si electronics

Report
SI2XXXX

Date: 28.05.2025
Document-ID: EV_009

General Information	
End Customer*:	Your Company Your Street Your City Your Country
Report No.:	**SI25XXXX**
CPO*:	**Your Order Number**
Order No.*:	EL-DEA-XXXXXX

* Information provided by the client (purchase department SI Electronics GmbH - purchasing@si-electronics.com)

Product information	
Part No.:	MT29F8G16ADBDAH4-AIT:D TR
Package type:	63-ball VFBGA
Manufacturer:	Micron
Date Code:	1722, 1724
Qty received:	4730
Qty Inspected:	30
Qty after DPA:	**4728**
Data Sheet:	Link

Objective of analysis and methods used

The objective of this analysis is to investigate the components for any anomalies or indications of potential component manipulation. To accomplish this, the samples will undergo microscopic examinations and an acetone surface test. Additionally, the material of the lead finish will be analyzed and compared against the datasheet using LIBS. The internal structure of the components will be visualized and compared to each other using X-ray inspection.

Conclusion

The investigations revealed no abnormalities or indications of possible component manipulation. Therefore, the examined components are considered inconspicuous and unused.

Component evaluation: Unused Parts **Quality inspection:** Passed

Person responsible

Prepared by:	Matthias Schwabe	Approved by:	Dr.-Ing. Paul Braun
Date:	09.04.2025	Date:	09.04.2025

Investigated Samples

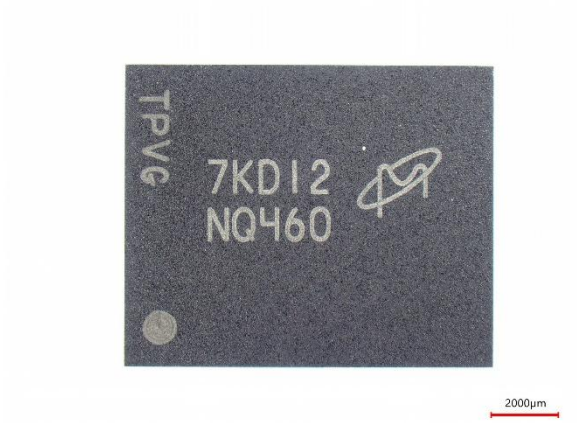

Fig. 1: Top

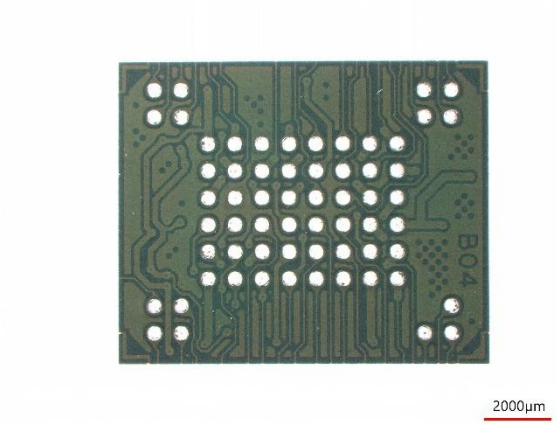

Fig. 2: Bottom

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1. Discussion

Packaging Inspection **inconspicuous**

The delivery packaging of the components was in impeccable condition, with no signs of damage. The components were securely delivered in an inner box in ESD-protective packaging within Tape&Reel. According to the label, the components have a Moisture Sensitivity Level (MSL) of 3 and have been properly packaged with silica gel and a moisture indicator, complying with the standard requirements. The packaging has been labeled with new labels, displaying the date code. Furthermore, all labels on the same packaging unit are identical to each other.

All examined components have the same orientation in the Tape&Reel. However, the leader is not sufficiently long. For this reason, a special leader tape was spliced onto the tape & reel to meet the requirements of DIN EN IEC 60286-3.

Detailed Visual Inspection **inconspicuous**

In the preliminary examination, all components exhibit a similar appearance, which indicates the same handling, packaging, and storage conditions. Furthermore, all components of the same date code have the same marking. The component marking is well-legible, featuring the manufacturers logo of Micron and the part marking "NQ460" which is in accordance with the data sheet. Further, the date code as well as the trace/lot code is shown on the part marking.

The microscopic examination of the package surface reveals characteristic structures, providing no indication of possible manipulation. No color dots are visible on the component casings that could suggest prior programming. Neither flux residue nor chemical deposits can be detected on the casings of the components. The molding compound material of the components does not exhibit any cracks or other anomalies that could be associated with transportation damage or prior use. Furthermore, the components housing show no signs of exposure to elevated temperatures, which could indicate ESD, EOS damage, or similar issues. Additionally, the housing edges display a characteristic radius, which strongly indicates that surface manipulation can be effectively ruled out. The solder spheres of the components exhibit no notable irregularities, such as deep scratches, cracks, excessive solder, nor excess flux or the like. Additionally, the interposer of the examined components does not show any noticeable issues, such as untypical scratches, significant contaminations, scratches underneath the BGA spheres or conspicuous debris around the spheres. Moreover, the BGA spheres display no crushed or flattened BGA spheres; they display a typical and uniform shape.

The surfaces of the solder spheres exhibit an expected morphology, minimal discoloration, without areas of oxidation. Imprints on the contact area of the solder spheres indicating a previous electrical test.

The general condition of the goods is consistent with the specified date code.

Surface Test **inconspicuous**

The surface test yields no indications of potential component manipulation. The surface structure remains unchanged through the test and the component marking remains legible. The component marking remains legible with no prior concealed markings becoming visible. Only typical cleaning effects are observed, without any significant alterations, signs of discoloration, cracks, separations, swelling, softening nor degradation of the molding compound.

Mechanical Inspection **inconspicuous**

The measured package dimensions are in accordance with the specifications stated in the datasheet.

Fourier Transform Infrared Spectroscopy **inconspicuous**

The FTIR analysis revealed that the recorded spectra are typical for molding compounds for IC devices. The bands of the filler (Si-O-Si and Si-O) at wavenumbers around 1100 cm^{-1} and 1250 cm^{-1} are clearly identifiable. Small absorption peaks, attributable to the resin used, are present. There are no unusually pronounced absorption peaks that would indicate the use of a new coating system in terms of component manipulation. A comparison with a reference spectrum from the SI database showed a match of 98.1 %. Overall, the FTIR analysis can be considered inconspicuous.

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Discussion

Lead Finish Evaluation (LIBS) — inconspicuous

The LIBS analysis has revealed that the lead finish is composed of an alloy of tin (Sn), silver (Ag) and copper (Cu). This lead finish is consistent with the specifications stated in the datasheet for this component.

X-Ray Inspection — inconspicuous

The X-ray inspection shows that the examined components exhibit typical structures for their type. The internal arrangement remains consistent across all components. Further, the semiconductor is faintly discernible. The size and position of the semiconductor are consistent among all components. No signs of damage, such as cracks, deformations, or unusual patterns, were detected in the interposer or bond wire. In addition, the solder balls display a characteristic shape without any noticeable voids, which would suggest a "reballing" of the components.

Decapsulation — inconspicuous

The Decapsulation has shown that the components contain two similar dies. Those exposed semiconductors show typical structures for a FLASH Memories - NAND Single Level Cell. Further, the dies are marked with the inscription 'Micron Technology Inc' which is in accordance with the data sheet. Moreover, on the semiconductors the copyright date of 2009, as well as the mask ID 'M60A', can be recognized. Additionally, the semiconductors are marked with the logo of the manufacturer 'Micron'. The light microscopic examination of the semiconductors did not reveal any abnormalities in the form of contaminations, ESD/EOS damage, nor double wire bonding.

The component appearance and dies of this test sample were compared with the appearance and dies from a previous delivery. The images of the dies were digitally overlaid, and the layout was visually inspected. No differences between the layouts of the two dies could be identified.

In sum, the decapsulation is evaluated inconspicuous.

Solderability Test — inconspicuous

The solderability analysis of the solder contacts has shown that all criteria defined by the standard IPC J-STD-002E 2017 are met. The wetting curves exhibit an immediate start of wetting followed by a typical increase of wetting forces to high forces. Upon reaching the peak wetting forces, there is a marginal decline, suggesting that minimal dewetting occurs; however, the threshold of F2 is not breached.

Based on the results, a reliable processing of the components in a real reflow process with preheating and protective gas atmosphere can be expected.

Conclusion

The investigations revealed no abnormalities or indications of possible component manipulation. Therefore, the examined components are considered inconspicuous and unused.

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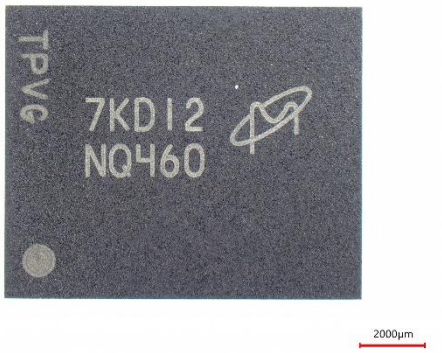
2. Part Details

Obsolescence[1]	High Risk
Compliance[2]	Low Risk
Market[3]	High Risk
Technology[4]	Low Risk
Multi-Sourcing[5]	High Risk
Manufacturer Score[6]	Medium Risk



Summary

Source	Link
Part Number	MT29F8G16ADBDAH4-AIT:D TR
Supplier Name	Micron Technology, Inc.
Product Type	Flash Memories
Part Lifecycle	Obsolete
RoHS (2011/65/EU)	Compliant
Description	FLASH - NAND (SLC) 8Gbit 512M x 16 1.7V - 1.95V ONFI 1.0 22ns 25ns 63-BGA T/R
Company Package Name	63-VFBGA (9x11)
Reel Diameter	13" Reel
Packaging Quantity	1,000
Family	MT29F8G16ADBDAH4-A
Manufacturing Locations	1
Part Grade	Industrial| Temp-40°C (TA) to 85°C (TA)
Lead Finish	SnAgCu
Packaging Type	Tape and Reel
Part Tags	Critical, Thin Package
Net Weight	N/A

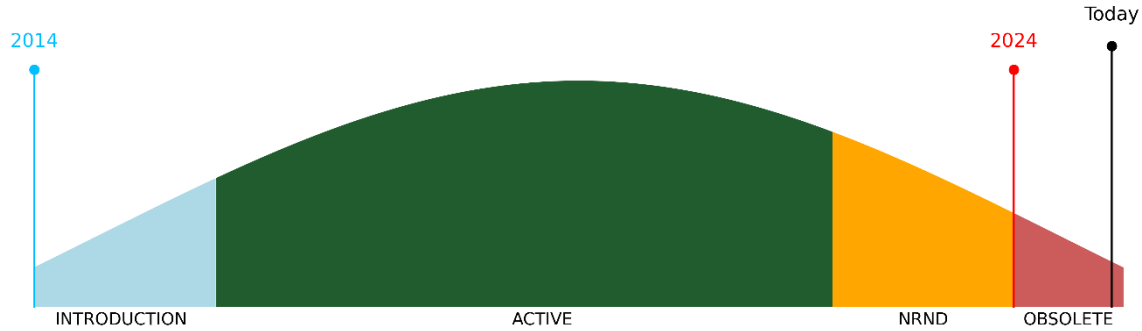


Fig. 3: Lifecycle of MPN MT29F8G16ADBDAH4-AIT:D TR

Part Details

Lifecycle Source	Open Source
Z2 Lifecycle Forecast	0
Part Introduction Date	2014
Last Datasheet update Date	July 26, 2021
Last PCN issued Date	March 22, 2024
Commodity average Years to EOL	8

Manufacturing

MSL	N/A
MSL Source	Open Source
Base Material	N/A
Base Material Source	Open Source
Maximum Reflow Temperature	260°C
Maximum Reflow Temperature Source	Open Source
Maximum Wave Temperature	N/A
Reflow Solder Time	30
Wave Solder Time	N/A
Number Of Reflow Cycle	3
Lead Finish Plating	SnAgCu
Lead Finish Plating Source	Open Source

Production sites of MT29F8G16ADBDAH4-AIT:D TR

[1] **Obsolescence Risk**
The Obsolescence Risk Score takes into account factors such as current lifecycle status, estimated years to end of life, the supplier's obsolescence behavior in the past and more.
A high obsolescence risk score means this part is not recommended for continued use or for selection in your bill of materials.

[2] **Compliance Risk**
The Compliance Risk Score takes into account this part's compliance with environmental regulations such as RoHS, REACH, China RoHS and more. It is suggested to find compliant crosses or replacements for parts that have a high compliant risk score.

[3] **Market Availability Risk**
The Market Availability Risk Score takes into account factors such as current inventory availability from authorized distributors, shortages, lead-times and more.
See distributors currently stocking this part by clicking the Sellers link in the sections below.

[4] **Technology Risk**
The Technology Risk Score measures whether this part has newer technology upgrades available or is a legacy technology.
It is suggested to find newer technology upgrades for parts with high technology risk scores.

[5] **Multi-Sourcing Risk**
The Multi-Sourcing Risk Score measures whether this part can easily be crossed to other suppliers.
Certain products cannot be crossed easily due to their technology types which makes your dependency risk higher on those parts.

[6] **Manufacturer Risk**
The Manufacturer Risk Score takes into account factors such as this Manufacturers financial performance, impactful current litigations, years in business, employee count and more.
A Weak manufacturer status may indicate a need to find viable alternatives for its products due to potential upcoming instability in the Manufacturers business operations.

