Measurement Results: **PASSED.**

All the emissions not reported below are too low against the FCC part 15 Subpart C limit.

| | | | |
|---|---|---|---|
| Date of Test： | Nov. 14, 2003 | Temperature： | 19℃ |
| EUT： | Remote Relay (Transmitter) | Humidity： | 47% |
| Test Position： | EUT on Stand | Fundamental Freq.： | 433MHz |

| Emission Frequency MHz | Antenna Factor dB/m | Cable Loss dB | Meter Reading Horizontal dBμV | Emission Level Horizontal dBμV/m | Limits dBμV/m | Margin dB |
|---|---|---|---|---|---|---|
| Fundamental Freq. (Quasi-Peak Value) | | | | | | |
| 433.400 | 17.20 | 5.20 | 40.83 | 63.23 | 72.83 | 9.60 |
| Spurious / Harmonic Freq. (Below 1000MHz, Quasi-Peak Value) | | | | | | |
| 107.490 | 17.42 | 2.20 | 3.26 | 22.88 | 52.83 | 29.95 |
| 228.180 | 23.40 | 3.30 | 0.58 | 27.28 | 52.83 | 25.55 |
| 297.300 | 26.70 | 4.00 | -0.13 | 30.57 | 52.83 | 22.26 |
| 866.500 | 22.66 | 7.20 | 12.52 | 42.38 | 52.83 | 10.45 |
| 896.400 | 22.96 | 7.30 | 8.35 | 38.61 | 52.83 | 14.22 |

| Emission Frequency MHz | Antenna Factor dB/m | Cable Loss dB | Meter Reading Vertical dBμV | Emission Level Vertical dBμV/m | Limits dBμV/m | Margin dB |
|---|---|---|---|---|---|---|
| Fundamental Freq. (Quasi-Peak Value) | | | | | | |
| 433.400 | 16.60 | 5.20 | 47.73 | 69.53 | 72.83 | 3.30 |
| Spurious / Harmonic Freq. (Below 1000MHz, Quasi-Peak Value) | | | | | | |
| * 113.430 | 17.24 | 2.26 | 9.40 | 28.90 | 43.50 | 14.60 |
| * 241.680 | 25.16 | 3.40 | 0.53 | 29.09 | 46.00 | 16.91 |
| * 274.890 | 25.27 | 3.70 | 0.69 | 29.66 | 46.00 | 16.34 |
| 866.500 | 21.59 | 7.20 | 14.43 | 43.22 | 52.83 | 9.61 |
| 897.800 | 23.00 | 7.30 | 10.65 | 40.95 | 52.83 | 11.88 |

Remark ： 1. All readings are Quasi-Peak values.
2. Emission Level = Antenna Factor + Cable Loss + Meter Reading.
3. '*' The field strength of emission appearing within Part 15.205(a)(b) shall not exceed the limits shown in section 15.209.

| | | | |
|---|---|---|---|
| Date of Test： | Nov. 14, 2003 | Temperature： | 19℃ |
| EUT： | Remote Relay (Transmitter) | Humidity： | 47% |
| Test Position： | EUT on Side | Fundamental Freq.： | 433MHz |

| Emission Frequency MHz | Antenna Factor dB/m | Cable Loss dB | Meter Reading Horizontal dBμV | Emission Level Horizontal dBμV/m | Limits dBμV/m | Margin dB |
|---|---|---|---|---|---|---|
| Fundamental Freq. (Quasi-Peak Value) | | | | | | |
| 433.400 | 17.20 | 5.20 | 40.42 | 62.82 | 72.83 | 10.01 |
| Spurious / Harmonic Freq. (Below 1000MHz, Quasi-Peak Value) | | | | | | |
| 102.090 | 16.99 | 2.10 | 3.64 | 22.73 | 52.83 | 30.10 |
| 220.080 | 22.90 | 3.21 | 3.15 | 29.26 | 52.83 | 23.57 |
| * 282.180 | 25.70 | 3.80 | 0.15 | 29.65 | 46.00 | 16.35 |
| 866.500 | 22.66 | 7.20 | 14.36 | 44.22 | 52.83 | 8.61 |
| 896.400 | 22.95 | 7.30 | 6.84 | 37.09 | 52.83 | 15.74 |

