

Effect of Different Parameters of Fibre Laser Soldering on Interfacial Reaction and Wetting Angle of Two Types of Lead-Free SAC305 Solder Fabrication on Cu Pad.

T J Nabila¹, S R A Idris^{1}, M Ishak¹*

Faculty of Mechanical Engineering, Universiti Malaysia Pahang,
26600 Pekan, Pahang, Malaysia,

rabiattull@ump.edu.my* nabilatamarjaya@gmail.com

Abstract.

This paper presents the effect of different parameters of fibre laser soldering on interfacial reaction of two types of lead-free solder fabrication on Cu pad. The objective of this paper is to study the intermetallic compound thickness (IMC) formation and wetting angle of two different types of solder fabrication when it were exposed to varies of laser power and scanning time. A fibre laser with 200W continues wave (CW) was used in this experiment to form a joining between SAC305 solder wire and printed copper board. A continuous laser power was ranged between 72W to 88W and scanning time of 1.5s and 2.5s were chosen to create joining. Flux was used in the laser soldering experiment in order to gain uniform heat distribution throughout the solders. The mechanical properties were observed by using optical and metallurgical microscope. Results showed that SAC305 solder powder performing good wetting angle and has more thinner IMC layer compared to SAC305 solder wire.

Keyword: Electronic packaging, soldering, interfacial reaction, intermetallic compound, powder methodology method, materials engineering.