Wire Wound Type Common Mode Filter

WCM4532F2SF-102T10

	ECN HISTORY LIST							
REV	DATE	DESCRIPTION	APPROVED	CHECKED	DRAWN			
1.0	15/04/08	新發行	楊祥忠	林志鴻	林宜蕰			
備								
註								

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Wire Wound Type Common Mode Filter

WCM4532F2SF-102T10

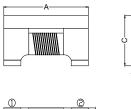
1. Features

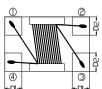
- High common mode impedance at high frequency cause excellent noise suppression performance.
- 2. WCM4532F2SF series realizes small size and low profile. 4.5x3.2x2.8 mm.
- 3. 100% Lead(Pb) & Halogen-Free and RoHS compliant.



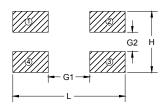


2. Dimension





Recommended PC Board Pattern



PC board should be designed so that products can prevent damage from mechanical stress when warping the board.

Products shall be positioned in the sideway direction against the mechanical stress to prevent failure.

Series	A(mm)	B(mm)	C(mm)	D1(mm)	D2(mm)	L(mm)	H(mm)	G1(mm)	G2(mm)
4532F2SF	4.5±0.2	3.2±0.2	2.8±0.2	1.0±0.1	1.2±0.1	4.8	3.8	2.5	0.7

Units: mm

3. Part Numbering



A: Series

B: Dimension

C: Material Ferrite Core
D: Number of Lines 2=2 lines

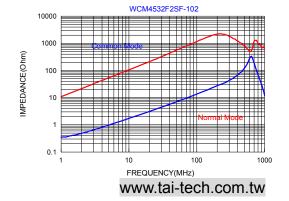
E: Type S=Shielded , N=Unshielded

F: Lead free

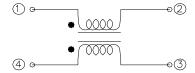
G: Impedance $102=1000\,\Omega$ H: Packaging T=Taping and Reel I: Rated Current $10=1000\,\text{mA}$

4. Specification

TAI-TECH Part Number	Common mode Impedance (Ω)	Test Frequency (MHz)	DC Resistance (Ω) max.	Rated Current (mA) max.	Rated Volt. (Vdc) max.	Withstand Volt. (Vdc) max.	IR (Ω) min.
WCM4532F2SF-102T10	1000±25%	100	0.24	1000	50	125	10M

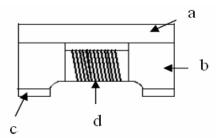


5.Schematic Diagram



6. Materials

No.	Description	Specification
a.	Upper Plate	Ferrite
b.	Core	Ferrite Core
С	Termination	Tin (Pb Free)
d	Wire	Enameled Copper Wire



7. Reliability and Test Condition

Item	Performance	Test Condition		
Electrical Characteristic	cs Test			
Z(common mode)		Agilent-4291A+ Agilent -16197A		
DCR	Refer to standard electrical characteristics list.	Agilent-4338B		
I.R.		Agilent4339		
Operating Temperature	—-40°C~+125°C			
Storage Temperature(on board)				
Temperature Rise Test	Rated Current < 1A $\Delta T 20^{\circ}C$ Max Rated Current \geq 1A $\Delta T 40^{\circ}C$ Max	1.Applied the allowed DC current. 2.Temperature measured by digital surface thermometer		
Mechanical Performance 1	Test Test			
Solderability Test	More than 95% of terminal electrode should be covered with solder.	Preheat: 150°C,60sec. ° Solder: Sn99.5%-Cu0. 5% ° Temperature: 245±5°C ° Flux for lead free: Rosin. 9.5% ° Dip time: 4±1sec ° Depth: completely cover the termination		
Solder Heat Resistance		Temperature (c) Time (s) Temperature ramplimmersion and emersion rate cycles 250 ±5 (solder temp) 10 ±1 25mm/s ±6 mm/s 1 Depth: completely cover the termination		
Terminal Strength	Appearance: No damage. Impedance: within±15% of initial value RDC: within±15% of initial value and shall not exceed the specification value	Preconditioning:Run through IR reflow for 2 times. (IPC/JEDEC J-STD-020DClassification Reflow Profiles With the component mounted on a PCB with the devic to be tested, apply a force (>0805:1kg, <=0805:0.5kg) the side of a device being tested. This force shall be applied for 60 +1 seconds. Also the force shall be applied gradually as not to apply a shock to the component being tested. Tadius 0.5 mm DUT wide wide whear force		

