



# Relatório de Ensaios

No. BR2203870 Rev. 0

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HT MICRON SEMICONDUTORES S.A. AVENIDA UNISINOS 1550 SAO LEOPOLDO, RS 93022750 BRAZIL

SGS Ordem No. : 40030083

Nome da amostra: CI DDR3

Total de Amostras Recebidas : 400 Amostras

As amostra(s) e informações acima foram fornecidas pelo cliente.

Número da Proposta: C&P PR22-281846.22 rev.01

Data de Recebimento da Amostra: 27 Set 2022

Período de análise : 30 Set 2022 - 08 Nov 2022

Teste Solicitado : Teste(s) selecionado(s) conforme solicitado pelo cliente.

Método de ensaio :Consulte a(s) página(s) seguinte(s).Resultados dos Ensaios :Consulte a(s) página(s) seguinte(s).

Responsabilidade Técnica : Alessandra Shimizu - Gerente de Laboratório CRQ 04245592

AVISO: As opiniões e interpretações expressas abaixo são baseadas nos resultados obtidos a partir do item ensaiado, aplicáveis somente para os ensaios em que os parâmetros de especificação estão inclusos nesse relatório.

#### Opiniões e Interpretações :

Baseado nos testes executados na amostra, o resultado **atende** aos requisitos estabelecidos pela Diretiva RoHS (UE) 2015/863 e emenda Anexo II da Diretiva 2011/65/UE, para os ensaios realizados.

#### Resumo de Resultados:

Teste Solicitado :	Método de Ensaio	Avaliação
Determinação de Chumbo, Cádmio, Cromo e	Referenciado nas IEC	Atende
Mercúrio em Polímeros, Metais e Eletrônicos por	62321-4:2013+A1:2017 e IEC	
ICP-OES	62321-5:2013, análise realizada por	
	ICP-OES.	
Determinação de Cromo Hexavalente em	Referenciado na IEC	Atende
Polímeros e Eletrônicos por Método	62321-7-2:2017; análise realizada por	
Colorimétrico	UV-VIS.	
Determinação de PBB e PBDE em Polímeros por	Referenciado na IEC 62321-6:2015,	Atende
GC-MS	análise realizada por GC-MS.	

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No. BR2203870 Rev. 0

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Assina em nome da SGS do Brasil Ltda.

Alessandra Shimizu

Gerente de Laboratório CRQ 04245592

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#### Relatório de Ensaios

No. BR2203870 Rev. 0

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Resultados dos Ensaios:

#### Descrição das Amostras

Specimer	SGS ID Amostra	Descrição
No.		
1	BR2203870.001	CI DDR3

Nota:

(1) MQL = Limite de Quantificação do Método

(2) ND =Não Detectado ( < MQL ) (3) "--" = Análises em Processo

(4) 1 mg/kg =0,0001% (5) mg/kg =

#### Determinação de Chumbo, Cádmio, Cromo e Mercúrio em Polímeros, Metais e Eletrônicos por ICP-OES

Metodologia Referenciado nas IEC 62321-4:2013+A1:2017 e IEC 62321-5:2013, análise realizada por ICP-OES.

Item(s) de Teste	<u>Limite</u>	<u>Unid.</u>	<u>MQL</u>	<u>Incerteza</u>	<u>001</u>
Chumbo (Pb)	Max. 1000,00	mg/kg	12,50	NA	ND
Cádmio (Cd)	Max. 100,00	mg/kg	12,50	NA	ND
Mercúrio (Hg)	Max. 1000,00	mg/kg	62,50	NA	ND

<sup>-</sup> As incertezas expandidas foram calculadas considerando k=2 e intervalo de confiança de ±95%.

## Determinação de Cromo Hexavalente em Polímeros e Eletrônicos por Método Colorimétrico

Metodologia	Referenciado na IEC 62321-7-2:2017; análise realizada por UV-VIS.					
Item(s) de Teste		<u>Limite</u>	<u>Unid.</u>	<u>MQL</u>	<u>Incerteza</u>	<u>001</u>
Cromo Hexavaler	nte - CrVI	Max. 1000,00	mg/kg	10,00	NA	ND

<sup>-</sup> As incertezas expandidas foram calculadas considerando k=2 e intervalo de confiança de ±95%.

