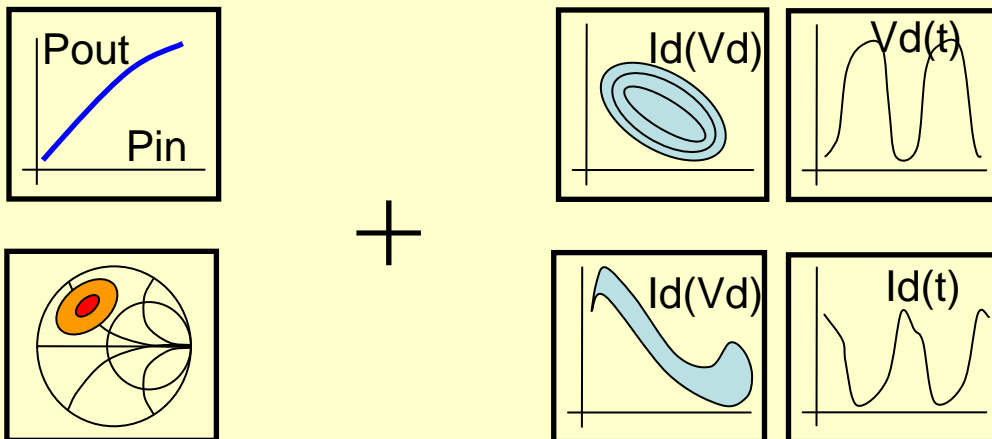


Get better insight in your power transistors!

SWAP-X402



**The simple and affordable way
 to add time domain waveform capability
 to your load-pull setup**





Extending your load-pull capabilities with the SWAP-X402



You want to explore the **reliability and performances** of your **power transistors**, you want to find their **safe operating limits** and you want to gain a better understanding of the behavior of your power transistors so you can **improve your models and/or your technology**.

If the above applies to you, you are probably already the proud owner of a **load-pull setup** with transistor biasing capability, an RF source, tuners and power meters or another kind of receiver. Most likely your load-pull setup allows you to measure several figures-of-merit — output power, gain, power-added-efficiency — all over the Smith chart and for various bias settings. But what happens if the measured figures-of-merit do not meet your expectations and you want to know why? Although the answer is often not present in the figures-of-merit themselves, it is present in the **transistor terminal voltage and current time domain waveforms**. Just think about trapping effects, soft and hard breakdown effects, forward gate conductance, knee walkout, etc. Just imagine how much more insight your load-pull setup would provide if only it could measure the voltage and current time domain waveforms as they appear at the terminals of a transistor under **various large signal load-pull conditions**.

That is why we have developed the SWAP-X402. This novel instrument and its accessories provide a simple and affordable way to **upgrade your load-pull setup to an advanced time domain load-pull setup**. At the heart of the instrument are four broadband sampling frequency

convertors and state-of-the-art digitizers. A simple build-in test-set facilitates the time domain load-pull calibration procedure. Once calibrated through our graphical user interface the SWAP-X402 performs **fast real-time measurements of the RF voltage and current time domain waveforms** as they appear at the transistor terminals.

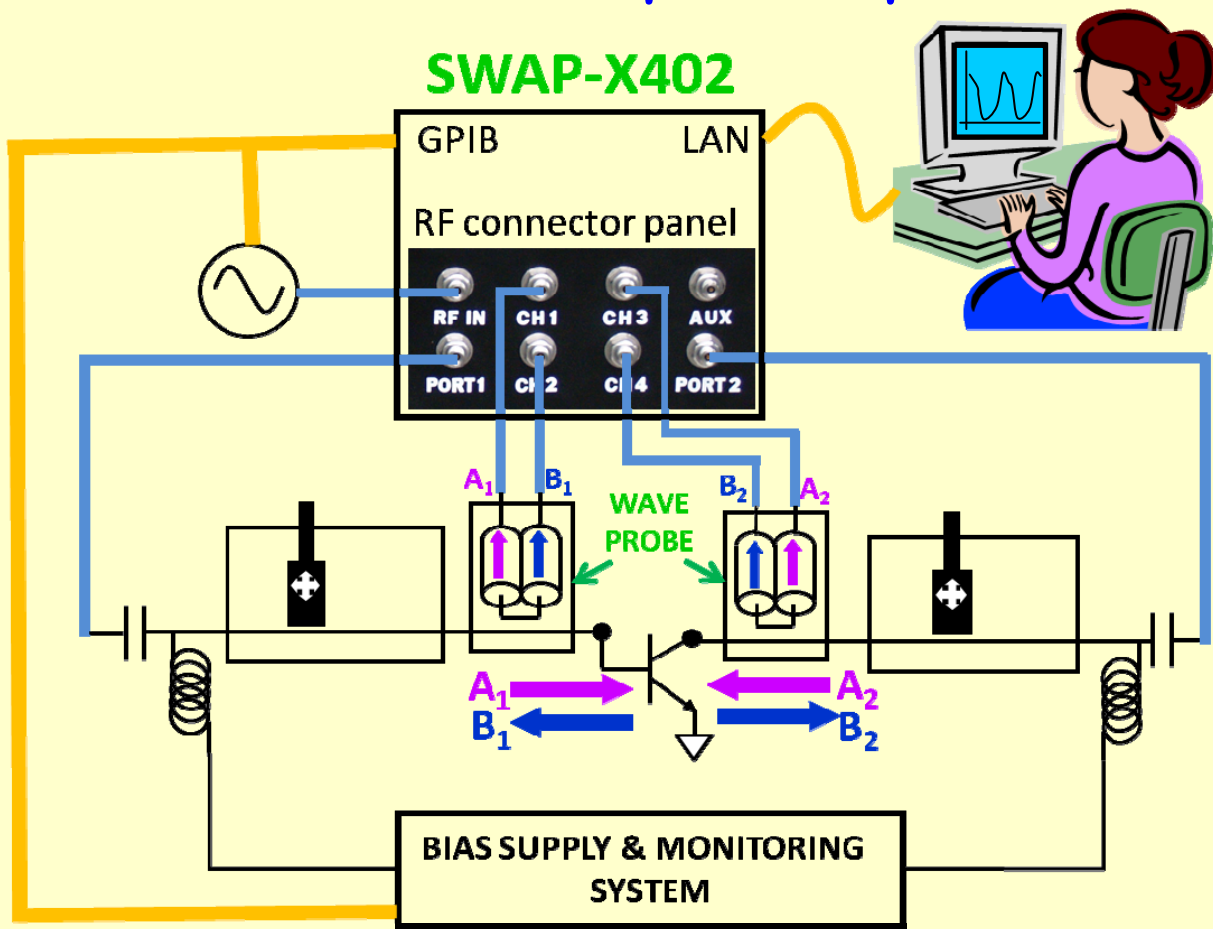
Several features and accessories were developed to allow for a smooth integration with your existing load-pull setup. Our accessory **wave-probes** provide an extremely low loss dual directional coupling structure that quite **won't affect your tuning range**. For maximum flexibility we have invented the adjustable wave-probes, so you can adapt the coupling factor to a wide range of power levels.

