



EPR

X-band 600 W Solid-State Amplifier

Bruker designed and built for state-of-the-art pulse EPR research

Innovation with Integrity

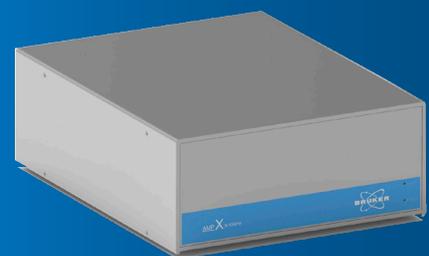
Microwave amplifiers are crucial components for pulsed EPR spectrometers. These amplifiers need a high output power for achieving short microwave pulses while also offering a high degree of experimental flexibility, e.g., using long microwave pulses or high duty cycles.

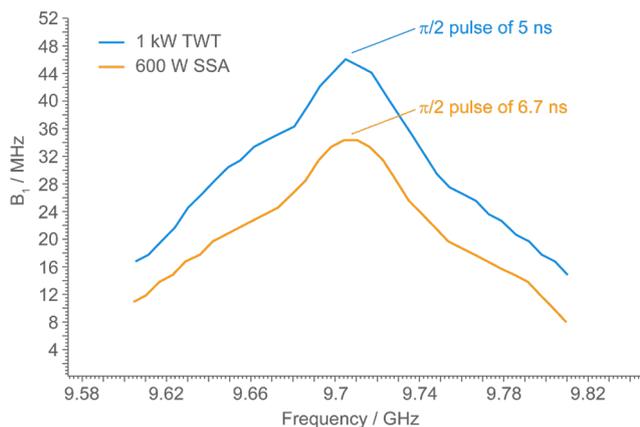
The Bruker-built Solid-State Amplifier (SSA) is the result of Bruker's decades of experience with X-band pulsed EPR spectrometers. The solid-state amplifier offers a high degree of experimental freedom while ensuring competitive pricing and short delivery times. With a fully overcoupled resonator, 90° pulses as short as 12 ns and saturation pulses a few hundred μ s long can be routinely achieved. Paired with high phase stability, this amplifier is ideally suited for all X-band pulsed experiments such as ESEEM, HYSCORE, ENDOR, and DEER.

The 600 W Solid-State Amplifier offers EPR researchers and scientists a competitive alternative to the TWT to perform state-of-the-art pulse EPR. By combining high output power with experimental flexibility, users can obtain a multitude of results with one amplifier and with less effort.

Features

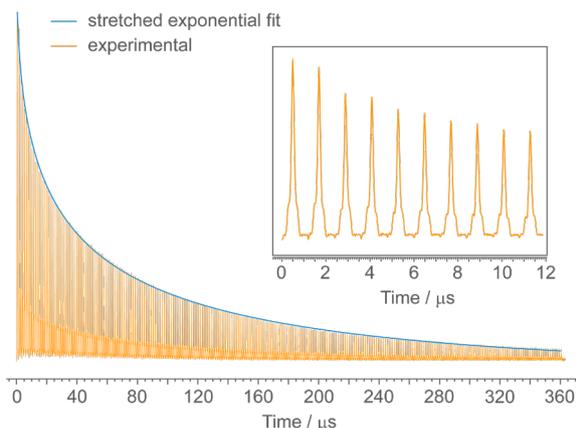
- Compatible with all X-band Flexline resonators
- Frequency range of 9 – 10 GHz
- 90° pulse as short as 12 ns (MD4 resonator, fully overcoupled)
- Saturating pulses a few 100 μ s long
- Pulse trains with hundreds of pulses
- Automatic fault state recognition and resetting





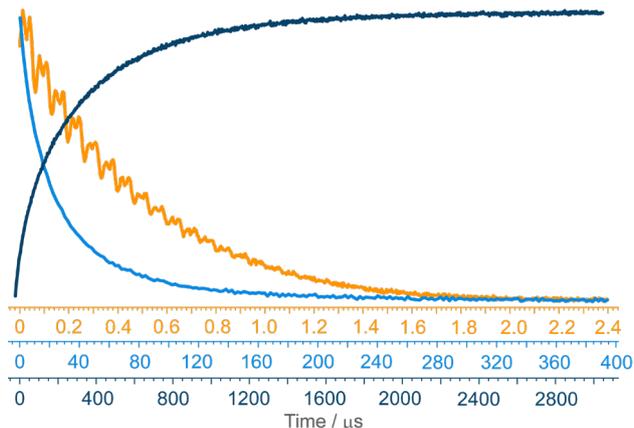
Output power

Bandwidth profiles of an MD4 resonator with the 1 kW TWT and the 600 W SSA under identical coupling conditions. The shape of the resonator profile for the TWT and SSA only differs in $B_{1\max}$. For the TWT, a slightly shorter 90° pulse in comparison to the SSA could be obtained.



Maximum number of pulses

CPMG sequence of γ-irradiated quartz using the SSA and 300 refocusing pulses. With the TWT, the number of pulses is limited to 64. For the TWT, the duty cycle is defined as Σ gate length/SRT. For the 600 W SSA, the duty cycle is defined as Σ pulse length/SRT, thus resulting in more experimental freedom.



Long saturation pulses

Relaxation time measurements of the Bruker DEER standard sample at 75 K using the 600 W SSA. The following relaxation times were obtained: $T_m = 0.51 \mu s$ (orange), $T_{1p} = 19.8 \mu s$ (blue), $T_{1inv} = 280 \mu s$ (dark blue). 14-28 ns detection pulses were used. The spin lock pulse for T_{1p} measurements had a length up to 400 μs .

Bruker BioSpin is continually improving its products and reserves the right to change specifications without notice. Order No. T191713 © 01/2023 Bruker BioSpin.

Bruker BioSpin
info@bruker.com

Customer Support
<https://www.bruker.com/en/services/support.html>

Online information
bruker.com/

bruker.com

