

試驗報告

號碼(No.): KA/2017/C2380A-02 日期(Date): 2018/03/07 頁數(Page): 1 of 16

Test Report

薩摩亞商史巴克電子有限公司台灣分公司

SPARKTEK TECHNOLOGY CO., LTD.(SAMOA) TAIWAN BRANCH

新北市中和區建康路79號2F

2F., NO.79, JIANKANG RD., ZHONGHE DIST., NEW TAIPEI CITY 235, TAIWAN (R.O.C.)

以下測試樣品係由申請廠商所提供及確認 (The following sample(s) was/were submitted and identified by/on behalf of the applicant as):

樣品名稱(Sample Description) : ESD/TVS PROTECTION DIODE
樣品型號(Style/Item No.) : DFN1006P3, DFN1109MP6, DFN1410P6, DFN1510TP6, DFN1610P6, DFN1616P6, DFN1714P8, DFN2514P12, DFN3314P16, DFN2626P9, DFN2010P8, DFN2010T8, DFN2010P5, DFN2510P10, DFN3020P6, DFN4120P10, MSOP-08, MSOP-10, SOP-08, SOP-14, SOP-16, SOT-143, SOT-23, SOT-25, SOT-26, SOT-723, SOT-523, SOT-323, SOT-553, SOT-563

收件日期(Sample Receiving Date) : 2017/12/29

測試期間(Testing Period) : 2017/12/29 TO 2018/01/05

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測試需求(Test Requested) : 依據客戶要求, 進行高關注物質(SVHC)篩檢. / As requested by client, SVHC Screening was performed.

測試結果(Test Results) : 請參閱下一頁 (Please refer to following pages).



報告簽署人/Ray Chang Ph.D./Manager-Tech
Signed for and on behalf of
SGS Taiwan Limited

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測試樣品(Test Sample): 整體混測:ESD/TVS PROTECTION DIODE (MIXED ALL PARTS:ESD/TVS PROTECTION DIODE)

測試方法(Test Method):

參照SGS內部方法RSTS-EE-SVHC-007. 由感應耦合電漿原子發射光譜儀、紫外光可見光譜儀、氣相層析/質譜儀、液相層析/質譜儀、氣相層析儀/火焰光度偵測器、液相層析/質譜儀/二極體陣列偵測器、超高效能液相層析串聯質譜儀進行分析。(SGS In-House method-RSTS-EE-SVHC-007. Analyzed by ICP-AES, UV-VIS, GC/MS, LC/MS, GC/FPD, LC/MS/DAD, UPLC-MSMS.)

測試結果 (Test Results)

No.	物質名稱 (Substance Name)	RL (%)	結果 (Result) (%)
1.	4,4' - 二氨基二苯甲烷 / 4,4' - Diaminodiphenylmethane (MDA) (CAS No.: 101-77-9)	0.05	n.d.
2.	二甲苯麝香 / 5-tert-butyl-2,4,6-trinitro- m-xylene (Musk Xylene) (CAS No.: 81-15-2)	0.05	n.d.
3.	短鏈氯化石蠟 / Alkanes, C10-13, chloro (Short Chain Chlorinated Paraffins) (CAS No.: 85535-84-8)	0.05	n.d.
4.	蒽 / Anthracene (CAS No.: 120-12-7)	0.05	n.d.
5.	鄰苯二甲酸丁苯甲酯 / BBP (Butyl Benzyl phthalate) (CAS No.: 85-68-7)	0.05	n.d.
6.	氧化雙三丁基錫 / Bis(tributyltin)oxide (TBTO)*** (CAS No.: 56-35-9)	-	n.d.
7.	五氧化二砷 / Diarsenic pentaoxide*** (CAS No.: 1303-28-2)	-	n.d.
8.	三氧化二砷 / Diarsenic trioxide*** (CAS No.: 1327-53-3)	-	n.d.
9.	鄰苯二甲酸二丁酯 / DBP (Dibutyl phthalate) (CAS No.: 84-74-2)	0.05	n.d.
10.	六溴環十二烷及所有主要被辨別出的異構物 / Hexabromocyclododecane (HBCDD) and all major diastereoisomers identified (α - HBCDD, β - HBCDD, γ - HBCDD) (CAS No.: 25637-99-4 and 3194-55-6 (134237-51-7, 134237-50-6, 134237-52-8))	0.05	n.d.
11.	砷酸氫鉛 / Lead hydrogen arsenate*** (CAS No.: 7784-40-9) (※1)	-	n.d.
12.	重鉻酸鈉 / Sodium dichromate*** (CAS No.: 7789-12-0; 10588-01-9(*))	-	n.d.
13.	三乙基砷酸酯 / Triethyl arsenate*** (CAS No.: 15606-95-8)	-	n.d.
14.	鄰苯二甲酸二(2-乙基己基)酯 / DEHP (Bis (2-ethyl(hexyl) phthalate)) (CAS No.: 117-81-7)	0.05	n.d.
15.	2,4-二硝基甲苯 / 2,4-Dinitrotoluene (CAS No.: 121-14-2)	0.05	n.d.
16.	蒽油 / Anthracene oil (CAS No.: 90640-80-5) (**)	0.05	n.d.
17.	蒽油, 蒽糊 / Anthracene oil, anthracene paste (CAS No.: 90640-81-6) (**)	0.05	n.d.
18.	蒽油, 蒽糊, 蒽餾分 / Anthracene oil, anthracene paste, anthracene fraction (CAS No.: 91995-15-2) (**)	0.05	n.d.

