**Report No.: 980501**
**Client: DWIN Electronics,Inc.**
**FCC ID: NY6TRM1**

**25 May, 1998**

# EMC TEST REPORT

## According to FCC Part 15 Subpart B

## for

## VIDEOPROCESSOR

## Model: TranScanner

## Prepared for:

## DWIN ELECTRONICS ,Inc.

**Prepared by**

**JMR Compliance Engineering**
**20400 Plummer Street**
**Chatsworth, CA 91311**
**Phone: 818-993-4801**

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## PREFACE

This report describes the results of radiated and conducted emission measurements made on an ITE which falls under the class of unintentional radiators by the FCC Rules and Regulations.

This ITE is designated: Videoprocessor
Model: TranScanner

The TRANSCANNER is designed and manufacture by DWIN Electronics,Inc. of 5838 San Fernando Road ,unit "D" Glendale, CA 91202.

The EUT was tested in full compliance to the FCC Regulations using the methods of ANSI C63.4. The results of the testing indicates that the radiated and conducted emissions met the Part 15, Class B limits when modified as described in Section 3.3 and 3.4 and 3.5 of this test record.

## 1.0 CERTIFICATION OF TEST DATA

# Certification

The data, data evaluation and equipment configuration represented herein are a true and accurate representation of the test sample ( EUT ), and EMC characteristics and measurements obtained as of the dates and the times of the test under the conditions specified and to the methods of ANSI C63.4 (1992)

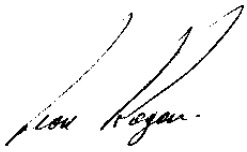
The test results provided with this report, indicate that the equipment tested:
**Videoprocessor Model:TranScanner is compliant** with the following Rules and Regulations:

A. 47 Code of Federal Regulations, Part 15, Subpart B, Class B
B. ANSI C 63.4 (1992)

Tests performed by:

Mike Chechelnik
EMC Test Engineer

Report approved by:



Leon Kogan
Technical Director,
JMR Compliance Engineering

## 2.0 GENERAL INFORMATION

### 2.1 Client Information

| | |
|---|---|
| Company Name: | DWIN ELECTRONICS,Inc. |
| Contact: | Edward Pagjian |
| Company Address: | 5838 San Fernando Road, Unit "D"<br>Glendale,CA 91202 |
| Phone: | (818) 956-1608 |

### 2.2 Administrative Data

| | |
|---|---|
| Device tested: | Videoprocessor |
| Model: | TranScanner |
| Accessories: | N/A |
| Expository Statement: | This device is intended for use in residential or office environments. |
| Purpose of test: | Demonstrate compliance with FCC Rules, Part 15, Subpart B, Class B. |
| Date of test: | 04/29/98-04/30/98 |
| Place of the test: | JMR Electronics, Inc.<br>Compliance Engineering Laboratory<br>20400 Plummer Street<br>Chatsworth, CA 91311<br>Phone: 818-993-4801 |

## 3.0 EQUIPMENT UNDER TEST ( EUT )

### 3.1 EUT Description

| | |
|---|---|
| Manufacturer: | DWIN Electronics,Inc. |
| Model No. ( type ) | Transcanner |
| Serial No. | N/A |
| Equipment category | ITE |
| Power supply | DWIN |
| Model No. | PCB882, rev1. |

### 3.2 Principle of Operation

#### a. Brief description

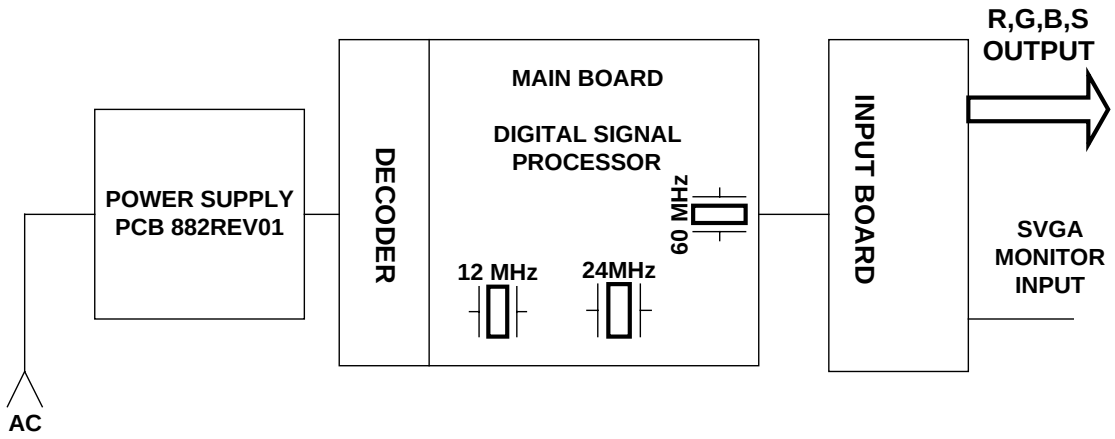
The TranScanner is a variable line multiplier designed for use with monitors that have a scanning frequency between 31.5 to 65 kHz and cannot be used with a conventional television receiver .

