

Hi there,

I have a problem when I'm sending data to and from external SPI chip (Spansion S25FL032P). The problem is I'm getting a really weird signals when I'm over 2,5 MHz speed (see the attached images). I'm not sure if this is entirely HW problem or we can enable some sort of compensation. This project uses CubeMX interface and I've tried all possible settings there, but the result is the same.

I found a call to the compensation cell (HAL\_EnableCompensationCell());, but the documentation is sparse. As far as I understand this, it's only applicable with speeds exceeding 50 MHz (directly wired to the output pin). I'd be grateful of any new information regarding this problem.

SPI init code:

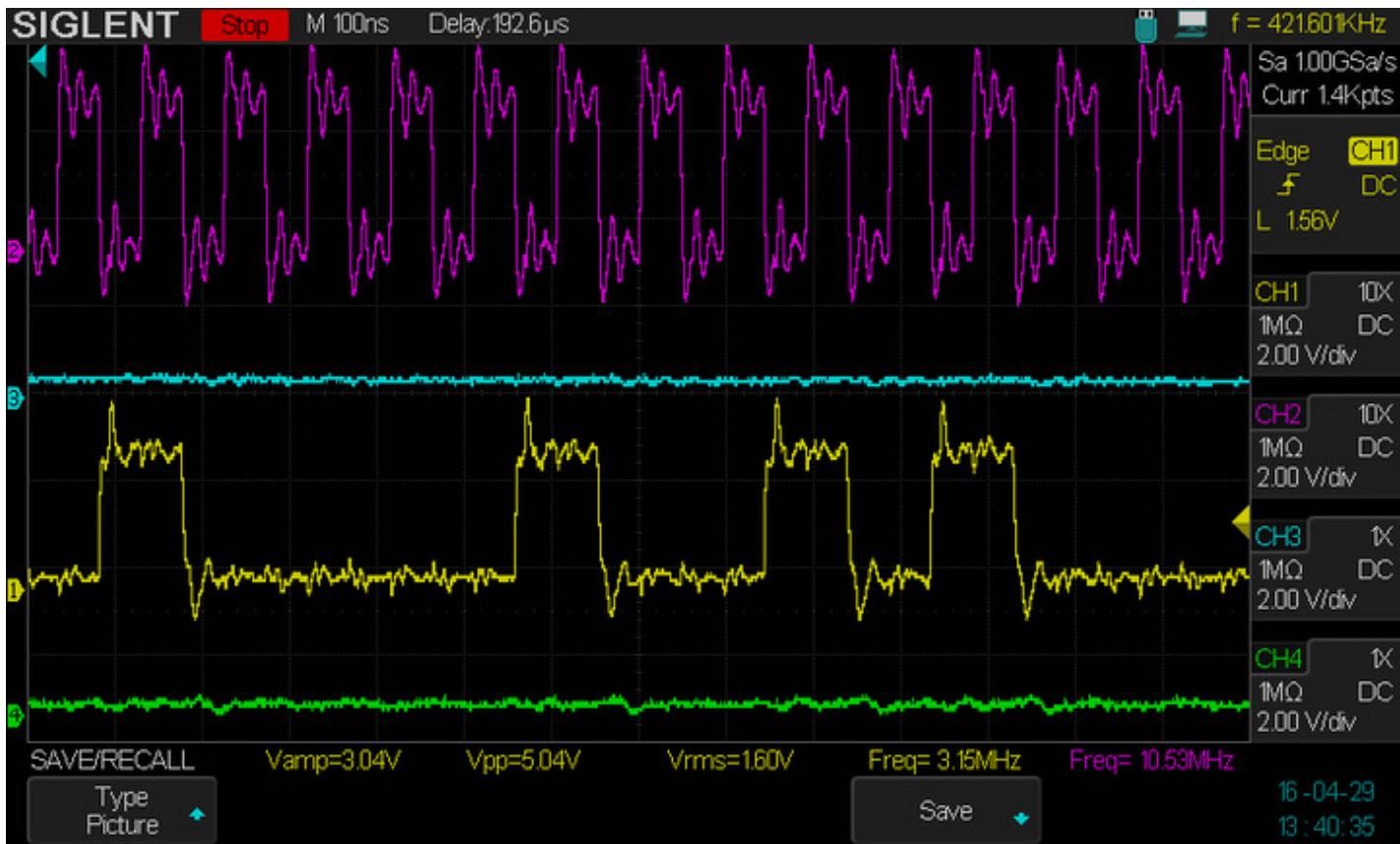
```
/* SPI1 init function */
void MX_SPI1_Init(void)
{
    hspi1.Instance = SPI1;
    hspi1.Init.Mode = SPI_MODE_MASTER;
    hspi1.Init.Direction = SPI_DIRECTION_2LINES;
    hspi1.Init.DataSize = SPI_DATASIZE_8BIT;
    hspi1.Init.CLKPolarity = SPI_POLARITY_LOW;
    hspi1.Init.CLKPhase = SPI_PHASE_1EDGE;
    hspi1.Init.NSS = SPI NSS_SOFT;
    hspi1.Init.BaudRatePrescaler = SPI_BAUDRATEPRESCALER_32;
    hspi1.Init.FirstBit = SPI_FIRSTBIT_MSB;
