DELTA ELECTRONICS, INC.

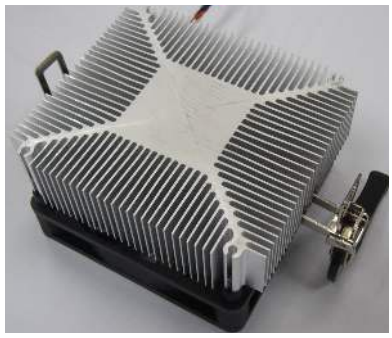
Model Name: FHS-A7015S61

Application:

- AMD A4 / A6 / A8 (Llano / Trinity APU 65W)
- AMD Athlon Ⅱ X2 2XX (Regor CPU / 65W)
- AMD Sempron 140 (Sargas CPU / 45W)

(Socket AM2 / Socket AM2+ / Socket AM3
Socket FM1 / Socket FM2)

Pictures



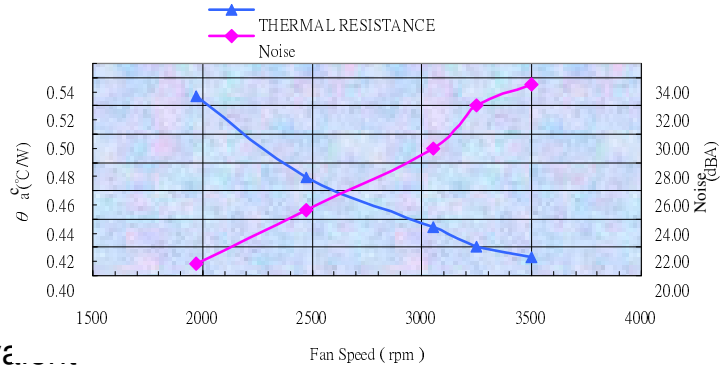
Thermal & Mechanical Spec.:

- Thermal performance for 65W/45W CPU
- HSK Assembly Weight: 169 g (ref.)
- Clipping Force: 50 lbf (ref.)

Component Specification:

1. Heat Sink Type: Al-Extruded HSK
   Material: Aluminum A6063 or Equivalent.
   Dimension: 77*68*38 mm
2. Thermal Interface Material
   Material: Dow-Corning TC-5121C or Equivalent.
3. Fan *(70x70x15 mm with PWM Control)*
   Rated Voltage: 12 V
   Life Time:
   Superflo Bearing 50000 hrs
   Connector:
   a. Lead wire:UL1061 AWG#26
      Pin 1: Black Wire--------(-)
      Pin 2: Red Wire----------(+)
      Pin 3: Blue Wire---------(F00)
      Pin 4: Yellow Wire------------(PWM)
   b. Housing: Molex 47054-1000 or Equiva...
   c. Terminal: Molex 2759T 08-50-0113 or Equivalent

Performance Curve:



* All readings are typical values at rated voltage.

** Specifications are subject to change without notice*

DELTA ELECTRONICS, INC.
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TAOYUAN SHIEN 333,
TAIWAN,R.O.C.
TEL: 886-3-3591968 EXT 2073
FAX: 886-3-3591991

DELTA PRODUCTS CORPORATION
4405 CUSHING PARKWAY
FREMONT, CA 94538, U.S.A.
TEL: 1-510-668-5100
FAX: 1-510-668-0680

DELTA ELECTRONICS(JAPAN), INC.
DELTA SHIBADAIMON BLDG.
2-1-14 SHIBADAIMON, MINATO-KU,
TOKYO, 105-0012, JAPAN
TEL: 81-3-5733-1111
FAX: 81-3-5733-1211

DELTA ELECTRONICS EUROPE LTD.
2 YOUNG PLACE
KELVIN INDUSTRIAL ESTATE
EAST KILBRIDE, GLASGOW G75 OTD, U.K.
TEL: 44-1355-588888
FAX: 44-1355-588889

Date: 30-Jan-12

Delta Electronics Corp.

APPROVAL SHEET

Customer Name : STD

Description : COOLER

Model Name :

Customer Part No. : FHS-A7015S61

Spec Issue Date : 2016/02/01

Spec Revision : 05

PLEASE SEND ONE COPY OF THIS SPECIFICATION BACK AFTER YOU SIGNED APPROVAL FOR PRODUCTION PRE-ARRANGMENT.

Approved By :

Date :

Approval	Check	Designer
Charles	Charles	Skyler

Delta Electronics Corp.

