



# TEST REPORT

Report Number: (6220)220-0077

August 13, 2020

Date Received: August 07, 2020

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Sixfab, Inc.  
75 E. Santa Clara St. 6th Floor San Jose, CA 95113

Sample Description: 3G/4G & LTE Base HAT

Test Period: August 07, 2020 to August 13, 2020

Item No(s): 3G/4G & LTE Base HAT

## SUMMARY OF TEST RESULTS

TEST REQUESTED	CONCLUSION	REMARK
European Parliament and Council Directive 2011/65/EU on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS)	PASS	-
Phthalates Test – Directive 2015/863/EU Amendment of European Parliament and Council Directive 2011/65/EU on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS) (Note: The amendment will be effective on 22 July 2019. For medical devices and control instruments, effective date will be 22 July 2021.)	PASS	-

### REMARK

If there are questions or concerns on this report, please contact:

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BUREAU VERITAS CONSUMER PRODUCTS  
SERVICES (H.K.) LIMITED, TAIWAN BRANCH

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VICO LIN  
MANAGER  
ANALYTICAL DEPARTMENT

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## Photo of the Submitted Sample



Sample



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## TEST RESULT

**Compliance Test - European Parliament and Council Directive 2011/65/EU on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS)**

**Test Method** : See Appendix.

Test Item(s)	Item / Component Description(s)
1.	Black ; Plastics
2.	Golden ; Metals
3.	Silvery ; Metals
4.	Black ; Plastics
5.	Black ; Electronics
6.	Brown ; Electronics
7.	White ; Electronics
8.	Black ; Electronics
9.	Brown ; Electronics
10.	Black ; Electronics
11.	Black ; Electronics
12.	Black ; Electronics
13.	Black ; Electronics
14.	Brown ; Electronics
15.	Black ; Electronics
16.	Black ; Electronics
17.	Black ; Electronics
18.	White ; Electronics
19.	Black ; Plastics
20.	Black ; Electronics
21.	Black ; Electronics
22.	Silvery ; Metals
23.	Green ; Electronics
24.	Black ; Plastics
25.	Black ; Electronics
26.	Black ; Electronics
27.	Brown ; Electronics
28.	Black ; Electronics
29.	Black ; Plastics
30.	Silvery ; Metals
31.	White ; Coating
32.	Black ; Electronics
33.	Black ; Plastics
34.	Silvery ; Metals
35.	Golden ; Metals
36.	Silvery ; Metals
37.	Silvery ; Metals
38.	Translucent/ yellow ; Plastics
39.	Silvery ; Metals

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## TEST RESULT

**Compliance Test - European Parliament and Council Directive 2011/65/EU on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS)**

**See Analytes and their corresponding Maximum Allowable Limit in Appendix**

-	Result						
Parameter	Lead (Pb)	Cadmium (Cd)	Mercury (Hg)	Chromium VI (Cr VI)	PBBs	PBDEs	Conclusion
Unit	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	-
Test Item(s)	-	-	-	-	-	-	-
1.	ND	ND	ND	ND	ND	ND	PASS
2.	ND	ND	ND	ND	NA	NA	PASS
3.	ND	ND	ND	ND	NA	NA	PASS
4.	ND	ND	ND	ND	ND	ND	PASS
5.	ND	ND	ND	ND	ND	ND	PASS
6.	ND	ND	ND	ND	ND	ND	PASS
7.	ND	ND	ND	ND	ND	ND	PASS
8.	ND	ND	ND	ND	ND	ND	PASS
9.	ND	ND	ND	ND	ND	ND	PASS
10.	ND	ND	ND	ND	ND	ND	PASS
11.	ND	ND	ND	ND	ND	ND	PASS
12.	ND	ND	ND	ND	ND	ND	PASS
13.	ND	ND	ND	ND	ND	ND	PASS
14.	ND	ND	ND	ND	ND	ND	PASS
15.	ND	ND	ND	ND	ND	ND	PASS
16.	ND	ND	ND	ND	ND	ND	PASS
17.	ND	ND	ND	ND	ND	ND	PASS
18.	ND	ND	ND	ND	ND	ND	PASS
19.	ND	ND	ND	ND	ND	ND	PASS
20.	ND	ND	ND	ND	ND	ND	PASS
21.	ND	ND	ND	ND	ND	ND	PASS
22.	ND	ND	ND	ND	NA	NA	PASS
23.	ND	ND	ND	ND	ND*	ND*	PASS
24.	ND	ND	ND	ND	ND	ND	PASS
25.	ND	ND	ND	ND	ND	ND	PASS
26.	ND	ND	ND	ND	ND	ND	PASS
27.	ND	ND	ND	ND	ND	ND	PASS
28.	ND	ND	ND	ND	ND	ND	PASS
29.	ND	ND	ND	ND	ND	ND	PASS
30.	ND	ND	ND	Negative*	NA	NA	PASS
31.	ND	ND	ND	ND	ND*	ND*	PASS
32.	ND	ND	ND	ND	ND	ND	PASS
33.	ND	ND	ND	ND	ND	ND	PASS
34.	ND	ND	ND	Negative*	NA	NA	PASS
35.	62.5*	ND*	ND*	ND	NA	NA	PASS
36.	ND	ND	ND	ND	NA	NA	PASS
37.	ND	ND	ND	Negative*	NA	NA	PASS

