DIP 2018/19 – Spartan FPGA Paint

VGA Graphics Module

Abbreviations used:

FP (Front porch)

BP (Back porch)

SP (Sync pulse)

AV (Active video)

V-Sync – Vertical sync

H-Sync – Horizontal sync

* Get 25MHz pixel clock from board’s 50 MHz
* One pixel – one tick (40 ns)
* 800\*524\*40ns = ~16.8ms ~60 Hz

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Front Porch | Sync | Back Porch | 480 |  |  |
| PIXELS |
| 640 |
| Horizontal | | Vertical | Front Porch | | |
|  |  | Sync | | |
|  |  | Back Porch | | |

|  |  |  |  |
| --- | --- | --- | --- |
| Horizontal pixel time (ticks) | | Vertical line time (ticks) | |
| FP | 16 | AV | 480 |
| SP | 96 | FP | 11 |
| BP | 48 | SP | 2 |
| AV | 640 | BP | 31 |
| **Total** | 800 | **Total** | 524 |