Item	Performance	Test Condition
Reliability Test		
		Preconditioning :Run through IR reflow for 2 times.(IPC/JEDEC J-STD-020DClassification Reflow Profiles
Life Test		Temperature: 85±2°C
		Applied current: rated current
		Duration: 1000±12hrs Measured at room temperature after placing for 24±2 hrs
		Preconditioning: Run through IR reflow for 2 times.(IPC/JEDEC J-STD-020DClassification Reflow Profiles
		Step1: -40±2°C 30±5min
The control of the colo		Step2: $25\pm2^{\circ}$ C ≤ 0.5 min
Thermal shock		Step3: 105±2°C 30±5min
		Number of cycles: 500 Measured at room temperature after placing for 24±2 hrs
		Preconditioning :Run through IR reflow for 2 times.(IPC/JEDEC J-STD-020DClassification Reflow Profiles
Humidity Resistance Test		Humidity: 85±2% R.H,
Tramaty Residence Test	Appearance: No damage.	Temperature : 85°C ±2°C
	Impedance: within±15% of initial value RDC: within±15% of initial value and shall not exceed the specification value	Duration: 1000hrs Min. with 100% rated current Measured at room temperature after placing for 24±2 hrs Preconditioning: Run through IR reflow for 2 times.(IPC/JEDEC
		J-STD-020DClassification Reflow Profiles Oscillation Frequency: 10∼2K∼10Hz for 20 minutes
		Equipment : Vibration checker
		Total Amplitude:1.52mm±10% Testing Time: 12 hours(20 minutes, 12 cycles each of 3 orientations) •
Vibration Test		

8. Soldering and Mounting

8-1. Soldering

Mildly activated rosin fluxes are preferred. TAI-TECH terminations are suitable for all wave and re-flow soldering systems. If hand soldering cannot be avoided, the preferred technique is the utilization of hot air soldering tools.

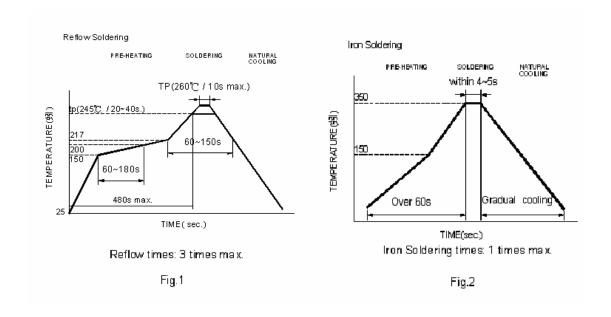
8-1.1 Solder re-flow:

Recommended temperature profiles for re-flow soldering in Figure 1.

8-1.2 Soldering Iron(Figure 2):

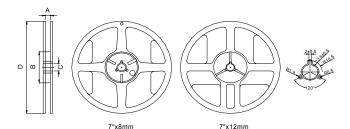
Products attachment with a soldering iron is discouraged due to the inherent process control limitations. In the event that a soldering iron must be employed the following precautions are recommended.

- Preheat circuit and products to 150℃ Never contact the ceramic with the iron tip Use a 20 watt soldering iron with tip diameter of 1.0mm
- 355°C tip temperature (max)
 1.0mm tip diameter (max)
 Limit soldering time to 4~5 sec.