| Emission Frequency MHz | Antenna Factor dB/m | Cable Loss dB | Meter Reading Vertical dBμV | Emission Level Vertical dBμV/m | Limits dBμV/m | Margin dB |
|---|---|---|---|---|---|---|
| Fundamental Freq. (Quasi-Peak Value) | | | | | | |
| 433.400 | 16.60 | 5.20 | 47.52 | 69.32 | 72.83 | 3.51 |
| Spurious / Harmonic Freq. (Below 1000MHz, Quasi-Peak Value) | | | | | | |
| * 129.090 | 18.28 | 2.40 | 3.25 | 23.93 | 43.50 | 19.57 |
| * 250.320 | 25.42 | 3.50 | 0.30 | 29.22 | 46.00 | 16.78 |
| 293.790 | 26.90 | 3.90 | -0.04 | 30.76 | 52.83 | 22.07 |
| 866.500 | 21.59 | 7.20 | 14.85 | 43.64 | 52.83 | 9.19 |
| 897.800 | 23.00 | 7.30 | 11.33 | 41.63 | 52.83 | 11.20 |

Remark ： 1. All readings are Quasi-Peak values.
2. Emission Level = Antenna Factor + Cable Loss + Meter Reading.
3. '*' The field strength of emission appearing within Part 15.205(a)(b) shall not exceed the limits shown in section 15.209.

| | | | |
|---|---|---|---|
| Date of Test： | Nov. 14, 2003 | Temperature： | 19℃ |
| EUT： | Remote Relay (Transmitter) | Humidity： | 47% |
| Test Position： | EUT on Lie | Fundamental Freq.： | 433MHz |

| Emission Frequency MHz | Antenna Factor dB/m | Cable Loss dB | Meter Reading Horizontal dBμV | Emission Level Horizontal dBμV/m | Limits dBμV/m | Margin dB |
|---|---|---|---|---|---|---|
| Fundamental Freq. (Quasi-Peak Value) | | | | | | |
| 433.400 | 17.20 | 5.20 | 47.35 | 69.75 | 72.83 | 3.08 |
| Spurious / Harmonic Freq. (Below 1000MHz, Quasi-Peak Value) | | | | | | |
| 102.090 | 16.99 | 2.10 | 8.84 | 27.93 | 52.83 | 24.90 |
| 107.490 | 17.42 | 2.20 | 4.75 | 24.37 | 52.83 | 28.46 |
| * 273.540 | 25.30 | 3.70 | 2.75 | 31.75 | 46.00 | 14.25 |
| 866.500 | 22.66 | 7.20 | 13.82 | 43.68 | 52.83 | 9.15 |
| 896.400 | 22.95 | 7.30 | 12.28 | 42.53 | 52.83 | 10.30 |

| Emission Frequency MHz | Antenna Factor dB/m | Cable Loss dB | Meter Reading Vertical dBμV | Emission Level Vertical dBμV/m | Limits dBμV/m | Margin dB |
|---|---|---|---|---|---|---|
| Fundamental Freq. (Quasi-Peak Value) | | | | | | |
| 433.400 | 16.60 | 5.20 | 32.18 | 53.98 | 72.83 | 18.85 |
| Spurious / Harmonic Freq. (Below 1000MHz, Quasi-Peak Value) | | | | | | |
| 95.340 | 17.10 | 2.00 | 5.73 | 24.83 | 52.83 | 28.00 |
| 214.680 | 22.90 | 3.11 | 0.66 | 26.67 | 52.83 | 26.16 |
| 287.040 | 25.89 | 3.80 | 0.30 | 29.99 | 52.83 | 22.84 |
| 866.500 | 21.59 | 7.20 | 15.21 | 44.00 | 52.83 | 8.83 |
| 897.800 | 23.00 | 7.30 | 8.57 | 38.87 | 52.83 | 13.96 |

Remark ： 1. All readings are Quasi-Peak values.
2. Emission Level = Antenna Factor + Cable Loss + Meter Reading.
3. '*' The field strength of emission appearing within Part 15.205(a)(b) shall not exceed the limits shown in section 15.209.

