



THE NEXT CREATION STARTS HERE
Placing *memory* at the forefront of future innovation and creative IT life



FAILURE ANALYSIS REPORT

(KLM8G1GETF-B041)

For: FOXCONN TECHNOLOGY CO., LTD-TW

May 21, 2024

Memory Quality Assurance

THIS DOCUMENT AND ALL INFORMATION PROVIDED HEREIN (COLLECTIVELY, "INFORMATION") IS PROVIDED ON AN "AS IS" BASIS AND REMAINS THE SOLE AND EXCLUSIVE PROPERTY OF SAMSUNG ELECTRONICS CO., LTD. CUSTOMER MUST KEEP ALL INFORMATION IN STRICT CONFIDENCE AND TRUST, AND MUST NOT, DIRECTLY OR INDIRECTLY, IN ANY WAY, DISCLOSE, MAKE ACCESSIBLE, POST ON A WEBSITE, REVEAL, REPORT, PUBLISH, DISSEMINATE OR TRANSFER ANY INFORMATION TO ANY THIRD PARTY. CUSTOMER MUST NOT REPRODUCE OR COPY INFORMATION, WITHOUT SPECIFIC WRITTEN CONSENT FROM SAMSUNG. CUSTOMER MUST NOT USE, OR ALLOW USE OF, ANY INFORMATION IN ANY MANNER WHATSOEVER, EXCEPT FOR CUSTOMER'S INTERNAL EVALUATION PURPOSE. CUSTOMER MUST RESTRICT ACCESS TO INFORMATION TO THOSE OF ITS EMPLOYEES WHO HAVE A BONA FIDE NEED-TO-KNOW FOR SUCH PURPOSE AND ARE BOUND BY OBLIGATIONS AT LEAST AS RESTRICTIVE AS THIS CLAUSE. BY RECEIVING THIS DOCUMENT, IT IS UNDERSTOOD THAT CUSTOMER AGREES TO THE FOREGOING AND TO INDEMNIFY SAMSUNG FOR ANY FAILURE TO STRICTLY COMPLY THEREWITH. IF YOU DO NOT AGREE TO ANY PORTION OF THIS CLAUSE, PLEASE RETURN ALL INFORMATION AND ALL COPIES (IF ANY) WITHIN 24 HOURS OF RECEIPT THEREOF.

I GENERAL INFORMATION

The plan for solving the problem was based on the following general information and prerequisites:

Customer	FOXCONN TECHNOLOGY CO., LTD-TW	Samsung FAR No.	TW240137
ODM Customer	-	Customer FAR NO.	-

Branch Far No.		Date of Failure.	Apr 30, 2024
Failure Location	Field	Failure Rate	-
Customer Part No.	-	Return Quantity	5
Samsung Part No.	KLM8G1GETF-B041	Device Type	eMMC
Week Code	See the next page.	Lot No	See the next page.
Customer Application	Etc	Model Name	-
Received Date	May 07, 2024	Report Date	May 21, 2024

II FAILURE ANALYSIS RESULT

DISCIPLINE 1. TEAM MEMBERS

This is a Failure Analysis report for the Samsung eMMC(eMCP) product returned for analysis. The failure analysis was performed by a team consist of Quality Assurance engineers, Product engineers, Package engineers, Design engineers and Software engineers.

1.1 TEAM MEMBERS INFORMATION

Team Members	Department	Name	Job Title
	Quality Assurance	HS, Min	Project Leader
		Jieon Song	Engineer
	CS	Jongwoo Paek	Project Leader
		Haeun Kim	Engineer

DISCIPLINE 2. DESCRIPTION OF THE PROBLEM

The device(s) were returned based on the following background information and expectations:

Return Category	Field
Failure Rate	-
Failure Symptom or Analysis Result	Cannot download system FW then stop at 7%.
Customer Comment	Failure analysis & Corrective action

