|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| FPGA | | | PCB | On-board Device | | | | | |
| Module | Pin | Pin Loc | Net | Chip | Pin | Pin Loc | Chip | Pin | Pin Loc |
| Spi\_slv\_8b8b | spi0\_spck | AB8 | SPI0\_SPCK | ATSAMG55 (SPI0) | PB0 | U54.37 |  |  |  |
| spi0\_npcs0 | N8 | SPI0\_NPCS0 | PA25 | U54.56 |  |  |  |
| spi0\_mosi | H8 | SPI0\_MOSI | PA10/TXD0 | U54.48 |  |  |  |
| spi0\_miso | B8 | SPI0\_MISO | PA9/RXD0 | U54.49 |  |  |  |
| ts\_data\_spi\_  receiver | spi1\_spck | N9 | SPI1\_SPCK | ATSAMG55 (SPI1) | PA27/SPI1\_SPCK | U54.51 |  |  |  |
| spi1\_npcs0 | N10 | SPI1\_NPCS0 | PA28/SPI1\_NPCS0 | U54.21 |  |  |  |
| spi1\_mosi | AA8 | SPI1\_MOSI | PB3/SPI1\_MOSI | U54.40 |  |  |  |
| spi1\_miso | Y10 | SPI1\_MISO | PB2/SPI1\_MISO | U54.39 |  |  |  |
| system\_bd | spi\_\*\_SCLK | B11 | SPI\_CLK | ATSAMG55 (SPI5) | PA14/SPICLK | U54.41 | ADI9364 | SPI\_CLK | U4.J5 |
| spi\_\*\_SS\_n | H6 | SPI\_ENB | PA11/SPICS0 | U54.44 | SPI\_ENB | U4.K6 |
| spi\_\*\_MOSI | E6 | SPI\_DI | PA13/MOSI | U54.42 | SPI\_DI | U4.J4 |
| spi\_\*\_MISO | F7 | SPI\_DO | PA12/MISO | U54.43 | SPI\_DO | U4.L6 |
| helm\_uart | helm\_rxd | U22 | U22 | HELM TP |  |  | J6 | UART\_RX\_EXT | J6.3 |
| helm\_txd | T22 | T22 |  |  | UART\_TX\_EXT | J6.4 |

Note: 1. R638,R639, R640 and R641must NOT be populated!!  
2. R662, R663, R660 and R661 must be populated!!

3. Why R171 is 49.9R