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No.	物質名稱 (Substance Name)	RL (%)	結果 (Result) (%)
19.	蔥油, 蔥糊, 輕油 / Anthracene oil, anthracene paste, distn. Lights (CAS No.: 91995-17-4) (**)	0.05	n.d.
20.	蔥油, 含蔥量少 / Anthracene oil, anthracene-low (CAS No.: 90640-82-7) (**)	0.05	n.d.
21.	鄰苯二甲酸二異丁酯 / DIBP (Di-isobutyl phthalate) (CAS No.: 84-69-5)	0.05	n.d.
22.	鉻酸鉛 / Lead chromate*** (CAS No.: 7758-97-6) (※5)	-	n.d.
23.	鉬鉻紅; 顏色索引: 顏料紅104 / Lead chromate molybdate sulphate red*** (C.I. Pigment Red 104) (CAS No.: 12656-85-8) (※5)	-	n.d.
24.	鉻酸鉛; 顏色索引: 顏料黃34 / Lead sulfochromate yellow*** (C.I. Pigment Yellow 34) (CAS No.: 1344-37-2) (※5)	-	n.d.
25.	煤瀝青, 高溫 / Pitch, coal tar, high-temp. (CAS No.: 65996-93-2) (**)	0.05	n.d.
26.	磷酸三(2-氯乙基)酯 / Tris(2-chloroethyl) phosphate (TCEP) (CAS No.: 115-96-8)	0.05	n.d.
27.	丙烯醯胺 / Acrylamide (CAS No.: 79-06-1)	0.05	n.d.
28.	重鉻酸銨 / Ammonium dichromate*** (CAS No.: 7789-09-5)	-	n.d.
29.	硼酸 / Boric acid*** (CAS No.: 10043-35-3; 11113-50-1)	-	n.d.
30.	無水四硼酸二鈉 / Disodium tetraborate, anhydrous*** (CAS No.: 1303-96-4, 1330-43-4, 12179-04-3)	-	n.d.
31.	鉻酸鉀 / Potassium chromate*** (CAS No.: 7789-00-6)	-	n.d.
32.	重鉻酸鉀 / Potassium dichromate*** (CAS No.: 7778-50-9)	-	n.d.
33.	鉻酸鈉 / Sodium chromate*** (CAS No.: 7775-11-3)	-	n.d.
34.	水合硼酸鈉 / Tetraboron disodium heptaoxide, hydrate (CAS No.: 12267-73-1) (*2)	-	n.d.
35.	三氯乙烯 / Trichloroethylene (CAS No.: 79-01-6)	0.05	n.d.
36.	乙二醇乙醚 / 2-Ethoxyethanol (CAS No.: 110-80-5)	0.05	n.d.
37.	乙二醇甲醚 / 2-Methoxyethanol (CAS No.: 109-86-4)	0.05	n.d.
38.	從三氧化鉻與其它寡聚體生成的酸類: 鉻酸 / Acids generated from chromium trioxide and their oligomers: Chromic acid*** (CAS No.: 7738-94-5)	-	n.d.
	從三氧化鉻與其它寡聚體生成的酸類: 重鉻酸 / Acids generated from chromium trioxide and their oligomers: Dichromic acid*** (CAS No.: 13530-68-2)	-	n.d.
	從三氧化鉻與其它寡聚體生成的酸類: 鉻酸與重鉻酸的寡聚體 / Acids generated from chromium trioxide and their oligomers: Oligomers of chromic acid and dichromic acid (*1)	-	n.d.

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化學實驗室-高雄 Chemical Laboratory - Kao., SGS Taiwan Ltd.

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No.	物質名稱 (Substance Name)	RL (%)	結果 (Result) (%)
39.	三氧化鉻 / Chromium trioxide *** (CAS No.: 1333-82-0)	-	n.d.
40.	碳酸鈷(二價) / Cobalt(II) carbonate*** (CAS No.: 513-79-1)	-	n.d.
41.	醋酸鈷(二價) / Cobalt(II) diacetate*** (CAS No.: 71-48-7)	-	n.d.
42.	硝酸鈷(二價) / Cobalt(II) dinitrate*** (CAS No.: 10141-05-6)	-	n.d.
43.	硫酸鈷(二價) / Cobalt(II) sulphate*** (CAS No.: 10124-43-3)	-	n.d.
44.	1,2,3-三氯丙烷 / 1,2,3-trichloropropane (CAS No.: 96-18-4)	0.05	n.d.
45.	鄰苯二甲酸二(C6-8支鏈與直鏈)烷基酯, 富C7 / 1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich (DIHP) (CAS No.: 71888-89-6)	0.05	n.d.
46.	鄰苯二甲酸二(C7-11支鏈與直鏈)烷基酯 / 1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters (DHNUP) (CAS No.: 68515-42-4)	0.05	n.d.
47.	N-甲基吡咯烷酮 / 1-methyl-2-pyrrolidone (CAS No.: 872-50-4)	0.05	n.d.
48.	乙二醇乙醚乙酸酯 / 2-ethoxyethyl acetate (CAS No.: 111-15-9)	0.05	n.d.
49.	聯氨 / Hydrazine (CAS No.: 7803-57-8; 302-01-2)	0.05	n.d.
50.	鉻酸鋇 / Strontium chromate*** (CAS No.: 7789-06-2)	-	n.d.
51.	二氯化鈷 / Cobalt dichloride (CAS No.: 7646-79-9)	0.005	n.d.
52.	1,2-二氯乙烷 / 1,2-Dichloroethane (CAS No.: 107-06-2)	0.05	n.d.
53.	4,4'-亞甲雙(2-氯苯胺) / 2,2'-dichloro-4,4'-methylenedianiline (MOCA) (CAS No.: 101-14-4)	0.05	n.d.
54.	鄰甲氧基苯胺 / 2-Methoxyaniline; o-Anisidine (CAS No.: 90-04-0)	0.05	n.d.
55.	對特辛基苯酚 / 辛基酚 / 4-(1,1,3,3-tetramethylbutyl) phenol, (4-tert-Octylphenol) (CAS No.: 140-66-9)	0.05	n.d.
56.	矽酸鋁, 耐火陶瓷纖維 (主要成分濃度於可變範圍內) / Aluminosilicate, Refractory Ceramic Fibres [oxides of aluminium and silicon are the main components present (in the fibres) within variable concentration ranges]	0.05	n.d.
57.	砷酸 / Arsenic acid*** (CAS No.: 7778-39-4)	-	n.d.
58.	雙(2-甲氧基乙基)醚 / Bis(2-methoxyethyl) ether (CAS No.: 111-96-6)	0.05	n.d.
59.	鄰苯二甲酸二甲氧基乙酯 / Bis(2-methoxyethyl) phthalate (CAS No.: 117-82-8)	0.05	n.d.
60.	砷酸鈣 / Calcium arsenate*** (CAS No.: 7778-44-1)	-	n.d.
61.	鉻酸鉻 / Dichromium tris (chromate)*** (CAS No.: 24613-89-6)	-	n.d.

