BLOG POST

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Surface Mount mmWave Microstrip Filters are key to reducing cost.

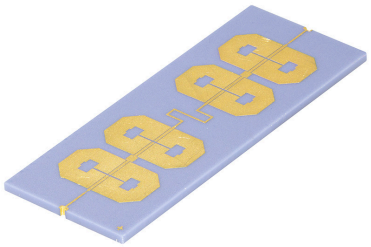
Frequencies in the mmWave spectrum play a key role in 5G communications. RF technology that was developed around existing mmWave applications has evolved to encompass the needs of 5G wireless access.

Components for such systems need to be selected for performance and cost – commercial systems are subject to intense price pressure and so both the purchase cost and the implementation cost of a component become important factors in selecting devices for a new design. Another key consideration can be size constraints and the need to preserve valuable board space.

To look at cost (while maintaining performance) consider implementation cost – the total cost of assembly, board design, component storage and handling.

In Microwave assemblies the replacement of chip-and-wire assembly with pick-and-place technology has enabled significant reductions in manufacturing costs. Minimizing mixed technologies and designing for as much automated assembly and SMT placement as possible reduces manufacturing complexity and cost, while improving quality.

A Microstrip Dual Mode Filter



Further, avoiding chip-and-wire chip-and-wire minimizes parasitic inductance from wire bonds, removing the need for post assembly tuning of the filters if they are made in a repeatable process.

Microwave filters in a surface mount package with repeatable performance become key enablers in reducing overall system cost.

But what about size? Why not implement the filter directly on the PCB and avoid filter components altogether?

Well one reason we already touched on is

A Power Divider

repeatability – filter components that are manufactured in a repeatable process and tested to specification before they land on the board are potentially less costly than having to correct variations in PCB implemented filters in a ‘set at test’ manner. The goal is cost effective tuning free assemblies even at mmWave frequencies.

Secondly is size – filters and dividers/splitters implemented in a surface mount package can be up to 20x smaller than an alternative printed directly onto a PCB board. You can see why in our blog post Microstrip Filters deliver small size at high frequencies

Surface Mount Microwave filters reduce cost, complexity and size. To learn more about how SMT filters play a role in 5G mmWave systems download our Whitepaper Reduce Cost and Complexity in 5G mmWave systems with Surface Mount Solderable Filter Components.