

檢測報告 Test Report

報告編號 RHS05F01622301E
Report No. RHS05F01622301E

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申請單位 啟創光電股份有限公司
Applicant ACTLIGHTING TECHNOLOGY CORP
地址 基隆市七堵區泰安路二巷 18 - 1 號 1 樓
Address 1F., NO. 18- 1, LN. 2, TAI-AN RD., CIDU DIST., KEELUNG CITY 206, TAIWAN (R. O. C.)

以下測試之樣品及樣品信息由申請者提供並確認

The following sample(s) and sample information was/were submitted and identified by/on the behalf of the client

序號 No.	樣品名稱 Sample Name
1	LED 燈綠色環氧部分 LED GREEN LIGHT PLASTIC PARTS
2	LED 燈黃色環氧部分 LED YELLOW LIGHT PLASTIC PARTS
3	LED 燈橙色/琥珀色環氧部分 LED ORANG/AMBER LIGHT PLASTIC PARTS
4	LED 燈乳白色環氧部分 LED MILK WHITE LIGHT PLASTIC PARTS
5	LED 燈銅支架鍍銀 LED SILVERY METAL BRACKET COPPER
6	LED 燈鐵支架鍍銀 LED SILVERY METAL BRACKET IRON
7	LED 鐵支架銅,鎳,錫層 LED cu ni sn
8	LED 支架銅,鎳,銀層 LED cu Ni Ag

樣品接收日期 2013.10.08
Sample Received Date Oct.10,2013
樣品檢測日期 2013.10.08-2013.10.12
Testing Period Oct.10,2013 to Oct.12,2013

主 檢
Tested by Chen Lijuan

審 核
Reviewed by Chen Kaihua

批 准
Approved by Su Hongwei
Su Hongwei
Senior Laboratory Manager

日 期
Date 2013.10.12



No. 1130338305

深圳市華測檢測技術股份有限公司上海分公司
Centre Testing International Co.,Ltd. Shanghai Branch
上海市浦東新區新金橋路 1996 號
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檢測要求

根據客戶要求，對所提交樣品中的四溴雙酚 A(TBBP-A)，砷(As)，鉛(Pb)，鎘(Cd)，汞(Hg)，六價鉻(Cr(VI))，多溴聯苯(PBBs)，多溴二苯醚(PBDEs)，六溴環十二烷(HBCDD)，鄰苯二甲酸酯，氟(F)，氯(Cl)，溴(Br)，碘(I)，全氟辛烷磺酸(PFOS)，多環芳烴(PAHs)進行測試。

Test Requested

As specified by client, to test Tetrabromobisphenol-A (TBBP-A), Arsenic (As), Lead(Pb), Cadmium(Cd), Mercury(Hg), Hexavalent Chromium (Cr(VI)), Polybrominated Biphenyls (PBBs), Polybrominated Diphenyl Ethers (PBDEs), Hexabromocyclododecane (HBCDD), Phthalates, Fluorine (F), Chlorine (Cl), Bromine (Br), Iodine (I), Perfluorooctane Sulfonates(PFOS), Polycyclic Aromatic Hydrocarbons (PAHs) in the submitted sample(s).

檢測依據 Test Method

測試項目 Tested Item(s)	測試方法 Test Method	測試儀器 Measured Equipment(s)
鉛(Pb) Lead (Pb)	IEC 62321:2008 Ed.1 Sec.8	ICP-OES
	IEC 62321:2008 Ed.1 Sec.9	
鎘(Cd) Cadmium (Cd)	IEC 62321:2008 Ed.1 Sec.8	ICP-OES
	IEC 62321:2008 Ed.1 Sec.9	
汞(Hg) Mercury (Hg)	IEC 62321:2008 Ed.1 Sec.7	ICP-OES
六價鉻(Cr(VI)) Hexavalent Chromium (Cr(VI))	IEC 62321:2008 Ed.1 Annex C	UV-Vis
	IEC 62321:2008 Ed.1 Annex B	
多溴聯苯(PBBs) Polybrominated Biphenyls (PBBs)	IEC 62321:2008 Ed.1 Annex A	GC-MS
多溴二苯醚(PBDEs) Polybrominated Diphenyl Ethers (PBDEs)	IEC 62321:2008 Ed.1 Annex A	GC-MS

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測試項目 Tested Item(s)	測試方法 Test Method	測試儀器 Measured Equipment(s)
氟(F) Fluorine	參考 BS EN 14582: 2007 Refer to BS EN 14582: 2007	IC
氯(Cl) Chlorine	參考 BS EN 14582: 2007 Refer to BS EN 14582: 2007	IC
溴(Br) Bromine	參考 BS EN 14582: 2007 Refer to BS EN 14582: 2007	IC
碘(I) Iodine	參考 BS EN 14582: 2007 Refer to BS EN 14582: 2007	IC
砷(As) Arsenic (As)	參考US EPA 3052:1996 Refer to US EPA 3052:1996	ICP-OES
四溴雙酚 A (TBBP-A) Tetrabromobisphenol-A (TBBP-A)	參考 US EPA 3540C:1996 Refer to US EPA 3540C:1996	GC-MS
多環芳烴(PAHs) Polycyclic Aromatic Hydrocarbons (PAHs)	參考 US EPA 8270D:2007 Refer to US EPA 8270D:2007	GC-MS
六溴環十二烷(HBCDD) Hexabromocyclododecane (HBCDD)	參考US EPA 3550C:2007 Refer to US EPA 3550C:2007	GC-MS
鄰苯二甲酸酯 Phthalates	參考EN 14372:2004(E) Refer to EN 14372:2004(E)	GC-MS
全氟辛烷磺酸(PFOS) Perfluorooctane Sulfonates(PFOS)	參考US EPA 3550C:2007 Refer to US EPA 3550C:2007	LC-MS-MS

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檢測結果 Test Result(s)

