Applicant: NANCHANG PANTENG TECHNOLOGY CO., LTD

Applicant address: No.3 Plant of Yubo Science and Technology Park, Hero Avenue, Baishui Lake Management Office, Qingshan Lake District, Nanchang City, Jiangxi Province.

The following samples were submitted and identified on behalf of the clients as

Sample Name:	Laser Particle Sensor
Model:	PMS9103M-W
Model/Type reference:	PMS9103CP、PMS9103MP、PMS9103M、PMS9103M-T
Trademark:	PLANTOWER
HTT Internal Reference No.:	HTT202106535CH-2
Sample Received Date:	Jun 23, 2021
Sample Quantity:	01 pcs
Test Period:	Jun 23, 2021 to Jul 12, 2021
Test Method:	Please refer to next page(s).
Test Result:	Please refer to next page(s).

Signed for and on behalf of
Shenzhen HTT Technology Co., Ltd

WRITTEN BY :	REVIEWED BY:	APPROVED BY:
James Huang	Robert Chen	Kevin Yang

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CONCLUSION :

TESTED SAMPLES	TEST ITEM	RESULT
Laser Particle Sensor	1.RoHS Directive 2011/65/EU Annex II amending Annex (EU)2015/863	
	— Lead, Cadmium, Mercury, Hexavalent Chromium, PBBs and PBDEs Content	**PASS**
	—Di-(2-ethylhexyl) phthalate(DEHP), Benzylbutyl phthalate(BBP), Dibutyl phthalate (DBP), Diisobutyl phthalate(DIBP) Content	**PASS**