3.7.2. 1GHz to 5GHz Frequency Range Measurement Results: **PASSED.**

The frequency spectrum from 1GHz to 5GHz (up to 10th harmonics) was investigated. All the emissions not reported below are too low against the FCC part 15 Subpart C limit.

| | | | |
|---|---|---|---|
| Date of Test： | Nov. 14, 2003 | Temperature： | 19℃ |
| EUT： | Remote Relay (Transmitter) | Humidity： | 47% |
| Test Position： | EUT on Stand | Fundamental Freq.： | 433MHz |

| Emission Frequency MHz | Antenna Factor dB/m | Cable Loss dB | Meter Reading Horizontal dBμV | Emission Level Horizontal dBμV/m | Limits dBμV/m | Margin dB |
|---|---|---|---|---|---|---|
| Spurious / Harmonic Freq. (Above 1000MHz, Peak Value) | | | | | | |
| 1299.300 | 25.33 | 4.84 | 7.48 | 37.65 | 74.00 | 36.35 |
| 1732.700 | 26.62 | 7.07 | 2.87 | 36.56 | 74.00 | 37.44 |
| 2165.200 | 28.17 | 6.08 | 1.27 | 35.52 | 74.00 | 38.48 |
| 2598.800 | 29.28 | 6.65 | - 1.42 | 34.51 | 74.00 | 39.49 |
| 3031.900 | 30.88 | 7.26 | - 6.50 | 31.64 | 74.00 | 42.36 |

| Emission Frequency MHz | Antenna Factor dB/m | Cable Loss dB | Meter Reading Vertical dBμV | Emission Level Vertical dBμV/m | Limits dBμV/m | Margin dB |
|---|---|---|---|---|---|---|
| Spurious / Harmonic Freq. (Above 1000MHz, Peak Value) | | | | | | |
| 1299.300 | 25.33 | 4.84 | 8.98 | 39.15 | 74.00 | 34.85 |
| 1732.700 | 26.62 | 7.07 | 3.77 | 37.46 | 74.00 | 36.54 |
| 2165.200 | 28.17 | 6.08 | 1.91 | 36.16 | 74.00 | 37.84 |
| 2598.800 | 29.28 | 6.65 | - 0.38 | 35.55 | 74.00 | 38.45 |
| 3031.900 | 30.88 | 7.26 | - 6.59 | 31.55 | 74.00 | 42.45 |

Remark ： 1. All readings are Peak values.
2. Emission Level = Antenna Factor + Cable Loss + Meter Reading.
3. '*' The field strength of emission appearing within Part 15.205(a)(b) shall not exceed the limits shown in section 15.209.

| | | | |
|---|---|---|---|
| Date of Test： | Nov. 14, 2003 | Temperature： | 19℃ |
| EUT： | Remote Relay (Transmitter) | Humidity： | 47% |
| Test Position： | EUT on Stand | Fundamental Freq.： | 433MHz |

| Emission Frequency MHz | Antenna Factor dB/m | Cable Loss dB | Meter Reading Horizontal dBμV | Emission Level Horizontal dBμV/m | Limits dBμV/m | Margin dB |
|---|---|---|---|---|---|---|
| Spurious / Harmonic Freq. (Above 1000MHz, Average Value) | | | | | | |
| 1299.300 | 25.33 | 4.83 | 2.49 | 32.65 | 54.00 | 21.35 |
| 1732.700 | 26.61 | 7.05 | - 2.10 | 31.56 | 54.00 | 22.44 |
| 2165.200 | 28.16 | 6.07 | - 3.71 | 30.52 | 54.00 | 23.48 |
| 2598.800 | 29.23 | 6.63 | - 6.35 | 29.51 | 54.00 | 24.49 |
| 3031.900 | 30.87 | 7.25 | - 11.48 | 26.64 | 54.00 | 27.36 |

| Emission Frequency MHz | Antenna Factor dB/m | Cable Loss dB | Meter Reading Vertical dBμV | Emission Level Vertical dBμV/m | Limits dBμV/m | Margin dB |
|---|---|---|---|---|---|---|
| Spurious / Harmonic Freq. (Above 1000MHz, Average Value) | | | | | | |
| 1299.300 | 25.33 | 4.83 | 3.99 | 34.15 | 54.00 | 19.85 |
| 1732.700 | 26.61 | 7.05 | - 1.20 | 32.46 | 54.00 | 21.54 |
| 2165.200 | 28.16 | 6.07 | - 3.07 | 31.16 | 54.00 | 22.84 |
| 2598.800 | 29.23 | 6.63 | - 5.31 | 30.55 | 54.00 | 23.45 |
| 3031.900 | 30.87 | 7.25 | - 11.57 | 26.55 | 54.00 | 27.45 |

