

Test Report

No. BR2001871 Rev. 0

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

SGS Order No. : 40013012
Total of Sample : 184 SAMPLES
Lot Number : HT32SX-PROTO
Country of Origin : BRAZIL
Country of Destination : BRAZIL
Sample date of Manufactured : 05/11/2020
Sample date of Expiration : 05/11/2025
Supplier : HT MICRON SEMICONDUTORES S.A
Manufacturer : HT MICRON SEMICONDUTORES S.A

The informations above was provided by or on behalf of the customer.

Proposal Number :
Date of Sample Received : 01 Jul 2020
Testing Period : 01 Jul 2020 - 07 Jul 2020
Test Requested : Selected test(s) as requested by client.
Test Part Description : Please refer to next page(s).
Test Method : Please refer to next page(s).
Test Results : Please refer to next page(s).
Technical Responsibility : Alessandra Shimizu - Laboratory Manager CRQ 04245592

Signed for and on behalf of
SGS do Brasil Ltda.



Renata Rodrigues de Souza
Technician Coordinator CRBio 86584/01-D

Test Report

No. BR2001871 Rev. 0

Test Results :

Test Part Description

Item No.	SGS Sample ID	Description
1	BR2001871.001	iMCP Sigfox

Determination of lead, cadmium, chromium and mercury in polymers, metals and electronics by ICP

Test Method : With reference to IEC 62321-4 and 5:2013; analysis was performed by ICP-OES.

Test Item(s)	Limit	Unit	MQL	Uncertainty	001
Lead (Pb)	Max. 1000.00	mg/kg	12.50	± 2.02	25.29
Cadmium (Cd)	Max. 100.00	mg/kg	12.50	NA	ND
Mercury (Hg)	Max. 1000.00	mg/kg	62.50	NA	ND

- For expanded uncertainty considered k=2 and ± 95% level of confidence.

Determinations of hexavalent chromium in polymers and electronics by colorimetric method

Test Method : With reference to IEC 62321:2008 and IEC 62321:2015 ; analysis was performed by UV-VIS.

Test Item(s)	Limit	Unit	MQL	Uncertainty	001
Hexavalent Chromium	Max. 1000.00	mg/kg	10.00	NA	ND

- For expanded uncertainty considered k=2 and ± 95% level of confidence.

Determination of PBB and PBDE in polymers by GC-MS

Test Method : With reference to IEC 62321-6:2015; analysis was performed by GC-MS.

Test Item(s)	Limit	Unit	MQL	Uncertainty	001
Monobromobiphenyl	-	mg/kg	35.00	NA	ND
Dibromobiphenyl	-	mg/kg	35.00	NA	ND
Tribromobiphenyl	-	mg/kg	35.00	NA	ND
Tetrabromobiphenyl	-	mg/kg	35.00	NA	ND
Pentabromobiphenyl	-	mg/kg	35.00	NA	ND
Hexabromobiphenyl	-	mg/kg	35.00	NA	ND
Heptabromobiphenyl	-	mg/kg	35.00	NA	ND
Octabromobiphenyl	-	mg/kg	35.00	NA	ND
Nonabromobiphenyl	-	mg/kg	35.00	NA	ND
Decabromobiphenyl	-	mg/kg	35.00	NA	ND
Sum of PBBs	Max. 1000.00	mg/kg	-	NA	ND
Monobromodiphenyl ether	-	mg/kg	50.00	NA	ND
Dibromodiphenyl ether	-	mg/kg	50.00	NA	ND
Tribromodiphenyl ether	-	mg/kg	50.00	NA	ND
Tetrabromodiphenyl ether	-	mg/kg	50.00	NA	ND
Pentabromodiphenyl ether	-	mg/kg	50.00	NA	ND
Hexabromodiphenyl ether	-	mg/kg	50.00	NA	ND
Hexabromodiphenyl ether	-	mg/kg	50.00	NA	ND
Heptabromodiphenyl ether	-	mg/kg	50.00	NA	ND
Octabromodiphenyl ether	-	mg/kg	125.00	NA	ND

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Test Item(s)	Limit	Unit	MQL	Uncertainty	001
Nonabromodiphenyl ether	-	mg/kg	125.00	NA	ND
Nonabromodiphenyl ether	-	mg/kg	125.00	NA	ND
Nonabromodiphenyl ether	-	mg/kg	125.00	NA	ND
Decabromodiphenyl ether	-	mg/kg	125.00	NA	ND
Sum of PBDEs	Max. 1000.00	mg/kg	-	NA	ND

- For expanded uncertainty considered k=2 and ± 95% level of confidence.

