



# Test Report

**Report No.:** PTC18120704103C-EN01

**Issue Date:** Jan. 25, 2019

Page 1 of 14

**Applicant:** Microtech S.r.l

**Address:** Via Aldo Moro,9 20090 Buccinasco (Mi) Italy

The following merchandise was (were) submitted and identified by client as:

**Sample Name:** e-cube Mini PC

**Style No.:** EC19ALB

**Order No.:** PTC18120704103C

**Qty of Sample Submitted:** 1

**Manufacturer:** Microtech S.r.l

**Address:** Via Aldo Moro,9 20090 Buccinasco (Mi) Italy

**Sample Received Date:** Dec. 21, 2018

**Completed Date:** Dec. 26, 2018

**Test Requested and Conclusion(s):**

No.	Test Sample	Standard and Requirement	Conclusion(s)
1	Submitted sample	RoHS Directive 2011/65/EU and its subsequent amendments - Lead (Pb), Cadmium(Cd), Mercury(Hg), Hexavalent Chromium(Cr <sup>6+</sup> ), PBBs and PBDEs	PASS

**Test Result(s):** Please refer to next page(s).

Signed for and on Behalf of PTC



Raul Cheng / P & C Department General Manager  
DongGuan Precise Testing and Certification Corp. Ltd.

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Page 2 of 14

## Test Result(s):

RoHS - Lead (Pb)/Cadmium(Cd)/Mercury(Hg)/Hexavalent Chromium(Cr<sup>6+</sup>)/PBBs/PBDEs

Test Method: IEC62321-3-1: 2013, IEC62321-5: 2013, IEC62321-4: 2013, IEC 62321-7-1:2015, IEC 62321-7-2: 2017, analyzed by EDXRF & AAS & ICP-AES & GC-MS & UV-Vis.

No.	Material Description	EDXRF Result					Chemical Result (mg/kg)	Conclusion
		Pb	Cd	Hg	Cr	Br		
1	Black plastic(cover)	BL	BL	BL	BL	463	PBBs:N.D. PBDEs:N.D.	PASS
2	White plastic with silvery coating(cover)	BL	BL	BL	BL	BL	--	PASS
3	Black rubber with glue (pad)	BL	BL	BL	BL	BL	--	PASS
4	Translucent plastic (LED lampshade)	BL	BL	BL	BL	BL	--	PASS
5	Silvery metal with gery coating(metal)	BL	BL	BL	BL	--	--	PASS
6	Silvery metal (metal)	BL	BL	BL	BL	--	--	PASS
7	Golden metal (metal)	BL	BL	BL	BL	--	--	PASS
8	Black plastic (cable jacket)	BL	BL	BL	BL	BL	--	PASS
9	Red plastic (wire jacket)	BL	BL	BL	BL	BL	--	PASS
10	White plastic (wire jacket)	BL	BL	BL	BL	BL	--	PASS
11	Golden metal (core)	BL	BL	BL	BL	--	--	PASS
12	Black magnet (magnet ring)	BL	BL	BL	BL	--	--	PASS
13	White plastic(terminal)	BL	BL	BL	BL	BL	--	PASS
14	Silvery metal(core)	BL	BL	BL	BL	--	--	PASS
15	Silvery metal(plug)	BL	BL	BL	BL	--	--	PASS
16	Golden metal (pin)	BL	BL	BL	BL	--	--	PASS
17	Black plastic(pin fixture)	BL	BL	BL	BL	BL	--	PASS
18	Silvery metal (socket cover)	BL	BL	BL	BL	--	--	PASS
19	Blue plastic (wire jacket)	BL	BL	BL	BL	BL	--	PASS

