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HDMI EDID Emulator In a Nutshell

- The EM-HD-NCP is a HDMI EDID emulator. It passes all the video signals across with the exception of the DDC (Display Data Channel).
- The DDC from the downstream device (typically a monitor) is NOT passed across to the source. Instead, an EEPROM in the emulator provides a fixed EDID table to the source.
- The EDID table reported to the source is comprised of 256 bytes. On the next page you can see the raw (hex or binary) format and deciphered/decoded in English
- As sold, the user cannot change the EDID table that is in the emulator (but for a user willing to manage their own EDID files, we offer USB programmers or other EDID emulators that are programmable or have the ability to learn the EDID from a display). If a user has a particular EDID file that they can supply, Hall Research can pre-load the user supplied EDID data in the emulator (setup fee and/or minimum order quantity requirements apply, please contact your sales representative)
- Power is supplied from the HDMI source (pin 18 must have 5 volts according to HDMI specifications). The EDID emulator uses only a few milliamps, so if there is power on pin 18 it will work.
- Hall Research makes no guarantees or claims as to how any particular source will interpret and react to the EDID supplied. How a source deals with EDID is a function of many variables including but not limited to:
    - Firmware or Chipset in the video output card
    - Memory of video output card
    - Operating system
    - Hardware platform
- Hall Research cannot guarantee that a source will output video at any particular resolution, or at all for that matter with the use of the emulator. The only thing the emulator guarantees is that the source will be able to read the "canned" EDID table in the emulator.

```
Block 0 (EDID Base Block)
               0   1   2   3   4   5   6   7   8   9
      000   |  00  FF  FF  FF  FF  FF  FF  00  22  49
      010   |  01  00  01  00  00  00  1F  1C  01  03
      020   |  80  00  00  78  EA  87  D5  A8  55  4D
      030   |  9F  25  0E  50  54  BF  EF  80  71  4F
      040   |  81  80  81  40  95  00  A9  40  B3  00
      050   |  D1  C0  D1  00  02  3A  80  18  71  38
      060   |  2D  40  58  2C  45  00  00  00  00  00
      070   |  00  1E  4D  D0  00  A0  F0  70  3E  80
      080   |  30  20  35  00  00  00  00  00  00  1A
      090   |  00  00  00  FC  00  20  20  20  20  48
      100   |  61  6C  6C  20  45  44  49  44  00  00
      110   |  00  00  00  00  00  00  00  00  00  00
      120   |  00  00  00  00  00  00  01  9A
```

Following is a translation of Block 0 mapping into English (Numbers in parenthesis represent byte positions)

```
(8-9)          ID Manufacture Name : HRI
(10-11)        ID Product Code     : 0001
(12-15)        ID Serial Number    : N/A
(16)           Week of Manufacture : 31
(17)           Year of Manufacture : 2018
(18)           EDID Version Number : 1
(19)           EDID Revision Number: 3
(20)           Video Input Definition       : Digital
(21)           Maximum Horizontal Image Size: 0 cm
(22)           Maximum Vertical Image Size  : 0 cm
(23)           Display Gamma                : 2.20
(24)           Power Management and Supported Feature(s):
                      Standby, Suspend, Active Off/Very Low Power, RGB Color, Non-sRGB, Preferred Timing
Mode
(25-34)        Color Characteristics
                      Red Chromaticity   :  Rx = 0.658  Ry = 0.328
                      Green Chromaticity :  Gx = 0.298  Gy = 0.620
                      Blue Chromaticity  :  Bx = 0.144  By = 0.056
                      Default White Point:  Wx = 0.313  Wy = 0.329
(35)           Established Timings I
                      720 x 400 @ 70Hz (IBM, VGA)
                      640 x 480 @ 60Hz (IBM, VGA)
                      640 x 480 @ 67Hz (Apple, Mac II)
                      640 x 480 @ 72Hz (VESA)
                      640 x 480 @ 75Hz (VESA)
                      800 x 600 @ 56Hz (VESA)
                      800 x 600 @ 60Hz (VESA)
(36)           Established Timings II
                      800 x 600 @ 72Hz (VESA)
                      800 x 600 @ 75Hz (VESA)
                      832 x 624 @ 75Hz (Apple, Mac II)
                      1024 x 768 @ 60Hz (VESA)
                      1024 x 768 @ 70Hz(VESA)
                      1024 x 768 @ 75Hz (VESA)
                      1280 x 1024 @ 75Hz (VESA)
(37)           Manufacturer's Timings
                      1152 x 870 @ 75Hz (Apple, Mac II)
(38-53)        Standard Timings
                      1152x864 @ 75 Hz (4:3 Aspect Ratio)
                      1280x1024 @ 60 Hz (5:4 Aspect Ratio)
