

Robin Hood Display Video Parameter Checks

Alpine Electronics

January 28, 2014

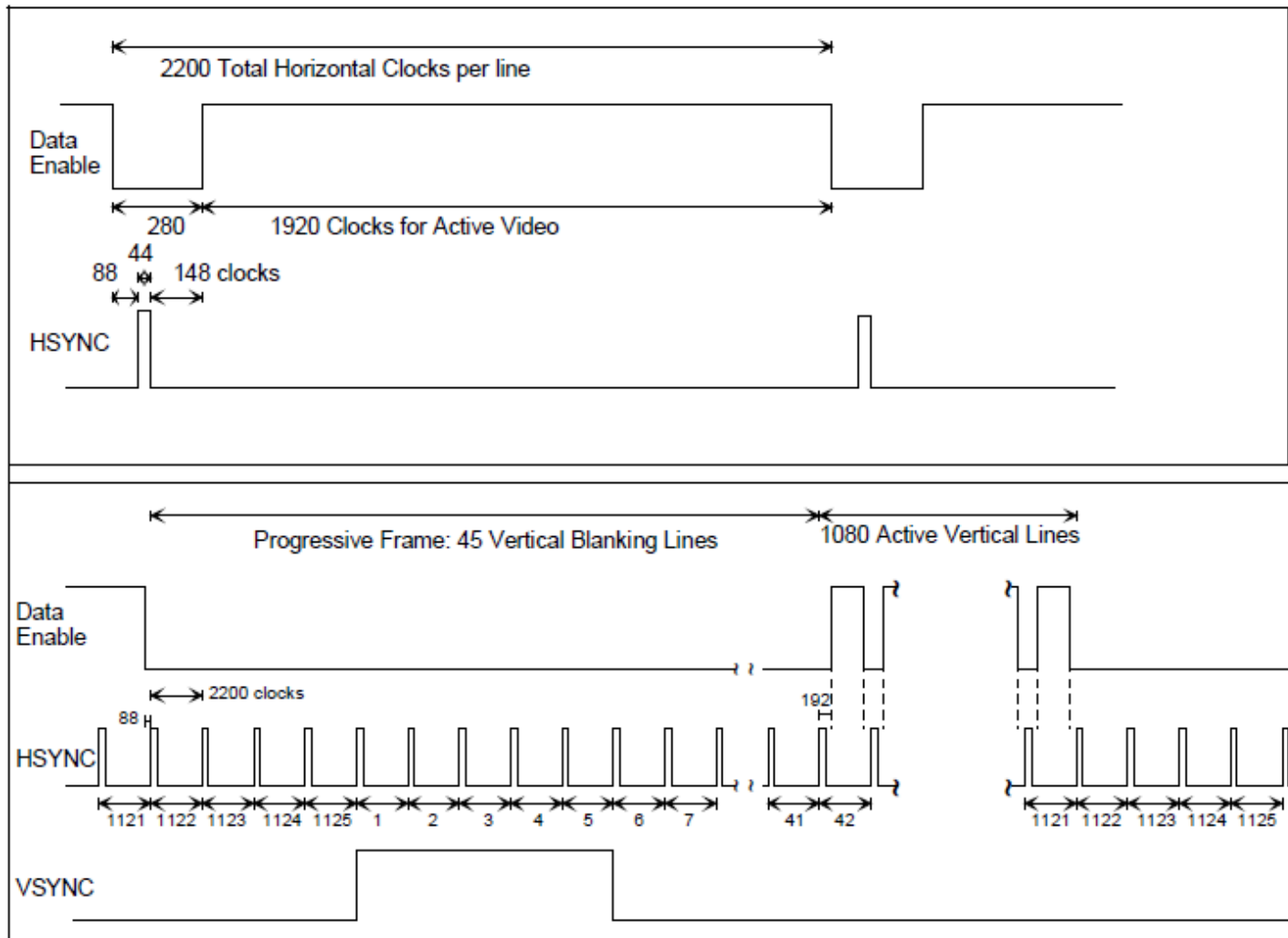
CEA-861 Display Timing Requirements

								(kHz)	(Hz)	(MHz)
Code	H active	V active	I/P	H total	H blank ⁵	V total	V blank ⁵	H Freq ⁵	V Freq ⁴	Pixel Freq ⁵
1	640	480	Prog	800	160	525	45	31.500	60.000	25.200
2,3	720	480	Prog	858	138	525	45	31.500	60.000	27.027
4	1280	720	Prog	1650	370	750	30	45.000	60.000	74.250
5	1920	1080	Int	2200	280	1125	22.5 ¹	33.750	60.000	74.250
6,7	1440 ²	480	Int	1716 ²	276	525	22.5 ¹	15.750	60.000	27.027
8,9	1440 ²	240	Prog	1716 ²	276	262	22	15.750	60.115	27.027
8,9	1440 ²	240	Prog	1716 ²	276	263	23	15.750	59.886	27.027
10,11	2880 ²	480	Int	3432 ²	552	525	22.5 ¹	15.750	60.000	54.054
12,13	2880 ²	240	Prog	3432 ²	552	262	22	15.750	60.115	54.054
12,13	2880 ²	240	Prog	3432 ²	552	263	23	15.750	59.886	54.054
14,15	1440 ²	480	Prog	1716 ²	276	525	45	31.500	60.000	54.054
16	1920	1080	Prog	2200	280	1125	45	67.500	60.000	148.500
35,36	2880	480	Prog	3432	552	525	45	31.500	60.000	108.108

CEA-861 Display Timing Requirements

4.15 1920x1080p @ 59.94/60Hz (Format 16)

This format is available only in a 16:9 aspect ratio. It is likely that non-HDMI source devices may not recognize this format in a Detailed Timing Descriptor.



Display Test Results

1. Recommend condition

Pixel clock	148.5	MHz
H total	2200	pixel
Hsync	67.50	kHz
V total	1125	pixel
Vsync	60.00	Hz

5. Investigation of Pixel clock

	min	max	
Pixel clock	130	160	MHz
H total	2200	2200	pixel
Hsync	59.09	72.73	kHz
V total	1125	1125	pixel
Vsync	52.53	64.65	Hz

Video clock acceptable 130MHz to 160MHz using Left condition

3. Investigation of Hsync

	min	max	
Pixel clock	154.5	154.5	MHz
H total	2120	3000	pixel
Hsync	72.88	51.50	kHz
V total	1125	1125	pixel
Vsync	64.78	45.78	Hz

Set video clock 154.5MHz, H period total acceptable 2120 - 3000pixel

4. Investigation of Vsync

	min	max	
Pixel clock	154.5	154.5	MHz
H total	2200	2200	pixel
Hsync	70.23	70.23	kHz
V total	1110	1200	pixel
Vsync	63.27	58.52	Hz

Set video clock 154.5MHz, V period total acceptable 1110 - 1200pixel

Display Test Results - Conclusions

- 1) The display is relatively insensitive to video clock frequency if the pixel count is correct.
- 2) With video clock set to the value reported by GM then the horizontal pixel count can vary widely on the high side.
- 3) With video clock set to the value reported by GM then the vertical pixel count must be held within a fairly narrow range.