## Determinação de PBB e PBDE em Polímeros por GC-MS

Metodologia	Referenciado na IEC 62321-6:20	15, análise realiza	ada por GC-N	MS.		
<u>Item(s) de Teste</u>		<u>Limite</u>	<u>Unid.</u>	<u>MQL</u>	<u>Incerteza</u>	<u>001</u>
Monobromobifenil		-	mg/kg	35,00	NA	ND
Dibromobifenil		-	mg/kg	35,00	NA	ND
Tribromobifenil		-	mg/kg	35,00	NA	ND
Tetrabromobifenil		-	mg/kg	35,00	NA	ND
Pentabromobifeni		-	mg/kg	35,00	NA	ND
Hexabromobifenil		-	mg/kg	35,00	NA	ND
Heptabromobifeni	l	-	mg/kg	35,00	NA	ND
Octabromobifenil		-	mg/kg	35,00	NA	ND
Nonabromobifenil		-	mg/kg	35,00	NA	ND
Decabromobifenil		-	mg/kg	35,00	NA	ND
Soma dos PBBs		Max. 1000,00	ma/ka	-	NA	ND

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Item(s) de Teste	<u>Limite</u>	<u>Unid.</u>	<u>MQL</u>	<u>Incerteza</u>	<u>001</u>
Monobromodifenil Eter	-	mg/kg	50,00	NA	ND
DiBromoDifenil Eter	-	mg/kg	50,00	NA	ND
Tribromodifenil Eter	-	mg/kg	50,00	NA	ND
Tetrabromobifenil Eter	-	mg/kg	50,00	NA	ND
Pentabromodifenil Eter	-	mg/kg	50,00	NA	ND
Hexabromodifenil Eter	-	mg/kg	50,00	NA	ND
Hexabromodifenil Eter	-	mg/kg	50,00	NA	ND
Heptabromodifenil Eter	-	mg/kg	50,00	NA	ND
Octabromodifenil Eter	-	mg/kg	125,00	NA	ND
Nonabromodifenil Eter	-	mg/kg	125,00	NA	ND
Nonabromodifenil Eter	-	mg/kg	125,00	NA	ND
Nonabromodifenil Eter	-	mg/kg	125,00	NA	ND
Decabromodifenil Eter	-	mg/kg	125,00	NA	ND
Soma dos PBDEs	Max. 1000,00	mg/kg	-	NA	ND

<sup>-</sup> As incertezas expandidas foram calculadas considerando k=2 e intervalo de confiança de ±95%.

#### Observações:

Os resultados reportados referem-se somente às amostras submetidas aos ensaios. A SGS não se responsabiliza pelas informações a respeito da composição da amostra e seus dados de fabricação. As mesmas são de responsabilidade exclusiva do cliente e não fazem parte do escopo de serviço da SGS do Brasil LTDA.

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A Regra de decisão definida pela SGS estabelece que a incerteza de medição não será considerada no Veredicto (declaração de conformidade) quando indicado no relatório de ensaio.

\*\*\* Final do Relatório \*\*\*

Os ensaios foram realizados no laboratório SGS do Brasil, localizado no endereço citado no rodapé deste relatório.

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#### Relatório de Ensaios

No. BR2203870-01 Rev. 0

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HT MICRON SEMICONDUTORES S.A. AVENIDA UNISINOS 1550 SAO LEOPOLDO, RS 93022750 BRAZIL

SGS Ordem No. : 40030083

Nome da amostra: CI DDR3

Total de Amostras Recebidas : 400 Amostras

As amostra(s) e informações acima foram fornecidas pelo cliente.

Número da Proposta: C&P PR22-281846.22 rev.01

Data de Recebimento da Amostra: 27 Set 2022

Período de análise: 30 Set 2022 - 07 Nov 2022

Teste Solicitado: Teste(s) selecionado(s) conforme solicitado pelo cliente.

Método de ensaio : Consulte a(s) página(s) seguinte(s).

