Low Pass Sampled-IF Filter

KR-SIF-LP-20-01 Preliminary Data Sheet

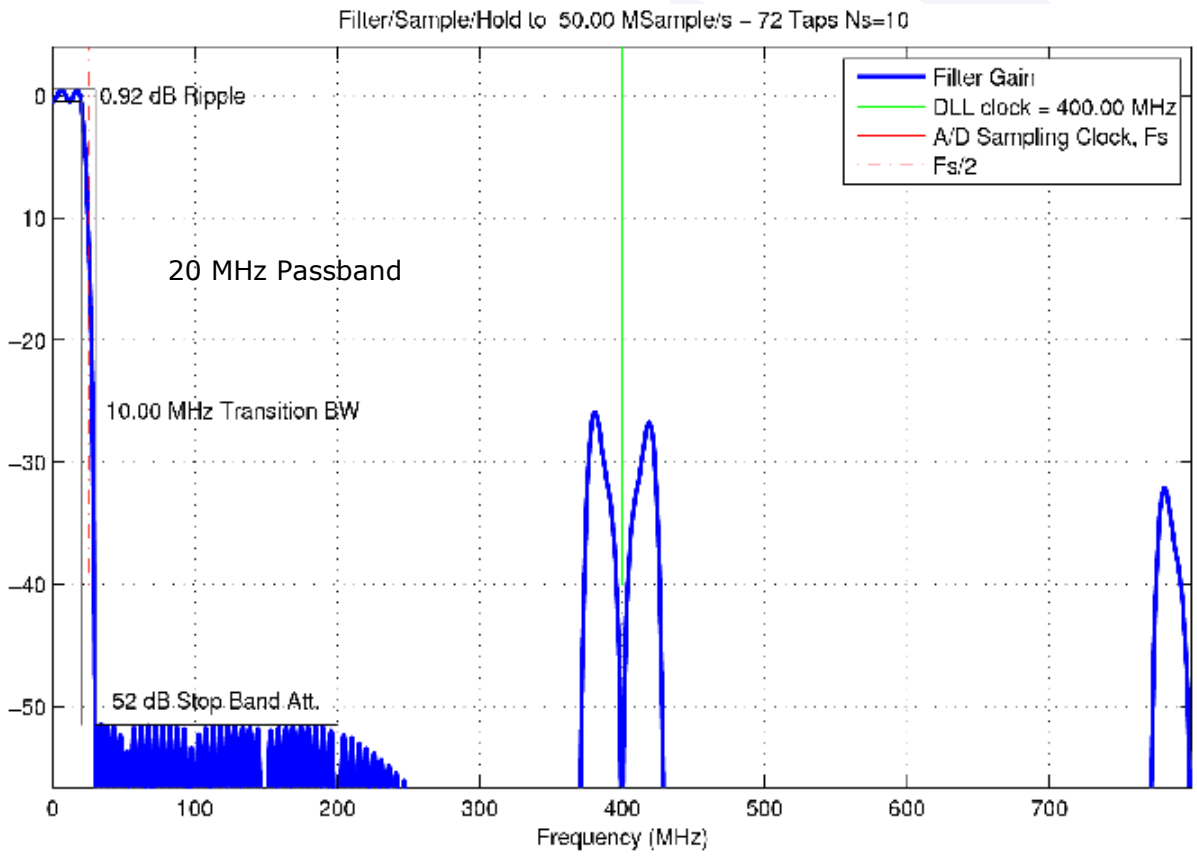
"The Industry's Only On-chip, Wide band, Selectable Bandwidth, Low Pass Filter for WiMAX"

Features

- Frequency from DC to 20 MHz
- Passband Ripple < 1 dB
- Stopband Attenuation > 50 dB
- Transition Bandwidth 10 MHz
- Sampling Frequency 3.125, 12.5, 25, or 50 MHz
- 72 Tap Coefficients
- No Group Delay Distortion
- Programmable Gain 30 to 44 dB in 2 dB steps
- 1.8 V Operation
- Die Area 0.27 m^2
- Reduces ADC Sample Rates and Resolution
- ADC Overload Notification
- Fast AGC

Applications

- WiMAX



KR-SIF-LP-20-01 WiMAX Sampled-IF Filter Transfer Function

WiMAX Sampled-IF Filter

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Description

The Kaben KR-SIF-LP-20-01 filter is the industry's first on-chip analog filter for WiMAX application. This receiver cell is a key building block for wide bandwidth signals requiring zero phase dispersion, such as for WiMAX.

Kaben's unique filter offers a selectable passband frequency of 1.25, 5, 10 or 20 MHz. The FIR filter gives linear phase and no group delay distortion. The gain can be varied between 30 and 44 dB in 2 dB steps to accommodate a wide range of input signal levels.

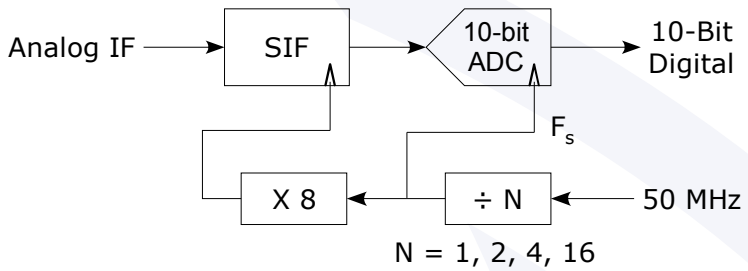
Unlike a traditional digital FIR filter, the KR-SIF-LP-20-01 provides sin x/x attenuation (approximately 25 dB) of any signal located at the aliased sidebands about the sampling clock frequency. This Anti-Alias filter allows out-of-band signals to be larger than the 60 dB dynamic range of the passband signal.

Support

For system's design, Kaben provides a kit that includes high-level models in Matlab/Simulink, Systemview, and Verilog-A. System-level models offer various modes of abstraction for flexibility in simulation speed vs. accuracy.

At the circuit design level, we deliver a Cadence library containing schematics, symbols, and cell layouts.

The Filter IP block can be available in most popular technologies.



KR-SIF-LP-20-01 WiMAX Sampled IF Filter

Electrical Characteristics

Parameter	Conditions	Min	Typ	Max	Units
Passband Frequency	Sampling Frequency f_s 50 MHz, Divide Ratio N = 1	DC		20	MHz
	Sampling Frequency f_s 25 MHz, Divide Ratio N = 2	DC		10	
	Sampling Frequency f_s 12.5 MHz, Divide Ratio N = 4	DC		5	
	Sampling Frequency f_s 3.125 MHz, Divide Ratio N = 16	DC		1.25	
Passband Ripple				1	dB
Stopband Attenuation			50		dB
Transition Bandwidth			10/N		MHz
Gain	2 dB steps	30		44	dB
Input Impedance			500		Ω
Supply Voltage	Digital and Analog	1.6		1.8	V
Area	130 nm RFCMOS (30% bigger in pure digital CMOS)		0.27		mm^2