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Issue Date: Jan. 25, 2019

Page 3 of 14

No.	Material Description	EDXRF Result					Chemical Result (mg/kg)	Conclusion
		Pb	Cd	Hg	Cr	Br		
20	Brown plastic (wire jacket)	BL	BL	BL	BL	BL	--	PASS
21	White plastic with black coating/glue(inner)	BL	BL	BL	BL	BL	--	PASS
22	Silvery metal(spring)	BL	BL	BL	BL	--	--	PASS
23	Silvery metal(screw)	BL	BL	BL	BL	--	--	PASS
24	Silvery metal with black plating(screw)	BL	BL	BL	BL	--	--	PASS
25	Silvery metal (shim)	BL	BL	BL	BL	--	--	PASS
26	Black farbic with glue (tape)	BL	BL	BL	BL	BL	--	PASS
27	Green PCB (PCB"PB#H35123-001")	BL	BL	BL	BL	BL	--	PASS
28	White plastic with black printing(lable)	BL	BL	BL	BL	BL	--	PASS
29	Silvery metal (shielding case)	BL	BL	BL	BL	--	--	PASS
30	Green PCB (PCB"CK1-LED-V1.0")	BL	BL	BL	BL	OL	PBBs:N.D. PBDEs:N.D.	PASS
31	White body (diode)	BL	BL	BL	BL	BL	--	PASS
32	Silvery solder (PCB"CK1-LED-V1.0")	BL	BL	BL	BL	--	--	PASS
33	Green PCB (PCB"CK1-V1.1")	BL	BL	BL	BL	OL	PBBs:N.D. PBDEs:N.D.	PASS
34	Silvery metal(battery)	BL	BL	BL	IN	--	Cr <sup>6+</sup> :Negative	PASS
35	White plastic(fixture)	BL	BL	BL	BL	BL	--	PASS
36	Black body(IC)	BL	BL	BL	BL	BL	--	PASS
37	Silvery metal(pin)	BL	BL	BL	BL	--	--	PASS
38	Blue plastic (pin fixture)	BL	BL	BL	BL	BL	--	PASS
39	Brown plastic (chip capacitor)	BL	BL	BL	BL	BL	--	PASS
40	Black body with white printing (chip resistor)	BL	BL	BL	BL	BL	--	PASS
41	Silvery metal(krystal)	BL	BL	BL	BL	--	--	PASS

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Issue Date: Jan. 25, 2019

Page 4 of 14

No.	Material Description	EDXRF Result					Chemical Result (mg/kg)	Conclusion
		Pb	Cd	Hg	Cr	Br		
42	Golden metal (contact chip)	BL	BL	BL	BL	--	--	PASS
43	White plastic with glue (tape)	BL	BL	BL	BL	BL	--	PASS
44	Black plastic(button)	BL	BL	BL	BL	BL	--	PASS
45	Silvery solder (PCB"CK1-V1.1")	BL	BL	BL	BL	--	--	PASS
46	Black plastic(fan )	BL	BL	BL	BL	OL	PBBs:N.D. PBDEs:N.D.	PASS
47	Golden metal (coil)	BL	BL	BL	BL	--	--	PASS
48	Silvery metal(motor)	BL	BL	BL	BL	--	--	PASS

- Note:**
1. mg/kg = milligram per kilogram (ppm).
  2. N.D. = Not Detected (<RL).
  3. Negative = Absence of Cr<sup>6+</sup>.
  4. Positive = Presence of Cr<sup>6+</sup>: the detected concentration in boiling-water-extraction solution is equal or greater than 0.02 mg/kg with 50 cm<sup>2</sup> sample surface area.
  5. The result are obtained by EDXRF for primary screening, if the result exceeds the below limit (BL), and further chemical testing.

## Screening limits in mg/kg for regulated elements in various matrices

Elements	Polymer	Metal	Composite Materials
Pb	BL≤(700-3σ)<X<(1300+3σ)≤ OL	BL≤(700-3σ)<X<(1300+3σ)≤ OL	BL≤(500-3σ)<X<(1500+3σ)≤ OL
Cd	BL≤(70-3σ)<X<(130+3σ)≤ OL	BL≤(70-3σ)<X<(130+3σ)≤ OL	LOD<X<(150+3σ)≤OL
Hg	BL≤(700-3σ)<X<(1300+3σ)≤ OL	BL≤(700-3σ)<X<(1300+3σ)≤ OL	BL≤(500-3σ)<X<(1500+3σ)≤ OL
Cr	BL≤(700-3σ)<X	BL≤(700-3σ)<X	BL≤(500-3σ)<X
Br	BL≤(300-3σ)<X	--	BL≤(250-3σ)<X