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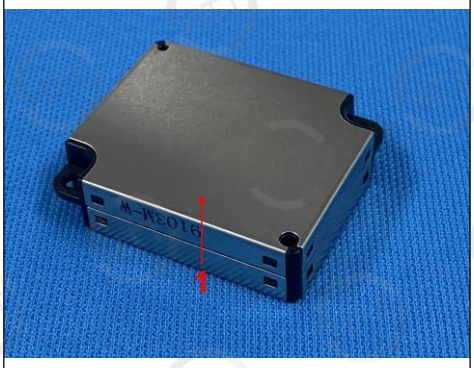
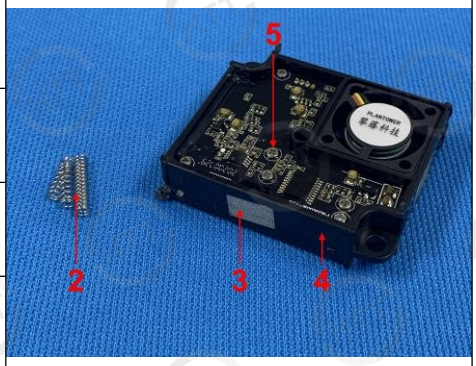
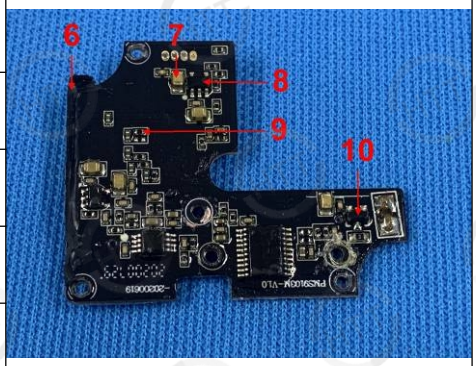
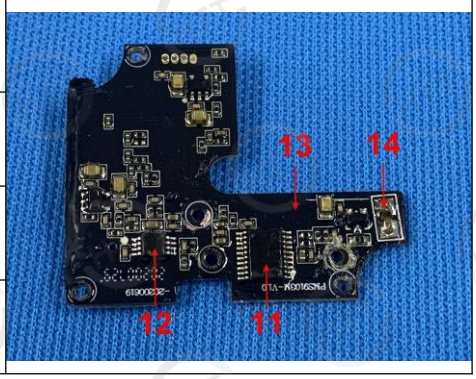
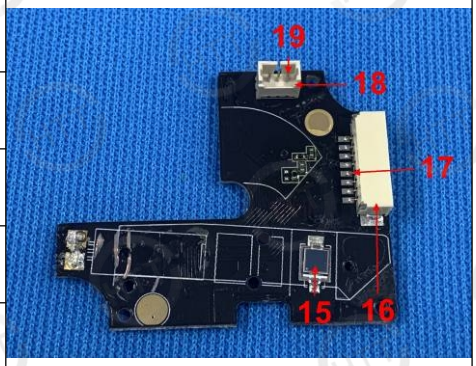
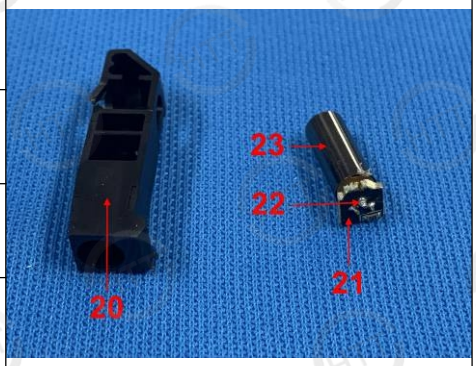
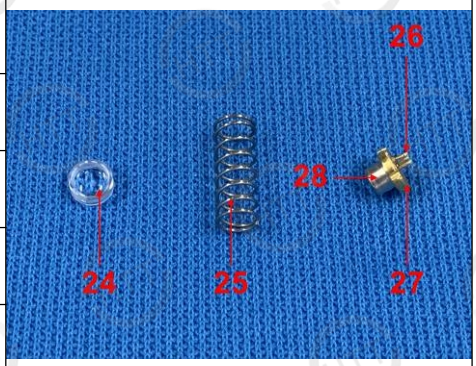
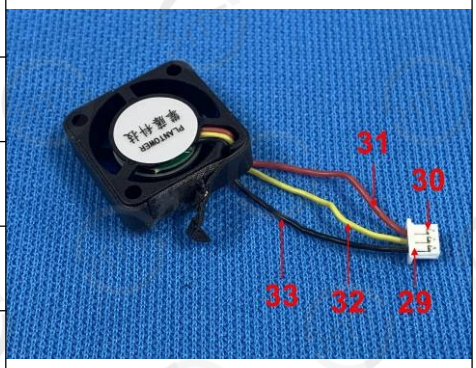