3. Packaging Inspection

Aim of analysis:	Goods receipt inspection.
Experimental:	The condition of the goods delivered is checked and documented using digital cameras and microscopes. The criteria of the IDEA-STD-1010 standard were taken into account.
	Sampling:
	After identifying which components share the same date code and/or lot code, thus forming a homogeneous lot, the components to be inspected were randomly selected from the entire lot. In the case of reels, the components were taken from the beginning, middle, and end of the tape accordingly.
Conducted by:	Alina Kleiber
Inspection date:	07.04.2025
Part No.:	MT29F8G16ADBDAH4-AIT:D TR
Package type:	63-ball VFBGA
Manufacturer:	Micron

Used Instruments

1st Instrument:	Digital Camera
Inventory ID:	L010
2nd Instrument:	Digital Microscope
Inventory ID:	L011
3rd Instrument:	X-Ray Counter
Inventory ID:	L013
Last inspection:	07.08.2023
Next inspection:	07.08.2025

Packaging Inspection

Received Date Codes and Sample Set definition

Tab. 1: Goods received

Sample set	Date Code	Date received	Packaging	Received quantity	Samples inspected	Samples for DPA	Comment
1	1722	07.04.2025	Tape&Reel	916	15	1	
2	1724	07.04.2025	Tape&Reel	3814	15	1	
			Total Quantity:	4730	30	2	
			Quantity after DPA:	4728			

Received Package Units

Tab. 2: Received Package Units

PU-ID	Lot-Code	Trace-Code	Date Code	Quantity
NNNNN-1	ADNNNNNN	D0NNNNNN	1724	821
NNNNN -2	ADNNNNNN	D0NNNNNN	1724	494
NNNNN -3	ADNNNNNN	D0NNNNNN	1724	1083
NNNNN -4 (sampled)	ADNNNNNN	D0NNNNNN	1722	916
NNNNN -5 (sampled)	ADNNNNNN	D0NNNNNN	1724	1416

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Packaging Inspection

Fig. 4: Inner box

Fig. 5: Tape&Reel

Packaging Inspection

Fig. 6: Exemplarily label

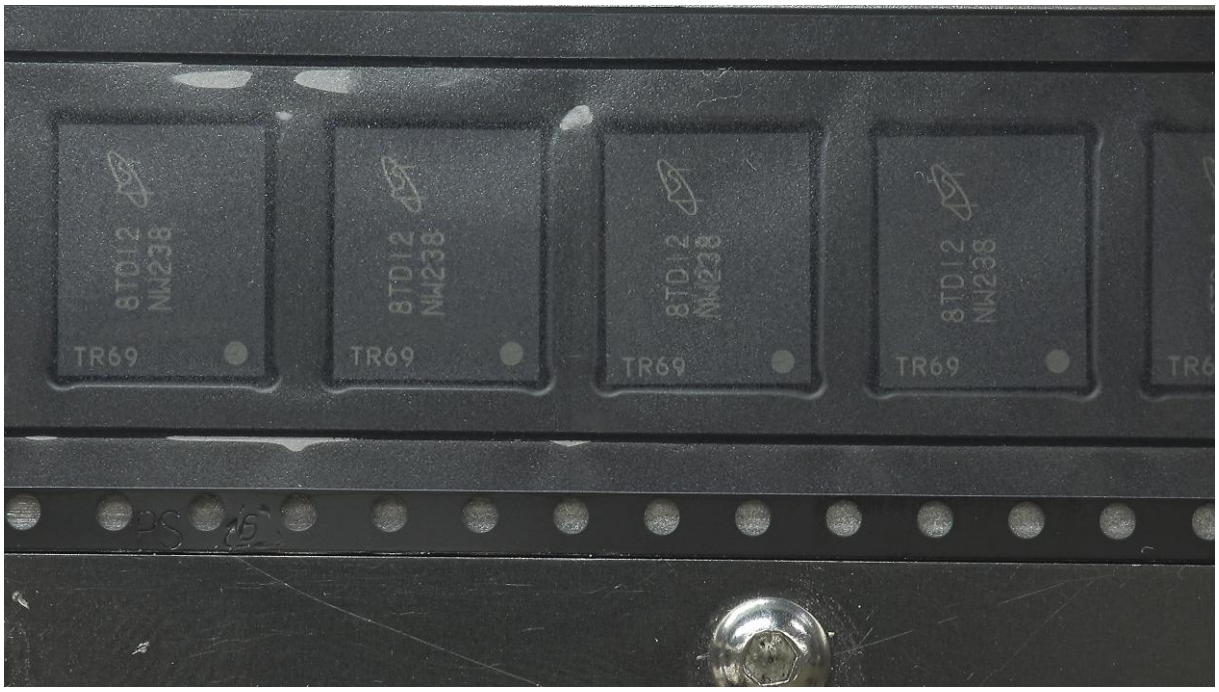

Fig. 7: Components in Tape&Reel

X-Ray Counting

Fig. 8: PU-ID: 3212-1

Fig. 9: PU-ID: 3212-2

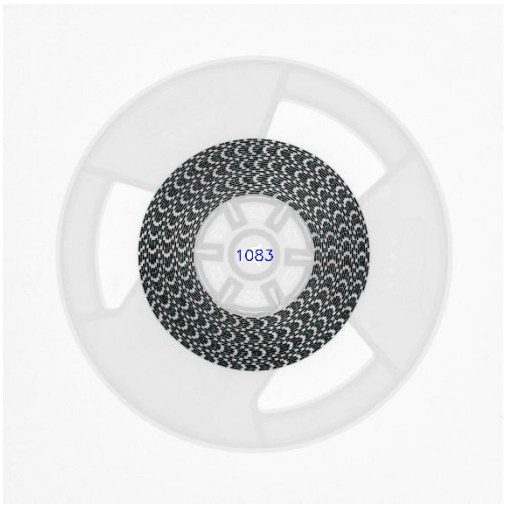

Fig. 10: PU-ID: 3212-3

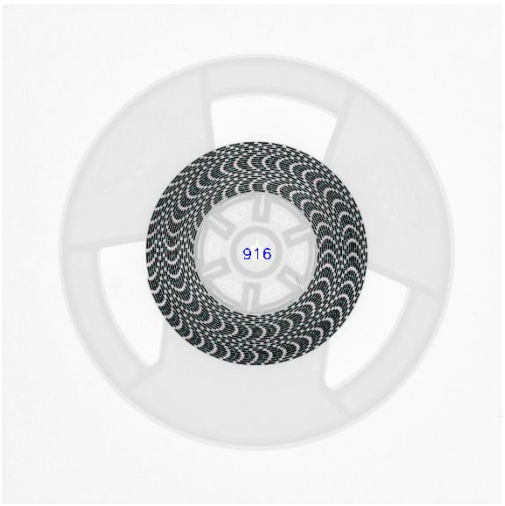

Fig. 11: PU-ID: 3212-4

Fig. 12: PU-ID: 3212-5

4. Detailed Visual Inspection

Aim of analysis:	The visually verifiable properties of the samples are intended to be inspected using advanced microscopic methods in accordance with the standard IDEA-STD-1010-B.
Experimental:	First, the sample is examined using a stereomicroscope to determine if the appearance of the components is homogeneous. Special attention is given to the surface of the package, the legibility of the markings, and the solder contacts, as described in the IDEA-STD-1010-B standard. If the sample appears homogeneous, a randomly selected component is documented using a Digital 3D-Microscope. In the case of any noticeable deviations in the sample, the discrepancies are documented. To obtain high-resolution and depth-focused images, the focus is automatically adjusted at different heights, and a stack of images is combined to create a sharp image with an extended depth of field.
Conducted by:	Alina Kleiber
Inspection date:	08.04.2025
Part No.:	MT29F8G16ADBDAH4-AIT:D TR
Package type:	63-ball VFBGA
Manufacturer:	Micron

Used Instruments

1st Instrument:	Stereomicroscope
Inventory ID:	L012
2nd Instrument:	Digital 3D-Microscope
Inventory ID:	L004
Last inspection:	21.03.2025
Next inspection:	21.03.2026

