

## Test Report

Applicant: ARICO TECHNOLOGY CO., LTD.  
8F., No. 1, Alley 1, Lane 235,  
Baoqiao Rd., Xindian Dist.,  
New Taipei City, 23145, Taiwan

Number : TWNC00897017

Issue Date : Jul 13, 2020

Sample Description:

One (1) Group of Submitted Samples Said To Be :  
Sample Description : Controller  
Style / Item No. : AR800  
Date Sample Received : Jun 24, 2020  
Date Test Started : Jun 24, 2020

Test Conducted:

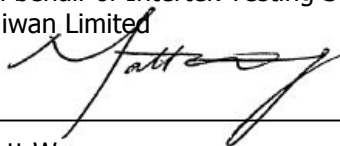
As requested by the applicant, for details please refer to attached pages.

Conclusion:

<u>Tested Sample</u>	<u>Standard</u>	<u>Result</u>
Tested Components of Submitted Samples	Restriction of Hazardous Substances (RoHS) Test – As per applicant's request with reference to 2011/65/EU and its amendment directive (EU) 2015/863	Pass

Remarks: As per the request of the applicant, only the listed components were tested for the RoHS directive.

Authorized By:  
On behalf of Intertek Testing Services  
Taiwan Limited



Matt Wang  
Sr. Manager



Signed by:



Thomas Chou  
Manager



Test Conducted :

Restriction of Hazardous Substances (RoHS) Test

A. Test Result Summary

	Tested Component	Screening Test		Confirmation Test				
		Element	Result (ppm)	Pb/Cd/Hg (ppm)	Cr(VI) (ug/cm <sup>2</sup> or ppm)	PBBs/PBDEs (ppm)	Phthalates (ppm)	
1	Grey/light grey/orange plastic sheet	Cd	ND	--				
		Pb	ND	--				
		Hg	ND	--				
		Cr	ND		--			
		Br	ND		--			
		DEHP	< 500		--			
		DBP	< 500		--	--		
		BBP	< 500		--	--		
		DIBP	< 500		--	--		
2	Silvery metal board	Cd	ND		--			
		Pb	ND		--			
		Hg	ND		--			
		Cr	922		Negative			
		Br	NA		--			
		DEHP	NA		--			
		DBP	NA		--	--		
		BBP	NA		--	--		
		DIBP	NA		--	--		
3	Silvery metal screw	Cd	ND		--			
		Pb	ND		--			
		Hg	ND		--			
		Cr	ND		--			
		Br	NA		--			
		DEHP	NA		--			
		DBP	NA		--	--		
		BBP	NA		--	--		
		DIBP	NA		--	--		
4	Silvery metal bolt	Cd	ND		--			
		Pb	ND		--			
		Hg	ND		--			
		Cr	1823		Negative			
		Br	NA		--			
		DEHP	NA		--			
		DBP	NA		--	--		
		BBP	NA		--	--		
		DIBP	NA		--	--		



Test Conducted :

	Tested Component	Screening Test		Confirmation Test			
		Element	Result (ppm)	Pb/Cd/Hg (ppm)	Cr(VI) (ug/cm <sup>2</sup> or ppm)	PBBs/PBDEs (ppm)	Phthalates (ppm)
5	Black metal nut	Cd	ND	--	--	--	
		Pb	ND	--			
		Hg	ND	--			
		Cr	ND				
		Br	NA			--	
		DEHP	NA				--
		DBP	NA				--
		BBP	NA				--
		DIBP	NA				--
6	Silvery metal stand off	Cd	ND	--	--	--	
		Pb	ND	--			
		Hg	ND	--			
		Cr	499				
		Br	NA			--	
		DEHP	NA				--
		DBP	NA				--
		BBP	NA				--
		DIBP	NA				--
7	Golden metal stand off	Cd	ND	--	--	--	
		Pb	25200	28081 (#)			
		Hg	ND	--			
		Cr	ND				
		Br	NA			--	
		DEHP	NA				--
		DBP	NA				--
		BBP	NA				--
		DIBP	NA				--
8	White plastic cable fixer	Cd	ND	--	--	--	
		Pb	ND	--			
		Hg	ND	--			
		Cr	ND				
		Br	ND			--	
		DEHP	< 500				--
		DBP	< 500				--
		BBP	< 500				--
		DIBP	< 500				--