測試項目 Tested Item(s)	結果 Result (單位 Unit:mg/kg)				方法檢測限 MDL
	1	2	3	4	
鉛(Pb) Lead (Pb)	N.D.	N.D.	N.D.	8	2mg/kg
鎘(Cd)Cadmium (Cd)	N.D.	N.D.	N.D.	N.D.	2mg/kg
汞(Hg)Mercury (Hg)	N.D.	N.D.	N.D.	N.D.	2mg/kg
六價鉻(Cr(VI)) Hexavalent Chromium (Cr(VI))	N.D.	N.D.	N.D.	N.D.	2mg/kg
	—	—	—	—	/
多溴聯苯 Polybrominated Biphenyls(PBBs)					
一溴聯苯 Monobromodiphenyl	N.D.	N.D.	N.D.	N.D.	5mg/kg
二溴聯苯 Dibromobiphenyl	N.D.	N.D.	N.D.	N.D.	5mg/kg
三溴聯苯 Tribromobiphenyl	N.D.	N.D.	N.D.	N.D.	5mg/kg
四溴聯苯 Tetrabromobiphenyl	N.D.	N.D.	N.D.	N.D.	5mg/kg
五溴聯苯 Pentabromobiphenyl	N.D.	N.D.	N.D.	N.D.	5mg/kg
六溴聯苯 Hexabromobiphenyl	N.D.	N.D.	N.D.	N.D.	5mg/kg
七溴聯苯 Heptabromobiphenyl	N.D.	N.D.	N.D.	N.D.	5mg/kg
八溴聯苯 Octabromobiphenyl	N.D.	N.D.	N.D.	N.D.	5mg/kg
九溴聯苯 Nonabromobiphenyl	N.D.	N.D.	N.D.	N.D.	5mg/kg
十溴聯苯 Decabromobiphenyl	N.D.	N.D.	N.D.	N.D.	5mg/kg
多溴二苯醚 Polybrominated Diphenyl Ethers(PBDEs)					
一溴二苯醚 Monobromodiphenyl ether	N.D.	N.D.	N.D.	N.D.	5mg/kg
二溴二苯醚 Dibromobiphenyl ether	N.D.	N.D.	N.D.	N.D.	5mg/kg
三溴二苯醚 Tribromobiphenyl ether	N.D.	N.D.	N.D.	N.D.	5mg/kg
四溴二苯醚 Tetrabromobiphenyl ether	N.D.	N.D.	N.D.	N.D.	5mg/kg
五溴二苯醚 Pentabromobiphenyl ether	N.D.	N.D.	N.D.	N.D.	5mg/kg
六溴二苯醚 Hexabromobiphenyl ether	N.D.	N.D.	N.D.	N.D.	5mg/kg
七溴二苯醚 Heptabromobiphenyl ether	N.D.	N.D.	N.D.	N.D.	5mg/kg
八溴二苯醚 Octabromobiphenyl ether	N.D.	N.D.	N.D.	N.D.	5mg/kg
九溴二苯醚 Nonabromobiphenyl ether	N.D.	N.D.	N.D.	N.D.	5mg/kg
十溴二苯醚 Decabromobiphenyl ether	N.D.	N.D.	N.D.	N.D.	5mg/kg

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測試項目 Tested Item(s)	結果 Result (單位 Unit:mg/kg)				方法檢測限 MDL
	1	2	3	4	
鹵素 Halogen					
氟 Fluorine (F)	N.D.	N.D.	N.D.	N.D.	10mg/kg
氯 Chlorine (Cl)	472	520	390	394	10mg/kg
溴 Bromine (Br)	441	N.D.	139	499	10mg/kg
碘 Iodine (I)	N.D.	N.D.	N.D.	N.D.	10mg/kg

測試項目 Tested Item(s)	結果 Result (單位 Unit:mg/kg)				方法檢測限 MDL
	1	2	3	4	
全氟辛烷磺酸(PFOS) Perfluorooctane Sulfonates (PFOS)	N.D.	N.D.	N.D.	N.D.	5mg/kg
六溴環十二烷(HBCDD) Hexabromocyclododecane (HBCDD)	N.D.	N.D.	N.D.	N.D.	5mg/kg
四溴雙酚 A Tetrabromobisphenol-A (TBBP-A)	N.D.	N.D.	N.D.	N.D.	5mg/kg
砷(As) Arsenic (As)	N.D.	N.D.	N.D.	N.D.	10 mg/kg

測試項目 Tested Item(s)	結果 Result (單位 Unit:mg/kg)				方法檢測限 MDL
	1	2	3	4	
鄰苯二甲酸酯 Phthalates					
鄰苯二甲酸二(2-乙基己基)酯 (DEHP) Bis(2-ethyl(hexyl)) phthalate (DEHP) CAS#:117-81-7	N.D.	N.D.	N.D.	N.D.	50mg/kg
鄰苯二甲酸二正丁酯(DBP) Dibutyl phthalate (DBP) CAS#:84-74-2	N.D.	N.D.	N.D.	N.D.	50mg/kg
鄰苯二甲酸丁基苄酯(BBP) Benzylbutyl phthalate (BBP) CAS#:85-68-7	N.D.	N.D.	N.D.	N.D.	50mg/kg