Remarks :

- (1) MQL = Method Quantification Limit
- (2) ND = Not Detected (< MQL)
- (3) "-" = Not Analyzed / Not Applicable
- (4) "--" = Analysis in Process
- (5) 1 mg/kg = 0.0001%
- (6) mg/kg = ppm

Comments :

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WARNING: The opinions and interpretations expressed below are based on the results obtained from the item tested, applicable only to the tests where the specification parameters are included in this report.

Comments and Interpretations :

Based on tests performed on the sample, the result **pass** the requirements established by RoHS Directive 2015/863/UE and its subsequent amendments, for the tests performed.

Result Summary :

Test Requested :	Test Method	Evaluation
Determination of lead, cadmium, chromium and mercury in polymers, metals and electronics by ICP	With reference to IEC 62321-4 and 5:2013; analysis was performed by ICP-OES.	PASS
Determinations of hexavalent chromium in polymers and electronics by colorimetric method	With reference to IEC 62321:2008 and IEC 62321:2015 ; analysis was performed by UV-VIS.	PASS
Determination of PBB and PBDE in polymers by GC-MS	With reference to IEC 62321-6:2015; analysis was performed by GC-MS.	PASS

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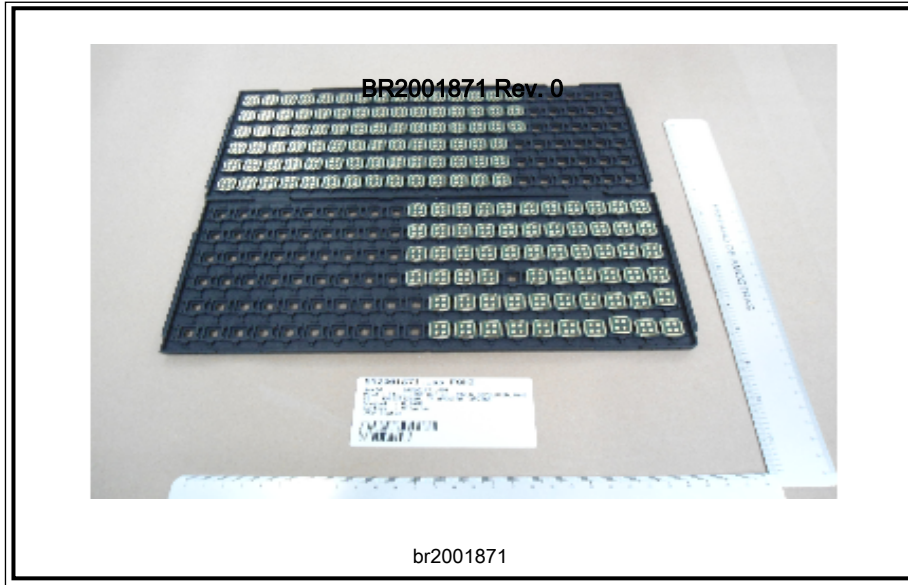
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Photo :

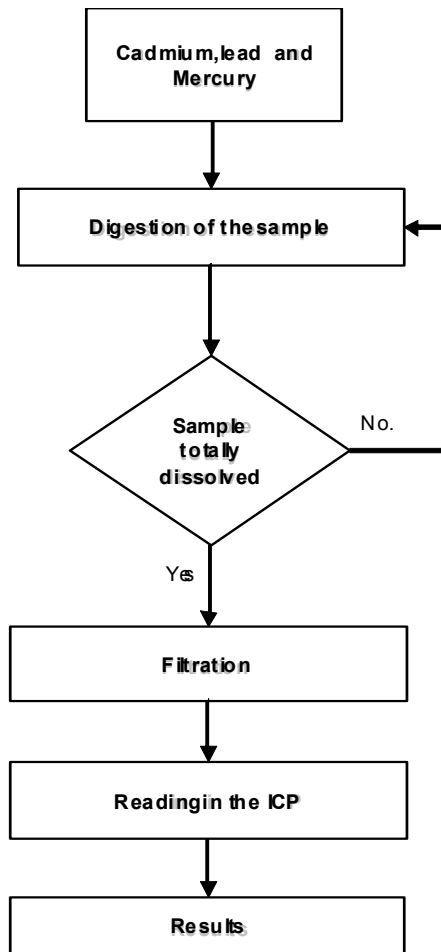
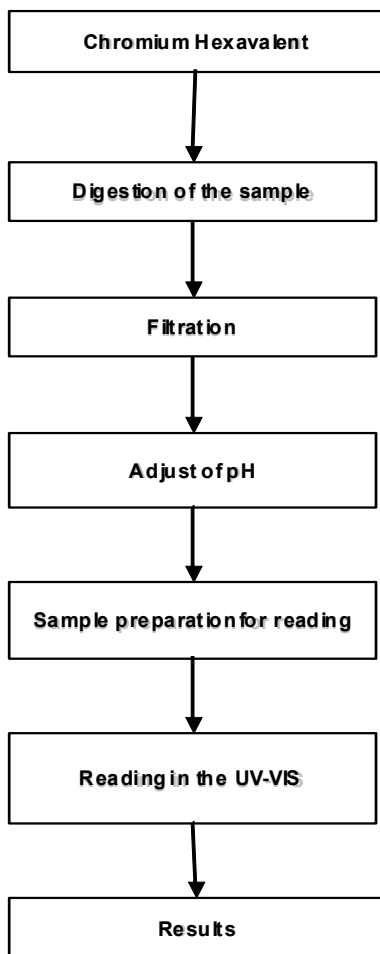