                      1280x960 @ 60 Hz (4:3 Aspect Ratio)
                      1440x900 @ 60 Hz (16:10 Aspect Ratio)
                      1600x1200 @ 60 Hz (4:3 Aspect Ratio)
                      1680x1050 @ 60 Hz (16:10 Aspect Ratio)
                      1920x1080 @ 60 Hz (16:9 Aspect Ratio)
```

```
                1920x1200 @ 60 Hz (16:10 Aspect Ratio)
(54-71)     Detailed Descriptor #1: Preferred Detailed Timing (1920x1080 @ 60Hz)
                Pixel Clock           : 148.5 MHz
                Horizontal Image Size  : 0 mm
                Vertical Image Size    : 0 mm
                Refresh Mode           : Non-interlaced
                Normal Display, No Stereo
                Horizontal:
                    Active Time     : 1920 Pixels
                    Blanking Time   : 280 Pixels
                    Sync Offset     : 88 Pixels
                    Sync Pulse Width: 44 Pixels
                    Border          : 0 Pixels
                    Frequency       : 67 kHz
                Vertical:
                    Active Time     : 1080 Lines
                    Blanking Time   : 45 Lines
                    Sync Offset     : 4 Lines
                    Sync Pulse Width: 5 Lines
                    Border          : 0 Lines
                Digital Separate, Horizontal Polarity (+), Vertical Polarity (+)
                Modeline: "1920x1080" 148.500 1920 2008 2052 2200 1080 1084 1089 1125 +hsync +vsync
(72-89)     Detailed Descriptor #2: Detailed Timing (3840x2160 @ 60Hz)
                Pixel Clock           : 533.25 MHz
                Horizontal Image Size  : 0 mm
                Vertical Image Size    : 0 mm
                Refresh Mode           : Non-interlaced
                Normal Display, No Stereo
                Horizontal:
                    Active Time     : 3840 Pixels
                    Blanking Time   : 160 Pixels
                    Sync Offset     : 48 Pixels
                    Sync Pulse Width: 32 Pixels
                    Border          : 0 Pixels
                    Frequency       : 133 kHz
                Vertical:
                    Active Time     : 2160 Lines
                    Blanking Time   : 62 Lines
                    Sync Offset     : 3 Lines
                    Sync Pulse Width: 5 Lines
                    Border          : 0 Lines
                Digital Separate, Horizontal Polarity (+), Vertical Polarity (-)
                Modeline: "3840x2160" 533.250 3840 3888 3920 4000 2160 2163 2168 2222 +hsync -vsync
(90-107)    Detailed Descriptor #3: Monitor Name
                Monitor Name:     Hall EDID
(108-125)   Detailed Descriptor #4: Defined by Manufacturer
(126-127)   Extension Flag and Checksum
                Extension Block(s)  : 1
                Checksum Value      : 154
```



```
Block 1(CEA-861 Extension Block)
              0   1   2   3   4   5   6   7   8   9
      128   |  02  03  2F  F3  54  10  05  04  03  02
      138   |  07  16  01  1F  12  13  14  20  15  11
      148   |  06  61  5D  5E  5F  23  09  7F  07  83
      158   |  01  00  00  6D  03  0C  00  10  00  38
      168   |  78  20  00  60  01  02  03  02  3A  80
      178   |  18  71  38  2D  40  58  2C  45  00  00
      188   |  00  00  00  00  1E  56  5E  00  A0  A0
      198   |  A0  29  50  30  20  35  00  00  00  00
      208   |  00  00  1A  F4  51  00  A0  F0  70  19
      218   |  80  30  20  35  00  00  00  00  00  00
      228   |  1E  00  00  00  00  00  00  00  00  00
      238   |  00  00  00  00  00  00  00  00  00  00
      248   |  00  00  00  00  00  00  00  34
```

Following is a translation of Block1 mapping into English (Numbers in parenthesis represent byte positions)

```
(128-130)       Extension Header
                        Revision Number    :  3
                        DTD Starting Offset:  47
(131)           Display Support
                        DTV Underscan, Basic Audio, YCbCr 4:4:4, YCbCr 4:2:2
                        Number of Native Formats: 3
(132-152)       Video Data Block
                        1920x1080p @ 59.94/60Hz - HDTV (16:9, 1:1)
                        1920x1080i @ 59.94/60Hz - HDTV (16:9, 1:1)
                        1280x720p @ 59.94/60Hz - HDTV (16:9, 1:1)
                        720x480p @ 59.94/60Hz - EDTV (16:9, 32:27)
                        720x480p @ 59.94/60Hz - EDTV (4:3, 8:9)
                        720(1440)x480i @ 59.94/60Hz - SDTV (16:9, 32:27)
                        720(1440)x576i @ 50Hz - SDTV (16:9, 64:45)
                        640x480p @ 59.94/60Hz - EDTV (4:3, 1:1)
                        1920x1080p @ 50Hz - HDTV (16:9, 1:1)
                        720x576p @ 50Hz - EDTV (16:9, 64:45)
                        1280x720p  @ 50Hz - HDTV  (16:9, 1:1)