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測試項目 Tested Item(s)	結果 Result (單位 Unit:mg/kg)				方法檢測限 MDL
	1	2	3	4	
多環芳烴 Polycyclic Aromatic Hydrocarbons (PAHs)					
萘 Naphthalene	N.D.	N.D.	N.D.	N.D.	0.2mg/kg
芴 Acenaphthylene	N.D.	N.D.	N.D.	N.D.	0.2mg/kg
芘 Acenaphthene	N.D.	N.D.	N.D.	N.D.	0.2mg/kg
芴 Fluorene	N.D.	N.D.	N.D.	N.D.	0.2mg/kg
菲 Phenanthrene	N.D.	N.D.	N.D.	N.D.	0.2mg/kg
蒽 Anthracene	N.D.	N.D.	N.D.	N.D.	0.2mg/kg
熾蒽 Fluoranthene	N.D.	N.D.	N.D.	N.D.	0.2mg/kg
芘 Pyrene	N.D.	N.D.	N.D.	N.D.	0.2mg/kg
屈 Chrysene	N.D.	N.D.	N.D.	N.D.	0.2mg/kg
苯並[a]蒽 Benzo[a]anthracene	N.D.	N.D.	N.D.	N.D.	0.2mg/kg
苯並[b]熾蒽 Benzo[b]fluoranthene	N.D.	N.D.	N.D.	N.D.	0.2mg/kg
苯並[k]熾蒽 Benzo[k]fluoranthene	N.D.	N.D.	N.D.	N.D.	0.2mg/kg
苯並[j]熾蒽 Benzo[j]fluoranthene	N.D.	N.D.	N.D.	N.D.	0.2mg/kg
苯並[a]芘 Benzo[a]pyrene	N.D.	N.D.	N.D.	N.D.	0.2mg/kg
苯並[e]芘 Benzo[e]pyrene	N.D.	N.D.	N.D.	N.D.	0.2mg/kg
茚並[1,2,3-cd]芘 Indenol[1,2,3-cd]pyrene	N.D.	N.D.	N.D.	N.D.	0.2mg/kg
二苯並[a,h]蒽 Dibenz[a,h]anthracene	N.D.	N.D.	N.D.	N.D.	0.2mg/kg
苯並[g,h,i]芘 Benzo[g,h,i]perylene	N.D.	N.D.	N.D.	N.D.	0.2mg/kg

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測試項目 Tested Item(s)	結果 Result (單位 Unit:mg/kg)				方法檢測限 MDL
	5	6	7	8	
鉛(Pb) Lead (Pb)	21	N.D.	N.D.	N.D.	2mg/kg
鎘(Cd)Cadmium (Cd)	N.D.	N.D.	N.D.	N.D.	2mg/kg
汞(Hg)Mercury (Hg)	N.D.	N.D.	N.D.	N.D.	2mg/kg
六價鉻(Cr(VI)) Hexavalent Chromium (Cr(VI))	—	—	—	—	2mg/kg
	陰性 Negative	陰性 Negative	陰性 Negative	陰性 Negative	/
多溴聯苯 Polybrominated Biphenyls(PBBs)					
一溴聯苯 Monobromodiphenyl	N.D.	N.D.	N.D.	N.D.	5mg/kg
二溴聯苯 Dibromobiphenyl	N.D.	N.D.	N.D.	N.D.	5mg/kg
三溴聯苯 Tribromobiphenyl	N.D.	N.D.	N.D.	N.D.	5mg/kg
四溴聯苯 Tetrabromobiphenyl	N.D.	N.D.	N.D.	N.D.	5mg/kg
五溴聯苯 Pentabromobiphenyl	N.D.	N.D.	N.D.	N.D.	5mg/kg
六溴聯苯 Hexabromobiphenyl	N.D.	N.D.	N.D.	N.D.	5mg/kg
七溴聯苯 Heptabromobiphenyl	N.D.	N.D.	N.D.	N.D.	5mg/kg
八溴聯苯 Octabromobiphenyl	N.D.	N.D.	N.D.	N.D.	5mg/kg
九溴聯苯 Nonabromobiphenyl	N.D.	N.D.	N.D.	N.D.	5mg/kg
十溴聯苯 Decabromobiphenyl	N.D.	N.D.	N.D.	N.D.	5mg/kg
多溴二苯醚 Polybrominated Diphenyl Ethers(PBDEs)					
一溴二苯醚 Monobromodiphenyl ether	N.D.	N.D.	N.D.	N.D.	5mg/kg
二溴二苯醚 Dibromobiphenyl ether	N.D.	N.D.	N.D.	N.D.	5mg/kg
三溴二苯醚 Tribromobiphenyl ether	N.D.	N.D.	N.D.	N.D.	5mg/kg
四溴二苯醚 Tetrabromobiphenyl ether	N.D.	N.D.	N.D.	N.D.	5mg/kg
五溴二苯醚 Pentabromobiphenyl ether	N.D.	N.D.	N.D.	N.D.	5mg/kg
六溴二苯醚 Hexabromobiphenyl ether	N.D.	N.D.	N.D.	N.D.	5mg/kg
七溴二苯醚 Heptabromobiphenyl ether	N.D.	N.D.	N.D.	N.D.	5mg/kg
八溴二苯醚 Octabromobiphenyl ether	N.D.	N.D.	N.D.	N.D.	5mg/kg
九溴二苯醚 Nonabromobiphenyl ether	N.D.	N.D.	N.D.	N.D.	5mg/kg
十溴二苯醚 Decabromobiphenyl ether	N.D.	N.D.	N.D.	N.D.	5mg/kg

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測試項目 Tested Item(s)	結果 Result (單位 Unit:mg/kg)				方法檢測限 MDL
	5	6	7	8	
全氟辛烷磺酸(PFOS) Perfluorooctane Sulfonates (PFOS)	N.D.	N.D.	N.D.	N.D.	5mg/kg

測試樣品/部位描述

Tested Sample/Part Description

1. 綠色塑膠 Green plastic
2. 黃色塑膠 Yellow plastic
3. 橙色塑膠 Orange plastic
4. 乳白色塑膠 Milk white plastic
5. 有銀色鍍層的金屬 Metal with silvery plating
6. 有銀色鍍層的金屬 Metal with silvery plating
7. 有銀色鍍層的金屬 Metal with silvery plating
8. 有銀色鍍層的金屬 Metal with silvery plating

注釋： 對於檢測鉛，鎘，汞，砷之樣品已完全溶解。

-N.D. = 未檢出 (小於方法檢測限).

-mg/kg=ppm=百萬分之幾.

-陰性表示不含有六價鉻，即由表面積為 50cm²的樣品所萃取出來的溶液中，測得六價鉻的濃度小於 0.02mg/kg。

Note : The sample had been dissolved totally tested for Lead, Cadmium, Mercury, Arsenic.

