# TEST PROCEDURE
# (ANSI C63.4 - 1992)

PCEC REPORT #81264-1
FCC ID: EWOHFL120239RS

## ACRONYMS

(E.M.I.) Electromagnetic Interference
(E.U.T.) Equipment Under Test
(L.I.S.N.) Line Impedance Stabilizing Network

## PROCEDURE-CONDUCTED LINE EMISSIONS

The EUT was placed in an RF Shield room on a wooden table 80 cm above the (2) 50 ohm/250 microhenry LISN's. The AC power leads were connected to two (2) 50 ohm/250 microhenry L.I.S.N.s. The system was energized and placed into its normal operating mode. The 50 ohm output of the L.I.S.N., was connected to the HP8568B RF Spectrum Analyzer. The spectrum was observed from 450 KHz to 30 MHz to identify the frequency of the emission that had the highest amplitude relative to the limit. For each mode of operation and for each current carring conductor, cable and/or wire manipulation was performed while observing the spectrum analyzer. For this series of tests the emission that had the highest amplitude relative to the limit was recorded.

Based on the preliminary tests, the EUT, and the cable and/or wire configuration and mode of operation which produced the highest emission relative to the limit was selected for the final AC powerline conducted emissions test. The final test on all current carrying conductors of the power cords that comprise the EUT was performed without variation of the configuration determined during the preliminary tests.

The X-Y plots of EMI generated by the E.U.T. were taken. The 6 highest readings from 450 KHz - 30 MHz for each side of the line are recorded. Unless otherwise specified, all Conducted Emissions are recorded as "PEAK" spectrum analyzer readings.

## PROCEDURE-SPURIOUS RADIATION

The EUT was placed on a wooden table 80 cm above the floor of an RF screen cage. A receiving Bicon antenna was placed 1 meter away from the EUT on a wooden tri-pod 1 meter above the floor of the RF screen cage. The receiving antenna was connected to the 50 Ω input of the HP8568B spectrum analyzer. The EUT was powered by a 120 VAC supply, and was configured into it's normal operational mode.

# LIST OF TEST EQUIPMENT

PCEC REPORT #81264-1

| | EQUIPMENT | MODEL NO. | SERIAL NO. | CAL DATE | DUE DATE |
|---|---|---|---|---|---|
| * | HP Spectrum Analyzer | HP8568B | 2216A02236 | 07/97 | 07/98 |
| * | HP Spectrum Analyzer | HP8568B | 2314A02597 | 03/98 | 03/99 |
| | HP Spectrum Analyzer | HP8566B | 3014A06612 | 07/97 | 07/98 |
| | HP QP Adapter | HP85650A | A1001 | 07/97 | 07/98 |
| | HP RF Pre-Selector | HP85685A | 2724A00627 | 07/97 | 07/98 |
| * | HP Spectrum Analyzer | HP8566A | 2637A03486 | 03/98 | 03/99 |
| * | HP QP Adapter | HP85650A | 2043A00279 | 03/98 | 03/99 |
| * | HP RF Pre-Selector | HP85685A | 2724A00595 | 07/97 | 07/98 |
| * | Fischer LISN | 50/250uh | | NCR | NCR |
| * | RF Screen Room | | | NCR | NCR |
| * | System Controller | HP9000 | | NCR | NCR |
| | System Controller | HP9836 | | NCR | NCR |
| * | System Controller | HP9816 | | NCR | NCR |
| | Eaton Field Int Mtr | NM17/27A | 062603355 | 08/96 | 08/97 |
| | Eaton Field Int Mtr | NM37/57A-SL | 062603355 | 08/96 | 08/97 |
| | Eaton QP Adapter | CCA7 | 017703080 | 08/96 | 08/97 |
| * | Bicon Antenna | EMCO 3110 | 9209-1549 | 08/97 | 08/98 |
| | Bicon Antenna | EMCO 3110 | 9304-1679 | 08/97 | 08/98 |
| * | Log Perodic Antenna | EMCO 3146 | 9210-3455 | 08/97 | 08/98 |
| | Log Perodic Antenna | EMCO 3146 | 9209-01549 | 08/97 | 08/98 |
| | Conical Log Spiral Ant. | EMCO 3102 | 90032701 | 08/95 | 08/96 |
| | Conical Log Spiral Ant. | EMCO 3102 | 90032790 | 08/95 | 08/96 |
| | Horn Antenna | EMCO 3115 | 90053462 | 08/95 | 08/96 |
| | Horn Antenna | EMCO 3115 | 90053459 | 09/95 | 09/96 |
| | Loop Antenna | EMCO 6512 | 1198 | 09/96 | 06/98 |
| | Field Str. Meter | Holiday 3004 | 33311 | 12/95 | 12/96 |
| | RF Survey Meter | Holiday 3600 | none | 11/95 | 11/96 |
| | Power Analyzer | Magtrol 4612B | OE2289 | 03/98 | 03/99 |
| | AC Power Supply | Elgar 3001 | 7911 | NCR | NCR |
| | Signal Generator | HP8640B | 1851A09701 | 03/98 | 03/99 |
| | Sweep Generator | HP83620A | 3213A01206 | 04/98 | 04/99 |