The monitors used with TranScanner must have a RGB+S input .

The TranScanner Provides source switching for seven different inputs including two components (Y,R-Y,B-Y),two composite video inputs and one RGB H&V Sync input.

## 3.3 EUT Block-Diagram

**BLOCK - DIAGRAM**



## 3.4 Support Equipment List

| | |
|---|---|
| Monitor: | Infotel, Inc. |
| Model: | X19001 |
| Serial number: | MH85H8100199 |
| Laser Disk Player: | Pioneer |
| Model: | CLD-D505 |
| Serial number: | QG3609520 |

## 3.5 Cabling Configuration

### Power Cords:

| | |
|---|---|
| Unit | EUT (TranScanner) |
| MFG | Generic |
| Shielded? | NO |
| Length | 2 m |

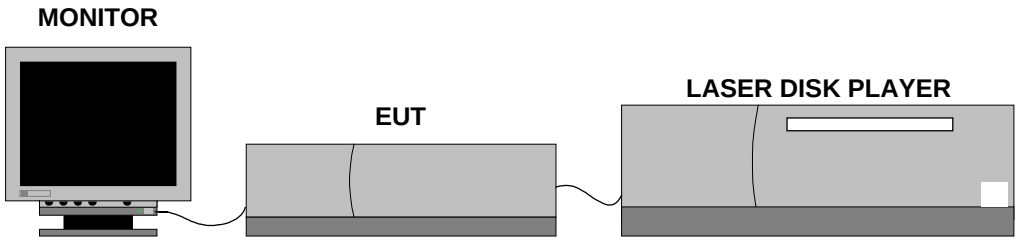
| | |
|---|---|
| Unit | Laser Disk Player |
| MFG | Pioneer |
| Shielded? | NO |
| Length | 2 m |

### I / O Cables External:

| | |
|---|---|
| Connection | Laser Disk Player to EUT (8 coaxial RG59/U cables) |
| Connector | |
| MFG | Generic |
| Shielded? | YES |

| | |
|---|---|
| Connection | Monitor to EUT |
| Connector | DB15(SVGA) |
| MFG | Infotel, Inc. |
| Shielded? | YES |

## Block Diagram Of Test Setup Operation



## 3.6 EUT Modifications

It was found that the use of:

**1**.Steward ferrite #B0562-200 on the DC connector from the main board to the power supply

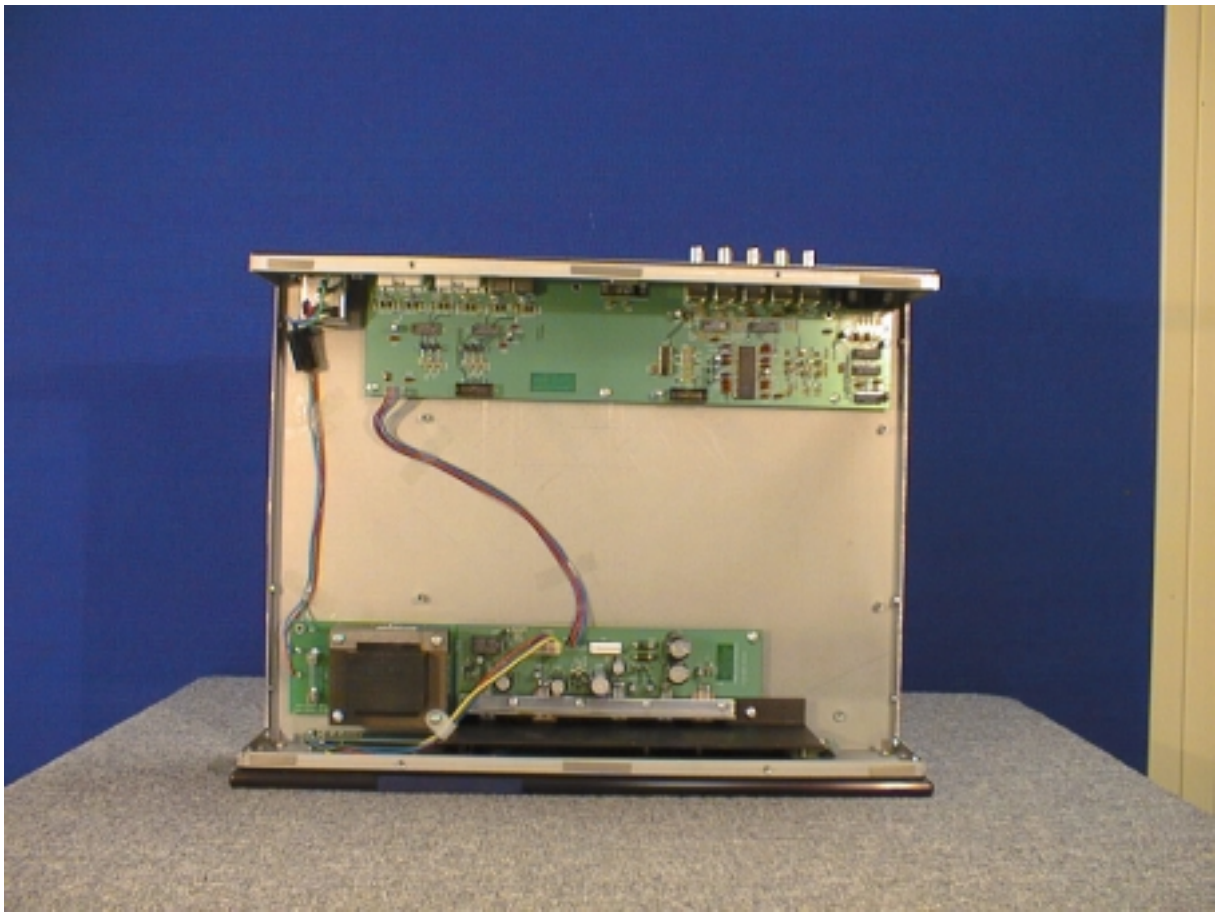
**2** Steward ferrite #B0562-200 from the AC inlet to the power supply

