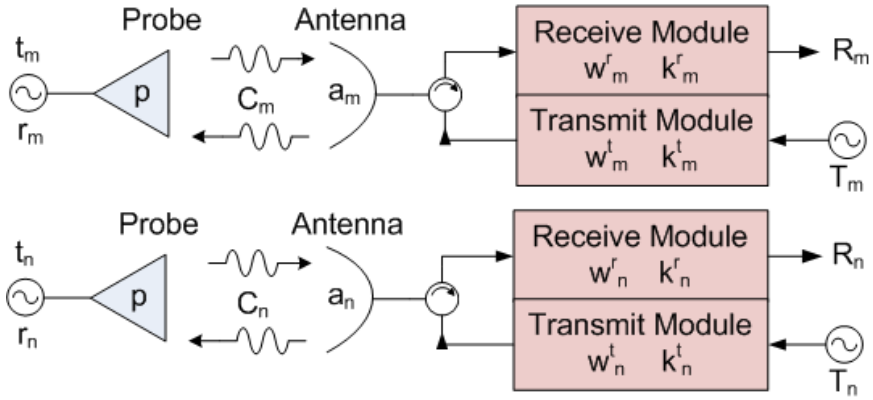

Figure 2. Calibration of a phased array radar using a near-field scanning probe.

$$R_m = t_m p\, C_m a_m w^r_m k^r_m$$
$$r_m = T_m k^t_m w^t_m a_m C_m p$$

R_m	the signal transmitted from the probe and received by the mth receive module	(measured)
r_m	the signal transmitted from the mth transmit module and received by the probe	(measured)
t_m	the signal transmitted from the probe to the mth antenna element	(known)
T_m	the signal transmitted from the mth transmitter	(known)
w^r_m	the phase/amplitude setting of the mth receive channel	(known)
w^t_m	the phase/amplitude setting of the mth transmit channel	(known)
p	losses due to the probe antenna and channel	(unknown)
a_m	losses due to the antenna elements	(unknown)
C_m	the amount of coupling between the probe and the mth antenna element	(unknown)
k^t_m	phase/amplitude effects of the mth transmit module	(unknown)
k^r_m	phase/amplitude effects of the mth receive module	(unknown)