8D Report

Customer Name	Weikeng	***Support Case #***	01539953
Customer Tracking #	Not specified	***Microchip FA #***	2025-00247
Customer Part #	Not specified	***Version***	8D report ver.01
Microchip Part #	DSPIC33CK64MC105-H/M4VAO	***Report Date***	2025-02-10
		Next Update	NA

Executive Summary

What problem was noticed by the customer?	The customer while testing the cooling fan speed, which showed a significant deviation.
What failure mode did Microchip verify?	The returned units did not reveal anomalies on external visual, X-ray, Curve trace, and C-SAM inspection. Microchip Automatic Test Equipment (ATE) verified that the returned units passed all functional and parametric including oscillator and frequency testing on ATE test at 25°C (room), 150°C (hot), and - 40°C (cold) temperature conditions. The customer reported problem was analyzed by Microchip and categorized as Non-Fail.
What is the root cause?	Customer reported problem was analyzed by Microchip and categorized as Non-Fail
Why did this device pass Microchip testing?	The unit passed based on the datasheet parameters before delivery.
What is Microchip doing to fix it?	The customer may seek the help of the Microchip Application Support Team for further analysis, if needed.
What is the estimated risk?	Microchip could not determine any risk for customer-returned unit that is verified as passing (no trouble found).

8D Report

Customer Tracking Information		Microchip Tracking Information	
Customer Name	Weikeng	***Failure Analysis #***	2025-00247
Customer Address	China	***Microchip Part Number***	DSPIC33CK64MC105-H/M4VAO
Customer Contact	shen qingzheng qingzheng.shen@weikeng.com.cn	***Number of Parts Returned***	2
Customer Tracking Number	N/A	***Part Received Date***	2025-01-17
Customer Part Number	N/A	***3D Report Date***	2025-01-21
End Customer	Not specified	***8D Target Date***	2025-02-04

D1 – Team Members

Name	Title	Department
Jovelle Almeria	Sr. Engineer I (8D Team Leader)	Customer Quality Engineering
Orlando Huang	Sr. Customer Quality Engineer	Customer Quality Management
Prasert Karaket	FA Technician (Initial Analysis)	Failure Analysis
Aris Dapatnapo	CQE Tech IV	Customer Quality Engineering

D2 – Problem Description

Customer incident description:

The DSPIC33CK64MC105T-H/M4VAO (Tracecode: 2351PY5) has a significant oscillator error, causing frequency deviation. Faulty chips were found to have an error margin of approximately 8%-9%.This issue was discovered by the customer while testing the cooling fan speed, which showed a significant deviation. Upon investigation, it was determined that the large deviation in motor speed, The KGU was 802 RPM(MCU: 70Mhz), and the fail was 760 RPM(MCU: 64-65Mhz)., was due to the oscillator error, matching the clock deviation

Microchip Comment:

Sample	Date Code	Customer Failure Origin
1, 2	2351	Line Pull

Microchip Incident Description:

Microchip Automatic Test Equipment (ATE) verified that the returned units passed all functional and parametric including oscillator and frequency testing on ATE test at 25°C (room), 150°C (hot), and - 40°C (cold) temperature conditions.

D3 – Implement and Verify Interim Containment Actions

Microchip Device Information:

Microchip Part	DSPIC33CK64MC105-H/M4VAO
Package Type	48 UQFN
Manufacture Product Code (MPC)	WAC07MPTXVA1
Mask	WAC07
Technology	FOUNDRY
Business Unit	MCU16
Wafer Fab Location	TC14: Taiwan Semiconductor Manufacturing Corp.
Assembly Location	ANAC: Amkor Assembly & Test (Shanghai) Co.,Ltd
Final Test Location	MTAI: Microchip Thailand

Lot Genealogy Information:

Sample #	Fab Lot #	Fab Date	Trace Code	Assembly Lot #	Final Test Date
SN1	TC14924020328.300	2023-04-11	2351PY5	ANAC243800041.000	2024-01-08
SN2	TC14924020328.300	2023-04-11	2351PY5	ANAC243800041.000	2024-01-08

Production Data Analysis / Lot History Review:	Yes	No	Comment
Device was fabricated to all standard manufacturing processes?	x		Referencing fab and assembly lot numbers.
Final electrical test yields and results were standard?	x		
Is this a Test escape?		x	
Other confirmed fails from same manufacturing lot?		x	Referencing fab and assembly lot numbers.
Automotive grade part?	x		

Risk Assessment

Final	Low risk. Lot history check does not reveal any major risk with the reported lot. The test yields were normal and there was no recorded anomaly during processing. Microchip could not determine any risk for the customer returned unit that is verified as passing and with no trouble found.