Resultados dos Ensaios : Consulte a(s) página(s) seguinte(s).

Responsabilidade Técnica : Alessandra Shimizu - Gerente de Laboratório CRQ 04245592

AVISO: As opiniões e interpretações expressas abaixo são baseadas nos resultados obtidos a partir do item ensaiado, aplicáveis somente para os ensaios em que os parâmetros de especificação estão inclusos nesse relatório.

#### Opiniões e Interpretações :

Baseado nos testes executados na amostra, o resultado **atende** aos requisitos estabelecidos pela Diretiva RoHS (UE) 2015/863 e emenda Anexo II da Diretiva 2011/65/UE, para os ensaios realizados.

#### Resumo de Resultados:

Teste Solicitado :	Método de Ensaio	Avaliação
Ftalatos	Referenciado na IEC 62321-8:2017	Atende
	análise realizada por GC-MS.	

Assina em nome da

SGS do Brasil Ltda.

Alessandra Shimizu

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Gerente de Laboratório CRQ 04245592

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#### Relatório de Ensaios

No. BR2203870-01 Rev. 0

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Resultados dos Ensaios:

#### Descrição das Amostras

Specimen	SGS ID Amostra	Descrição
No.		
1	BR2203870-01.001	CI DDR3

Nota:

(1) MQL = Limite de Quantificação do Método

(2) ND = Não Detectado ( < MQL ) (3) "--" = Análises em Processo

(4) 1 mg/kg = 0,0001%(5) mg/kg = ppm

### **Ftalatos**

Metodologia Referenciado na IEC 62321-8:2017 análise realizada por GC-MS.

Item(s) de Teste	CAS NO.	<u>Limite</u>	<u>Unid.</u>	<u>MQL</u>	<u>Incerteza</u>	<u>001</u>
Di(2-etilhexil) Ftalato (DEHP)	117-81-7	Max. 0,100	%	0,005	NA	ND
Benzil butil Ftalato (BBP)	85-68-7	Max. 0,100	%	0,005	NA	ND
Ftalato de di-n-butilo (DBP)	84-74-2	Max. 0,100	%	0,005	NA	ND
Di-isobutil Ftalato (DIBP)	84-69-5	Max. 0,100	%	0,005	NA	ND

<sup>-</sup> As incertezas expandidas foram calculadas considerando k=2 e intervalo de confiança de ±95%.

## Observações:

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A Regra de decisão definida pela SGS estabelece que a incerteza de medição não será considerada no Veredicto (declaração de conformidade) quando indicado no relatório de ensaio.

\*\*\* Final do Relatório \*\*\*

Os ensaios foram realizados no laboratório SGS do Brasil, localizado no endereço citado no rodapé deste relatório.

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**Test Report** No. HKTEC2205479201 Date: 31 Oct 2022 Page 1 of 5

HT MICRON SEMICONDUTORES S.A.

AVENIDA UNISINOS, 1550, CRISTO REI -SÃO LEOPOLDO - RIO GRANDE DO SUL

The following sample(s) was/were submitted and identified on behalf of the clients as : CI DDR3 BR2203870EXT

SGS Job No. : 5124650 - HK

Date of Sample Received: 17 Oct 2022

Testing Period: 17 Oct 2022 - 26 Oct 2022

Test Requested: Selected test(s) as requested by client.

Test Method: Please refer to next page(s).

Test Results: Please refer to next page(s).

Conclusion: The test results of submitted sample(s) do not exceed the reference limit.

Signed for and on behalf of SGS Hong Kong Limited.

Chan Chun Kit, Dickson

Manager EET

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No. HKTEC2205479201

Date: 31 Oct 2022

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Test Results:

#### **Test Part Description:**

Specimen No.	SGS Sample ID	Description
1	HKT22-054792.001	Black plastic w/ silvery metal w/ grey printing w/ chips - Electronic component

#### Remarks:

- (1) 1 mg/kg = 1 ppm = 0.0001%
- (2) MDL = Method Detection Limit
- (3) ND = Not Detected ( < MDL )
- (4) "-" = Not Regulated

# <u>Halogen</u>

Test Method: With reference to EN 14582:2016, analysis was performed by IC.

