Engineering Evaluation Report
CI2316-9236

Prepared for

CELESTICA (THAILAND) LTD / Thailand, Thailand
Jun-12-23
FH8067303534005S R3ZM
Field Return: After One Year

Intel® Worldwide Quality Support Centers

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FH8067303534005S R3ZM
Field Return: After One Year
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CUSTOMER INFORMATION							**Customer Ref.** R1147-G0016-01
Company / Location	CELESTICA (THAILAND) LTD / Thailand, Thailand						
Report Distribution	tpraphat@celestica.com; njaruek@celestica.com; rngamar@celestica.com; Srilasak@celestica.com; albert.tsai@intel.com; tchaiyut@celestica.com; davidx.chen@intel.com; yux.bai@intel.com; knunthak@celestica.com						
Product ID	FH8067303534005S R3ZM						
Quantity	**Returned**	6	**Failed**	11	**Mfg. Qty.**	1350	
Failure Issue Description	The unit cannot memory date time and time delay FACR Objective: RA - Risk Assessment						
Failure Condition	Field Return: After One Year						

Summary

CELESTICA (THAILAND) LTD / Thailand, Thailand reported 11 out of 1350 system failed from Field Return: After One Year. The reported failure symptom is "The unit cannot memory date time and time delay". The failed units were returned to Intel for investigation.

Manufacturing lot history shows that the lot was not involved in any manufacturing excursions. Analysis of other customer returns indicates this material was shipped to multiple customers, but no other issues have been reported.

FACR analysis included Visual Inspection (VI), Automated Curve Tracer (ACT), Automated Test Equipment (ATE) testing and Product Platform Validation (PPV) testing. The returned units passed all inspection and conformed to Intel Workmanship Standards with no abnormalities seen at external package.

Unit #3, #4 and #5 passing all Intel testing and unable to replicate or observed any failures. Hence these units were determined as Test Miscorrelation. Intel recommends returning the products to the customer for retest. If the failures are persistent or have a high rate of recurrence, please contact Intel Customer Quality Engineering for further assistance.

However, Unit #1, #2, and #6 had pad lifted during Reball process. Due to the physical damage for these units, further analysis was discontinued before completion, hence there is insufficient information to form a conclusion and it is therefore concluded as Failure Analysis Inconclusive.

Please take note 3 out of 6 customer returned units found lifted pad during standard FACR flow. Even these 3 returned units no abnormality found during VI but customer may need to alert that

Location	APAC	Date Units Received	May-31-23
Analyst	Lim, Kean Yam	Preliminary Analysis Update	Jun-02-23
Manager	Bada, Marlon	Engineering Evaluation Report	Jun-12-23
Intel Contact	Tsai, Albert	FACR Status	Closed

the mechanical force applied on customer site potentially causing the defect. Intel has been confirmed that the testers are in good condition and standard FACR test flow will not causing the damage or lifted pad on unit.

Please contact an Intel Customer Quality Engineer (CQE) if further question or clarification is needed. The product will be archived at the analysis site.

Background and Concern Description

CELESTICA (THAILAND) LTD / Thailand, Thailand reported 11 out of 1350 system failed from Field Return: After One Year. The reported failure symptom is "The unit cannot memory date time and time delay". The failed units were returned to Intel for investigation.

Analysis

FACR analysis began with Visual Inspection (VI). The inspection was performed using a low power optical microscope to check for any abnormalities of the external package. Visual inspection unable to identify abnormalities on the returned 6 units.

Automated Curve Tracer (ACT) is performed using a PC-based parametric analyser to measure shorts, opens and leakages on the device. At this testing level, Unit #1, #3, #4, and #5 passed ACT testing. Unit #2 and #6 failed ACT testing.

Automated Test Equipment (ATE) is a stored-response tester designed to test component functionality at the transistor level. ATE testing is the preferred method for testing outgoing material because it can isolate specific areas that are failing and provide information on the cause of failure. This specialized tester, which can vary inputs and measure outputs on each pin, is used in production to test 100% of outgoing material. Unit #3, #4 and #5 passed ATE testing.

The Product Platform Validation (PPV) test platform is designed around an actual application of the Intel product. Intel PPV testers are based on Intel Customer Reference System designs, modified to include special testing capabilities. PPV systems boot multiple operating systems, run a variety of applications and perform a variety of stress tests. Unit #3, #4 and #5 passed PPV testing.

