Compliance Labs Inc.

16740 Peters Road, Middlefield OH 44062 Phone 440-632-5001 Fax 440-632-5009

An EMC/EMI Testing Company

Measured Radio Frequency Emissions
From

TCP Fluorescent Lamps
EXBS Series

Report 1126
August 1, 1999

For:
Technical Consumer Products
29401 Ambina Drive
Solon OH 44139

Summary: The testing for compliance to FCC Regulations Part 18, Subpart C, dated 10/1/97, was performed on four Technical Consumer Products, Inc. EXBS Series lamps. The devices are subject to FCC rules and regulations as a RF lighting device.

In the testing performed on July 28, 1999, the samples of the lamps were found to meet the required FCC specifications for conducted emissions

_____

R. Edward Koskie, President

Summary: The testing for compliance to FCC Regulations Part 18, Subpart C, dated 10/1/97, was performed on four Technical Consumer Products, Inc. ESBX Series lamps, The devices are subject to FCC rules and regulations as a RF lighting device.

In the testing performed on July 26, 1999, the samples of the lamps were found to meet the required FCC specifications for conducted emissions

I. Introduction:

Four ESBX-Series lamps were tested for compliance with FCC Regulations, Part 18, Subpart C, Dated 10/1/97. The testing was done at Compliance Labs Inc., 16740 Peters Road, Middlefield OH 44062. Test procedures were as defined in FCC/OST MP-5 (1986) Methods of Measurement of Radio Noise Emission from Industrial, Scientific and Medical Equipment. Description of the Compliance Lab facility is on file with the FCC Laboratory, Colombia, Maryland (FCC file 31040/SIT, 1300F2).

This testing is a continuation of previous work reported by the University of Michigan and adds to the range of lamps in the product family.
For reference, the model numbers on the original application were:
TCP Fluorescent Lamps; ES11, ES15 and ES18. The listed FCC authorization number was:
FCC ID: NIR-10108

II. Test Equipment Listing

Instrument	Manufacturer	Calibration date
EMI Test System	Dynamic Sciences DSI 2020	12/21/98
LISN	Fisher Custom Communications M 50/250-25-4	7/31/98
Cables	Various	N/A

III. Configuration and Identification of Device under test

The units are designed to be screwed into a standard light socket via a short connecting wire from the adapter. They have a plastic case (adapter) containing an electronic ballast that is constructed on a PC board which is identical to the board in the U of M tests. The lamps are configured into a spiral whose length is a function of the wattage. The ballast is a switching power supply operating at 45kHz. At this frequency, conducted but not radiated emission tests are required.

The units are designed by Technical Consumer Products, Inc. 29401 Ambina Drive, Solon OH 44139, and manufactured by Shanghai Jensing Electron Electrical Equipment Co. 23 Kai Jiange Rd. E, Si Jing, Song Jiang, 201601 Shanghai, China.

The Lamps in this test are identified by Model as:

TCP Fluorescent Lamp,

ESBX-18
ESBX- 23
ESBX- 26
ESBX- 30

The 18,23 and 26 are all high power factor lamps. The 30 is a low power factor unit. The power factor designation will appear on the label for each lamp.

FCC ID: NIR-10108

A standard table lamp socket with a 1.2M two wire
cord was prepared for powering the lamps. This length was selected to accommodate the requirement that no part of the EUT be closer that 0.8 M from the LISN.

3.1 Modifications

There were no modifications made on the lamps under test.

4. Emission limits

The lamps were tested in accordance with Part 18, Subpart C, dated 10/1/97. The frequency of test and the limits are given in the following table.

4.1 Conducted Emission Limits

Table 4.1 Conducted emission limits
(Paragraph: 18.307; consumer equipment)

Frequency, KHz	Consumer equipment	
	μV	DBμV
45-170.5	250	48.0
170.5-3000	250	48.0

5. Emission Tests and Results

Power line conducted emission tests were measured with a FCC approved setup with the DUT on a table as shown in figure1. The lamp cord was routed across the table and to the LISN. The conductive noise level was measured with a DSI measurement system that automatically plotted emission values in dBμV from 450 kHz to30 MHz for both the hot and neutral lines. The system was set to record those points that exceeded the limit line of 48dB.

The tests were run as follows. An automatic scam using peak detection was completed over the specified frequency range. Peak detection was used because of the ability of the equipment to scan significantly faster than at quasi-peak. Since any quasi-peak measurement would be less than peak, where the scan showed reading at or less than limit the unit would obviously pass. For verification, where the scan indicated a value at or above the limit value, that frequency was examined with quasi-peak detection and a pass/fail judgement made.

5.1 Conducted Emission Results

The results of the scans on each of the units are shown as Figure 1- 4.and Table 1-4. The red line is the hot line and the blue is the neutral line. Figure 1 shows two suspect frequencies in the peak scan. These were examined with a quasi-peak detector and found to meet limits. None of the other lamps had suspect frequencies. The data thus shows that the units meet the Consumer Equipment limits.