                        1920x1080i @ 50Hz - HDTV (16:9, 1:1)
                        1920x1080p @ 23.97/24Hz - HDTV(16:9, 1:1)
                        720(1440)x576i @ 50Hz - SDTV (4:3, 16:15)
                        720x576p @ 50Hz - EDTV (4:3, 16:15)
                        720(1440)x480i @ 59.94/60Hz - SDTV (4:3, 8:9)
                    (97) 3840x2160p 59.94/60Hz - (16:9)
                    (93) 3840x2160p 23.98/24Hz - (16:9)
                    (94) 3840x2160p 25Hz - (16:9)
                    (95) 3840x2160p 29.97/30Hz - (16:9)
(153-156)       Audio Data Block
                        Audio Format #1    : LPCM, 2-Channel, 24-Bit, 20-Bit, 16-Bit
                        Sampling Frequency : 192 kHz, 176.4 kHz, 96 kHz, 88.2 kHz, 48 kHz, 44.1 kHz, 32 kHz
(157-160)       Speaker Allocation Data Block (SADB)
                        Front Left/Front Right Audio Channel (FL/FR)
(161-174)       Vendor Specific Data Block (VSDB)
                        IEEE Registration Identifier: 0x000C03
                        CEC Physical Address        : 0x0010
                        Maximum TMDS Clock          : 165MHz
(175-192)       Detailed Descriptor #1: Detailed Timing (1920x1080 @ 60Hz )
                        Pixel Clock           : 148.5 MHz
                        Horizontal Image Size  : 0 mm
                        Vertical Image Size    : 0 mm
                        Refresh Mode           : Non-interlaced
                        Normal Display, No Stereo
                        Horizontal:
                                Active Time     : 1920 Pixels
                                Blanking Time   : 280 Pixels
                                Sync Offset     : 88 Pixels
                                Sync Pulse Width: 44 Pixels
```



```
                        Border          : 0 Pixels
                        Frequency       : 67 kHz
                Vertical:
                        Active Time     : 1080 Lines
                        Blanking Time   : 45 Lines
                        Sync Offset     : 4 Lines
                        Sync Pulse Width: 5 Lines
                        Border          : 0 Lines
                Digital Separate, Horizontal Polarity (+), Vertical Polarity (+)
                Modeline: "1920x1080" 148.500 1920 2008 2052 2200 1080 1084 1089 1125 +hsync +vsync
(193-210)       Detailed Descriptor #2: Detailed Timing (2560x1440 @ 60Hz )
                Pixel Clock             : 241.5 MHz
                Horizontal Image Size   : 0 mm
                Vertical Image Size     : 0 mm
                Refresh Mode            : Non-interlaced
                Normal Display, No Stereo
                Horizontal:
                        Active Time     : 2560 Pixels
                        Blanking Time   : 160 Pixels
                        Sync Offset     : 48 Pixels
                        Sync Pulse Width: 32 Pixels
                        Border          : 0 Pixels
                        Frequency       : 88 kHz
                Vertical:
                        Active Time     : 1440 Lines
                        Blanking Time   : 41 Lines
                        Sync Offset     : 3 Lines
                        Sync Pulse Width: 5 Lines
                        Border          : 0 Lines
                Digital Separate, Horizontal Polarity (+), Vertical Polarity (-)
                Modeline: "2560x1440" 241.500 2560 2608 2640 2720 1440 1443 1448 1481 +hsync -vsync
(211-228)       Detailed Descriptor #3: Detailed Timing (3840x2160 @ 24Hz )
                Pixel Clock             : 209.8 MHz
                Horizontal Image Size   : 0 mm
                Vertical Image Size     : 0 mm
                Refresh Mode            : Non-interlaced
                Normal Display, No Stereo
                Horizontal:
                        Active Time     : 3840 Pixels
                        Blanking Time   : 160 Pixels
                        Sync Offset     : 48 Pixels
                        Sync Pulse Width: 32 Pixels
                        Border          : 0 Pixels
                        Frequency       : 52 kHz
                Vertical:
                        Active Time     : 2160 Lines
                        Blanking Time   : 25 Lines
                        Sync Offset     : 3 Lines
                        Sync Pulse Width: 5 Lines
                        Border          : 0 Lines
                Digital Separate, Horizontal Polarity (+), Vertical Polarity (+)
                Modeline: "3840x2160" 209.800 3840 3888 3920 4000 2160 2163 2168 2185 +hsync +vsync
(229-246)       Detailed Descriptor #4: Defined by Manufacturer
(247-254)       Post DTD Padding
                Residual Byte Padding: 0000000000000000
(255)           Checksum Value: 52
```