



# TEST REPORT

**Report No.**..... : WTX22X06131311C  
**Applicant**..... : Sharkoon Technologies GmbH  
**Address**..... : Grüninger Weg 48, 35415 Pohlheim, Germany  
**Manufacturer**..... : Sharkoon Technologies GmbH  
**Address**..... : Gruninger Weg 48, 35415 Pohlheim, Germany  
**Sample Name**..... : 3-Port USB 3.2 Gen 1 Aluminium Hub + RJ45 Ethernet Adapter; USB-C Adapter included  
**Sample Model**..... : 3-Port USB 3.2 Gen 1 Aluminium Hub + RJ45 Ethernet Adapter  
**Sample Material**..... : NA  
**Supplier**..... : NA  
**Test Requested**..... : In accordance with the RoHS Directive 2011/65/EU and its amendment (EU) No. 2015/863, to determine the 10 restricted substances content in the submitted sample.  
**Test Conclusion**..... : **Pass** (Based on the performed tests on the submitted samples, the results comply with the requirement of EU RoHS Directive 2011/65/EU and its amendment (EU) No. 2015/863).  
**Date of Receipt sample**..... : 2022-07-04 & 2022-07-14  
**Testing period**..... : 2022-07-04 ~ 2022-07-12 & 2022-07-14 ~ 2022-07-15  
**Date of Issue**..... : 2022-07-19  
**Test Result**..... : Refer to next page (s)

**Prepared By:**

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Signed for and on behalf of  
Waltek Testing Group (Shenzhen) Co., Ltd.

Hugo.CHen

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**Reference Model No. .... :** 4-Port USB 3.2 Gen 1 Aluminium Hub

**Brand..... :** Sharkoon

**Test Method:**

- IEC 62321-3-1:2013, screening - Lead, mercury, cadmium, total chromium and total bromine by X-ray fluorescence spectrometry (XRF)
- IEC 62321-4:2013/AMD1:2017 for mercury (Hg), analyzed by ICP-OES
- IEC 62321-5:2013 for lead (Pb) and cadmium (Cd), analyzed by ICP-OES
- IEC 62321-7-2:2017 and/or IEC 62321-7-1:2015 for hexavalent chromium (Cr<sup>6+</sup>), analyzed by UV-Vis
- IEC 62321-6:2015 for PBBs and PBDEs, analyzed by GC-MS
- IEC 62321-8:2017 for phthalates, analyzed by GC-MS

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**Test Results:**

**1. Lead, Mercury, Cadmium, Hexavalent Chromium, PBBs and PBDEs**

No.	Part Description (See Photograph of parts tested)	Result of XRF					Result of Chemical Testing (mg/kg)
		Pb	Cd	Hg	Cr	Br	
1	Black cladding metal shell	BL	BL	BL	BL	NA	NA
2	Black plastic	BL	BL	BL	BL	BL	NA
3	Black soft plastic cable jacket	BL	BL	BL	BL	BL	NA
4	Black soft plastic plug	BL	BL	BL	BL	BL	NA
5	Black cladding metal	BL	BL	BL	BL	NA	NA
6	Silvery metal (USB Type-A)	BL	BL	BL	BL	NA	NA
7	Blue plastic (USB Type-A)	BL	BL	BL	BL	IN	PBBs: ND PBDEs: ND
8	Golden cladding metal PIN (USB Type-A)	BL	BL	BL	BL	NA	NA
9	Silvery metal wire	BL	BL	BL	BL	NA	NA
10	Transparent plastic film	BL	BL	BL	BL	BL	NA
11	Coppery metal wire	BL	BL	BL	BL	NA	NA
12	Silvery metal foil	BL	BL	BL	BL	NA	NA



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No.	Part Description (See Photograph of parts tested)	Result of XRF					Result of Chemical Testing (mg/kg)
		Pb	Cd	Hg	Cr	Br	
13	Silvery metal (net)	BL	BL	BL	BL	NA	NA
14	Silvery metal PIN (net)	BL	BL	BL	BL	NA	NA
15	Black plastic (net)	BL	BL	BL	BL	BL	NA
16	Coppery metal coil (Inductance)	BL	BL	BL	BL	NA	NA
17	Gray solid material (Inductance)	BL	BL	BL	BL	BL	NA
18	Black plastic	BL	BL	BL	BL	BL	NA
19	Coppery metal coil (Inductance)	BL	BL	BL	BL	NA	NA
20	Gray solid material (Inductance)	BL	BL	BL	BL	BL	NA
21	Transparent glue	BL	BL	BL	BL	IN	PBBs: ND PBDEs: ND
22	Silvery metal (USB Type-A)	BL	BL	BL	BL	NA	NA
23	Blue plastic (USB Type-A)	BL	BL	BL	BL	BL	NA
24	Golden cladding metal PIN (USB Type-A)	BL	BL	BL	BL	NA	NA