    hspi1.Init.TIMode = SPI_TIMODE_DISABLE;
    hspi1.Init.CRCCalculation = SPI_CRCALCULATION_DISABLE;
    hspi1.Init.CRCPolynomial = 10;
    HAL_SPI_Init(&hspi1);

}

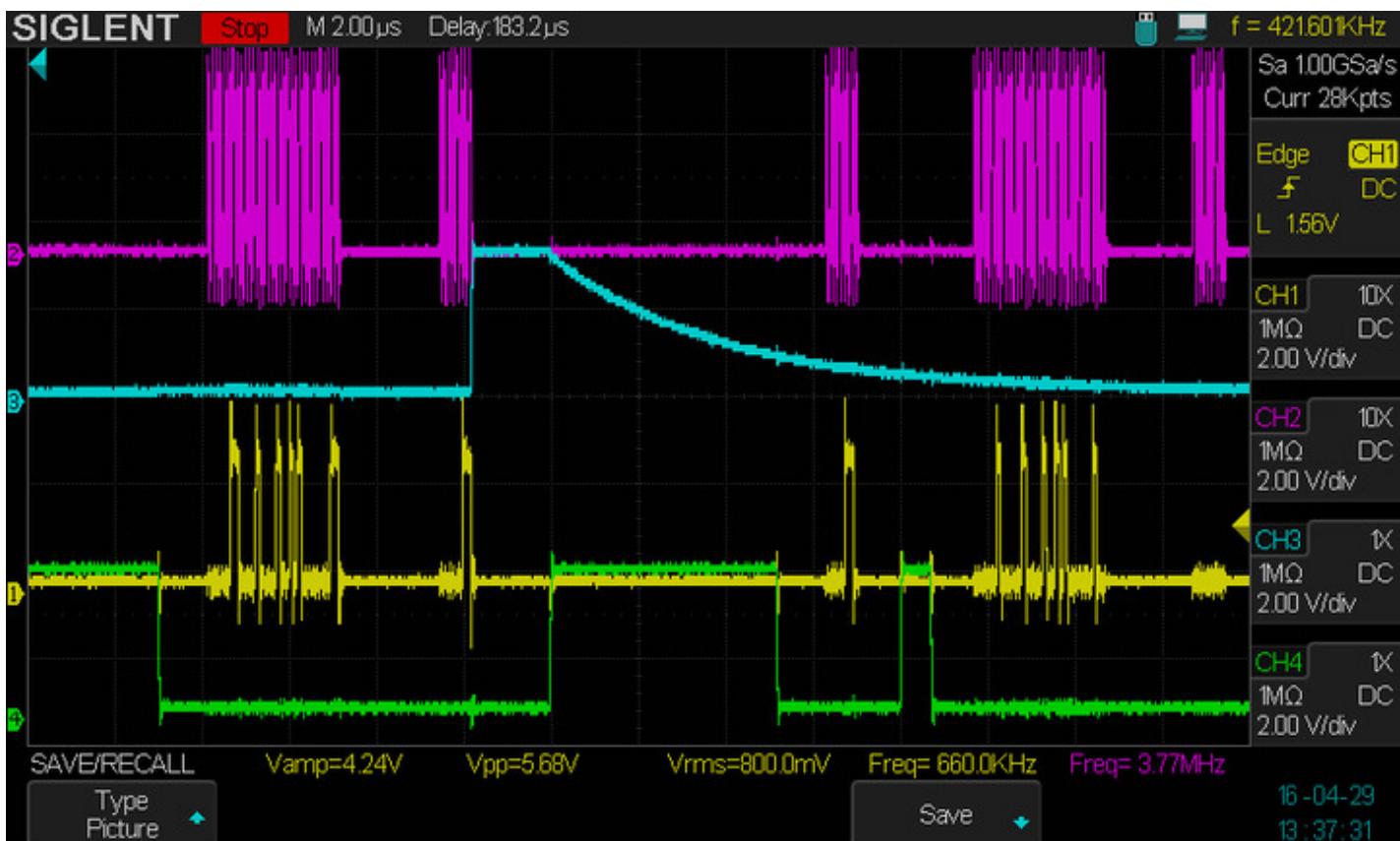
void HAL_SPI_MspInit(SPI_HandleTypeDef* hspi)
{
    GPIO_InitTypeDef GPIO_InitStruct;
    if(hspi->Instance==SPI1)
    {
        /* USER CODE BEGIN SPI1_MspInit 0 */
        SetWgFramPower(ENABLE);
        HAL_Delay(POWER_DELAY_TIME);
        /* USER CODE END SPI1_MspInit 0 */
        /* Peripheral clock enable */
        __HAL_RCC_SPI1_CLK_ENABLE();

        /**SPI1 GPIO Configuration
        PA5      -----> SPI1_SCK
        PA6      -----> SPI1_MISO
        PA7      -----> SPI1_MOSI
        */
        GPIO_InitStruct.Pin = FRAM_SPI_SCK_Pin|FRAM_SPI_MISO_Pin|FRAM_SPI_MOSI_Pin;
        GPIO_InitStruct.Mode = GPIO_MODE_AF_PP;
        GPIO_InitStruct.Pull = GPIO_NOPULL;
        GPIO_InitStruct.Speed = GPIO_SPEED_FREQ_VERY_HIGH;
        GPIO_InitStruct.Alternate = GPIO_AF5_SPI1;
        HAL_GPIO_Init(GPIOA, &GPIO_InitStruct);

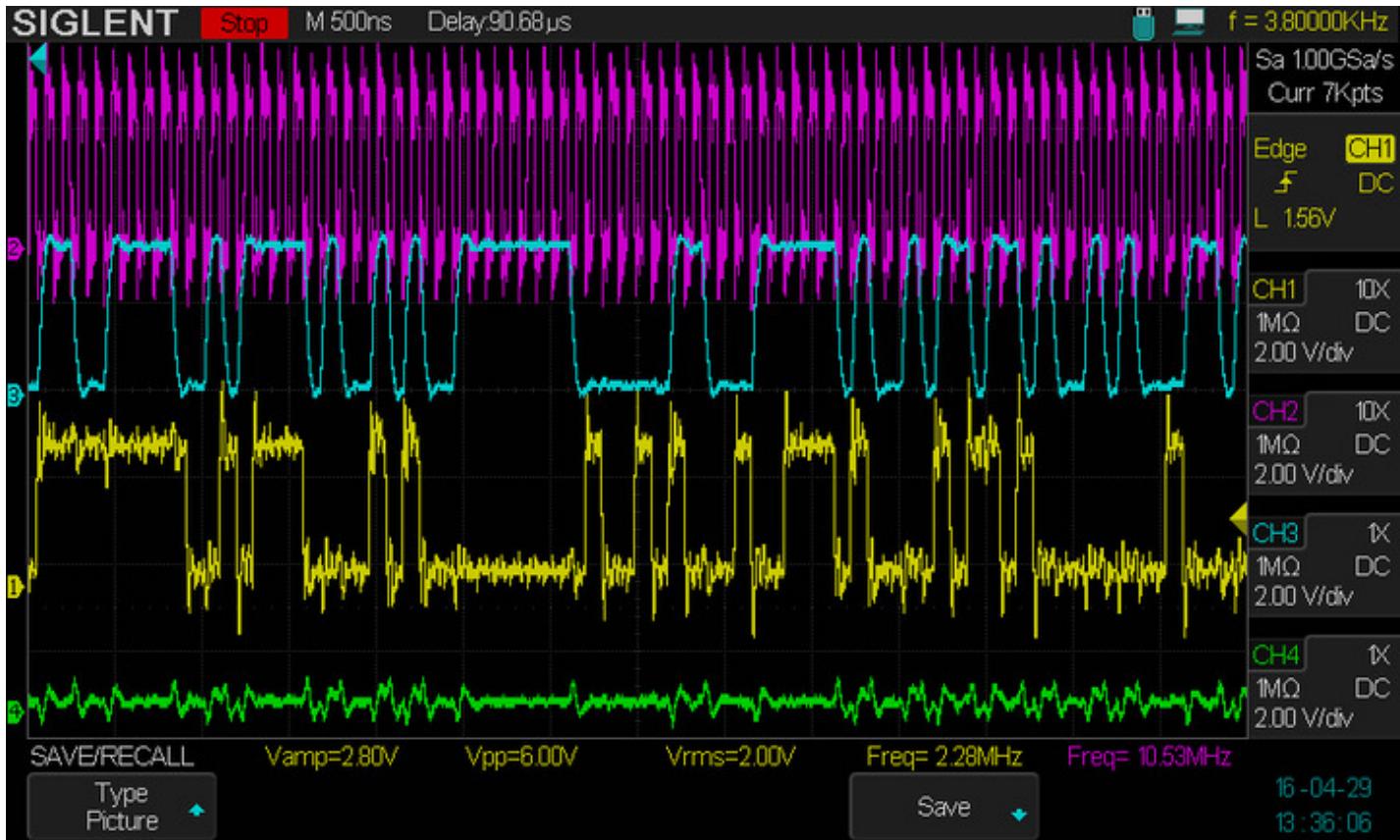
        /* USER CODE BEGIN SPI1_MspInit 1 */
        /* USER CODE END SPI1_MspInit 1 */
    }
}
```