Test Item(s)	<u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>001</u>
Fluorine (F)	-	mg/kg	50	220
Chlorine (CI)	-	mg/kg	50	ND
Bromine (Br)	-	mg/kg	50	ND
lodine (I)	-	mg/kg	50	ND

#### Notes:

(1) The measurement report of the expanded uncertainty with confident level 95% by coverage factor k=2, is 20% for each analyte of halogen.

# IEC61249-2-21 - Halogen

Test Method: With reference to EN 14582: 2016, determination by Ion Chromatograph (IC) method. (Decision Rule: please refer to appendix 1: Category 1)

Test Item(s)	<u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>001</u>
Chlorine (CI)	900	mg/kg	50	ND
Bromine (Br)	900	mg/kg	50	ND
Chlorine (CI)+Bromine (Br)	1,500	mg/kg	100	ND
Conclusion				PASS

# Notes:

The reference limit is referred from IEC61249-2-21.

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# Appendix 1

Category	Decision Rule Statement
N. 1. 7. 2. 1. 7	
1	The decision rule for conformity reporting is based on the non-binary statement with guard band (is equal to the expanded measurement uncertainty with a 95% coverage probability, w = U95) in ILAC-G8:09/2019 Clause 4.2.3.  A. "Pass - the measured value is within (or below / above) the acceptance limit, where the acceptance limit is below / above to the guard band." or "Pass - The measured values were observed in tolerance at the points tested. The specific false accept risk is up to 2.5%.".  B. "Conditional Pass - The measured values were observed in tolerance at the points tested. However, a portion of the expanded measurement uncertainty intervals about one or more measured values exceeded / out of tolerance. When the measured result is close to the tolerance, the specific false accept risk is up to 50%."  C. "Conditional Fail - One or more measured values were observed out of tolerance at the points tested. However, a portion of the expanded measurement uncertainty intervals about one or more measured values were in tolerance. When the measured result is close to the tolerance, the specific false reject risk is up to 50%."  D. "Fail - the measured value is out of (or below / above) the tolerance limit added / subtracted to the guard band." or "Fail - One or more measured values were observed out of tolerance at the points tested". The specific false reject risk is up to 2.5%.
2	The decision rule for conformity reporting is based on BS EN 1811:2011+A1:2015: Reference test method for release of nickel from all post assemblies which are inserted into pierced parts of the human body and articles intended to come into direct and prolonged contact with the skin in Section 9.2 interpretation of results.
3	The decision rule for conformity reporting is based on the general consideration of simple acceptance as stated in ISO/IEC Guide 98-3: "Uncertainty of measurement - Part 3: Guide to the expression of uncertainty in measurement (GUM 1995)", and more specifically for analytical measurements to the EURACHEM/CITAC Guide 2012 "Quantifying Uncertainty in Analytical Measurement".
4.	The decision rule for conformity reporting is according to the IEC 62321-7-1 Edition 1.0 2015- 09 Section 7: Table 1-(comparison to standard and interpretation of result)
5	The decision rule for conformity reporting is according to the IEC 62321-3-1 Edition 1.0 2013-06 Annex A.3 interpretation of result.
6	The decision rule for conformity reporting is according to the GB/T 26125-2011 Annex A to H
7	The decision rule for conformity reporting is according to the requested specification or standard (ASTM F963-17 section 4.3.5)
8	The decision rule for conformity reporting is according to the requested specification or standard (AS/NZS ISO 8124 Part 3 section 4.2)
Remark	If the decision rule is not feasible to be used and the uncertainty of the result is able to be provided, the uncertainty range of the result will be shown in the report. Otherwise, only result will be shown in the report.