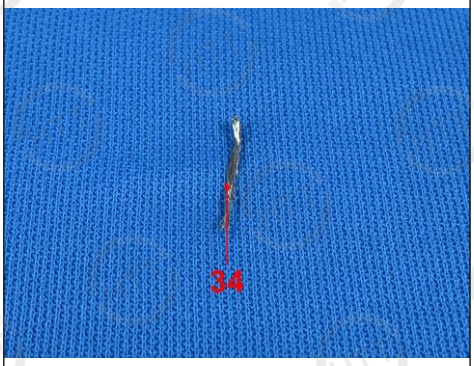
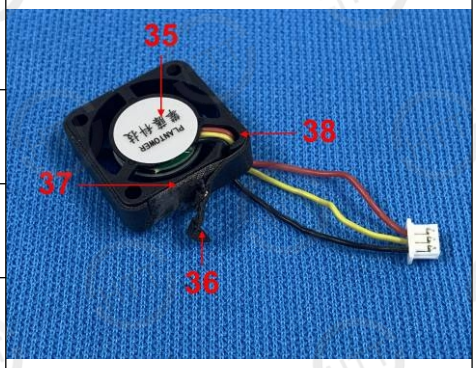
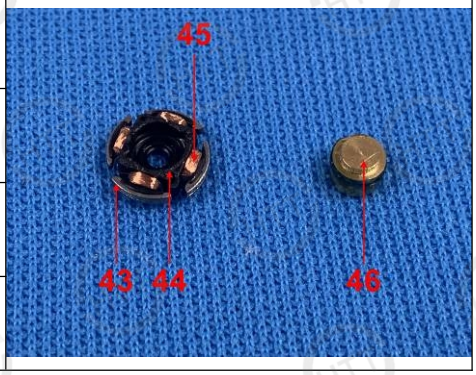
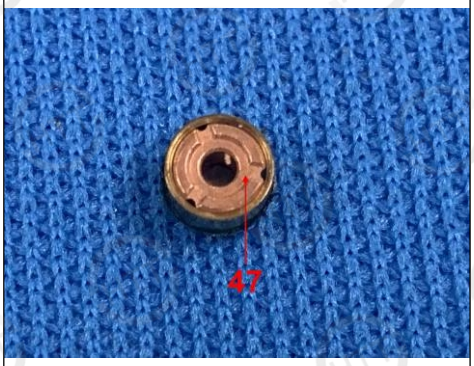
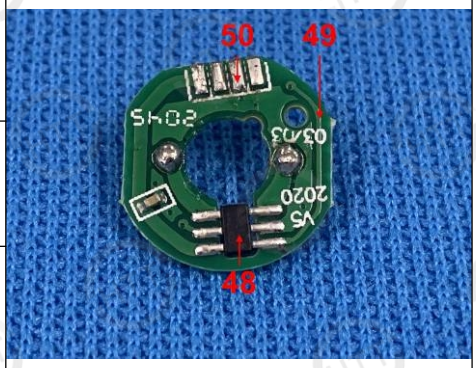
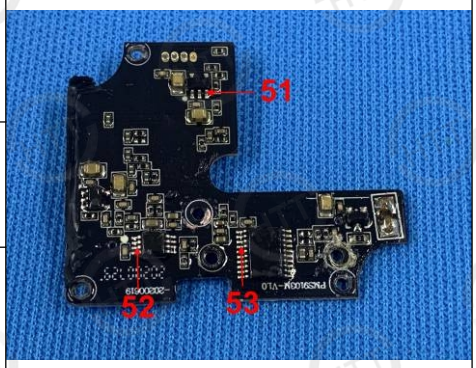
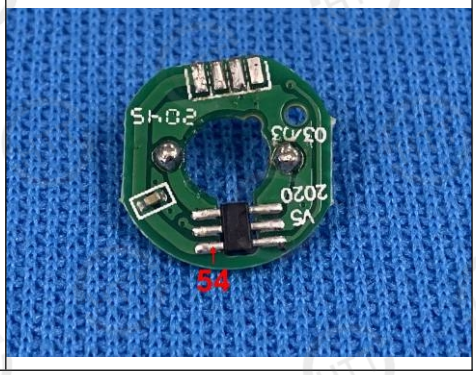
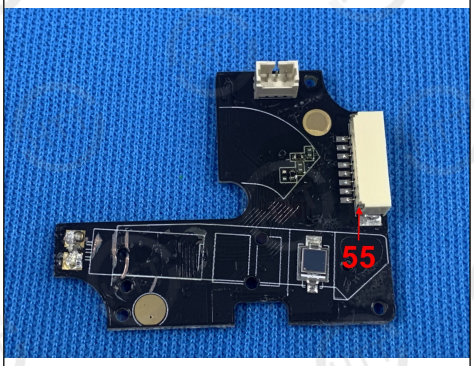
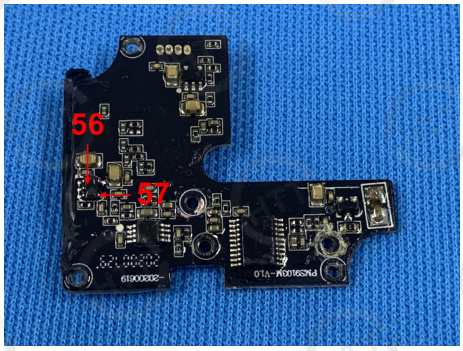
2. Test Item Description And Photo List