NOTE: AN * INDICATES THAT THE INSTRUMENT WAS USED DURING TESTING OF THE EUT.

REPORT# 81264-1
DATE OF TEST: 5-6-98

PHILIPS CONSUMER ELECTRONICS COMPANY
EMI LAB
P.O. 14810
KNOXVILLE, TN 37914-1810

RADIATED RF LEVEL

MANUFACTURER: PHILIPS LIGHTING
MODEL: HFL-120-2/39 RS
SUPPORT EQUIPMENT:

| FREQUENCY (Mhz) | DbuV/M HORIZ. | DbuV/M VERT. | DbuV/M LIMIT | DbuV/M DELTA |
|---|---|---|---|---|

**THE SPECTRUM WAS SCANNED FROM 30 -1000 MHz AND NO SIGNIFICANT EMISSIONS WERE FOUND**

QP= QUASI PEAK READING AT THAT FREQUENCY

DELTA REFERS TO THE DB DIFFERENCE BETWEEN THE HIGHER OF THE HORIZONTAL AND THE VERTICAL READINGS AND THE DB LIMIT AT THAT FREQUENCY.

ABOVE READINGS ARE PEAK READINGS WITH CABLE AND ANTENNA FACTORS INCLUDED EXCEPT AS NOTED QUASI-PEAK READINGS.

TEST DISTANCE BETWEEN DEVICE UNDER TEST AND RECEIVING ANTENNA WAS 10 METERS.

NOTE: AN '*' INDICATES THAT THE DEVICE UNDER TEST EXCEEDS THE FCC CLASS B LIMIT AT THAT FREQUENCY.

# SUMMARY OF RESULTS
# (ANSI C63.4 - 1992)

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FCC ID: EWOHFL120239RS

The measurement data (Report #81264-1) indicates the Philips Lighting model HFL-120-2/39 **MEETS** the requirements as set forth by the FCC for Class B RF Lighting Devices with the following modifications.

**MODIFICATIONS:**

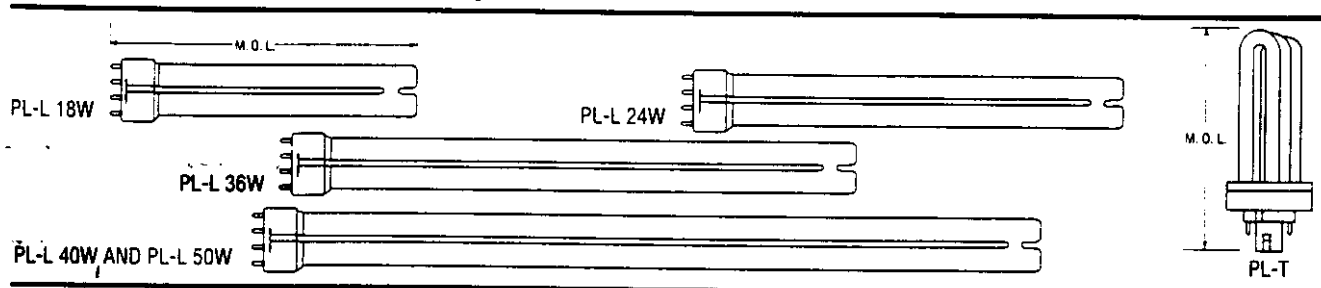
**NONE**

Mass production of final instrument systems utilizing the exact electrical/ mechanical components, lead dress, and RF ground paths as tested by PCEC will not likely cause harmful interference to any radio communication, radio navigation or safety services. Any deviation in design from the system tested by our facility will require further verification of FCC Compliance by PCEC.