Test Conducted :

	Tested Component	Screening Test		Confirmation Test			
		Element	Result (ppm)	Pb/Cd/Hg (ppm)	Cr(VI) (ug/cm <sup>2</sup> or ppm)	PBBs/PBDEs (ppm)	Phthalates (ppm)
9	Silvery metal screw	Cd	ND	--			
		Pb	ND	--			
		Hg	ND	--			
		Cr	271		--		
		Br	NA				
		DEHP	NA		--		
		DBP	NA		--		
		BBP	NA		--		
DIBP	NA	--					
10	Black fabric tape	Cd	ND	--			
		Pb	ND	--			
		Hg	ND	--			
		Cr	ND		--		
		Br	ND				
		DEHP	NA		--		
		DBP	NA		--		
		BBP	NA		--		
DIBP	NA	--					
11	PCBA [The all tested components were excluded]	Cd	--	ND			
		Pb	--	9			
		Hg	--	ND			
		Cr	--		ND		
		Br	--		PBBs: ND PBDEs: ND		
		DEHP	--		ND		
		DBP	--		ND		
		BBP	--		ND		
DIBP	--	ND					
12	Black cable jacket	Cd	ND	--			
		Pb	ND	--			
		Hg	ND	--			
		Cr	ND		--		
		Br	ND				
		DEHP	< 500		--		
		DBP	< 500		--		
		BBP	< 500		--		
DIBP	< 500	--					



Test Conducted :

	Tested Component	Screening Test		Confirmation Test			
		Element	Result (ppm)	Pb/Cd/Hg (ppm)	Cr(VI) (ug/cm <sup>2</sup> or ppm)	PBBs/PBDEs (ppm)	Phthalates (ppm)
13	Red cable jacket	Cd	ND	--	--	--	
		Pb	ND	--			
		Hg	ND	--			
		Cr	ND				
		Br	ND				
		DEHP	< 500				--
		DBP	< 500				--
		BBP	< 500				--
		DIBP	< 500				--
14	Silvery metal wire	Cd	ND	--	--	--	
		Pb	ND	--			
		Hg	ND	--			
		Cr	ND				
		Br	NA				
		DEHP	NA				--
		DBP	NA				--
		BBP	NA				--
		DIBP	NA				--
15	PCBA [Mixed all parts]	Cd	--	ND	ND	PBBs: ND PBDEs: ND	
		Pb	--	10			
		Hg	--	ND			
		Cr	--				
		Br	--				
		DEHP	--				ND
		DBP	--				ND
		BBP	--				ND
		DIBP	--				ND
16	PCBA [RJ-45 jack was excluded]	Cd	--	ND	ND	PBBs: ND PBDEs: ND	
		Pb	--	41			
		Hg	--	ND			
		Cr	--				
		Br	--				
		DEHP	--				ND
		DBP	--				ND
		BBP	--				ND
		DIBP	--				ND



Test Conducted :

	Tested Component	Screening Test		Confirmation Test				
		Element	Result (ppm)	Pb/Cd/Hg (ppm)	Cr(VI) (ug/cm <sup>2</sup> or ppm)	PBBs/PBDEs (ppm)	Phthalates (ppm)	
17	PCBA [The all tested components were excluded]	Cd	--	ND				
		Pb	--	8				
		Hg	--	ND				
		Cr	--		ND		PBBs: ND PBDEs: ND	
		Br	--					
		DEHP	--					
		DBP	--					
				BBP	--			ND
				DIBP	--			ND
18	Black cable insulation	Cd	ND	--				
		Pb	ND	--				
		Hg	ND	--				
		Cr	ND		--		--	
		Br	ND					
		DEHP	< 500					
		DBP	< 500					
				BBP	< 500			--
				DIBP	< 500			--
19	Black strain relief hood	Cd	ND	--				
		Pb	ND	--				
		Hg	ND	--				
		Cr	ND		--		--	
		Br	ND					
		DEHP	< 500					
		DBP	< 500					
				BBP	< 500			--
				DIBP	< 500			--
20	USB jack - silvery metal frame	Cd	ND	--				
		Pb	ND	--				
		Hg	ND	--				
		Cr	ND		--		--	
		Br	NA					
		DEHP	NA					
		DBP	NA					
				BBP	NA			--
				DIBP	NA			--