Sample No.	Description	Photograph
001	Silvery metal (housing)	
002	Silvery metal (spring)	
003	Silvery grey tape	
004	Black plastic (shell)	
005	Silvery metal (screw)	
006	Black glue	
007	Brown body (chip capacitor)	
008	Black body (IC)	
009	Black body	
010	Black body (transistor)	
011	Black body (IC)	
012	Black body (IC)	
013	Black PCB	
014	Silvery solder	

Sample No.	Description	Photograph
015	Color body	
016	Beige plastic	
017	Silvery metal	
018	Beige Plastic	
019	Silvery metal	
020	Black plastic	
021	Black PCB	
022	Silvery solder	
023	Gun Metal	
024	Transparent plastic	
025	Silvery metal (spring)	
026	Golden metal (pin)	
027	Golden metal	
028	Silvery metal	
029	White plastic	
030	Silvery metal (terminal)	
031	Red plastic (wire jacket)	
032	Yellow plastic (wire jacket)	
033	Black plastic (wire jacket)	

Sample No.	Description	Photograph
034	Silvery metal wire (core)	
035	Silvery/black plastic	
036	Black soft plastic	
037	Silvery grey tape	
038	Black plastic	
039	Black plastic	
040	Silvery metal	
041	Black-gray magnet	
042	Silvery metal	
043	Silvery metal	
044	Black plastic	
045	Coppery metal wire	
046	Golden metal	

Sample No.	Description	Photograph
047	Coppery metal	
048	Black body	
049	Green PCB	
050	Silvery solder	
051	Silvery metal (pin)	
052	Silvery metal (pin)	
053	Silvery metal (pin)	
054	Silvery metal (pin)	

Sample No.	Description	Photograph
055	Silvery metal	
056	Black body	
057	Silvery metal (pin)	

3. Test Results

3.1 Screening test for the specified hazardous substances of RoHS for the selected materials of the submitted sample:

- Heavy Metal (Cadmium, Chromium, Mercury, Lead) Content Test
- Bromine Content Test

According to IEC 62321-3-1:2013, and Quantification analyzed with Energy Dispersive X-ray Fluorescence Spectrometers.

Sample No.	Total Cadmium	Total Lead	Total Mercury	Total Chromium	Total Bromine
Sample 001	BL	BL	BL	Inconclusive^	N.A.
Sample 002	BL	BL	BL	BL	N.A.
Sample 003	BL	BL	BL	BL	BL
Sample 004	BL	BL	BL	BL	BL
Sample 005	BL	BL	BL	BL	N.A.
Sample 006	BL	BL	BL	BL	BL
Sample 007	BL	BL	BL	BL	BL
Sample 008	BL	BL	BL	BL	BL
Sample 009	BL	BL	BL	BL	BL
Sample 010	BL	BL	BL	BL	BL
Sample 011	BL	BL	BL	BL	BL
Sample 012	BL	BL	BL	BL	BL
Sample 013	BL	BL	BL	BL	Inconclusive^
Sample 014	BL	BL	BL	BL	N.A.
Sample 015	BL	BL	BL	BL	BL
Sample 016	BL	BL	BL	BL	BL
Sample 017	BL	BL	BL	BL	N.A.
Sample 018	BL	BL	BL	BL	BL
Sample 019	BL	BL	BL	BL	N.A.
Sample 020	BL	BL	BL	BL	BL
Sample 021	BL	BL	BL	BL	Inconclusive^
Sample 022	BL	BL	BL	BL	N.A.
Sample 023	BL	Inconclusive^	BL	BL	N.A.
Sample 024	BL	BL	BL	BL	BL
Sample 025	BL	BL	BL	BL	N.A.
Sample 026	BL	BL	BL	BL	N.A.