REV.	Description	Drawn	Checked	Approved	Issue Date
00	ISSUE SPEC	Skyler	Charles. Chen	Charles. Chen	07/25'11
01	1.Modify the fan assy to 3622703111 2.Remove the spacer 3470469700 3.Change the fan spec to AUB712MB-AL3G 4.Modify the fan cable on PD 5.Change the Clip to 3468186600	Skyler	Charles. Chen	Charles. Chen	09/30'11
02	1. Add grease thickness of PD. 2. Add CE / UL / CSA / VDE certificate of fan. 3. Add material RoHS report.	HIKARU	Charles. Chen	Charles. Chen	02/25'13
03	1. Correct the HSK dimension. 2. Correct the clip dimension and p/n 3. Correct PD&PA SPEC.	Skyler	Charles. Chen	Charles. Chen	01/13'14
04	1. Change the HSK P/N to 3347100300 2. Modify the grease mesh type 3. Modify the PD&AS SPEC 4. Modify total weight	Skyler	Charles. Chen	Charles. Chen	01/23'14
05	1. Change the TC-5121 TO TC-5121C 2. Correct the tolerance :38+/-1.5mm 3. Correct the HSK tolerance:18.3+/-0.5mm 4. Modify the PA spec. 5. Modify Clip(3468186600)spec.	Skyler	Charles. Chen	Charles. Chen	02/01'16

Description: SAMPLE REVISION CODE LIST		
Part No. FHS-A7015S61		REV
Delta Model : FHS-A7015S61	TOTAL 80 PAGE	05

Delta Electronics Corp.

CONTENTS

Item	Element Description	Page	Note
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4	Packing Plan	13	
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6	Material RoHS Report	41	

Delta Electronics Corp.

1. SPECIFICATION

1.1 Characters

Item	Description
Scope	THIS SPECIFICATION DEFINES THE ELECTRICAL AND MECHANICAL CHARACTERISTICS OF THE FAN HEATSINK
Application	AMD 65W/45W CPU COOLER with SOCKET AM2/AM3
Specification	
a: Thermal Resistance	0.43 ℃/W (REF.) @ 34dBA
b: Total Weight	169 g (REF.)
c: Clip Force	50 lbf (REF.)