The SWAP-X402 can most likely easily be integrated into your load-pull setup as the instrument comes with plenty of possibilities for interfacing: **LAN, USB, general purpose interface for driving external switches, GPIB master and GPIB slave**. You can communicate with the instrument through LAN or GPIB using a SCPI command set compliant with IEEE 488.2.

As budgets are tight **we wanted the SWAP-X402 to be as affordable as possible**. So we really made sure not to put any stuff into the instrument that you won't really use. Note that with the SWAP-X402, the time domain load-pull is not just an option. It is actually the only instrument specifically designed with time domain load-pull in mind.



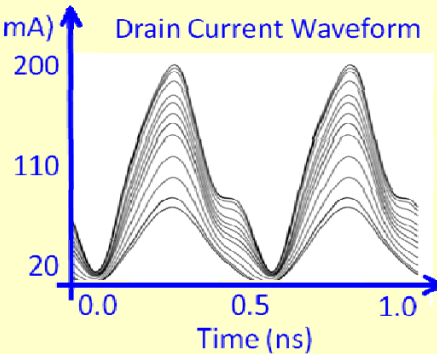
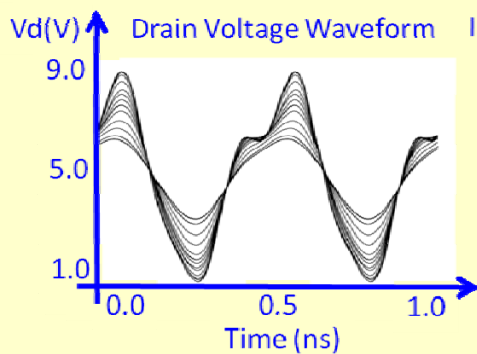
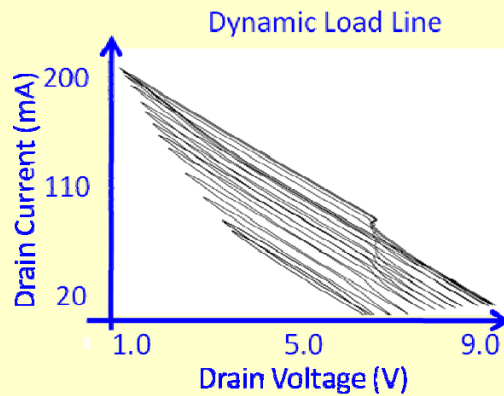
Typical integration of SWAP-X402 with a load-pull setup



Measurement Example



Commercial Power Transistor
 Power Sweep
 Fundamental @ 2 GHz
 Drain Bias Voltage = 5V
 Quiescent Drain Current = 50mA





Key product features



RF input bandwidth	20GHz (30GHz optional)
Number of RF input channels	4
Spurious free dynamic range	60 dB (typical)
Receiver linear input power (after wave-probe and optional attenuators)	-10dBm
Interface	LAN, USB, master GPIB, slave GPIB
Software	graphical user interface calibration software SCPI GPIB/LAN command set (compliant with IEEE 488.2)

Options:

- Adjustable wave-probes with an RF bandwidth from 800MHz to 18GHz and a coupling factor between -15dB and -40dB
- Switchable attenuators between RF inputs and receiver
- RF input bandwidth extension up to 30GHz
- Pulsed RF capability (for pulses with a duration ≥ 150 ns)



Contact us for a demo in YOUR lab !

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