Power 5gv Specification

1. VIDEO, DATA AND GRAPHICS PROJECTOR:

   A. Video, Data and Graphics Projectors, General:

      The video, data and graphics projector shall be capable of projecting bright, resolute large screen images of video and computer sources. The projector shall be compatible with all video standards and computer standards up to 1280 x 1024 resolution.

   B. Sources and Inputs:

      i. Source Compatibility:

         - Video Sources:
           The projector shall be compatible with all video standards including 525/60, 625/50, PAL, NTSC, SECAM, and HDTV.
         - Computer Sources:
           The projector shall be compatible with all computer sources up to a resolution of 1280 x 1024 including, VGA, SVGA, XGA, SXGA and MAC.

      ii. Input Configuration:

      The projector shall include a minimum of three discreet inputs. Each input must be universal in nature and able to be software configured to accept;
         - RGB signals with sync on green, composite H/V sync and separate H and V sync. The projector shall automatically sense and select the sync configuration.
         - Single cable NTSC, PAL and SECAM signals
         - S-Video Y/C signals
         - Component Video RGB and Y Pr Pb signals

      iii. Input Specifications:

      The projector inputs shall be on BNC connectors with the following input specifications;
         - RGB Signals:
           RGB = 700mV / 75Ω
           Sync = .7V - 5v
           Sync on green, composite H/V sync and separate H and V sync, auto select
         - Component Video Signals:
           Y = 700 mV + 300 mV / 75Ω
           Pr, Pb = 700 mV p-p / 75Ω
         - S-Video Signals:
           Y = 700 mV + 300 mV / 75Ω
           C = 300 mV p-p / 75Ω
         - Composite Video:
           1 V p-p / 75Ω

iv. Scan Frequencies:

Minimum Horizontal Frequency Range	= 15 kHz to 90 kHz
Minimum Vertical Frequency Range	= 24 Hz to 100 Hz

v. Video Processing:

The projector shall include internal Faroudja [tm] NTSC / PAL decoding, Y/C separation, adaptive comb filtering, motion compensation and contrast enhancement. Internal video decoding must include the following specifications:

- Accept digitized NTSC or PAL composite signal input
- Internal 10-bit digital processing
- YUV, RGB, D1 outputs available
- Meets CCIR 601 and SMPTE 259 standards

C. Performance Specifications:

i. Brightness:
With a new lamp the projector shall deliver a minimum of 6500 Lumens measured according to the ANSI/NAPM IT7.228-1997 specification.

ii. Lamp Life and Lumen Maintenance:
The projection lamp shall have a minimum lamp life of 500 hours of operation, with light output no less than 50% of the rated light output at the specified lamp life.

Example: A lamp rated at 6500 ANSI Lumens and a lamp life of 500 hours shall deliver no less than 3250 ANSI Lumens at 500 hours of operation.

iii. Brightness Uniformity:
The projector shall deliver a minimum of 90% brightness uniformity throughout the specified life of the lamp. The brightness uniformity shall be measured according to the ANSI/NAPM IT7.228-1997 specification.

iv. Color and Gray-scale:

- Gray-scale Uniformity:
  The projector shall deliver a minimum of 95% gray-scale uniformity across the entire projected image, and throughout the specified life of the lamp. The gray-scale uniformity shall be measured using the 9 zones specified in the ANSI/NAPM IT7.228-1997 specification.
- Color Temperature:
  The projector shall deliver a color temperature range of 3000K - 9300 K adjustable from the remote control.
- Color Gamut:
  The projector shall be capable of producing over 1 billion shades of color.
- Stability:
  The projector shall maintain color stability and gray-scale uniformity throughout

the life of the projector and all of its components, including the lamp, without manipulation of the projector controls. The projector color temperature shall deviate no more than ±200K throughout the rated life of the lamp.

v. Contrast Ratio:
The projector shall deliver a minimum contrast ratio of 200:1 measured according to the ANSI/NAPM IT7.228-1997 specification.

D. Projector Display:

i. Display Type:
The projector shall utilize a three channel DMD type display, utilizing red, green and blue color channels. The display devices shall have fixed convergence and geometry, requiring no convergence adjustments. The projector shall be capable of displaying various different screen sizes and source types and frequencies without requiring the projector to be reconverged.

ii. Resolution:
The projection display shall have a minimum native resolution of 1024 x 768 pixels.

iii. Aperture Ratio:
The aperture ratio or fill factor of the display shall be greater than 92%.
i.e. no less than 92 % of the pixel area shall be used to generate light on the projected image. No greater than 8% of the pixel shall be used for circuitry and masking.

iv. Pixel Mapping:
The projector shall include a resizing engine capable of converting all compatible input sources, including all video sources and computer sources up to 1280 x 1024 resolution, to the native resolution of the display. This resizing will be accomplished without significant sampling errors or decimation of picture content.

E. Lamp:

i. General:
The projector shall utilize a high energy arc lamp with a native color temperature of 5000K – 7000K. The lamp native color temperature shall not deviate more than ±200K throughout the rated lamp life. The lamp shall be capable of hot restrike and shall not require fan cool down after the lamp is turned off.

ii. Lamp Replacement:
The projector shall include a modular lamp assembly that can be replaced by the user without the use of tools. The lamp assembly shall be prealigned and targeted, requiring no adjustments or alignments in the field.

F. Lenses:

i. general:
The projector shall have a single lens aperture, requiring no convergence adjustments. A

full range of optional lenses including both fixed and zoom lenses shall be available.

ii. specifications:
- aperture: F/3 minimum
- distortion:
  - fixed focal length lenses: <0.5%
  - zoom lenses: <2.0%
- Modulation Transfer Function:
  - Center 20 lp/mm: >60
  - Center 33 lp/mm: >40
  - Corner 20 lp/mm: >40
  - Corner 33 lp/mm: >30

iii. Motorized Lens Mount and Lens shift:
The projector shall include an integral motorized lens mount which provides a lens shift mechanism which allows the projector to be mounted above or below the center of the screen, ±20% of the screen height with no optical or geometric distortion. The projector shall be capable of being mounted anywhere along the vertical screen centerline between the top and the bottom of the screen with less than 5% geometric distortion. The projector shall be capable of being mounted within a quarter screen width to the left or right of screen center with less than 5% geometric distortion. The motorized lens mount shall provide remote control of optical lens focus.

G. Projector Control:
All projector functions shall be accessed through an on-screen menu system which is controlled by a handheld remote control and also by a built in keypad on the rear panel of the projector. The remote control shall be capable of communicating with the projector via infrared (IR) signal, or by attaching a hard-wired connection. In addition, the projector shall include provisions for RS232 computer control.

H. Environmental:

i. Warm-up:
The projector shall achieve its full specified light output, convergence and color stability within 2 minutes of initial lamp strike.

ii. Power Efficiency: >1.5 Lumens / Watt

iii. Power Consumption: 3000 Watts

iv. Power Requirement: 208 – 265 VAC @ 50 – 60 Hz

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I. Service:

i. General:
The projector shall be constructed in a modular fashion allowing plug in replacement of all major system components with minimal service time required.

ii. Manufacturer Support:
Projector manufacturer shall provide overnight replacement of defective modules at no charge within the warrantee period. In addition, projector manufacturer shall provide a service support hotline available 24 hours per day.