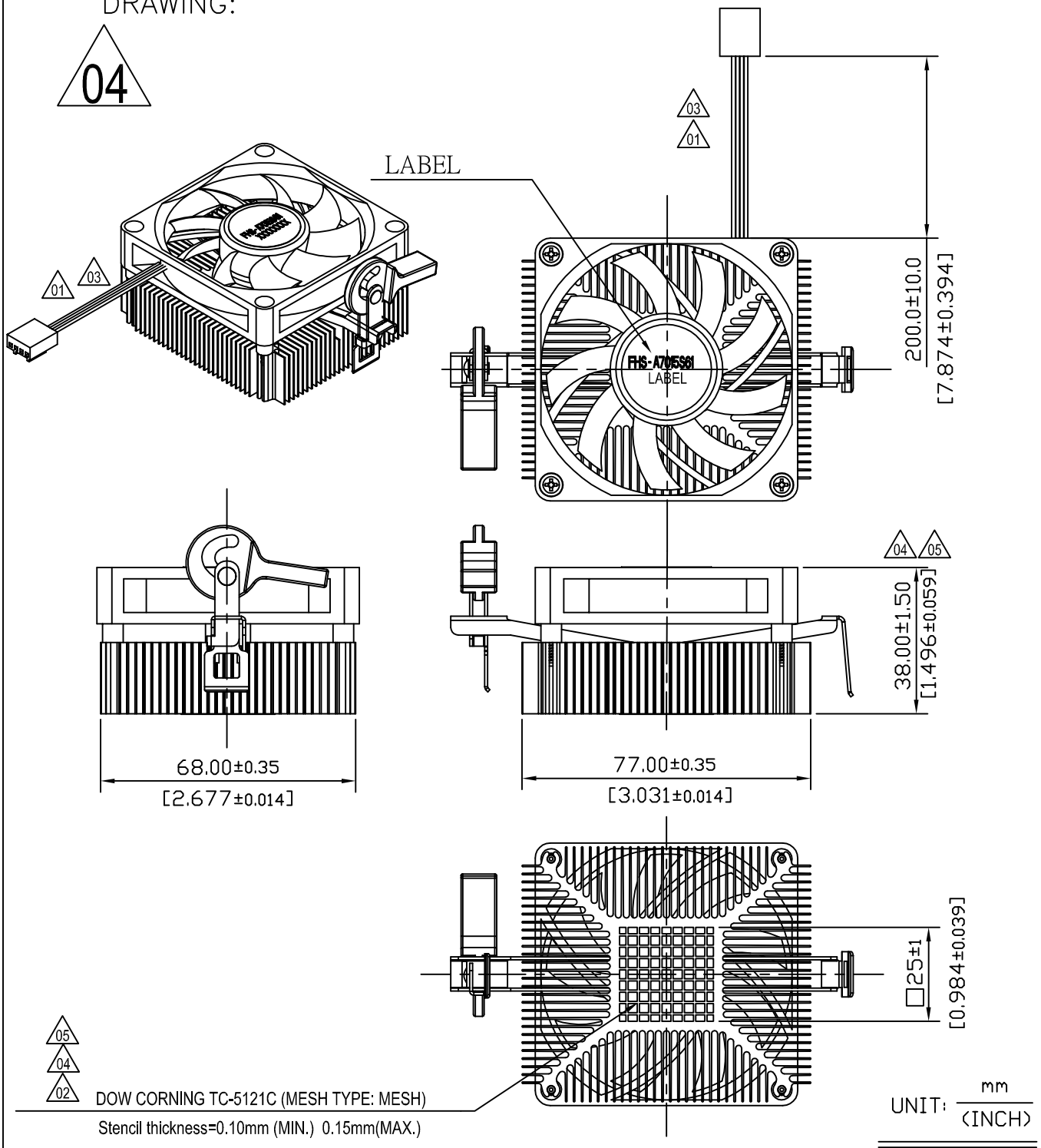
1.2 BOM

Item	Part Name	Material	Part NO.	Q'TY	Remark
1	FAN	PBT+30%GF	3622703111	1 pce	AUB0712MB-AL3G
2	HEATSINK	AL6063-T5	3347100300	1 pce	
3	CLIP	SK7	3468186600	1 pce	
4	SCREW	S18C	3109141900	4 pce	
5	LABEL	PET OR PP	3266916100	1 pce	
6	GREASE	TC-5121C	4021107200	1 pce	Rev05

