

# Box mode #7

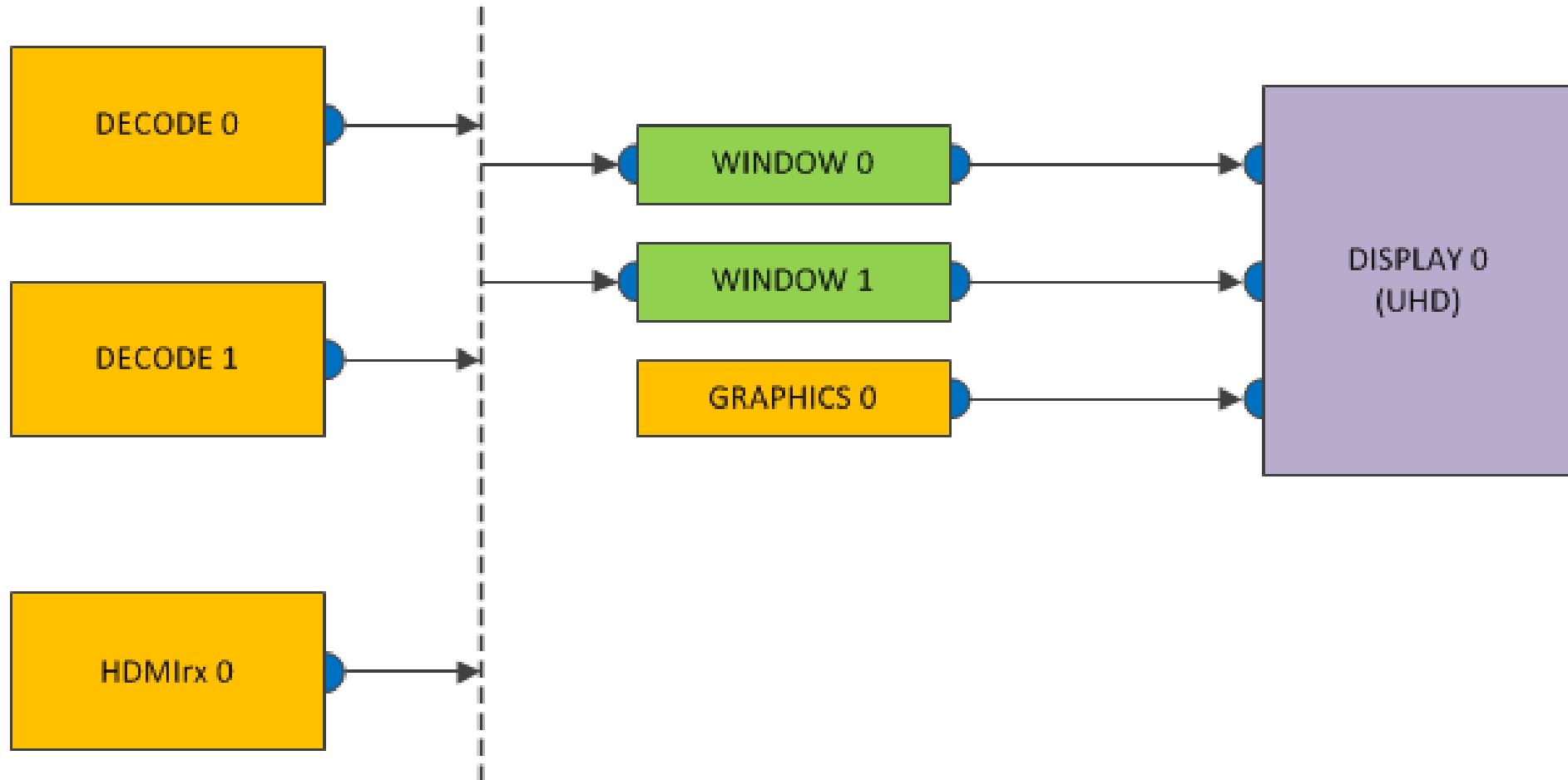
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## Box mode #7

- Required memory speed: 1x 32-bit LPDDR4-3733
  - No high-temperature refresh
- Features:
  - Two decoders:
    - One 3840x2160p60 10-bit decode
    - One 1080p30 10-bit decode
  - Multi-PIP supported (3+1)
  - UHD display only (no SD)
  - Main + PIP
  - HDMI input supported
  - No transcoding

# Possible video routings



# Source limitations

- Decode 0
  - 3840x2160p60 10-bit HEVC / VP9
  - 1920x1080p60 8-bit AVC / MPEG2
  - Multi-PIP (3x)
    - 1920x1080p30/60i 10-bit HEVC
    - 1920x1080p30/60i 8-bit VP9 / AVC / MPEG2
  - No MTG
- Decode 1
  - 1920x1080p30/60i 10-bit HEVC / VP9
  - 1920x1080p30/60i 8-bit AVC / MPEG2
  - No MTG
- HDMIrx 0
  - Up to 3820x2160p60
- Graphics 0 (UHD)
  - 1080p60 32-bit ARGB
  - Does not require graphics compression

# HARDWARE RESOURCE MAPPING

- Requires overclocking of HVD0 to achieve 4kp60 + 1080p30 rates
  - Implemented through a power profile

Decoder	MFD	Hardware
Decode 0	MFD0	HVD0
Decode 1	MFD1	HVD0

# Window limitations

- Window 0 (MAIN / UHD)
  - Up to full-screen display (smooth scaling)
  - 1080i60 de-interlacing
  - Multi-PIP (3x)
    - Each display rectangle up to 25% x 25%
    - 480i60 de-interlacing
- Window 1 (PIP / UHD)
  - When the source is 1080p or less, then full-screen display (no smooth scaling)
  - When the source is greater than 1080p, then PIP is limited to ½ x ½ canvas.
  - 1080i60 de-interlacing

# Display and encode limitations

- Display 0 (UHD)
  - 3840x2160p60