-M.D.L. = Method Detection Limit

-N.D. = Not Detected (<M.D.L.)

-mg/kg= ppm =parts per million

-Negative = Absence of Cr (VI). The Cr (VI) concentration detected in the boiling water extraction solution is less than 0.02 mg/kg with 50cm² sample surface area used.

備註： 報告編號中“E”表示此報告為中英文對照版本。

本報告的測試結果引用自報告 RHS05F016223E。

Remark: The end sign of report number E represents the bilingual version.

The test result(s) of this report is/are presented in reference to the result(s) that reported in RHS05F016223E.

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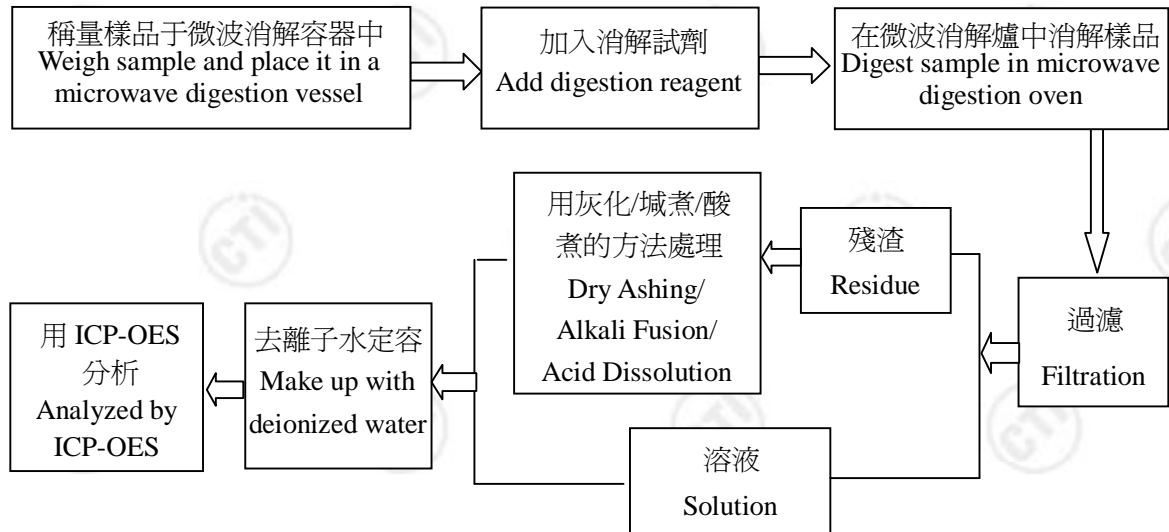
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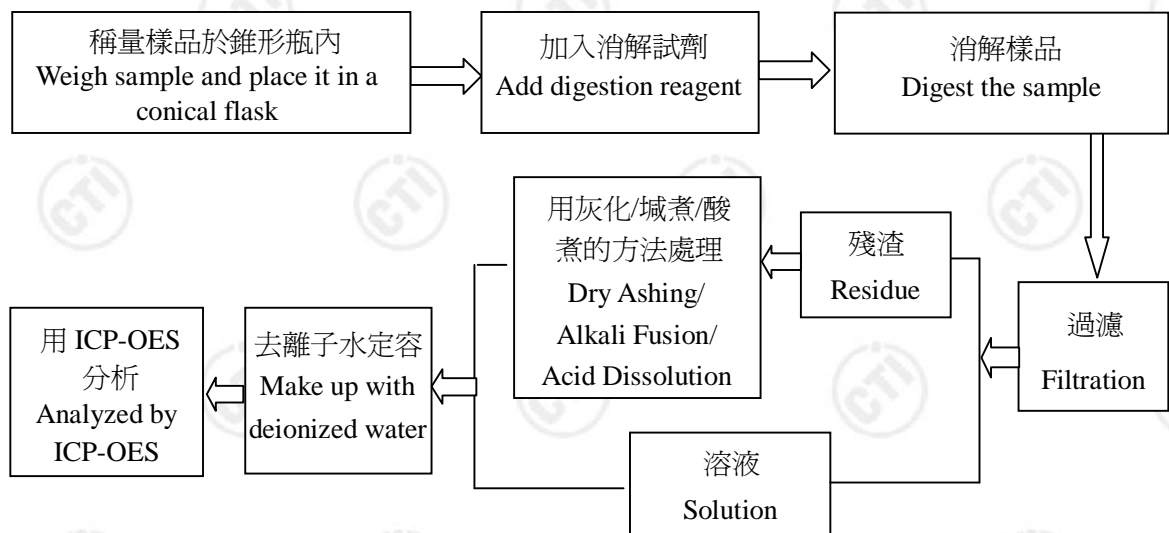
檢測流程 Test Process

1. 鉛(Pb), 鎘(Cd) Lead(Pb), Cadmium(Cd)

