c. Use the proper test method to measure the Dielectric Constant of the PCB calibration kit
d. Measure the transmission line's impedance using the TDR
e. Using the Dielectric Constant measured in the step c to implement the microwave application with the same Core and Prepreg of the PCB calibration kit. The same transmission line of the PCB calibration kit also needs to be placed on the microwave application's PCB.
f. Require the manufacturer using the TDR to control the transmission line impedance as the same value which is measured in the step d.

4. Surface mount components
   Many RF designers did not notice PCB material, solder paste, soldering method and reflow soldering temperature curve may also affect the high frequency performance of the surface mount components.

   My suggestion is that measure the component's high frequency parameters in the same production condition by using the same reflow soldering profile of the mass production process.

Part III: The problems of IC suppliers' support

As far as I know, TEXAS INSTRUMENTS(TI) provided the best antenna design references. TI's DN007 and AN043 antennas were widely used, we even could find them with other companies SOCs, such as NXP JN5169, NXP JN5189, Silicon Labs EM35x, Nordic Semiconductor nRFx etc.