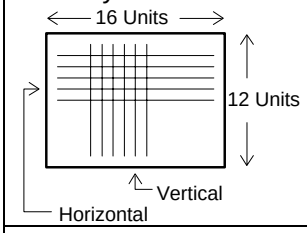
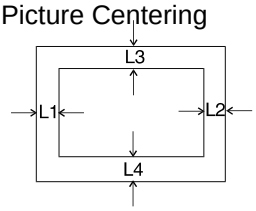
# 5. ELECTRICAL SPECIFICATIONS

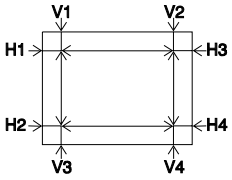
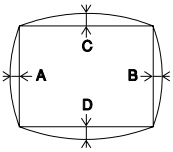
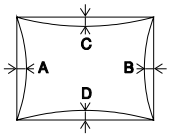
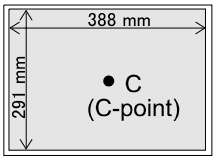
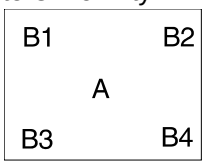
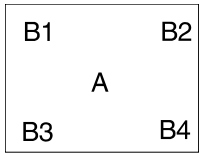
All measurements are subject to the conditions listed in 5.1, unless otherwise specified by the item in secttion 5.2 to 5.5.

## 5.1 Standard measurement conditions

| | |
|---|---|
| Pattern of the signal | Cross-hatched pattern<br>(Horizontal (H) x Vertical (V): 16 x 12 Units) |
| Video signal level | 0.7 Vp-p 75 Ω |
| Contrast/Brightness | 100 %/100 % |
| Ambient temperature | Normal |
| Input current | AC 200-240 V 50 Hz / 100-120V 50/60 Hz |
| Magnetic field | Depends on the destination (refer to page 26) |
| Measurement | After warm up for at least 30 minutes |
| Mode | VESA 1600 dots x 1200 lines @85 Hz |
| Display area size | 388 mm x 291 mm (15.3" x 11.5") |

## 5.2 Displaying Performance

| Items | Values | Conditions |
|---|---|---|
| Scanning Frequency | Horizontal: 30~130 kHz (Auto Switching)<br>Vertical: 50~160Hz (Auto Switching) | |
| Linearity<br>  <br> | Horizontal: ± 5.5 % max.<br>specified as following figure on limited horizontal frequency ranges ; 30~33, 35~42, 45~50, 55~62, 64~69, 73~82, 90~94, 98~102, 104~108 and 111~113 (at kHz).<br>Vertical: ± 5.5 % max. | As obtained through following formula.<br>H = {(X max. or X min.)-(X Ave.)} / (X Ave.) x 100<br>V = {(Y max. or Y min.)-(Y Ave.)} / (Y Ave.) x 100 |
| Display Area Size | | |
| (a) Standard | Horizontal: 388±6 mm<br>Vertical: 291±6 mm | After activating auto sizing. |
| (b) Maximum Size | 400 mm (H) x 298 (V) mm<br>Viewable Image Size: 498 mm | Sets to horizontal and vertical size at maximum.<br>(NOTE: Picture size depends on the graphics board or PC utilized.) |
| Picture Centering<br>  <br> | Horizontal: \| L1-L2 \| ≤ 6 mm<br>Vertical: \| L3-L4 \| ≤ 6 mm | After activating auto sizing. |
| Raster Size Regulation | | |
| (a) Static | Horizontal: 2.0 mm max.<br>Vertical: 2.0 mm max. | As defined by overall raster size from white frame pattern to white raster field pattern. |
| (b) Dynamic | Horizontal: 2.0 mm max.<br>Vertical: 2.0 mm max. | As defined by overall raster size reversing 30% white band pattern. |