Speed 10 MHz, Fastest GPIO (CH1 MO, CH2 CLK, CH3 MI, CH4 CS).



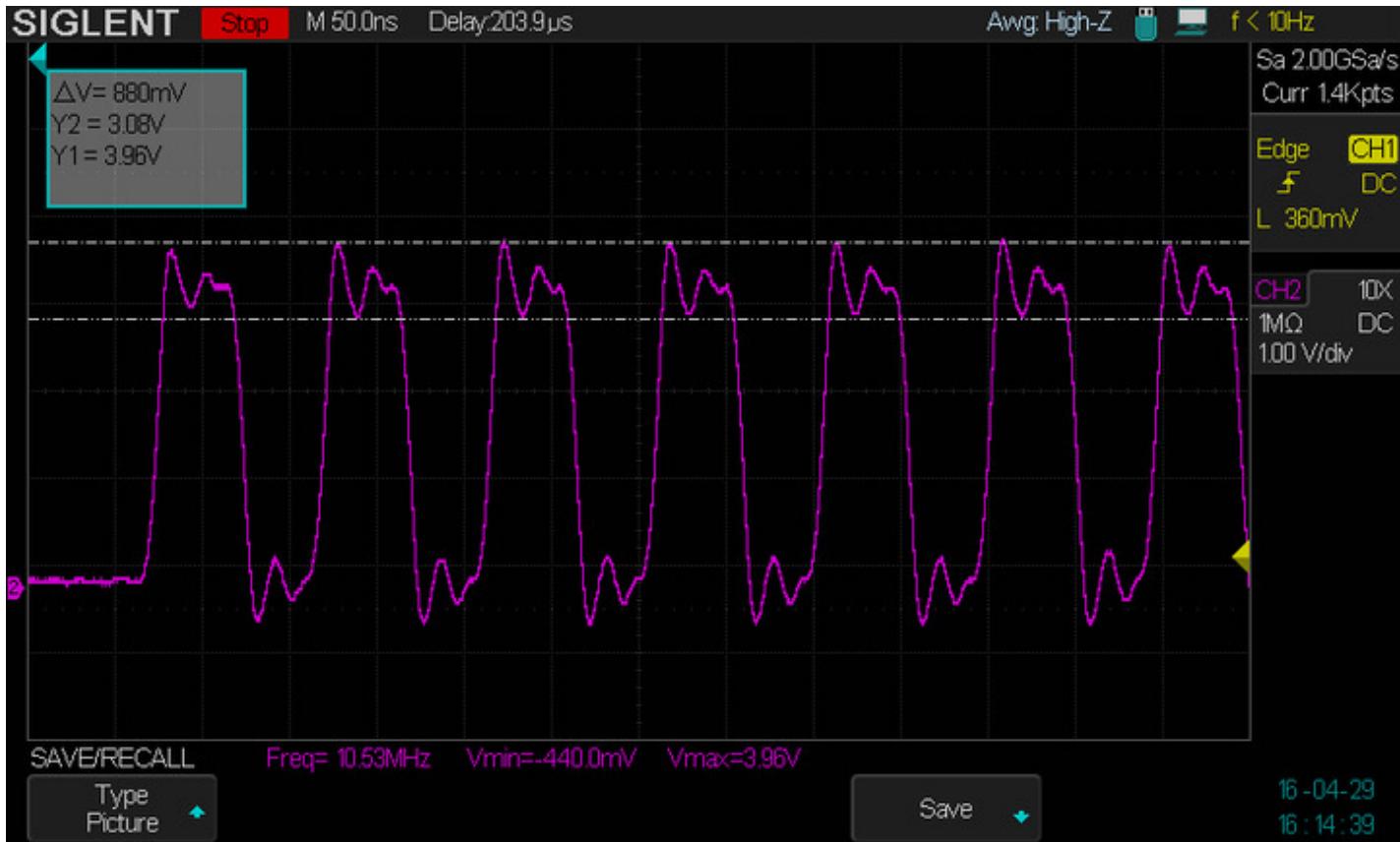
Speed 10 MHz, Fastest GPIO (CH1 MO, CH2 CLK, CH3 MI, CH4 CS).