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## TEST RESULT

### Compliance Test - European Parliament and Council Directive 2011/65/EU on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS)

-	Result						
Parameter	Lead (Pb)	Cadmium (Cd)	Mercury (Hg)	Chromium VI (Cr VI)	PBBs	PBDEs	Conclusion
Unit	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	-
Test Item(s)	-	-	-	-	-	-	-
38.	ND	ND	ND	ND	ND	ND	PASS
39.	ND	ND	ND	ND	NA	NA	PASS

Note / Key :

ND = Not detected                      NA = Not Applicable  
mg/kg = milligram(s) per kilogram = ppm = part(s) per million  
Detection Limit : See Appendix.

Remark :

- The testing approach is listed in table of Appendix.
- \* denotes as reported result(s) was (were) performed by wet chemistry method. Others were screened by XRF. For XRF screening, the result(s) of Cr VI was (were) reported as total chromium and the result(s) of PBBs and PBDEs was (were) reported as total bromine. Also, the XRF result(s) may be different to the actual content based on various factors including, but not limit to, sample size, thickness, area, non-uniformity composition, surface flatness.
- According to European Parliament and Council Directive 2011/65/EU, Article 5 "Adaptation of the Annexes to scientific and technical progress", exemption(s) should be granted to the materials and components of Test Item(s) in the lists in Annexes III and IV of this directive.

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**Phthalates Test – Directive 2015/863/EU Amendment of European Parliament and Council Directive 2011/65/EU on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS)**

**Test Method** : With reference to International Standard IEC 62321-8.

Maximum Allowable Limit:	DEHP, BBP, DBP & DIBP: 0.1% (Each)			
Tested Item(s)	Result			Conclusion
	Detected Analyte(s)	Conc.	Unit	
1.	ND	ND	%	PASS
2.	/	/	%	NA
3.	/	/	%	NA
4.	ND	ND	%	PASS
5.	ND	ND	%	PASS
6.	ND	ND	%	PASS
7.	ND	ND	%	PASS
8.	ND	ND	%	PASS
9.	ND	ND	%	PASS
10.	ND	ND	%	PASS
11.	ND	ND	%	PASS
12.	ND	ND	%	PASS
13.	ND	ND	%	PASS
14.	ND	ND	%	PASS
15.	ND	ND	%	PASS
16.	ND	ND	%	PASS
17.	ND	ND	%	PASS
18.	ND	ND	%	PASS
19.	ND	ND	%	PASS
20.	ND	ND	%	PASS
21.	ND	ND	%	PASS
22.	/	/	%	NA
23.	ND	ND	%	PASS
24.	ND	ND	%	PASS
25.	ND	ND	%	PASS
26.	ND	ND	%	PASS
27.	ND	ND	%	PASS
28.	ND	ND	%	PASS
29.	ND	ND	%	PASS
30.	/	/	%	NA
31.	ND	ND	%	PASS
32.	ND	ND	%	PASS
33.	ND	ND	%	PASS
34.	/	/	%	NA
35.	/	/	%	NA

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## TEST RESULT

**Phthalates Test – Directive 2015/863/EU Amendment of European Parliament and Council Directive 2011/65/EU on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS)**

<b>Maximum Allowable Limit:</b>	<b>DEHP, BBP, DBP &amp; DIBP: 0.1 % (Each)</b>			
Tested Item(s)	Result			Conclusion
	Detected Analyte(s)	Conc.	Unit	
36.	/	/	%	NA
37.	/	/	%	NA
38.	ND	ND	%	PASS
39.	/	/	%	NA

Note / Key :