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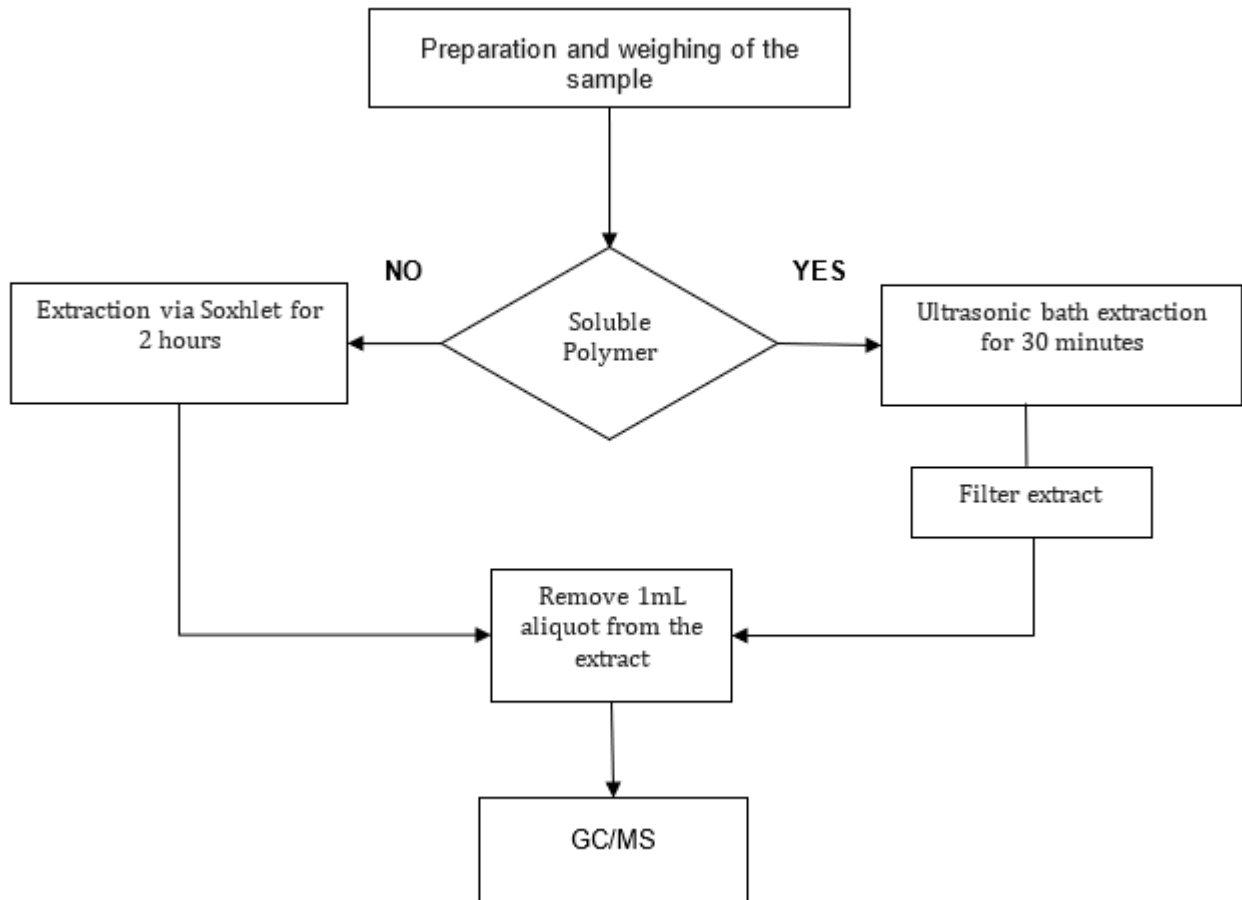
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The sample has been totally digest and dissolved by the pre- conditioning method as flow below (Cadmium, Lead and Mercury).