Speed 10 MHz, Medium GPIO (CH1 MO, CH2 CLK, CH3 MI, CH4 CS).



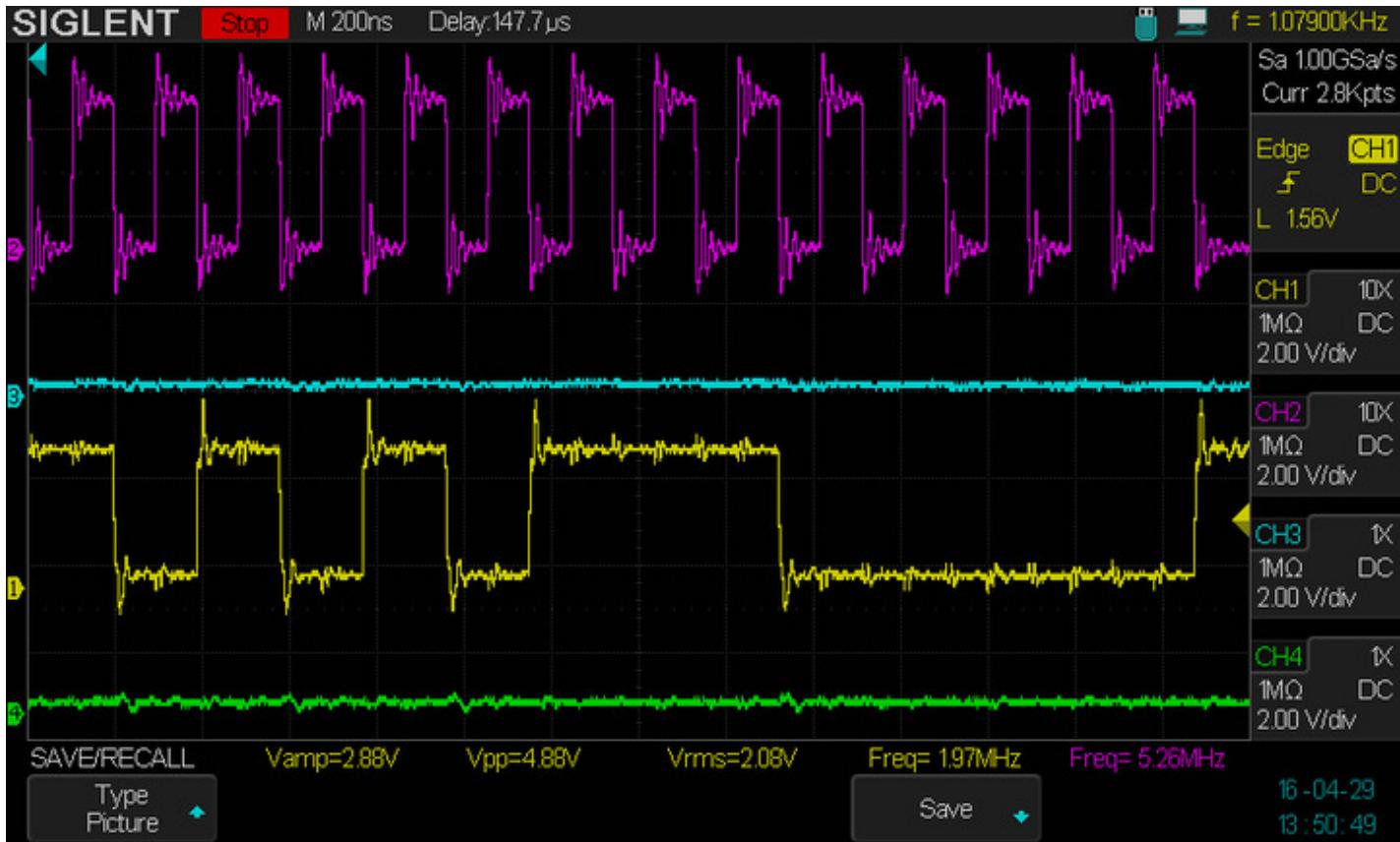
Speed 10 MHz, Medium GPIO + Pull Down enabled (CH1 MO, CH2 CLK, CH3 MI, CH4 CS).