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No.	物質名稱 (Substance Name)	RL (%)	結果 (Result) (%)
62.	甲醛與苯胺的寡聚體 / Formaldehyde, oligomeric reaction products with aniline (technical MDA) (CAS No.: 25214-70-4)	0.05	n.d.
63.	疊氮化鉛 / Lead diazide, Lead azide*** (CAS No.: 13424-46-9)	-	n.d.
64.	苦味酸鉛 / Lead dipicrate*** (CAS No.: 6477-64-1)	-	n.d.
65.	中性斯蒂芬酸鉛 / Lead styphnate*** (CAS No.: 15245-44-0)	-	n.d.
66.	N,N-二甲基乙醯胺 / N,N-dimethylacetamide (DMAC) (CAS No.: 127-19-5)	0.05	n.d.
67.	八氫氧化五鉻酸鋅 / Pentazinc chromate octahydroxide*** (CAS No.: 49663-84-5)	-	n.d.
68.	酚酞 / Phenolphthalein (CAS No.: 77-09-8)	0.05	n.d.
69.	氫氧化鉻酸鋅鉀 / Potassium hydroxyoctaoxodizincatedi- chromate*** (CAS No.: 11103-86-9)	-	n.d.
70.	砷酸鉛 / Trilead diarsenate*** (CAS No.: 3687-31-8) (※1)	-	n.d.
71.	鋯矽酸鋁，耐火陶瓷纖維（主要成分濃度於可變範圍內） / Zirconia Aluminosilicate, Refractory Ceramic Fibres [oxides of aluminium, silicon and zirconium are the main components present (in the fibres) within variable concentration ranges]	0.05	n.d.
72.	鹼性藍 26 [內含 ≥ 0.1% 的米氏酮或米氏鹼] / [4-[[4-anilino-1-naphthyl] [4-(dimethylamino) phenyl] methylene] cyclohexa-2,5-dien-1-ylidene] dimethylammonium chloride (C.I. Basic Blue 26) (CAS No.: 2580-56-5) [with ≥ 0.1% of Michler's ketone or Michler's base]	0.05	n.d.
73.	鹼性紫 3 [內含 ≥ 0.1% 的米氏酮或米氏鹼] / [4-[4,4'-bis(dimethylamino) benzhydrylidene] cyclohexa-2,5-dien-1-ylidene] dimethylammonium chloride (C.I. Basic Violet 3) (CAS No.: 548-62-9) [with ≥ 0.1% of Michler's ketone or Michler's base]	0.05	n.d.
74.	三甘醇二甲醚 / 1,2-bis (2-methoxyethoxy) ethane (TEGDME; triglyme) (CAS No.: 112-49-2)	0.05	n.d.
75.	乙二醇二甲醚 / 1,2-dimethoxyethane; ethylene glycol dimethyl ether (EGDME) (CAS No.: 110-71-4)	0.05	n.d.
76.	異氰尿酸三縮水甘油酯 / TGIC (1,3,5-tris(oxiranylmethyl)- 1,3,5-triazine-2,4,6 (1H,3H,5H)-trione) (CAS No.: 2451-62-9)	0.05	n.d.
77.	異氰尿酸β-三縮水甘油酯 / β-TGIC (1,3,5-tris [(2S and 2R)-2,3-epoxypropyl]- 1,3,5-triazine-2,4,6- (1H,3H,5H)-trione) (CAS No.: 59653-74-6) (※3)	0.05	n.d.

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2F., NO.79, JIANKANG RD., ZHONGHE DIST., NEW TAIPEI CITY 235, TAIWAN (R.O.C.)

No.	物質名稱 (Substance Name)	RL (%)	結果 (Result) (%)
78.	α, α -二[(二甲氨基)苯基]-4-甲氨基苯甲醇 [內含 $\geq 0.1\%$ 的米氏酮或米氏鹼] / 4,4'-bis (dimethylamino)-4''-(methylamino) trityl alcohol (CAS No.: 561-41-1) [with $\geq 0.1\%$ of Michler's ketone or Michler's base]	0.05	n.d.
79.	4,4'-二(N,N-二甲氨基)二苯甲酮 (米氏酮) / 4,4'-bis (dimethylamino) benzophenone (Michler's ketone) (CAS No.: 90-94-8)	0.05	n.d.
80.	三氧化二硼 / Diboron trioxide*** (CAS No.: 1303-86-2)	-	n.d.
81.	甲醯胺 / Formamide (CAS No.: 75-12-7)	0.05	n.d.
82.	甲基磺酸鉛 / Lead(II) bis(methanesulfonate)*** (CAS No.: 17570-76-2)	-	n.d.
83.	4,4'-(對二甲氨基)二苯基甲烷 (米氏鹼) / N,N,N',N'-tetramethyl-4,4'-methylenedianiline (Michler's base) (CAS No.: 101-61-1)	0.05	n.d.
84.	溶劑藍 4 [內含 $\geq 0.1\%$ 的米氏酮或米氏鹼] / α, α -Bis[4-(dimethylamino) phenyl]-4 (phenylamino) naphthalene-1-methanol (C.I. Solvent Blue 4) (CAS No.: 6786-83-0) [with $\geq 0.1\%$ of Michler's ketone or Michler's base]	0.05	n.d.
85.	[1,2-苯二羧酸根合]二氧化三鉛 / [Phthalato(2-)] dioxotrilead*** (CAS No.: 69011-06-9)	-	n.d.
86.	支鏈和直鏈1,2-苯二羧二戊酯 / 1,2-Benzenedicarboxylic acid, dipentylester, branched and linear (CAS No.: 84777-06-0)	0.05	n.d.
87.	乙二醇二乙醚 / 1,2-Diethoxyethane (CAS No.: 629-14-1)	0.05	n.d.
88.	正丙基溴 / 1-bromopropane (CAS No.: 106-94-5)	0.05	n.d.
89.	3-乙基-2-甲基-2-(3-甲基丁基)-1,3-惡唑烷 / 3-ethyl-2-methyl-2-(3-methylbutyl)-1,3-oxazolidine (CAS No.: 143860-04-2)	0.05	n.d.
90.	4-(1,1,3,3-四甲基丁基)苯酚, 乙氧基 [以及所有的被定義的物質, 未知成分或可變成分的物質, 聚合物和同系物] / 4-(1,1,3,3-tetramethylbutyl) phenol, ethoxylated [covering well-defined substances and UVCB substances, polymers and homologues]	0.05	n.d.
91.	4,4'-二氨基-3,3'-二甲基聯苯基甲烷 / 4,4'-methylenedi-o-toluidine (CAS No.: 838-88-0)	0.05	n.d.
92.	4,4'-二氨基二苯醚 / 4,4'-oxydianiline and its salts (CAS No.: 101-80-4)	0.05	n.d.
93.	4-苯基偶氮基苯胺 / 4-Aminoazobenzene (CAS No.: 60-09-3)	0.05	n.d.
94.	2,4-二氨基甲苯 / 4-methyl-m-phenylenediamine (2,4-toluenediamine) (CAS No.: 95-80-7)	0.05	n.d.

