D1: ESTABLISH TEAMS

Champion: Mark

Team Leader: Chiwen

Members: EELu, Karen

D2: PROBLEM DESCRIPTION

Receive Sample：67pcs	Problem happen time: Light on after SMT

Describe: Customer (Intelligent) (A) Found abnormal mark on the back side of LED's substrate. (B) Found that after SMT half of the LED is brighter than the other half on the board.

Test current: Customer test using a bench power supply set to exact voltage requirements, and only drive at 100mA. Problem rate: Customer estimates around 100%.

D3: CONTAINMENT ACTIONS

We don't have customer specification in inventory, but we also checked other T9090U-UNL1-A1GC1H samples, we didn't found same situation (back side black color problem) in our side. Please refer images as attached.
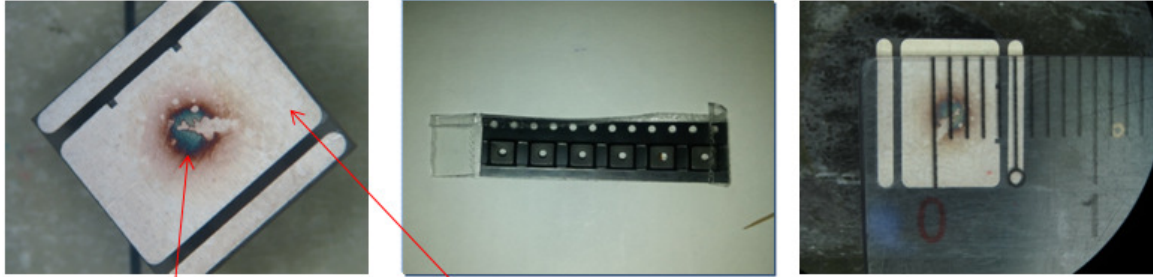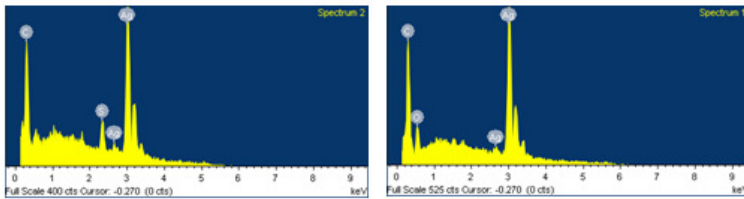
D4: ROOT CAUSE

Analysis procedure:

1. Found abnormal mark on the backside of LED's substrate:

Element	Weight%	Atomic%
C K	11.89	51.83
S K	4.73	7.71
Ag L	83.38	40.46
Totals	100.00	

| Element	Weight%	Atomic%
C K	10.51	40.43
O K	8.64	24.95
Ag L	80.85	34.62
Totals	100.00	

   We did EDX analysis for the abnormal mark, and it is silver sulfide. Please refer to the picture above. The size of abnormal mark is around 1.5mm to 2mm in the center of emitter, that is similar to the hole of reel bottom (the dimension is 1.5mm). We believe the abnormal mark is caused by contamination by silver sulfide during the delivery or storage environment.

2. Found that after SMT half of the LED is brighter than the other half on the boards:

The emitter situation with 1mA driving
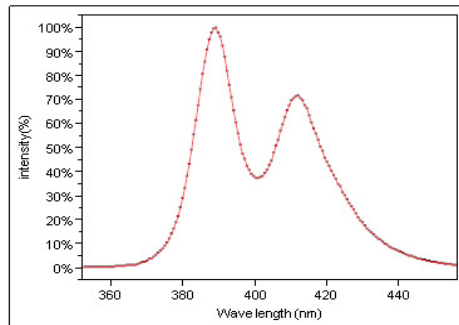
   After checking the spectrum from IS, there were two different types of chips in the emitter, and it can be distinguished by the bond pad direction.

Based on the result:

  Issue 1: That is caused by contamination of sulfide during the delivery or storage environment.

  Issue 2: There were two different type chips in the package. That is caused by misoperation, operators use the wrong chip for these products.

D5: CORRECTIVE ACTIONS

About issue 2:

　Fab produce two different wave lengths but the same product type at the same time, and Run card do not have information to prevent chip mix. TSLC found that operator could cause this kind of mistake. So production manager dept. will avoid to production same package product but different wave length at the same time.

D6: IMPLEMENT CORRECTIVE ACTIONS

　There was no abnormal sample (same mixed chip issue) had been found till 7/22/2015.

D7: PREVENT RECURRENCE

(1) We re-mark clear information (wavelength) to classify chip type.

(2) We won't start same part name but different wavelength at the same time to avoid the misoperation.

D8: CONGRATULATE

Champion:	Mark
Team Leader:	Chiwen
Members:	EELu
	Karen