Test Conducted :

	Tested Component	Screening Test		Confirmation Test				
		Element	Result (ppm)	Pb/Cd/Hg (ppm)	Cr(VI) (ug/cm <sup>2</sup> or ppm)	PBBs/PBDEs (ppm)	Phthalates (ppm)	
21	USB jack - white plastic socket	Cd	ND	--				
		Pb	ND	--				
		Hg	ND	--				
		Cr	ND		--			
		Br	699					
		DEHP	< 500		PBBs: ND PBDEs: ND			
		DBP	< 500		--			
		BBP	< 500		--			
		DIBP	< 500		--			
22	USB jack - silvery metal pin	Cd	ND		--			
		Pb	ND		--			
		Hg	ND		--			
		Cr	ND		--			
		Br	NA		--			
		DEHP	NA		--			
		DBP	NA		--			
		BBP	NA		--			
		DIBP	NA		--			
23	Light grey metal housing	Cd	ND		--			
		Pb	ND		--			
		Hg	ND		--			
		Cr	345		--			
		Br	NA		--			
		DEHP	NA		--			
		DBP	NA		--			
		BBP	NA		--			
		DIBP	NA		--			
24	Silvery metal screw	Cd	ND		--			
		Pb	ND		--			
		Hg	ND		--			
		Cr	ND		--			
		Br	NA		--			
		DEHP	NA		--			
		DBP	NA		--			
		BBP	NA		--			
		DIBP	NA		--			



Test Conducted :

	Tested Component	Screening Test		Confirmation Test						
		Element	Result (ppm)	Pb/Cd/Hg (ppm)	Cr(VI) (ug/cm <sup>2</sup> or ppm)	PBBs/PBDEs (ppm)	Phthalates (ppm)			
25	Transparent plastic light pipe	Cd	ND	--						
		Pb	ND	--						
		Hg	ND	--						
		Cr	ND		--	PBBs: ND PBDEs: ND				
		Br	6573							
		DEHP	< 500		--					
		DBP	< 500		--					
		BBP	< 500		--					
		DIBP	< 500		--					
26	Capacitor - black/silvery metal can	Cd	ND		--					
		Pb	ND		--					
		Hg	ND	--						
		Cr	938		Negative	--				
		Br	NA							
		DEHP	NA		--					
		DBP	NA		--					
		BBP	NA		--					
		DIBP	NA		--					
27	Capacitor - black rubber seal	Cd	ND		--					
		Pb	ND		--					
		Hg	ND	--						
		Cr	ND		--	--				
		Br	ND							
		DEHP	< 500		--					
		DBP	< 500		--					
		BBP	< 500		--					
		DIBP	< 500		--					
28	Inductor - black core part	Cd	ND		--					
		Pb	ND		--					
		Hg	ND	--						
		Cr	ND		--	--				
		Br	ND							
		DEHP	NA		--					
		DBP	NA		--					
		BBP	NA		--					
		DIBP	NA		--					





Test Conducted :

	Tested Component	Screening Test		Confirmation Test			
		Element	Result (ppm)	Pb/Cd/Hg (ppm)	Cr(VI) (ug/cm <sup>2</sup> or ppm)	PBBs/PBDEs (ppm)	Phthalates (ppm)
29	Inductor - coppery metal coil	Cd	ND	--	--	--	
		Pb	ND	--			
		Hg	ND	--			
		Cr	ND				
		Br	NA				
		DEHP	NA				--
		DBP	NA				--
		BBP	NA				--
		DIBP	NA				--
30	PCBA [The all tested components were excluded]	Cd	--	ND			
		Pb	--	4			
		Hg	--	ND			
		Cr	--		ND		
		Br	--			PBBs: ND PBDEs: ND	
		DEHP	--				ND
		DBP	--				ND
		BBP	--				ND
		DIBP	--				ND

- Remarks:
- ppm = Parts per million based on weight of tested sample = mg/kg
  - ND = Not detected
  - NA = Not applicable
  - = Not tested
  - # = As claimed by the declaration submitted by the client, the tested component was within the scope of RoHS (2011/65/EU-6(c)) exemption: copper alloy containing up to 4 % lead by weight.
  - Negative = The negative result indicated the positive observation was not found by the spot test. Boiling water extraction shall be conducted when the spot test obtained the negative result.
  - As per applicant's request, only spot test was conducted for chromium VI (Cr(VI)) for the metal material.
  - PCB assembly was ground first and randomly sampled the residue for test.