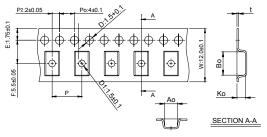
9. Packaging Information

9-1. Reel Dimension



Туре	A(mm)	B(mm)	C(mm)	D(mm)
7"x12mm	13.5±0.5	60±2	13.5±0.5	178±2

9-2. Tape Dimension / 12mm

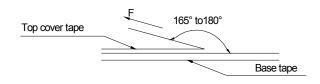


Series	size	Bo(mm)	Ao(mm)	Ko(mm)	P(mm)	t(mm)
WCM4532F2S	4532	4.90±0.1	3.60±0.1	3.00±0.1	8.0±0.1	0.26±0.05

9-3. Packaging Quantity

Chip size	Chip/Reel	Inner Box	Middle Box	Carton
WCM4532F2S	500	2500	12500	25000

9-4. Tearing Off Force



The force for tearing off cover tape is 15 to 80 grams in the arrow direction under the following conditions.

Room Temp. Room Humidity		Room atm	Tearing Speed	
(℃)	(%)	(hPa)	mm/min	
5~35	45~85	860~1060	300	

Application Notice

Storage Conditions(component level)

To maintain the solderability of terminal electrodes:

- 1. TAI-TECH products meet IPC/JEDEC J-STD-020D standard-MSL, level 1.
- 3. Recommended products should be used within 12 months form the time of delivery.
- $4. \ \ The packaging material should be kept where no chlorine or sulfur exists in the air.$
- Transportation
- 1. Products should be handled with care to avoid damage or contamination from perspiration and skin oils.
- 2. The use of tweezers or vacuum pick up is strongly recommended for individual components.
- 3. Bulk handling should ensure that abrasion and mechanical shock are minimized.

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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)

WIREWOUND SERIES

樣品型號(Style/Item No.)

WCM, HSF, HDMI, DVI, YCM, BCM, PCM, TCM, LCM, LPF, TXF, ACM, DCM, WIH

SERIES

收件日期(Sample Receiving Date)

2014/10/09

測試期間(Testing Period)

2014/10/09 TO 2014/10/16

測試結果(Test Results) :

請見下一頁 (Please refer to next pages).



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測試結果(Test Results)

測試部位(PART NAME)No.1

: 整體混測 (MIXED ALL PARTS)

測試項目	單位	測試方法	方法偵測 極限値	結果 (Result)
(Test Items)	(Unit)	(Method)	(MDL)	No.1
鎬 / Cadmium (Cd)	mg/kg	参考IEC 62321-5: 2013方法,以感應	2	n.d.
∀y 4¢		耦合電漿原子發射光譜儀檢測. / With		
		reference to IEC 62321-5: 2013 and		
		performed by ICP-AES.	tonia di managana	
鉛 / Lead (Pb)	mg/kg	參考IEC 62321-5: 2013方法, 以感應	2	n.d.
		耦合電漿原子發射光譜儀檢測. / With		
		reference to IEC 62321-5: 2013 and		
		performed by ICP-AES.		
汞 / Mercury (Hg)	mg/kg	参考IEC 62321-4: 2013方法,以感應	2	n.d.
		耦合電漿原子發射光譜儀檢測./With		
		reference to IEC 62321-4: 2013 and		
		performed by ICP-AES.		
六價鉻 / Hexavalent Chromium Cr(VI)	mg/kg	参考IEC 62321: 2008方法,以UV-VIS	2	n.d.
		檢測. / With reference to IEC		
-west 1. F		62321: 2008 and performed by UV-		
The state of the s		VIS.		
銻 / Antimony (Sb)	mg/kg	参考US EPA 3052方法,以感應耦合電	2	n.d.
		漿原子發射光譜儀檢測. / With		
		reference to US EPA Method 3052.		
		Analysis was performed by ICP-AES.	****	
全氟辛烷磺酸 / Perfluorooctane	mg/kg	参考US EPA 3550C: 2007方法,以液相	10	n.d.
sulfonates (PFOS-Acid, Metal Salt,		層析/質譜儀檢測. / With reference		
Amide)		to US EPA 3550C: 2007. Analysis		
The state of the s		was performed by LC/MS.		