BL = Below Limit, OL = Over Limit, IN = Inconclusive, LOD = Limit of Detection

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Issue Date: Jan. 25, 2019

Page 5 of 14

## Chemical Testing - Detection Limit & 2011/65/EU Limit:

No	Name of Chemicals	Detection Limit (mg/kg)	2011/65/EU Limit (mg/kg)
1	Lead (Pb)	5	1000
2	Cadmium (Cd)	5	100
3	Mercury (Hg)	5	1000
4	Chromium VI (Cr VI)	Non-metal: 10 Metal: Negative	Non-metal: 1000 Metal: Negative
5	Polybromobiphenyls (PBBs) -Bromobiphenyl (MonoBB) -Dibromobiphenyl (DiBB) -Tribromobiphenyl (TriBB) -Tetrabromobiphenyl (TetraBB) -Pentabromobiphenyl (PentaBB) -Hexabromobiphenyl (HexaBB) -Heptabromobiphenyl (HeptaBB) -Octabromobiphenyl (OctaBB) -Nonabromobiphenyl (NonaBB) -Decabromobiphenyl (DecaBB)	Each 5	Sum: 1 000
6	Polybromodiphenyl ethers (PBDEs) -Bromodiphenyl ether (MonoBDE) -Dibromodiphenyl ether (DiBDE) -Tribromodiphenyl ether (TriBDE) -Tetrabromodiphenyl ether (TetraBDE) -Pentabromodiphenyl ether (PentaBDE) -Hexabromodiphenyl ether (HexaBDE) -Heptabromodiphenyl ether (HeptaBDE) -Octabromodiphenyl ether (OctaBDE) -Nonabromodiphenyl ether (NonaBDE) -Decabromodiphenyl ether (DecaBDE)	Each 5	Sum: 1 000

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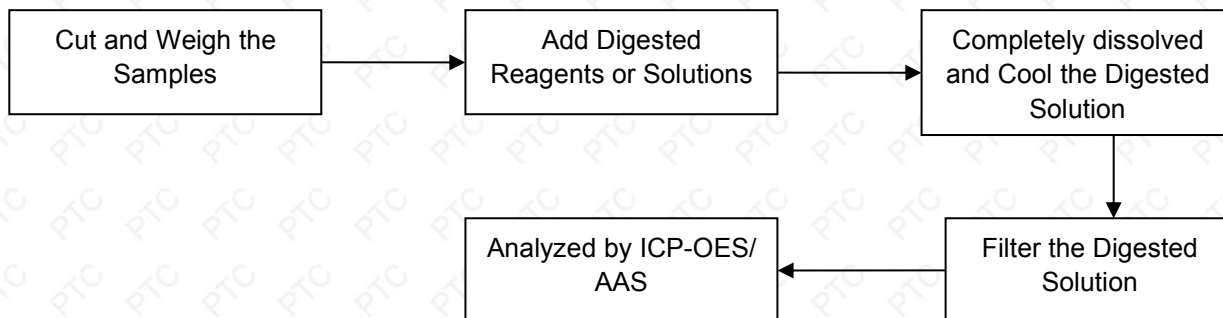
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Issue Date: Jan. 25, 2019