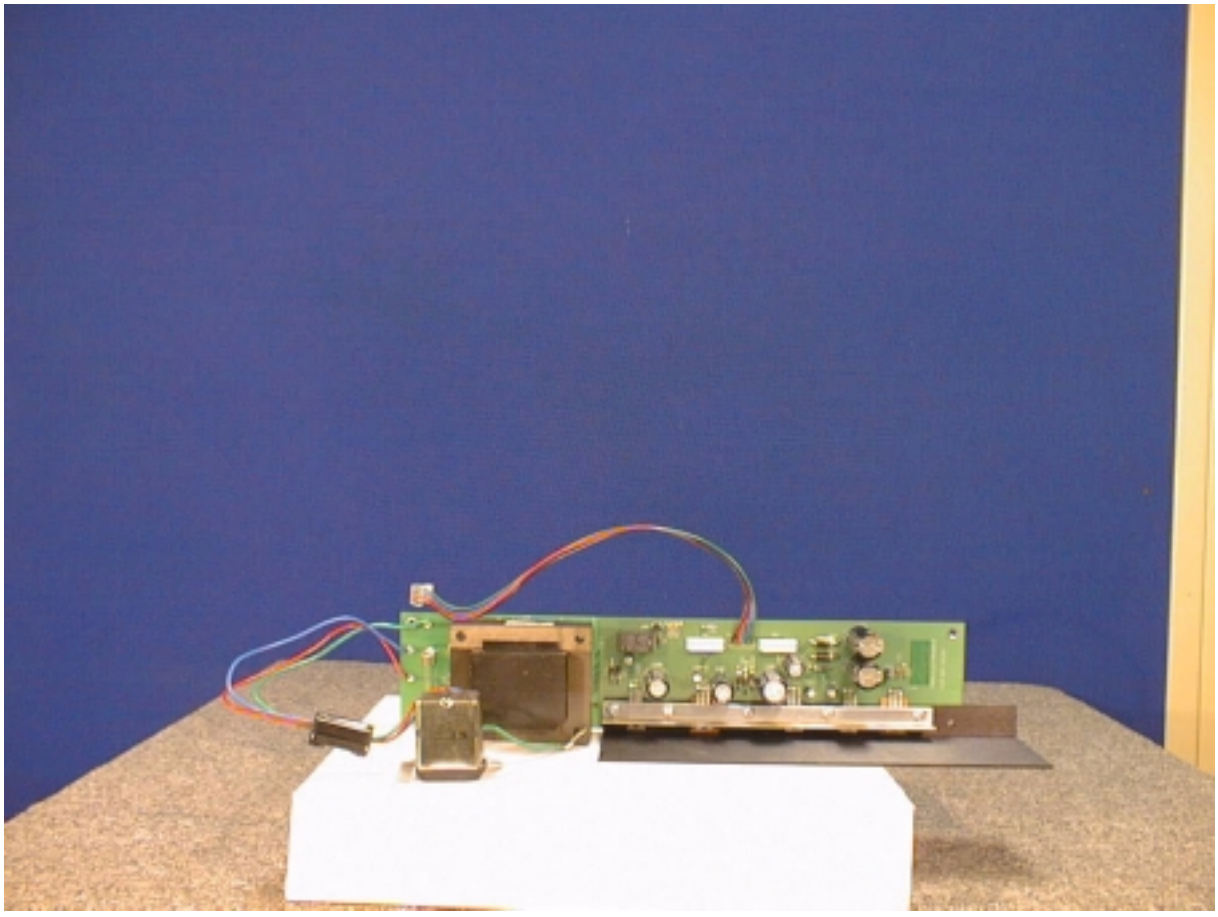
**3.** Qualiteck Electronics,Inc. EMI AC power inlet and filter, Model:857-03/047