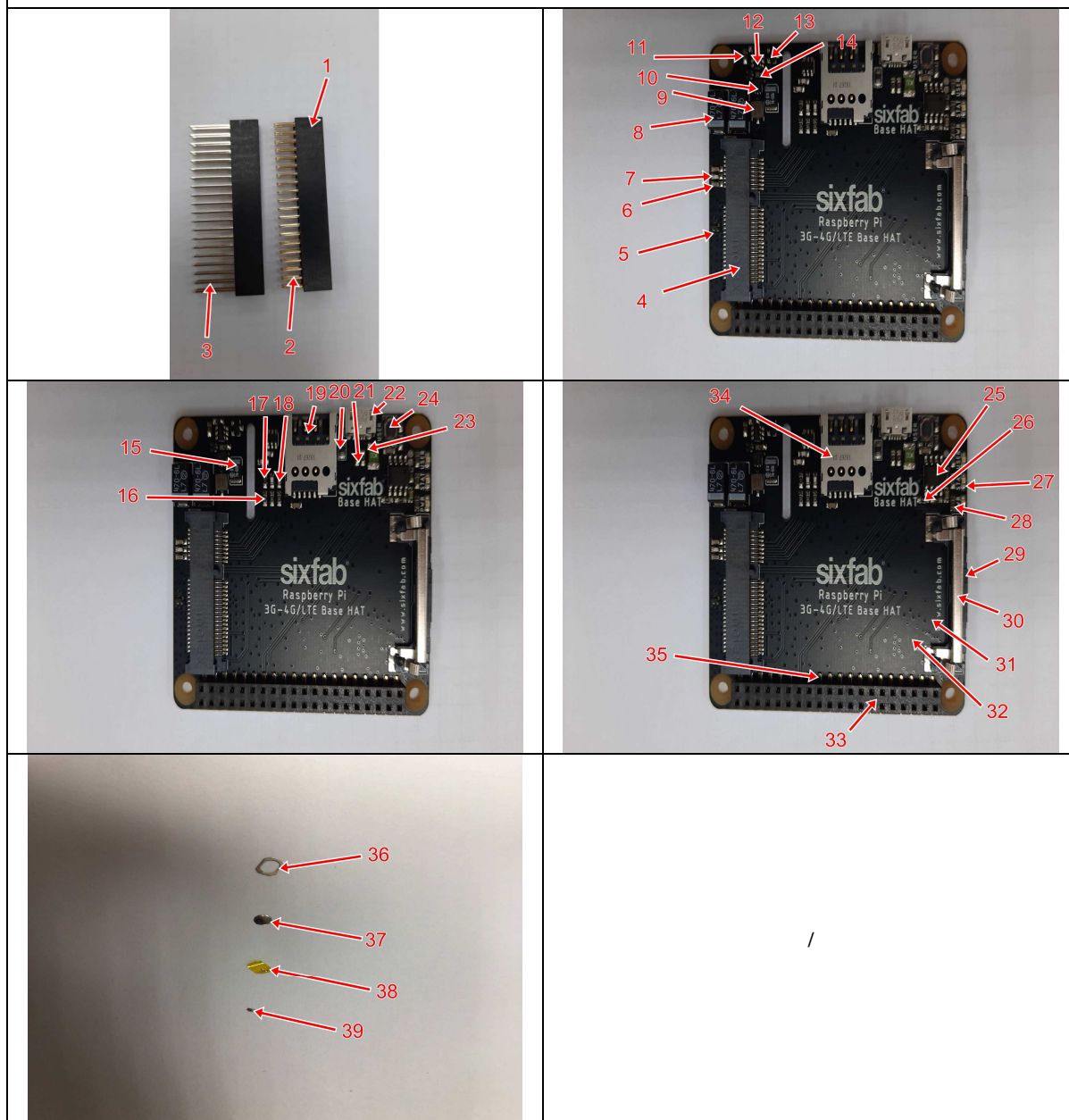
ND = Not detected                      NA = Not Applicable  
mg/kg = milligram(s) per kilogram = ppm = part(s) per million  
% = percent                              10 000 mg/kg = 1 %  
Detection Limit (%) : 0.005

Remark : The list of phthalates is summarized in table of Appendix.

