

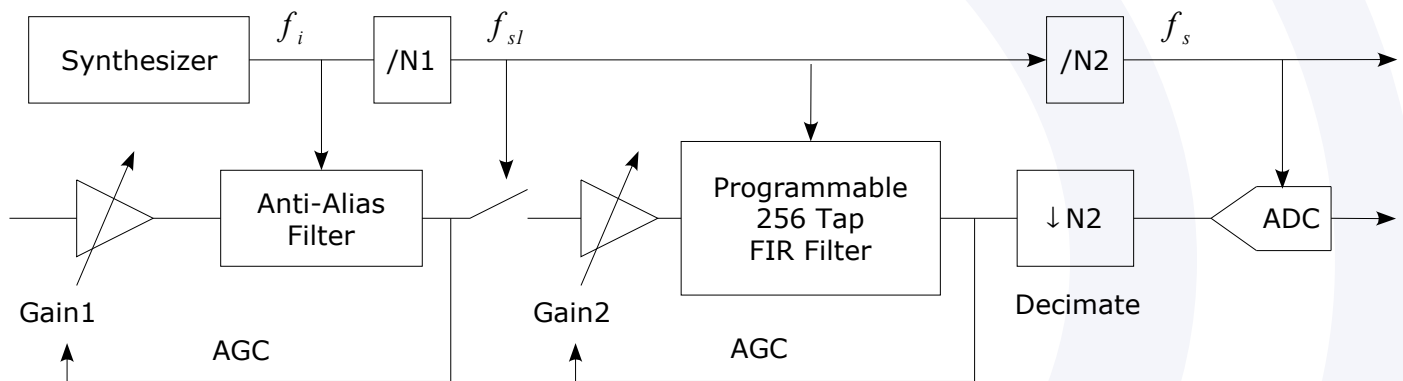
*"The Industry's First Highly Programmable Sampled-IF Filter for Integration into Multi-Standard Radios"*

## Features

- Programmable center frequency from 70 to 200 MHz
- Programmable Bandwidth from 10 to 30% of center frequency
- Programmable Stopband Attenuation up to 55 dB
- Programmable Transition Bandwidth
- Programmable Gain 0 to 30 dB in 2 dB steps
- 256 Tap Coefficients
- Spurious Free Dynamic Range 60 dB
- Low Noise Figure 6 dB
- No Group Delay Distortion
- 1.8 V and 3.0 V Operation
- Low Current Consumption 20 mA at 3 V
- Reduces ADC Sample Rates and Resolution
- Originally Designed for IBM 7WL process and portable to other processes

## Applications

- SAW Filter replacement for Base Stations
- Software Defined Radios (SDR)
- Multi-Standard Radios
- Cable Modems
- WLAN 802.11a, 802.11b, 802.11g
- 2.4 and 5 GHz Radios



KR-IFS-200-01 Programmable Sampled-IF Filter

# Field Programmable Sampled-IF Filter

KR-IFS-200-01 Preliminary Data Sheet

## Description

The Kaben KR-IFS-200-01 is the industry's most flexible field programmable analog filter. This receiver cell is a key building block in the design of multi-mode wireless systems that require the ability to switch between multiple standards.

The novel architecture of the KR-IFS-200-01 features 256 digitally programmable tap coefficients, which provide flexibility in the following parameters: Frequency, Bandwidth, Passband Ripple, Selectivity, Transition Bandwidth, and Stopband Attenuation.

Kaben's unique Programmable Filter offers a center frequency from 70 to 200 MHz with up to 60 MHz bandwidth. The gain can be varied between 0 and 30 dB in 2 dB steps to accommodate a wide range of input signal levels. The Stopband Attenuation can be varied down to 55 dB and traded against Passband Ripple or Transition Bandwidth. The FIR filter gives linear phase and no group delay distortion.

The spurious free dynamic range of 60 dB makes this product an ideal choice for wideband applications that require high selectivity and programmability.

The KR-IFS-200-01 is designed to have high RF image rejection for low IF receivers without the use of digital correction techniques. In multi-mode radios this technique can eliminate one or more off-chip IF filters. The Anti-Alias filter also allows for out-of-band signals to be larger than the 60 dB dynamic range.

High performance is delivered without sacrificing power consumption. The cell operates using 20 mA from a 3 V supply.

## Support

For system's design, we provide 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 GDS II files and a Cadence library containing schematics, symbols, and cell layouts.

Originally designed in the IBM 7WL process, this IP block can be ported to other technologies.

## Electrical Characteristics

Parameter	Conditions	Min	Typ	Max	Units
Center Frequency		70		200	MHz
Bandwidth	Percentage of Center Frequency	10		30	%
Spurious Free Dynamic Range	10 MHz Bandwidth			60	dB
Noise Figure			6		dB
Gain	2 dB steps	0		30	dB
Digital Supply Current	V <sub>cc</sub> = 1.6 V, Temp = 22°C		5		mA
Analog Supply Current	V <sub>cc</sub> = 3 V, Temp = 22°C		15		mA
Digital Supply Voltage		1.2		1.8	V
Analog Supply Voltage		2.7		3.6	V
Operating Temperature		-40		85	°C