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測試項目	單位	測試方法		結果 (Result)
(Test Items)	(Unit)	(Method)	(MDL)	No.1
全氟辛酸 / PFOA (CAS No.: 335-67-1)	mg/kg	參考US EPA 3550C: 2007方法,以液相	10	n.d.
·		層析/質譜儀檢測. / With reference		
		to US EPA 3550C: 2007. Analysis		
		was performed by LC/MS.		
聚氯乙烯 / PVC	**	以紅外光譜分析及焰色法檢測./	-	Negative
		Analysis was performed by FTIR and		
		FLAME Test.		
六溴環十二烷及所有主要被辨别出的異構	mg/kg	参考IEC 62321: 2008方法, 以氣相層	5	n.d.
物 / Hexabromocyclododecane (HBCDD)	٠	析/質譜儀檢測. / With reference to		
and all major diastereoisomers		IEC 62321: 2008 method. Analysis		
identified ($lpha$ - HBCDD, eta - HBCDD,		was performed by GC/MS.		
γ - HBCDD) (CAS No.: 25637-99-4 and				
3194-55-6 (134237-51-7, 134237-50-6,				
134237-52-8))				
鄰苯二甲酸丁苯甲酯 / BBP (Butyl	%	參考EN 14372, 以氣相層析/質譜儀檢	0.003	n.d.
Benzyl phthalate) (CAS No.: 85-68-7)		測. / With reference to EN 14372.		
	***	Analysis was performed by GC/MS.		
鄰苯二甲酸二 (2-乙基己基)酯 / DEHP	%	参考EN 14372, 以氣相層析/質譜儀檢	0.003	n.d.
(Di- (2-ethylhexyl) phthalate) (CAS		測. / With reference to EN 14372.		
No.: 117-81-7)		Analysis was performed by GC/MS.		
鄰苯二甲酸二異癸酯 / DIDP (Di-	%	参考EN 14372, 以氣相層析/質譜儀檢	0.01	n.d.
isodecyl phthalate) (CAS No.: 26761-		測. / With reference to EN 14372.		
40-0; 68515-49-1)		Analysis was performed by GC/MS.		
鄰苯二甲酸二異壬酯 / DINP (Di-	%	参考EN 14372, 以氣相層析/質譜儀檢	0.01	n.d.
isononyl phthalate) (CAS No.: 28553-		測. / With reference to EN 14372.		
12-0; 68515-48-0)		Analysis was performed by GC/MS.		
鄰苯二甲酸二正辛酯 / DNOP (Di-n-	%	参考EN 14372, 以氣相層析/質譜儀檢	0.003	n.d.
octyl phthalate) (CAS No.: 117-84-0)		測. / With reference to EN 14372.		
		Analysis was performed by GC/MS.	***************************************	

