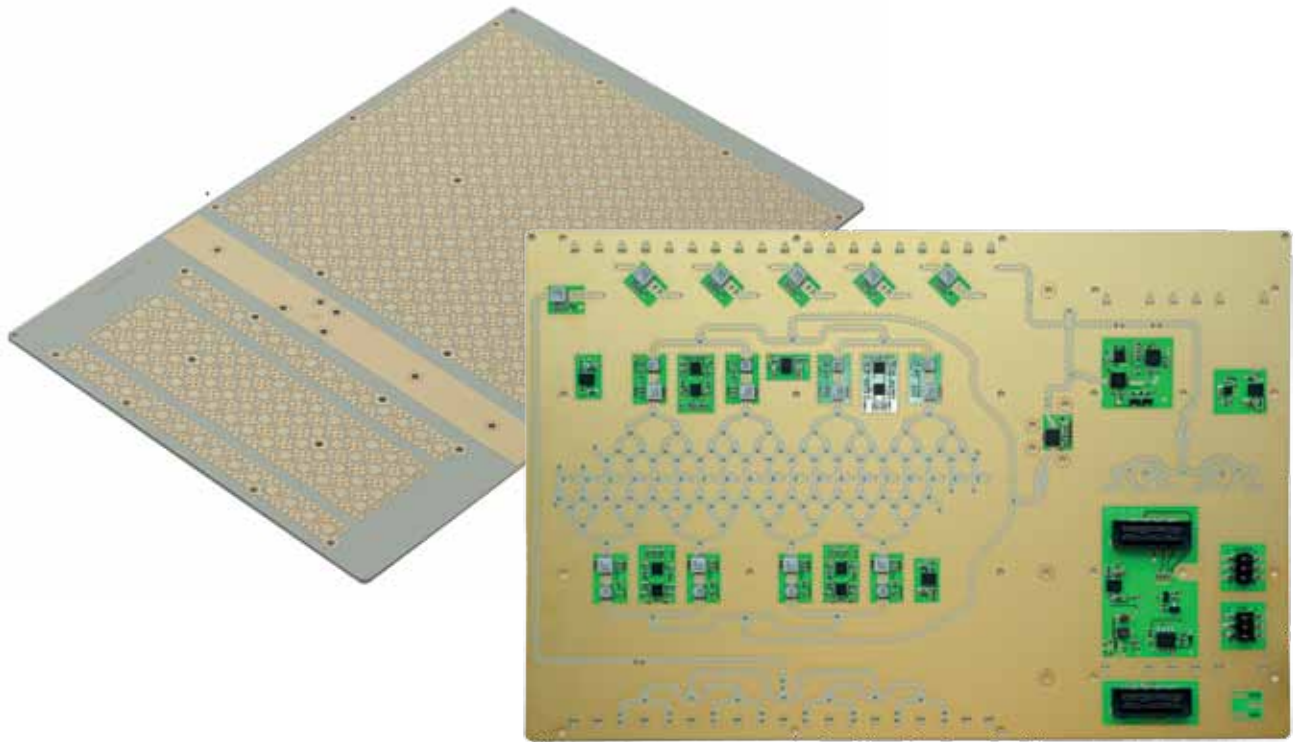


RADAR APPLICATION NOTE

8-CHANNEL DIGITAL BEAMFORMING EXTENDED FRONTEND



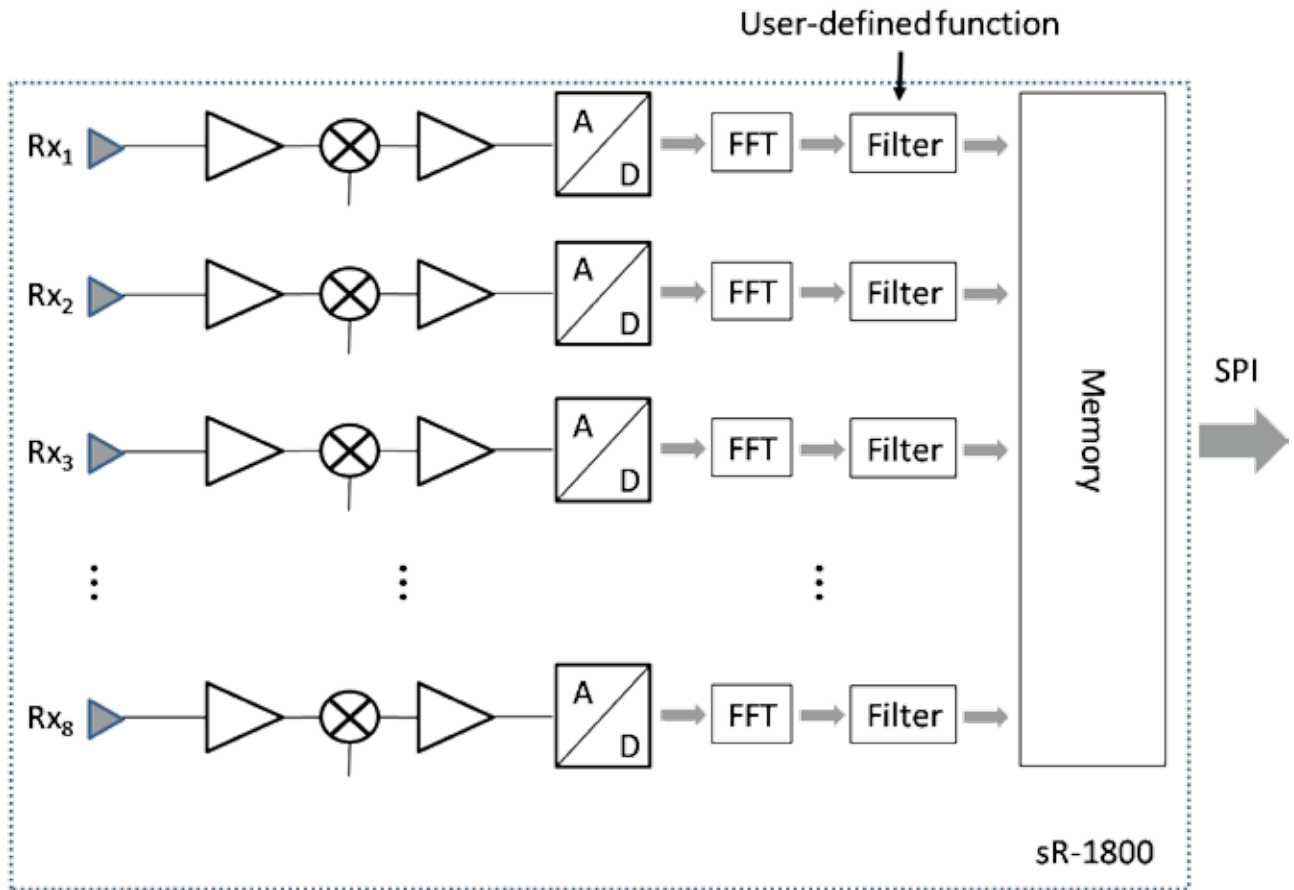
**sR-1800 digital beamforming frontend
with online calibration subsystem**

OVERVIEW

The sR-1800 is a full-scale digital beamforming frontend. It features a single transmit antenna and on receiver side a patch array network with 8 outputs. All 8 outputs are equipped with full downconversion chains, i.e. LNA, mixer and IF amplifiers. A novel in-system calibration standard enables the user to switch on/off a reference target and thereby evaluate amplitude and phase differences of the 8 channels. With this system, high precision measurements and online drift-compensation (e.g. temperature) become feasible.

The digital subsystem features two IMST base-band units in master-slave configuration. A central clock generation ensures that ADC samples are coherent. The calculation power is sufficient to perform fourier transforms and first digital processing steps (decimation, filtering, rough target detections). Processed data is either saved on internal SD-Card or is transferred to a host via SPI, where full digital beamforming is performed.

TECHNICAL DATA



DESCRIPTION

DESCRIPTION	VALUE
0 Beamwidth azimuth	60 deg
1 Beamwidth elevation	24 deg
2 virtual beamwidth azimuth	8 deg
3 max. data per measurement	32 kB
4 max. measurement rate (@ 2 Mbit/s data transfer)	20 Hz
5 switchable online calibration ghost target	@ 1,5 m



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