2. PRINT

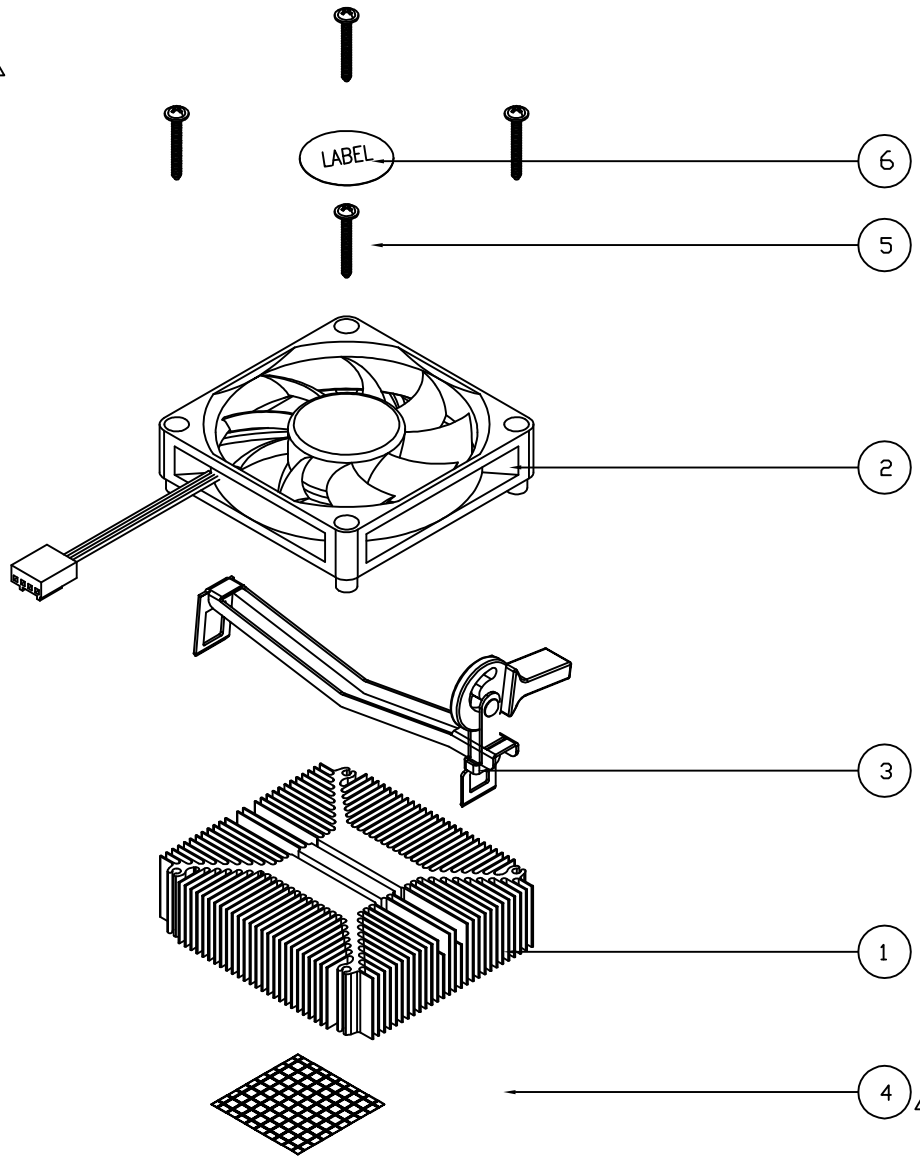
Assembly Drawing

DRAWING:



台達電子工業股份有限公司 DELTA ELECTRONICS, INC.		DELTA MODEL: FHS-A7015S61	Drawn: Skyler
THESE DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF DELTA ELECTRONICS, INC. AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE MANUFACTURE OR SELL OF APPARATUSES OR DEVICES WITHOUT PERMISSION.		CUSTOMER NAME: STD	
		CUSTOMER P/N: ---	
DIMENSIONAL TOLERANCES HOLES : ±0.05 ANGLES : ±0.5°		THIRD ANGLE PROJECTION	Description: PRODUCTION SPEC. (PHYSICAL DIMENSION)
( ) <30 :±0.25 >30~100 :±0.35 >100~300 :±0.5 ABOVE 300:±0.6	( ) DECIMALS X :±0.3 XX :±0.2 XXX:±0.1	( ) UP~100 :±0.2 100~150 :±0.25 150~200 :±0.3 200~250:±0.35	( ) 250~300 :±0.4 300~350 :±0.45 350~400 :±0.5 UP~600 :±1.5 600~900 :±2.4 900~OVER :±3.1
SCALE --- UNIT mm USED ON COOLER		A4 SIZE	Part No. FHS-A7015S61-PD REV. 05
		SHEET 1 OF 1	ISSUE DATE:

04



ITEM	QTY	DESCRIPTION	PART NO.
6	1	LABEL	3266916100
5	4	SCREW	3109141900
05 04 01 4	0.3g	GREASE	4021107200
3	1	METAL CLIP	3468186600
01 2	1	FAN ASSY	3622703111
1	1	HEATSINK	3347100300

台達電子工業股份有限公司
DELTA ELECTRONICS, INC.

DELTA MODEL: FHS-A7015S61

Drawn: Skyler

CUSTOMER NAME: STD

CUSTOMER P/N: ----------

DIMENSIONAL TOLERANCES HOLES : ±0.05 ANGLES : ±0.5°

( )		( )		( )		( )	
<30	:±0.25	DECIMALS	UP~100 :±0.2	250~300 :±0.4	UP~600	:±1.5
>30~100	:±0.35	X :±0.3	100~150 :±0.25	300~350 :±0.45	600~900	:±2.4
>100~300	:±0.5	XX :±0.2	150~200 :±0.3	350~400 :±0.5	900~OVER	:±3.1
ABOVE 300	:±0.6	XXX :±0.1	200~250 :±0.35			

THIRD ANGLE PROJECTION

Description: PRODUCTION SPEC. (ASSEMBLY ORDER)

