

SEMI D36-1103

TERMINOLOGY FOR LCD BACKLIGHT UNIT

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1 Purpose

1.1 These terms and definitions describe various components and characteristics of backlight unit used for light source of liquid crystal display. This Standard will be helpful to unify terminologies used for backlight unit, which will improve manufacturing efficiency resulting in reduction of manufacturing cost and time.

2 Scope

2.1 This Standard is applicable to backlight unit. This Standard includes the terminologies of components used in Backlight unit, inspection and measurement used in backlight unit field as well as panel and instrumentation field. The other area is not dealt with other SEMI Standard Documents.

NOTICE: SEMI Standards and Safety Guidelines do not purport to address all safety issues associated with their use. It is the responsibility of the users of the Documents to establish appropriate safety and health practices, and determine the applicability of regulatory or other limitations prior to use.

3 Limitations

3.1 In this Standard, our target is only backlight unit and general purpose for terminology. Hence a special language used for critical purpose is not mentioned. For example, we do not define special languages depending to personal emotion and a detail or small components depending on special or general purpose.

3.2 The definition of lamp components follows the language used in lighting company or other optics related standardization.

4 Referenced Standards and Documents

4.1 CIE Standard¹

CIE 1931 — Color Space, CIE 1976 UCS

NOTICE: Unless otherwise indicated, all documents cited shall be the latest published versions.

5 Terminology

5.1 General Terminology

5.1.1 Definition of Backlight Unit

5.1.1.1 Backlight unit (BLU) is a kind of light source positioned at the backside of liquid crystal panel. Since LCD is non-emissive display device it needs essentially light source.

5.1.2 Structure of BLU

5.1.2.1 As an initial light source cold cathode fluorescence lamp (CCFL) is used at bottom and/or topside of BLU. The light emitted from CCFL is entered into light guide plate (LGP). Here light is spread out two-dimensional light by scattering sites at the back surface LGP or inside of LGP. Two-dimensional light is sometimes diffused by diffusion sheet or conversed by prism sheet respectively. And final light comes into human eyes.

¹ CIE International Commission on Illumination, Kegelgasse 27, A-1030 Vienna, Austria

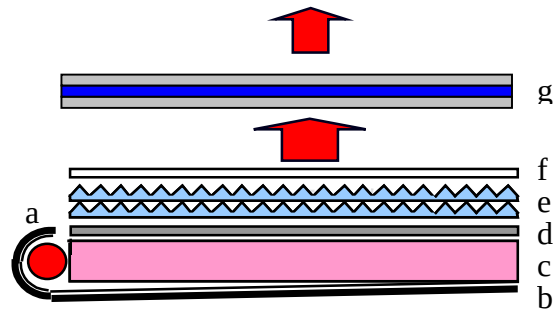


Figure 1

General structure of BLU; From a) to g), each components indicates CCFL, reflection sheet, light guide plate, diffusion sheet, two prism sheets, protection sheet and panel respectively.

5.2 *Components* — The following measurement items are recommended for BLU but these items depend on user requirements if they are specified.

5.2.1 *cold cathode fluorescence lamp* — the positive column or cathode discharge lamp of the glow discharge. Namely, the ultraviolet by the releasing of the second electron of cathode stimulates the phosphor, so the lamp radiates the visible ray.

5.2.2 *reflection sheet* — the sheet that reflects the light to prevent the loss of the light toward back side of the BLU.

5.2.3 *light guide plate* — the plate, one of important components of the BLU, that changes the path of the light from line light source to face light source.

5.2.4 *diffusion sheet* — the sheet that diffuses the light to the previous surface.

5.2.5 *prism sheet* — the film to enhance the brightness.

5.2.6 *protection sheet* — a kind of sheet placed on the top of BLU for protecting other components from damage outside.

5.2.7 *frame* — the frame to make the components of the BLU stably combined.

5.2.8 *electrode* — the conductor, an electron source inside the lamp, which releases the electron by the electric current or flows the discharge current.

5.2.9 *hot (electrode)* — the electrode part receiving current from the inverter, namely anode.

5.2.10 *ground (electrode)* — the opposite part against the hot electrode of the lamp, namely cathode.

5.2.11 *inverter* — the device that transfers the voltage of the power supply from low voltage DC to high voltage AC to start the cold cathode fluorescence lamp.

5.2.12 *lamp* — the light source device mainly using the cold cathode fluorescence lamp that lights the BLU.

5.2.13 *lamp assembly* — the total light source devices to light lamp.

5.2.14 *lamp cover* — the part protecting the lamp makes the light released from the luminance factor incident over the light guide plate.

5.2.15 *lamp holder* — the part that protects the lamp form external collision or contact.

5.2.16 *lamp ring* — the part that protects lamp from the fragility.

5.2.17 *mercury* — as an ultraviolet light source, elemental name in the periodic table is Hg.

5.2.18 *mixing gas* — the gas needed to open the discharge consists of Neon and Argon gas etc. maintaining the discharge.