Figure 1

Frequency scan of 18W ESBX

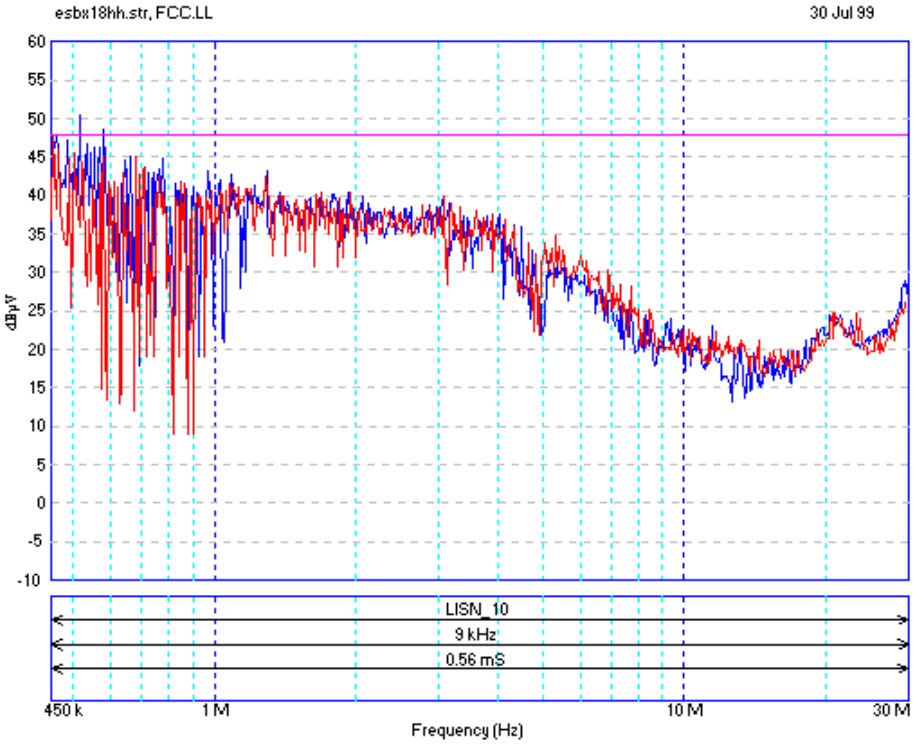

Table 1
Results of examining suspect frequencies

```
@ Log 1  07/30/99 07:59:41 (933346781)
  Frequency: 450.500 kHz
  Peak Measurement - Raw: 36.1 dBµV  Corrected: 46.1 dBµV
  Quasi Peak - Raw: 33.2 dBµV  Corrected: 43.2 dBµV
  Limit Line: FCCOND
  Limit Level: 48.0 dBµV
  Limit Type: QPeak
  Delta Limit: -4.8 dB

@ Log 2  07/30/99 08:01:02 (933346862)
  Frequency: 518.000 kHz
  Peak Measurement - Raw: 37.8 dBµV  Corrected: 47.8 dBµV
  Quasi Peak - Raw: 35.3 dBµV  Corrected: 45.3 dBµV
    Limit Level: 48.0 dBµV
  Limit Type: QPeak
  Delta Limit: -2.7 dB
```