**PHILIPS CONSUMER ELECTRONICS COMPANY**

Fred A. Fisher
Manager Regulatory FCC/DOC

# Compact Fluorescent Lamps

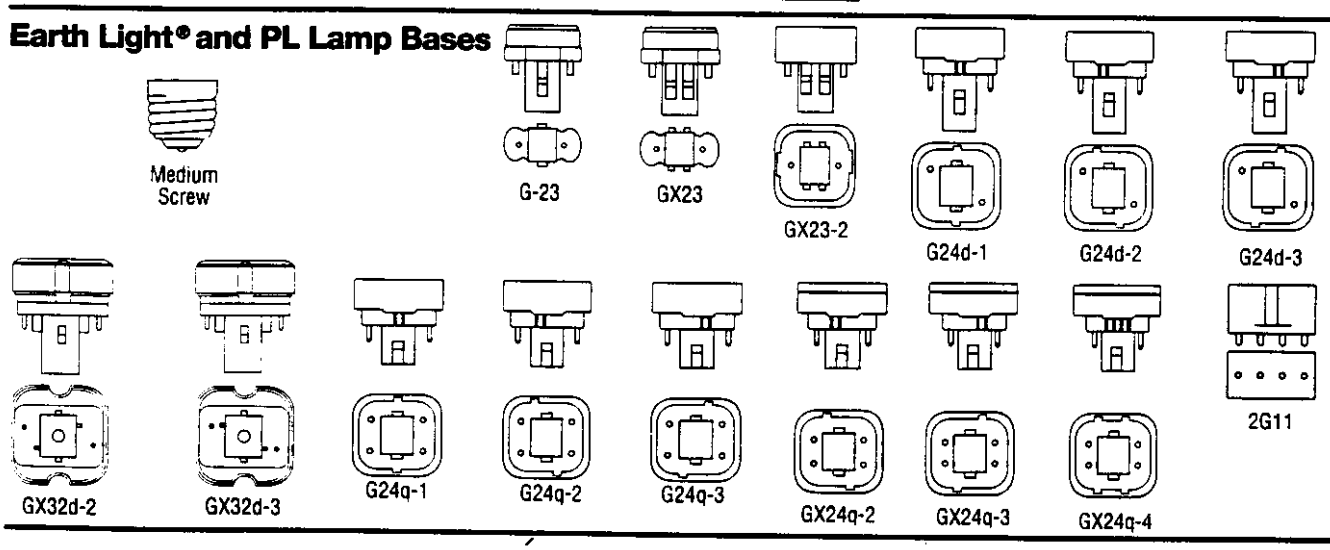



| Nominal Lamp Watts | Bulb | Base | | Product Number 046677- | Ordering Code | Generic Designation | Pkg. Qty. ● | Description | M.O.L. (In.) | Avg. Life, Hrs. (202) | Approx. Initial(203) Lumens(204) | Design Lumens (208) | CRI |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **PL Long Fluorescent Lamps** High color rendering, high efficacy lamps feature 4 pin base for use with preheat, rapid start, electronic and dimming circuits. | | | | | | | | | | | | | |
| **18** | PL-L | 2G11 | SSS | 34500-9 | PL-L 18W/30 | FT18W/2G11/30 | 25 | 3000K | 8 15/16 | 12,000 | 1250 | 1125 | 82 |
| | | | | 34501-7 | PL-L 18W/41 | FT18W/2G11/41 | 25 | 4100K | 8 15/16 | 12,000 | 1250 | 1125 | 82 |
| **24** | PL-L | 2G11 | SSS | 34505-8 | PL-L 24W/30 | FT24W/2G11/30 | 25 | 3000K | 12 1/16 | 12,000 | 1800 | 1620 | 82 |
| | | | | 34508-2 | PL-L 24W/41 | FT24W/2G11/41 | 25 | 4100K | 12 1/16 | 12,000 | 1800 | 1620 | 82 |
| **36** | PL-L | 2G11 | SSS | 34511-6 | [illegible] | FT36W/2G11/30 | 25 | 3000K | 16 7/16 | 12,000 | 2900 | 2610 | 82 |
| | | | | 34942-3 | [illegible] | FT36W/2G11/35 | 25 | 3500K | 16 7/16 | 12,000 | 2900 | 2610 | 82 |
| | | | | 34513-2 | [illegible] | FT36W/2G11/41 | 25 | 4100K | 16 7/16 | 12,000 | 2900 | 2610 | 82 |
| **38** | PL-L | 2G11 | SSS | 30042-6 | [illegible] | FT40W/2G11/RS/30 | 25 | 3000K | 22 1/2 | 20,000 | 3300 | 2970 | 82 |
| | | | | 30043-4 | [illegible] | FT40W/2G11/RS/35 | 25 | 3500K | 22 1/2 | 20,000 | 3300 | 2970 | 82 |
| | | | | 30044-2 | [illegible] | FT40W/2G11/RS/41 | 25 | 4100K | 22 1/2 | 20,000 | 3300 | 2970 | 82 |