Detailed Visual Inspection

Sample Set 1 - DC 1722

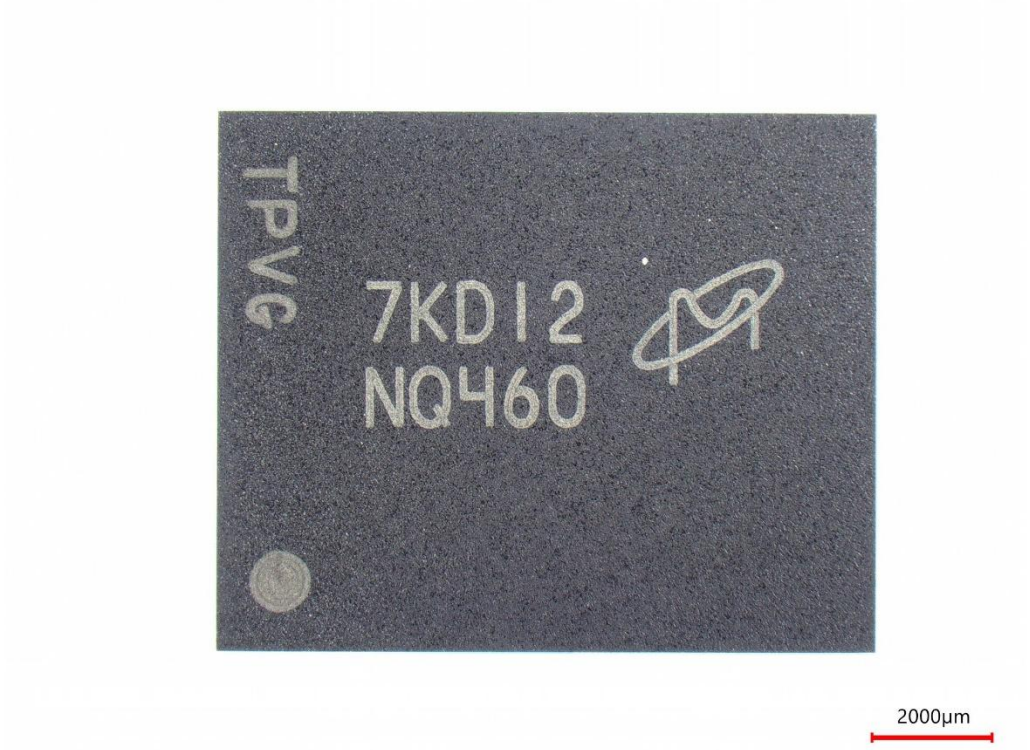

Fig. 13: Top

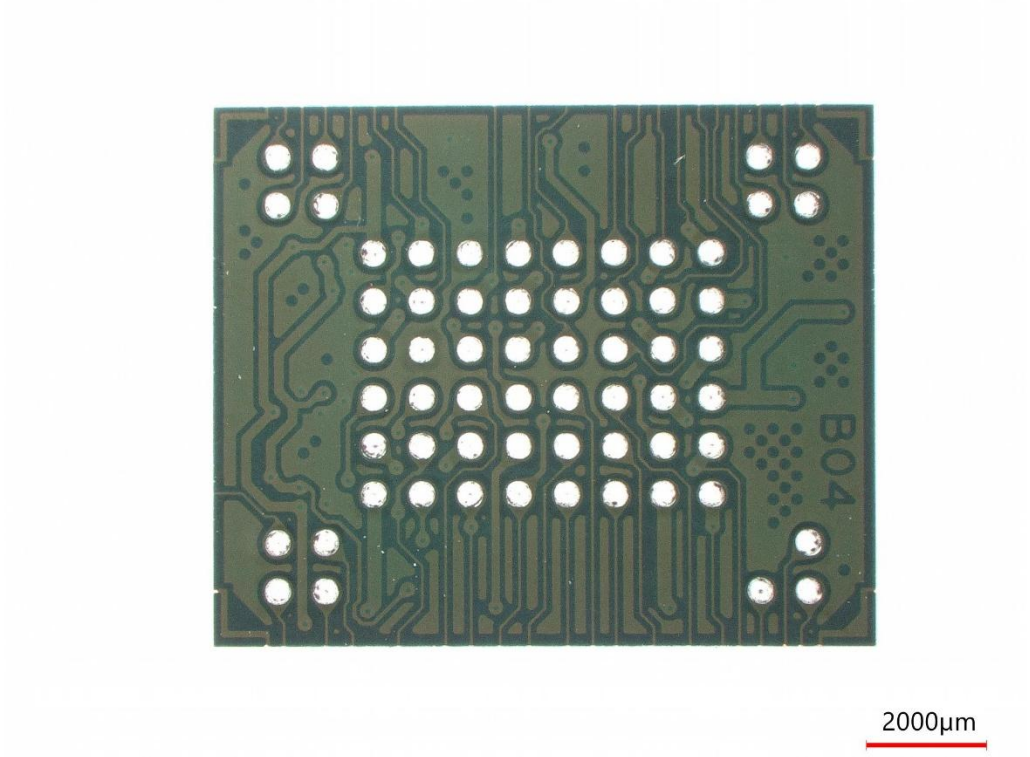

Fig. 14: Bottom

Detailed Visual Inspection

Sample Set 1 - DC 1722

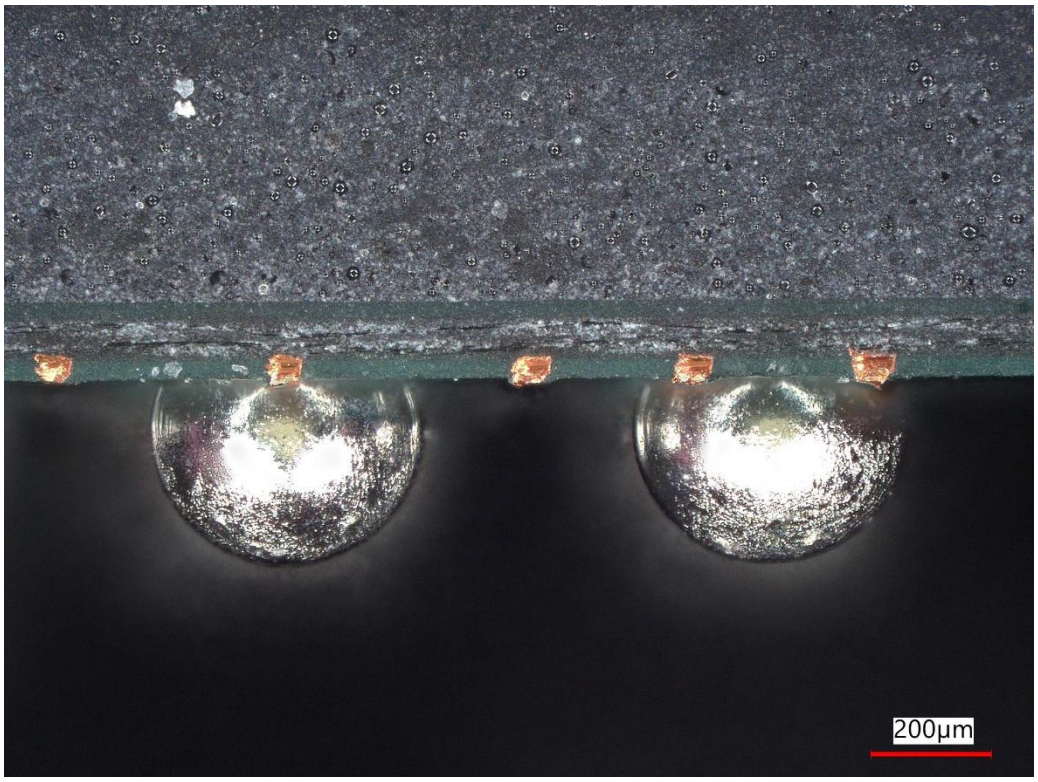

Fig. 15: Side view with solder spheres

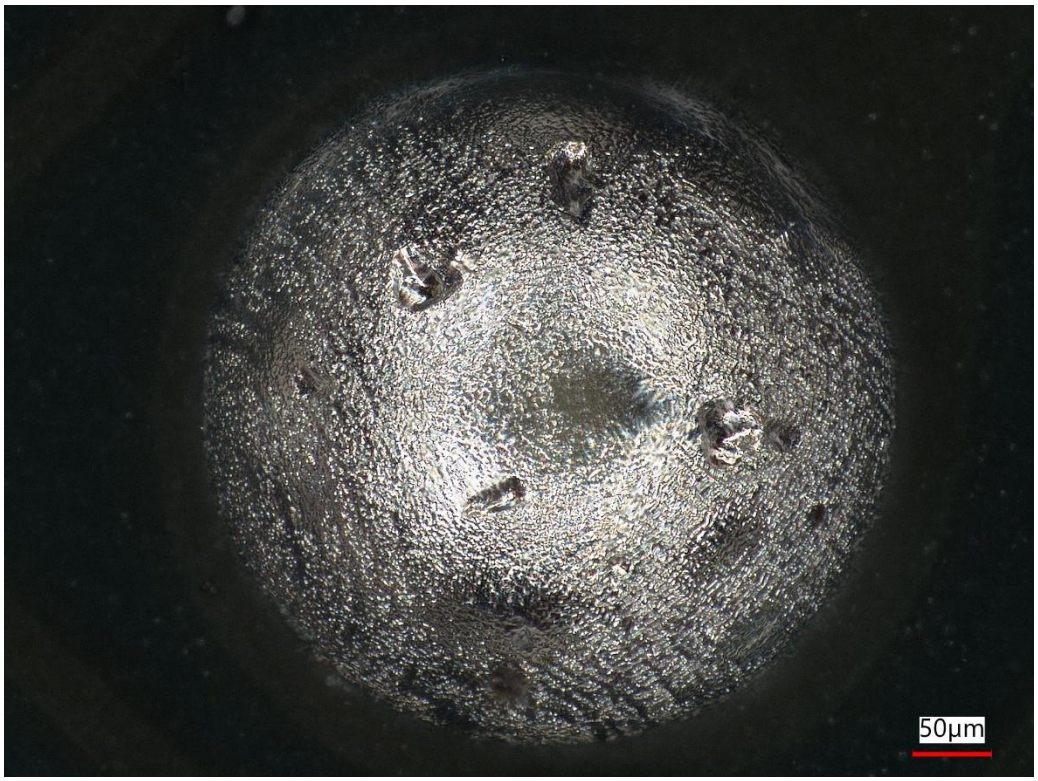

Fig. 16: Solder sphere

Detailed Visual Inspection

Sample Set 1 - DC 1722

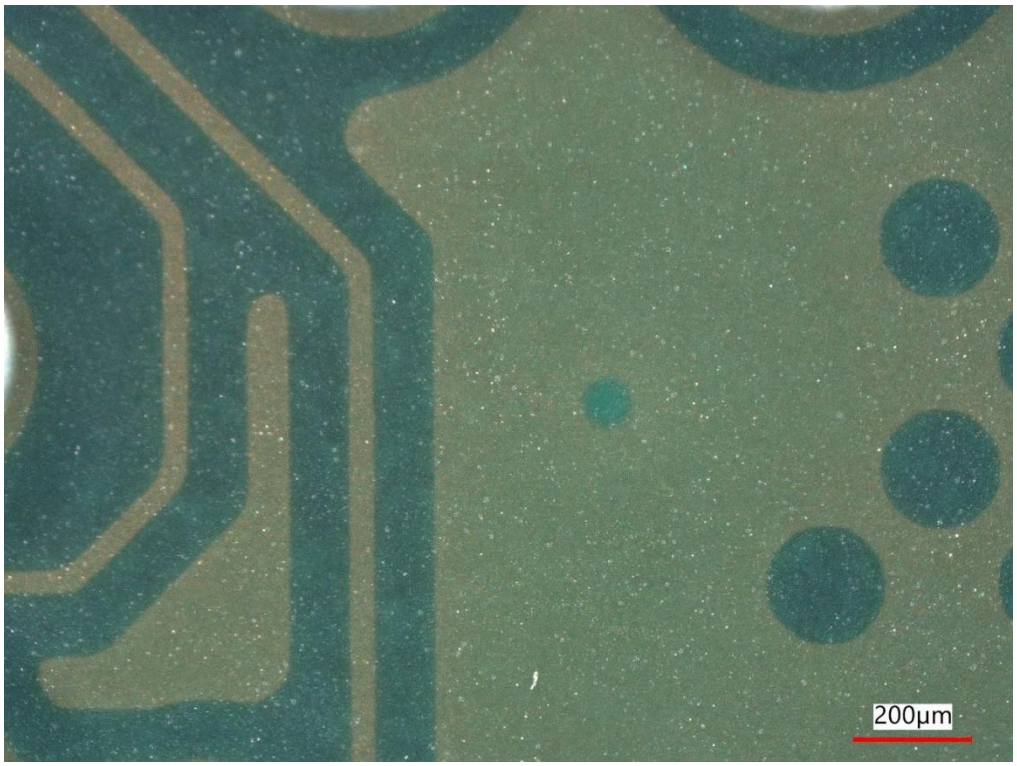

Fig. 17: Interposer

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Detailed Visual Inspection

Sample Set 2 - DC 1724

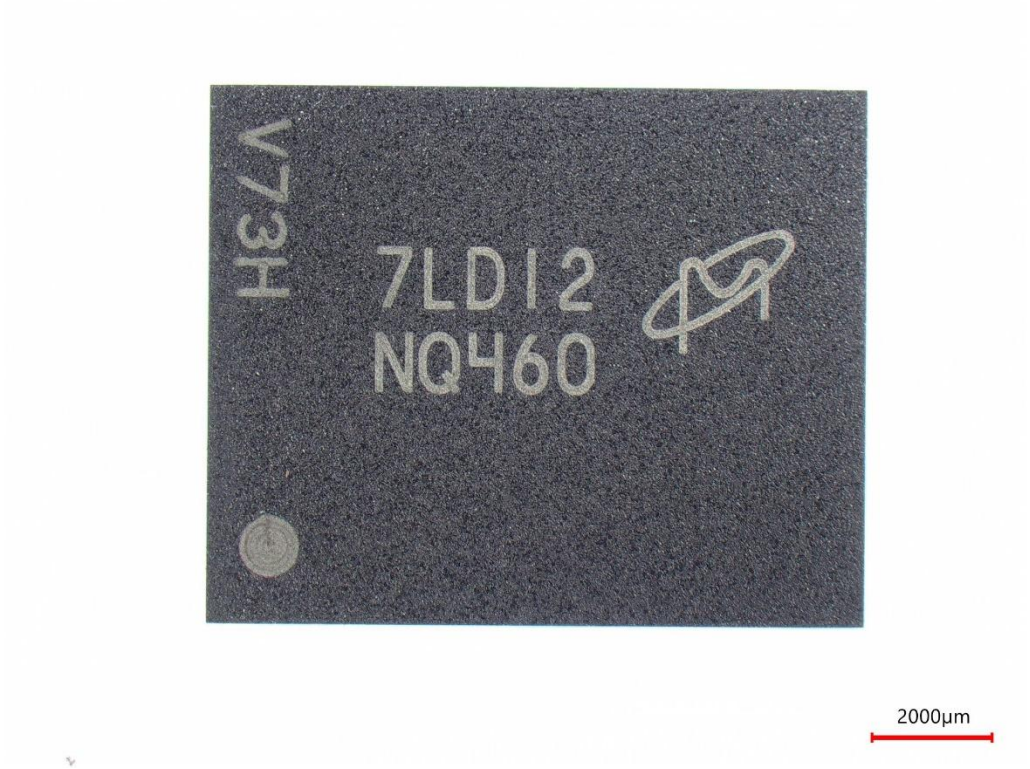

Fig. 18: Top

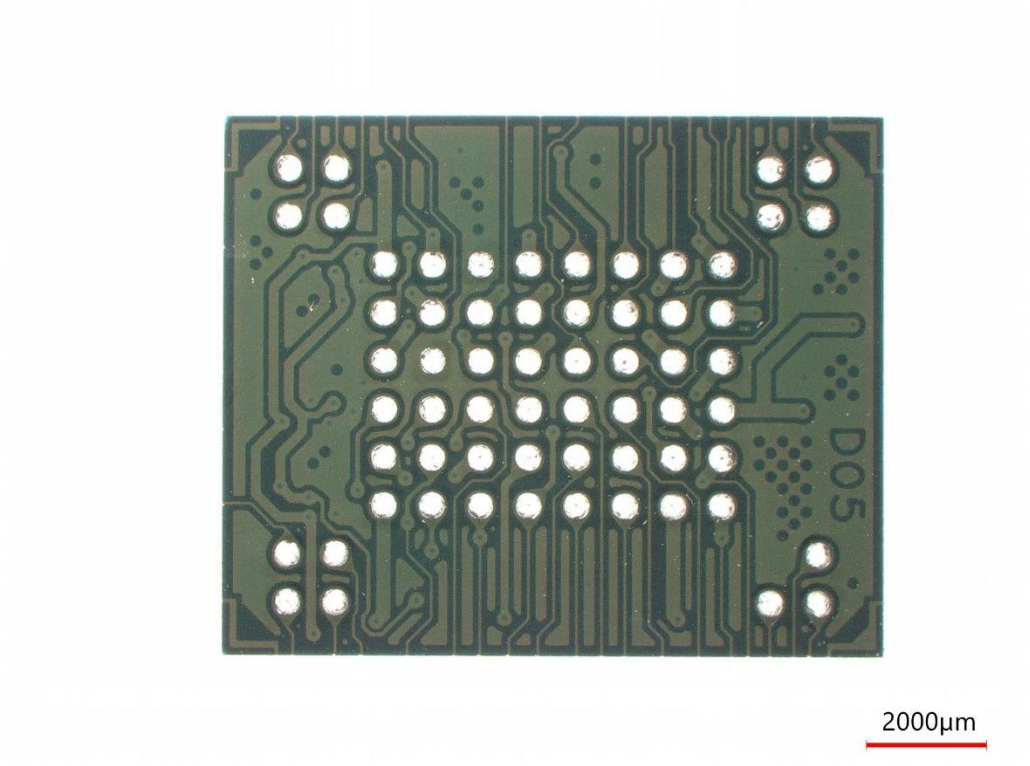

Fig. 19: Bottom

Detailed Visual Inspection

Sample Set 2 - DC 1724

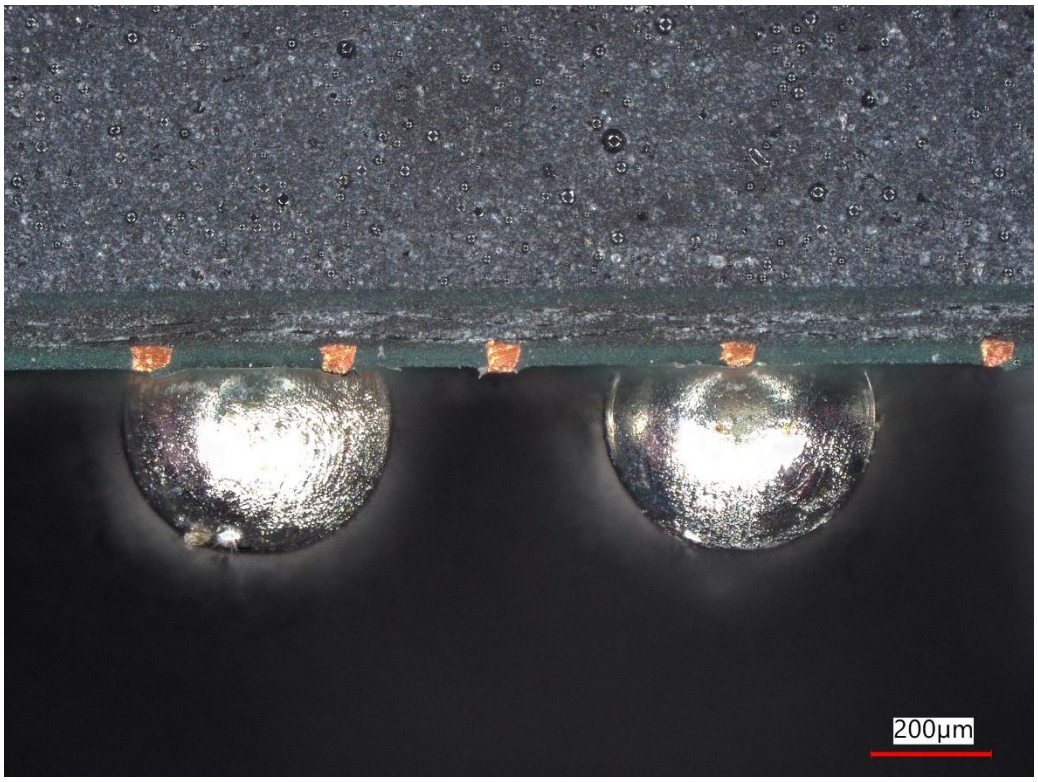

Fig. 20: Side view with solder spheres

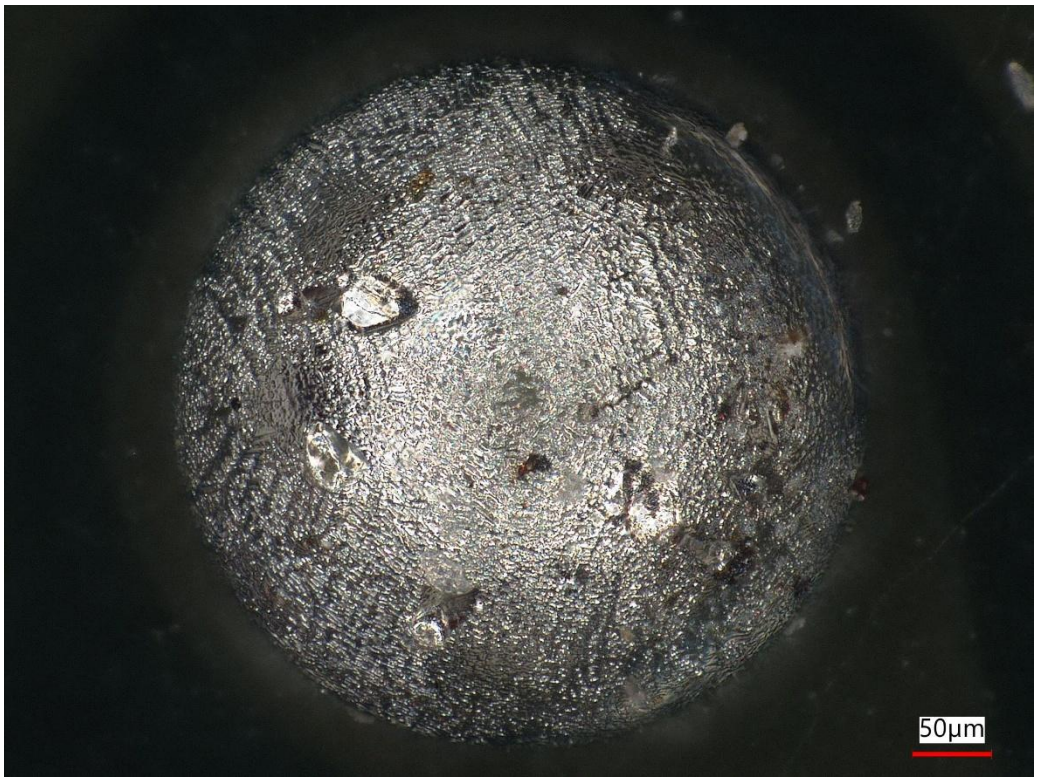

Fig. 21: Solder sphere

Detailed Visual Inspection

Sample Set 2 - DC 1724

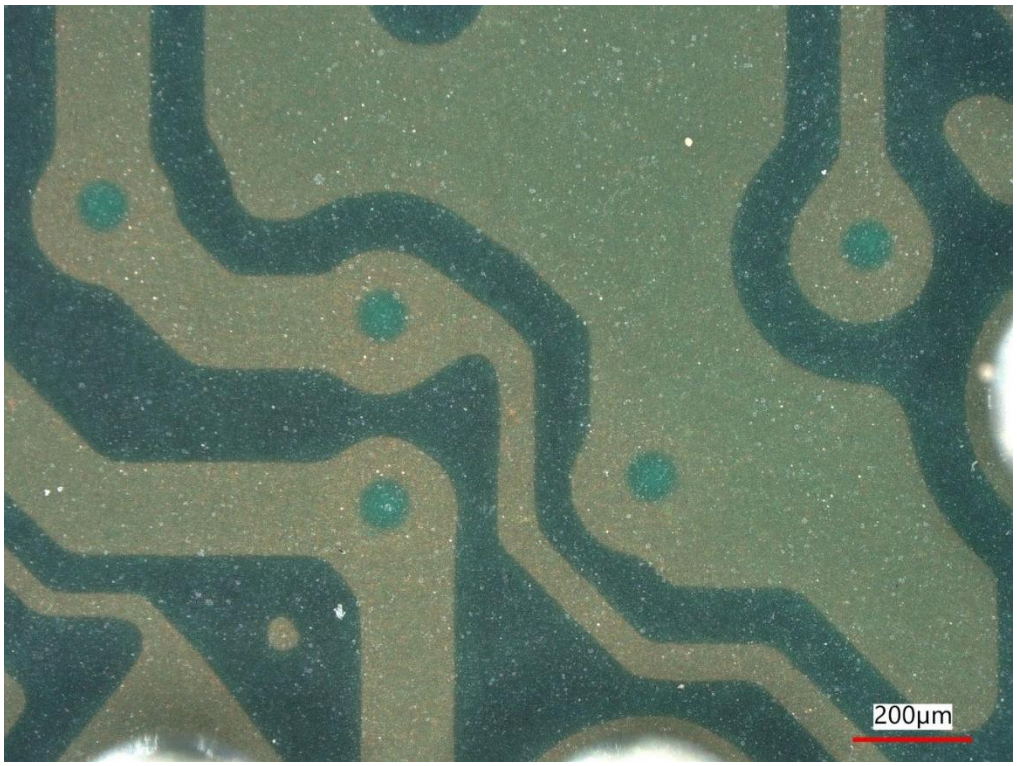

Fig. 22: Interposer

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5. Surface Test

Aim of analysis:	Verification of the component surface for possible manipulation using the Device Surface Test according to IDEA-STD-1010-B.
Experimental:	Before the test, the surface under investigation is carefully documented using a Digital 3D-Microscope. Subsequently, a cotton swab soaked with acetone is sturdy wiped across the surface of the component. After the test, the surface of the component is once again documented through imaging. Additionally, the cotton swab is also imaged after the test to detect any potential residues that may have been transferred.
Conducted by:	Alina Kleiber
Inspection date:	08.04.2025
Part No.:	MT29F8G16ADBDAH4-AIT:D TR
Package type:	63-ball VFBGA
Manufacturer:	Micron

Used Instruments

Instrument:	Digital 3D-Microscope
Inventory ID:	L004
Last inspection:	21.03.2025
Next inspection:	21.03.2026

Surface Test

Sample Set 1 - DC 1722

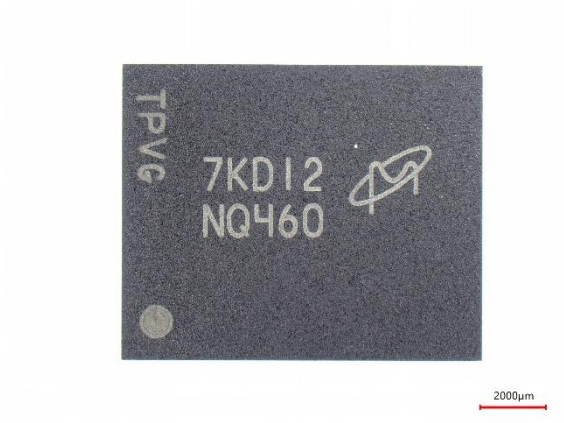


Fig. 23: Top, before Solvent Test

Fig. 24: Top, after Solvent Test

Fig. 25: Cotton swab after Solvent Test

Sample Set 2 - DC 1724

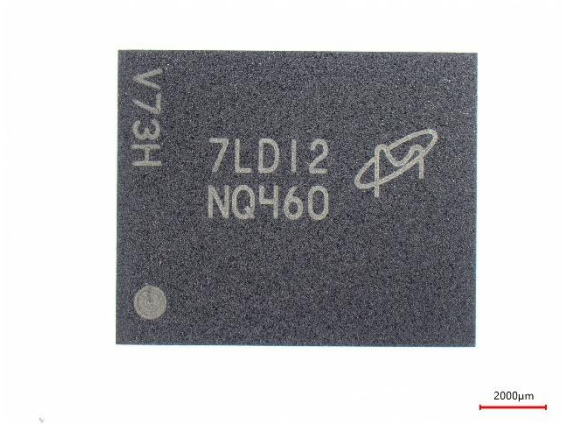


Fig. 26: Top, before Solvent Test

Fig. 27: Top, after Solvent Test

Fig. 28: Cotton swab after Solvent Test

6. Mechanical Inspection

Aim of analysis: Measurement of the housing dimensions.

Experimental: The housing dimensions are measured and compared with the specifications provided in the data sheet for accurate assessment.

Part No.: MT29F8G16ADBDAH4-AIT:D TR
Package type: 63-ball VFBGA
Manufacturer: Micron

Conducted by: Alina Kleiber
Inspection date: 08.04.2025

Used Instruments

Instrument: Caliper
Inventory ID: L001
Last inspection: 31.01.2025
Next inspection: 31.01.2026

Results

Tab. 3: Measurement of package dimensions

	L [mm]		B [mm]		H [mm]	
	min.	max.	min.	max.	min.	max.
Sample set	10,90	11,10	8,90	9,10	-	1,00
1	11,04		9,05		0,98	
2	11,02		9,01		0,97	

Figure 7: 63-Ball VFBGA (9mm x 11mm) (H4)

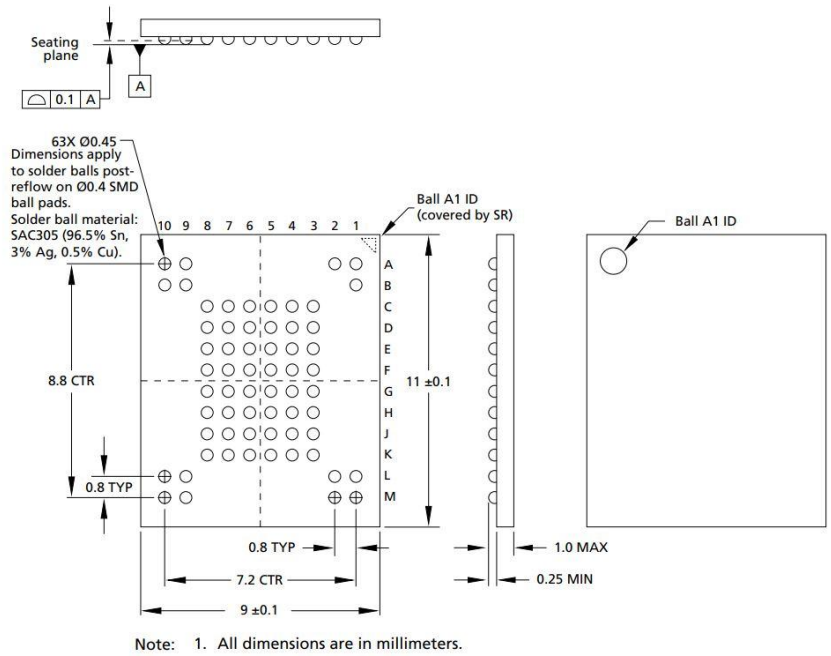


Fig. 29: Technical package drawing

7. Fourier-transform infrared spectroscopy (FTIR)

Aim of analysis:	The aim of the FTIR analysis is to detect potential component manipulations, such as resurfacing, by comparing the FTIR spectra of the device under test (DUT) with those from a typical molding compound in the SI database or a reference sample.
