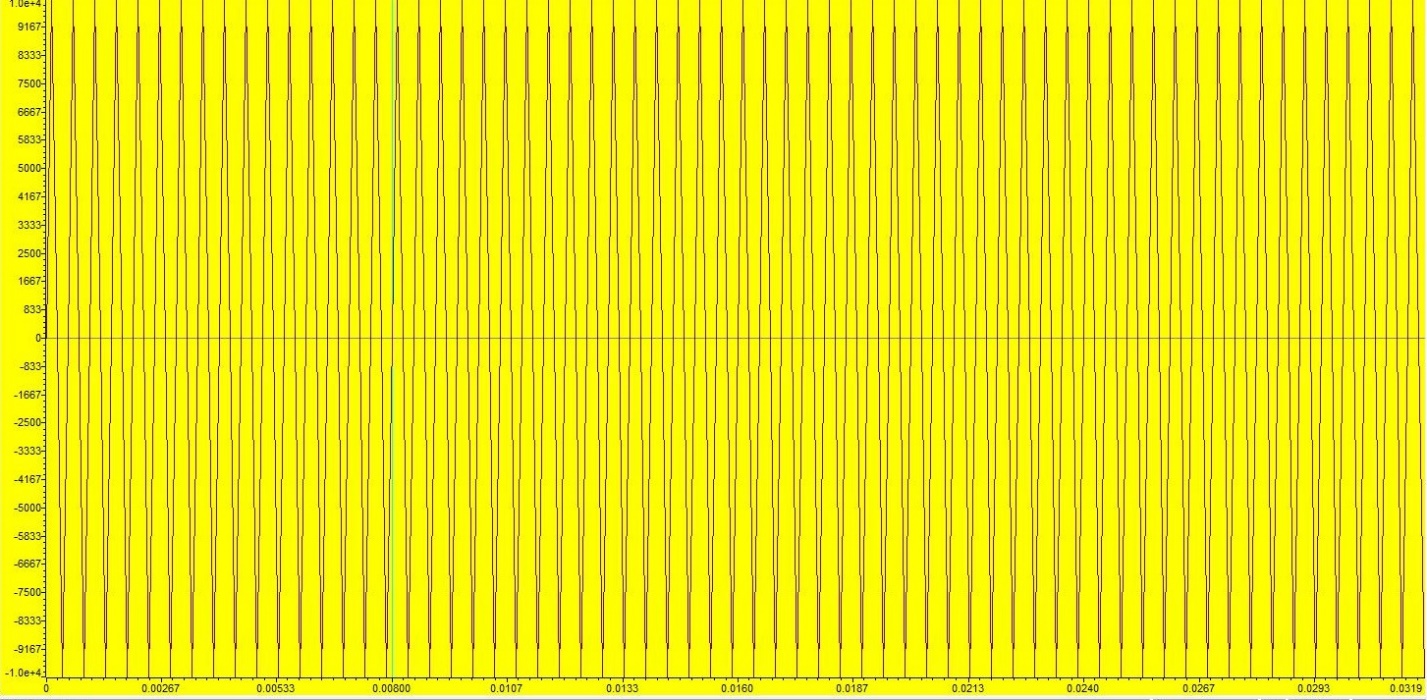
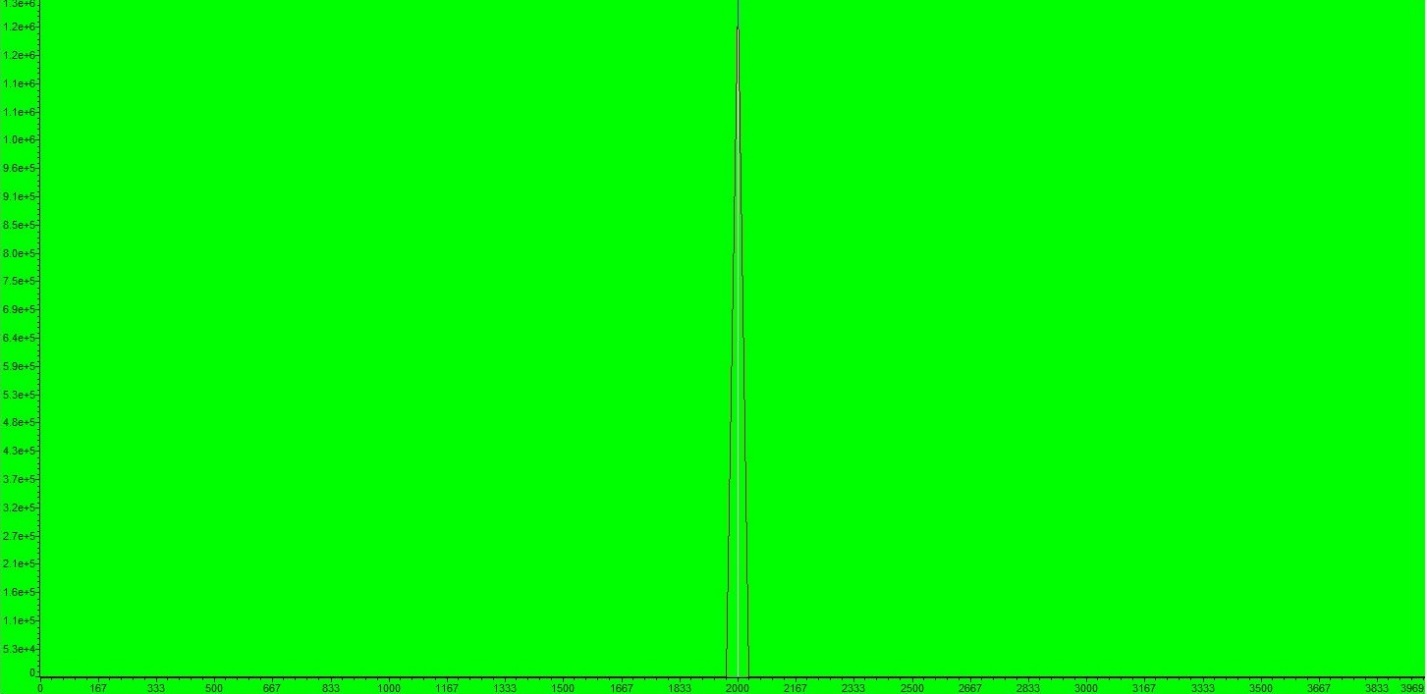
**Appendix**

