



Sub-Components of an RF Launch

Knobs to Turn for Complete Optimization

Connector Landing Pad: The landing pad size is dictated by the mechanical constraints of the connector. It needs to be large enough to provide a reliable connection by accounting for manufacturing tolerances of the connector and PCB fabrication, but small enough to allow for designs using the connector to achieve the desired performance level.

Signal Via: Electrically speaking, for a via, the drill hole size is the dimension that matters, not the finished hole size. The drill size determines the outer dimension of the signal via, which in turn controls the impedance of the via. Having a list of common drill sizes used by the PCB vendor is very useful while trying to tune via launches.

Tuning Feature: Used to equalize the impedance from via pad/void region to the trace. A tapered shape is less sensitive to PCB layer-to-layer misregistration.

Planes, Voids and Ground Collar: The ground planes under the launch tie the ground vias together. Voids in the planes allow the tuning of the impedance seen by the signal as it travels down the via. When possible, it is best to create a “ground feature” on power planes and signal layers. This ensures adequate metal coverage along the via, improving the approximately coaxial structure of the launch and performance.

Ground Rings Inner/Outer: There are 2 rings of ground vias. The inner ring has a strong impact on the impedance of the transition and cutoff frequency. The second ground ring helps seal the gaps between the vias of the inner ground ring which limits crosstalk to adjacent signals. The performance of the launch is heavily dependent of the ground rings.