

Kaben Wireless Silicon Inc.

KR-SI-60-IBM7WL-01 Preliminary Data Sheet Frequency Synthesizer 0.5– 6 GHz

Features

- Designed for IBM 7WL process
- 0.5 to 6 GHz operation
- Reference Frequency 5 to 250 MHz
- Phase noise -77 dBc/Hz at 1 kHz offset at 5.8 GHz
- 2.7 V to 5.5 V operation
- Current 24 mA at 5 V
- Analog or Digital Lock Detect
- Programmable Prescaler 8/9, 16/17, 32/33, 64/65
- Programmable Charge Pump Current
- Programmable width anti-deadzone pulse
- Simple integration into existing designs

Applications

- Cable TV Tuners (CATV)
- 900 MHz and 2.4 GHz WLAN
- Base Station for Wireless Radio
- Portable wireless communications (PCS/PCN, cordless, 2-way radio)
- Spread spectrum communication systems (CDMA)
- GPS
- Satellite receivers
- Pagers

The Kaben KR-SI-60-IBM7WL-01 Integer-N frequency synthesizer cell provides, low phase-noise, low spurious levels, and the ability to easily integrate into your current design. This synthesizer is a key building block in designing high-performance wireless systems.

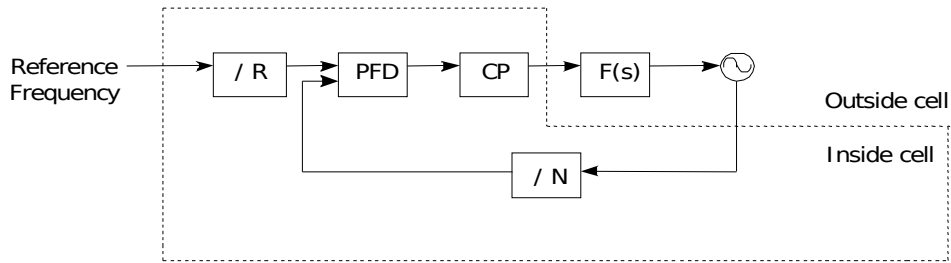
When integrating the Integer-N synthesizer core into your IBM 7WL SoC, our engineers support your design for system-level integration and verification, fabrication, and maximum re-use. This characterized cell helps in making your SoC design predictable and efficient across many application areas.

The Kaben KR-SI-60-IBM7WL-01 cell has a maximum output frequency of 6 GHz while maintaining low close-in phase noise of -77 dBc/Hz measured from a 5.8 GHz synthesizer making it ideal for any base station.

High performance is delivered without sacrificing power consumption. The cell operates using 24 mA from a 5 V supply. A separate charge pump supply allows for a wider VCO tuning range in 3 V applications.

Support can be provided for all phases of the life cycle of your SoC. For system design, we provide a kit that includes high-level models in Matlab/Simulink. System-level models offer various modes of abstraction for flexibility in simulation speed vs. accuracy. Included is a loop-filter design kit for tailoring the trade-off between VCO noise and synthesizer phase noise. All high-level models are based on measured data.

At the circuit design level, Kaben's Release Kit contains GDSII files, Verilog files, and Cadence™ design libraries containing test benches, schematics, symbols, and cell layouts.



KR-SI-60-IBM7WL-01

Electrical Characteristics

Parameter	Conditions	Min	Typical	Max	Units
Supply Voltage		2.7		5.5	V
Total Supply Current	V _{CC} = 5 V Temp = 27 °C F _{REF} = 52 MHz F _{COMP} = 200 kHz F _{VCO} = 6 GHz Charge Pump Current = 5 mA			24	mA
RF Input Operating Frequency		0.5		6	GHz
External Reference Frequency				250	MHz
Phase Detector Comparison Frequency				16	MHz
Charge Pump Output Current		1.25		10	mA
Step Size	3-bit resolution		1.25		μA
Charge Pump Variation Over Temperature			2		%
RF Input Sensitivity	50 ohm source Functional at -25 dBm	-25		0	dBm
Synthesizer contribution to close-in Phase Noise	F _{REF} = 52 MHz F _{COMP} = 200 kHz F _{VCO} = 5.8 GHz Offset = 1 kHz Charge Pump Current = 5 mA		-77		dBc/Hz
Operating Temperature		-40	27	+100	°C