Remark ： 1. All readings are Average values.
2. Emission Level = Antenna Factor + Cable Loss + Meter Reading.
3.‘*’ The field strength of emission appearing within Part 15.205(a)(b) shall not exceed the limits shown in section 15.209.

Date of Test： Nov. 14, 2003 Temperature： 19℃

EUT： Remote Relay (Transmitter) Humidity： 47%

Test Position： EUT on Side Fundamental Freq.： 433MHz

| Emission Frequency MHz | Antenna Factor dB/m | Cable Loss dB | Meter Reading Horizontal dBμV | Emission Level Horizontal dBμV/m | Limits dBμV/m | Margin dB |
|---|---|---|---|---|---|---|
| Spurious / Harmonic Freq. (Above 1000MHz, Peak Value) | | | | | | |
| 1299.300 | 25.33 | 4.84 | 4.48 | 34.65 | 74.00 | 39.35 |
| 1732.700 | 26.62 | 7.07 | - 0.15 | 33.54 | 74.00 | 40.46 |
| 2165.200 | 28.17 | 6.08 | - 1.90 | 32.35 | 74.00 | 41.65 |
| 2598.800 | 29.28 | 6.65 | - 6.58 | 29.35 | 74.00 | 44.65 |
| 3031.900 | 30.88 | 7.26 | - 10.61 | 27.53 | 74.00 | 46.47 |

| Emission Frequency MHz | Antenna Factor dB/m | Cable Loss dB | Meter Reading Vertical dBμV | Emission Level Vertical dBμV/m | Limits dBμV/m | Margin dB |
|---|---|---|---|---|---|---|
| Spurious / Harmonic Freq. (Above 1000MHz, Peak Value) | | | | | | |
| 1299.300 | 25.33 | 4.84 | 10.39 | 40.56 | 74.00 | 33.44 |
| 1732.700 | 26.62 | 7.07 | 4.86 | 38.55 | 74.00 | 35.45 |
| 2165.200 | 28.17 | 6.08 | 3.60 | 37.85 | 74.00 | 36.15 |
| 2598.800 | 29.28 | 6.65 | 0.60 | 36.53 | 74.00 | 37.47 |
| 3031.900 | 30.88 | 7.26 | - 3.79 | 34.35 | 74.00 | 39.65 |

Remark ： 1. All readings are Peak values.
2. Emission Level = Antenna Factor + Cable Loss + Meter Reading.
3.‘*’ The field strength of emission appearing within Part 15.205(a)(b) shall not exceed the limits shown in section 15.209.

| | | | |
|---|---|---|---|
| Date of Test： | Nov. 14, 2003 | Temperature： | 19℃ |
| EUT： | Remote Relay (Transmitter) | Humidity： | 47% |
| Test Position： | EUT on Side | Fundamental Freq.： | 433MHz |

| Emission Frequency MHz | Antenna Factor dB/m | Cable Loss dB | Meter Reading Horizontal dBμV | Emission Level Horizontal dBμV/m | Limits dBμV/m | Margin dB |
|---|---|---|---|---|---|---|
| Spurious / Harmonic Freq. (Above 1000MHz, Average Value) | | | | | | |
| 1299.300 | 25.33 | 4.83 | - 0.51 | 29.65 | 54.00 | 24.35 |
| 1732.700 | 26.61 | 7.05 | - 5.12 | 28.54 | 54.00 | 25.46 |
| 2165.200 | 28.16 | 6.07 | - 6.88 | 27.35 | 54.00 | 26.65 |
| 2598.800 | 29.23 | 6.63 | - 11.51 | 24.35 | 54.00 | 29.65 |
| 3031.900 | 30.87 | 7.25 | - 15.59 | 22.53 | 54.00 | 31.47 |