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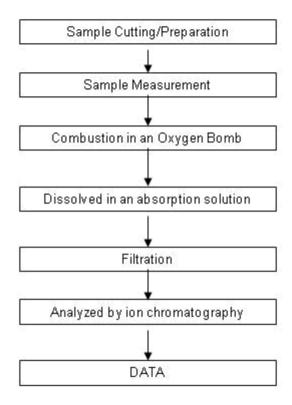
No. HKTEC2205479201

Date: 31 Oct 2022

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## Flowchart for Halogen Free Test

Method: BS EN14582:2016



Operator:

Tang Ying Sam

Supervisor:

Chan Chun Kit (Dickson)

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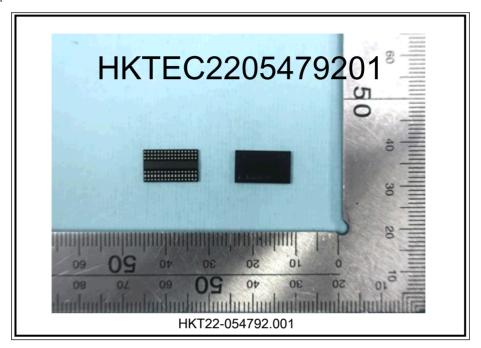


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Date: 31 Oct 2022

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Sample photo:



SGS authenticate the photo on original report only

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# Relatório de Ensaios

No. BR2203870-02 Rev. 0

Data: Barueri, 11 Nov 2022

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HT MICRON SEMICONDUTORES S.A. AVENIDA UNISINOS 1550 SAO LEOPOLDO, RS 93022750 BRAZIL

SGS Ordem No.: 40030083

SGS ID Amostra BR2203870-02.001

Descrição CI DDR3

Total de Amostras Recebidas : 400 Amostras

As informações acima foram fornecidas pelo cliente ou em seu nome.

Número da Proposta: C&P PR22-281846.22 rev.01

Data de Recebimento da Amostra: 27 Set 2022

Período de análise: 30 Set 2022 - 11 Nov 2022

Teste Solicitado: Teste(s) selecionado(s) conforme solicitado pelo cliente.

Descrição das Amostras:

Consulte a(s) página(s) seguinte(s).

Método de ensaio :

Consulte a(s) página(s) seguinte(s).

Resultados dos Ensaios :

Consulte a(s) página(s) seguinte(s).

Responsabilidade Técnica : Alessandra Shimizu - Gerente de Laboratório CRQ 04245592

Assina em nome da SGS do Brasil Ltda.

Obstrie z-

Alessandra Shimizu

Gerente de Laboratório CRQ 04245592

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#### Relatório de Ensaios

No. BR2203870-02 Rev. 0

Data: Barueri, 11 Nov 2022

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Resultados dos Ensaios:

Descrição das Amostras:

Item No.	SGS ID Amostra	Descrição	
1	BR2203870.001	CI DDR3	

#### **Metais Pesados**

Método de ensaio: Referenciado na US EPA 3052:1996, análise foi realizada por ICP-OES.

<u>Item(s) de Teste</u>	<u>Limite</u>	<u>MQL</u>	<u>Unid.</u>	001
Antimônio (Sb)	-	12,50	mg/kg	ND

#### Ácido Perfluorococtanico (PFOA) e Ácido Heptadecafluoroctano Sulfônico (PFOS)

Método de ensaio : Método In House 2364/12. Análise realizada por LC-MS.

Item(s) de Teste	CAS NO.	<u>Limite</u>	<u>MQL</u>	<u>Unid.</u>	001
Ácido perfluorooctanóico (PFOA)	335-67-1	-	1,000	μg/m²	ND
Perfluorooctanossulfonatos (PFOS)	1763-23-1	-	1,000	μg/m²	ND

#### Nota:

(1) MQL = Limite de Quantificação do Método

(2) ND = Não Detectado ( < MQL ) (3) "-" = Não Analisado / Não Aplicável (4) "--" = Análises em Processo

(5) 1 mg/kg = 0,0001%(6) mg/kg = ppm

#### Observações:

Os resultados reportados referem-se somente às amostras submetidas aos ensaios. A SGS não se responsabiliza pelas informações a respeito da composição da amostra e seus dados de fabricação. As mesmas são de responsabilidade exclusiva do cliente e não fazem parte do escopo de serviço da SGS do Brasil LTDA.

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\*\*\* Final do Relatório \*\*\*

Os ensaios foram realizados no laboratório SGS do Brasil, localizado no endereço citado no rodapé deste relatório.

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