(1) IEC 62321:2008 Ed.1 Sec.8



(2) IEC 62321:2008 Ed.1 Sec.9

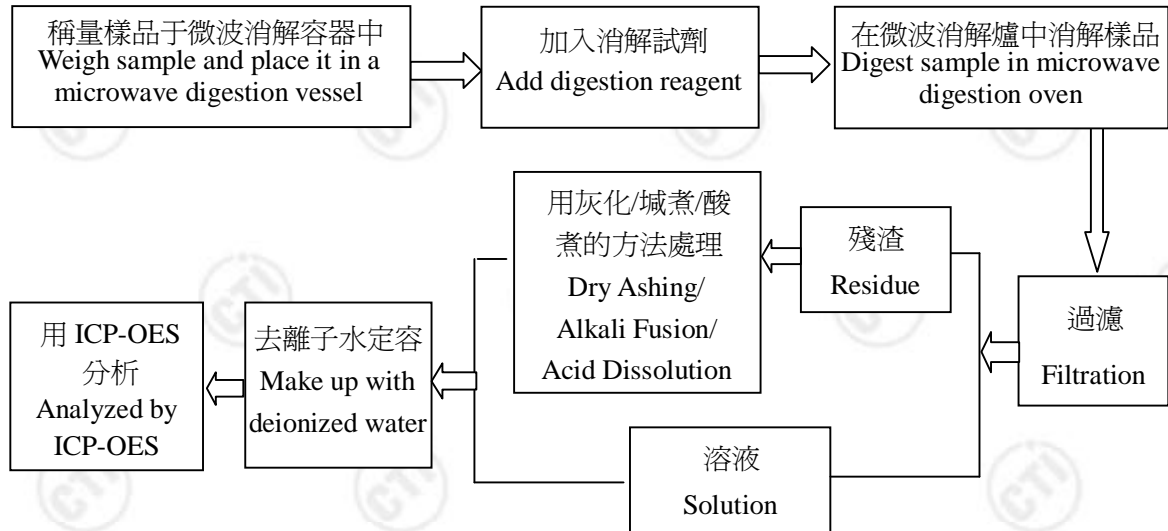


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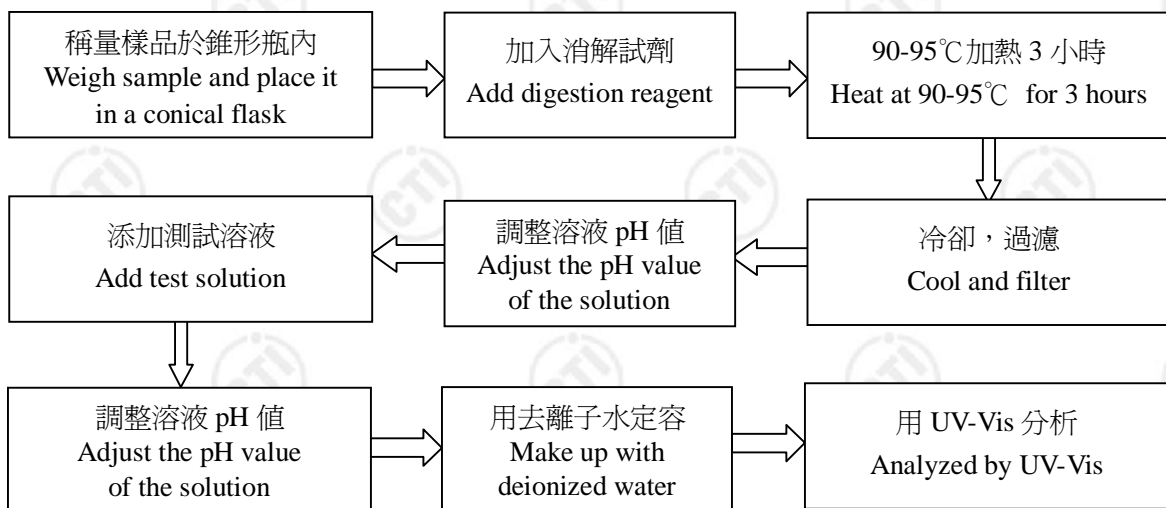
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2. 汞(Hg) Mercury(Hg)



3. 六價鉻(Cr(VI)) Hexavalent Chromium (Cr(VI))

(1) IEC 62321:2008 Ed.1 Annex C

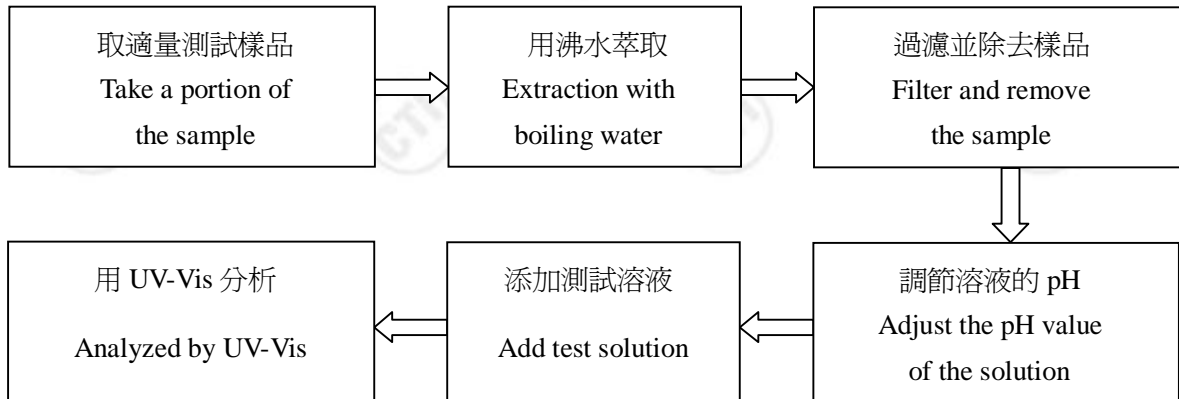


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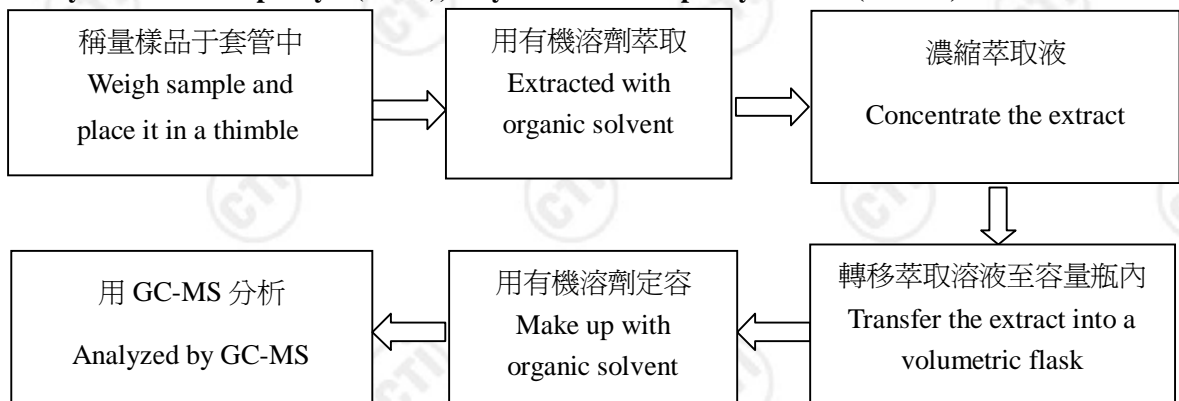
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(2) IEC 62321:2008 Ed.1 Annex B