| **50** | PL-L | 2G11 | SSS | 34747-6 | PL-L 50W/30/RS | FT50W/2G11/RS/30 | 25 | 3000K | 22 1/2 | 14,000 | 4300 | 3870 | 82 |
| | | | | 34753-4 | PL-L 50W/35/RS | FT50W/2G11/RS/35 | 25 | 3500K | 22 1/2 | 14,000 | 4300 | 3870 | 82 |
| **PL Triple 4 pin Fluorescent Lamps** High color rendering, high efficacy lamps feature 4 pin base for use with preheat, rapid start, electronic and dimming circuits. | | | | | | | | | | | | | |
| **18** | PL-T | GX24q-2 | SSS | 22224-0 | PL-T 18W/30/4P | FM18W/GX24q/30 | 24 | 3000K | 4 5/8 | 10,000 | 1200 | 960 | 82 |
| | | | | [illegible] | PL-T 18W/35/4P | [illegible] | [illegible] | 3500K | 4 5/8 | 10,000 | 1200 | 960 | 82 |
| | | | | [illegible] | PL-T 18W/41/4P | [illegible] | [illegible] | 4100K | 4 5/8 | 10,000 | 1200 | 960 | 82 |
| **26** | PL-T | GX24q-3 | SSS | 34741-8 | PL-T 26W/30/4P | FM26W/GX24q/30 | 24 | 3000K | 4 7/8 | 10,000 | 1800 | 1440 | 82 |
| | | | | 34742-7 | PL-T 26W/35/4P | FM26W/GX24q/35 | 24 | 3500K | 4 7/8 | 10,000 | 1800 | 1440 | 82 |
| | | | | 35366-4 | PL-T 26W/41/4P | FM26W/GX24q/41 | 24 | 4100K | 4 7/8 | 10,000 | 1800 | 1440 | 82 |
| **32** | PL-T | GX24q-3 | SSS | 34743-5 | PL-T 32W/30/4P | FM32W/GX24q/30 | 24 | 3000K | 5 1/2 | 10,000 | 2400 | 1920 | 82 |
| | | | | 34744-3 | PL-T 32W/35/4P | FM32W/GX24q/35 | 24 | 3500K | 5 1/2 | 10,000 | 2400 | 1920 | 82 |
| | | | | 35367-2 | PL-T 32W/41/4P | FM32W/GX24q/41 | 24 | 4100K | 5 1/2 | 10,000 | 2400 | 1920 | 82 |
| **42** | PL-T | GX24q-4 | SSS | 22125-9 | PL-T 42W/30/4P | FM42W/GX24q/30 | 24 | 3000K | 6 3/4 | 10,000 | 3200 | 2560 | 82 |
| | | | | 22126-7 | PL-T 42W/35/4P | FM42W/GX24q/35 | 24 | 3500K | 6 3/4 | 10,000 | 3200 | 2560 | 82 |
| | | | | 22134-1 | PL-T 42W/41/4P | FM42W/GX24q/41 | 24 | 4100K | 6 3/4 | 10,000 | 3200 | 2560 | 82 |