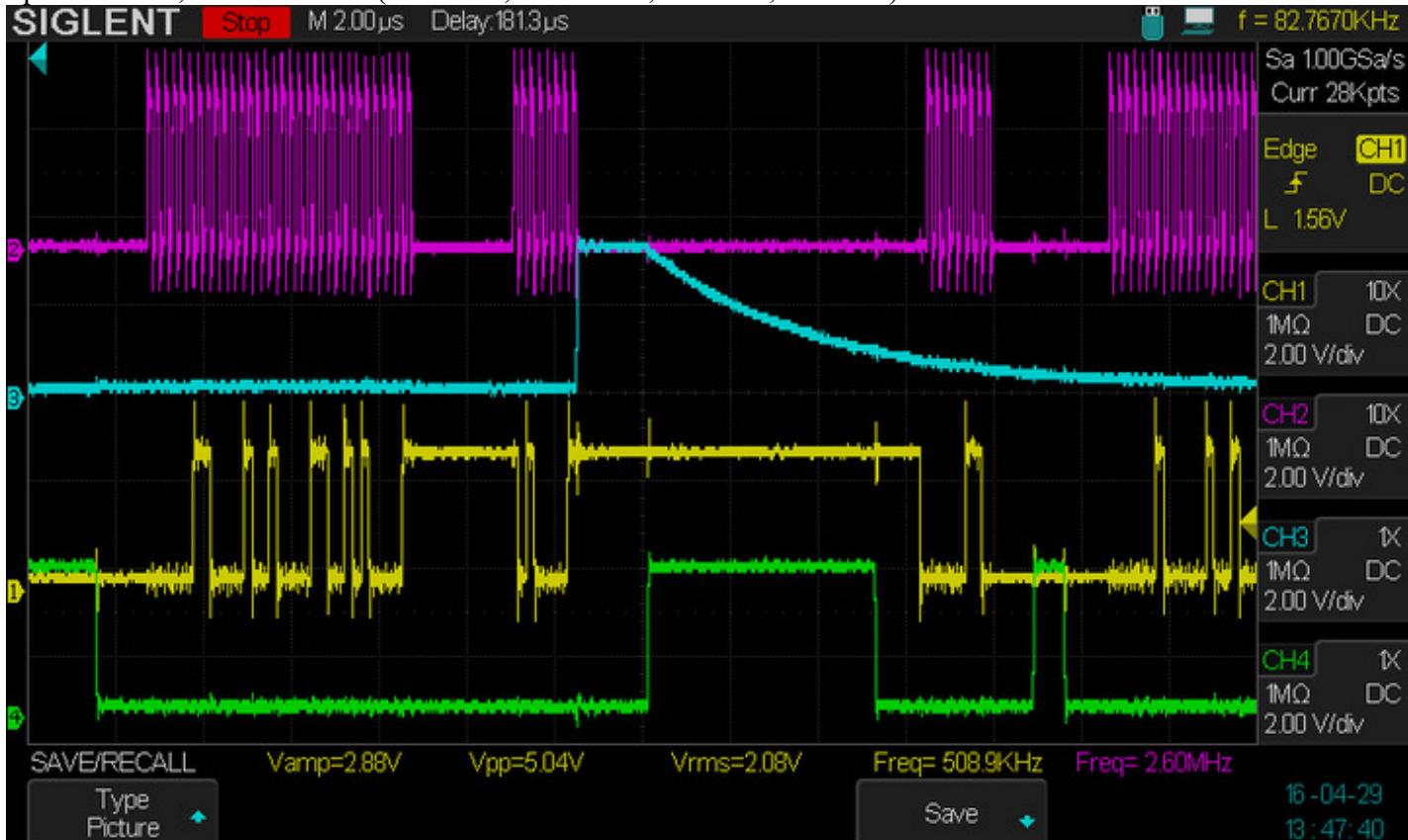
Speed 10 MHz, Slow GPIO (CH1 MO, CH2 CLK, CH3 MI, CH4 CS).



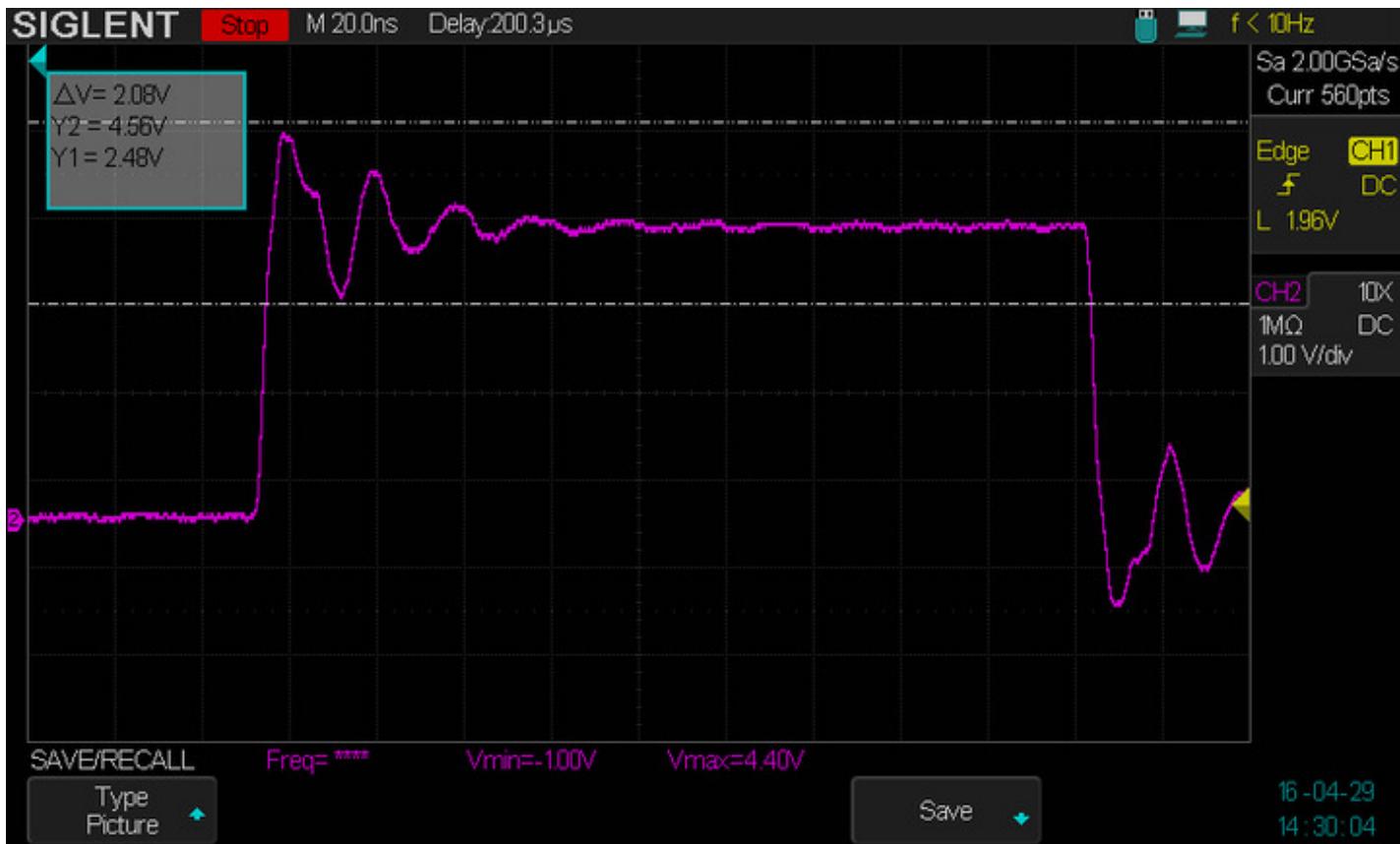
Speed 5 MHz, Fastest GPIO (CH1 MO, CH2 CLK, CH3 MI, CH4 CS).



