

WHY DO WE NEED TO
CALIBRATE A VNA?

WHAT DOES CALIBRATION DO?

HOW DO WE DO IT?

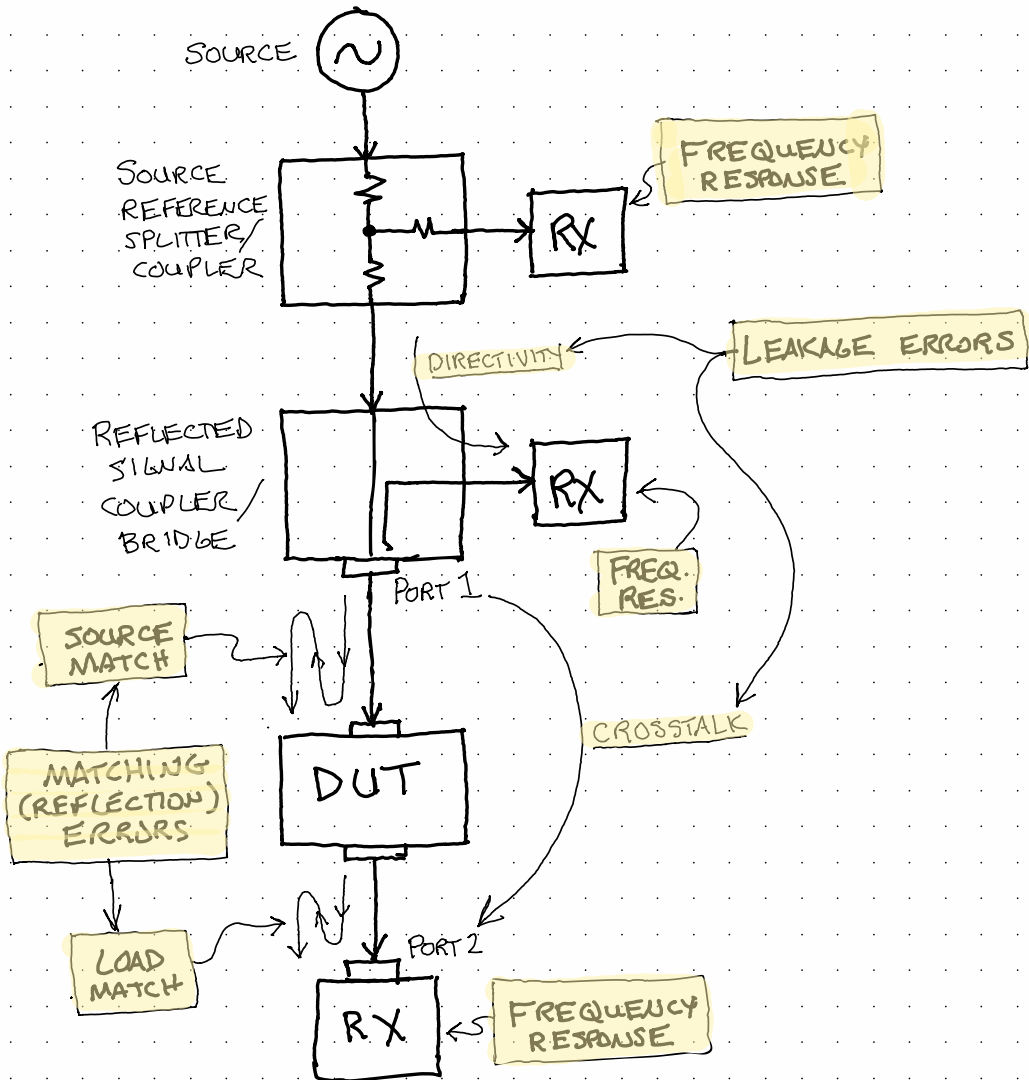
WHY

- LARGE MEASUREMENT DYNAMIC RANGE
 - CORRECT FOR FREQUENCY RESPONSE, INTERCONNECT, ETC.
 - PHASE MEASUREMENT
 - INSTRUMENT & INTERCONNECT EFFECTS
 - MEASUREMENT PLANE
 - OBTAIN RESULTS AT DUT, REMOVE INTERCONNECT
 - "FACTORY" CALIBRATION CAN'T DO IT ALL
 - LIMITED # OF POINTS
 - NO KNOWLEDGE OF INTERCONNECT, FREQ RANGE, ETC.
- ... THUS, WE PERFORM A USER CALIBRATION
WHENEVER WE CHANGE THE DUT,
FREQUENCY RANGE, ETC.

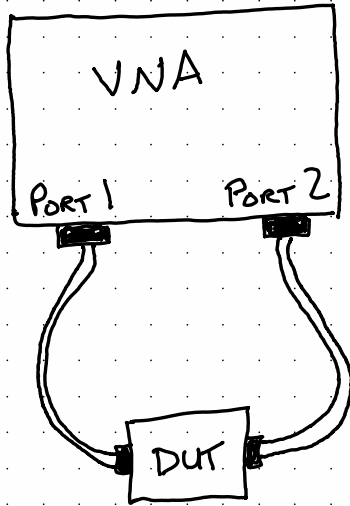
WHAT DOES CALIBRATION DO?

① - CORRECT FOR SYSTEMATIC ERROR SOURCES

- TRACKING (REF & TRANS FREQ RESPONSE)
- MISMATCH (SOURCE & LOAD MISMATCH)
- LEAKAGE (DIRECTIVITY & CROSSTALK)



② - ESTABLISH THE "MEASUREMENT PLANE"



- CALIBRATING AT THE DUT PORTS

- REMOVES THE FREQUENCY RESPONSE AND DELAY (PHASE SHIFT) OF THE CABLES
- ENSURES THE IMPEDANCE MEASUREMENTS ARE NOT TRANSFORMED BY THE TRANSMISSION LINES.

WHEN & HOW DO WE RUN A USER CALIBRATION?

WHEN:

- CHANGE IN FREQUENCY RANGE
- CHANGE IN CONNECTION TO DUT (CABLE LENGTH, ADAPTERS, ETC.)
- CHANGE IN VNA PORTS USED

HOW:

- MOST COMMON USE:

OPEN
SHORT
LOAD (MATCH)

} FOR REFLECTION
S11, Γ , SWR, Z.

THRU
ISOLATION

} ADDED FOR TRANSMISSION S22

- ROUTINE IN VNA USER INTERFACE