Sample No.	Total Cadmium	Total Lead	Total Mercury	Total Chromium	Total Bromine
Sample 027	BL	BL	BL	BL	N.A.
Sample 028	BL	BL	BL	BL	N.A.
Sample 029	BL	BL	BL	BL	BL
Sample 030	BL	BL	BL	BL	N.A.
Sample 031	BL	BL	BL	BL	BL
Sample 032	BL	BL	BL	BL	BL
Sample 033	BL	BL	BL	BL	BL
Sample 034	BL	BL	BL	BL	N.A.
Sample 035	BL	BL	BL	BL	BL
Sample 036	BL	BL	BL	BL	BL
Sample 037	BL	BL	BL	BL	BL
Sample 038	BL	BL	BL	BL	BL
Sample 039	BL	BL	BL	BL	BL
Sample 040	BL	BL	BL	BL	N.A.
Sample 041	BL	BL	BL	BL	BL
Sample 042	BL	BL	BL	BL	N.A.
Sample 043	BL	BL	BL	BL	N.A.
Sample 044	BL	BL	BL	BL	BL
Sample 045	BL	BL	BL	BL	N.A.
Sample 046	BL	Inconclusive^	BL	BL	N.A.
Sample 047	BL	BL	BL	BL	N.A.
Sample 048	BL	BL	BL	BL	BL
Sample 049	BL	BL	BL	BL	Inconclusive^
Sample 050	BL	BL	BL	BL	N.A.
Sample 051	BL	BL	BL	BL	N.A.
Sample 052	BL	BL	BL	BL	N.A.
Sample 053	BL	BL	BL	BL	N.A.
Sample 054	BL	BL	BL	BL	N.A.
Sample 055	BL	BL	BL	BL	N.A.
Sample 056	BL	BL	BL	BL	BL
Sample 057	BL	BL	BL	BL	N.A.

Note:

1. All Concentrations express in “mg/kg” (milligram per kilogram), mg/kg ~ ppm
2. “OL” denotes “over limit”

3. “BL” denotes “below limit”
4. “N.A.” denotes “Not Applicable”
5. “Inconclusive” denotes result is intermediate between “OL” and “BL”
6. “^”denotes the screening result was inconclusive(X) or over limit (OL), thus further confirmation test was conducted, results are listed in 3.2 and 3.3.

XRF screening limits for different materials:

Materials	Concentration (mg/kg)				
	Cd	Cr	Pb	Hg	Br
Metal	BL≤(70-3σ)<X<(130+3σ)≤OL	BL≤(700-3σ)<X	BL≤(700-3σ)<X<(1300+3σ)≤OL	BL≤(700-3σ)<X<(1300+3σ)≤OL	N.A.
Polymers	BL≤(70-3σ)<X<(130+3σ)≤OL	BL≤(700-3σ)<X	BL≤(700-3σ)<X<(1300+3σ)≤OL	BL≤(700-3σ)<X<(1300+3σ)≤OL	BL≤(300-3σ)<X
Composite material	BL≤(50-3σ)<X<(150+3σ)≤OL	BL≤(500-3σ)<X	BL≤(500-3σ)<X<(1500+3σ)≤OL	BL≤(500-3σ)<X<(1500+3σ)≤OL	BL≤(250-3σ)<X

3. 2 Test for Heavy Metals

– Lead, Cadmium, Hexavalent Chromium and Mercury Tests according to IEC 62321-4:2013+A1:2017 &IEC 62321-5:2013 & IEC 62321-7-1:2015& IEC 62321-7-2:2017, Analysis was conducted by ICP-OES, UV-VIS.

Element	Total Cadmium [mg/kg]	Total Lead [mg/kg]	Total Mercury [mg/kg]	Hexavalent Chromium [μg/cm²]	Hexavalent Chromium [mg/kg]
Detection Limit	**5**	**5**	**5**	**0.10**	**5**
Limit	**100**	**1000**	**1000**	**0.10**	**1000**
Sample 001	/	/	/	N.D.	/
Sample 023	/	333	/	/	/
Sample 046	/	30	/	/	/

Note:

1. All Concentrations express in “mg/kg”(milligram per kilogram), mg/kg ~ ppm.
2. “N.D.” = “Not Detected”.
3. Boiling-water-extraction:
   Negative = Absence of Cr(VI) coating / surface layer: the detected concentration in boiling-water-extraction solution is less than 0.10μg with 1cm² sample surface area.
   Positive = Presence of Cr(VI) coating / surface layer: the detected concentration in boiling-water-extraction solution is greater than 0.13μg with 1cm² sample surface area.
   Inconclusive =the detected concentration in boiling-water-extraction solution is greater than 0.10μg and less than 0.13μg with 1cm² sample surface area.
4. Positive = result be regarded as not comply with RoHS requirement
   Negative = result be regarded as comply with RoHS requirement
5. “-” =Not regulated

3. 3 Test for Flame retardants

– Test Method: With reference to IEC 62321-6:2015, extracted by toluene and analyzed by Gas Chromatography and Mass Spectrometry (GC-MS). [Reporting Limit: 5mg/kg]