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試驗報告

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Test Report

薩摩亞商史巴克電子有限公司台灣分公司

SPARKTEK TECHNOLOGY CO., LTD.(SAMOA) TAIWAN BRANCH

新北市中和區建康路79號2F

2F., NO.79, JIANKANG RD., ZHONGHE DIST., NEW TAIPEI CITY 235, TAIWAN (R.O.C.)

No.	物質名稱 (Substance Name)	RL (%)	結果 (Result) (%)
95.	分支或線性的壬基酚，包括含有9個碳烷基鏈的所有獨立的同分異構體和所有含有線性或分支9個碳烷基鏈的UVCB物質 / 4-Nonylphenol, branched and linear [substances with a linear and/or branched alkyl chain with a carbon number of 9 covalently bound in position 4 to phenol, covering also UVCB- and well-defined substances which include any of the individual isomers or a combination thereof]	0.05	n.d.
96.	3-甲基-6-甲氧基苯胺 / 6-methoxy-m-toluidine (p-cresidine) (CAS No.: 120-71-8)	0.05	n.d.
97.	城式醋酸鉛 / Acetic acid, lead salt, basic*** (CAS No.: 51404-69-4)	-	n.d.
98.	4-胺基聯苯 / Biphenyl-4-ylamine (CAS No.: 92-67-1)	0.05	n.d.
99.	十溴聯苯醚 / Bis(pentabromophenyl) ether (DecaBDE) (CAS No.: 1163-19-5)	0.05	n.d.
100.	六氫苯二甲酸酐 / Cyclohexane-1,2-dicarboxylic anhydride (HHPA), cis-cyclohexane-1,2- dicarboxylic anhydride, trans-cyclohexane-1,2- dicarboxylic anhydride (Hexahydrophthalic anhydride - HHPA) (CAS No.: 85-42-7, 13149-00-3, 14166-21-3)	0.05	n.d.
101.	偶氮[二]甲醯胺 / Diazene-1,2-dicarboxamide (C,C'-azodi(formamide)) (CAS No.: 123-77-3)	0.05	n.d.
102.	二氯二丁基錫 / Dibutyltin dichloride (DBTC)*** (CAS No.: 683-18-1)	-	n.d.
103.	硫酸二乙酯 / Diethyl sulphate (CAS No.: 64-67-5)	0.05	n.d.
104.	鄰苯二甲酸二異戊酯 / Diisopentylphthalate (CAS No.: 605-50-5)	0.05	n.d.
105.	硫酸二甲酯 / Dimethyl sulphate (CAS No.: 77-78-1)	0.05	n.d.
106.	2-(1-甲基丙基)-4,6-二硝基苯酚 / Dinoseb (CAS No.: 88-85-7)	0.05	n.d.
107.	雙(十八酸基)二氧代三鉛 / Dioxobis(stearato) trilead*** (CAS No.: 12578-12-0)	-	n.d.
108.	C16-18-脂肪酸鉛鹽 / Fatty acids, C16-18, lead salts*** (CAS No.: 91031-62-8)	-	n.d.
109.	呋喃 / Furan (CAS No.: 110-00-9)	0.05	n.d.
110.	全氟十一酸 / Henicosafluoroundecanoic acid (CAS No.: 2058-94-8)	0.05	n.d.
111.	全氟十四酸 / Heptacosafuorotetradecanoic acid (CAS No.: 376-06-7)	0.05	n.d.
112.	甲基六氫苯酐 / Hexahydromethylphthalic anhydride (CAS No.: 25550-51-0) 4-甲基六氫苯酐 / Hexahydro-4-methylphthalic anhydride (CAS No.: 19438-60-9) 1-甲基六氫苯酐 / Hexahydro-1-methylphthalic anhydride (CAS No.: 48122-14-1) 3-甲基六氫苯酐 / Hexahydro-3-methylphthalic anhydride (CAS No.: 57110-29-9)	0.05	n.d.
113.	四氟硼酸鉛 (II) / Lead bis(tetrafluoroborate)*** (CAS No.: 13814-96-5)	-	n.d.
114.	氰基氰鉛鹽 / Lead cyanamidate*** (CAS No.: 20837-86-9)	-	n.d.

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薩摩亞商史巴克電子有限公司台灣分公司

SPARKTEK TECHNOLOGY CO., LTD.(SAMOA) TAIWAN BRANCH

新北市中和區建康路79號2F

2F., NO.79, JIANKANG RD., ZHONGHE DIST., NEW TAIPEI CITY 235, TAIWAN (R.O.C.)

