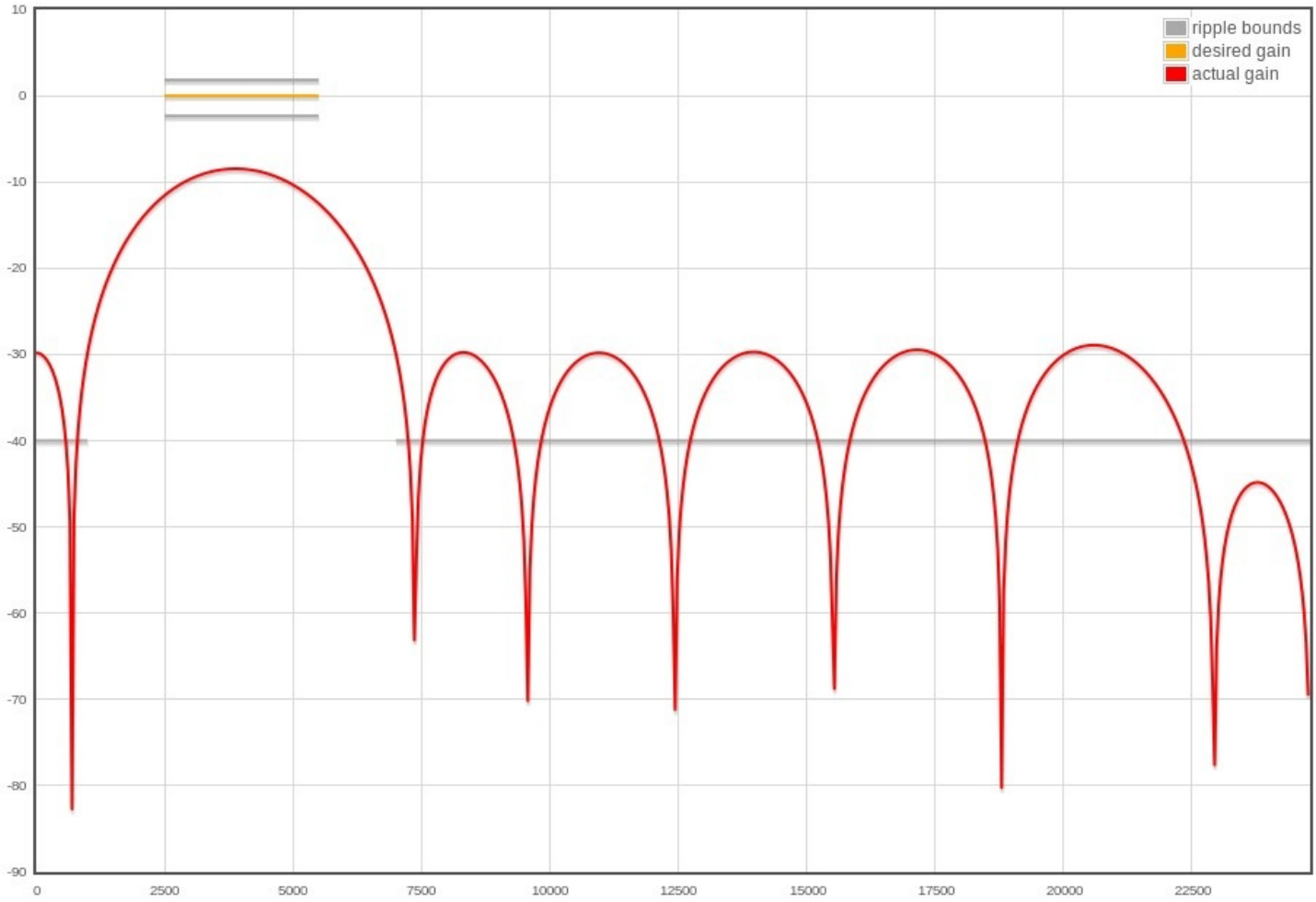
Example FIR filter coefficients

Below are shown two filter designs for testing FIR filters. The assumption is that data words going into the filter are 12-bit 2's complement numbers and that coefficients are also 12-bit 2's complement signed numbers. An online FIR filter design tool was used to create these designs and can be found at: http://t-filter.engineerjs.com

No claim is make that these are optimal designs, simple examples that can be used for demonstrating basic operation of a FIR filter. While a 16 tap filter will demonstrate basic filter operation, a 32 or 64 tap filter will allow sharper filter slopes and greater stop-band attenuation.

A 16 tap band-pass filter, 50Khz sample rate

0-1000Hz	stopband	-29 db attenuation, i.e. output voltage 0.035 x Vin
2500-5500Hz	passband	-12.5 db attenuation, i.e. output voltage 0.24 x Vin
7000-25000Hz	stopband	-29 db attenuation



Note that filter is fairly broad and there is significant attenuation in the pass-band.

Coefficients are shown on the next page.