Experimental:	FTIR spectra were obtained using a FTIR spectrometer equipped with a thermo-electrically cooled mercury cadmium telluride (TE-MCT) detector. A germanium attenuated total reflectance (ATR) crystal was used for all measurements. Spectra were recorded in the range of 6000 to 670 cm^{-1} with a resolution of 2 cm^{-1}. Each spectrum was the result of 60 co-added scans to improve the signal-to-noise ratio. Data Analysis: The obtained spectra were analyzed using FTIR-software, focusing on the identification of characteristic absorption bands. Baseline correction and normalization were performed to ensure accurate peak assignments.
Sample preparation steps:	When necessary, the component was ground using different grit sizes prior to the FTIR analysis.
Collection mode:	ATR
Resolution:	2 cm^{-1}
Number of scans:	60
ATR crystal:	Germanium
Conducted by:	Alina Kleiber
Inspection date:	08.04.2025
Part No.:	MT29F8G16ADBDAH4-AIT:D TR
Package type:	63-ball VFBGA
Manufacturer:	Micron

Used Instruments

Instrument:	FTIR microscope
Inventory ID:	L014
Last inspection:	07.08.2024
Next inspection:	07.08.2025

Fourier-transform infrared spectroscopy (FTIR)

Sample Set 1 - DC 1722

Number of sample scans	60
Resolution	4
Measurement date and time	08/04/2025 13:35:34 (GMT+2)
Sample name	SI250233 - MT29F8G16ADBDAH4-AIT-D

Search

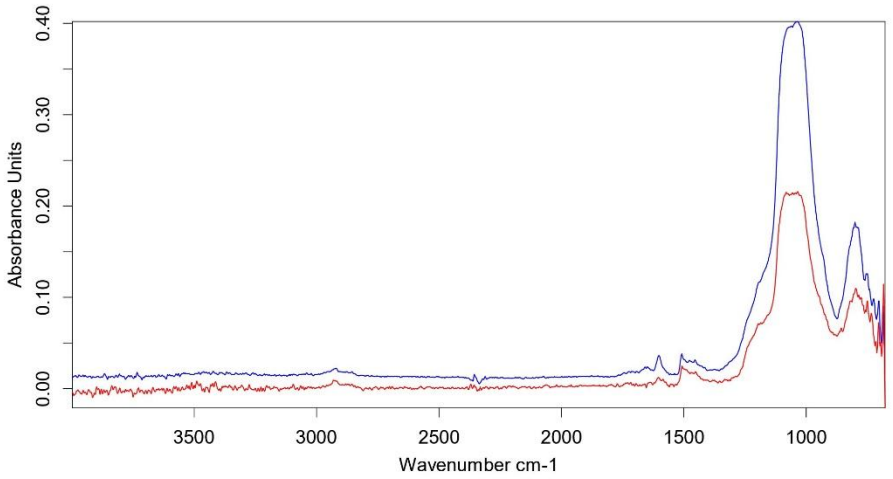
Hit No.	Hit qual.	Compound name	Entry no.	Lib. index
1	936	Texas Instruments	7	12
2	934	Onsemi	5	12
3	932	Texas Instruments	8	12
4	929	Microchip	3	12
5	919	Analog Devives	1	12

Quick Compare

Material is identified as Reference molding ✔

Corr.[%]	Compound Name	Info
99.2	Reference molding	SC-70-4

Reference Spectra and Query Spectrum (red)



08.04.2025 13:38:46 1/1

Fig. 30: Comparing spectra

Fourier-transform infrared spectroscopy (FTIR)

Sample Set 2 - DC 1724

Number of sample scans	60
Resolution	4
Measurement date and time	08/04/2025 13:40:20 (GMT+2)
Sample name	SI250233 - MT29F8G16ADBDAH4-AIT-D

Search

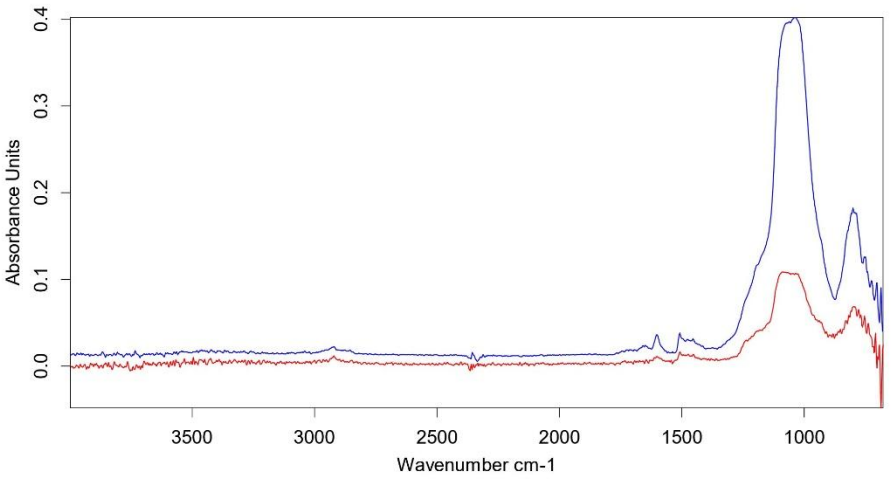
Hit No.	Hit qual.	Compound name	Entry no.	Lib. index
1	907	Texas Instruments	8	12
2	900	Onsemi	5	12
3	900	Texas Instruments	7	12
4	895	Microchip	3	12
5	884	NXP	4	12

Quick Compare

Material is identified as Reference molding ✔

Corr.[%]	Compound Name	Info
98.1	Reference molding	SC-70-4

Reference Spectra and Query Spectrum (red)



08.04.2025 13:44:27 1/1

Fig. 31: Comparing spectra

8. Lead Finish Evaluation (LIBS)

Aim of analysis:	The used lead finish material is to be analyzed and compared with the information provided in the datasheet.
Experimental:	To identify the material used for the lead finish, Laser-Induced Breakdown Spectroscopy (LIBS) is utilized. The LIBS system focuses a laser onto the surface of the lead finish, initiating plasma through a short laser pulse at the measurement point. As the plasma breaks down, characteristic wavelengths are emitted by the materials present. The optical spectrum is captured, and by integrating the intensities, the composition of the observed plasma is analyzed.
Conducted by:	Alina Kleiber
Inspection date:	08.04.2025
Part No.:	MT29F8G16ADBDAH4-AIT:D TR
Package type:	63-ball VFBGA
Manufacturer:	Micron