No.	物質名稱 (Substance Name)	RL (%)	結果 (Result) (%)
115.	硝酸鉛 / Lead dinitrate*** (CAS No.: 10099-74-8)	-	n.d.
116.	氧化鉛 / Lead oxide (lead monoxide)*** (CAS No.: 1317-36-8)	-	n.d.
117.	碱式硫酸鉛 / Lead oxide sulfate*** (CAS No.: 12036-76-9)	-	n.d.
118.	鈦酸鉛 / Lead titanium trioxide*** (CAS No.: 12060-00-3)	-	n.d.
119.	鈦酸鉛鋯 / Lead Titanium Zirconium Oxide*** (CAS No.: 12626-81-2)	-	n.d.
120.	甲氧基乙酸 / Methoxy acetic acid (CAS No.: 625-45-6)	0.05	n.d.
121.	環氧丙烷 / Propylene oxide; 1,2-epoxypropane; methyloxirane (CAS No.: 75-56-9)	0.05	n.d.
122.	N,N-二甲基甲醯胺 / N,N-dimethylformamide; dimethyl formamide (CAS No.: 68-12-2)	0.05	n.d.
123.	N-甲基乙醯胺 / N-methylacetamide (CAS No.: 79-16-3)	0.05	n.d.
124.	鄰苯二甲酸正戊異戊酯 / N-pentyl-isopentylphthalate (CAS No.: 776297-69-9)	0.05	n.d.
125.	鄰氨基偶氮甲苯 / o-aminoazotoluene (CAS No.: 97-56-3)	0.05	n.d.
126.	四氧化鉛 / Lead tetroxide (orange lead)*** (CAS No.: 1314-41-6)	-	n.d.
127.	鄰甲苯胺 / o-Toluidine; 2-Aminotoluene (CAS No.: 95-53-4)	0.05	n.d.
128.	全氟十三酸 / Pentacosfluorotridecanoic acid (CAS No.: 72629-94-8)	0.05	n.d.
129.	氧化鉛與硫酸鉛的複合物 / Pentalead tetraoxide sulphate*** (CAS No.: 12065-90-6)	-	n.d.
130.	C.I.顏料黃41 / Pyrochlore, antimony lead yellow*** (CAS No.: 8012-00-8)	-	n.d.
131.	含鉛的矽酸鋇 / Silicic acid, barium salt, lead-doped (※4) (CAS No.: 68784-75-8)	0.05	n.d.
132.	矽酸鉛 / Silicic acid, lead salt*** (CAS No.: 11120-22-2)	-	n.d.
133.	亞硫酸鉛(II) / Sulfurous acid, lead salt, dibasic*** (CAS No.: 62229-08-7)	-	n.d.
134.	四乙基鉛 / Tetraethyllead*** (CAS No.: 78-00-2)	-	n.d.
135.	三鹼式硫酸鉛 / C.I. 顏料白 / Tetralead trioxide sulphate*** (CAS No.: 12202-17-4)	-	n.d.
136.	全氟十二酸 / Tricosfluorododecanoic acid (CAS No.: 307-55-1)	0.05	n.d.
137.	碱式碳酸鉛 / Trilead bis(carbonate) dihydroxide (basic lead carbonate)*** (CAS No.: 1319-46-6)	-	n.d.
138.	磷酸氧化鉛 / Trilead dioxide phosphonate*** (CAS No.: 12141-20-7)	-	n.d.

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薩摩亞商史巴克電子有限公司台灣分公司

SPARKTEK TECHNOLOGY CO., LTD.(SAMOA) TAIWAN BRANCH

新北市中和區建康路79號2F

2F., NO.79, JIANKANG RD., ZHONGHE DIST., NEW TAIPEI CITY 235, TAIWAN (R.O.C.)

No.	物質名稱 (Substance Name)	RL (%)	結果 (Result) (%)
139.	分支或線性的乙氧基壬基酚，包括含有9個碳烷基鏈的所有獨立的同分異構體和所有含有線性或分支9個碳烷基鏈的UVCB物質 / 4-Nonylphenol, branched and linear, ethoxylated [substances with a linear and/or branched alkyl chain with a carbon number of 9 covalently bound in position 4 to phenol, ethoxylated covering UVCB- and well-defined substances, polymers and homologues, which include any of the individual isomers and/or combinations thereof]	0.05	n.d.
140.	全氟辛酸銨 / Ammoniumpentadecafluorooctanoate (APFO)*** (CAS No.: 3825-26-1)	-	n.d.
141.	鎘 / Cadmium (Cd) (CAS No.: 7440-43-9)	0.005	n.d.
142.	氧化鎘 / Cadmium oxide*** (CAS No.: 1306-19-0)	-	n.d.
143.	鄰苯二甲酸二戊酯 / Dipentyl phthalate (CAS No.: 131-18-0)	0.05	n.d.
144.	全氟辛酸 / Pentadecafluorooctanoic acid (PFOA) (CAS No.: 335-67-1)	0.05	n.d.
145.	硫化鎘 / Cadmium sulphide*** (CAS No.: 1306-23-6)	-	n.d.
146.	鄰苯二甲酸二己酯 / Dihexyl phthalate (CAS No.: 84-75-3)	0.05	n.d.
147.	直接紅28 / Disodium 3,3'-[[1,1'-biphenyl]-4,4'-diylbis(azo)]bis(4-aminonaphthalene-1-sulphonate) (C.I. Direct Red 28) (CAS No.: 573-58-0)	0.05	n.d.
148.	直接黑38 / Disodium 4-amino-3'-[[4'-[(2,4-diaminophenyl)azo][1,1'-biphenyl]-4-yl]azo]-5-hydroxy-6-(phenylazo)naphthalene-2,7-disulphonate (C.I. Direct Black 38) (CAS No.: 1937-37-7)	0.05	n.d.
149.	亞乙基硫脲 / Imidazolidine-2-thione; 2-imidazoline-2-thiol (CAS No.: 96-45-7)	0.05	n.d.
150.	醋酸鉛 / Lead di(acetate)*** (CAS No.: 301-04-2)	-	n.d.
151.	磷酸三(二甲苯)酯 / Trixylyl phosphate (CAS No.: 25155-23-1)	0.05	n.d.
152.	鄰苯二甲酸二己酯(支鏈和直鏈) / 1,2-Benzenedicarboxylic acid, dihexyl ester, branched and linear (CAS No.: 68515-50-4)	0.05	n.d.
153.	氯化鎘 / Cadmium chloride*** (CAS No.: 10108-64-2)	-	n.d.
154.	過硼酸鈉 / Sodium perborate; perboric acid, sodium salt***	-	n.d.
155.	過氧偏硼酸鈉 / Sodium peroxometaborate*** (CAS No.: 7632-04-4)	-	n.d.
156.	2-(2'-羥基-3',5'-二-叔-戊基苯基)苯並三唑(紫外線吸收劑328) / 2-(2H-benzotriazol-2-yl)-4,6-ditertpentylphenol (UV-328) (CAS No.: 25973-55-1)	0.05	n.d.
157.	2-(2-羥基-3',5'-二-叔-丁基苯基)-苯並三唑(紫外線吸收劑320) / 2-benzotriazol-2-yl-4,6-di-tert-butylphenol (UV-320) (CAS No.: 3846-71-7)	0.05	n.d.