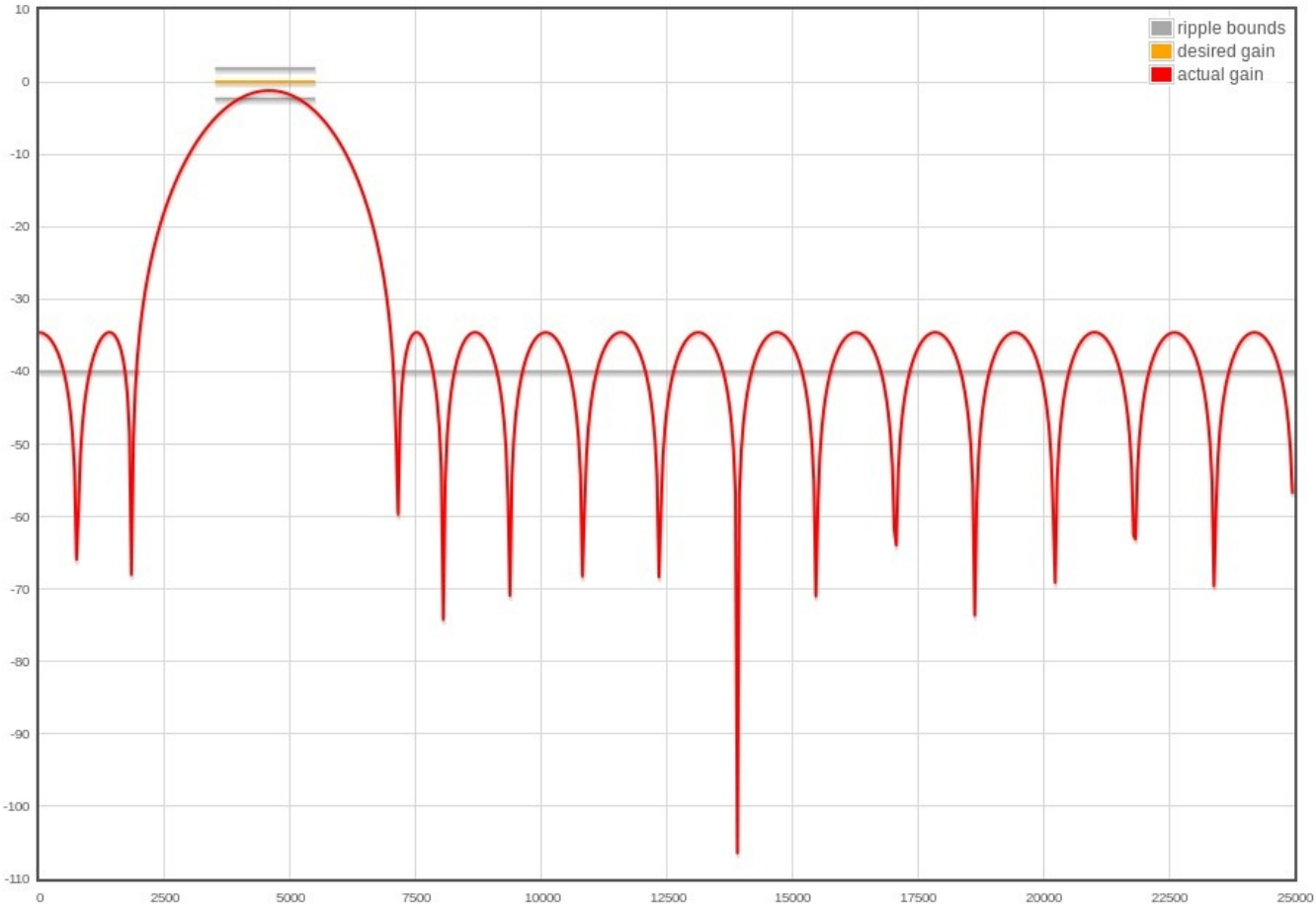
Coefficients for the 16 tap bandpass filter:

Decimal	Hex (signed 12 bit 2's complement)
357	165
-1413	A76
-1048	BE8
-860	CA4
-440	E48
182	0B6
807	327
1197	4AD
1197	4AD
807	327
182	0B6
-440	E48
-860	CA4
-1048	BE8
-1413	A76
357	165

A 32 tap bandpass filter, 3500-5500Hz pass band, 50Khz sample rate

About 35 db attenuation in the stop bands, i.e. Vout = 0.0178 x Vin

About 5 db attenuation in the pass band, i.e. Vout = 0.56 x Vin



Coefficients for the 32 tap bandpass filter:

Decimal	Hex (signed 12 bit 2's complement)
-212	F2C
-84	FAC
42	0 2A
258	102
484	1E4
597	255
490	1EA
131	083
-400	E70
-918	C6A
-1203	B4B
-1095	706
-575	DC1
207	0CF
978	3D2
1454	5AE
1454	5AE
978	3D2
207	0CF
-575	DC1
-1095	706
-1203	B4B
-918	C6A
-400	E70
131	083
490	1EA
597	255
484	1E4
258	102
42	02A
-84	FAC
-212	F2C