Dual-Resolution Graphics With Different Output Scaling

Component →

HDMI →

RF →

Composite →

S-Video →

bdisplay

Display 0
(HD)

(1920x1080)
Or
(1280x720)
Or
(720x480)

← Alpha blend — **Decode window 0 (MAIN)** — Alpha blend →

← Alpha blend — **Decode window 1 (PIP)** — Alpha blend →

bdecode_window

bdisplay

Display 1
(SD)

NTSC (720x480)

Horizontal Upscale ↑

Horizontal Upscale ↑

Framebuffer

2 if double buffered

Size = Source Width x Max Display Height (960x1080)

Graphics Engine 0

Destination resolution = Display 0 Resolution

Source Resolution = Framebuffer Resolution (960x1080)

Graphics Engine 1

Destination resolution = Display 1 Resolution

Source Resolution = Framebuffer Resolution (640x480)

Framebuffer

2 if double buffered

Size = Source Width x Max Display Height (640x480)

bgraphics

bgraphics

bsurface_copy()
Or
bsurface_blit()

Followed By bgraphics_flip() (if double-buffered)

[H & V Scaling] [Color Conversion]

bsurface_copy()
Or
bsurface_blit()

Followed By bgraphics_flip() (if double-buffered)

[H & V Scaling] [Color Conversion]

bsurface

Virtual Framebuffer

Hidden Surface
Resolution = Application Graphics Resolution (i.e. 960x540, 720x480, or 640x480)

Copied to each framebuffer via bsurface_copy() or bsurface_blit() to achieve desired scaling.

bsurface_copy()
Or
bsurface_blit()

Application Bitmaps

Hidden Surfaces

Copied to virtual framebuffer for display

Legend

■ (red)	Realtime HW
■ (green)	HW Assisted SW Initiated