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Test Report

薩摩亞商史巴克電子有限公司台灣分公司

SPARKTEK TECHNOLOGY CO., LTD.(SAMOA) TAIWAN BRANCH

新北市中和區建康路79號2F

2F., NO.79, JIANKANG RD., ZHONGHE DIST., NEW TAIPEI CITY 235, TAIWAN (R.O.C.)

No.	物質名稱 (Substance Name)	RL (%)	結果 (Result) (%)
158.	二正辛基-雙(2-乙基己基巰基乙酸酯)錫 / 2-ethylhexyl 10-ethyl-4,4-dioctyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate (DOTE)*** (CAS No.: 15571-58-1)	-	n.d.
159.	氟化鎘 / Cadmium fluoride*** (CAS No.: 7790-79-6)	-	n.d.
160.	硫酸鎘 / Cadmium sulphate*** (CAS No.: 10124-36-4; 31119-53-6)	-	n.d.
161.	二正辛基-雙(2-乙基己基巰基乙酸酯)錫和單辛基-三(2-乙基己基巰基乙酸酯)錫的反應物 / Reaction mass of 2-ethylhexyl 10-ethyl-4,4-dioctyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate and 2-ethylhexyl 10-ethyl-4-[[2-[(2-ethylhexyl)oxy]-2-oxoethyl]thio]-4-octyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate (reaction mass of DOTE and MOTE)***	-	n.d.
162.	鄰苯二甲酸二(C6-10)烷基酯; 鄰苯二甲酸二己、二辛、二癸酯混合物; 鄰苯二甲酸二己酯 ≥ 0.3% / 1,2-benzenedicarboxylic acid, di-C6-10-alkyl esters; 1,2-benzenedicarboxylic acid, mixed decyl and hexyl and octyl diesters with ≥ 0.3% of dihexyl phthalate (CAS No.: 68515-51-5; 68648-93-1)	0.05	n.d.
163.	5-二級丁基-2-(2,4-二甲基環己-3-烯-1-基)-5-甲基-1,3-二氧環己烷[1], 5-二級丁基-2-(4,6-二甲基環己-3-烯-1-基)-5-甲基-1,3-二氧環己烷[2], [任何[1]和[2]或者其任意組合的單獨異構物或其任何組合] / 5-sec-butyl-2-(2,4-dimethylcyclohex-3-en-1-yl)-5-methyl-1,3-dioxane [1], 5-sec-butyl-2-(4,6-dimethylcyclohex-3-en-1-yl)-5-methyl-1,3-dioxane [2] [covering any of the individual isomers of [1] and [2] or any combination thereof]	0.05	n.d.
164.	1,3-丙烷磺內酯 / 1,3-propanesultone (CAS No.: 1120-71-4)	0.05	n.d.
165.	2,4-二-叔丁基-6-(5-氯-2H-苯并三唑-2-基)苯酚(紫外線吸收劑327) / 2,4-di-tert-butyl-6-(5-chlorobenzotriazol-2-yl)phenol (UV-327) (CAS No.: 3864-99-1)	0.05	n.d.
166.	2-(3-仲-丁基-5-叔丁基-2-羥苯基)苯并三唑(紫外線吸收劑 UV-350) / 2-(2H-benzotriazol-2-yl)-4-(tert-butyl)-6-(sec-butyl)phenol (UV-350) (CAS No.: 36437-37-3)	0.05	n.d.
167.	硝基苯 / Nitrobenzene (CAS No.: 98-95-3)	0.05	n.d.
168.	全氟壬酸 / Perfluorononan-1-oic acid (2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,9-heptafluorononanoic acid and its sodium and ammonium salts (CAS No.: 375-95-1; 21049-39-8; 4149-60-4)	0.05	n.d.
169.	苯并(a)芘 / Benzo[def]chrysene (Benzo[a]pyrene) (CAS No.: 50-32-8)	0.05	n.d.
170.	雙酚A / 4,4'-isopropylidenediphenol (Bisphenol A) (CAS No.: 80-05-7)	0.05	n.d.

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Test Report

薩摩亞商史巴克電子有限公司台灣分公司

SPARKTEK TECHNOLOGY CO., LTD.(SAMOA) TAIWAN BRANCH

新北市中和區建康路79號2F

2F., NO.79, JIANKANG RD., ZHONGHE DIST., NEW TAIPEI CITY 235, TAIWAN (R.O.C.)

No.	物質名稱 (Substance Name)	RL (%)	結果 (Result) (%)
171.	4-庚基苯酚, 支鍊及直鍊 (4-HPb1), 包括含有7個碳烷基鏈的所有獨立的同分異構體和所有含有線性或分支7個碳烷基鏈的UVCB物質 / 4-Heptylphenol, branched and linear (4-HPb1) [substances with a linear and/or branched alkyl chain with a carbon number of 7 covalently bound predominantly in position 4 to phenol, covering also UVCB- and well-defined substances which include any of the individual isomers or a combination thereof]	0.05	n.d.
172.	十九氟癸酸及其鈉和銨鹽 / Nonadecafluorodecanoic acid (PFDA) and its sodium and ammonium salts (CAS No.: 3108-42-7, 335-76-2, 3830-45-3)	0.05	n.d.
173.	對(1,1-二甲基丙基)苯酚 / p-(1,1- dimethylpropyl) phenol (PTAP) (CAS No.: 80-46-6)	0.05	n.d.
174.	全氟己基磺酸及其鹽類 / Perfluorohexane-1-sulphonic acid and its salts (PFHxS) (CAS No.: 355-46-4)	0.05	n.d.

