# THE ROLE OF OSCILLOSCOPES IN THE MEASUREMENT OF AC POWER LOSSES

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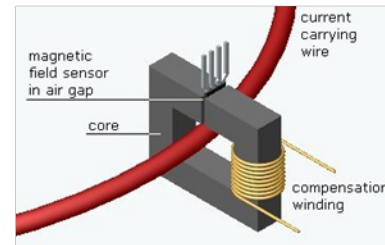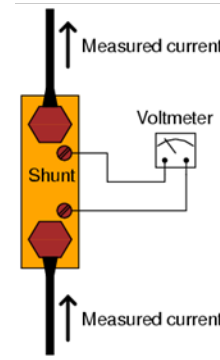
**ROHDE & SCHWARZ**

Make ideas real

# CURRENT AND VOLTAGE MEASUREMENTS

► Voltage probes

- Passive probes with ground
- Active differential probes for floating measurements
- High voltage active and passive voltage probes

► Current probes

- AC/DC active (hall effect) current probes
- Passive AC current probes
- Shut resistor and active differential probe

# MEASURING AC POWER LOSS

► AC power = V(t)*I(t)

► V(t) = Ch1(t)

► I(t) = $K_{cp}$*Ch2(t-$\delta$)

► Oscilloscope channel skew must be compensated for accurate measurements

► Timing is referenced to the probe tips

► Power loss = $P_{ACout}/P_{ACin}$



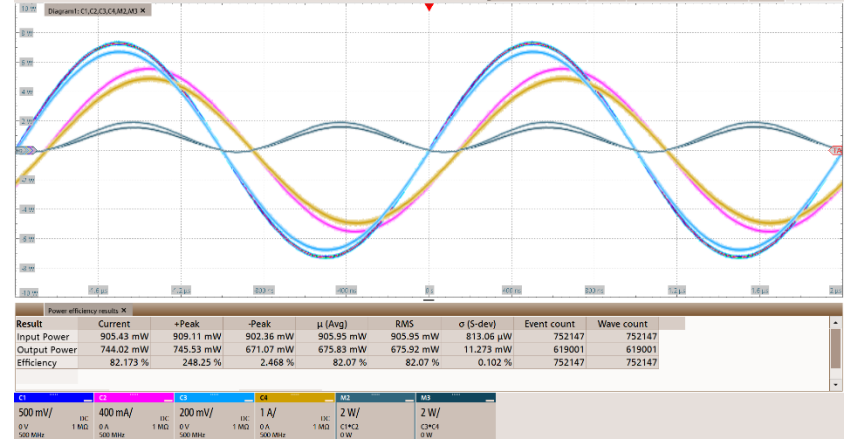V(t)          I(t)
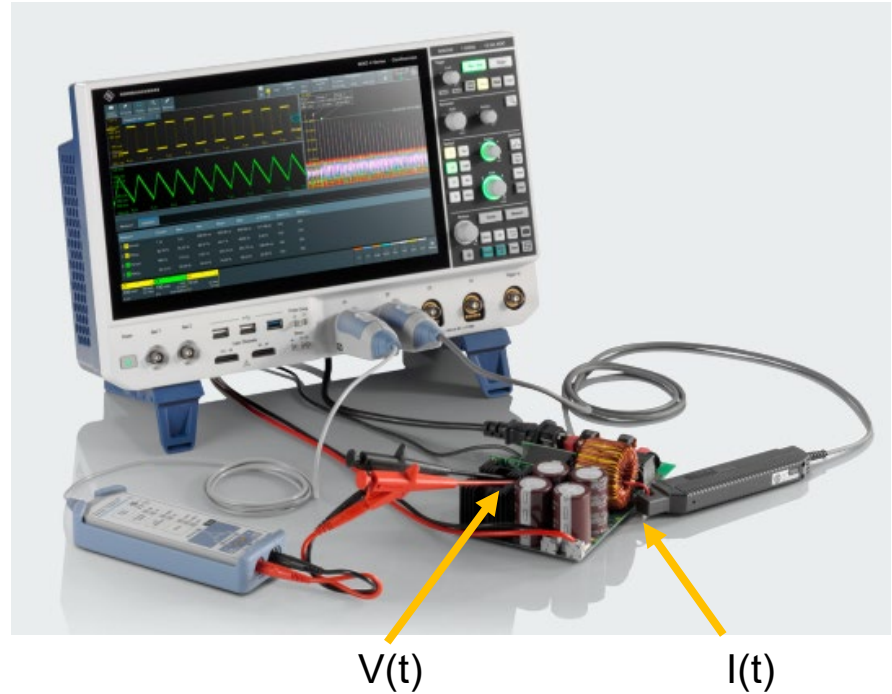
# CHANNEL SKEW COMPENSATION