| Emission Frequency MHz | Antenna Factor dB/m | Cable Loss dB | Meter Reading Vertical dBμV | Emission Level Vertical dBμV/m | Limits dBμV/m | Margin dB |
|---|---|---|---|---|---|---|
| Spurious / Harmonic Freq. (Above 1000MHz, Average Value) | | | | | | |
| 1299.300 | 25.33 | 4.83 | 5.40 | 35.56 | 54.00 | 18.44 |
| 1732.700 | 26.61 | 7.05 | - 0.11 | 33.55 | 54.00 | 20.45 |
| 2165.200 | 28.16 | 6.07 | - 1.38 | 32.85 | 54.00 | 21.15 |
| 2598.800 | 29.23 | 6.63 | - 4.33 | 31.53 | 54.00 | 22.47 |
| 3031.900 | 30.87 | 7.25 | - 8.77 | 29.35 | 54.00 | 24.65 |

Remark ： 1. All readings are Average values.
2. Emission Level = Antenna Factor + Cable Loss + Meter Reading.
3.‘*’ The field strength of emission appearing within Part 15.205(a)(b) shall not exceed the limits shown in section 15.209.

Date of Test： Nov. 14, 2003 Temperature： 19℃

EUT： Remote Relay (Transmitter) Humidity： 47%

Test Position： EUT on Lie Fundamental Freq.： 433MHz

| | Emission Frequency MHz | Antenna Factor dB/m | Cable Loss dB | Meter Reading Horizontal dBμV | Emission Level Horizontal dBμV/m | Limits dBμV/m | Margin dB |
|---|---|---|---|---|---|---|---|
| Spurious / Harmonic Freq. (Above 1000MHz, Peak Value) | | | | | | | |
| | 1299.300 | 25.33 | 4.85 | 7.59 | 37.77 | 74.00 | 36.23 |
| | 1732.700 | 26.62 | 7.07 | 2.43 | 36.12 | 74.00 | 37.88 |
| | 2165.200 | 28.16 | 6.07 | 1.00 | 35.23 | 74.00 | 38.77 |
| | 2598.800 | 29.26 | 6.64 | - 1.67 | 34.23 | 74.00 | 39.77 |
| | 3031.900 | 30.88 | 7.26 | - 5.49 | 32.65 | 74.00 | 41.35 |

| | Emission Frequency MHz | Antenna Factor dB/m | Cable Loss dB | Meter Reading Vertical dBμV | Emission Level Vertical dBμV/m | Limits dBμV/m | Margin dB |
|---|---|---|---|---|---|---|---|
| Spurious / Harmonic Freq. (Above 1000MHz, Peak Value) | | | | | | | |
| * | 1399.300 | 25.33 | 4.84 | 6.98 | 37.15 | 74.00 | 36.85 |
| | 1732.700 | 26.62 | 7.07 | 2.42 | 36.11 | 74.00 | 37.89 |
| | 2165.200 | 28.17 | 6.08 | 1.56 | 35.81 | 74.00 | 38.19 |
| | 2598.800 | 29.28 | 6.65 | - 1.61 | 34.32 | 74.00 | 39.68 |
| | 3031.900 | 30.88 | 7.26 | - 4.49 | 33.65 | 74.00 | 40.35 |

Remark ： 1. All readings are Peak values.
2. Emission Level = Antenna Factor + Cable Loss + Meter Reading.
3.‘*’ The field strength of emission appearing within Part 15.205(a)(b) shall not exceed the limits shown in section 15.209.

Date of Test： Nov. 14, 2003 Temperature： 19℃

EUT： Remote Relay (Transmitter) Humidity： 47%

Test Position： EUT on Lie Fundamental Freq.： 433MHz

| | Emission Frequency MHz | Antenna Factor dB/m | Cable Loss dB | Meter Reading Horizontal dBμV | Emission Level Horizontal dBμV/m | Limits dBμV/m | Margin dB |
|---|---|---|---|---|---|---|---|
| Spurious / Harmonic Freq. (Above 1000MHz, Average Value) | | | | | | | |
| | 1299.300 | 25.33 | 4.83 | 2.61 | 32.77 | 54.00 | 21.23 |
| | 1732.700 | 26.61 | 7.05 | - 2.54 | 31.12 | 54.00 | 22.88 |
| | 2165.200 | 28.16 | 6.07 | - 4.00 | 30.23 | 54.00 | 23.77 |
| | 2598.800 | 29.23 | 6.63 | - 6.63 | 29.23 | 54.00 | 24.77 |
| | 3031.900 | 30.87 | 7.25 | - 10.47 | 27.65 | 54.00 | 26.35 |