A4 SIZE

Part No. FHS-A7015S61 -AS

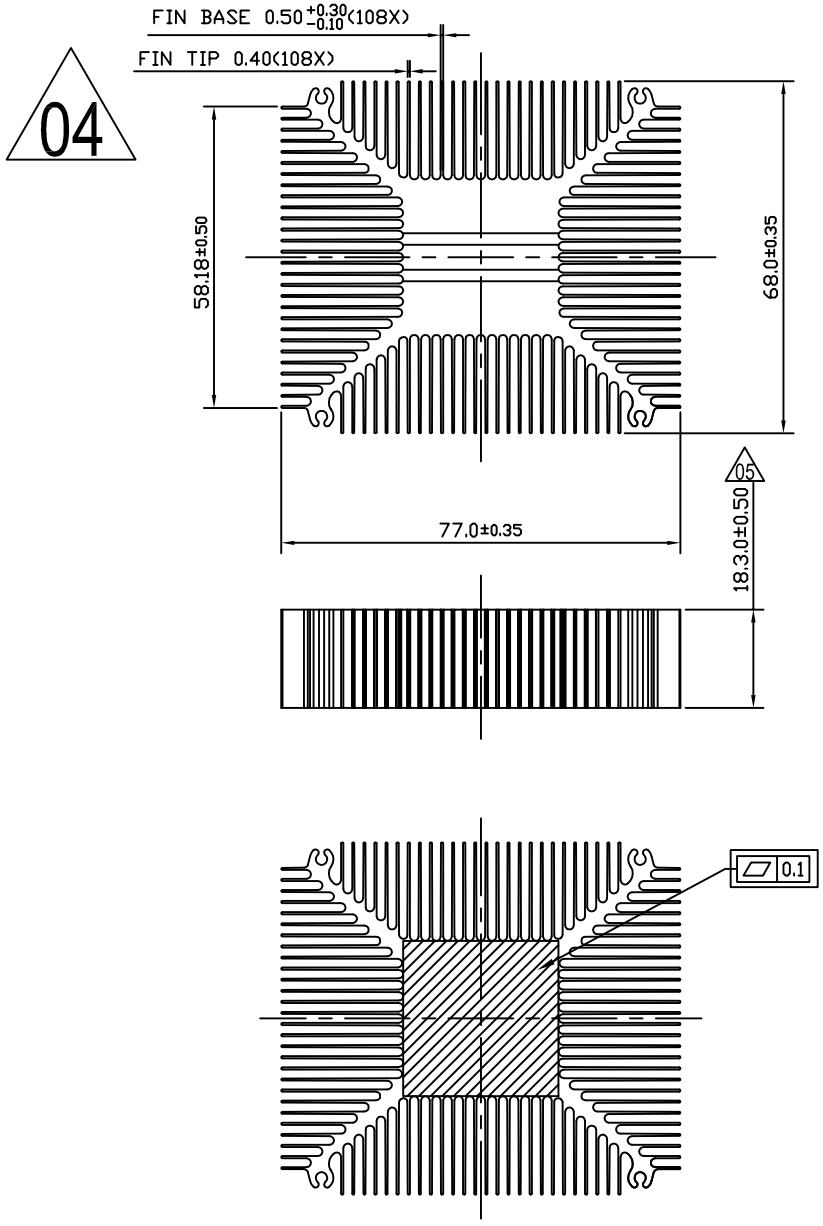
REV. 05

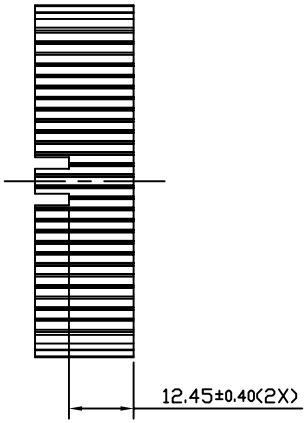
SCALE	---	UNIT	---	USED ON	COOLER

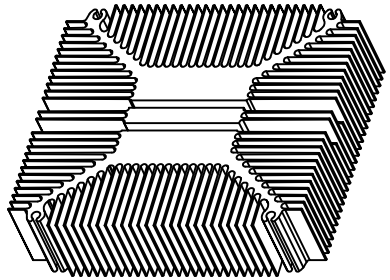
SHEET 1 OF 1

ISSUE DATE:

DRAWING







NOTES:

1.MATERIAL: A6063-T5
FINISH:NONE

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DELTA ELECTRONICS, INC.

Drawn: Skyler

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THIRD ANGLE PROJECTION

DESCRIPTION: HEATSINK

DIMENSIONAL TOLERANCES
HOLES : ±0.05 ANGLES : ±0.5°

( )		(V)		( )				( )	
<30	±1.0	DECIMALS		UP~100	±0.2	250~300	±0.4	UP~600	±1.5
>30~100	±2.0	X	±0.5	100~150	±0.25	300~350	±0.45	600~900	±2.4
>100~300	±3.0	X.X	±0.3	150~200	±0.3	350~400	±0.5	900~OVER	±3.1
ABOVE 300	±4.0	X.XX	±0.2	200~250	±0.35				