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測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測 極限値 (MDL)	結果 (Result) No.1
鄰苯二甲酸二丁酯 / DBP (Dibutyl phthalate) (CAS No.: 84-74-2)	%	參考EN 14372, 以氣相層析/質譜儀檢 測. / With reference to EN 14372. Analysis was performed by GC/MS.	0.003	n.d.
鄰苯二甲酸二異丁酯 / DIBP (Di- isobutyl phthalate) (CAS No.: 84-69- 5)	%	參考EN 14372, 以氣相層析/質譜儀檢 測. / With reference to EN 14372. Analysis was performed by GC/MS.	0.003	n.d.
多溴聯苯總和 / Sum of PBBs	mg/kg		_	n.d.
一溴聯苯 / Monobromobiphenyl	mg/kg		5	n.d.
二溴聯苯 / Dibromobiphenyl	mg/kg	1	5	n.d.
三溴聯苯 / Tribromobiphenyl	mg/kg] [5	n.d.
四溴聯苯 / Tetrabromobiphenyl	mg/kg] [5	n.d.
五溴聯苯 / Pentabromobiphenyl	mg/kg	7	5	n.d.
六溴聯苯 / Hexabromobiphenyl	mg/kg	1	5	n.d.
七溴聯苯 / Heptabromobiphenyl	mg/kg	1	5	n.d.
八溴聯苯 / Octabromobiphenyl	mg/kg	1	5	n.d.
九溴聯苯 / Nonabromobiphenyl	mg/kg		5	n.d.
十溴聯苯 / Decabromobiphenyl	mg/kg	析/質譜儀檢測. / With reference to	5	n.d.
多溴聯苯醚總和 / Sum of PBDEs	mg/kg	IEC 62321: 2008 and performed by	_	n.d.
一溴聯苯醚 / Monobromodiphenyl ether	mg/kg	GC/MS.	5	n.d.
二溴聯苯醚 / Dibromodiphenyl ether	mg/kg]	5	n.d.
三溴聯苯醚 / Tribromodiphenyl ether	mg/kg] · [5	n.d.
四溴聯苯醚 / Tetrabromodiphenyl ether	mg/kg	1	5	n.d.
五溴聯苯醚 / Pentabromodiphenyl ether	mg/kg]	5	n.d.
六溴聯苯醚 / Hexabromodiphenyl ether	mg/kg]	5	n.d.
七溴聯苯醚 / Heptabromodiphenyl ether	mg/kg]	5	n.d.
八溴聯苯醚 / Octabromodiphenyl ether	mg/kg]	5	n.d.
九溴聯苯醚 / Nonabromodiphenyl ether	mg/kg]	5	n.d.
十溴聯苯醚 / Decabromodiphenyl ether	mg/kg	7	5	n.d.

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(桃園縣中壢市中壢工業區長春六路15號 / NO. 15, CHANGCHUN 6TH RD., JHONGLI CITY, TAOYUAN COUNTY 320, TAIWAN)

測試項目	單位	測試方法	方法偵測	結果 (Result)
(Test Items)	(Unit)	(Method)	極限値 (MDL)	No.1
鹵素 / Halogen				
鹵素(氟)/ Halogen-Fluorine (F) (CAS No.: 14762-94-8)	mg/kg	参考BS EN 14582:2007, 以離子層析儀 分析. / With reference to BS EN 14582:2007. Analysis was performed by IC.	50	n.d.
鹵素(氣)/ Halogen-Chlorine (Cl) (CAS No.: 22537-15-1)	mg/kg		50	n.d.
鹵素(溴)/ Halogen-Bromine (Br) (CAS No.: 10097-32-2)	mg/kg		50	n.d.
鹵素(碘)/ Halogen-Iodine (I) (CAS No.: 14362-44-8)	mg/kg		50	n.d.

備註(Note):

- 1. mg/kg = ppm ; 0.1wt% = 1000ppm
- 2. n.d. = Not Detected (未檢出)
- 3. MDL = Method Detection Limit (方法偵測極限値)
- 4. "-" = Not Regulated (無規格值)
- 5. **= Qualitative analysis (No Unit) 定性分析(無單位)

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- 6. Negative = Undetectable 陰性(未偵測到); Positive = Detectable 陽性(已偵測到)
- 7. 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别單一材質的含量. (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.)

PFOS參考資訊(Reference Information) : 持久性有機污染物 POPs - (EU) 757/2010

PFOS濃度在物質或製備中不得超過0.001%(10ppm),在半成品、成品或零部件中不得超過0.1%(1000ppm),在紡織品或塗層材料中不得超過1,µg/m²。

(Outlawing PFOS as substances or preparations in concentrations above 0.001% (10ppm), in semi-finished products or articles or parts at a level above 0.1%(1000ppm), in textiles or other coated materials above $1\mu g/m^2$.)