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Flow chart of determination of PBB and PBDE in polymers by GC/MS



*** End of Report ***

The assay were conducted in the laboratory in Brazil, located at the address cited at the bottom of this report.

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Test Report

No. BR2001871-01 Rev. 0

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

SGS Order No. : 40013012
Total of Sample : 184 SAMPLES
Lot Number : HT32SX-PROTO
Country of Origin : BRAZIL
Country of Destination : BRAZIL
Sample date of Manufactured : 05/11/2020
Sample date of Expiration : 05/11/2025
Supplier : HT MICRON SEMICONDUTORES S.A
Manufacturer : HT MICRON SEMICONDUTORES S.A

The informations above was provided by or on behalf of the customer.

Proposal Number : CRS PR20-00440 Rev.02
Date of Sample Received : 01 Jul 2020
Testing Period : 01 Jul 2020 - 07 Jul 2020
Test Requested : Selected test(s) as requested by client.
Test Part Description : Please refer to next page(s).
Test Method : Please refer to next page(s).
Test Results : Please refer to next page(s).
Technical Responsibility : Alessandra Shimizu - Laboratory Manager CRQ 04245592

Signed for and on behalf of
SGS do Brasil Ltda.



Alessandra Shimizu
Laboratory Manager CRQ 04245592

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Test Report

No. BR2001871-01 Rev. 0

Test Results :

Test Part Description

Item No.	SGS Sample ID	Description
1	BR2001871-01.001	iMCP Sigfox

Phthalates

Test Method : CPSC Method CPSC-CH-C1001.09.3 - 2010

Test Item(s)	CAS NO.	Limit	Unit	MQL	Uncertainty	001
Bis-(2-ethylhexyl) (DEHP)	117-81-7	Max. 0.100	%	0.006	NA	ND
Benzylbutyl Phthalate (BBP)	85-68-7	Max. 0.100	%	0.006	NA	ND
Dibutyl Phthalate (DBP)	84-74-2	Max. 0.100	%	0.006	NA	ND
Diisobutyl Phthalate (DIBP)	84-69-5	Max. 0.100	%	0.006	NA	ND

- For expanded uncertainty considered k=2 and ± 95% level of confidence.

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- (4) "--" = Analysis in Process
- (5) 1 mg/kg =0.0001%
- (6) mg/kg = ppm

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WARNING: The opinions and interpretations expressed below are based on the results obtained from the item tested, applicable only to the tests where the specification parameters are included in this report.

Comments and Interpretations :

Based on tests performed on the sample, the result **pass** the requirements established by RoHS Directive 2015/863/UE and its subsequent amendments, for the tests performed.

Result Summary :

Test Requested :	Test Method	Evaluation
Phthalates	CPSC Method CPSC-CH-C1001.09.3 - 2010	PASS

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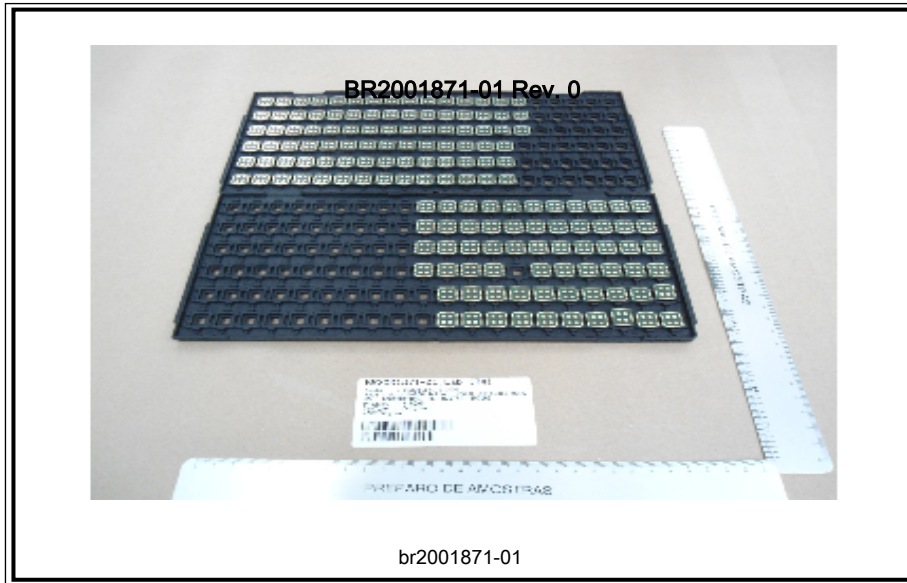
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Test Report

