CLEARCOMM INTERMOD TESTING

- Intermods are created by two or more high powered signals mixing creating unwanted frequency products.

- There are 3 major causes of PIM in passive devices:
  - Poor contact junctions
  - Components made with, or plated with materials that exhibit some level of hysteresis, i.e. Nickel, Iron, etc.
  - Contamination
Acceptable levels of PIM are extremely low and difficult to measure accurately. Often below -150 dBc.

As compared to S parameters, PIM cannot be simulated or predicted using analytical software.

The only way to determine if a device generates PIM, and to what level, is to measure it.

Testing to AQL levels is misleading because PIM is very unpredictable and can be generated in what appear to be perfectly designed and constructed devices.
• How to Minimize Passive Intermods
  – Avoid the use of Ferrite materials
  – Minimize the number of contact junctions
  – Design all contact junctions in a way that they are precise and under sufficient pressure to maintain good contact.
  – Solder or Weld all junctions where possible
  – Avoid dissimilar metals in direct Contact
  – Plate all surfaces to prevent Oxidation
  – Make certain Plating is uniformly applied and sufficiently thick
ClearComm has custom designed our in house PIM Test Setups for great dynamic range and frequency coverage.

- PIM testing capabilities from 700 – 2200 MHz
- Dynamic Range is >170 dBC
Two Tone Intermod Test Set

Frequency F1: Signal Generator SCPA 25 W
- Clean Up Filter: Passes F1, Rejects F2
- Low I.M. Combiner F2
- Tx Passes F1-F2, Rejects I.M.D

Frequency F2: Signal Generator SCPA 25 W
- Clean Up Filter: Passes F2, Rejects F1
- Switch to Check Residual I.M.'s and Noise Floor

Low I.M. Cable Load

Ant D.U.T
Tx Rx

Spectrum Analyzer

50 Ohm Load

50 Ohm Load