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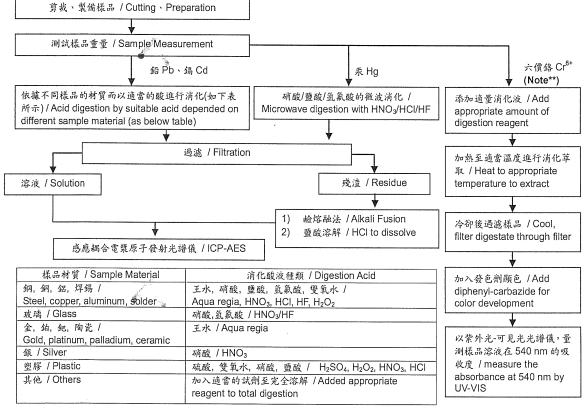
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- 根據以下的流程圖之條件,樣品已完全溶解。(六價鉻測試方法除外) / These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr6+ test method excluded)
- 測試人員:楊登偉 / Name of the person who made measurement: Climbgreat Yang
- 3) 測試負責人: 張啓興 / Name of the person in charge of measurement: Troy Chang



Note** (For IEC 62321)

- (1) 針對非金屬材料加入鹼性消化液,加熱至 90~95℃萃取. / For non-metallic material, add alkaline digestion reagent and heat to
- (2) 針對金屬材料加入純水,加熱至沸騰萃取. / For metallic material, add pure water and heat to boiling.

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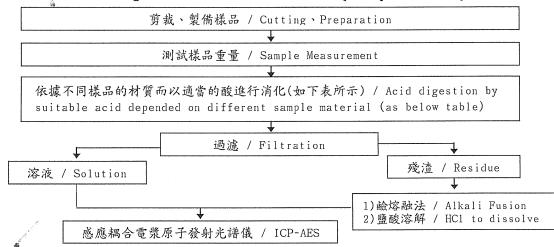
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- 2) 測試人員:楊登偉 / Name of the person who made measurement: Climbgreat Yang
- 3) 測試負責人:張啓興 / Name of the person in charge of measurement: Troy Chang

元素以 ICP-AES 分析的消化流程圖

(Fellow Chart of digestion for the elements analysis performed by ICP-AES)



鋼,銅,鋁,焊錫 / Steel, copper, aluminum, solder	王水,硝酸,鹽酸,氫氟酸,雙氧水 /
	Aqua regia, HNO3, HC1, HF, H2O2
玻璃 / Glass	硝酸,氫氟酸 / HNOa/HF
金,鉑,鈀,陶瓷 / Gold, platinum, palladium, ceramic	王水 / Aqua regia
銀 / Silver	硝酸 / HNO₃
塑膠 / Plastic	硫酸,雙氧水,硝酸,鹽酸 / HaSO4, HaO2, HNO3, HC1
其他 / Others	加入適當的試劑至完全溶解 / Added appropriate
	reagent to total digestion

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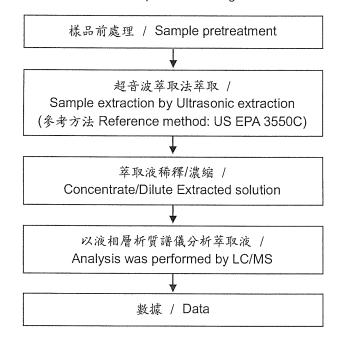
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全氟辛酸/全氟辛烷磺酸分析流程圖 / PFOA/PFOS analytical flow chart

- 測試人員: 翁賜彬 / Name of the person who made measurement: Roman Wong
- 測試負責人:張啓興 / Name of the person in charge of measurement: Troy Chang



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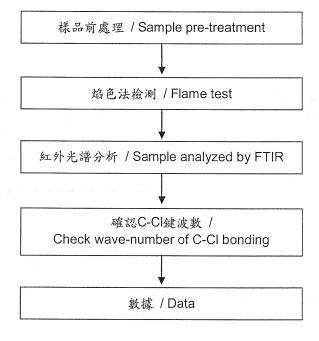
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聚氯乙烯物質判定分析流程圖 /