No. BR2001871-01 Rev. 0

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Photo :

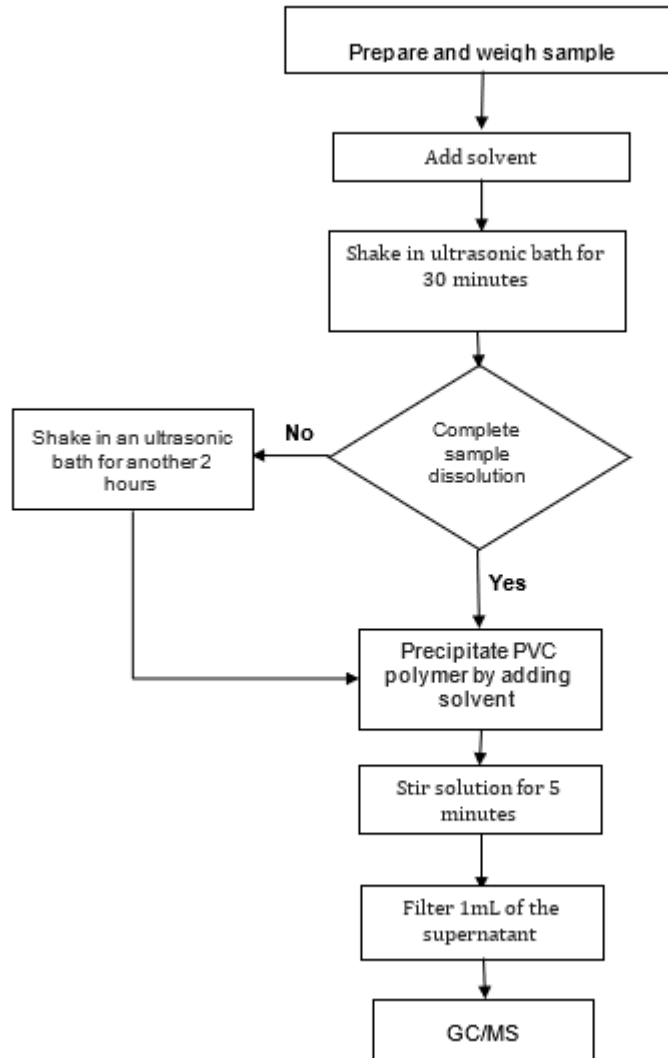


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Phthalate Flow Chart - CPSC-CH-C1001-09



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Test Report

No. BR2001871-02 Rev. 0

Date: Barueri, 06 Jul 2020

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AVENIDA UNISINOS
1550
SAO LEOPOLDO, RS 93022750
BRAZIL

SGS Order No. : 40013012

SGS Sample ID BR2001871-02.001
Description iMCP Sigfox

Total of Sample : 184 SAMPLES

Lot Number : HT32SX-PROTO

Country of Origin : BRAZIL

Country of Destination : BRAZIL

Sample date of Manufactured : 05/11/2020

Sample date of Expiration : 05/11/2025

Supplier : HT MICRON SEMICONDUTORES S.A

Manufacturer : HT MICRON SEMICONDUTORES S.A

The informations above was provided by or on behalf of the customer.

Proposal Number :

Date of Sample Received : 01 Jul 2020

Testing Period : 01 Jul 2020 - 03 Jul 2020

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

Test Part Description : Please refer to next page(s).

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

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

Technical Responsibility : Alessandra Shimizu - Laboratory Manager CRQ 04245592

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Renata Rodrigues de Souza
Technician Coordinator CRBio 86584/01-D

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Test Report

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Date: Barueri, 06 Jul 2020

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Test Results :

Test Part Description :

Item No.	SGS Sample ID	Description
1	BR2001871.001	iMCP Sigfox

Heavy Metals

Test Method : With reference to US EPA Method 3052:1996, analysis was performed by ICP-OES.

Test Item(s)	Limit	MQL	Unit	001
Antimony (Sb)	-	12.50	mg/kg	ND

Remarks :

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- (5) 1 mg/kg =0.0001%
- (6) mg/kg = ppm

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