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No.	Part Description (See Photograph of parts tested)	Result of XRF					Result of Chemical Testing (mg/kg)
		Pb	Cd	Hg	Cr	Br	
25	Black IC SMD	BL	BL	BL	BL	BL	NA
26	Brown capacitor SMD	BL	BL	BL	BL	BL	NA
27	Black coating PCB board	BL	BL	BL	BL	BL	NA
28	Silvery metal body (Crystal oscillator)	BL	BL	BL	BL	NA	NA
29	Black IC SMD	BL	BL	BL	BL	BL	NA
30	Black plastic	BL	BL	BL	BL	BL	NA
31	Black IC SMD	BL	BL	BL	BL	BL	NA
32	Red plastic wire jacket 1	BL	BL	BL	BL	BL	NA
33	Black plastic wire jacket 1	BL	BL	BL	BL	BL	NA
34	White plastic wire jacket 1	BL	BL	BL	BL	BL	NA
35	Green plastic wire jacket 1	BL	BL	BL	BL	BL	NA
36	Light green plastic wire jacket 1	BL	BL	BL	BL	BL	NA



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No.	Part Description (See Photograph of parts tested)	Result of XRF					Result of Chemical Testing (mg/kg)
		Pb	Cd	Hg	Cr	Br	
37	Orange plastic wire jacket 1	BL	BL	BL	BL	BL	NA
38	Blue plastic wire jacket 1	BL	BL	BL	BL	BL	NA
39	Purple plastic wire jacket 1	BL	BL	BL	BL	BL	NA
40	Transparent plastic	BL	BL	BL	BL	BL	NA
41	Solder	BL	BL	BL	BL	NA	NA
42	Black soft plastic plug	BL	BL	BL	BL	BL	NA
43	Solder	BL	BL	BL	BL	NA	NA

**Note:**

- (1) Results are obtained by EDXRF for primary screening, and further chemical testing by ICP (for Cd, Pb, Hg), UV-VIS (for Cr<sup>6+</sup>) and GC-MS (for PBBs, PBDEs) is recommended to be performed, if the concentration exceeds the below warning value according to IEC 62321-3-1: 2013 (unit: mg/kg)

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

BL= Below Limit      OL= Over Limit      LOD = Limit of Detection      -- = Not Regulated

- (2) "IN" expresses the inconclusive region, and further chemical testing to confirm whether it complies with the requirement of RoHS Directive.
- (3) The XRF screening test for RoHS elements – the reading may be different to the actual content in the sample be of non-uniformity composition.
- (4) mg / kg =milligram per kilogram=ppm, μg/cm<sup>2</sup>= Micrograms per square centimeter.
- (5) ND = Not Detected, less than the value of Method Detection Limit.
- (6) NA = Not Applicable, as the XRF screening test result was below the limit, it was not need to conduct the chemical testing.
- (7) MDL= Method Detection Limit in chemical test.

Test Items	Pb	Cd	Hg	Cr <sup>6+</sup>	PBB	PBDE
Units	mg/kg	mg/kg	mg/kg	mg/kg	μg/cm <sup>2</sup>	mg/kg
MDL	10	10	10	10	0.1	10

The MDL for single compound of PBBs and PBDEs is 10mg/kg, MDL of Cr<sup>6+</sup> for polymer and composite sample is 10mg/kg and MDL of Cr<sup>6+</sup> for metal sample is 0.1μg/cm<sup>2</sup>.

- (8) Requirement as per RoHS Directive 2011/65/EU and its amendment (EU) No. 2015/863

Restricted Substances	Limits
Cadmium (Cd)	0.01% (100 mg/kg)
Lead (Pb)	0.1% (1000 mg/kg)
Mercury (Hg)	0.1% (1000 mg/kg)
Chromium (VI) (Cr <sup>6+</sup> )	0.1% (1000 mg/kg)
Polybrominated Biphenyls (PBBs)	0.1% (1000 mg/kg)
Polybrominated Diphenyl Ethers (PBDEs)	0.1% (1000 mg/kg)

- (9) According to IEC 62321-7-1:2015, determined of Cr<sup>6+</sup> on metal sample by boiling water extraction test method, and result is shown as Positive/Negative.

Boiling water extraction:

Negative = Absence of Cr<sup>6+</sup> coating, the detected concentration in boiling water extraction solution is less than 0.10μg/cm<sup>2</sup>.