B. Information on Analysis

(I) Screening Test

Test Item	Test Method	Reporting Limit
XRF for regulated elements	With reference to IEC 62321-3-1: 2013, by X-ray fluorescence spectrometry.	See Table II
Phthalates	With reference to IEC 62321-8:2017, by solvent extraction or Pyrolyzer and determined by GC-MS.	500 ppm



Test Conducted :

Table I: Screening Limits in mg/kg for Various Materials.

Element	Polymer Materials	Metallic Materials	Composite Materials
Cd	BL ≤ 70 < X < 130 ≤ OL	BL ≤ 70 < X < 130 ≤ OL	BL ≤ 70 < X < 150 ≤ OL
Pb	BL ≤ 700 < X < 1300 ≤ OL	BL ≤ 700 < X < 1300 ≤ OL	BL ≤ 500 < X < 1500 ≤ OL
Hg	BL ≤ 700 < X < 1300 ≤ OL	BL ≤ 700 < X < 1300 ≤ OL	BL ≤ 500 < X < 1500 ≤ OL
Cr	BL ≤ 700 < X	BL ≤ 700 < X	BL ≤ 500 < X
Br	BL ≤ 300 < X	Not Applicable	BL ≤ 250 < X
Phthalates	BL ≤ 500 < X	Not Applicable	BL ≤ 500 < X

Remarks: mg/kg = Milligram per kilogram = ppm  
 BL = Below Limit  
 X = Inconclusive result  
 OL = Over Limit

Table II: Estimated detection limits in mg/kg for regulated elements in various matrices.

Element	Polymer Materials	Metallic Materials	Composite Materials
Cd	50	70	70
Pb	100	200	200
Hg	100	200	200
Cr	100	200	200
Br	200	Not Applicable	200

(II) Confirmation Test

Test Item	Test Method	Reporting Limit
Cadmium (Cd) content	With reference to IEC 62321-5: 2013, by microwave or acid digestion and determined by ICP-OES.	2 ppm
Lead (Pb) content	With reference to IEC 62321-5: 2013, by microwave or acid digestion and determined by ICP-OES.	2 ppm
Mercury (Hg) content	With reference to IEC 62321-4:2013+AMD1:2017, by microwave or acid digestion and determined by ICP-OES.	2 ppm
Chromium VI (Cr(VI)) content (for non-metal)	With reference to IEC 62321-7-2: 2017, organic solvent was used to dissolve or swell sample matrix, followed by alkaline digestion and determined by UV-Vis Spectrophotometer.	8 ppm
Chromium VI (Cr(VI)) content (for metal)	With reference to IEC 62321: 2008, by spot test.	1 ppm
Polybrominated biphenyls (PBBs)	With reference to IEC 62321-6: 2015, by solvent extraction and determined by GC-MS and further HPLC-DAD confirmation when necessary.	5 ppm
Polybrominated diphenyl ethers (PBDEs)		
Di(2-ethylhexyl) phthalate (DEHP)	With reference to IEC 62321-8:2017, by Soxhlet extraction or Ultrasonic extraction and determined by GC-MS.	50 ppm
Dibutyl phthalate (DBP)		
Benzyl Butyl phthalate (BBP)		
Diisobutyl phthalate (DIBP)		

Remarks: Reporting Limit = Quantitation limit of analyte in sample



Test Conducted :