Test Item		Result [mg/kg]			RoHS Requirement [mg/kg]
		Sample 013	Sample 021	Sample 049	
PBBs	Monobromobiphenyl	< 5	< 5	< 5	Sum of PBBs < 1000
	Dibromobiphenyl	< 5	< 5	< 5	
	Tribromobiphenyl	< 5	< 5	< 5	
	Tetrabromobiphenyl	< 5	< 5	< 5	
	Pentabromobiphenyl	< 5	< 5	< 5	
	Hexabromobiphenyl	< 5	< 5	< 5	
	Heptabromobiphenyl	< 5	< 5	< 5	
	Octabromobiphenyl	< 5	< 5	< 5	
	Nonabromobiphenyl	< 5	< 5	< 5	
	Decabromobiphenyl	< 5	< 5	< 5	
	Sum of PBBs	< 5	< 5	< 5	
PBDEs	Monobromodiphenyl Ether	< 5	< 5	< 5	Sum of PBDEs < 1000
	Dibromodiphenyl Ether	< 5	< 5	< 5	
	Tribromodiphenyl Ether	< 5	< 5	< 5	
	Tetrabromodiphenyl Ether	< 5	< 5	< 5	
	Pentabromodiphenyl Ether	< 5	< 5	< 5	
	Hexabromodiphenyl Ether	< 5	< 5	< 5	
	Heptabromodiphenyl Ether	< 5	< 5	< 5	
	Octabromodiphenyl Ether	< 5	< 5	< 5	
	Nonabromodiphenyl Ether	< 5	< 5	< 5	
	Decabromodiphenyl Ether	< 5	< 5	< 5	
	Sum of PBDEs	< 5	< 5	< 5	

Note:

1. All Concentrations express in “mg/kg” (milligram per kilogram), mg/kg ~ ppm.
2. “<” denotes less than

3.4 Di-(2-ethylhexyl) phthalate(DEHP), Benzylbutyl phthalate(BBP), Dibutyl phthalate (DBP), Diisobutyl phthalate (DIBP) Content—RoHS Directive 2011/65/EU Annex II amending Annex (EU)2017/2102

Test method: With reference to IEC 62321-8:2017; Analysis was conducted by GC-MS.