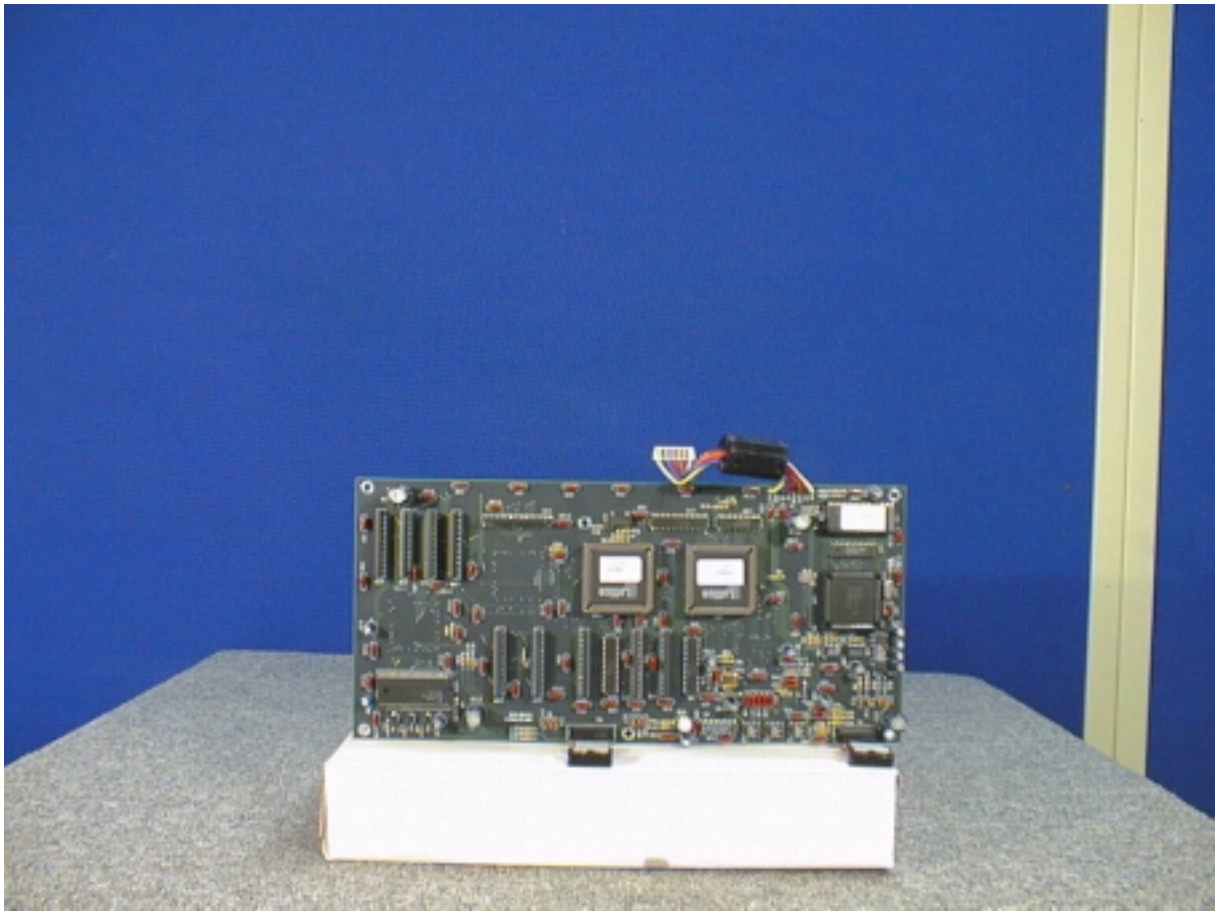
were needed to reduce radiated and conducted emissions to Class B levels.

.The photographs in Section 3.7 shows the location of the all above mentioned modifications

## 3.7 Photographs of the EUTmodifications







## 3.8 EUT Labeling per FCC Requirements

ITE equipment that has been certified or verified to the FCC part 15 regulations must carry the following expository statement on the ITE unless the ITE is so small that this is not practical. In this case the statement must appear in the instruction manual.