(III) Other Information on Analysis

Responsibility of Chemist : Pely Hsiao/ Vita Fu

Date Sample Received : Jun 24, 2020  
Test Period : Jun 24, 2020 to Jul 03, 2020

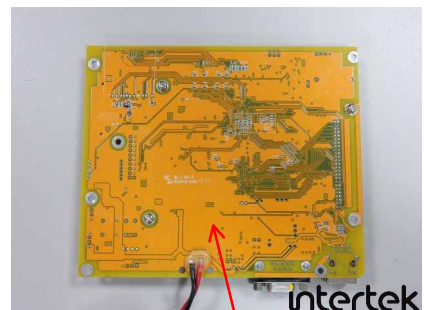
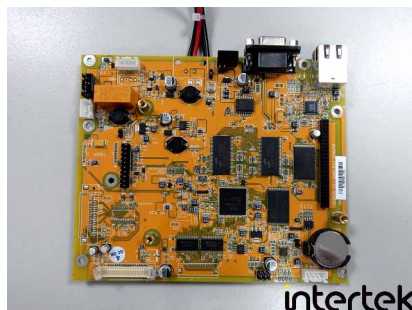
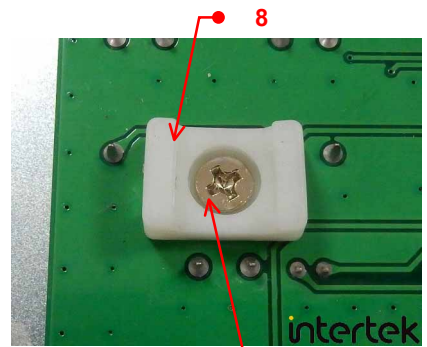
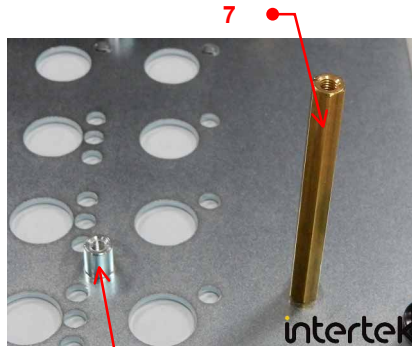
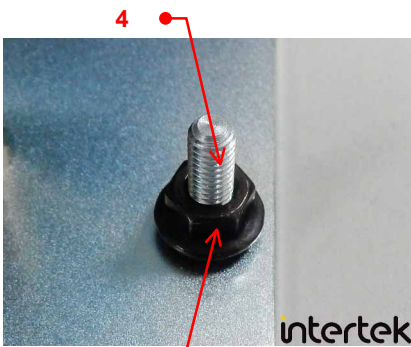
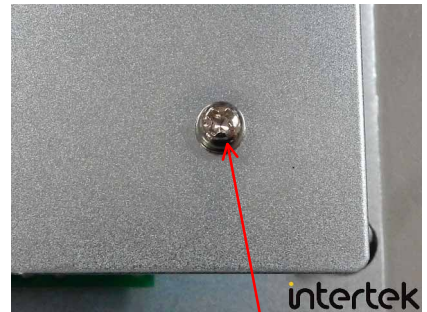
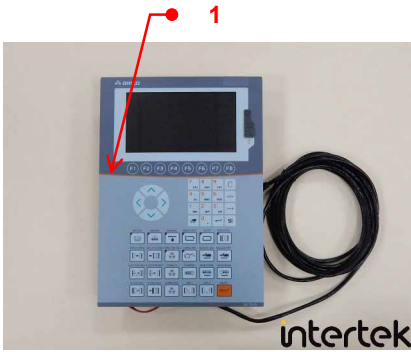
RoHS Limit

<u>Restricted Substances</u>	<u>Limits</u>
Cadmium (Cd) content	0.01% (100 ppm)
Lead (Pb) content	0.1% (1000 ppm)
Mercury (Hg) content	0.1% (1000 ppm)
Chromium VI (Cr(VI)) content	0.1% (1000 ppm)
Polybrominated biphenyls (PBBs)	0.1% (1000 ppm)
Polybrominated diphenyl ethers (PBDEs)	0.1% (1000 ppm)
Di(2-ethylhexyl) phthalate (DEHP)	0.1% (1000 ppm)
Dibutyl phthalate (DBP)	0.1% (1000 ppm)
Benzyl Butyl phthalate (BBP)	0.1% (1000 ppm)
Diisobutyl phthalate (DIBP)	0.1% (1000 ppm)