| Items | Values | Conditions |
|---|---|---|
| Distortion | | |
| (a)Trapezoidal, Parallelogrammie &Tilt   | \| V1 - V2 \| ≤ 3.0 mm<br>\| V3 - V4 \| ≤ 3.5 mm<br>\| H1 - H2 \| ≤ 3.0 mm<br>\| H3 - H4 \| v 3.0 mm | Defined by the actual distances of the standard white raster field from the nearest bezel escutcheon against all directions. |
| (b) Barrel   | Left, Right: A, B = 1.5 mm max.<br>Top, Bottom: C, D = 1.5 mm max. | |
| (c) Pin   | Left, Right: A, B = 2.0 mm max.<br>Top, Bottom: C, D = 2.0 mm max. | |
| Color Purity | Conspicuous different colors shall not be recognizable within display area against all directions after the external degaussing. | Display Image: Red, Green & Blue field pattern. |
| Convergence   | Max. deviation among RGB raster line center distances, either horizontal or vertical, shall not exceed the following:<br>Center (C-Point): 0.20 mm<br>Preset Area (388 x 291 mm): 0.35 mm | |
| White Balance | To be validated from 4000 K to 10000 K incremented by the 500 K and factory default setting 9300 K. Tolerance of each color temperature of x-y coordinates is ±0.025 for 5000 K, 6500 K, 9300 K. | To be validated through high-intensity white window (40 mm x 40 mm) in the center of the CRT. Brightness is set to 38 ft-L (130 cd/$m^2$) at 6500 K and 9300 K.<br>30 ft-L(103 cd/$m^2$) at 4000 K. |
| Uniformity | | |
| White Uniformity   | Color coordination<br>A (x, y)<br>Bi (xi, yi) (I=1~4)<br>$\Delta x = \lvert x - xi \rvert < 0.020$<br>$\Delta y = \lvert y - yi \rvert < 0.020$ | To be measured with a white field pattern.<br>Measured after the external degaussing. |
| Bright Uniformity   | Bi ÷ A × 100 ≥ 60 %<br>(i: 1~4) | |

| Items | Values | Conditions |
|---|---|---|
| Jitters | To be less than 0.1 mm in amplitude, horizontally and vertically, or invisible from the distance of 50 cm from CRT surface. | |
| Focus | All # characters to be clearly recognized in both normal and reverse mode. | 1600x1200 resolution<br>Display "#" character (font of 7 x 9) entire screen. |
| Brightness | Input signal 0.7 Vp-p, Brightness & Contrast maximum at 9300 K. | |
| (a) White field pattern | 30 ft-L (103 cd/$m^2$) typ.<br>27 ft-L (93 cd/$m^2$) min. | To be measured with a white field pattern. |
| (b) White window pattern | 38 ft-L (130 cd/$m^2$) typ.<br>34 ft-L (117 cd/$m^2$) min.<br>67ft-L (230 cd/$m^2$) min.*<br>*selected the 'Movie' mode of the 'Fine Contrast' function. | To be measured with a 40 mm x 40 mm window pattern. |
| Display Colors | Unlimited Colors | |

## 5.3 sRGB (Reference)

| | | |
|---|---|---|
| Phosphor Chromatically Coordination | x=0.3127, y=0.3290 | To be measured with a white field pattern |
| Brightness (White window pattern) | 23ft-L (80cd/$m^2$) | To be measured with a 40 mm x 40 mm window pattern. |
| Gamma | $\gamma$=2.2 | |

## 5.4 Signal Input

| | | |
|---|---|---|
| Retrace Time | Horizontal: 2.0 µs max.<br>Vertical: 0.4 ms max. | AC=0 |
| Sync Input Signal Form | (a) Separate, TTL, Positive/Negative<br>(b) Composite, TTL, Positive/Negative<br>(c) Composite, Sync on Green, 0.3 Vp-p Negative (conform to RS343)<br>Sync signals are automatically recognized and internally adjusted in the order of priority (a) through (c). | |
| Video Input Signal Form | Analogue, Positive (0.7 Vp-p/75 Ω) | |
| Pixel Dot Clock | 340 MHz max. | |

## 5.5 Power Supply

| Items | Values | Condition |
|---|---|---|
| Input current and voltage | 100-120/200-240 VAC±10 % 50/60 Hz, 2.2 A/1.1 A | |
| In-rush current | 60 A peak maximum. | |
| Power Consumption<br>(a) Normal operation<br>(b) Maximum<br><br><br>(c) Power saving mode 1<br>(d) Power saving mode 2 | <br>160 W (typ.)<br>180 W[*1]<br>*1 With optional speaker and all USB ports in operation.<br>Less than 10 W [*2]<br>less than 3 W [*2]<br>*2 only monitor operated | To be measured with a white field pattern and contrast and brightness set to maximum. |
| Power save function | VESA DPMS | |

## 5.6 USB Specifications

| Items | |
|---|---|
| USB Standard | Rev. 1.1 complied<br>USB Monitor Control Class Rev. 1.0 complied |
| Downstream power supply | 500 mA for each (maximum) |
| Communication speed | 12M bps (full) 1.5M bps (low) |
| USB Ports | Upstream port x 1 (Series B connector)<br>Downstream ports x 4 (Series A connector) |
| Compatible Computers & Systems | All computers equipped with a USB interface using the OS below.<br>Windows 98/2000 / Mac OS 8.5.1 or newer |