A3 SIZE

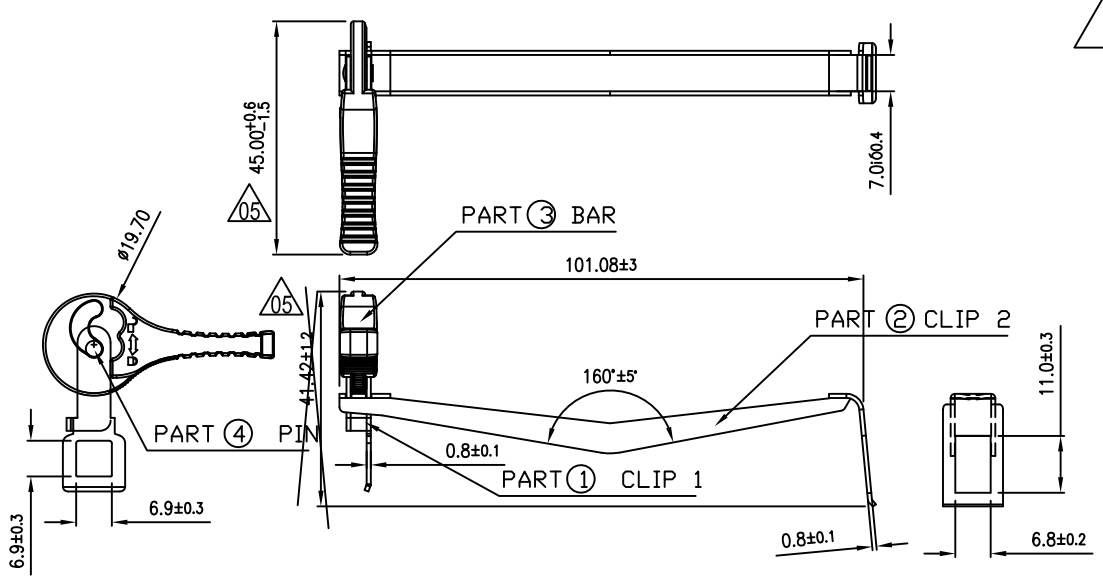
PART NO.: 04 3347100300

REV. 05

SCALE	1/1	UNIT	mm	USED ON	COOLER

SHEET 1 OF 1

FRAME NAME : DF-MEA3H-4R01.DWG



03

NO.1, NO.2 NOTES :
1. MATERIAL: SK7 SPRING STEEL, t=0.8±0.05mm, POST-FORM.
2. FINISH : COATING-NICKEL PLATED (NI) (鍍鎳),

NO.3 NOTES:
1. MATERIAL: PA66, COLOR: BLACK.
2. ALL CLIP, BAR & PIN, MUST BE ACTIVE SMOOTH WHEN ASSEMBLY.

NO.4 NOTES :
1. MATERIAL: 1018A, SWRCH18A.
2. FINISH : COATING-NICKEL PLATED (NI)

NO.	NAME	MATERIAL
①	CLIP 1	SK7
②	CLIP 2	SK7
③	BAR	PA66
④	PIN	1018A

DELTA ELECTRONICS, INC.

THIRD ANGLE PROJECTION

DIMENSIONAL TOLERANCES
HOLES : ±0.05 ANGLES : ±0.5°

( )		(.x)		( )				( )	
<30	±0.25	DECIMALS		UP~100	±0.2	250~300	±0.4	UP~600	±1.5
>30~100	±0.35	X	±0.3	100~150	±0.25	300~350	±0.45	600~900	±2.4
>100~300	±0.5	X.X	±0.2	150~200	±0.3	350~400	±0.5	900~OVER	±3.1
ABOVE 300	±0.6	X.XX	±0.1	200~250	±0.35				