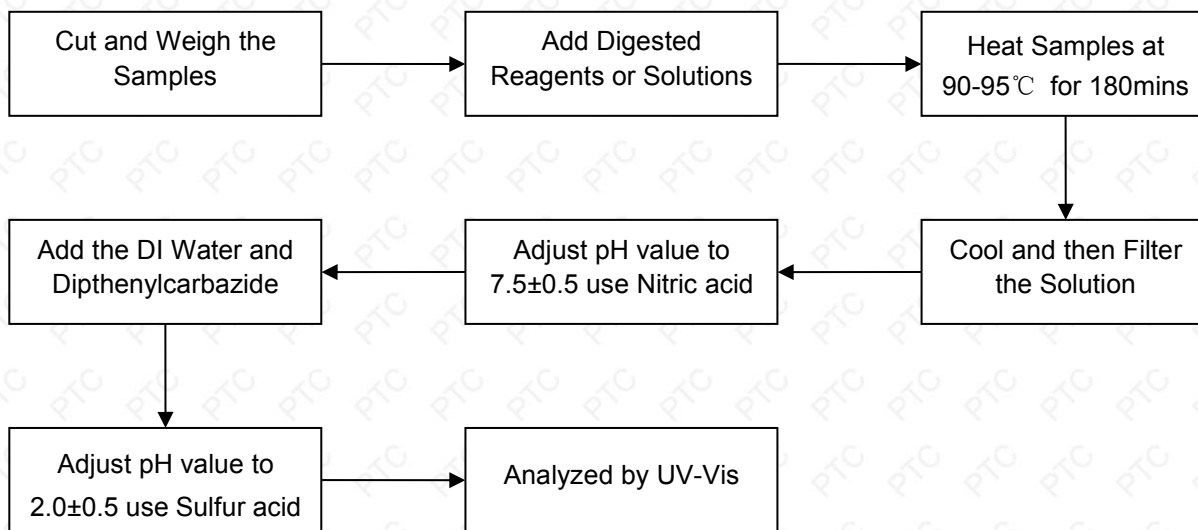
Page 6 of 14

## Test Process Flow:

### 1. Lead, Cadmium, Mercury



### 2. Hexavalent Chromium (Non-metal)



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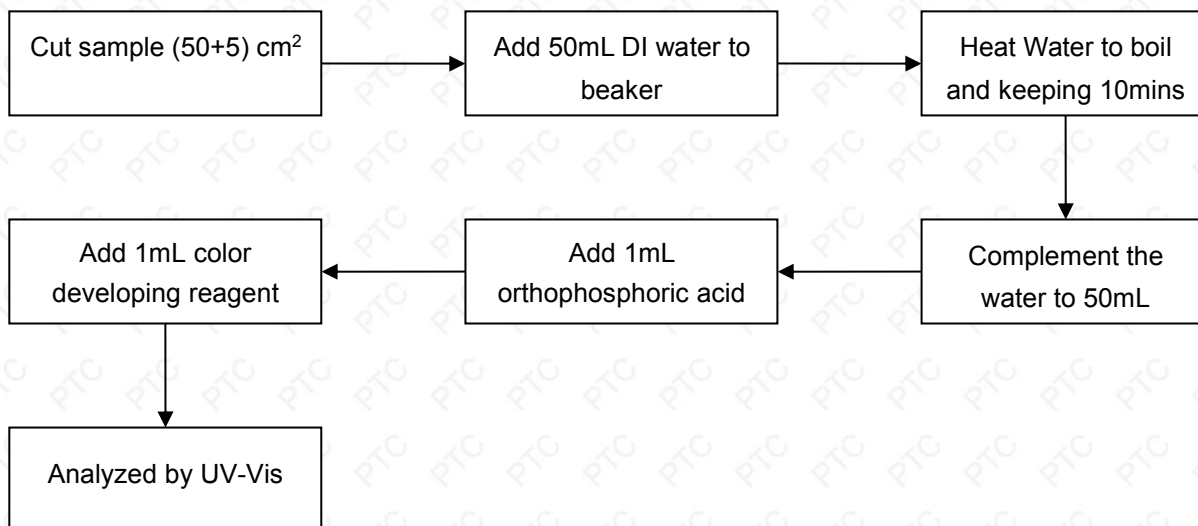
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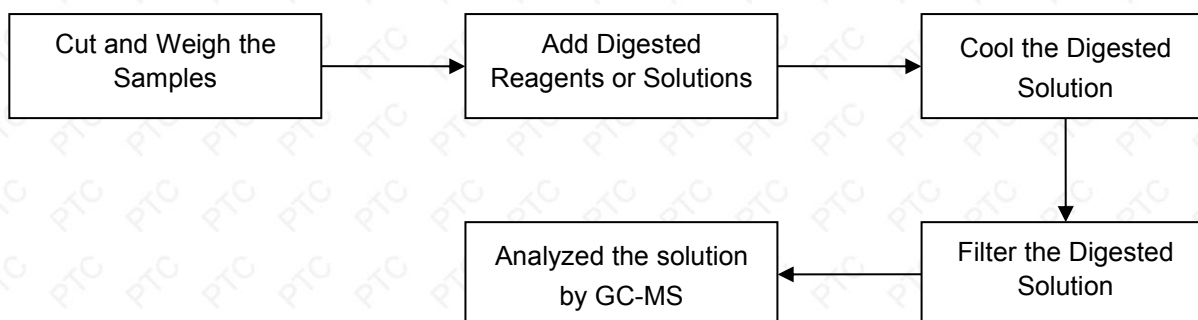
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Page 7 of 14

