



## *Variable Frequency Microwave (VFM) Processing*

### *Solutions for Rapid Curing of Adhesive*

Variable Frequency Microwave (VFM) processing provides a cure solution that would dramatically reduce the cycle time while providing the equivalent material properties following cure. It is generally well known that microwaves can accelerate chemical reaction rates. For curing of adhesives, as much as 10 to 20 fold enhancement over the convection process time has been observed. VFM is a unique microwave technology that allows the benefit of microwave curing without the disadvantages associated with single frequency microwave process. The key features of VFM are as follows:

- By rapid sweeping through a bandwidth of frequencies, VFM produces uniform energy distribution within the processing chamber.
- The rapid frequency sweep cycle time of 100ms eliminates the problem of arcing usually observed with fixed frequency microwaves. This permits processing of samples with metal, circuits, and high value semiconductor assemblies, without any damage.
- The rapid cure is accomplished without compromise to material properties or product specifications.

VFM has been successfully used for numerous curing applications. These include but are not limited to:

- Flip Chip Underfill and Bump Cure
- Glob Top and Potting Cure
- Structural Bonding
- Die Attach
- Wafer Processing
- Opto-electronics