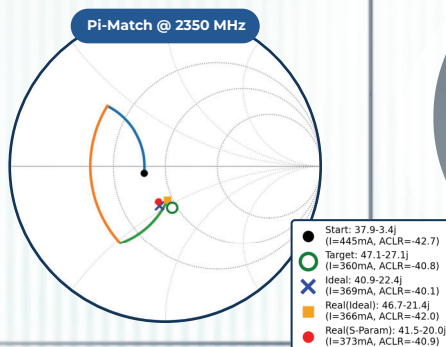


AI-Steered Wireless Circuit Design for Next-Generation 6G and Satellite Transmitters

AI-steered wireless circuit design addresses the **urgent demand for high efficiency and linearity power amplifiers (PAs) in 6G and satellite transmitters**. Unlike traditional load-pull measurements, this invention uses a **deep neural network (DNN) model to precisely predict key linearity metrics** across unseen impedances to acquire load-pull data, thereby **reducing test time by 70%**. It then leverages the predicted load-pull data to **automatically generate and suggest 3GPP-compliant, low-current matching networks for 6G and satellite transmitters**. This approach not only enables efficient handling of **complex wideband signals with minimal power consumption in space-constrained devices**, but also **accelerates mobile front-end development cycles**.



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FEATURES AND ADVANTAGES

Reduces test time by 70% by eliminating time-consuming customised testing processes for different devices

01

Predicts key linearity metrics:
Error Vector Magnitude (EVM) and
Adjacent Channel Leakage Ratio (ACLR)

02

Seamless integration into real transmitter hardware, capable of operating in fully packaged power amplifier modules (PAMs)

03

Fully compliant with 3GPP requirements, enabling easy extension to various frequency bands

04

Technology-agnostic design allows simple retraining for PAM vendors without additional investment in machinery or technicians

05

Significant reductions in lab costs through fewer physical measurements and faster optimisation processes

06

Greener RF design practices:
Lower energy consumption and reduced equipment wear

07

FUTURE DEVELOPMENTS

- Empowering future **terrestrial and non-terrestrial** circuit design
- Accelerating communication innovation to facilitate AI development