## Hexavalent Chromium (Metal)



## 3. PBBs & PBDEs



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Report No.: PTC18120704103C-EN01

Issue Date: Jan. 25, 2019

Page 8 of 14

Photo(s) of Sample:



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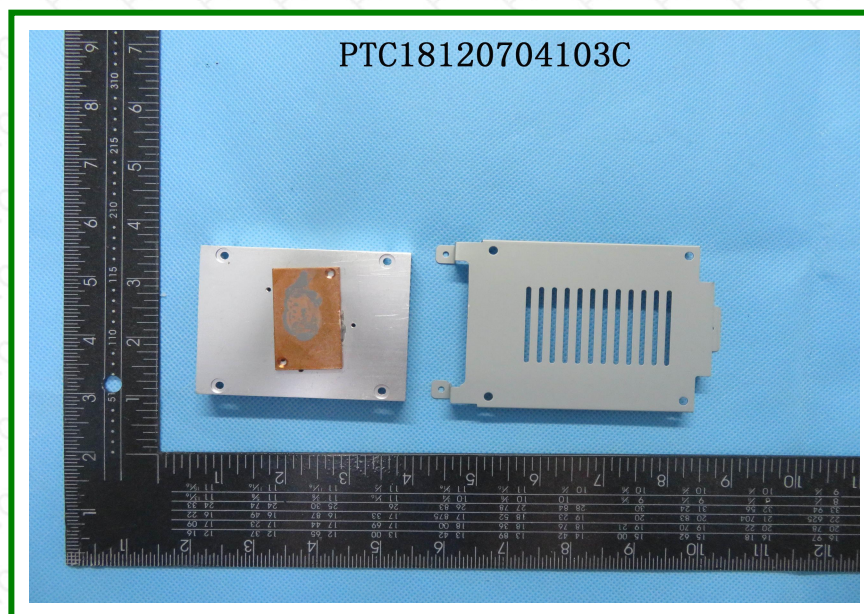


# Test Report

Report No.: PTC18120704103C-EN01

Issue Date: Jan. 25, 2019

Page 9 of 14



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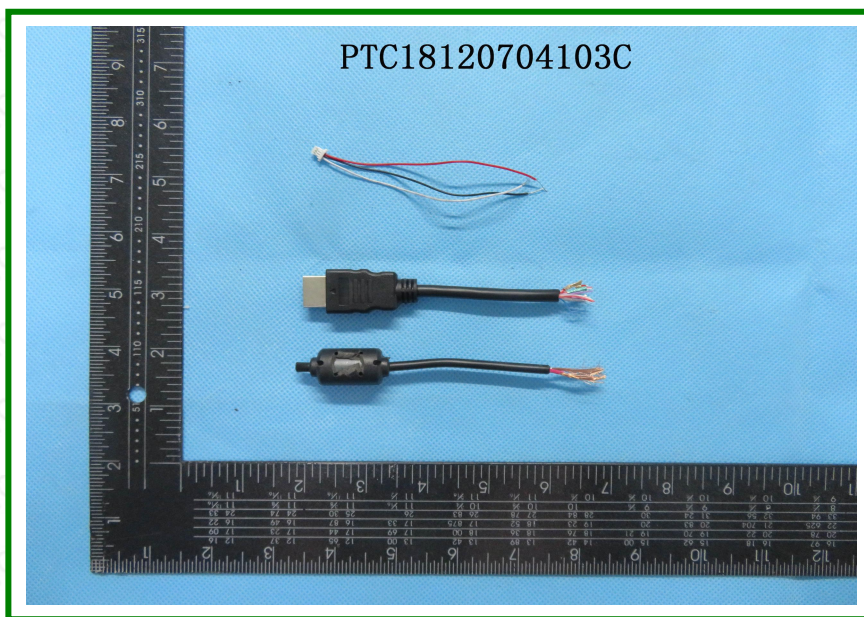


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Report No.: PTC18120704103C-EN01

