

## Technical Summary

The P26600A is an energy efficient 8-bit 56GS/s ADC with ENOB <6-bit and analog input -3dB bandwidth of 20GHz. The 28nm CMOS technology is used for chip fabrication, and a high performance LTCC BGA chip carrier used for packaging. The ADC is offered as a component with enhanced 20 lane JESD204B+ data interface and as an IP block for integration into SoCs (Figure 1). A low-speed (1.75Gb/s) interface for reading out internal RAM which can store up to 256K consecutive samples. A trigger system is implemented for automatic data capture.

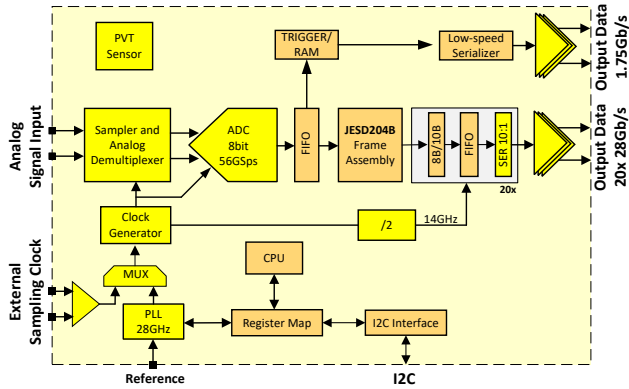


Figure 1. A block diagram of the ADC chip.

Figure 2 shows the ADC chip on the carrier, the BGA package and a characterization board. An evaluation board will be made available to customers. ADC testing results are presented in Figure 3 and Figure 4.

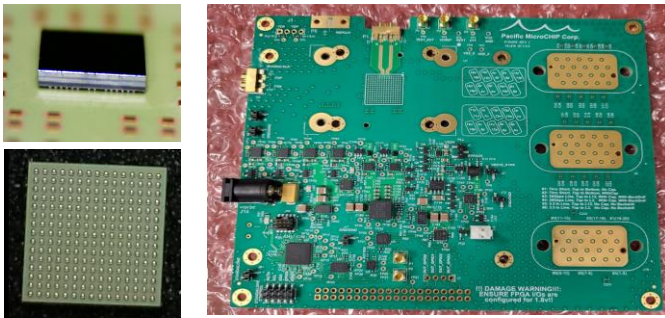


Figure 2. Assembled chip and BGA package (left), the evaluation PCB (right).



Figure 3. Measured AC response.

## Operational Capabilities

The ADC offers a competitive FoM at ultrafast sampling rates yet providing a reasonable ENOB. The capabilities/features include:

- Sampling rate of up to 56GS/s
- ENOB ~6-bit at low frequencies, >4.5-bit up to 20GHz
- Input signal -3dB bandwidth 20GHz
- ADC power consumption ~1.3W
- Power consumption with JESD204B+ interface ~3.8W
- JESD204B+ compatible data output at 20x28Gb/s
- On-chip memory of 2.0 Mb for storing digitized data
- 1.75Gb/s LVDS interface for readout of memory
- On-chip RISC-V CPU for calibration and control
- I2C interface for control, diagnostics and readout
- 15 x 15 BGA package (12.8mm x 12.8 mm)

The ADC ASIC is a deep modification of a previously designed, fabricated and tested 8-bit 56GS/s ADC P18600B. The new P26600A ASIC includes improved bandwidth and ENOB, and the enhanced rate 20x28 Gb/s JESD204B+ interface for convenient data transmission to FPGAs.

## Applications

- Phased antenna array systems
- Software definable radio
- 5G handsets
- Fiber optic transceivers for 100 to 400Gbps
- Spectrum/frequency analyzers
- High sampling rate oscilloscopes
- Satellite communications
- Radio telescopes
- Event/burst capture
- Pulsed Radars

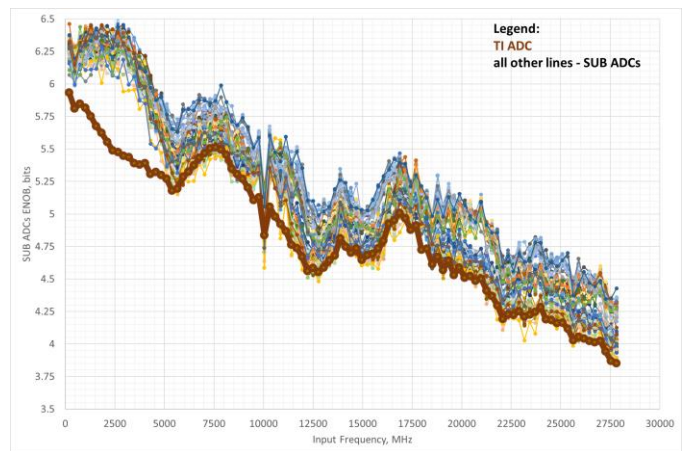


Figure 4. Measured ENOB