| | Emission Frequency MHz | Antenna Factor dB/m | Cable Loss dB | Meter Reading Vertical dBμV | Emission Level Vertical dBμV/m | Limits dBμV/m | Margin dB |
|---|---|---|---|---|---|---|---|
| Spurious / Harmonic Freq. (Above 1000MHz, Average Value) | | | | | | | |
| * | 1399.300 | 25.37 | 5.14 | 1.64 | 32.15 | 54.00 | 21.85 |
| | 1732.700 | 26.61 | 7.05 | - 2.55 | 31.11 | 54.00 | 22.89 |
| | 2165.200 | 28.16 | 6.07 | - 3.42 | 30.81 | 54.00 | 23.19 |
| | 2598.800 | 29.23 | 6.63 | - 6.54 | 29.32 | 54.00 | 24.68 |
| | 3031.900 | 30.87 | 7.25 | - 9.47 | 28.65 | 54.00 | 25.35 |

Remark ： 1. All readings are Average values.
2. Emission Level = Antenna Factor + Cable Loss + Meter Reading.
3. '*' The field strength of emission appearing within Part 15.205(a)(b) shall not exceed the limits shown in section 15.209.

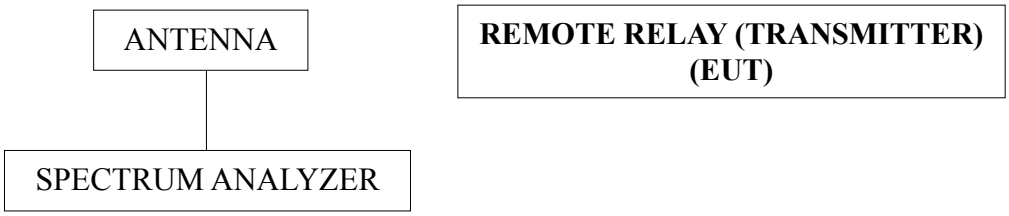
# 4. EMISSION BANDWIDTH MEASUREMENT

## 4.1. Test Equipment

The following test equipment were used during the Bandwidth Measurement：

| Item | Type | Manufacturer | Model No. | Serial No. | Last Cal. | Next Cal. |
|---|---|---|---|---|---|---|
| 1. | Spectrum Analyzer | HP | 8564EC | 3946A00249 | Aug.28, 03' | Aug.27, 04' |
| 2. | Wide Band Antenna | Diamond | RH799 | N/A | N/A | N/A |

## 4.2. Block Diagram of Test Setup




## 4.3. Specification Limits [§15.231-(c)]

The bandwidth of emission shall be no wider than 0.25% of the center frequency for device operating above 70MHz and below 900MHz. Bandwidth is determined at the points 20dB down from the modulated carrier.

## 4.4. EUT's Configuration during Compliance Measurement

The configuration of EUT were same as section 3.4.