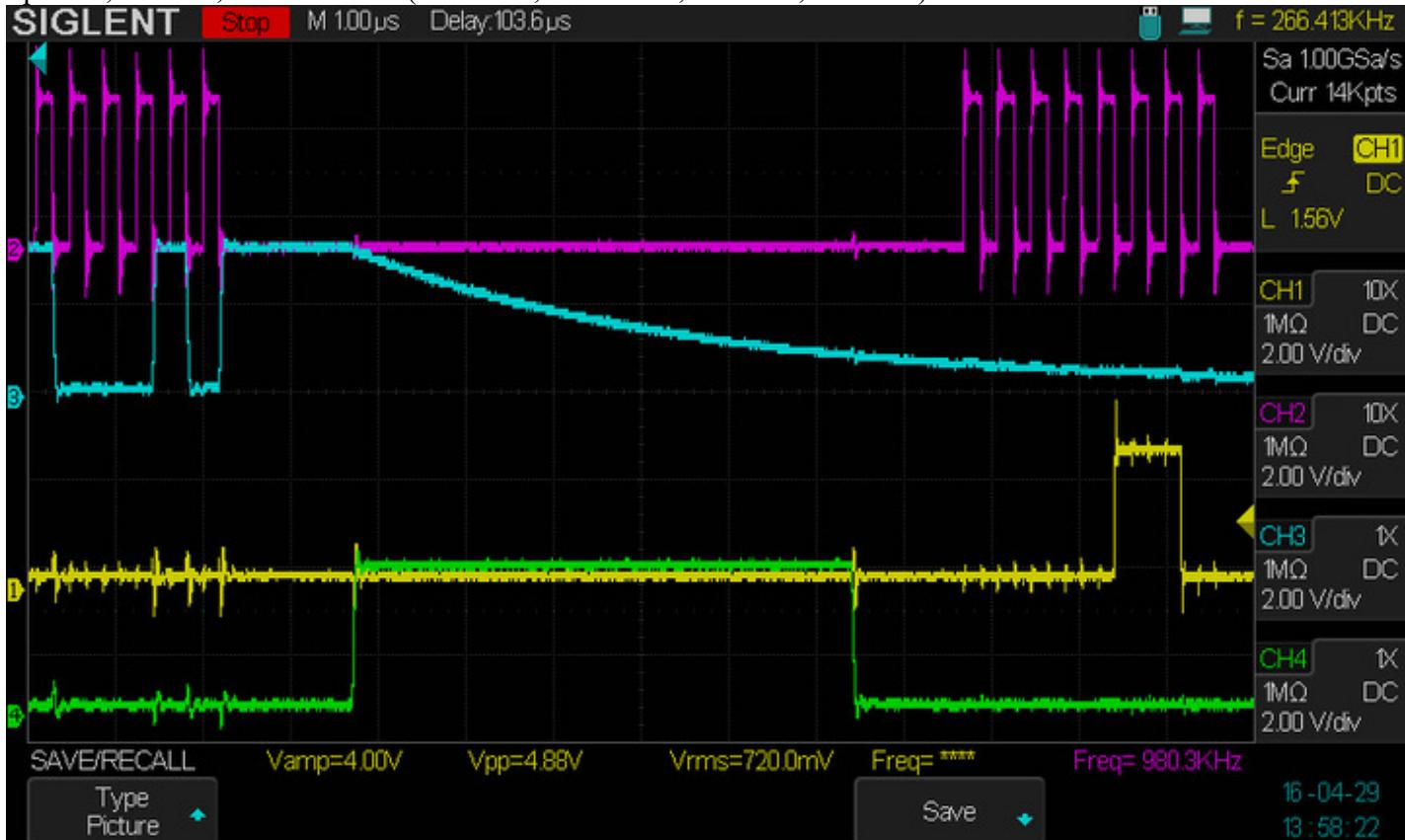
Speed 5 MHz, Fastest GPIO (CH1 MO, CH2 CLK, CH3 MI, CH4 CS).