► Fixture provides synchronous voltage and current
signals

► Use timing skew adjustment in oscilloscope



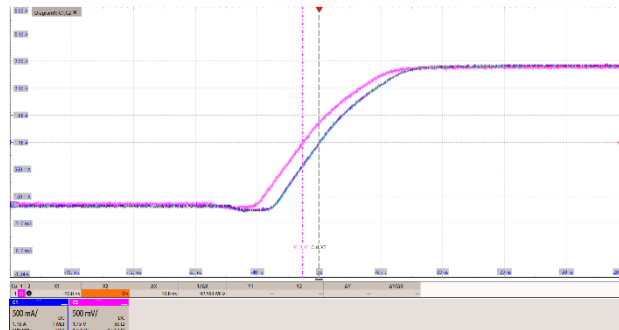Voltage probe

Deskew fixture

Current probe
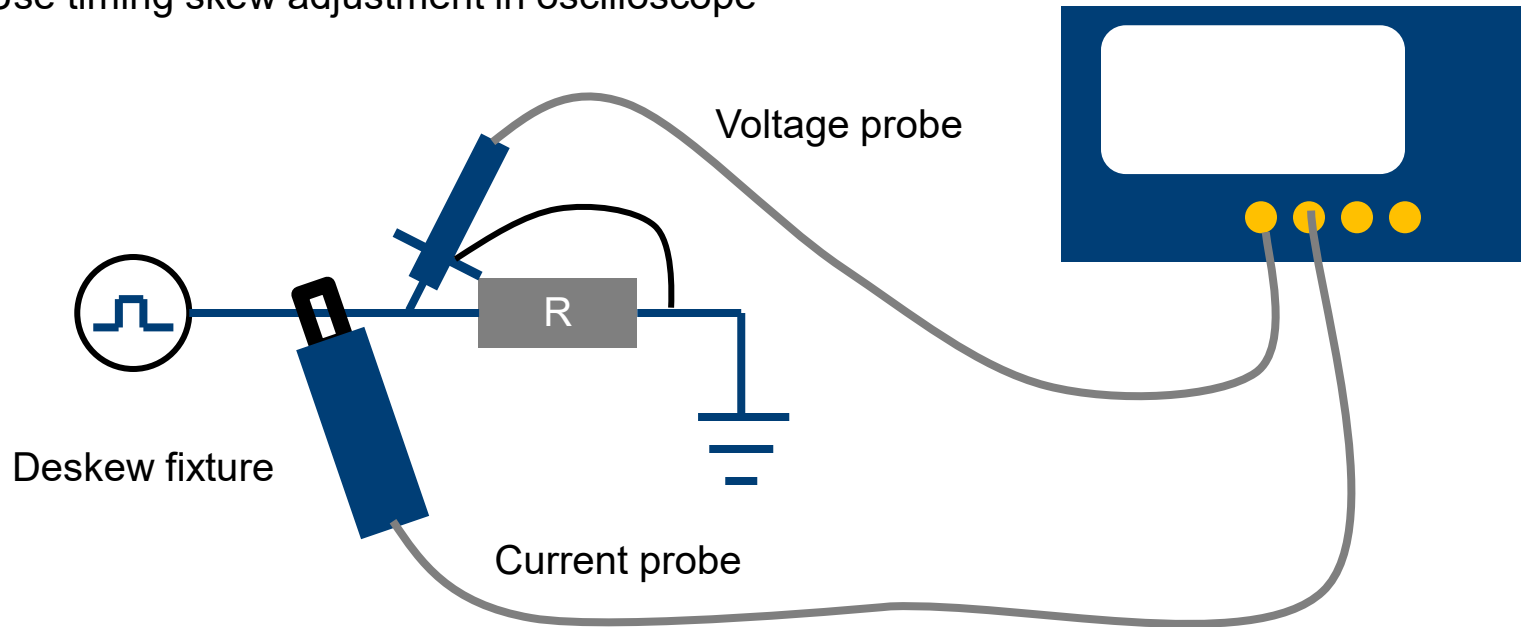
# MEASUREMENT EXAMPLE



Power measurement



efficiency



Channel skew compensation