No.	物質名稱 (Substance Name)	RL (%)	結果 (Result) (%)
1.	德克隆(涵蓋各個反式及順式同分易構物或者相關組合) / 1,6,7,8,9,14,15,16,17, 17,18,18-Dodecachloropentacyclo [12.2.1.16,9.02,13.05,10]octadeca-7,15-diene ("Dechlorane Plus" TM) [covering any of its individual anti- and syn-isomers or any combination thereof]	0.05	n.d.
2.	苯並[a]蔥 / Benz[a]anthracene (CAS No.: 56-55-3)	0.05	n.d.
3.	硝酸鎘 / Cadmium nitrate*** (CAS No.: 10325-94-7)	-	n.d.
4.	碳酸鎘 / Cadmium carbonate*** (CAS No.: 513-78-0)	-	n.d.
5.	氫氧化鎘 / Cadmium hydroxide*** (CAS No.: 21041-95-2)	-	n.d.
6.	苯並[a]菲 / Chrysene (CAS No.: 218-01-9)	0.05	n.d.
7.	1,3,4-噁唑烷-2,5-二硫酮, 甲醛及4-庚基苯酚支鍊及直鍊反應物, (RP-HP) [含≥0.1% w/w 支鍊及直鍊4-庚基苯酚] / Reaction products of 1,3,4-thiadiazolidine-2,5-dithione, formaldehyde and 4-heptylphenol, branched and linear (RP-HP) [with ≥0.1% w/w 4-heptylphenol, branched and linear] (※7)	-	n.d.
8.	四氧化三鈷含≥ 0.1% w/w 氧化鎳 / Tricobalt tetraoxide containing ≥ 0.1% w/w nickel oxides (※6) (CAS No.: 1308-06-1)	-	n.d.

※ 建議清單中亦包含『雙酚A』, 此次再度被提議是因為新增特性∨相同危害等級∨, 而該項目已列於候選清單中。/ Bisphenol A is re-proposed because of its new additional property "EQC". But it has been included in the previous candidate list.

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薩摩亞商史巴克電子有限公司台灣分公司

SPARKTEK TECHNOLOGY CO., LTD.(SAMOA) TAIWAN BRANCH

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Remark :

1. 根據Regulation (EC) No 1907/2006 中第7條款第2項之規定，如果物質合乎第57條款之標準以及可依據第59(1)條之規定鑑別，且同時符合下列兩項狀況，任何成品之製造人和進口人應向歐洲化學總署(ECHA)通報：

- (a) 成品中所含物質每年超過1公噸。
- (b) 依重量百分比計算，物質濃度超過0.1%。

In accordance with Regulation (EC) No 1907/2006, any producer or importer of articles shall notify ECHA, in accordance with paragraph 2 of Article 7, if a substance meets the criteria in Article 57 and is identified in accordance with Article 59(1) of the Regulation,

if (a) the substance is present in those articles in quantities totaling over one tonne per producer or importer per year; and (b) the substance is present in those articles above a concentration of 0.1% weight by weight (w/w).

2. Regulation (EC) No 1907/2006中第 33 條要求成品供應商，其成品所含物質符合第57條款的標準並依照第59(1)條款確定其濃度大於 0.1wt%，應提供成品接受者充份可取得資訊，以確保成品的安全使用(至少包括物質的名稱)。

Article 33 of Regulation (EC) No 1907/2006 requires supplier of an article containing a substance meeting the criteria in Article 57 and identified in accordance with Article 59(1) in a concentration above 0.1% weight by weight (w/w) shall provide the recipient of the article with sufficient information, available to the supplier, to allow safe use of the article including, as a minimum, the name of that substance.

3. 倘若SVHC超出報告極限值，建議客戶確認含有該SVHC的零件，並要求實驗室進一步的定量分析而取得SVHC的確切濃度。

If a SVHC is found over the reporting limit, client is suggested to identify the component which contains the SVHC and the exact concentration of the SVHC by requesting further quantitative analysis from the laboratory.

備註(Note) :

1. mg/kg = ppm ; 0.1wt% = 1000ppm
2. RL = Reporting Limit / 報告極限值
3. n.d.= not detected = below Reporting Limit / 未檢出
4. "-" = Not Regulated / 無規格值
5. (*): 重鉻酸鈉二水合物(CAS No.: 7789-12-0)含量 = 重鉻酸鈉含量 × 1.1374
(conc. of Sodium dichromate dihydrate = conc. of sodium dichromate × 1.1374)
6. (**): 上述混合物的濃度是經由所獲得的成分比例介於被選擇標靶物及混合物所推估出來。 / The concentrations of above-mentioned mixtures are evaluated per the gained composition rate between the selected marks and the mixtures.
7. F 參數換算表/F Parameter Conversion Table : http://twap.sgs.com/sgrsrsts/chn/download-REACH_tw.asp
8. 分類/Classification : Please refer to http://twap.sgs.com/sgrsrsts/chn/download-REACH_tw.asp

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9. (*1): 鉻酸與重鉻酸的寡聚體: 因為其寡聚體是由未知數的鉻酸或與重鉻酸所組成, 而導致沒有固定分子量, 因此以單體鉻酸或重鉻酸較為重要並應被考慮。/ Oligomers of chromic acid and dichromic acid : since the oligomers are made of the unknown amount of chromic acid or dichromic acid that results in no fixed molecular weight, therefore the monomer of chromic acid or dichromic acid is relevant and considered.
10. (*2): 水合硼酸鈉: 依照歐洲化學總署解釋以無水四硼酸二鈉數據作為代表(歐洲化學總署回信編號 Ref no.: INC 000000032519) / Tetraboron disodium heptaoxide, hydrate: Only anhydrous form of disodium tetraborate is relevant and considered according to ECHA explanation (Ref no.: INC 000000032519).
11. ***: 該物質是由單辛基錫、二辛基錫、三丁基錫、二丁基錫、全氟辛酸或各別元素 (例如: 砷、鉛、六價鉻、硼、鈷、鋇、鎘)之測試結果計算得知。/ The substance was calculated by the test results of MonoctylTin, Dioctyl Tin, Tributyl Tin, Dibutyl Tin, PFOA or element (Ex. Arsenic, Lead, Cr(VI), Boron, Cobalt, Barium, Cadmium respectively).