1. **Upsampling and downsampling**

**a)**

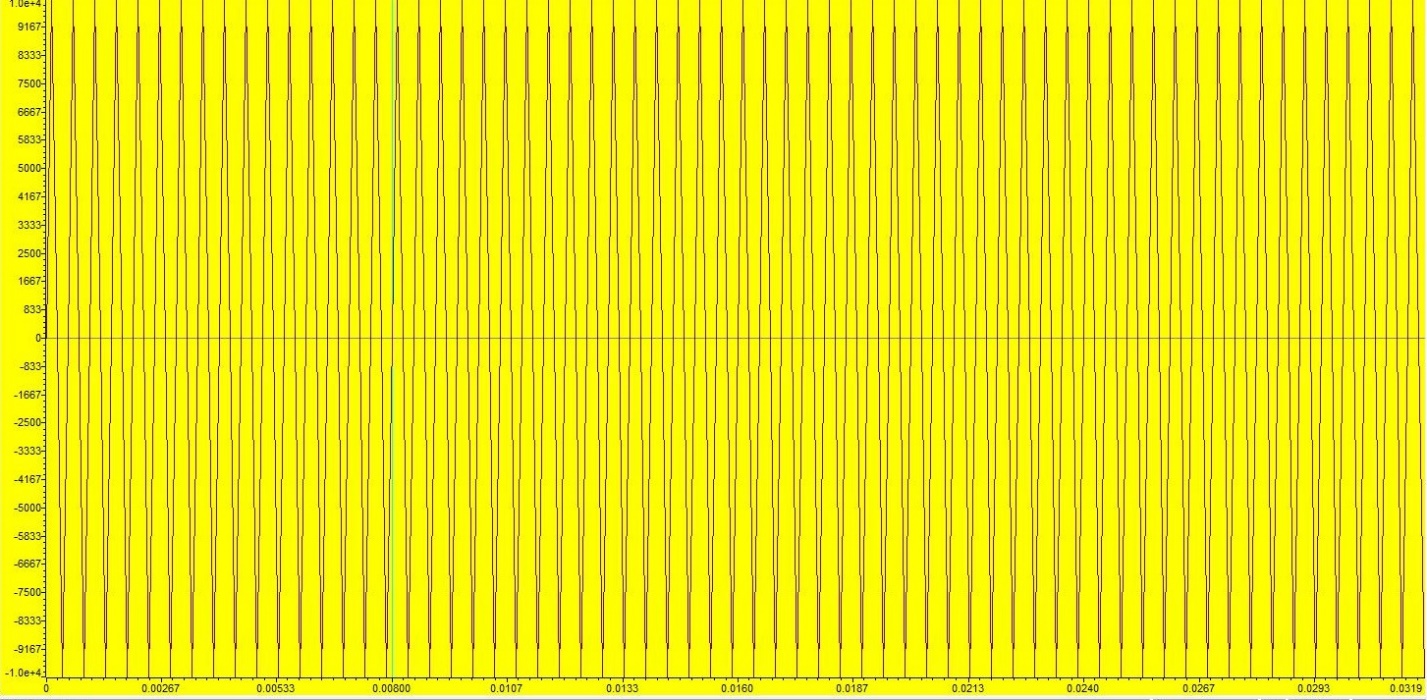
****

**Time domain plot Fs=8 KHz**

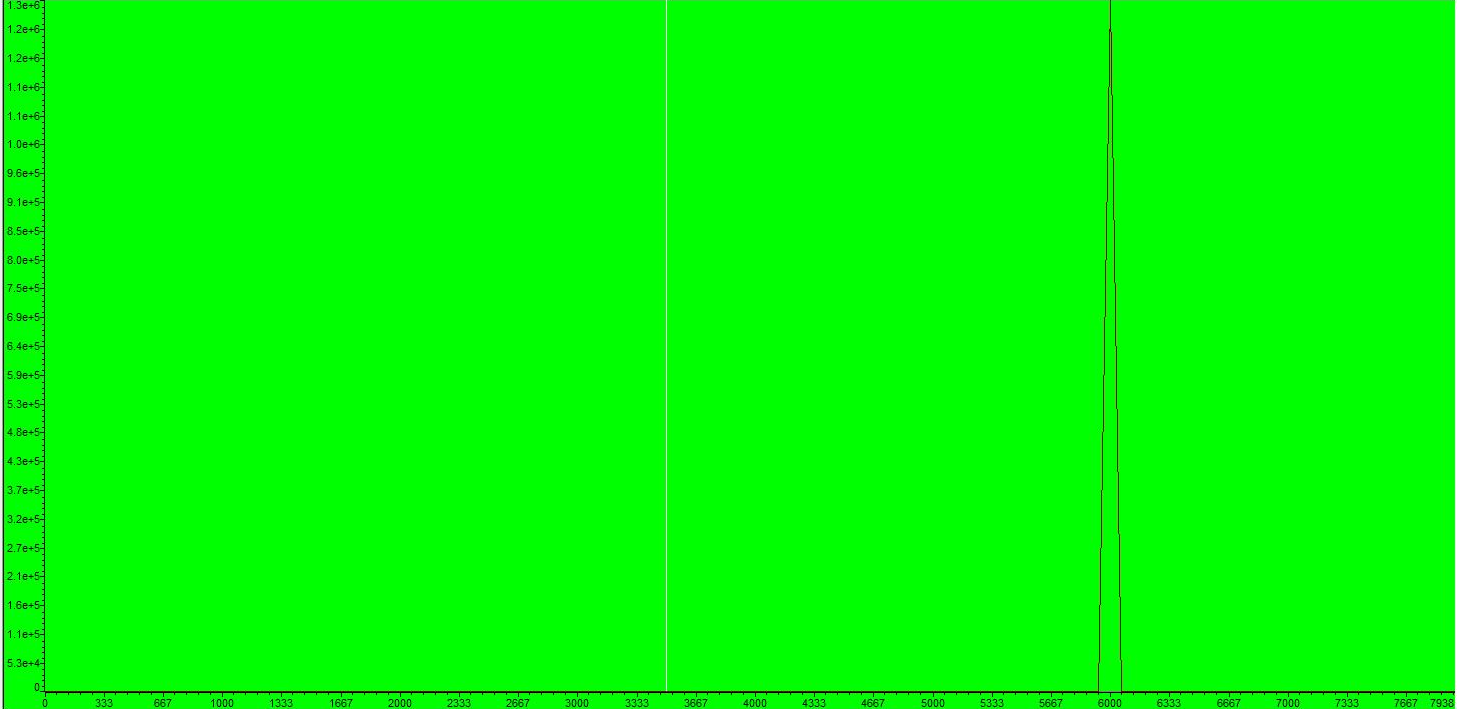
****

**Frequency domain plot Fs=8 KHz**

**b)**

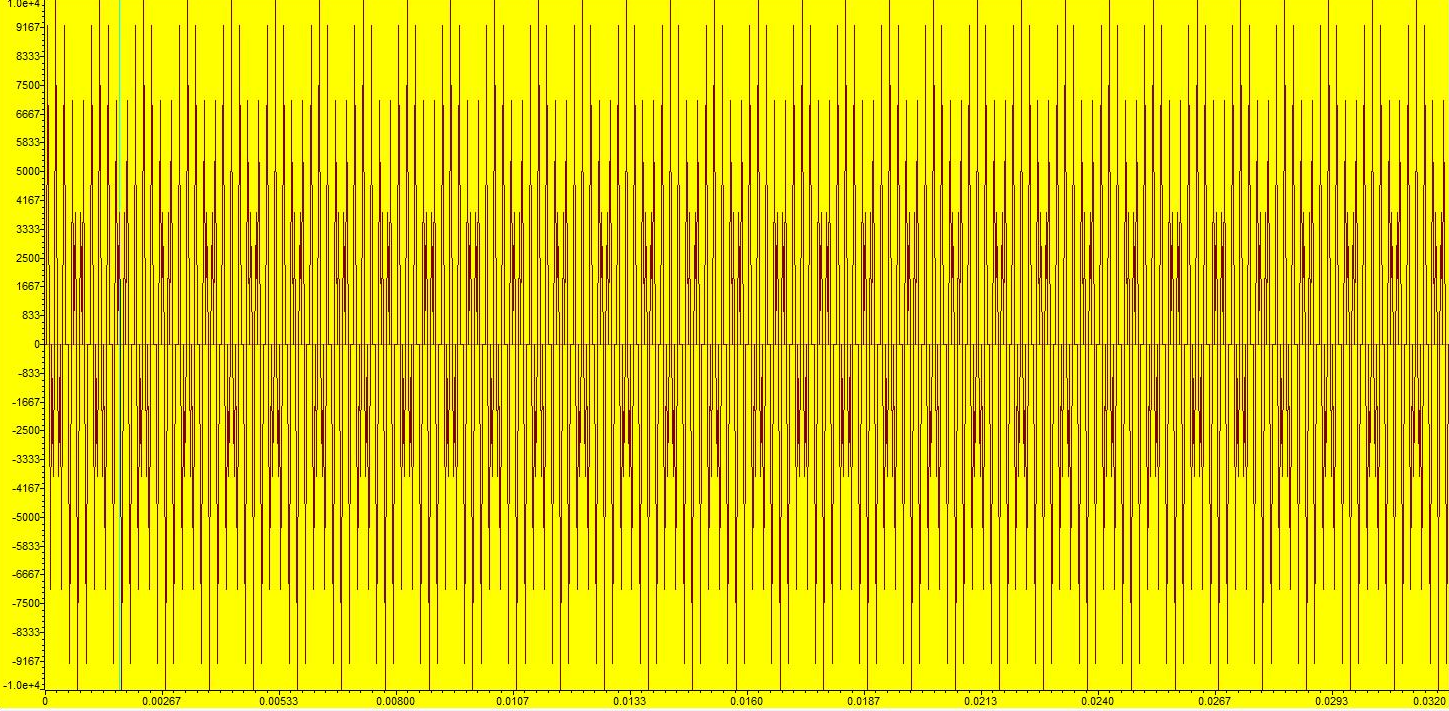
