

Sophic Silicon Accelerates Wireless SoC Innovation with Synopsys Custom Compiler and PrimeSim

“At Sophic Silicon Technologies, we are committed to delivering innovative and high-performance wireless solutions to our customers. With Synopsys Custom Compiler and PrimeSim, our team was able to accelerate development, achieve precise RF measurements, and bring our next-generation SoCs to market faster and more efficiently than ever before.”

– Deepak Pancholi, Founder and CEO, Sophic Silicon Technologies



Company Overview

Sophic Silicon Technologies empowers Product and System Solution organizations with next-generation Wireless, AI, Power Management, Analog/Mixed Signal, Digital SoC and IP Solutions. Leveraging deep expertise in RF/Analog mixed signal design and rigorous methodologies, Sophic delivers best-in-class SoCs and IPs. They specialize in developing customized analog/mixed signal and digital IPs, with extensive experience in WiFi7, WiFi6E, BT/BLE, multiprotocol IPs, high-speed SERDES, and photonics.

Challenges

- **Meeting Stringent Performance and Integration Goals:** Delivering highly reliable, energy-efficient wireless SoCs to address the demands of evolving wireless protocols and integrating multiple wireless standards—such as BLE, BT Classic, and others—within a single SoC, without increasing area or power consumption.
- **Managing Complex RF and Analog/Mixed-Signal Design:** Ensuring stable, high-performance operation in congested frequency bands shared with protocols like Wi-Fi and Zigbee and Implementing advanced encryption and secure communication with minimal system overhead.
- **Accelerating Development Cycles:** Achieving rapid time-to-market despite intricate design requirements and rapidly changing standards and relying on efficient, accurate design tools to facilitate fast simulation, thorough verification, and reduced development cycles.

Solution

- **Adoption of Advanced Design Tools:** Easily adopted Synopsys Custom Compiler and PrimeSim, which provided an intuitive user interface, enabling rapid migration and effective use by engineers with varying levels of prior experience.
- **Robust Simulation and Measurement:** Utilized the rich set of RF measurements in PrimeWave—including impedance matching, S-parameters, and noise circles—to optimize LNA and transceiver performance.
- **Expert Collaboration:** Partnered closely with the Synopsys Applications team for smooth tool setup, swift troubleshooting, and best-practice guidance, accelerating project timelines and ensuring design success.

Results

- **Accelerated Development and Time-to-Market:** Streamlined workflows enabled faster project execution and reduced design cycles while efficient tool adoption allowed the team to quickly migrate and scale new designs.
- **Enhanced Design Accuracy and Performance:** Achieved robust LNA and transceiver designs that met stringent S-parameter, noise figure, and power targets for BLE/BT applications. Leveraged advanced simulation and measurement capabilities to ensure compliance with wireless standards.

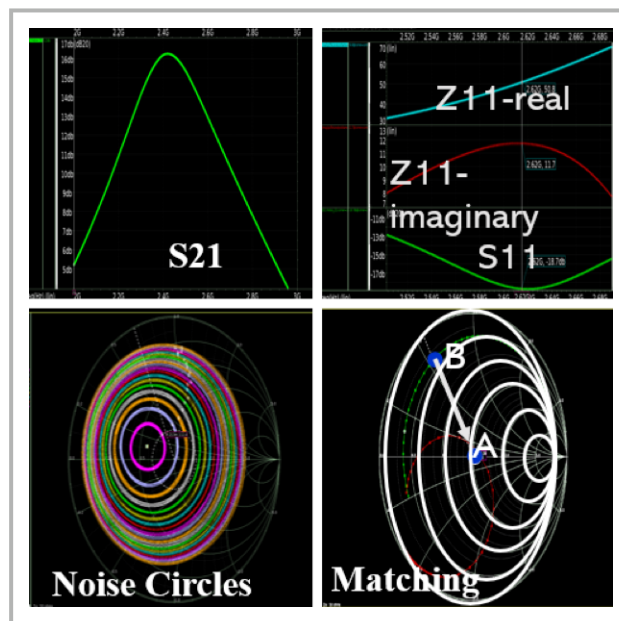


Figure 1: Impedance matching, Gain, Noise Circles essential for LNA design as plotted on PrimeWave