Containment Actions:

Action #	Action Description	Implementation Date
1	Check the manufacturing history of the affected lot/s at Microchip with reference to the fab and assembly lot numbers. Result:	2025-01-21
2	Check for any remaining inventory of the affected lot/s at Microchip and at the customer. Provide disposition guidance. Result: All potentially affected materials were shipped. No materials to contain at Microchip.	2025-01-21
3	Check the shipment record of the affected lot/s. Provide disposition guidance. Check the shipment of the affected lot. Result: • Total shipment: 6893K pcs • Weiking: 6813K pcs • Other customer shipment: 80 pcs • The latest shipment date was 2024-12-13.	2025-01-21

ORDERNO	LOTID	SHIPNO	SHIPDATE	SHIPQTY	CUSTNAME
22495867	243800041000ANAC	B-HK-WE2-S16705298	1/10/2024 0:00	549	Weikeng International Co., Ltd.
22516087	243800041000ANAC	B-HK-WE2-S16776239	2/19/2024 0:00	3477	Weikeng International Co., Ltd.
30523893	243800041000ANAC	P-E-MLN-S16886436	4/26/2024 0:00	50	Hanon Systems Italia Campiglione
30526977	243800041000ANAC	P-JP-MN4-S16985050	6/16/2024 0:00	19	MACNICA, Inc.
30526977	243800041000ANAC	P-JP-MN4-S16985050	6/16/2024 0:00	11	MACNICA, Inc.
22669331	243800041000ANAC	B-HK-WE2-S17272319	12/13/2024 0:00	2562	Weikeng International Co., Ltd.
22669331	243800041000ANAC	B-HK-WE2-S17272319	12/13/2024 0:00	225	Weikeng International Co., Ltd.
				6893	Total
				6813	Weikeng International Co., Ltd.
				80	Other Customer

For now, no immediate action is to be taken with the affected lots that have already been used by the customer.

D4 – Define and Verify Root Cause(s)

Root Cause Analysis Summary

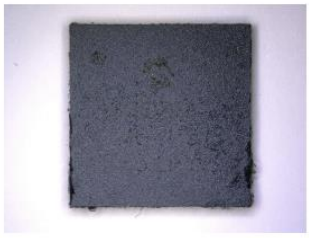
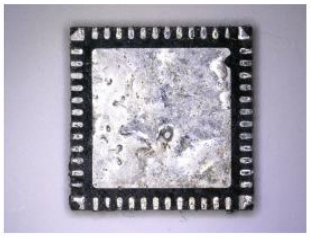
The returned units did not reveal anomalies on external visual, X-ray, Curve trace, and C-SAM inspection. Microchip Automatic Test Equipment (ATE) verified that the returned units passed all functional and parametric including oscillator and frequency testing on ATE test at 25°C (room), 150°C (hot), and - 40°C (cold) temperature conditions.

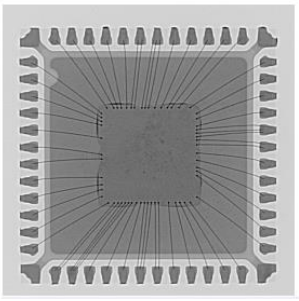
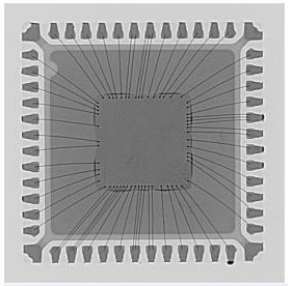
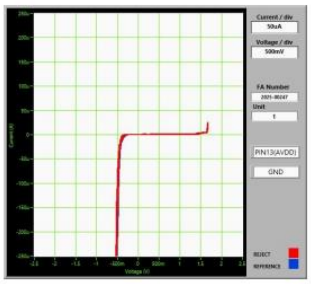
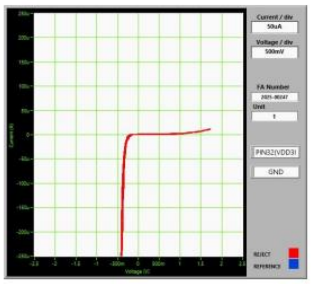
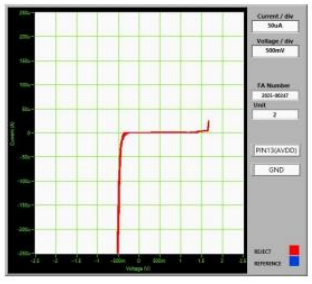
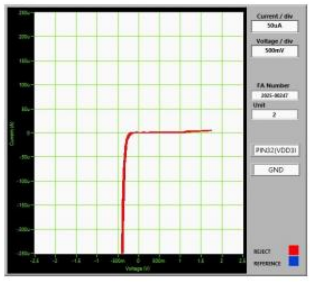
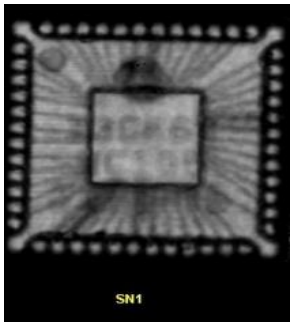
The customer reported problem was analyzed by Microchip and categorized as Non-Fail.