Certified ITE:

| |
|---|
| FCC ID: [ number ]<br><br>This device complies with part 15 of the FCC Rules.<br>Operation is subject to the following two conditions:<br>(1) This device may not cause harmful interference, and<br>(2) this device must accept any interference received,<br>including interference that may cause undesired operation. |

Verified ITE:

| |
|---|
| This device complies with part 15 of the FCC Rules.<br>Operation is subject to the following two conditions:<br>(1) This device may not cause harmful interference, and<br>(2) this device must accept any interference received,<br>including interference that may cause undesired operation. |

# 4.0 TEST PROCEDURE AND CONFIGURATION

## 4.1 Test Specifications

Specification: ANSI C63.4 (1992 )
Title: American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.

Specification: FCC 47 CFR, Part 15, Subpart B, Class B
Title: Code of Federal Regulations, Telecommunication

## 4.2 Procedure of Radiated Emissions Test

The EMC radiated test facility consists a of shielded semi-anechoic chamber with attached shielded control room. The semi-anechoic chamber is approximately 18 feet wide by 28 feet long by 19 feet high. A hybrid absorber combines high performance anechoic polyurethane foam with a ferrite tile base to achieve high levels of absorption and power dissipation capability.

The test site is designed according to the ANSI 63.4 -1992 requirements and the anechoic treatment of the chamber is sufficient to achieve the requirements of CISPR 22 and ANSI C63.4. The site attenuation data has been filed with the FCC and a letter of compliance with the requirements of Section 2.948 of the FCC Rules was issued on June 12, 1995 by the FCC.

The EUT was test in compliance with Section 12 of the ANSI C63.4 standard. All data was obtained via an HP 85876A EMI measurement software package using an HP 85462A Receiver.

The EUT was configured as a variable line multiplier providing sufficient for the test purposes continues video signal and exercised via coaxial -shielded cables in various geometric patterns, to find the geometric configuration and EUT cabling that produced the largest emissions when tested by the techniques of ANSI C63.4.

After determination of the maximum emissions configuration the distance of the EUT to the scanning antenna was set to 3 meters as required by the standards.
Radiated emissions were then monitored from the EUT over a frequency range of 30 MHz to 1000 MHz in horizontal polarization with the scanning antenna repeatedly moving from 1 to 4 meters in elevation while the turntable rotated through a 360 degree arc. This procedure was then repeated in vertical polarization to confirm the strongest signals and polarization orientation. This part of the test sequence the spectrum check is done in a manual mode.

After it is determine by the results of the spectrum check scan that the article is compliant the EUT is then measured in completely automatic mode using a Hewlett-Packard 8546A EMI Receiver ( 9 kHz - 6.5 Ghz) and HP 85876A EMI Measurement Software test system.
The HP Software, after scanning the EUT in Peak mode, automatically selects the strongest signal from the EUT and then Quasi-Peaks and Averages those strong signals to determine EUT compliance to the standards.

The measurement values are data reduced and then presented as both graphical results of the spectrum check and tabulated QP and Averages of the strongest signals in this report.

**Radiated emission test**
**(Front view)**


**Radiated emission test**
**(Rear view)**

## 4.4 Conducted Emissions Test

### 4.4.1 Procedures

Conducted emissions test are done in the "Peak Detector" mode for Line 1, which is high line to ground. Then the RFI emissions are measured from Line 2, or neutral to ground. When Peak amplitudes are found to be above the limits, or within 10 dB of the limits, a Quasi-Peak Detector Mode and Average Detector Mode for the line or lines with excessive RFI is then performed.

For North American AC powerline conducted tests, the following option may be exercised if the EUT Peak Mode emissions exceed the average limit when performing the tests. If the level of the emission measured using instrumentation with Quasi-Peak detection is 6 dB, or more, higher than the level of the same emission measured with instrumentation having an Average Detector with a 9 kHz minimum bandwidth, that emission is considered to be broadband and the level obtained with the Quasi-Peak detector may be reduced by 13 dB for comparison to the limit. When exercising this option, both of the following conditions will be observed.

1) The measuring instrumentation with the average detector shall employ a linear EF amplifier.

2) Care must be taken not to exceed the dynamic range of the measuring instrument when measuring an emission with a low duty cycle.

### 4.4.2 Conducted Emissions Test Setup

The EUT is configured as a system with peripherals connected, so that at least one interface port of each type is connected to one external peripheral when tested for conducted emissions according to EN 55022. The EUT may have one of two test configurations. These are either in a table-top setup as shown on following page. or in a free standing configuration as required for larger systems.