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Positive = Presence of Cr<sup>6+</sup> coating, the detected concentration in boiling water extraction solution is greater than 0.13μg/cm<sup>2</sup>.

Information on storage conditions and production date of the tested sample is unavailable and thus Cr<sup>6+</sup> results represent status of the sample at the time of testing.

(10) Abbreviation:

“Pb” denotes Lead, “Cd” denotes Cadmium, “Hg” denotes Mercury, “Cr” denotes Chromium, “Cr<sup>6+</sup>” denotes Hexavalent Chromium, “Br” denotes Bromine, “PBBs” denotes Total Polybrominated Biphenyls, “PBDEs” denotes Total Polybrominated Diphenyl Ethers.

(11) Sample 43 was received on 2022-07-14.

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**2. Phthalates (DEHP, BBP, DBP, DIBP)**

Serial No.	Part No. (See Photograph of parts tested)	Result (mg/kg)			
		DIBP	DBP	BBP	DEHP
T01	21	ND	ND	ND	ND
T02	3+4+42 <sup>△</sup>	ND	ND	ND	ND
T03	32+33 <sup>△</sup>	ND	ND	ND	ND
T04	34+35 <sup>△</sup>	ND	ND	ND	ND
T05	36+37 <sup>△</sup>	ND	ND	ND	ND
T06	38+39 <sup>△</sup>	ND	ND	ND	ND
T07	10+15+18 <sup>△</sup>	ND	ND	ND	ND
T08	17+20 <sup>△</sup>	ND	ND	ND	ND
T09	25+29+31 <sup>△</sup>	ND	ND	ND	ND
T10	26+27 <sup>△</sup>	ND	ND	ND	ND
T11	30+40 <sup>△</sup>	ND	ND	ND	ND
T12	7+23 <sup>△</sup>	ND	ND	ND	ND

**Note:**

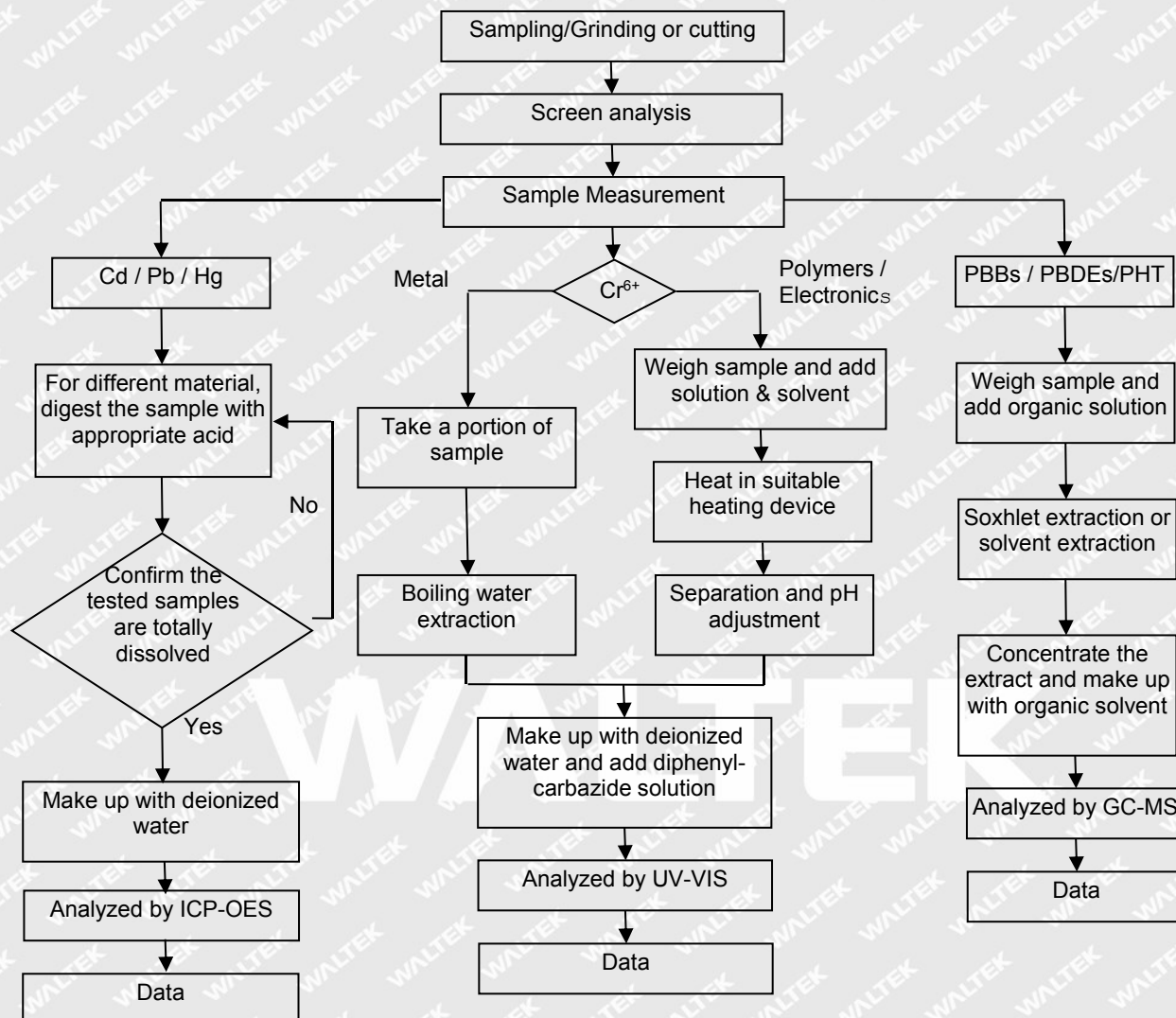
- (1) mg/kg =milligram per kilogram= ppm.
- (2) Requirement as per RoHS Directive 2011/65/EU and its amendment (EU) No. 2015/863