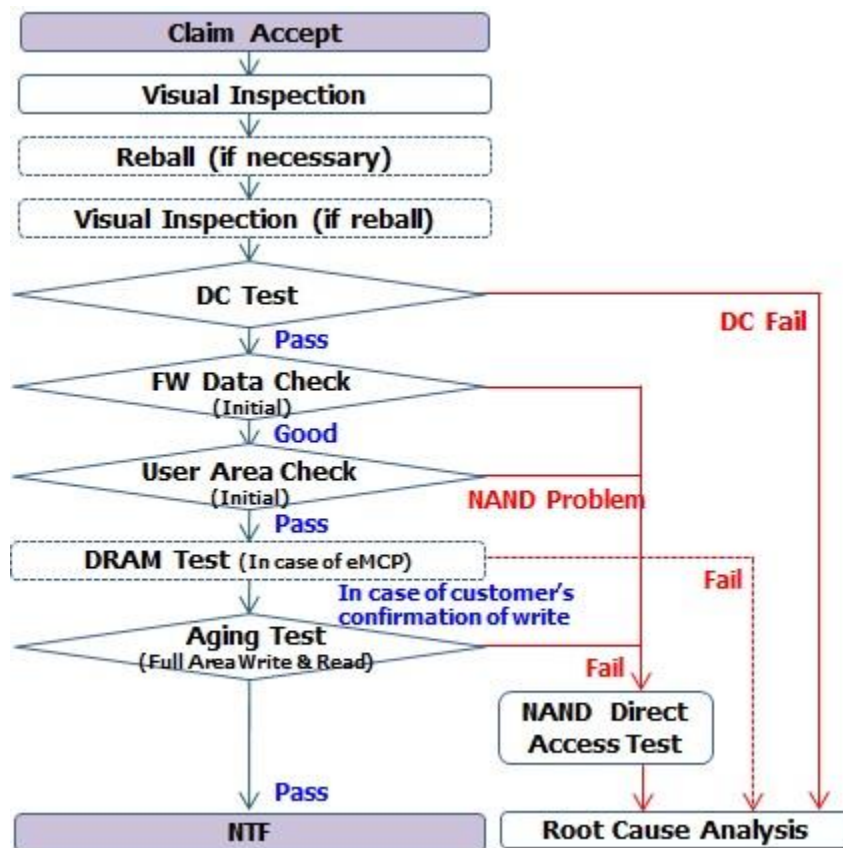
DISCIPLINE 3. DEFINE THE ROOT CAUSE

3.1 Summary

Based on our analysis, the returned part(s) has been verified and the FA result is presented below;

S/N	Customer S/N	W/C	Lot No	Failure Information	Analysis Result
1	1	213	NTWF99IKU	Cannot download system FW then stop at 7%.	CND
2	2	210	NTB7KKIIS		CND
3	3	243	SHVR4SGAS		CND
4	4	249	NV2AWSGQS		CND
5	5	204	SGABKGG2N		CND

3.1.1 Analysis Flow Chart



3.2 Failure Analysis Techniques and Results

3.2.1 Visual Inspection

Visual inspection was performed using naked eyes, and followed by a microscope inspection to find any defect or contaminations. Please refer to the followings:

S/N	Customer S/N	W/C	Lot No	Analysis Results
1	1	213	NTWF99IKU	GOOD
2	2	210	NTB7KKIIS	GOOD
3	3	243	SHVR4SGAS	GOOD
4	4	249	NV2AWSGQS	GOOD
5	5	204	SGABKGG2N	GOOD

3.2.2 DC Test

A DC test was performed on the returned unit(s) and the Table below has the results:

S/N	Customer S/N	DC Test		
		Open/Short Test	Leakage Current Test	Standby Test
1	1	PASS	PASS	PASS
2	2	PASS	PASS	PASS
3	3	PASS	PASS	PASS
4	4	PASS	PASS	PASS
5	5	PASS	PASS	PASS

3.2.3 FW Analysis Result

A firmware analysis was performed and the Table below has the test results.