## 4.5. Emission Bandwidth Measurement Results

**PASSED.** (0.01039% < 0.25%)

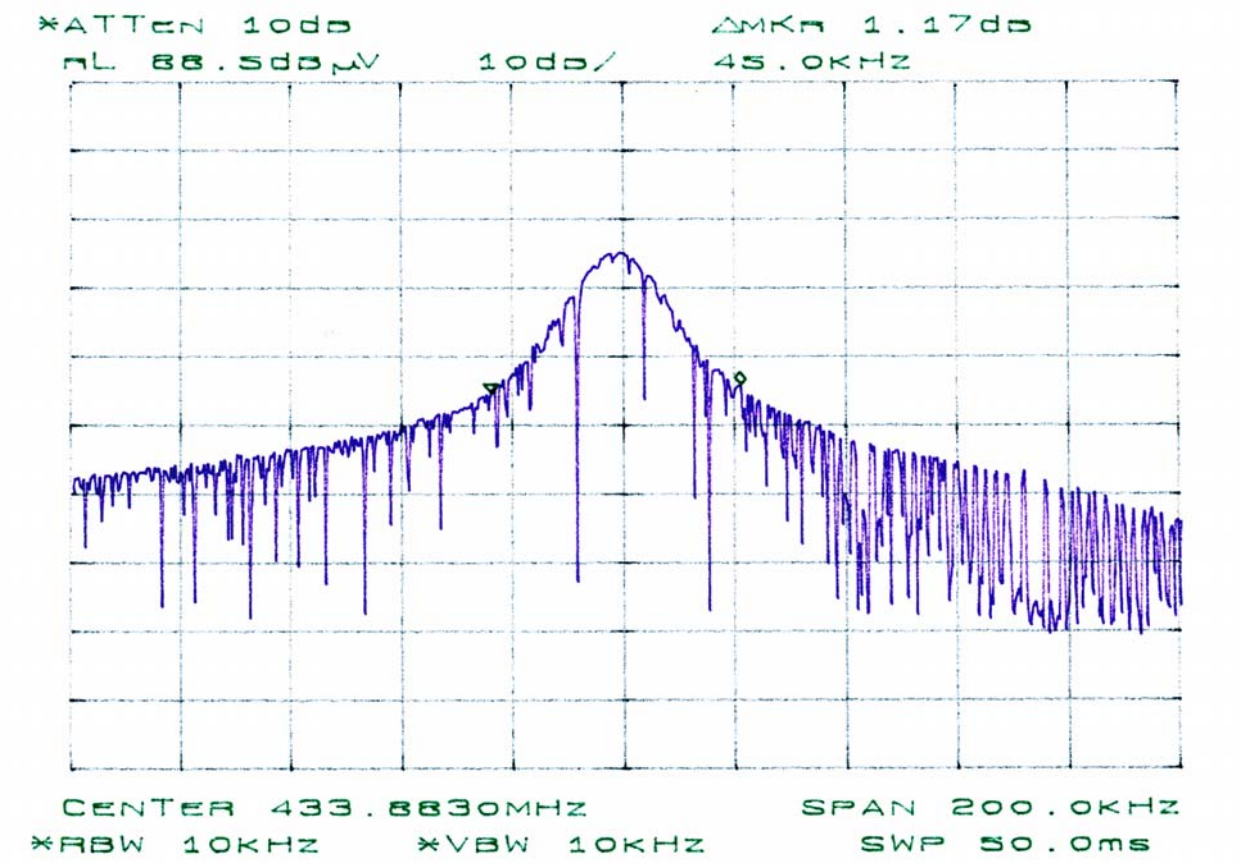
Fundamental Frequency: 433MHz

(Test Date: Nov. 14, 2003, Temperature: 22℃, Humidity: 62% )

| No. | Center Frequency | **Bandwidth** | **Tolerance (%)** |
|---|---|---|---|
| 1. | 433MHz | **45.0kHz** | **0.01039%** |

The graph of bandwidth measured is attached in next page.

# (Graph of Bandwidth Measurement)



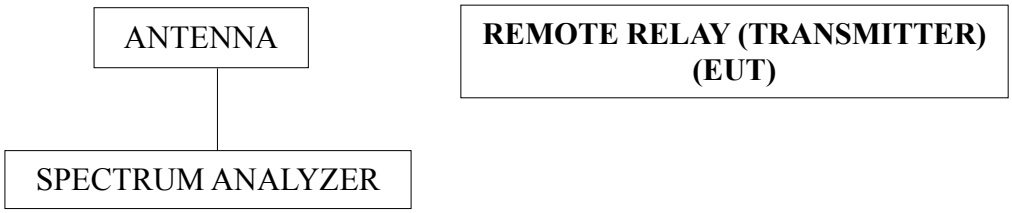
# 5. PERIODIC OPERATED MEASUREMENT

## 5.1. Test Equipment

The following test equipment were used during the periodic operated Measurement：

| Item | Type | Manufacturer | Model No. | Serial No. | Last Cal. | Next Cal. |
|---|---|---|---|---|---|---|
| 3. | Spectrum Analyzer | HP | 8564EC | 3946A00249 | Aug.28, 03’ | Aug.27, 04’ |
| 4. | Wide Band Antenna | Diamond | RH799 | N/A | N/A | N/A |

## 5.2. Block Diagram of Test Setup




## 5.3. Specification Limits [§15.231-(a)-(1)]

The operation of this device is manually operated transmitter that is automatically deactivated the transmitter within not more than 5 seconds of being released, Compliance with §15.231 (a)- (1).