Issue Date: Jan. 25, 2019

Page 10 of 14



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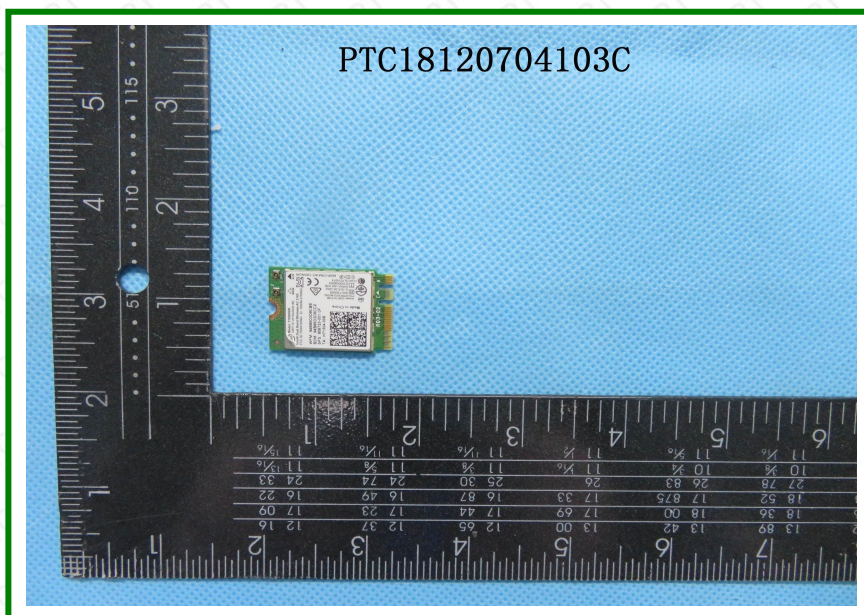


# Test Report

Report No.: PTC18120704103C-EN01

Issue Date: Jan. 25, 2019

Page 11 of 14



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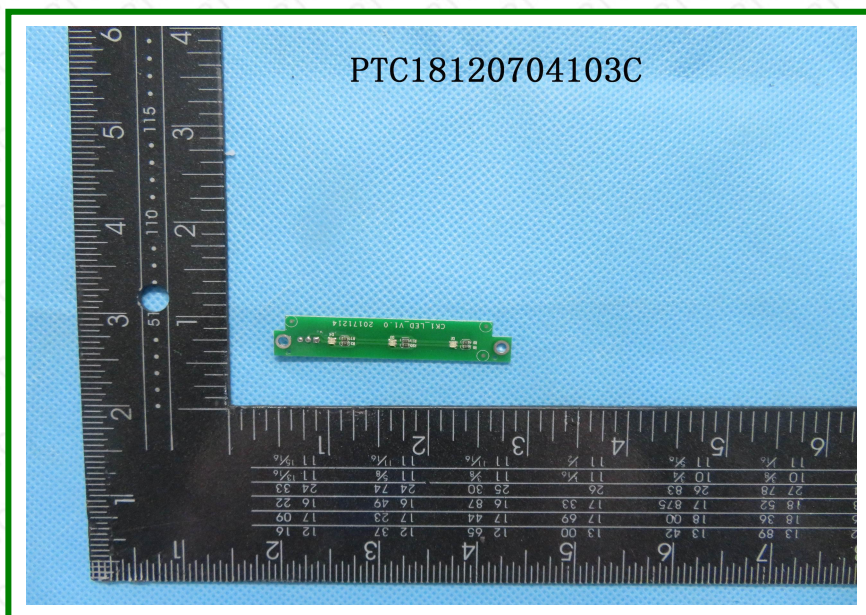
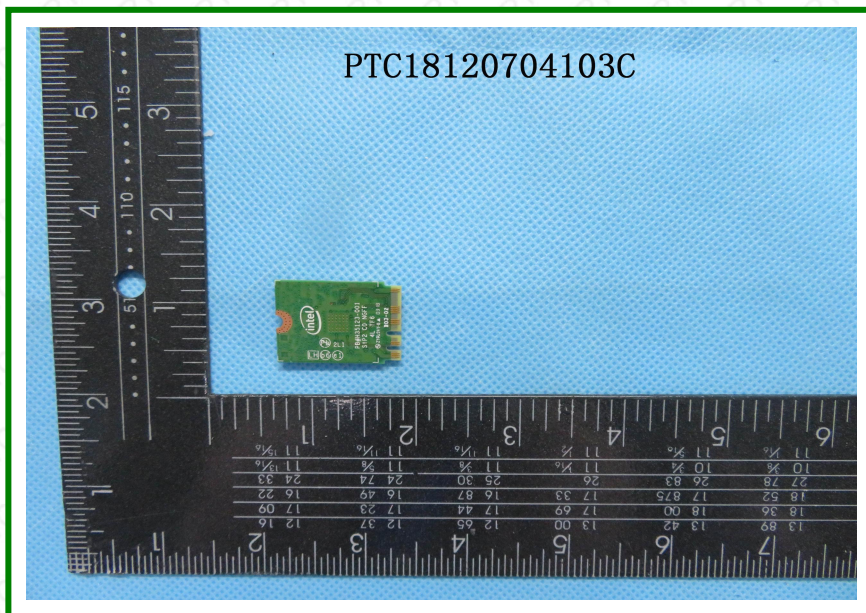