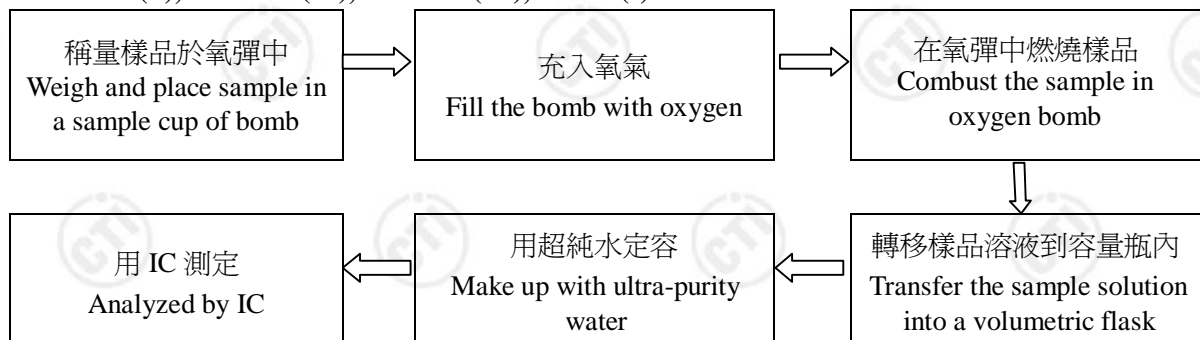
4. 多溴聯苯(PBBs), 多溴二苯醚(PBDEs)

Polybrominated Biphenyls (PBBs), Polybrominated Diphenyl Ethers (PBDEs)



5. 氟(F), 氯(Cl), 溴(Br), 碘(I)

Fluorine (F), Chlorine (Cl), Bromine (Br), Iodine (I)

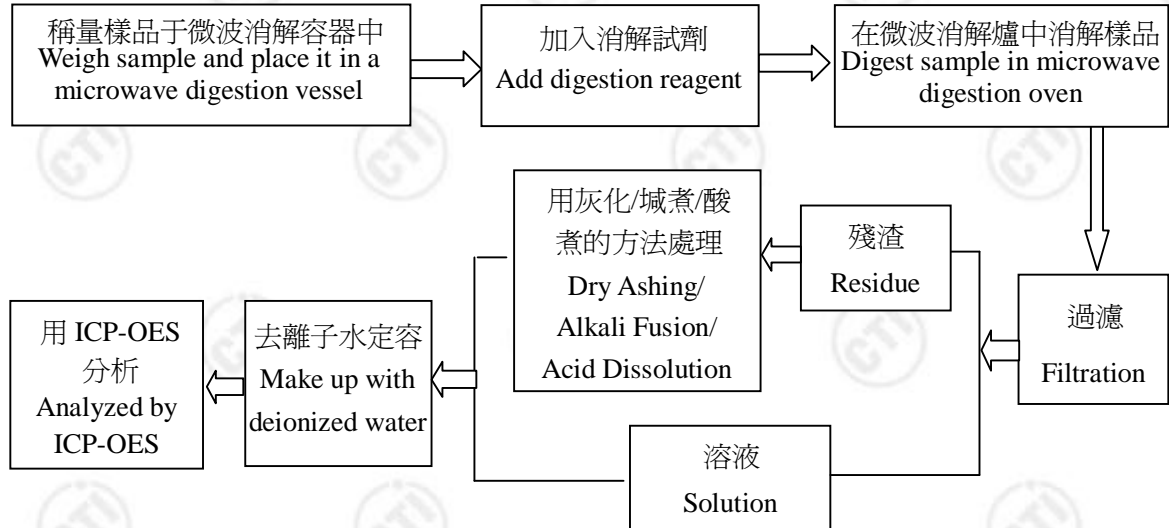


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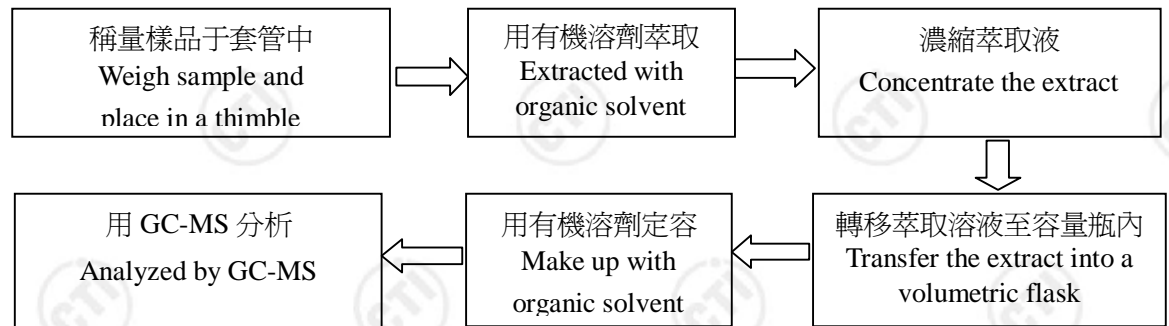
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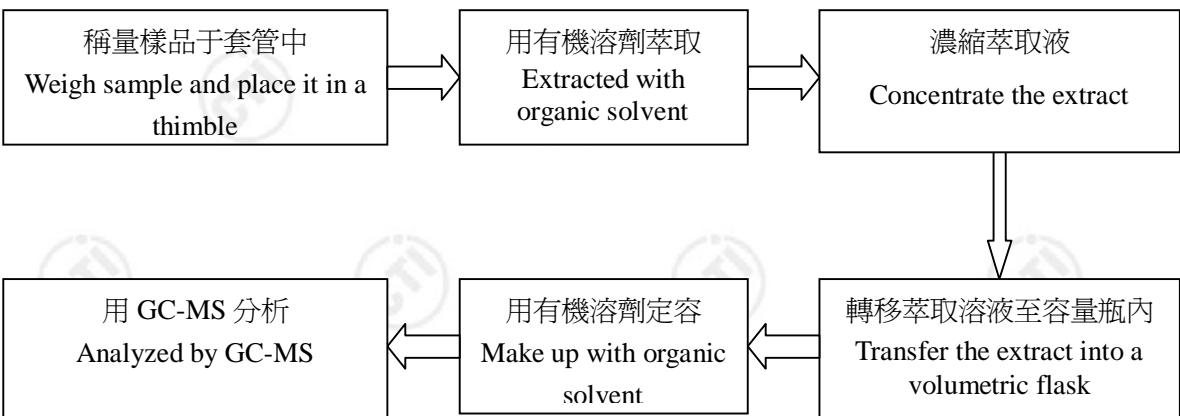
6. 砷(As) Arsenic (As)