測試結果如下(The test result is given as):

物質名稱 (Substance Name)	RL (%)	濃度 (Concentration) (%)
三丁基錫 / Tributyl Tin (TBT)	0.05	n.d.
砷 / Arsenic (As) (※2)	0.005	n.d.
鉛 / Lead (Pb)	0.005	n.d.
六價鉻 / Hexavalent Chromium Cr(VI)	0.005	n.d.
硼 / Boron (B) (※2)	0.005	n.d.
鈷 / Cobalt (Co)	0.005	n.d.
二丁基錫 / Dibutyl Tin (DBT)	0.05	n.d.
鋇 / Barium (Ba)	0.005	n.d.
二辛基錫 / Dioctyl Tin (DOT)	0.0230	n.d.
單辛基錫 / MonoctylTin (MOT)	0.0138	n.d.

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薩摩亞商史巴克電子有限公司台灣分公司

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12. (※1): 此砷鉛化合物之濃度是取砷及鉛兩者各別換算出砷鉛化合物濃度，並取其最小值做為最後出報告之依據。
(Regarding the compound containing arsenic and lead, lead and arsenic are tested and respectively used for the calculation of the independent concentration of the compound containing arsenic and lead. The minimum value of the two independently calculated concentrations is used as the final concentration for the report.)
13. (※2): 被萃取出的溶出硼/砷是以感應耦合電漿原子發射光譜儀檢測得之。 / The extracted soluble Boron / Arsenic are detected by ICP-AES.
14. (※3): 由於TGIC本身含有 β -TGIC，依照ECHA 技術文件 β -TGIC與 TGIC 約為 1:10 比例，因此 β -TGIC將以1/10 的TGIC計算濃度。
/ TGIC is a mixture and also contains β -TGIC. According to the ECHA's technical dossier the ratio of β -TGIC to TGIC is around 1 to 10. Therefore β -TGIC is issued based on the above-mentioned ratio.
15. (※4): 只有在矽與鉛定性結果為陽性時，再以鋇之濃度換算之。 / Only if both qualitative results of lead and silicon are positive, the test result of the compound will be calculated based on the concentration of barium.
16. (※5): 此化合物之濃度是取六價鉻及鉛兩者各別換算出化合物濃度，並取其最小值做為最後出報告之依據。
(Regarding the compound containing Cr(VI) and lead, lead and Cr(VI) are tested and respectively used for the calculation of the independent concentration of the compound containing Cr(VI) and lead. The minimum value of the two independently calculated concentrations is used as the final concentration for the report.)
17. (※6): 鎳之檢測結果為陽性時，再以鈷之濃度換算之。 / If the result of nickel is positive, the test result of compound will be calculated based on the concentration of Cobalt.
18. (※7): RP-HP無法直接測得且無法自特定元素計算含量，RP-HP之所以被定義於SVHC是因為4-HPb1，因此分析4-HPb1取代RP-HP。 / RP-HP can't be identified directly and test result can't be calculated based on specific element(s) or compound. RP-HP is identified as SVHC because of 4-HPb1, therefore 4-HPb1 is analysed instead of RP-HP.
19. 樣品的測試是基於申請人要求混合測試，報告中的混合測試結果不代表其中個別單一材質的含量。(The samples was/were analyzed on behalf of the applicant as mixing sample in one testing. The above results was/were only given as the informality value.)
20. 此為2018/1/5所發行KA/2017/C2380之加發報告，原始資料請參考KA/2017/C2380。(This is the additional test report of KA/2017/C2380 which was issued on 2018/1/5. Please refer to KA/2017/C2380 for original information.)

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Test Report

薩摩亞商史巴克電子有限公司台灣分公司

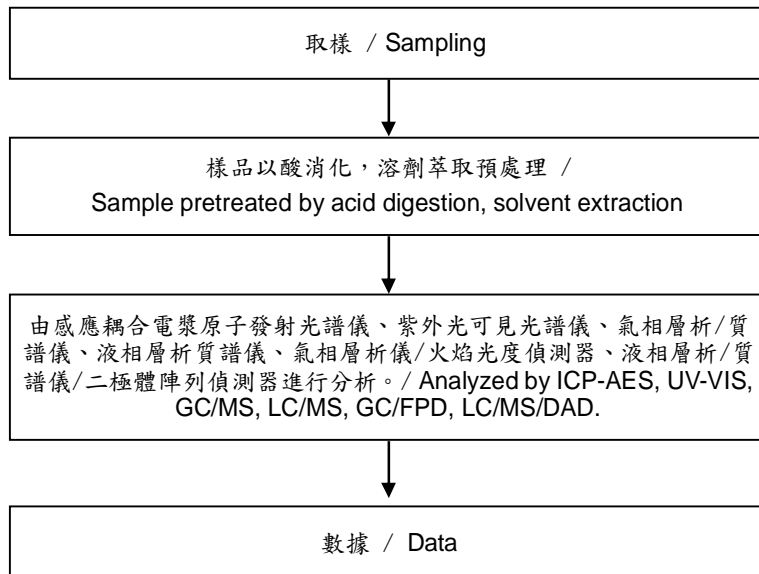
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SVHC 分析流程圖 / Analytical flow chart of SVHC

- 測試人員：劉俊宏/陳威錚/黃璟璵 / Name of the person who made measurement: Jony Liu/Dorothy Chen/Ginny Huang
- 測試負責人：張伯睿 / Name of the person in charge of measurement: Ray Chang



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* 照片中如有箭頭標示，則表示為實際檢測之樣品/部位。*

(The tested sample / part is marked by an arrow if it's shown on the photo.)

KA/2017/C2380



** 報告結尾(End of Report) **