# Test Report

Report No.: PTC18120704103C-EN01

Issue Date: Jan. 25, 2019

Page 12 of 14



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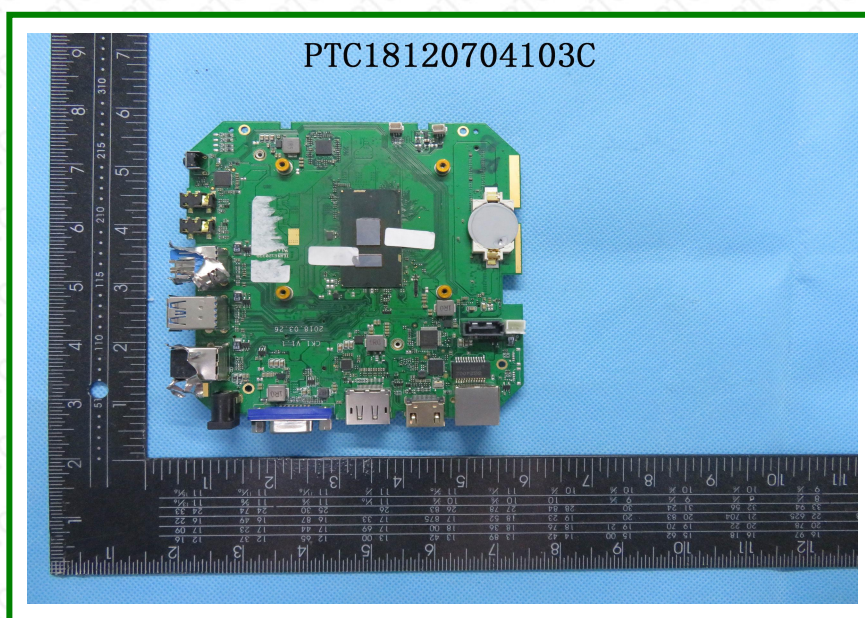
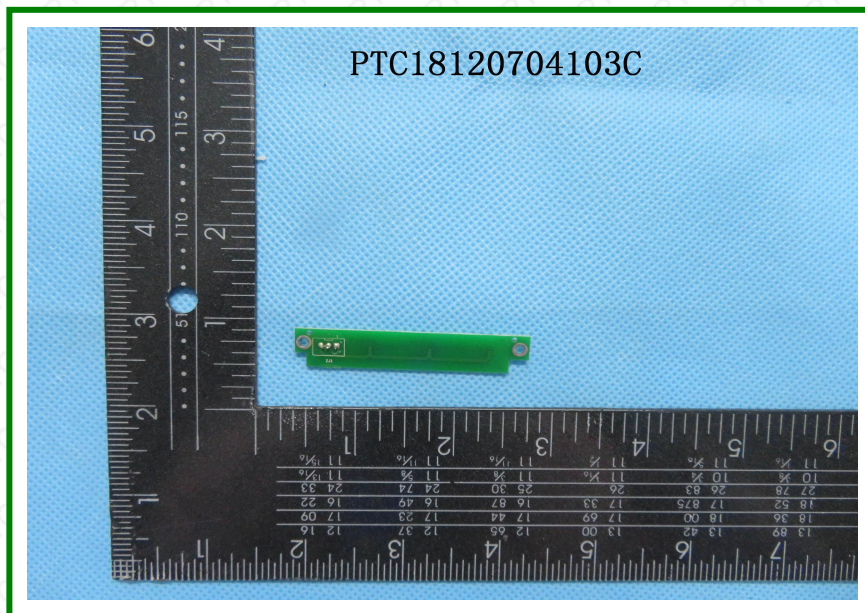