7. 多環芳烴(PAHs) Polycyclic Aromatic Hydrocarbons (PAHs)



8. 六溴環十二烷(HBCDD) Hexabromocyclododecane (HBCDD)

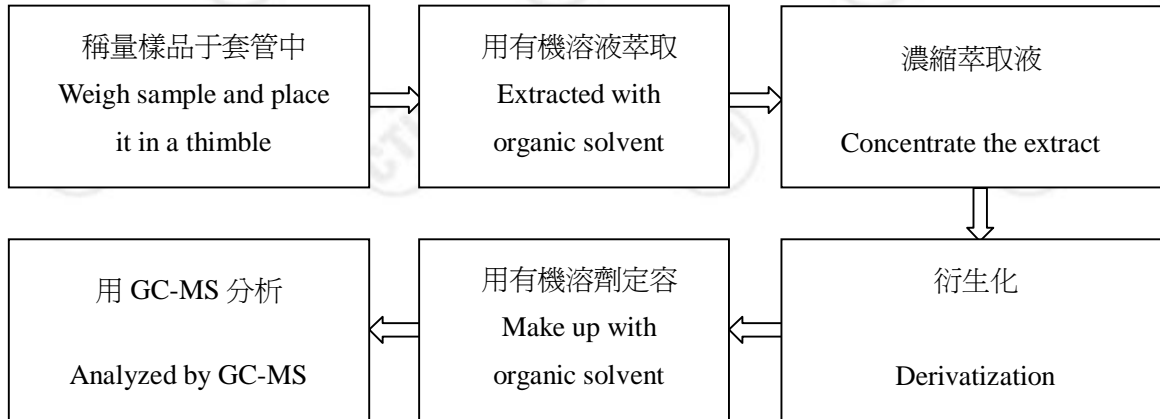


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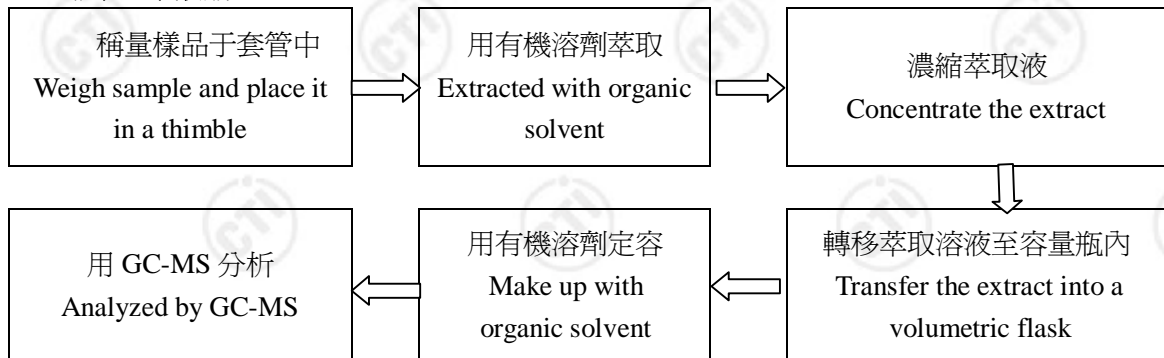
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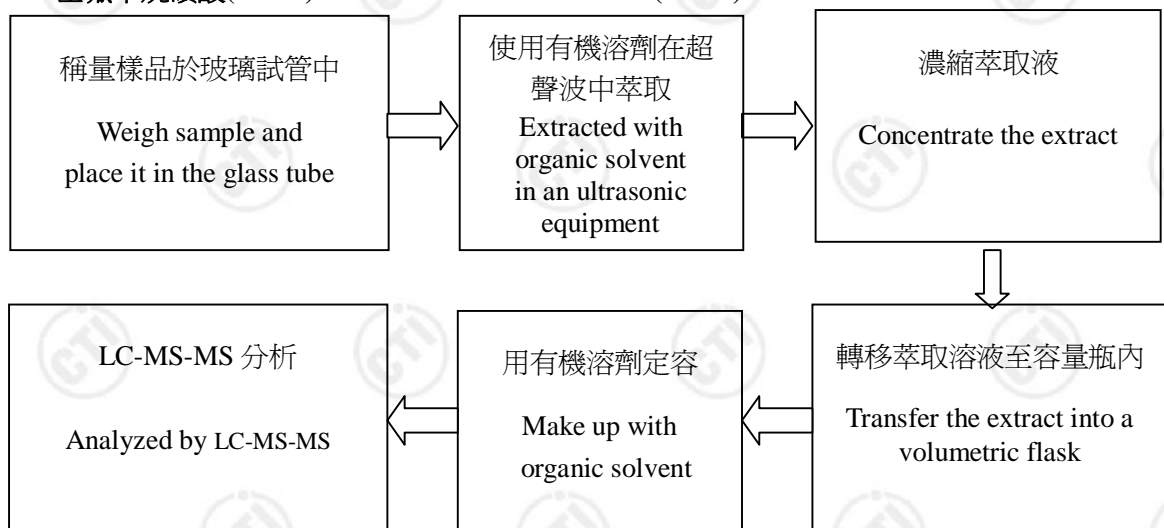
9. 四溴雙酚 A Tetrabromobisphenol-A (TBBP-A)