The test data was otained using a Hewlett Packard 8546A EMI Receiver ( 9 kHz - 6.5 Ghz) and HP 85876A EMI Measurement Software.
The conducted test is performed inside a shielded test room, measuring 12 feet by 10 feet by 9 feet tall. The separation between the EUT and the LISN is according to EN 55022 with the power cord between the EUT and LISN arranged so that is at least 0.4 meters from the screen room wall and parallel to it.

The EUT is powered through an appropriate Line Impedance Stabilization Network (LISN), bonded to the ground plane as described in C.I.S.P.R. 16. The power input cables to the LISN and the RFI measurement system are arranged so that they will not influence the measurement results. To ensure that RFI from the auxiliary instrumentation or support equipment does not influence the test readings, the LISN power is isolated from other power by RFI filters. Excess power cord is folded back and forth to form a non-inductive bundle.


**Conducted emission test**
**(Front view)**


**Conducted emission test**
**(Rear view)**

## 4.5 TEST EQUIPMENT USED

### 4.5.1 Radiated Emission Test

| Device | Model No. | Serial No. | Last Cal. | Next Cal |
|---|---|---|---|---|
| Cable 1 | RG-214/U | | 8/23/97 | 8/23/98 |
| Analyzer | HP85422E or HP85462A | 3325A00120 | 3/25/98 | 3/25/99 |
| Preselector | HP85460A | 3303A00117 | 3/25/98 | 3/25/99 |
| QPeak Adapter | HP85462 Internal | none (internal) | N/A | N/A |
| Pre-Amplifier | None | | | |
| EUT | URX 1 | | N/A | N/A |
| Tower 1 | EMCO 1050 | 9310A01786 | N/A | N/A |
| Turntable 1 | EMCO 1060 | 9304A01677 | N/A | N/A |
| Antenna 1 | 11966P 30-1000 MHz | 1167 | 9/27/97 | 9/27/98 |

### 4.5.2 Conducted Emission Test

| Device | Model No. | Serial No. | Last Cal. | Next Cal |
|---|---|---|---|---|
| Cable 1 | RG-214/U | | 8/23/97 | 8/23/98 |
| Analyzer | HP85422E or HP85462A | 3325A00120 | 3/25/98 | 3/25/99 |
| Preselector | HP85460A | 3303A00117 | 3/25/98 | 3/25/99 |
| QPeak Adapter | HP85462 Internal | none (internal) | N/A | N/A |
| Pre-Amplifier | None | | | |
| Eut 1 | | | N/A | N/A |
| Source 1 | LISN 3825 | 9406-2232 | 06/23/97 | 06/23/98 |
| Switch1 | N/A | N/A | N/A | N/A |
| Attenuator1 | 33-1034 | BA9146 | 8/23/97 | 8/23/98 |

# 5.0 TEST RESULTS

## 5.1 RADIATED EMISSION TEST

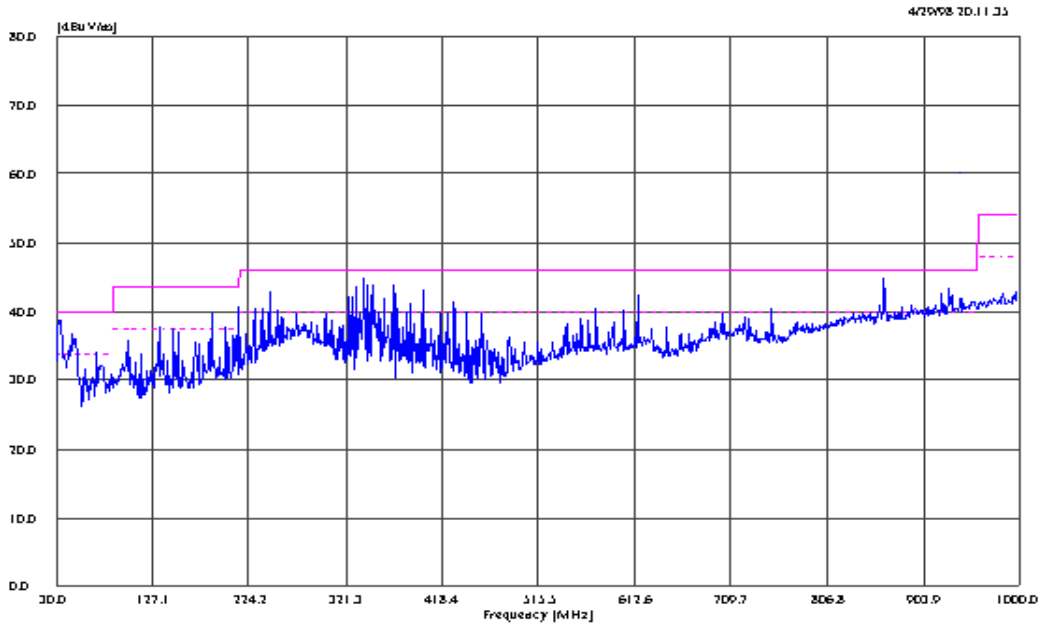
Below is the Quasi-Peak result of the highest value signals observed throughout the 30 MHz to 1000 MHz frequency range.