Test Item(s)	Limit (mg/kg)
Bis (2-ethylhexyl)- phthalate (DEHP)	1000
Dibutyl phthalate (DBP)	1000
Benzylbutyl phthalate (BBP)	1000
Diisobutyl phthalate (DIBP)	1000

- (3) Abbreviation:  
“DBP” denotes Dibutyl phthalate, “BBP” denotes Benzyl butyl phthalate (BBP), “DEHP” denotes Bis(2-ethylhexyl)-phthalate, “DIBP” denotes Diisobutyl phthalate, “PHT” denotes Phthalates.
- (4) Method Detection Limit (MDL) : 50mg/kg for each of phthalate.
- (5) “△”= As client’s requirement, the testing was conducted based on mixed components. Results are calculated by the minimum weight of mixed components.



Measurement Flow chart:





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**Sample Photo:**





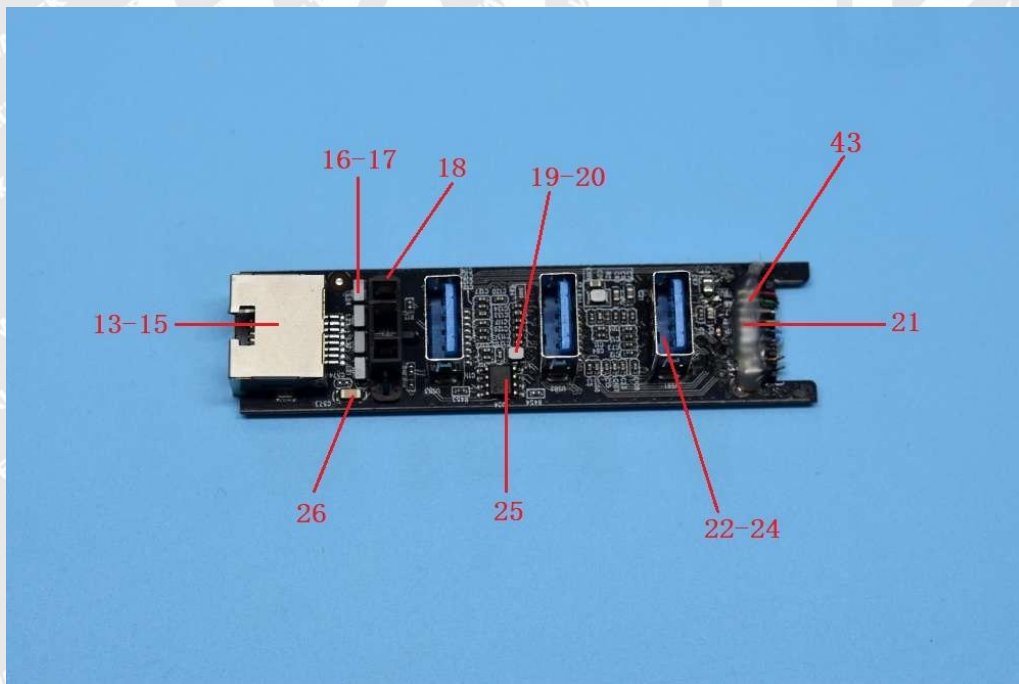
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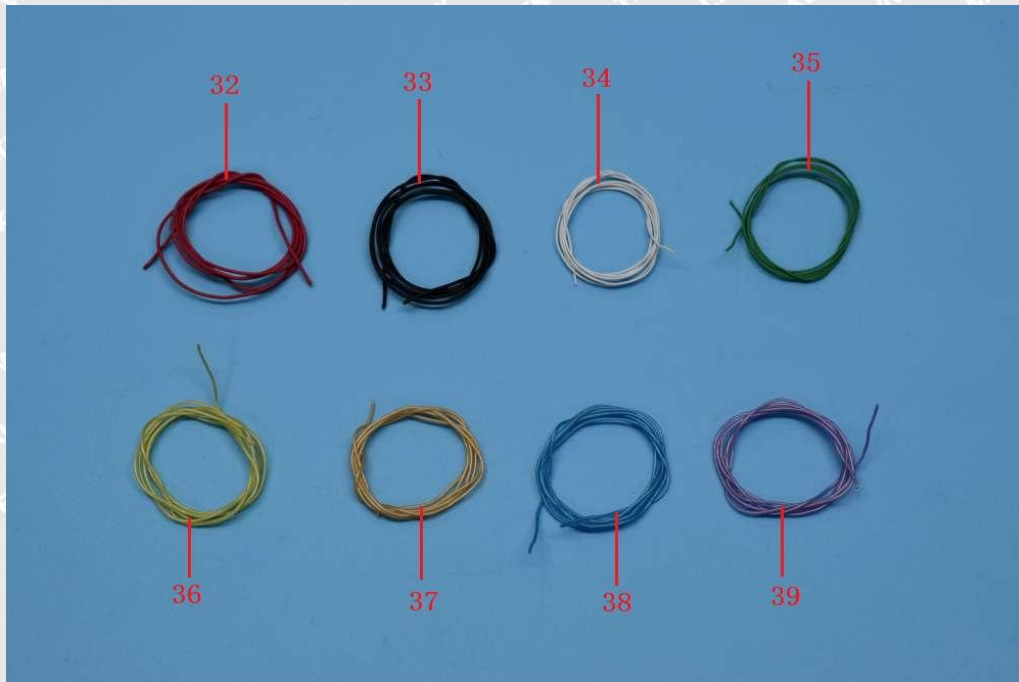
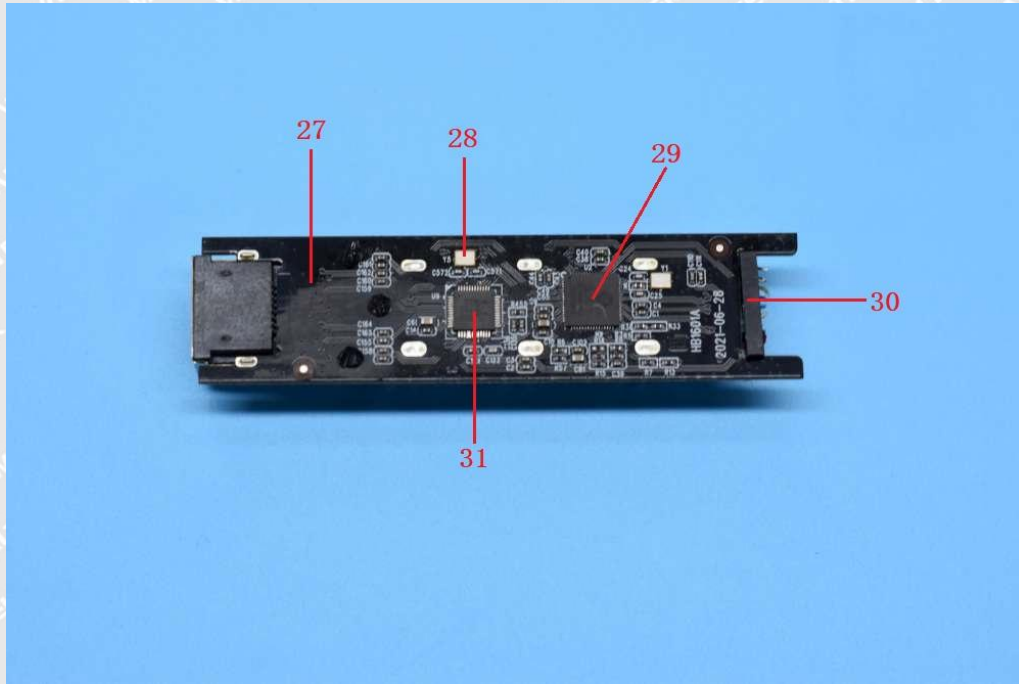
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Photograph of parts tested :





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Remarks:

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===== End of Report =====

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