****

**Time domain plot Fs=8 KHz**

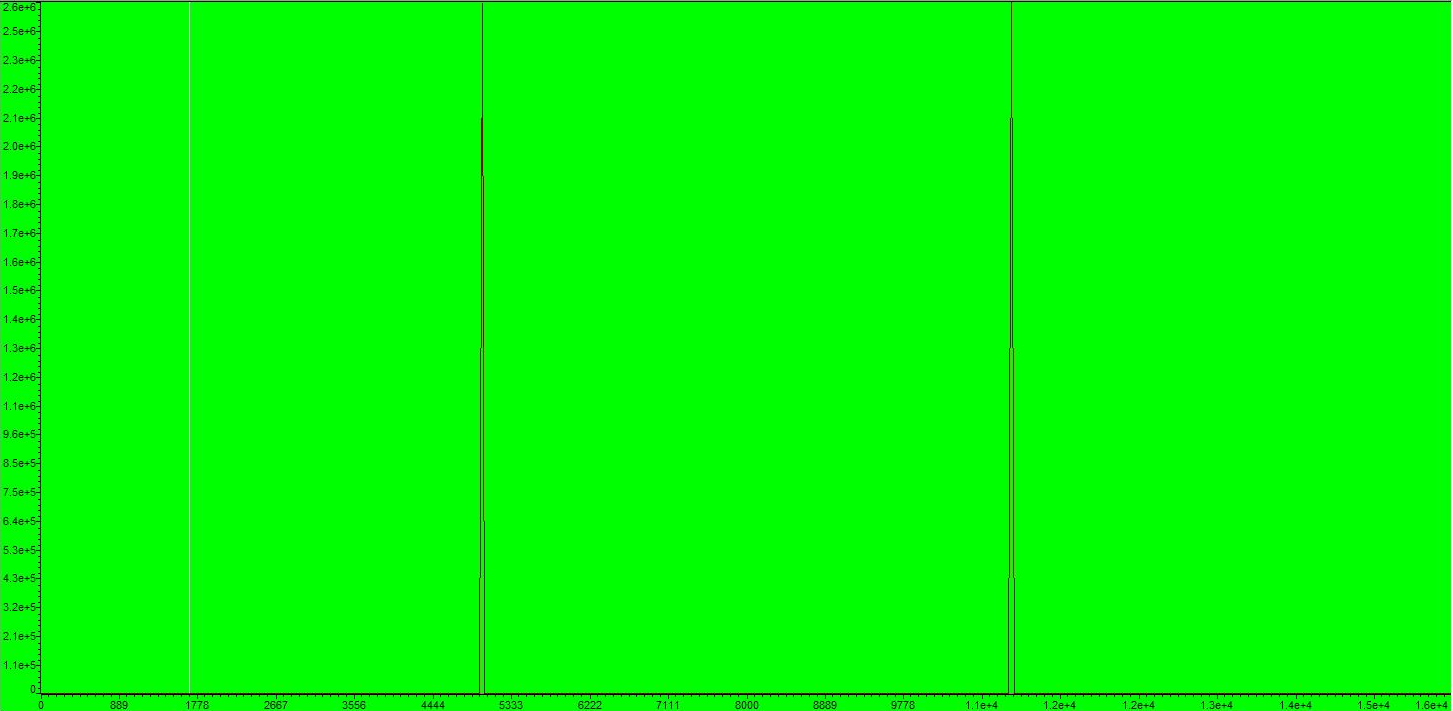
****

**Frequency domain plot Fs=8 KHz**

**c)**

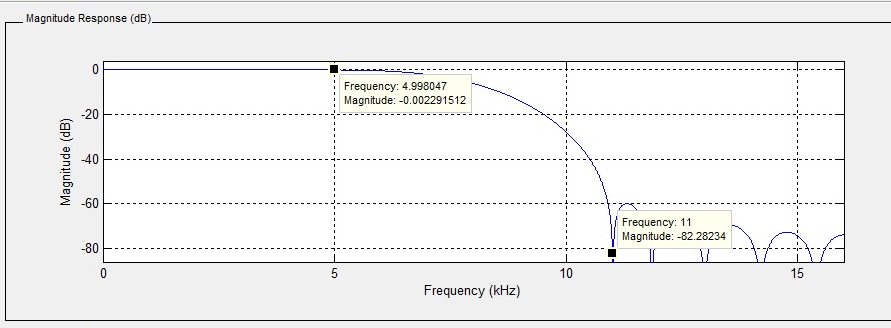
****

**Time domain plot Fs=32 KHz**

****

**Frequency domain plot Fs=32 KHz**

**d)**

****

**Magnitude response of the LPF**

1. **Analysis Filter Bank and Synthesis Filter Bank Coefficients**

****

**Magnitude response**

****

**Impulse response**

1. **Non-efficient Implementation of Two-channel Filter Bank**

****

**Input (blue) and output (red) of the filter bank**

1. **Efficient Implementation of Two-channel Filter Bank**

****

**Input (blue) and output (red) of the filter bank**