Used Instruments

Instrument:	Digital 3D-Microscope with LIBS-System
Inventory ID:	L004
Last inspection:	21.03.2025
Next inspection:	21.03.2026

Lead Finish Evaluation (LIBS)

Sample Set 1 - DC 1722

Tab. 4: Material Analysis Results

No.	Presumed material	Sn	Ag	Cu
1	Solder alloy	95,3%	3,2%	1,5%
2	Solder alloy	95,0%	1,6%	3,4%
3	Solder alloy	94,5%	4,4%	1,1%

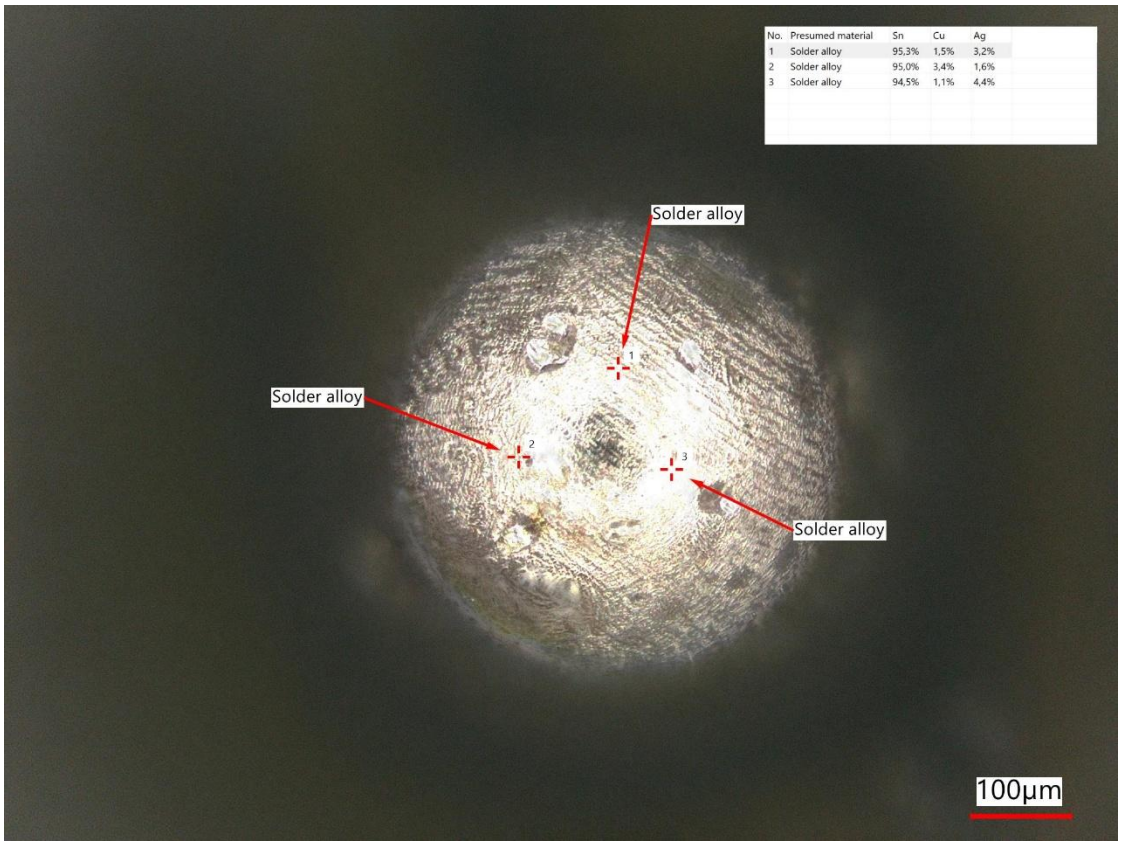


Fig. 32: Measuring points LIBS

Lead Finish Evaluation (LIBS)

Sample Set 1 - DC 1722

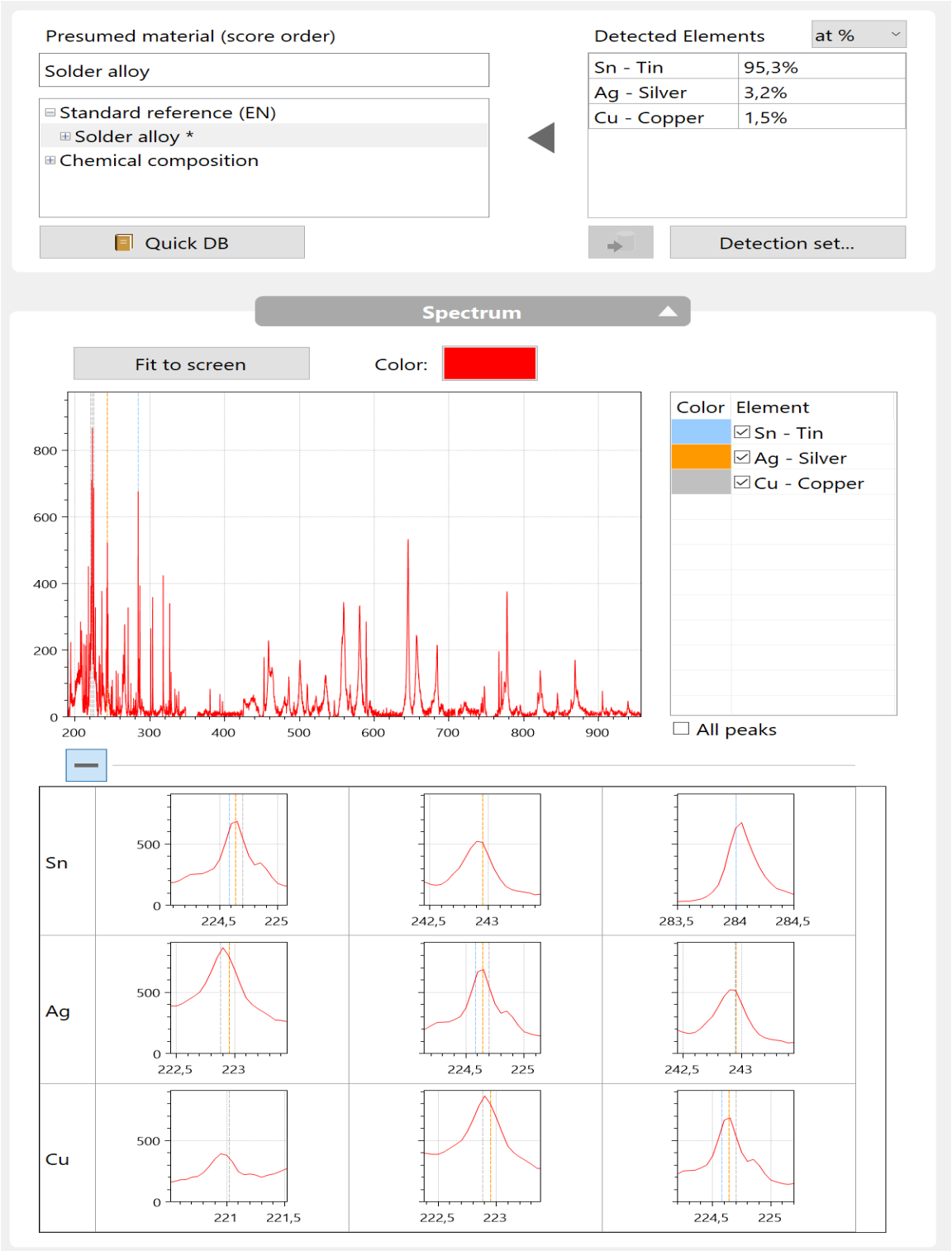


Fig. 33: Exemplary spectrum of one of the LIBS analyses

Lead Finish Evaluation (LIBS)

Sample Set 2 - DC 1724

Tab. 5: Material Analysis Results

No.	Presumed material	Sn	Ag	Cu
1	Tin	100,0%		
2	Solder alloy	96,3%	2,1%	1,6%
3	Solder alloy	94,8%	3,5%	1,7%

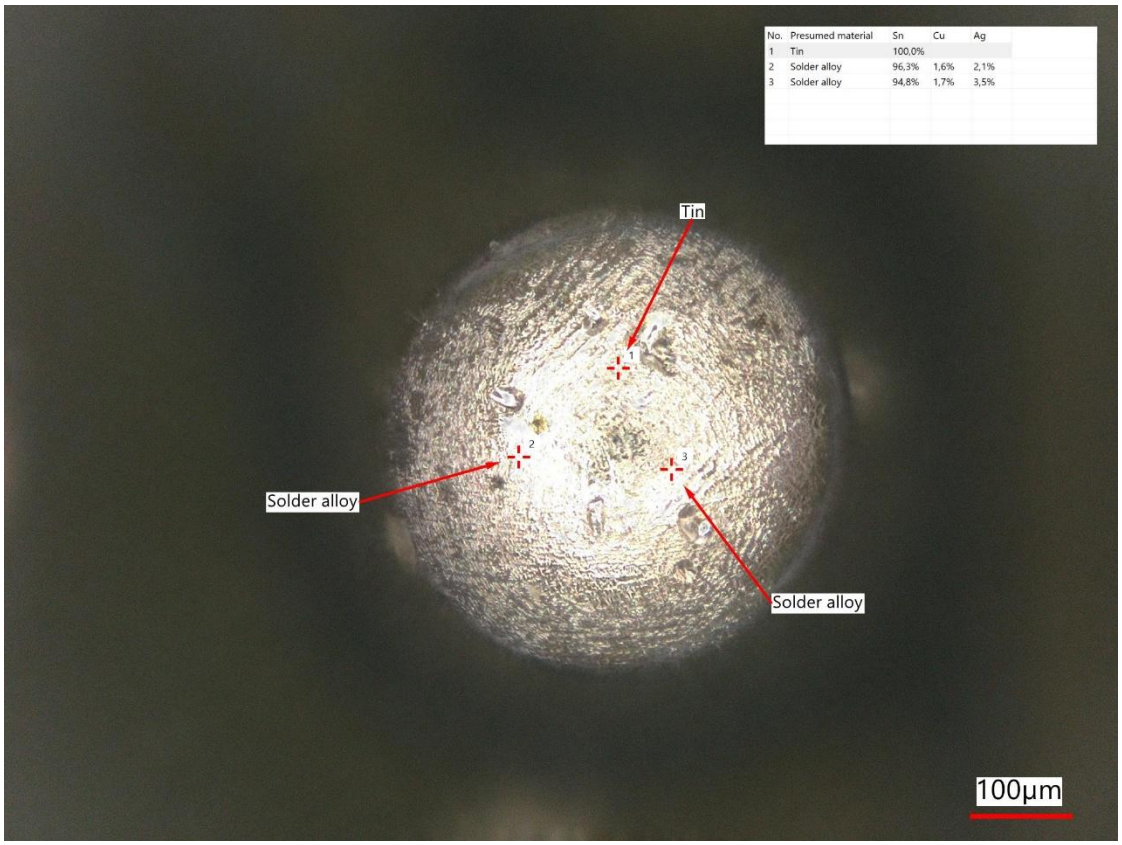


Fig. 34: Measuring points LIBS

Lead Finish Evaluation (LIBS)

Sample Set 2 - DC 1724

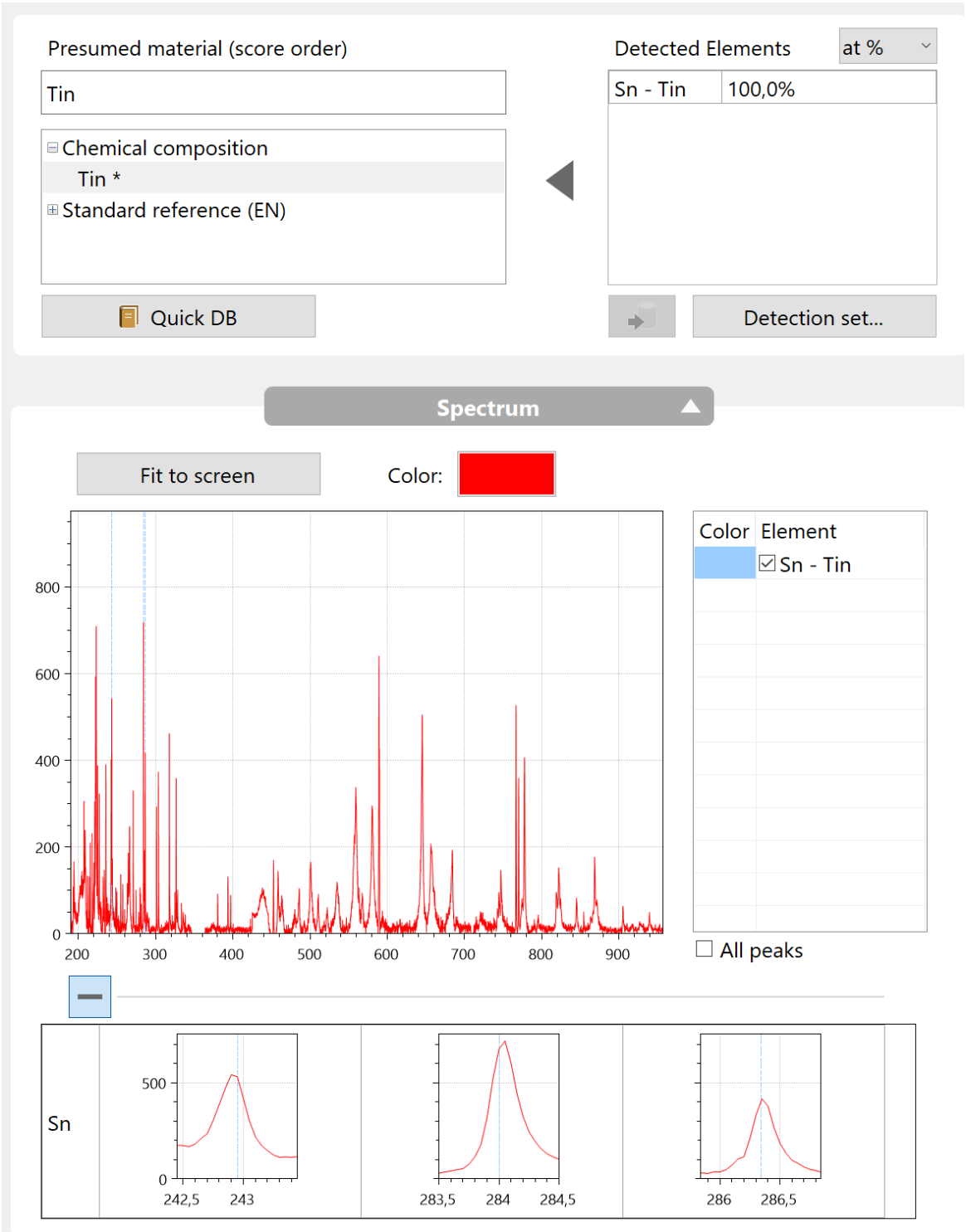


Fig. 35: Exemplary spectrum of one of the LIBS analyses

9. X-Ray Inspection

Aim of analysis:	X-Ray inspection for analysis of the internal structures of the components according to IDEA-STD-1010-B.
Experimental:	The specimen is placed in an X-ray system. Tube voltage, sample current, inclination and position of the detector are adjusted according to the examination conditions to obtain an optimized image. A total of 15 components of each date code will undergo scrutiny to assess their uniformity and detect any abnormalities. In the event of an unremarkable sample, four components will be chosen as representative examples and thoroughly documented.
Conducted by:	Alina Kleiber
Inspection date:	08.04.2025
Part No.:	MT29F8G16ADBDAH4-AIT:D TR
Package type:	63-ball VFBGA
Manufacturer:	Micron