S/N	Customer S/N	W/C	Lot No	Initialization Test Results	FW Analysis Results
1	1	213	NTWF99IKU	FAIL	Meta corruption
2	2	210	NTB7KKIIS	PASS	UECC
3	3	243	SHVR4SGAS	FAIL	Meta corruption
4	4	249	NV2AWSGQS	FAIL	Meta corruption
5	5	204	SGABKGG2N	FAIL	Meta corruption

3.2.4 NAND Level Test Result

To duplicate the customer failure symptom, functional test was performed. The results are as below;

S/N	Customer S/N	W/C	Lot No	Analysis Results
1	1	213	NTWF99IKU	PASS
2	2	210	NTB7KKIIS	PASS (UECC Not Duplicated)
3	3	243	SHVR4SGAS	PASS
4	4	249	NV2AWSGQS	PASS
5	5	204	SGABKGG2N	PASS

3.2.5 Functionality & Aging Test

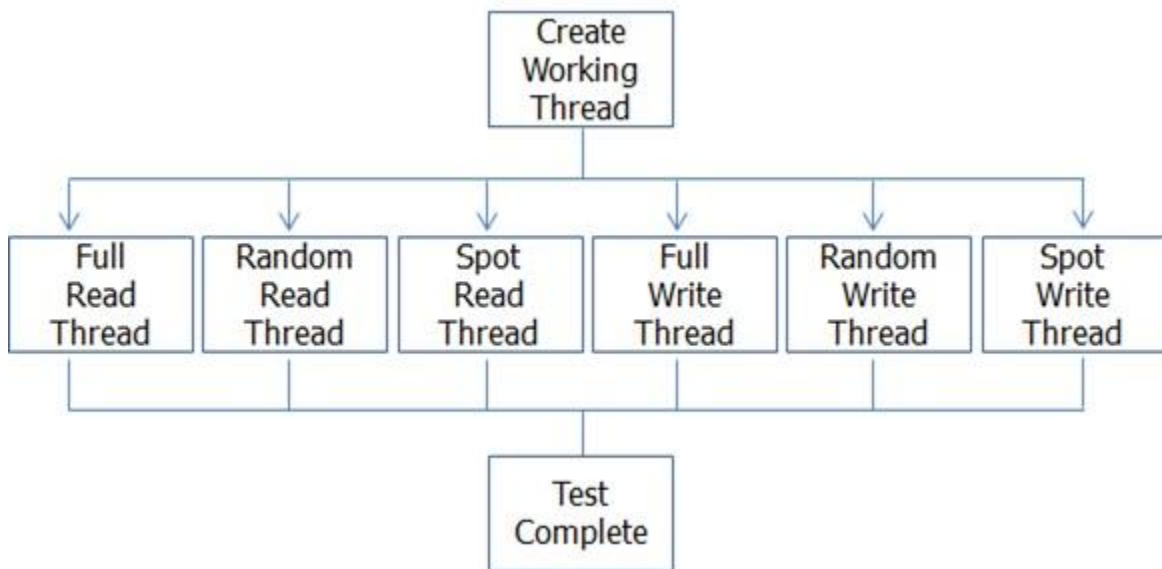
To duplicate the customer failure symptom, functional test and aging test was performed. The results are as below;

S/N	Customer S/N	W/C	Lot No	Functionality Results	Aging Results
1	1	213	NTWF99IKU	PASS	PASS
2	2	210	NTB7KKIIS	PASS	PASS
3	3	243	SHVR4SGAS	PASS	PASS
4	4	249	NV2AWSGQS	PASS	PASS
5	5	204	SGABKGG2N	PASS	PASS

We performed the Aging test over 24 hours totally on the chamber.

As a result, device had passed an additional test without any failure symptoms.

Test conditions are as below.



[Test Flow]

Test Item :

1. Operation : Sequential Write & Read, Random Write & Read
2. eMMC Pattern : Test Worst Pattern & Random Pattern
3. User Scenario (File Copy & Paste)

DISCIPLINE 4. CONTAINMENT PLAN

NA

DISCIPLINE 5. PERMANENT CORRECTIVE ACTION

NA

DISCIPLINE 6. VERIFICATION OF EFFECTIVENESS

NA

DISCIPLINE 7. PREVENT RECURRENCE

Based on our analysis, conclusion was made for the returned part(s) as per below and please refer to our action(s) for each mode(s).

Conclusion

Fail Mode	Quantity		Sample No.
CND	5	Part(s)	1,2,3,4,5

7.1 CND (Can Not Duplicated)

Based on the test results, we think the failed units were caused by unexpected environment which is sudden power off, unstable power supply etc.

DISCIPLINE 8. CONGRATULATE THE TEAM

We really appreciate customer's feedback to improve the quality of SAMSUNG products. We have been doing our best to resolve each quality issue from customers continuously.