10. 鄰苯二甲酸酯 Phthalates



11. 全氟辛烷磺酸(PFOS) Perfluorooctane Sulfonates (PFOS)

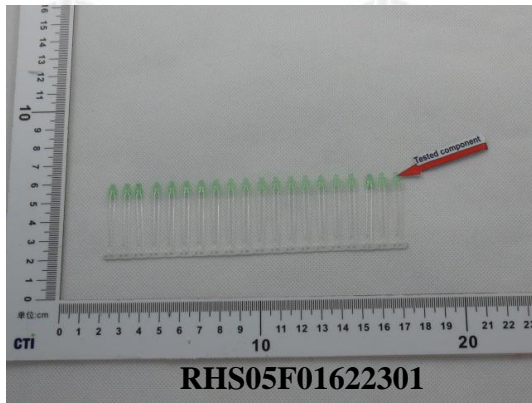


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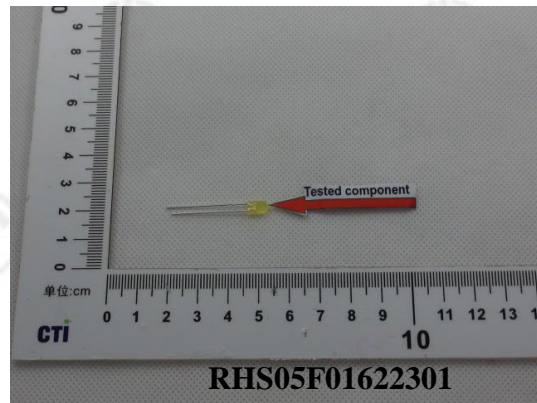
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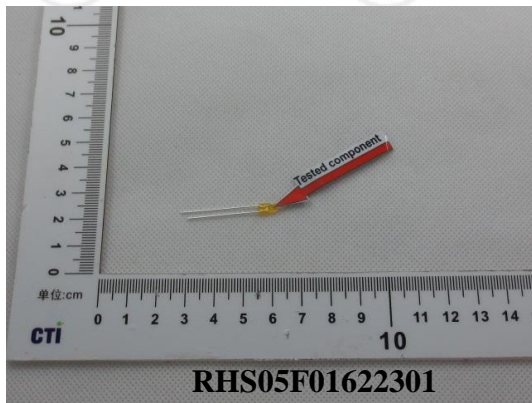
樣品圖片 Photo(s) of the sample(s)



1



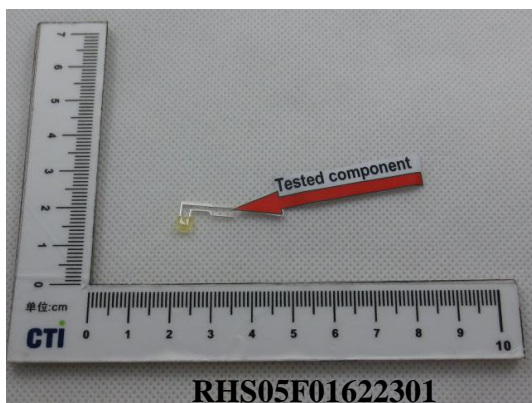
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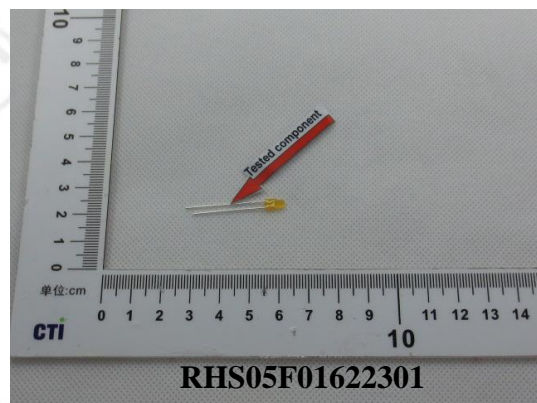
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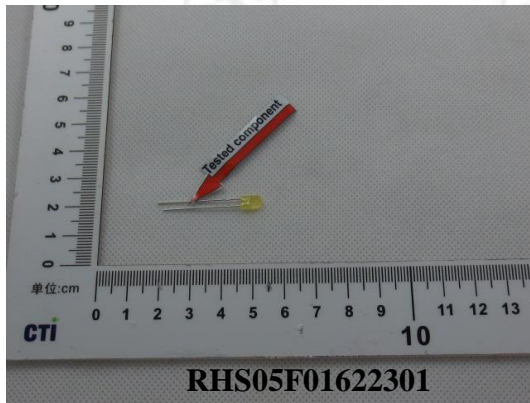


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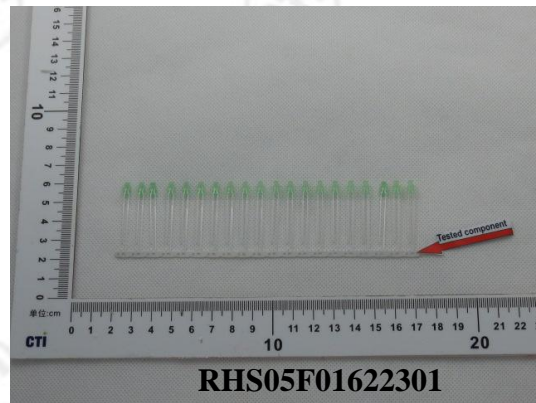
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***End of report ***

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