Used Instruments

Instrument:	X-Ray Inspection System
Inventory ID:	L007
Last inspection:	05.04.2025
Next inspection:	05.04.2026

Sample Set 1 - DC 1722

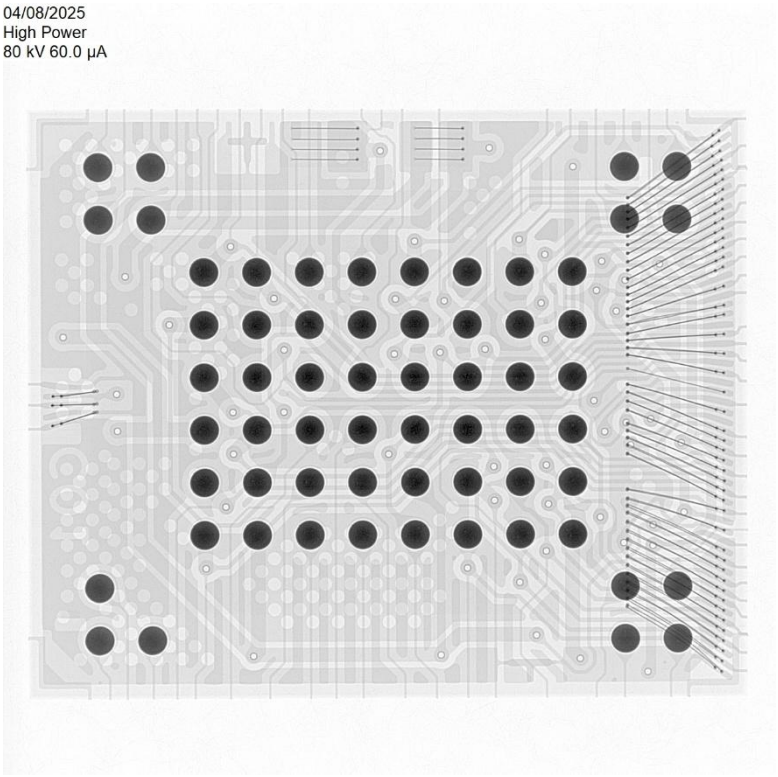


Fig. 36: Top view, Component 1

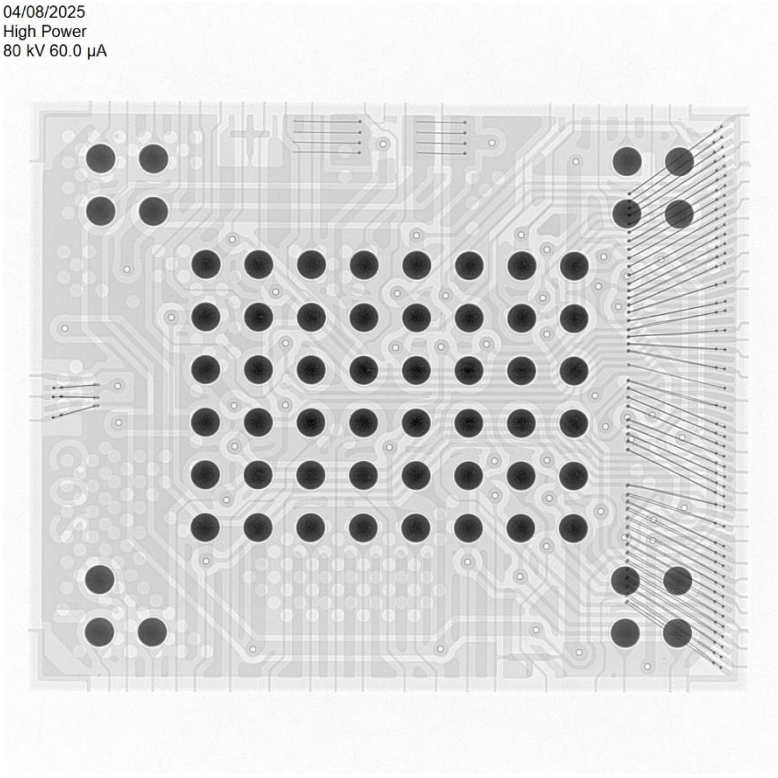


Fig. 37: Top view, Component 2

Sample Set 1 - DC 1722

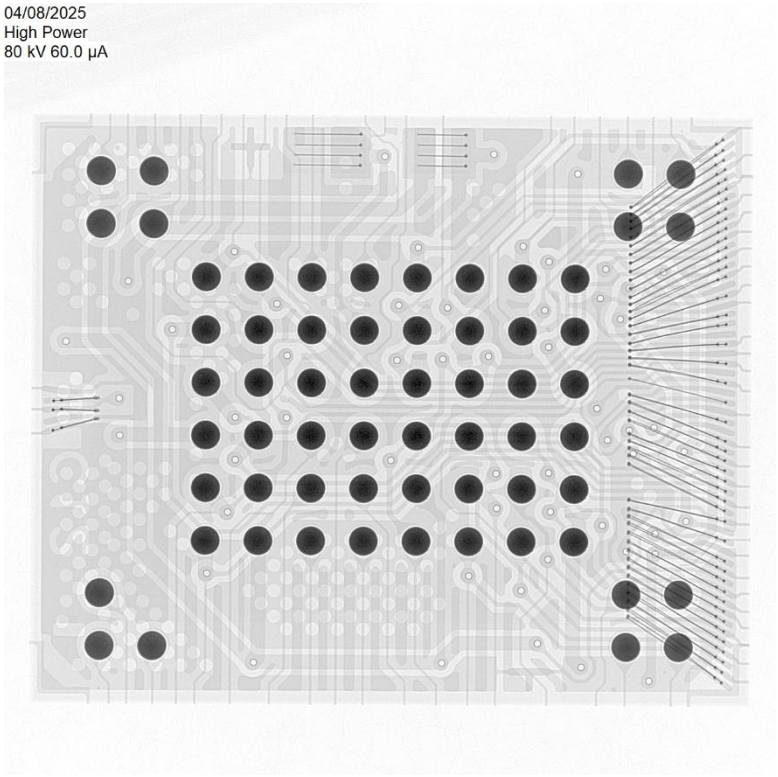


Fig. 38: Top view, Component 3

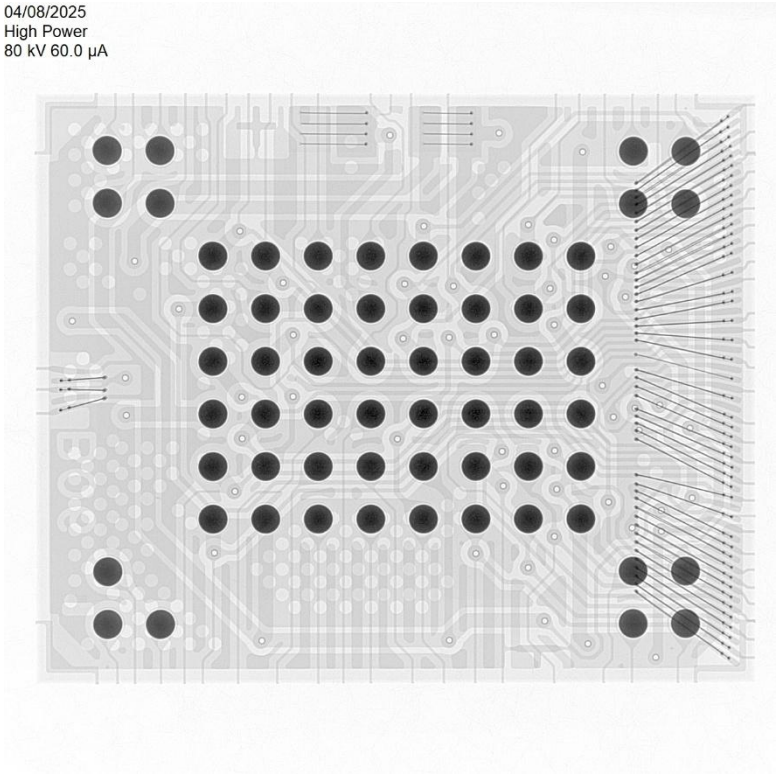


Fig. 39: Top view, Component 4

Sample Set 1 - DC 1722

Fig. 40: Side view, Component 1

Fig. 41: Side view, Component 2

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Sample Set 2 - DC 1724

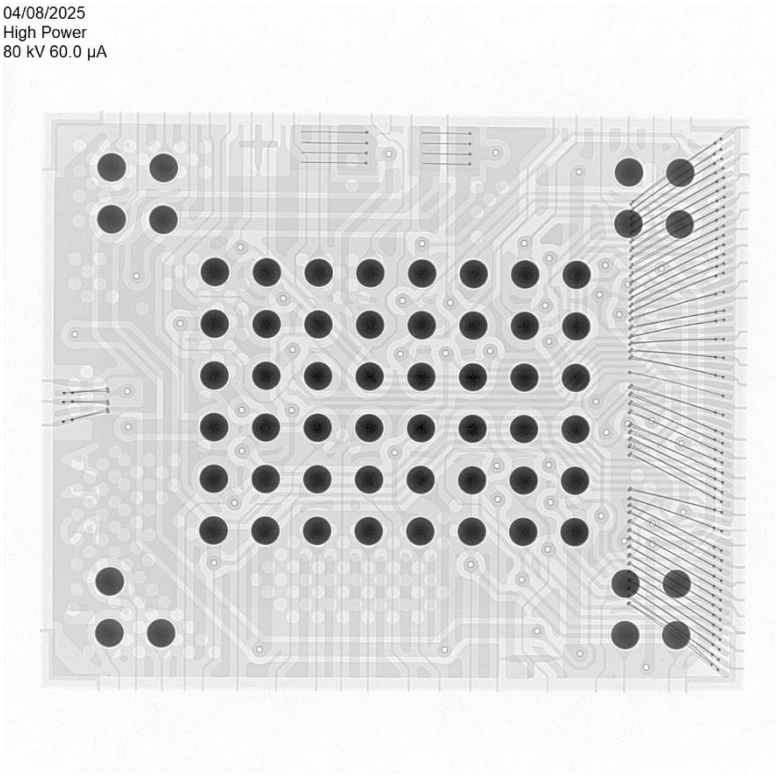

Fig. 42: Top view, Component 1

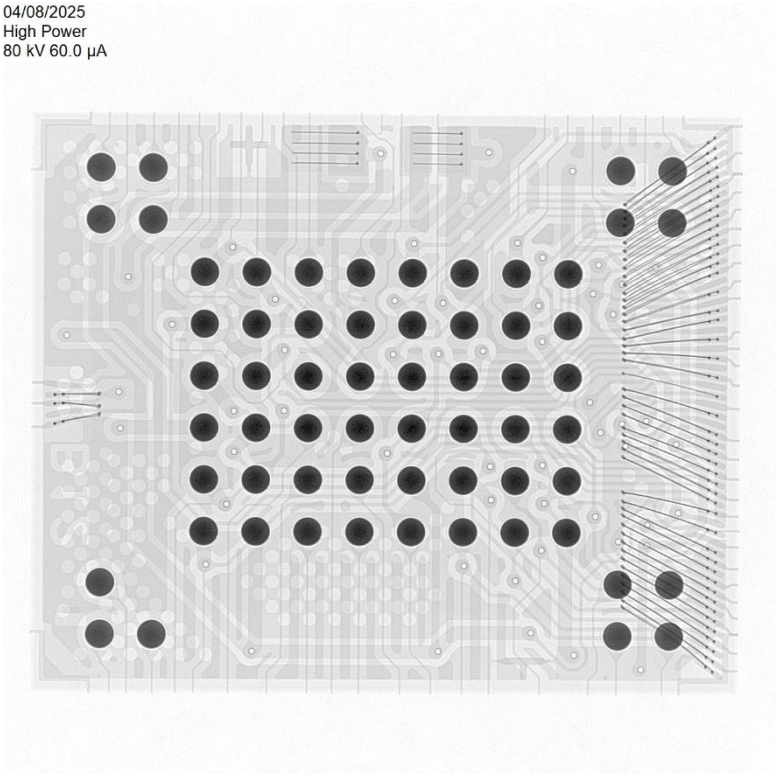

Fig. 43: Top view, Component 2

Sample Set 2 - DC 1724

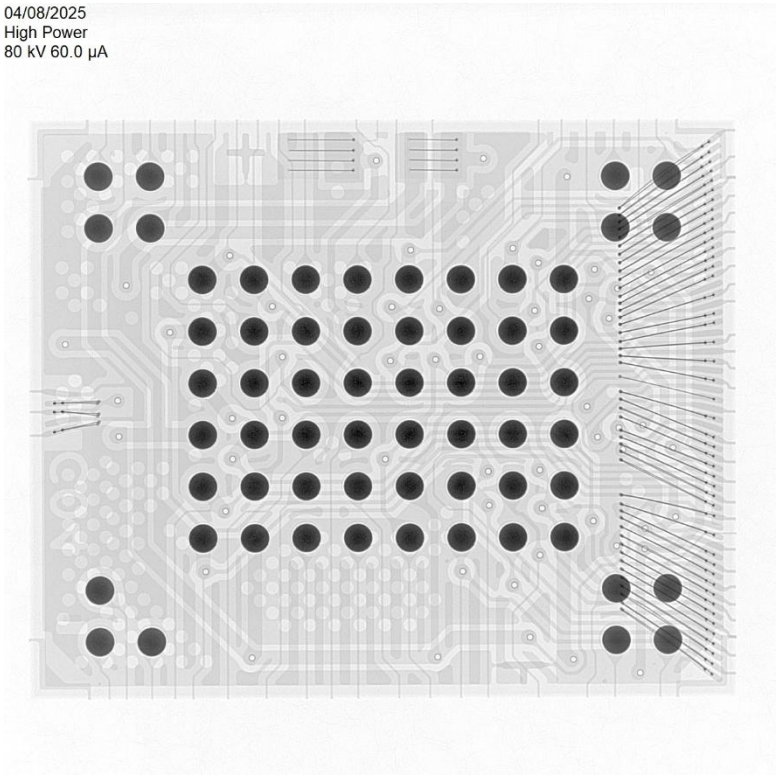

Fig. 44: Top view, Component 3

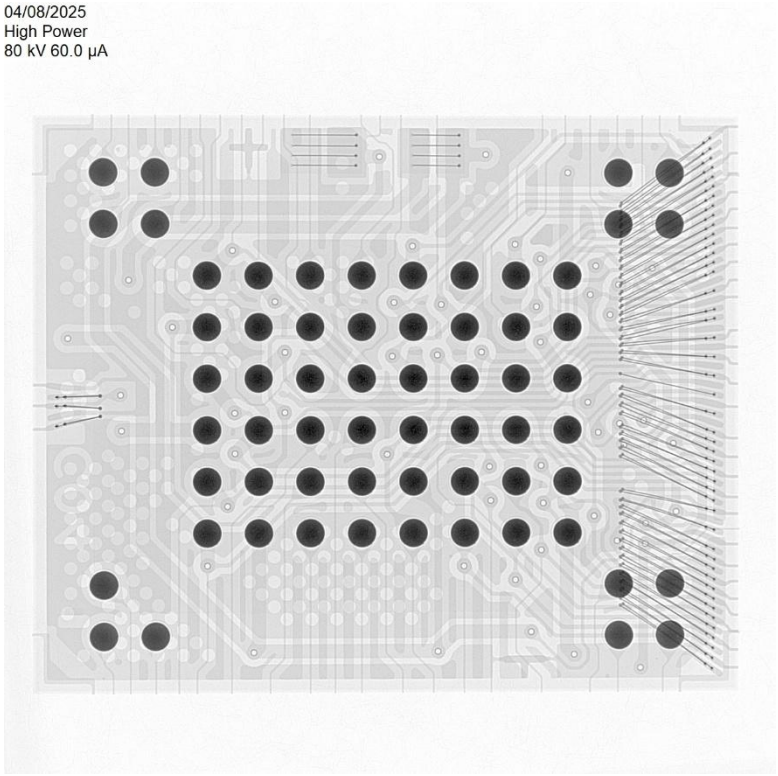

Fig. 45: Top view, Component 4

Sample Set 2 - DC 1724

Fig. 46: Side view, Component 1

Fig. 47: Side view, Component 2

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10. Decapsulation

Aim of analysis:	The objective of decapsulation analysis, in alignment with the standard IDEA-STD-1010-B, is to reveal the internal structure of samples by removing the encapsulant, thereby enabling the inspection of internal components to authenticate the semiconductor's origin and assess its integrity.
Experimental:	The encapsulant of the components is removed to expose the semiconductor of the samples. Subsequently, the exposed semiconductor is examined and documented using light microscopy according to the requirements of IDEA-STD-1010-B.
Conducted by:	Alina Kleiber
Inspection date:	08.04.2025
Part No.:	MT29F8G16ADBDAH4-AIT:D TR
Package type:	63-ball VFBGA
Manufacturer:	Micron

Used Instruments

1st Instrument:	Stereomicroscope
Inventory ID:	L012
2nd Instrument:	Digital 3D-Microscope
Inventory ID:	L005
Last inspection:	20.03.2025
Next inspection:	20.03.2026