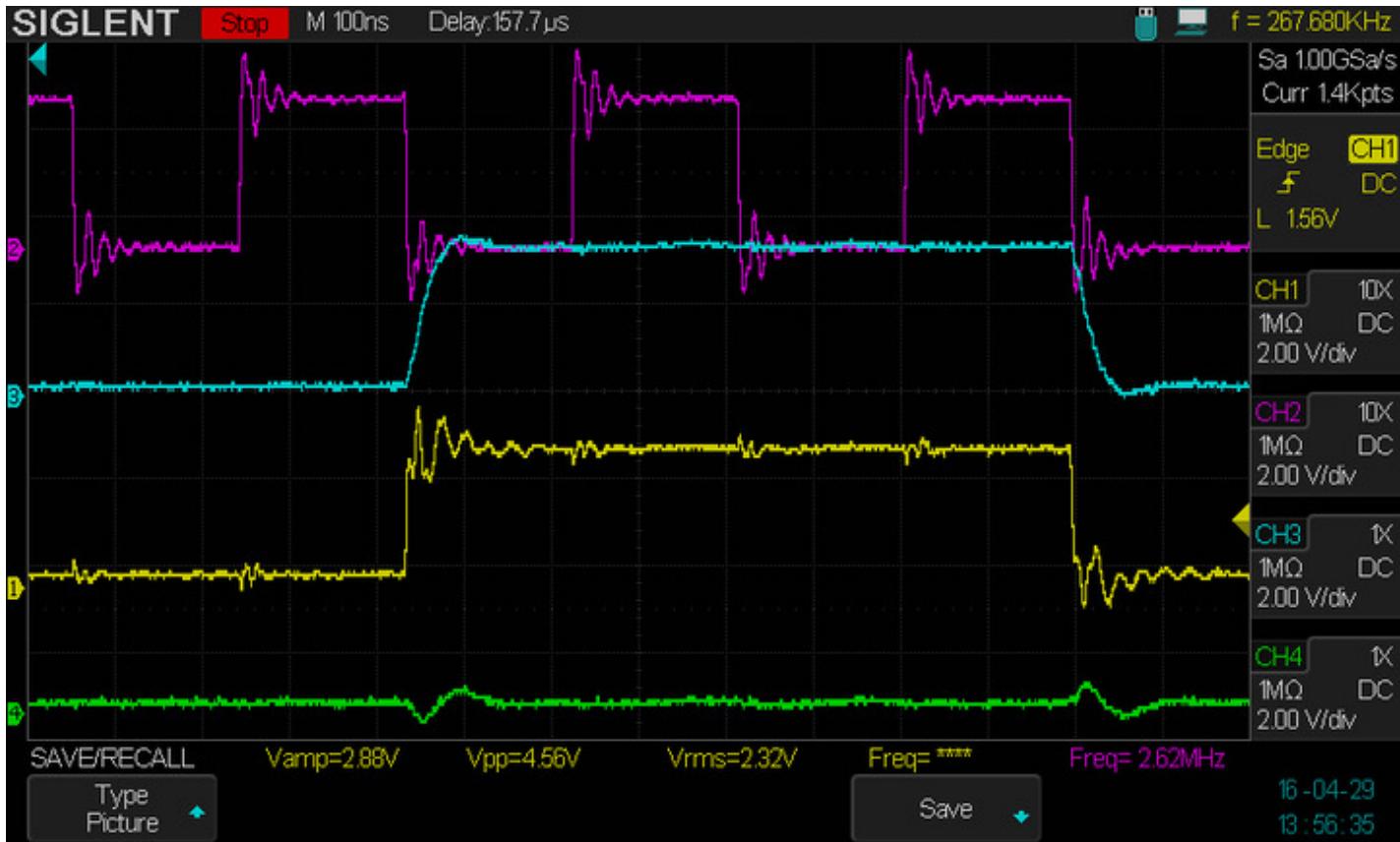
Speed 5 MHz, Fastest GPIO (CH1 MO, CH2 CLK, CH3 MI, CH4 CS).



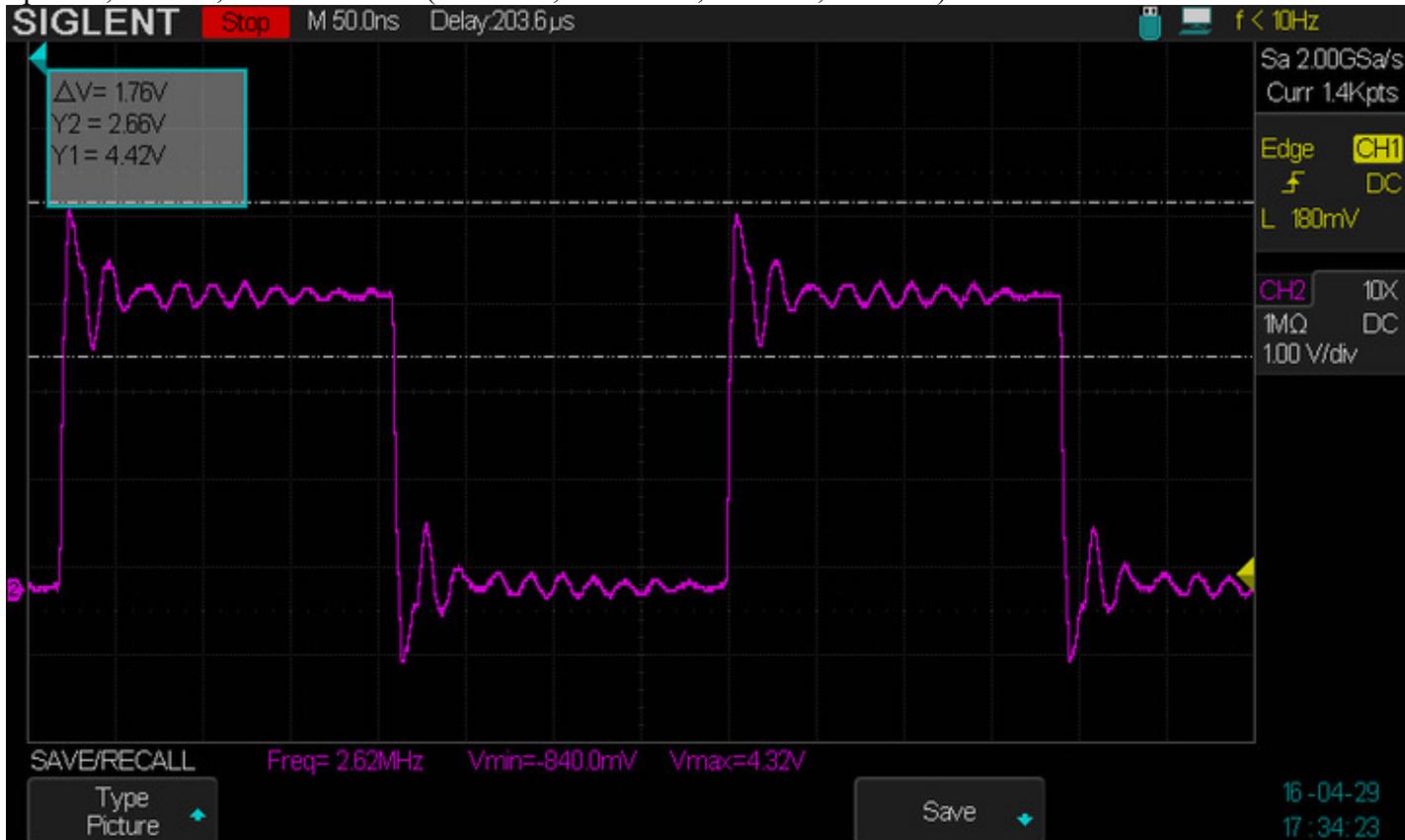
Speed 2,65 MHz, Fastest GPIO (CH1 MO, CH2 CLK, CH3 MI, CH4 CS).