Analysis flow chart for determination of PVC in material

- 測試人員:林建宇 / Name of the person who made measurement: Roy Lin
- 測試負責人:張啓興 / Name of the person in charge of measurement: Troy Chang



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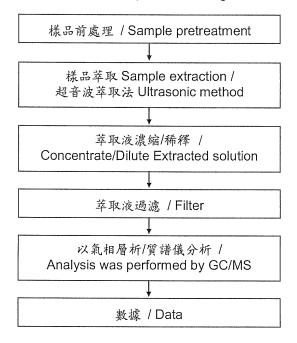
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六溴環十二烷分析流程圖 / HBCDD analytical flow chart

- 測試人員: 翁賜彬 / Name of the person who made measurement: Roman Wong
- 測試負責人:張啓興 / Name of the person in charge of measurement: Troy Chang



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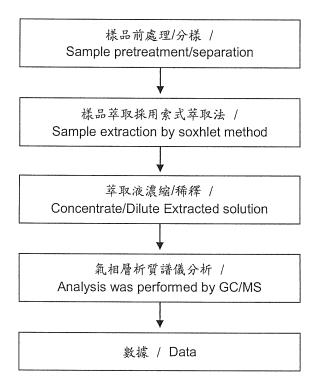
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可塑劑分析流程圖 / Analytical flow chart of phthalate content

- 測試人員:翁賜彬 / Name of the person who made measurement: Roman Wong
- 測試負責人:張啓興 / Name of the person in charge of measurement: Troy Chang



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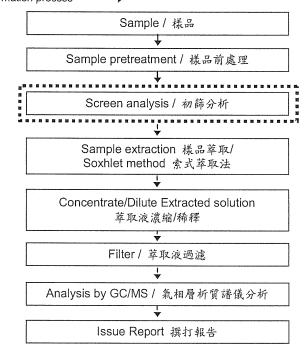
多溴聯苯/多溴聯苯醚分析流程圖 / PBB/PBDE analytical FLOW CHART

- 測試人員:翁賜彬 / Name of the person who made measurement: Roman Wong
- 測試負責人:張啓興 / Name of the person in charge of measurement: Troy Chang

初次測試程序 / First testing process ————

選擇性篩檢程序 / Optional screen process ■■■■■■■■

確認程序 / Confirmation process - · - · ▶



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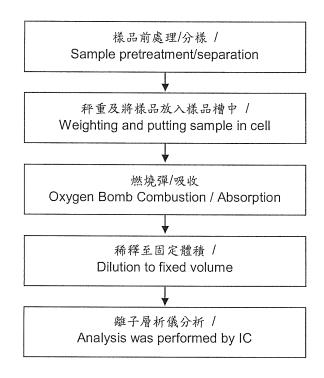
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(桃園縣中壢市中壢工業區長春六路15號 / NO. 15, CHANGCHUN 6TH RD., JHONGLI CITY, TAOYUAN COUNTY 320 TAIWAN)

鹵素分析流程圖 / Analytical flow chart of halogen content

- 測試人員:陳恩臻 / Name of the person who made measurement: Rita Chen
- 測試負責人:張啓興 / Name of the person in charge of measurement: Troy Chang



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Test Report

號碼(No.): CE/2014/A1722

日期(Date): 2014/10/16

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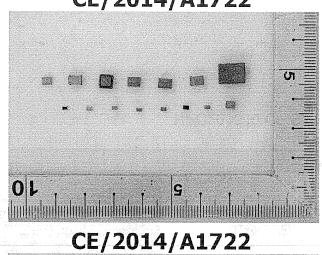
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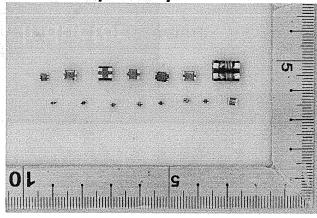
* 照片中如有箭頭標示,則表示為實際檢測之樣品/部位. *

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

CE/2014/A1722



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** 報告結尾 (End of Report) **

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