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Decapsulation

Sample Set 1 - DC 1722

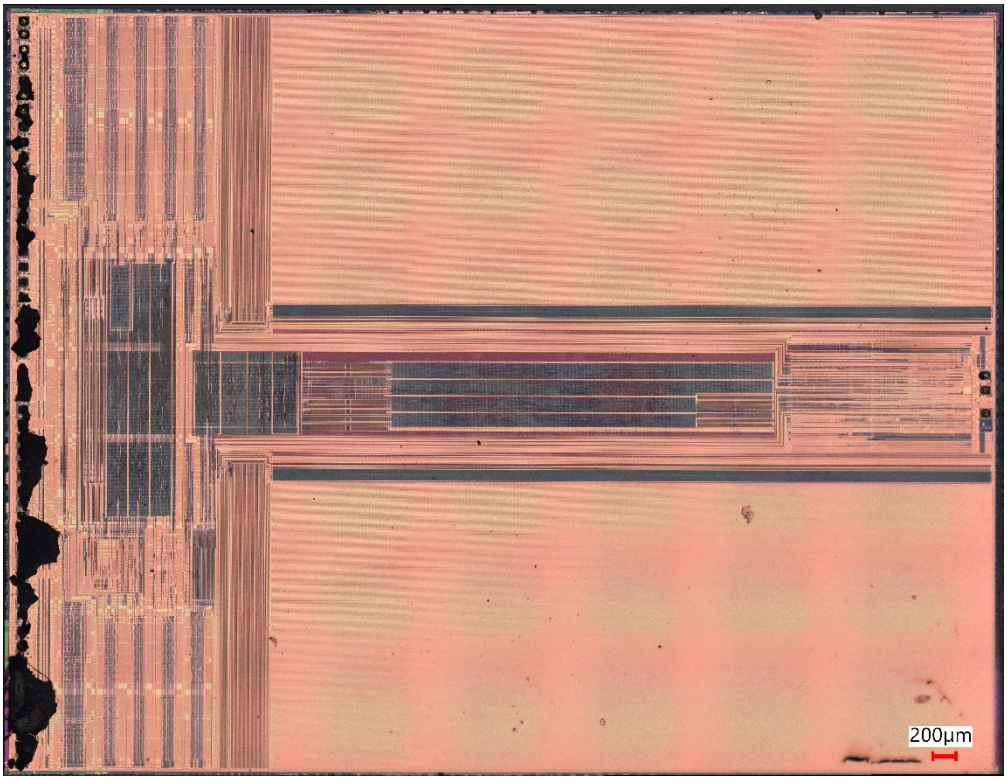

Fig. 48: Die

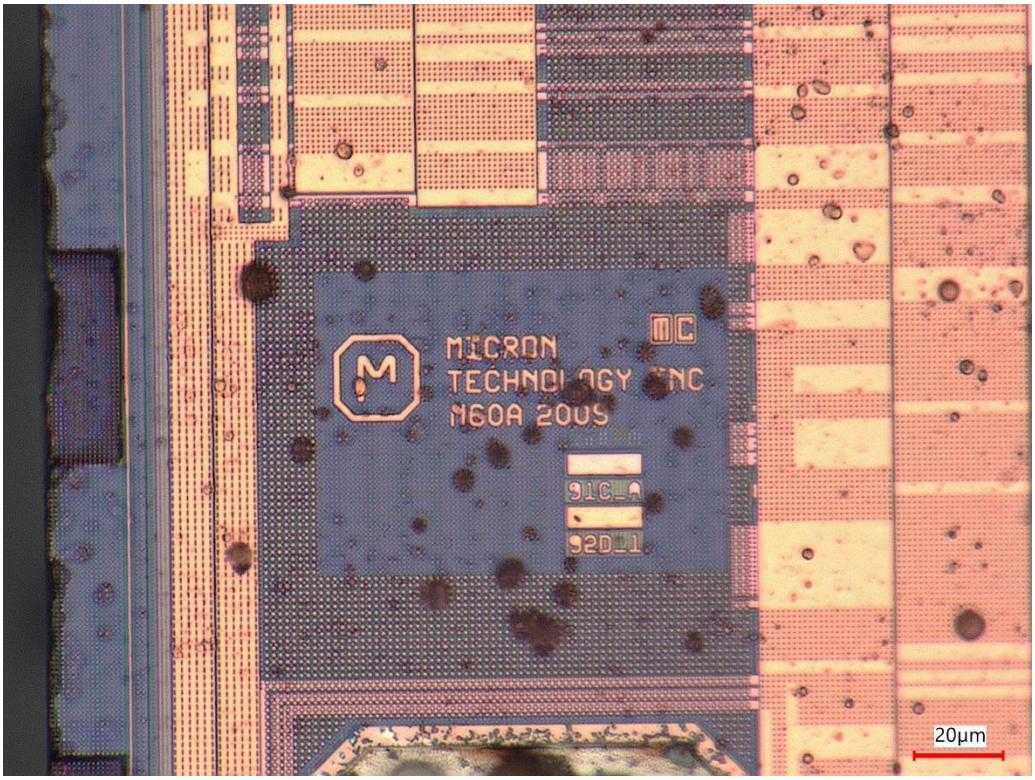

Fig. 49: Die 1 - marking

Decapsulation

Sample Set 1 - DC 1722

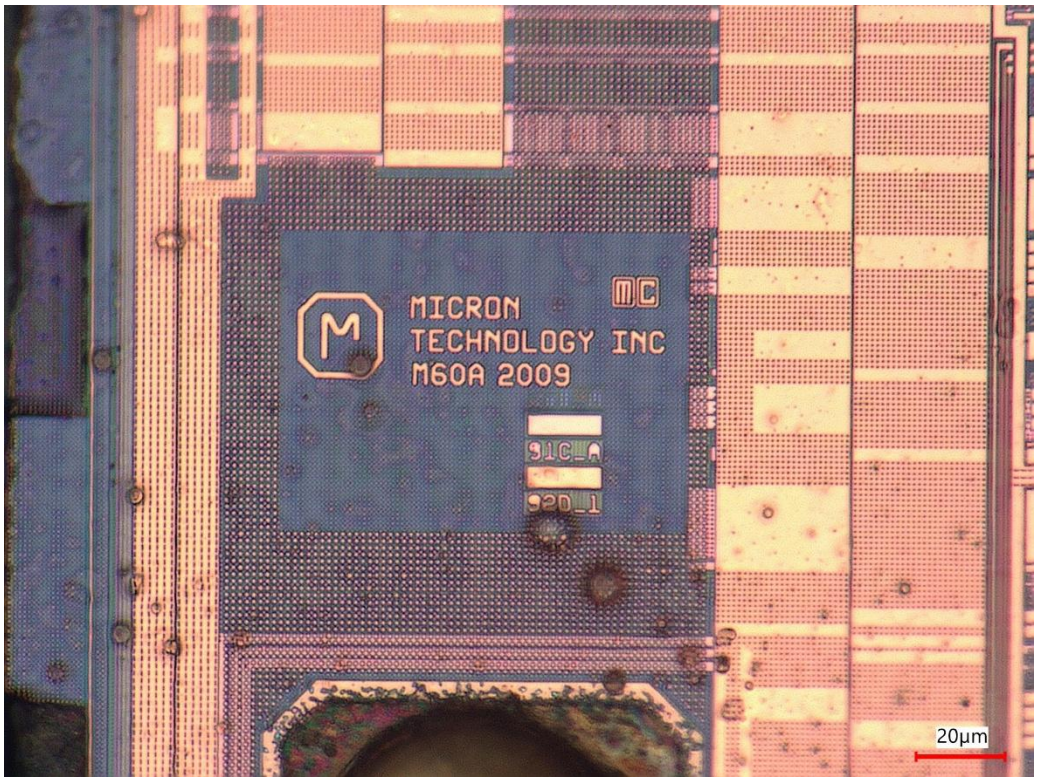

Fig. 50: Die 2 - marking

Decapsulation

Sample Set 2 - DC 1724

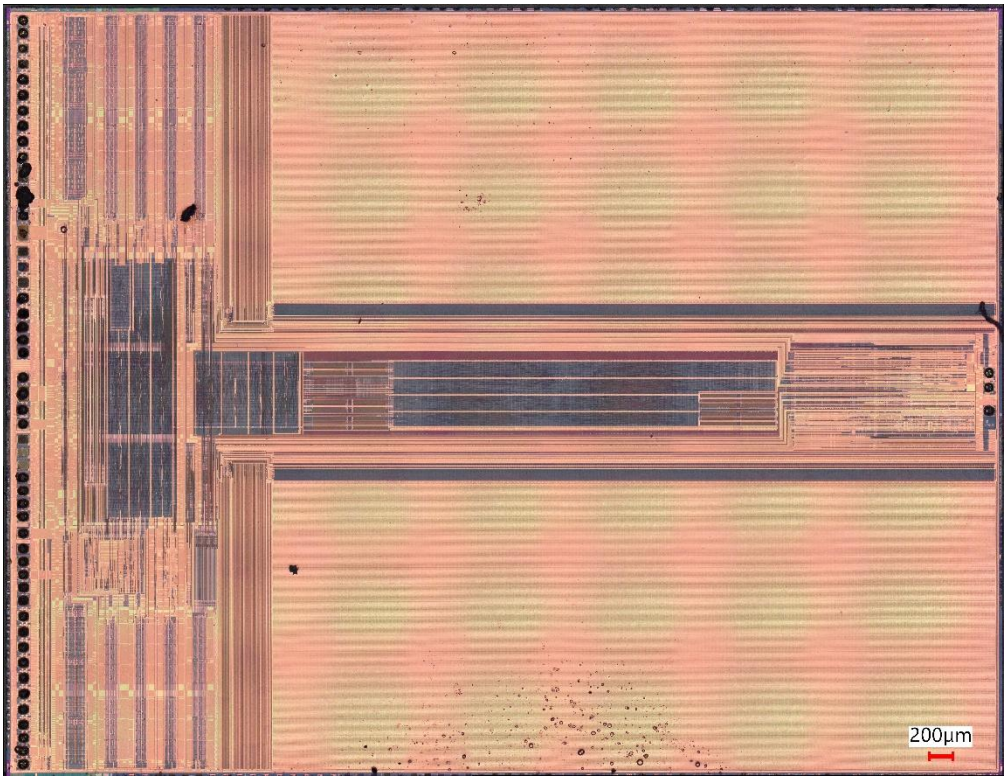

Fig. 51: Die

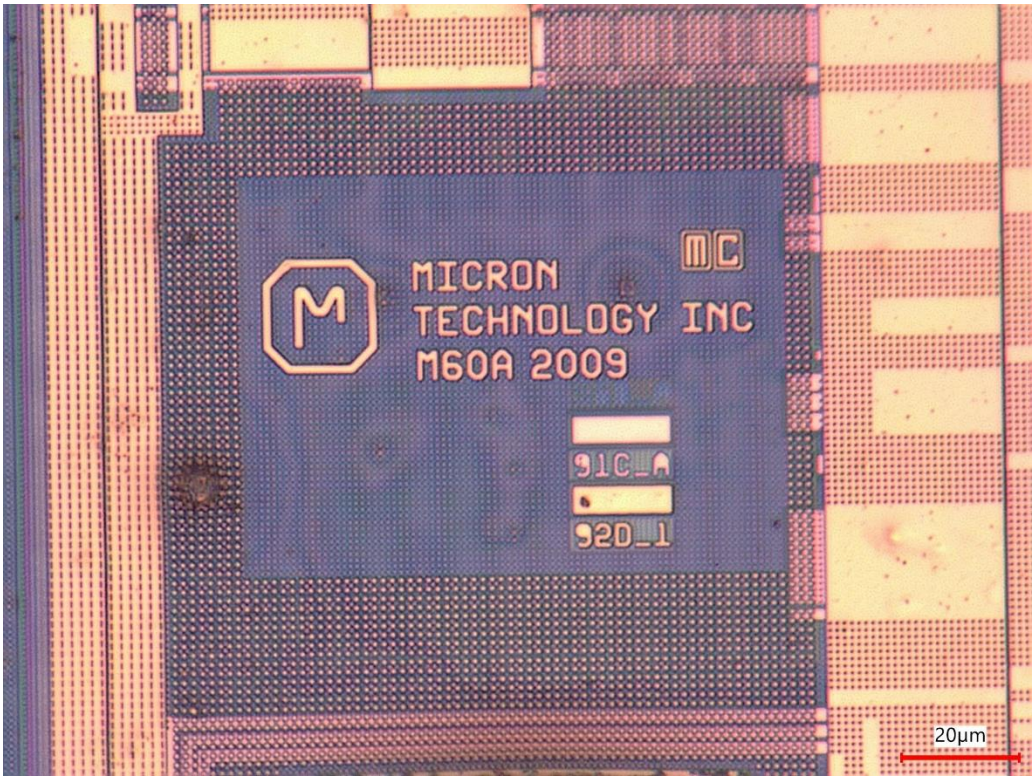

Fig. 52: Die 1 - marking

Sample Set 2 - DC 1724

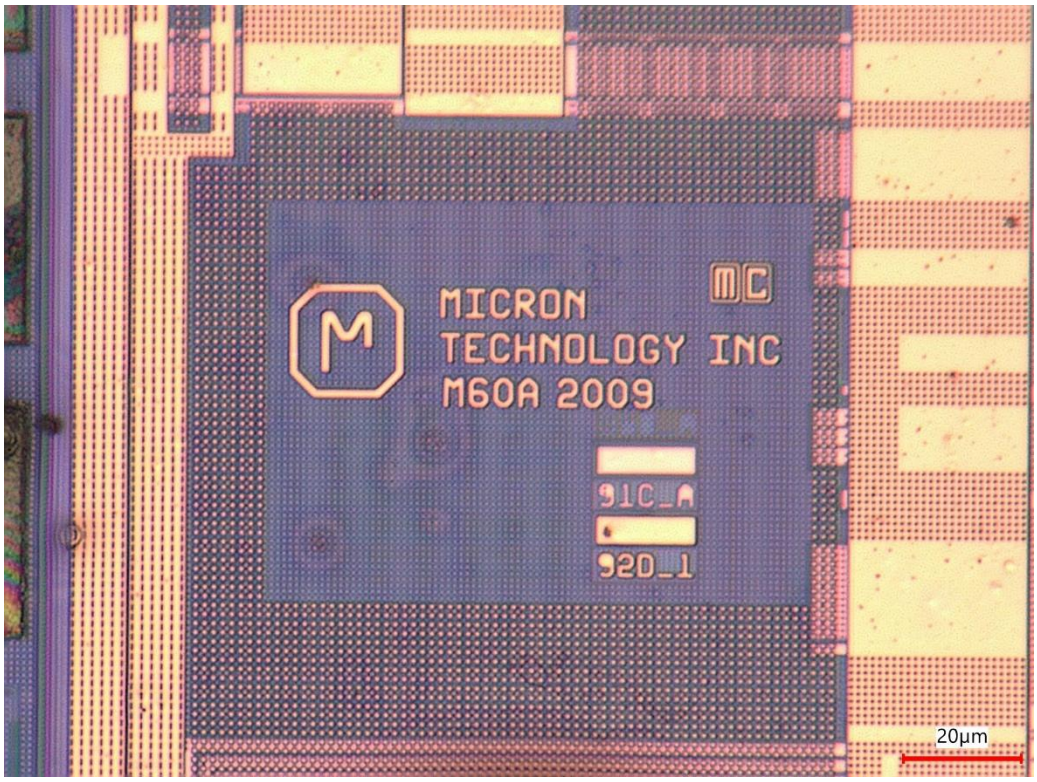

Fig. 53: Die 2 - marking

11. Solderability Test

Aim of analysis:	To assess the processability of the components, the solderability of the components should be evaluated based on the IPC J-STD-002E 2017 standard.
Experimental:	To assess the solderability of components in a soldering process, a randomly selected component underwent a wetting balance globule test according to IPC J-STD-002E 2017. The component was clamped into a suitable holder to ensure the correct immersion angle into the globe. Subsequently, the test solder contact and the solder globe were coated with compliant flux. Then, the component was immersed into the globe at a defined immersion speed until the prescribed immersion depth was reached. The solder joint was then held in the solder ball for the specified time. During this period, the occurring forces were measured and plotted as a function of immersion time. The solder joint processability is evaluated based on this wetting curves.
Test Procedure:	G1 (Wetting Balance)
Alloy:	SAC
Temperature:	245 °C
Flux:	Actiec 5
Immersion speed:	1 mm/second
Immersion depth:	0.1 mm
Test time:	5 s
Conducted by:	Alina Kleiber
Inspection date:	08.04.2025
Part No.:	MT29F8G16ADBDAH4-AIT:D TR
Package type:	63-ball VFBGA
Manufacturer:	Micron

Used Instruments

Instrument:	Wetting Balance
Inventory ID:	L006
Last inspection:	20.01.2025
Next inspection:	20.01.2026

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Solderability Test

Sample Set 1 - DC 1722

Must III Force Chart

Test Details

Component	: MT29F8G16ADBDAH4-AIT:D TR		
