

Table 2. Key Areas Addressed in iNEMI Methodology

Areas	Key Contents
Understanding and identifying all use conditions	<ul style="list-style-type: none"> • Manufacturing (device assembly to board, board into system) • Shipping (device, system) • Field use
Tools and best practices	<ul style="list-style-type: none"> • 3-step qualification process • Simulation • FEMA • Test chips vs. functional devices • Electrical characteristics • Detailed construction analysis • Test to failure • Sequential stress testing • Safe launch • Failure analysis
Assessment prior to reliability testing (usability, not reliability)	<ul style="list-style-type: none"> • Moisture/reflow sensitivity • MSL classification vs. preconditioning • Reflow profile for making good solder joints vs. J-STD-020 evaluation profile • Moisture sensitivity vs. process sensitivity • Process sensitivity • Package warpage during reflow
Qualification standards and test methods	<ul style="list-style-type: none"> • JEDEC • Automotive Electronics Council (AEC) • IEC • JEITA • SAE
Reliability test methods	<ul style="list-style-type: none"> • Thermal cycling, thermal shock • Biased temperature and humidity life • High temperature storage life • Power cycling • Unbiased, accelerated temperature and humidity (HAST, autoclave) • 1st level electromigration (flip chip bump, solder joint, and UBM) • Shock and vibration • Hermeticity • Salt spray • Corrosive gases (including sulfur)
Qualification report	<ul style="list-style-type: none"> • Requirements of a qualification report • Reasons why device suppliers may not provide device qualification reports that comply with JESD69 or AEC-Q100 • How to interpret and use the information in a qualification report • Qualification by similarity