| Frequency | Peak | QP Peak | Lmt | DelLim-QP | Pol | Hgt | Angle | Status |
|---|---|---|---|---|---|---|---|---|
| MHz | dBuV/m | dBuV/m | dBu | dB | | cm | deg | |
| 31.91638 | 37.59 | 33.01 | 40 | -6.99 | Horz | 105 | 207 | PASS |
| 71.57937 | 31.72 | 26.36* | 40 | -13.64 | Horz | 105 | 32 | PASS |
| 186.2707 | 40.87 | 38.09 | 43.5 | -5.41 | Vert | 122 | 23 | PASS |
| 200.4552 | 39.48 | 36.19 | 43.5 | -7.31 | Vert | 117 | 82 | PASS |
| 214.3941 | 40.07 | 37.28* | 43.5 | -6.22 | Vert | 100 | 2 | PASS |
| 229.1021 | 40.82 | 36.65 | 46 | -9.35 | Vert | 121 | 43 | PASS |
| 243.4097 | 45.53 | 42.36 | 46 | -3.64 | Vert | 122 | 70 | PASS |
| 254.0106 | 40.99 | 39.33 | 46 | -6.67 | Vert | 100 | 357 | PASS |
| 325.7436 | 41.42 | 34.36 | 46 | -11.64 | Vert | 107 | 198 | PASS |
| 329.3181 | 42.7 | 40.38 | 46 | -5.62 | Vert | 121 | 183 | PASS |
| 340.0448 | 42.6 | 32.76 | 46 | -13.24 | Vert | 100 | 176 | PASS |
| 347.2133 | 40.87 | 40.99* | 46 | -5.01 | Vert | 105 | 189 | PASS |
| 354.3920 | 32.84 | 33.60* | 46 | -12.4 | Horz | 229 | 88 | PASS |
| 429.5347 | 42.39 | 40.21 | 46 | -5.79 | Vert | 100 | 213 | PASS |
| 615.6796 | 39.84 | 37.18 | 46 | -8.82 | Vert | 121 | 46 | PASS |
| 749.9965 | 43.07 | 39.57 | 46 | -6.43 | Vert | 100 | 117 | PASS |
| 820.5071 | 37.27 | 30.92 | 46 | -15.08 | Horz | 296 | 74 | PASS |
| 829.694 | 37.9 | 31.14* | 46 | -14.86 | Horz | 355 | 207 | PASS |
| 836.6619 | 38.35 | 31.1 | 46 | -14.9 | Horz | 371 | 118 | PASS |
| 840.1422 | 38.23 | 31.03 | 46 | -14.97 | Horz | 218 | 68 | PASS |
| 843.7596 | 37.78 | 31.17* | 46 | -14.83 | Horz | 358 | 333 | PASS |
| 846.8108 | 37.7 | 31.21 | 46 | -14.79 | Vert | 279 | 141 | PASS |
| 849.6743 | 38.12 | 31.08 | 46 | -14.92 | Vert | 295 | 204 | PASS |
| 855.7067 | 38.83 | 31.12 | 46 | -14.88 | Horz | 235 | 50 | PASS |
| 859.01 | 43.01 | 38.83 | 46 | -7.17 | Vert | 322 | 77 | PASS |
| 859.9882 | 41.73 | 37.28 | 46 | -8.72 | Horz | 295 | 229 | PASS |
| 861.6158 | 37.95 | 31.25 | 46 | -14.75 | Vert | 312 | 302 | PASS |
| 861.8943 | 37.54 | 31.27* | 46 | -14.73 | Vert | 278 | 342 | PASS |
| 862.4259 | 41.63 | 36.77 | 46 | -9.23 | Vert | 130 | 181 | PASS |
| 863.0829 | 45.08 | 39.33* | 46 | -6.67 | Horz | 100 | 34 | PASS |
| 863.4299 | 42.26 | 36.28 | 46 | -9.72 | Vert | 295 | 281 | PASS |
| 864.3848 | 43.88 | 37.66 | 46 | -8.34 | Vert | 105 | 135 | PASS |
| 866.0328 | 38.18 | 31.2 | 46 | -14.8 | Horz | 169 | 216 | PASS |
| 882.6556 | 37.99 | 31.46 | 46 | -14.54 | Horz | 200 | 277 | PASS |
| 890.3355 | 38.1 | 31.61 | 46 | -14.39 | Horz | 266 | 340 | PASS |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 894.1985 | 39.26 | 31.68 | 46 | -14.32 | Horz | 121 | 234 | PASS |
| 894.8512 | 38.06 | 31.83* | 46 | -14.17 | Horz | 131 | 13 | PASS |
| 896.0736 | 38.98 | 31.8 | 46 | -14.2 | Vert | 383 | 218 | PASS |
| 900.0367 | 41.82 | 36.19* | 46 | -9.81 | Horz | 100 | 95 | PASS |
| 901.8599 | 38.25 | 31.85 | 46 | -14.15 | Horz | 198 | 214 | PASS |
| 914.2944 | 38.93 | 32.05 | 46 | -13.95 | Horz | 192 | 117 | PASS |
| 923.6679 | 39.41 | 32.41* | 46 | -13.59 | Horz | 304 | 340 | PASS |
| 924.0763 | 38.63 | 32.24 | 46 | -13.76 | Horz | 395 | 209 | PASS |
| 925.4921 | 38.97 | 32.38 | 46 | -13.62 | Horz | 142 | 100 | PASS |
| 926.6025 | 39.11 | 32.34 | 46 | -13.66 | Vert | 367 | 293 | PASS |
| 929.5557 | 42.91 | 38.73* | 46 | -7.27 | Horz | 190 | 347 | PASS |
| 936.9677 | 38.86 | 32.69 | 46 | -13.31 | Horz | 356 | 179 | PASS |
| 947.5177 | 39.44 | 32.89 | 46 | -13.11 | Horz | 287 | 288 | PASS |
| 948.3933 | 40.03 | 32.96 | 46 | -13.04 | Horz | 242 | 16 | PASS |