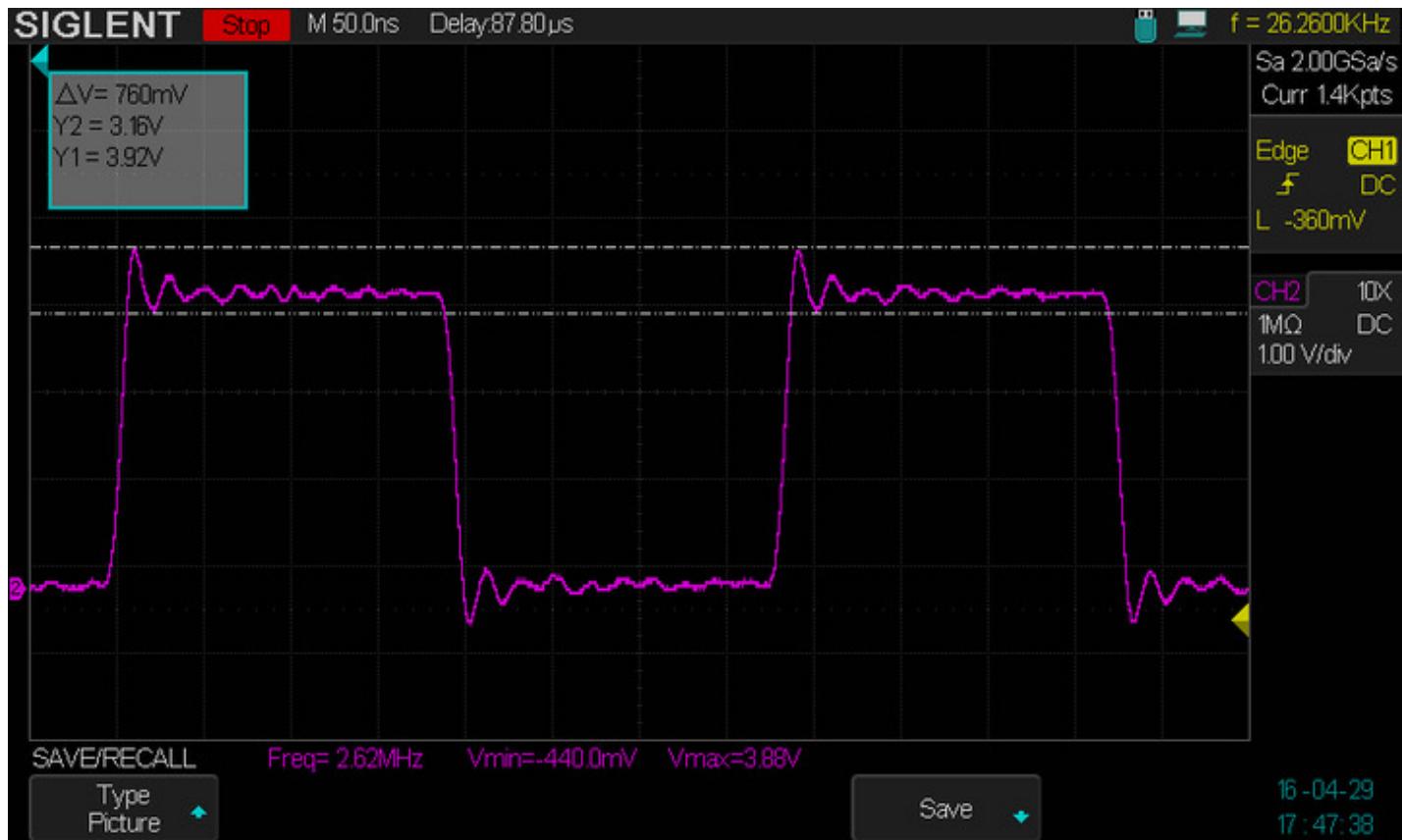
Speed 2,65 MHz, Fastest GPIO (CH1 MO, CH2 CLK, CH3 MI, CH4 CS).



Speed 2,65 MHz, Medium GPIO (CH1 MO, CH2 CLK, CH3 MI, CH4 CS)



Speed 2,65 MHz, Medium GPIO +PD (CH1 MO, CH2 CLK, CH3 MI, CH4 CS)



Speed 2,65 MHz, Slow GPIO +PD (CH1 MO, CH2 CLK, CH3 MI, CH4 CS)