

NXP RF Technology Design Strategy: Focus on **Ease of Use**

To keep a reasonable output impedance above 1500 W, NXP is raising the voltage

Output impedance
Higher impedance makes it easier to match to 50 ohm.

$$R_L = \frac{V^2}{2P}$$

Drain voltage

NXP is raising the voltage V to increase the output power P, while keeping the output impedance R_L reasonable.

$R_L = (65^2 / 2 \times 900W) \times 2 \text{ sides} = 4.7 \text{ ohm}^*$
(transformation ratio to 50 ohms = ~10)

*: examples for a 1800W push-pull transistor.

Output power.

NXP's competitors increase output power P while retaining V = 50 V. Consequence: reduced output resistance, making the transistors difficult to match and very challenging to use wideband.

$R_L = (50^2 / 2 \times 900W) \times 2 \text{ sides} = 2.8 \text{ ohm}^*$
(transformation ratio to 50 ohms = ~18)

Ease of use = higher power WITH higher voltage.

