



10 years
of innovation

Kaben Corporate Overview

Mar 2011

Overview

- Kaben Wireless Silicon is a world class team of experienced engineers specializing in mixed signal and radio system architecture
- 10 years of successful Mixed-Signal/RF Silicon product development for numerous customers and projects
- Strong underlying IP foundation in innovative high-performance AMS/RF (strong patent portfolio)
- History
 - 1999 – Tom Riley delivers world’s first Delta –Sigma Frac-N synthesizer after years in R&D
 - December 15, 2000 – Kaben founded as a spinout from Philsar Semiconductor after its acquisition by Conexant/Skyworks/Mindspeed
 - 2002 – Kaben delivers first Fractional – N Synthesizer as an IP block
 - 2007 – Kaben develops radio system design capability
 - 2007 – Kaben develops world’s first Sampling IF filter implementation
 - 2011 – Kaben designs world leading Programmable IF strip technology

Kaben Wireless Silicon

- We are a Semiconductor Development Organization
 - Develop specialized, integrated circuits and systems
 - Address wireline, wireless & optical market segments
 - Have supply management and foundry partnerships
 - Function as an extension of our customer's design team
 - Offer turnkey integrated circuit solutions

- We specialize in
 - Best-in-class, high-performance frequency synthesizers
 - Unique, accurate, on-chip programmable filters (SAW-like)
 - Digital to IF converters (DAC)
 - Advanced radio systems and architectures

Markets

- FM/AM Radio Tuners
- Bluetooth
- GPS
- Satellite Receivers
- Digital TV Tuners
- UWB
- DVB-H
- WLAN 802.11a/b/g/h/n
- LTE
- WiMAX 802.16a
- Multimode Cellular
- Precision Timing



Business Model

- Standard IP Provider's Business Model
 - License fee
 - Royalties
 - NRE fees on customization
- Engagement Model
 - Foundry Partnerships
 - Joint product ventures
 - Private labeling
 - Development contracts
- Customer Base
 - Wireless and wireline OEMs
 - Module manufacturers

Foundry Partners



- TSMC
 - 90 nm
 - 0.13 μm
 - 0.18 μm



- IBM **Si Proven Partner**
 - 8WL/8HP 0.13 μm
 - 7WL 0.18 μm
 - 5HP 0.35 μm



- Tower/ Jazz **Si Proven Partner**
 - SiGe90 0.18 μm
 - SiGe60 0.35 μm



- ST Microelectronics
 - BiCMOS6G 0.35 μm



- MOSIS



- Chartered Semi CH35 SiG 0.35 μm



- Cypress Semiconductor 0.35 μm

Core Technologies for Wireless & Wireline

- $\Delta\Sigma$ -Fractional-N Frequency Synthesizers
 - Component vendors, datacom and telecom corporations identify Kaben as their design house for high-performance timing products
 - Lead to Best-in-Class performance our clients demand
 - Applications:
 - Hopping synthesizers, Precision Timing Sources, GPS, Measurement systems
 - Commodity / Infrastructure-oriented wireless applications
- Tunable, on-chip (precision) filters
 - SAW filter replacement
 - Basestation / Repeaters and other wireless applications where reconfigurability and BoM reduction is key
- Data Converters (ADCs & DACs)
 - Precision converters needed for all segments

Product Roadmap

- Continuous improvement of core products as IP or turnkey
- Synthesizers
 - All-Digital PLL architectures/products
 - Lower Jitter PLL products
- Filters & ADCs
 - Recent industry trends have pushed us to develop wideband technology
 - Wideband tunable filters and high dynamic range ADCs, that can work on lower supply voltages
- Reconfigurable RF Front-ends (Multi-Standard)
 - Low Power FM Tuner
 - Basestation and Repeaters – LTE, WiMAX, Reconfigurable Radioheads
 - GPS

Summary

KABEN offers a partnership model with our experienced Analog/MS/RF ASIC development organization providing the following benefits:

- Transparent cooperation as an extension of your in-house R&D team
 - Tight product development control
 - Lower risk
- Preferred availability of resources
- Continuity of service and high growth potential
- Advantageous cost structure
 - Re-use of technology and building blocks
 - Group licensing
 - Flexible business models



Trusted Silicon Design Partner

- Kaben Wireless Silicon Inc
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