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Comment:

**Photograph(s) [ Compliance Test for European Parliament and Council Directive 2011/65/EU ] :**



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## APPENDIX

List of Analytes and their Corresponding Test Methods, Detection Limit and Maximum Allowable Limit [ Compliance Test for European Parliament and Council Directive 2011/65/EU ] :						
No.	Name of Analytes	Detection Limit (mg/kg)				Maximum Allowable Limit (mg/kg)
		X-ray fluorescence (XRF) <sup>[a]</sup>			Wet Chemistry	
		Plastic	Metallic / glass / ceramic	Others		
1	Lead (Pb)	100	200	200	10 <sup>[b]</sup>	1 000
2	Cadmium (Cd)	50	50	50	10 <sup>[b]</sup>	100
3	Mercury (Hg)	100	200	200	10 <sup>[c]</sup>	1 000
4	Chromium (Cr)	100	200	200	NA	NA
5	Chromium VI (Cr VI)	NA	NA	NA	3 <sup>[g, h]</sup> / 10 <sup>[d]</sup> / See <sup>[e, j]</sup>	1 000 / Negative <sup>[i]</sup>
6	Bromine (Br)	200	NA	200	NA	NA
7	Polybromobiphenyls (PBBs) - Bromobiphenyl (MonoBB) - Dibromobiphenyl (DiBB) - Tribromobiphenyl (TriBB) - Tetrabromobiphenyl (TetraBB) - Pentabromobiphenyl (PentaBB) - Hexabromobiphenyl (HexaBB) - Heptabromobiphenyl (HeptaBB) - Octabromobiphenyl (OctaBB) - Nonabromobiphenyl (NonaBB) - Decabromobiphenyl (DecaBB)	NA	NA	NA	Each 50 <sup>[f]</sup>	Sum 1 000
8	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)	NA	NA	NA	Each 50 <sup>[f]</sup>	Sum 1 000
NA = Not applicable						
<sup>[a]</sup>	Test method with reference to International Standard IEC 62321-3-1: 2013.					
<sup>[b]</sup>	Test method with reference to International Standard IEC 62321-5: 2013.					
<sup>[c]</sup>	Test method with reference to International Standard IEC 62321-4: 2013+AMD 1:2017 CSV.					
<sup>[d]</sup>	Polymers and Electronics - Test method with reference to European Standard EN 62321-7-2: 2017.					
<sup>[e]</sup>	Metal - Test method with reference to International Standard IEC 62321-7-1: 2015 <sup>[i]</sup> .					
<sup>[f]</sup>	Test method with reference to International Standard IEC 62321-6: 2015.					
<sup>[g]</sup>	Leather - Test method International Standard ISO 17075: 2007.					
<sup>[h]</sup>	Other Than Metal, Leather, Polymers and Electronics - Test method with reference to International Standard ISO 17075: 2007.					
<sup>[i]</sup>	The principle of this method was evaluated and supported by two studies organized by IEC TC 111 WG3. These studies were focused on detecting the presence of Cr VI in the corrosion protection coatings on metallic samples.					



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(j)	<p>Result(s) of Cr VI for metallic material(s) was (were) expressed in term of positive and negative.  Cr(VI): 0.1 µg/cm<sup>2</sup>  #The sample is positive for Cr(VI) if the Cr(VI) concentration is greater than 0.13µg/cm<sup>2</sup>. The coating is considered to contain Cr(VI).  #The sample is negative for Cr(VI) if the Cr(VI) concentration is less than 0.10µg/cm<sup>2</sup>. The coating is considered a non-Cr(VI) based coating.  #The result between 0.10µg/cm<sup>2</sup> and 0.13µg/cm<sup>2</sup> is considered to be inconclusive – unavoidable coating variations may influence the determination.</p>
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**Testing Approach [ Compliance Test for European Parliament and Council Directive 2011/65/EU ] :**

The testing approach was with reference to the following document(s).

- 1 International Standards IEC 62321-1: 2013 and IEC 62321-2: 2013
- 2 “RoHS Enforcement Guidance Document Version 1” by EU RoHS Enforcement Authorities Informal Network. (May 2006)
- 3 “RoHS Regulations - Government Guidance Notes” by United Kingdom Department for Business Innovation & Skills. (February 2011)
- 4 “Final Report to RoHS substances (Hg, Pb, Cr(VI), Cd, PBB and PBDE) in electrical and electronic equipment in Belgium” by Belgium Federal Public Service Health, Food Chain Safety and Environment. (November 2005)

**List of Phthalates:**

No.	Name of Analytes	CAS-No.	No.	Name of Analytes	CAS-No.
1	Bis(2-ethylhexyl) phthalate (DEHP)	117-81-7	3	Dibutyl phthalate (DBP)	84-74-2
2	Butyl benzyl phthalate (BBP)	85-68-7	4	Diisobutyl phthalate (DIBP)	84-69-5