Figure 2

Frequency scan of 23W ESBX

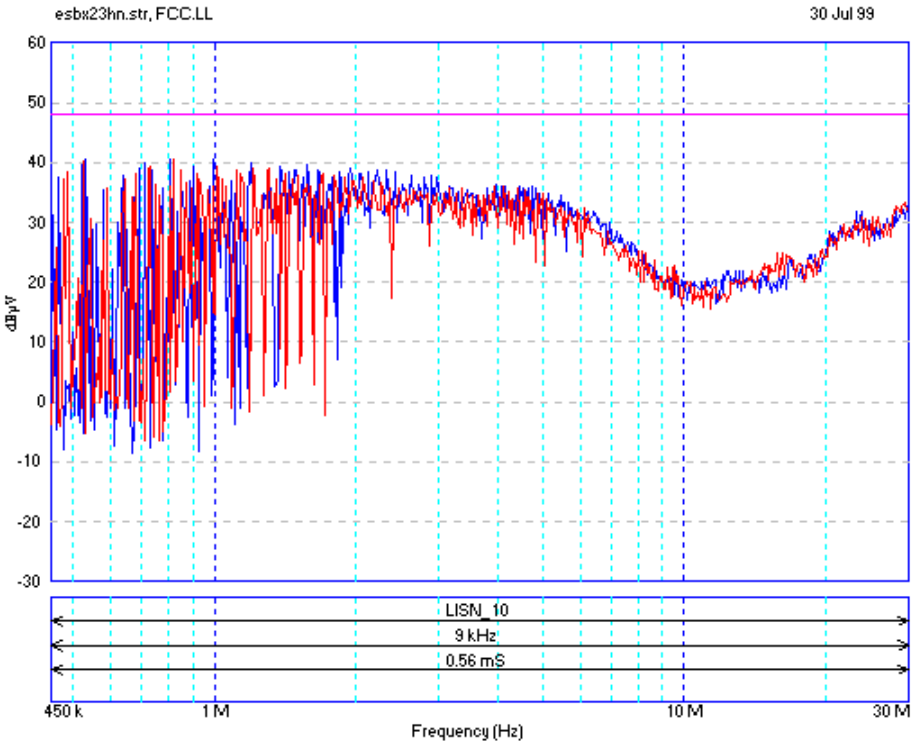

Table 2

Results of examining suspect frequencies of medium position

There were no suspect frequencies

Figure 3

Frequency scan of 26W ESBX

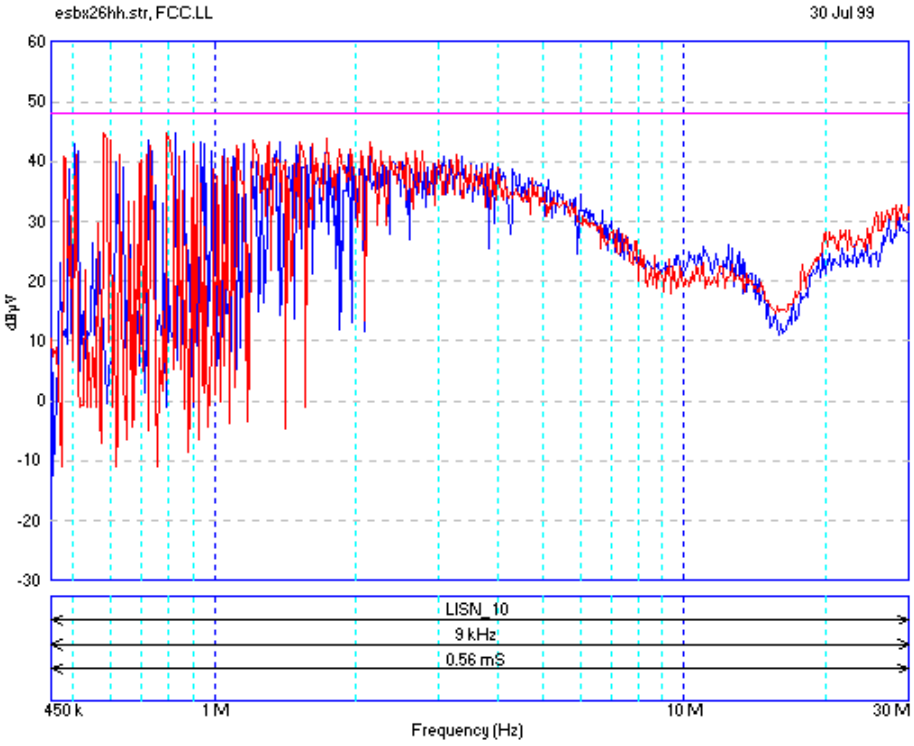

Table 3

Results of examining suspect frequencies at high position

There were no suspect frequencies

Figure 4

Frequency scan of 32W ESBX

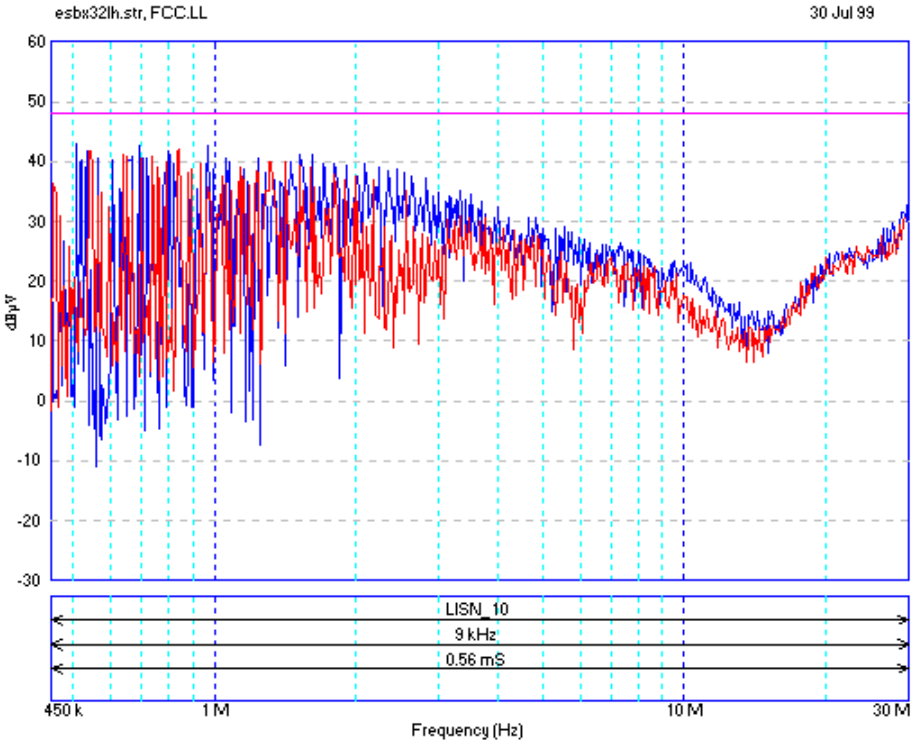

Table 4

Results of examining suspect frequencies at high position

There were no suspect frequencies

Figure 5, Test setup