Contribution ID: **707** Contribution code: **WEPB021** Type: **Poster Presentation**

Design of a 2300 W 352 MHz solid-state amplifier module with integrated EtherCAT interface for monitoring and control

Wednesday 4 June 2025 16:00 (2 hours)

For multi-unit RF amplifier systems, a 2300 W solid-state RF power amplifier module with integrated EtherCAT and USB interface has been developed. The RF amplifier section is constructed from the latest LDMOS from Ampleon with a power of 2300 W at an efficiency of 72 % and is fully shielded and offers space for adding a driver amplifier or phase shifter circuit. The module is equipped with a DIN 7/16 output connector and an N-type input connector and is housed in a metal housing of 200 x 95 x 80 mm. The cooling of the RF LDMOS is done via a CNC milled copper cooling plate that is gold-plated. The gold layer prevents chemical oxidation with other aluminum parts such as an aluminum main plate. In a multi-unit system, the EtherCAT interface provides lightning-fast and synchronous control and monitoring of parameters such as supply voltage and current, heat sink and LDMOS temperature, forward and reverse RF power. Outside the EtherCAT environment, the USB interface can be used in combination with a Windows GUI. Eight LEDs are available as visual indicators. The entire process of design, assembly and testing takes place in the Netherlands, which guarantees quality and traceability.

Footnotes

Paper preparation format

Word

Region represented

Europe

Funding Agency

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Session Classification: Wednesday Poster Session

Track Classification: MC7: Accelerator Technology and Sustainability: MC7.T08 RF Power Sources