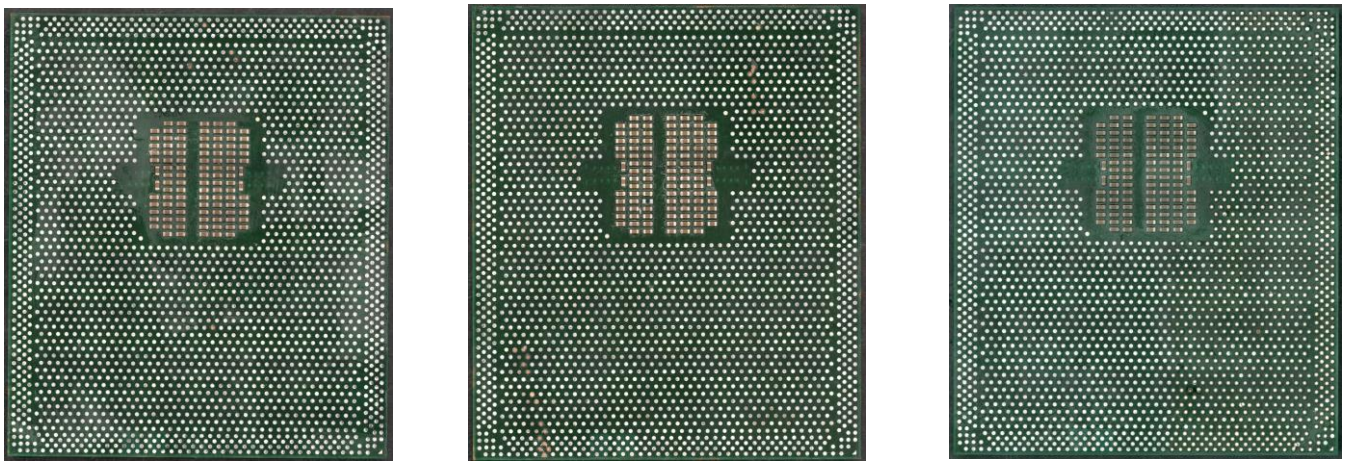
However, Unit #1, #2, and #6 found pad lifted during Reball process. Due to the physical damage for these units, further analysis was discontinued before completion, hence there is insufficient information to form a conclusion and it is therefore concluded as Failure Analysis Inconclusive. Please refer to Figure 1 for the pad lifted image.

Please take note 3 out of 6 customer returned units found lifted pad during standard FACR flow. Even these 3 returned units no abnormality found during VI but customer may need to alert that the mechanical force applied on customer site potentially causing the defect. Intel has been confirmed that the testers are in good condition and standard FACR test flow will not causing the damage or lifted pad on unit.

Table 1.1 Analysis results

Unit#	FPO	VID	Perceived Problem	VI	ACT	ATE	PPV	Comments
1	J229F895	721Y7C6201110	Date/Time Failure	Pass	Pass	N/A	N/A	Failure Analysis Inconclusive
2	J051G796	70BP525400391		Pass	Fail	N/A	N/A	
3	J218F082	72QC508000254		Pass	Pass	Pass	Pass	Test Miscorrelation
4	J218F082	72QC508000954		Pass	Pass	Pass	Pass	
5	J229F895	721Y7C6201027		Pass	Pass	Pass	Pass	
6	J229F895	721Y7C6201105		Pass	Fail	N/A	N/A	Failure Analysis Inconclusive

Note: Unit #1, Unit #2 and Unit #6 found lifted pad during Reball process.



Unit #1 **Unit #2** **Unit #6**

Figure 1: Pad lifted for Unit #1, #2 and #6

Discussion

The 6 returned units were determined to meet Intel visual and mechanical standards. All 6 units passed Visual Inspection (VI) stage. Unit #1, #3, #4, and #5 passed standard Intel electrical (ACT) testing.

Unit #3, #4 and #5 showing passing result at all validation stages (VI, ACT, ATE and PPV). These units passed Intel parametric electrical testing which covered in ACT and parametric in ATE test. No shorts and opens were found on these units. Unit #3, #4 and #5 also passed system functionality PPV test. Intel unable to replicate and cannot reproduce the failures as customer reported.

However, Unit #1, #2, and #6 had pad lifted during Reball process. Due to the physical damage for these units, further analysis was discontinued before completion.

Conclusion

Unit #3, #4 and #5 passing all Intel testing and unable to duplicate or observed any failures and determined as Test Miscorrelation. Intel recommends returning the products to the customer for retest. If the failures are persistent or have a high rate of recurrence, please contact Intel Customer Quality Engineering for further assistance.

However, Unit #1, #2, and #6 had pad lifted during Reball process. Due to the physical damage for these units, further analysis was discontinued before completion, hence there is insufficient information to form a conclusion and it is therefore concluded as Failure Analysis Inconclusive.

Corrective Actions

No Intel corrective actions were initiated as result of this analysis.

Disposition

Units will be archived at analysis site unless requested send back by customer.