SCALE	1/1	UNIT	mm	USED ON	COOLER

A3 SIZE

Drawn: Skyler

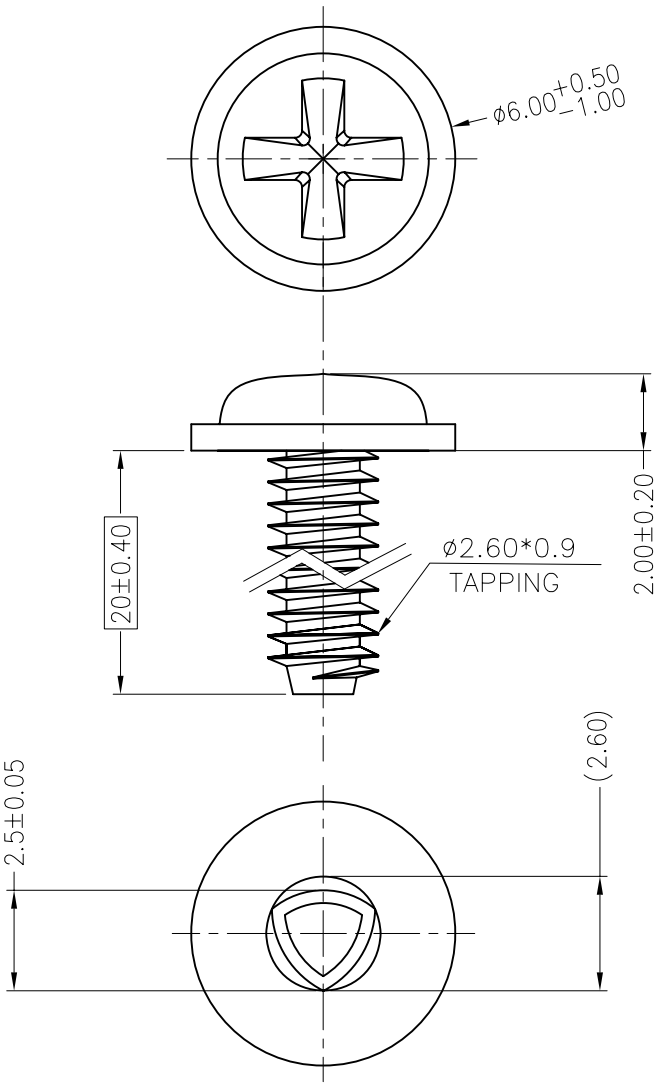
DESCRIPTION: CLIP

PART NO.: 3468186600

REV. 05

SHEET 1 OF 1

FRAME NAME : DF-MEA3H-4R01.DWG



NOTES:

*1. MATERIAL:SAE1018 (S18C)(低碳鋼)(標準規格) (TYPE B自攻縲絲)(每吋28牙)
*2. CARBONIZATION HANDLE (滲碳熱處理) ;TEMPERING(回火熱處理);
HRADNESS (表面硬度): HV(維克氏) 400~750.
*3. FINISH : COATING-ZINC PLATED (Zn) (鍍黑鋅) ;THICKNESS:0.003~0.005mm.
*4. DRIVER SIZE NO. : #1.
*5. MUST MEET DELTA'S SPEC 10000-0006 & 10000-0162.
*6. 所有( )內尺寸均爲參考尺寸,不需要量測.

台達電子工業股份有限公司
DELTA ELECTRONICS, INC.

Drawn:

THIRD ANGLE PROJECTION

DESCRIPTION: SCREW

DIMENSIONAL TOLERANCES HOLES : ±0.05 ANGLES : ±0.5°

(✓)		( )		( )		( )	
<30	:±0.25	DECIMALS		UP~100	:±0.2	250~300	:±0.4	UP~600	:±1.5
>30~100	:±0.35	X	:±0.3	100~150	:±0.25	300~350	:±0.45	600~900	:±2.4
>100~300	:±0.5	X.X	:±0.2	150~200	:±0.3	350~400	:±0.5	900~OVER	:±3.1
ABOVE 300	:±0.6	X.XX	:±0.1	200~250	:±0.35				