SSS — Energy Saving Product

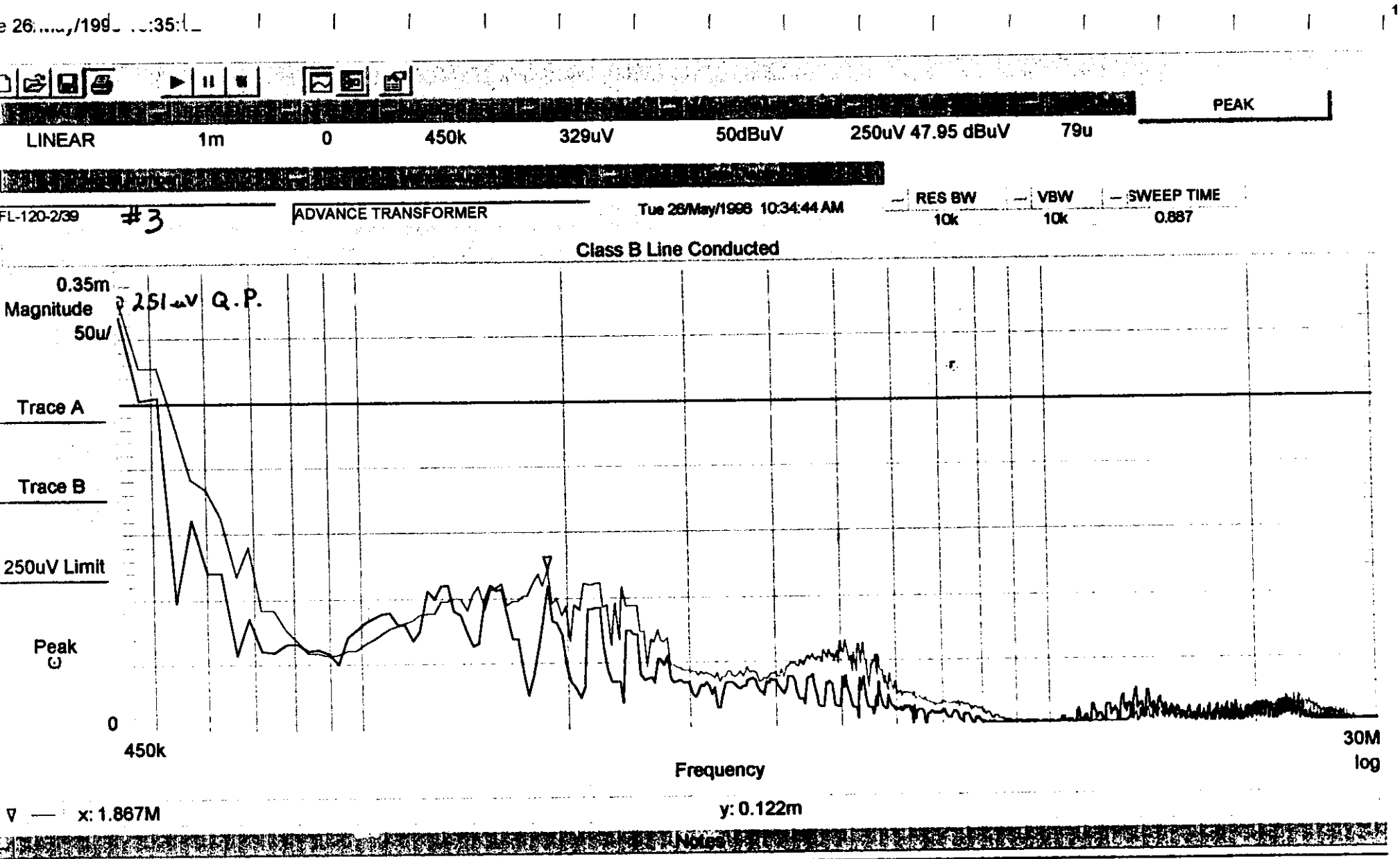
High Color Rendering Lamps

## Earth Light® and PL Lamp Bases



# BILL OF MATERIAL - CAT. # HFL 120 2/39 RS

| DESIGNATION | DESCRIPTION | QUANTITY |
|---|---|---|
| | | |
| R1,R2 | RESISTOR, SCF,180K,1W,5% | 2 |
| R3,R4 | RESISTOR, CF,22,1W,5% | 2 |
| R5,R6 | RESISTOR, CF,220K,1/2W,5% | 2 |
| R7,R8 | RESISTOR, CF,62K,1/2W,5% | 2 |
| R101 | RESISTOR, CF,1K,1/8W,5% | 1 |
| R102,R108,R111 | RESISTOR, CF,100K,1/8W,5% | 3 |
| R103 | RESISTOR, CF,820K,1/8W,5% | 1 |
| R104,R107,R109 | RESISTOR, CF,200K,1/8W,5% | 3 |
| R105,R106 | RESISTOR, MF,24.9K,1/8W,1% | 2 |
| | | |
| C1 | CAPACITOR, MEF,2.2uF,250V,10% | 1 |
| C2 | CAPACITOR,47uF,250V,20% | 1 |
| C3,C4 | CAPACITOR, MEF,1.5uF,250V,10% | 2 |
| C5 | CAPACITOR, CER,5000pF,3KV,20% | 1 |
| C6 | CAPACITOR, MEF,.1uF,100V,10% | 1 |
| C7 | CAPACITOR, PP,.047uF,400V,5% | 1 |
| C8 | CAPACITOR, PP,.015uF,630V,5% | 1 |
| C9 | CAPACITOR, CER,360pF,3KV,20% | 1 |
| C10 | CAPACITOR, PP,.0056uF,2KV,5% | 1 |
| C12,C13 | CAPACITOR, CER,.22uF,100V,10% | 2 |
| C101,C104 | CAPACITOR, CER,.47uF,50V,20% | 2 |
| C102 | CAPACITOR, CER,.1uF,50V,10% | 1 |
| C103 | CAPACITOR, CER,.01uF,50V,5% | 1 |
| | | |
| D1,D2,D3,D4 | DIODE, RECT,1A,400V | 4 |
| D5,D7 | DIODE, FR,1A,600V | 2 |
| D6,D8,D107 | DIODE, SCHOTTKY,1A,40V | 3 |
| D12 | DIODE,DIAC,34-40V | 1 |
| D17-D20,D101 | DIODE, SIGNAL,150mA,75V | 5 |
| D21 | DIODE, ZENER,7.5V,1/2W,RANGE 7V-25V | 1 |
| D22 | DIODE, ZENER,43V,1/2W,5% | 1 |
| D102,D104-D106,D108 | DIODE, SIGNAL,150mA,75V | 5 |
| D103,D109 | DIODE, ZENER,7.5V,1/2W,5% | 2 |
| | | |
| Q1,Q2 | TRANSISTOR,2SC4054,5A,850V | 2 |
| Q3,Q102 | TRANSISTOR,MPSA14 | 2 |
| Q101 | TRANSISTOR,2N7000,60V,.5A,5ohms | 1 |
| Q103 | MOSFET,IRLD014 | 1 |
| U101 | IC,14 STAGE RIPPLE OSCILLATOR | 1 |
| | | |
| T1 | TRANSFORMER, INPUT,CIT-007B | 1 |
| T2 | TRANSFORMER, CHOKE,CHT-007A | 1 |
| T4 | TRANSFORMER, POWER,CPT-051A | 1 |