## 5.4. EUT’s Configuration during Compliance Measurement

The configuration of EUT were same as section 3.4.

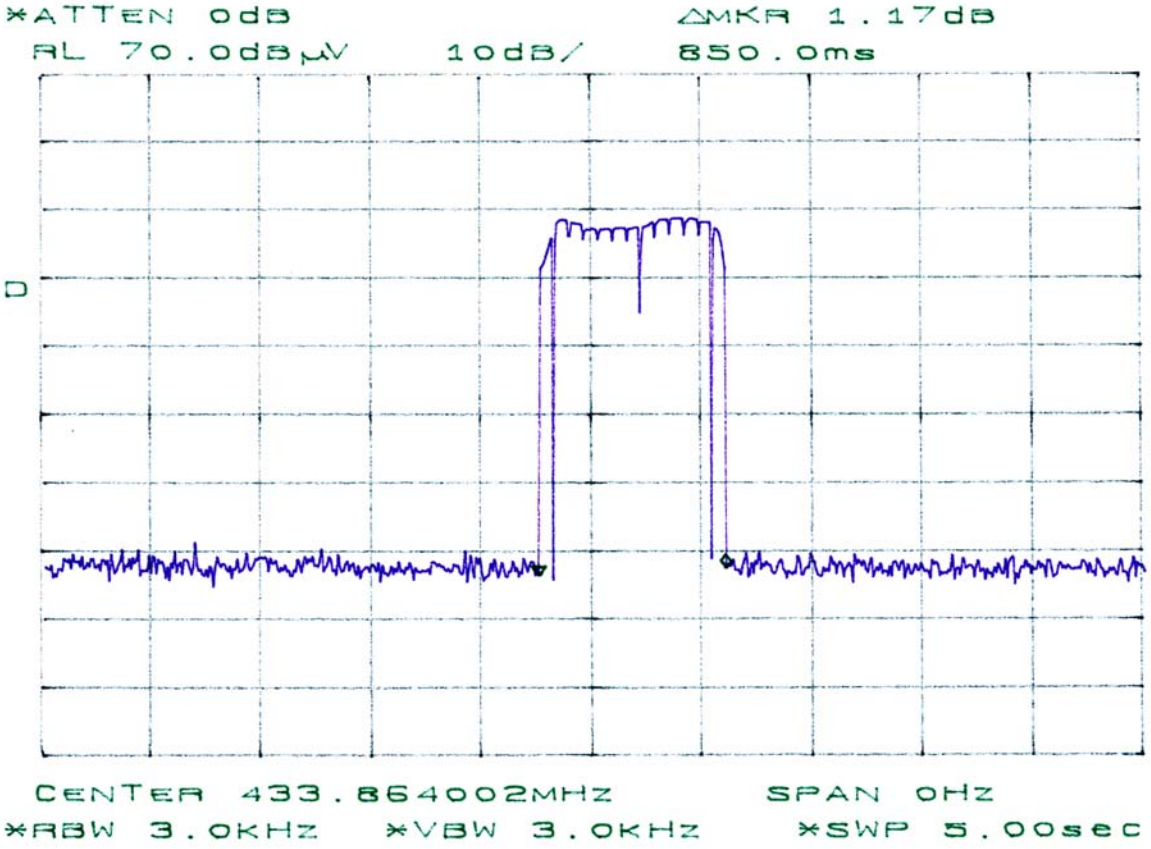
## 5.5. Periodic Operated Measurement Results

**PASSED.** T = 850.0ms. (< 5sec.)

(Test Date: Nov. 14, 2003, Temperature: 22℃, Humidity: 62% )

The graph of testing is attached in next page.

# (Graph of Periodic Operated Measurement)



# 6. DEVIATION TO TEST SPECIFICATIONS

【NONE】