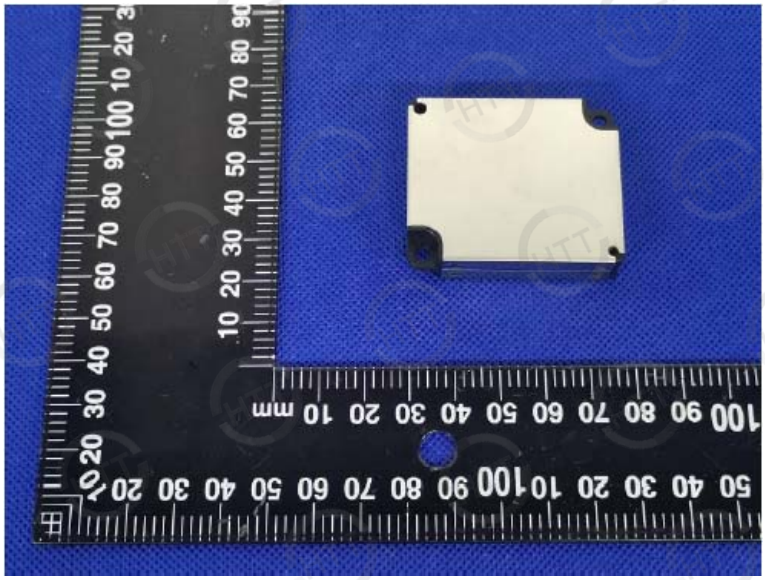
Element	Di-(2-ethylhexyl) phthalate (DEHP) [mg/kg]	Benzylbutyl phthalate (BBP) [mg/kg]	Dibutyl phthalate (DBP) [mg/kg]	Diisobutyl phthalate(DIBP) [mg/kg]
Detection Limit	**50**	**50**	**50**	**50**
Limit	**1000**	**1000**	**1000**	**1000**
Sample 003	N.D.	N.D.	N.D.	N.D.
Sample 004	N.D.	N.D.	N.D.	N.D.
Sample 006	N.D.	N.D.	N.D.	N.D.
Sample 007	N.D.	N.D.	N.D.	N.D.
Sample 008	N.D.	N.D.	N.D.	N.D.
Sample 009	N.D.	N.D.	N.D.	N.D.
Sample 010	N.D.	N.D.	N.D.	N.D.
Sample 011	N.D.	N.D.	N.D.	N.D.
Sample 012	N.D.	N.D.	N.D.	N.D.
Sample 013	N.D.	N.D.	N.D.	N.D.
Sample 015	N.D.	N.D.	N.D.	N.D.
Sample 016	N.D.	N.D.	N.D.	N.D.
Sample 018	N.D.	N.D.	N.D.	N.D.
Sample 020	N.D.	N.D.	N.D.	N.D.
Sample 021	N.D.	N.D.	N.D.	N.D.
Sample 024	N.D.	N.D.	N.D.	N.D.
Sample 029	N.D.	N.D.	N.D.	N.D.
Sample 031	N.D.	N.D.	N.D.	N.D.
Sample 032	N.D.	N.D.	N.D.	N.D.
Sample 033	370	N.D.	N.D.	N.D.
Sample 035	N.D.	N.D.	N.D.	N.D.
Sample 036	N.D.	N.D.	N.D.	N.D.
Sample 037	N.D.	N.D.	N.D.	N.D.
Sample 038	N.D.	N.D.	N.D.	N.D.
Sample 039	N.D.	N.D.	N.D.	N.D.
Sample 041	N.D.	N.D.	N.D.	N.D.
Sample 044	N.D.	N.D.	N.D.	N.D.
Sample 048	N.D.	N.D.	N.D.	N.D.
Sample 049	N.D.	N.D.	N.D.	N.D.

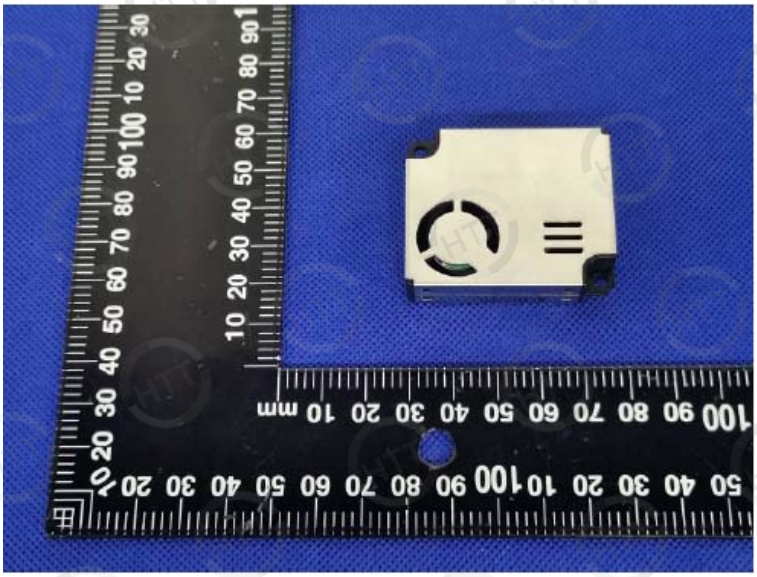
Element	Di-(2-ethylhexyl) phthalate (DEHP) [mg/kg]	Benzylbutyl phthalate (BBP) [mg/kg]	Dibutyl phthalate (DBP) [mg/kg]	Diisobutyl phthalate(DIBP) [mg/kg]
Detection Limit	**50**	**50**	**50**	**50**
Limit	**1000**	**1000**	**1000**	**1000**
Sample 056	N.D.	N.D.	N.D.	N.D.

Note:

1. All Concentrations express in “mg/kg”(milligram per kilogram), mg/kg ~ ppm.
2. “N.D.” = “Not Detected”.

Photo of the Submitted Sample





*** End of Report ***