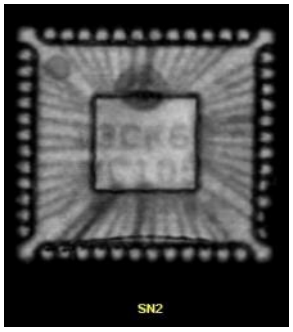
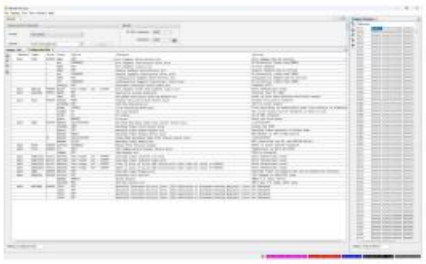
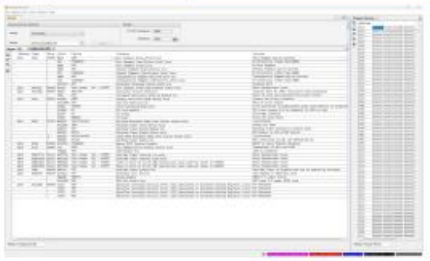
Root Cause Summary Table:

Sample	Failure Mode	Occurrence Root Cause	Non-detection Root Cause
1, 2	No problem found	Not applicable	Not applicable

Failure Analysis Results:

Verification action	Sample	Results
External Visual Inspection	1	Upon receipt. Solder and flux residue was observed during external visual inspection.  
	2	Upon receipt. Solder and flux residue was observed during external visual inspection.  
X-RAY analysis	1	No anomaly was observed.

		
	2	No anomaly was observed. 
Curve Trace analysis	1	No open/short I-V curve was observed at all pins with respected to ground.  
	2	No open/short I-V curve was observed at all pins with respected to ground.  
Scanning Acoustic Microscopy (SAM) analysis	1	No red spot-on die surface. 

	2	No red spot-on die surface. 
Incoming Read	1	No anomaly was observed. 
	2	No anomaly was observed. 
Automated Tester Equipment (ATE)	1, 2	Microchip Automatic Test Equipment (ATE) verified that the returned unit passed all functional and parametric on ATE test at 25°C (room), 150°C (hot), and - 40°C (cold) temperature conditions.

D5 – Define and Verify Corrective/Improvement Actions

Occurrence Corrective/Improvement Actions Summary

Not applicable.

Non-Detection Corrective/Improvement Actions Summary

Not applicable.

As a result of the above problem analysis, Microchip has defined the following corrective actions:

Corrective Action Plan:

Action	Planned Date	Responsible
Not applicable.		

D6 – Implement Corrective Actions

Implementation Plan:

Root Cause Type	Action / Verification of Effectiveness	Implementation Date	Cutoff Date / Date Code
Occurrence	Not applicable.		
Non-Detection	Not applicable.		

D7 – Prevent Recurrence

Microchip has defined the following preventative actions:

Category	Actions	Date	Comment
Failure Mode and Effects Analysis (DFMEA, PFMEA)	Not applicable	Not applicable	Not applicable
Control Plan	Not applicable	Not applicable	Not applicable
Procedure, Work Instruction	Not applicable	Not applicable	Not applicable
Look Across / Fan Out	Not applicable	Not applicable	Not applicable
Other	Not applicable	Not applicable	Not applicable

Microchip's Zero Defects efforts are focused on the continuous improvement of systems and processes to make them more robust and improve overall product quality and reliability. Due to the nature of semiconductor manufacturing, improvement efforts are intended to reduce the probability of occurrence if not complete elimination.

D8 – Microchip 8D Approval

Customer reported problem was analyzed by Microchip and categorized as: **Non-fail.**
Microchip Management is kept informed by means of various Quality Metrics which contribute to the identification of systemic improvement initiatives.

The problem-solving team has identified actions to address the customer's reported deviation. This report has been electronically approved (without signatures).

Thanks to the team for their continued support.

8D Author: Jovelle Almeria
8D Approver: Orlando Huang

Status of the FA samples: Unit is kept at Microchip.