A composite ( that is both horizontal and vertical polarization ) spectrum trace of the magnitude of all the signals throughout the band may be seen below. In this graph

the magnitude of the largest signal is plotted for the configuration that produced the largest signal.

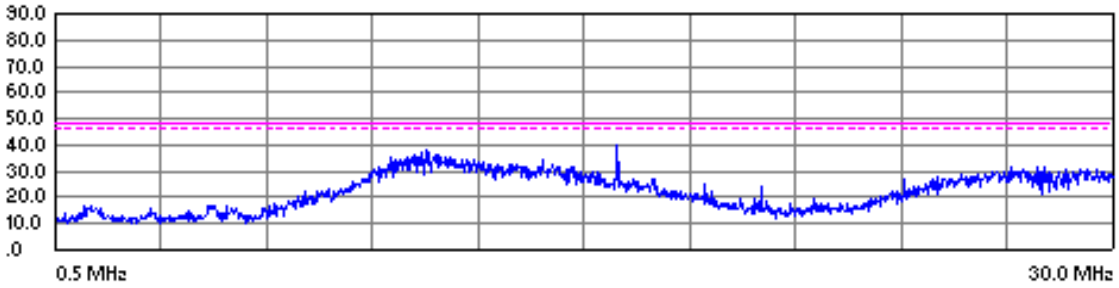


## 5.2 CONDUCTED EMISSION TEST

As may be seen in the graph below the conducted emissions are very low.
The strongest signal are tabulated as indicative of the overall emission spectrum.

**line1**

| Frequency | Peak | QP | QP Lmt | DelLim-QP | Status |
|---|---|---|---|---|---|
| MHz | dBuV/m | dBuV/m | dBuV/m | dB | |
| 16.09816 | 40.45 | 39.52 | 61 | -21.48 | PASS |
| 27.8440 | 30.44 | 25.34 | 61 | -35.66 | PASS |
| 28.06411 | 30.44 | --.-- | 61 | --.-- | PASS |
| 28.45897 | 29.52 | 24.82 | 61 | -36.18 | PASS |
| 28.57274 | 23.7 | --.-- | 61 | --.-- | PASS |
| 28.65131 | 30.34 | 24.09 | 61 | -36.91 | PASS |



**line2**

| Frequency | Peak | QP | QP Lmt | DelLim-QP | Status |
|---|---|---|---|---|---|
| MHz | dBuV/m | dBuV/m | dBuV/m | dB | |
| 9.900356 | 35.81 | 29.72 | 61 | -31.28 | PASS |
| 10.4113 | 38.76 | 32.62 | 61 | -28.38 | PASS |
| 10.60155 | 38.83 | 33.34 | 61 | -27.66 | PASS |
| 16.09968 | 39.43 | --.-- | 61 | --.-- | PASS |
| 17.77593 | 31.31 | --.-- | 61 | --.-- | PASS |
| 27.72526 | 26.39 | --.-- | 61 | --.-- | PASS |