



## 60 GHz Antenna Gain Measurement Procedure

**Step-1:** Two calibrated test systems with known antenna gain and cable loss, with equivalent impedance and matching polarity are used to derive the path loss "Distance" coefficient

**Step-2:** A signal generator is used to produce an unmodulated CW at the test frequency and power level matching to that of the DUT. This power level is measured at the receive antenna as "reference".

**Step-3:** The reference transmitter is then substituted with the DUTs antenna & RFIC and the power level is measured as "DUT" Power.

**Step-4:** The delta in the measured "reference" and "DUT" power is then used to derive two steps yields the DUT's gain from the Friis Equation.

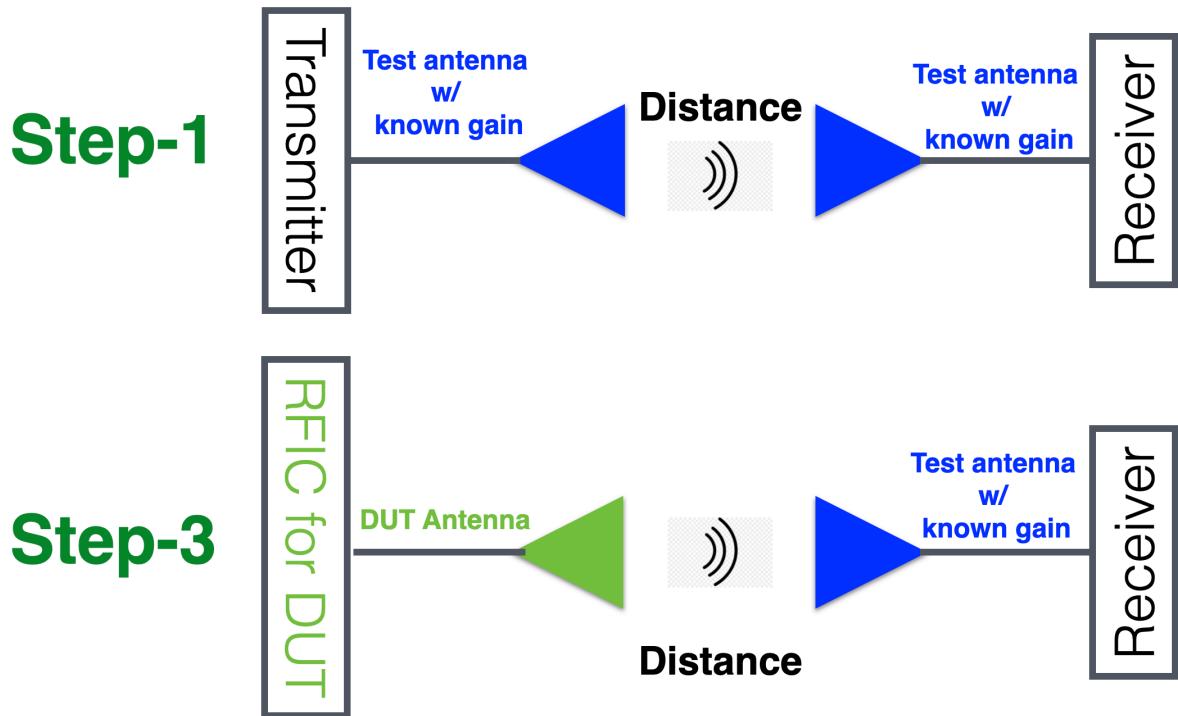


Figure 1 - Measurement setup

$$1] P_{rx} = P_{tx} G_{tx} G_{rx} \left( \frac{c}{4\pi D_r f_0} \right)^2$$

$$2] P_{rx}(dB) = P_{tx} + G_{tx} + G_{rx} + 20 \log_{10} \left( \frac{\lambda}{4\pi D_r} \right)$$

Figure 2 - Friis Equations



## 60 GHz Antenna Gain Result

60.5 GHz Antenna Gain 4.0 dBi, Type: antenna-in-package