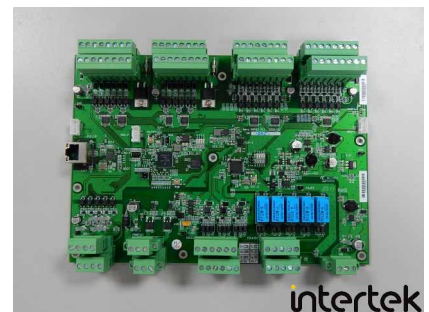
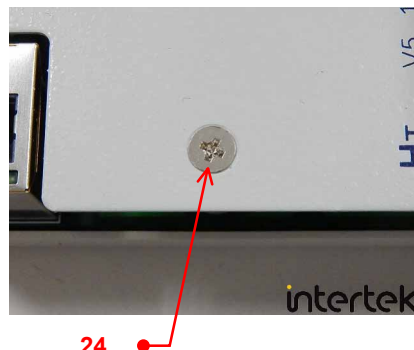
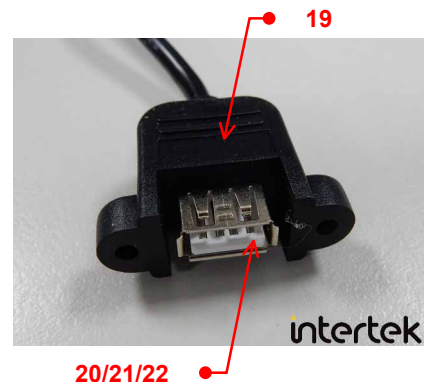
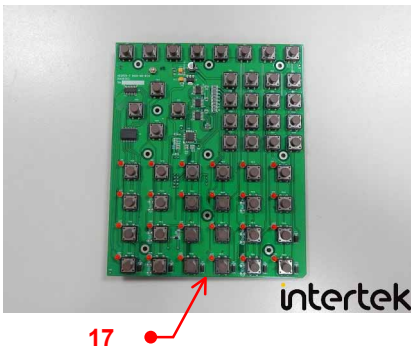
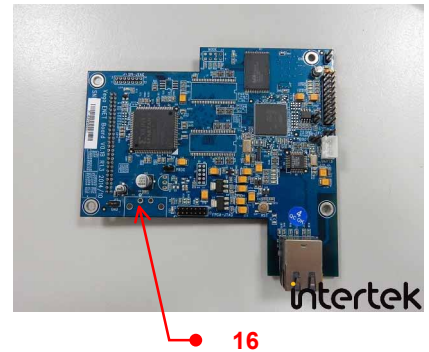
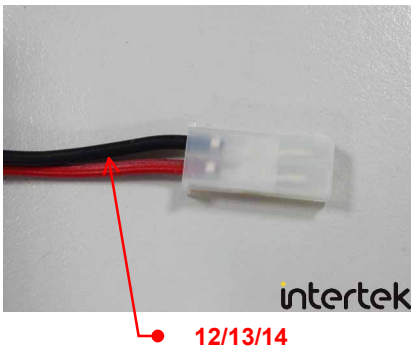
The limits were quoted from Annex II of Directive 2011/65/EU amended by Directive (EU) 2015/863 for homogeneous material.



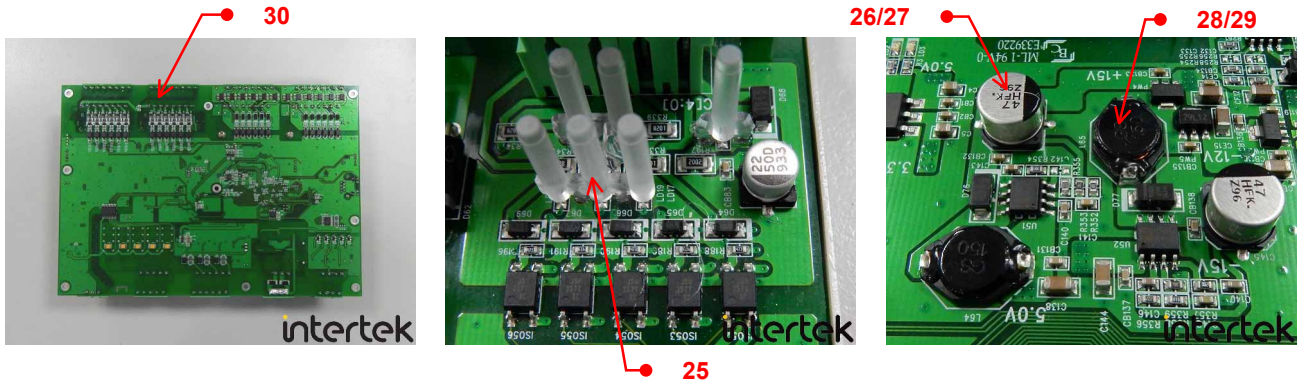
Sample photo:



Sample photo:



Sample photo:



End of Report

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