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Report No.: PTC18120704103C-EN01

Issue Date: Jan. 25, 2019

Page 13 of 14



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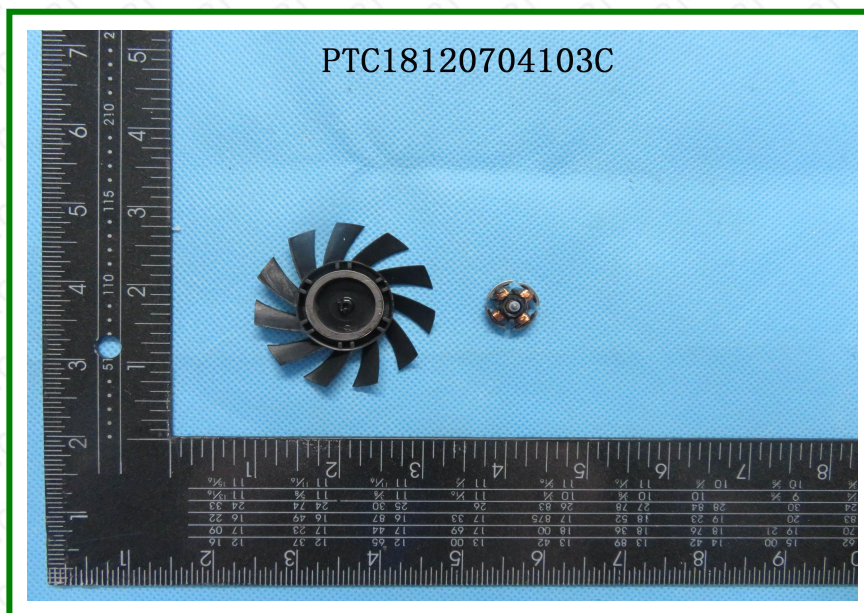
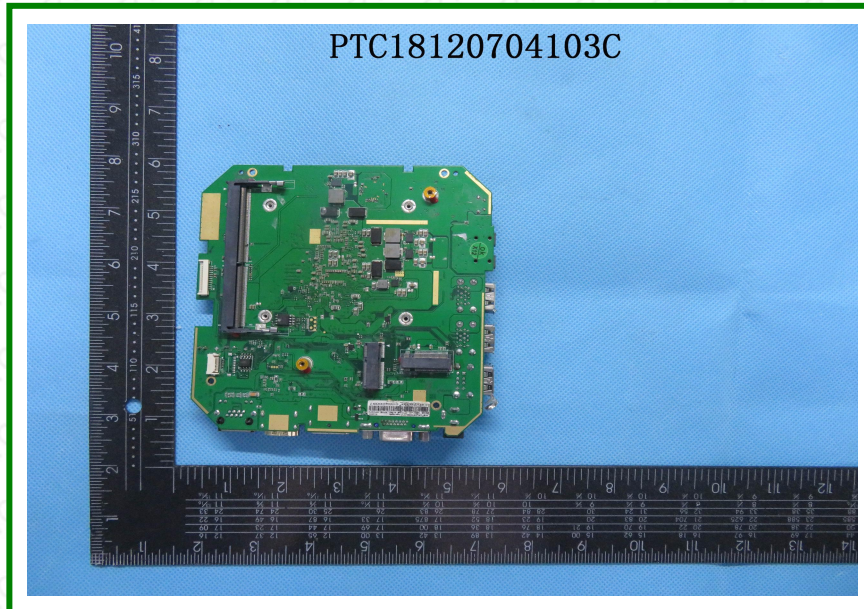


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Report No.: PTC18120704103C-EN01

Issue Date: Jan. 25, 2019

Page 14 of 14



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