

PASSIVE INTERMODULATION*

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- Passive Intermodulation (PIM) is a non-linear interface similar to intermodulation produced when signals are mixed in an active discrete device. PIM generation requires at least two signals present in a single passive component or transmission line at different frequencies. The frequencies combine and generate harmonics at regular intervals as shown below (two carrier system):
 - Intermodulation = $nF1 \pm mF2$
 - Where $m=1,2,3\dots$ and $n = 1,2,3 \dots$
 - PIM Order = $m + n$
- PIM is generated by a “diode” mixing phenomena caused when current flows through a non-linear media
- Surface imperfections such as Microcracking, Loose Plating, Scratches and Burrs, Metallic dust and fibers can cause nonlinear phenomena.
- A major source of PIM is caused by voids present at a conductor to conductor interface
- Areas of concern are flange, connector, and solder joint interfaces where loose connections or light contract can occur