| | | |
| V1 | VARISTOR,150VAC | 1 |
| F1 | FUSE,7A,125V,PICO | 1 |
| 40-001-037-02 | PCB,EOL-RS | 1 |




30min WARM UP TIME
20 SWEEPS

## TEST PROCEDURES CONT'D

The 30 to 40 MHZ band was observed on the spectrum analyzer while the EUT power and control leads were adjusted to maximize emissions. The peak frequencies for this band were recorded. This search for emissions continued from 40 MHZ up to the upper frequency required per FCC 15.33 (b) (1). Upon completion of the pre-scan, the EUT was placed on a wooden table 80 cm above a rotatable wooden turntable mounted level with the metal ground plane of the 3 meter test site.

The EUT was booted up into its normal operational mode. The worst case cable configuration determined by the pre-scan was duplicated and re-maximized at the worst case frequency. Based on this configuration all frequencies located during the 1 meter pre-scan were measured at the 3 meter test distance. The receiving antennas were varied in height from 1 to 4 meters and the remote turntable was rotated 360° to find the maximum emissions. This test was performed for all modes of operation.

For all measured frequencies above 999MHZ the Conical Log Spiral antenna and/or the Double Ridged Guide Antenna was placed 3-meters away from the system on a 4-meter fiberglass mast. The receiving antenna was connected to an HP8566B spectrum analyzer via 60 ft. of 50ohm Heliax (wave guide) cable.

All significant emissions are reported on the attached data report. To verify that the E.M.I. emissions measured were generated by the E.U.T., the system power was interrupted at peak reading while observing the Spectrum Analyzer. Unless otherwise specified, all Radiated Emissions are recorded as "PEAK" spectrum analyzer readings. The Radiated Field Strength was calculated as follows: Maximum Emission Received (dB) + Antenna Factor (dB) + Cable Loss (dB) = Field Strength dBuv/Meter.