Test parameter filename	: Globule Parameters.vts	**Test parameter line**	: 10

Test Limits and Conditions

F1	= 0.12 mN @ 2.00 s	**F2**	= 0.09 mN @ 5.00 s
Tb	= 1.00 s	**Time 2/3 Fmax**	= 5.00 s
Immersion Speed	= 1.0 mm/s	**Immersion Depth**	= 0.10 mm
Test Time	= 5 s	**Pre-heat Time**	= 0 s
Test Temperature	= 245.0 °C	**Flux**	= Actiec 5

Description	Results Filename	Tb (s)	T2/3 (s)	F1 (mN)	F2 (mN)	A.U.C. (mN)	DeWet (%)	Fmax (mN)	TFmax (s)	Pass/Fail
	MT29F8G16ADBISI2502330027 L01	0.264	0.669	0.363	0.280	1.478	26.5	0.381	0.972	Pass
	MT29F8G16ADBISI2502330028 L01	0.288	0.687	0.272	0.214	1.111	31.2	0.311	0.963	Pass
	MT29F8G16ADBISI2502330032 L01	0.306	0.714	0.383	0.309	1.554	22.3	0.398	1.704	Pass
	Standard Dev	0.021	0.023	0.059	0.049	0.237	4.4	0.046	0.425	
	Mean	0.286	0.690	0.339	0.268	1.381	26.7	0.363	1.213	
	Max	0.306	0.714	0.383	0.309	1.554	31.2	0.398	1.704	
	Min	0.264	0.669	0.272	0.214	1.111	22.3	0.311	0.963	

Number of Tests : 003 **Passing rate :** 100.0 %

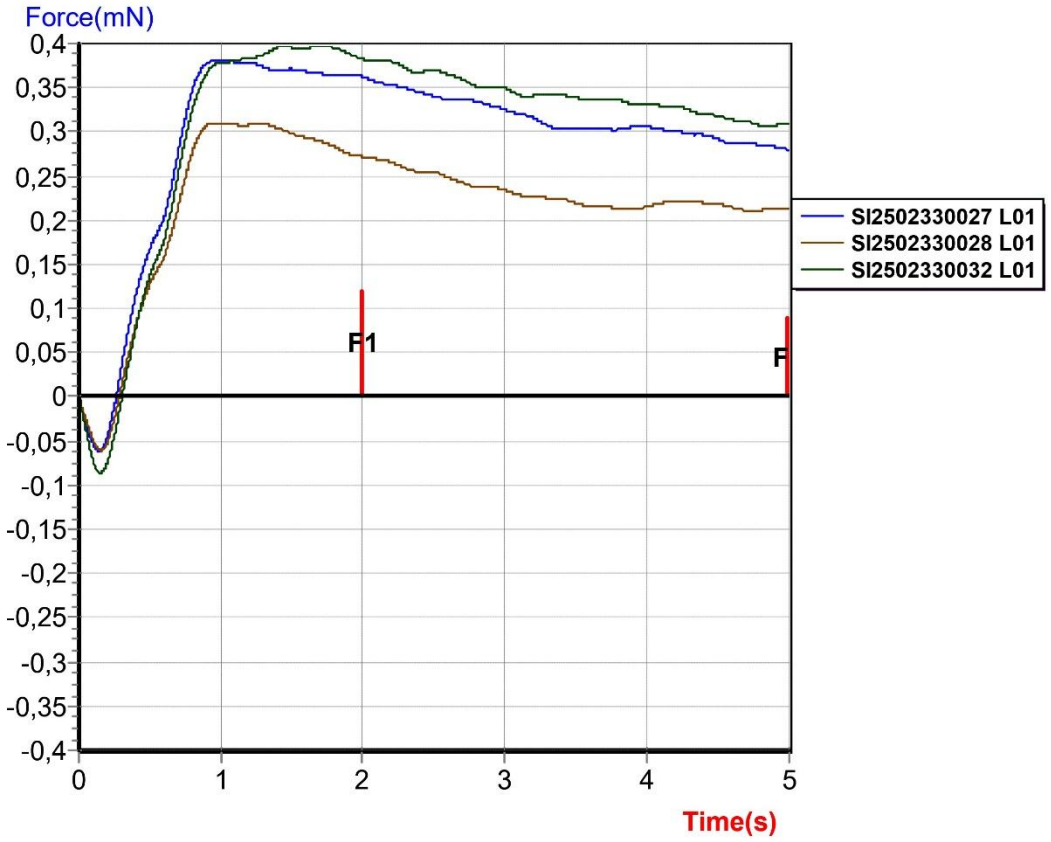

Fig. 54: Wetting curves

Solderability Test

Sample Set 2 - DC 1724

Must III Force Chart

Test Details

Component	: MT29F8G16ADBDAH4-AIT:D TR		
Test parameter filename	: Globule Parameters.vts	Test parameter line	: 10

Test Limits and Conditions

F1	= 0.12 mN @ 2.00 s	F2	= 0.09 mN @ 5.00 s
Tb	= 1.00 s	Time 2/3 Fmax	= 5.00 s
Immersion Speed	= 1.0 mm/s	Immersion Depth	= 0.10 mm
Test Time	= 5 s	Pre-heat Time	= 0 s
Test Temperature	= 245.0 °C	Flux	= Actiec 5

Description	Results Filename	Tb (s)	T2/3 (s)	F1 (mN)	F2 (mN)	A.U.C. (mN)	DeWet (%)	Fmax (mN)	TFmax (s)	Pass/Fail
	MT29F8G16ADBISI2502330034 L01	0.594	3.132	0.286	0.377	1.198	2.8	0.388	4.722	Pass
	MT29F8G16ADBISI2502330035 L01	0.345	0.726	0.319	0.315	1.376	5.9	0.335	1.068	Pass
	MT29F8G16ADBISI2502330037 L01	0.714	0.966	0.338	0.336	1.338	8.6	0.368	1.386	Pass
	Standard Dev	0.188	1.325	0.027	0.032	0.094	2.9	0.027	2.024	
	Mean	0.551	1.608	0.314	0.343	1.304	5.8	0.364	2.392	
	Max	0.714	3.132	0.338	0.377	1.376	8.6	0.388	4.722	
	Min	0.345	0.726	0.286	0.315	1.198	2.8	0.335	1.068	

Number of Tests : 003 **Passing rate :** 100.0 %

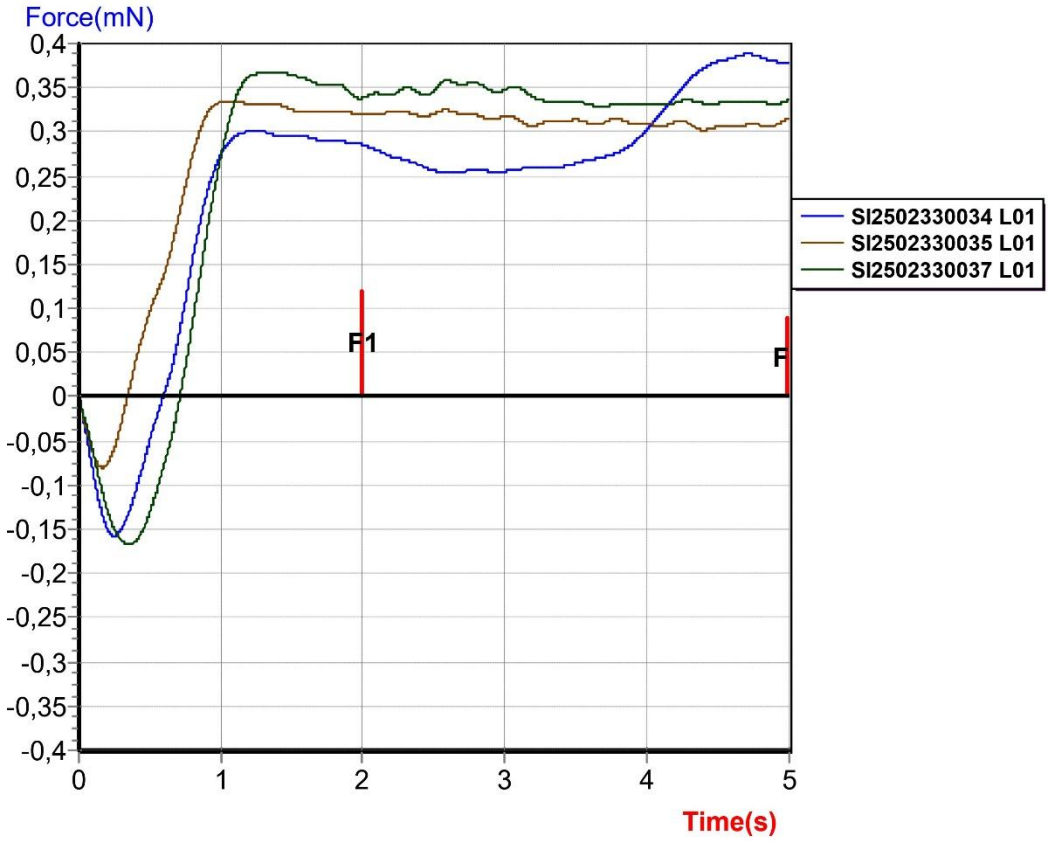

Fig. 55: Wetting curves