A4 SIZE

PART NO.: 3109141900

REV. ——

SCALE	1/1	UNIT	mm	USED ON	COOLER

SHEET 2 OF 2

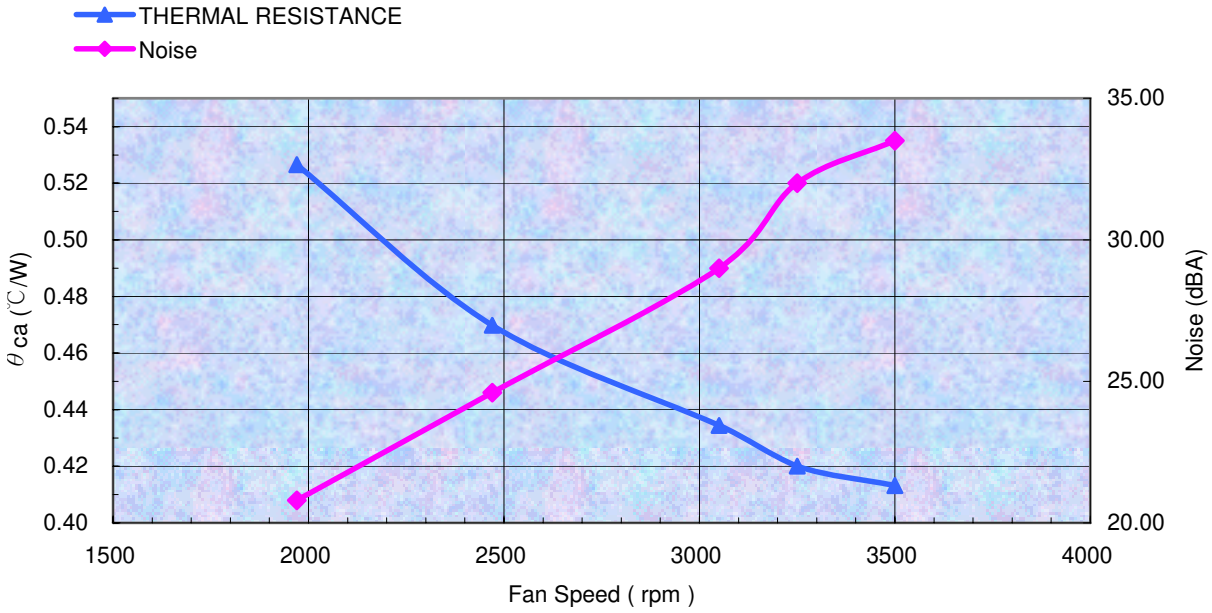
DF-MEA4V-3R00

3. THERMAL TEST PLAN

3.1 Thermal Test Specification

CPU PROCESSOR	AMD TTV FOR K8 SOCKET AM2/AM3
MOTHERBOARD	AMD THERMAL TEST BOARD FOR K8 SOCKET AM2/AM3
DATA LOGGER	FLUKE HYDER II
THERMALCOUPLE	OMEGA T-36 1.5M
BARRIER	IN OPEN SYSTEM
TEST TIME	30 MINUTES
FOLLOW INTEL PROCESSOR THERMAL METROLOGY	

3.2 Thermal Test Report



Fan Speed vs. Noise vs. Thermal Resistance Chart

3. PACKING PLAN

Packing Specification

PART NO.	FHS-A7015S61			
BASE DATA	QUANTITY/CARTON	45PCS (3 LAYERS/CARTON, 15PCS/LAYER)		
	PRODUCTION NET WEIGHT	8.0 kg (REF.)		
	PRODUCTION GROSS WEIGHT	10.5 kg (REF.)		
20(ft)CONTAINER ILLUSTRATE	SIZE	5.889(L)*2.352(w)*2.386(H)m	PACKING QUANTITY	20 PALLETS/CONTAINER
	CONTAINER	STEEL		

CONTAINER FORM

CONTAINER LOADING MATHOD

PALLET	PALLET	PALLET	PALLET	PALLET
PALLET	PALLET	PALLET	PALLET	PALLET

TOP VIEW

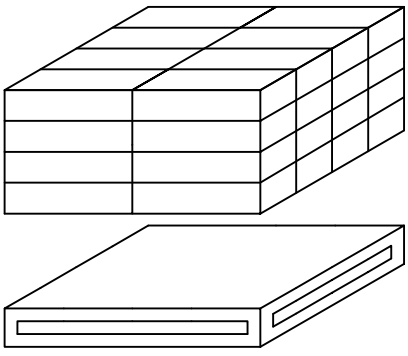
PALLET	PALLET
PALLET	PALLET

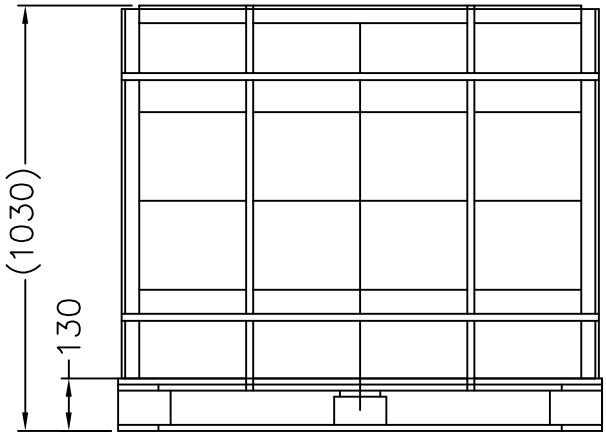
FRONT VIEW

PALLET LOADING ILLUSTRATE	SIZE	120(L)*107(w)*13(H)cm	PACKING QUANTITY	32 CARTONS/PALLET
	PALLET	WOOD/PLYWOOD △05		

PALLET ILLUSTRATE

PALLET LOADING MATHOD





台達電子工業股份有限公司
DELTA ELECTRONICS, INC.

DELTA MODEL: FHS-A7015S61

Drawn:

CUSTOMER NAME: STD

CUSTOMER P/N: FHS-A7015S61

DIMENSIONAL TOLERANCES HOLES : ±0.05 ANGLES : ±0.5°

(√)		( )		( )		( )	
<30	:±0.25	DECIMALS		UP~100	:±0.2	250~300	:±0.4
>30~100	:±0.35	X	:±0.3	100~150	:±0.25	300~350	:±0.45
>100~300	:±0.5	X.X	:±0.2	150~200	:±0.3	350~400	:±0.5
ABOVE 300	:±0.6	X.XX	:±0.1	200~250	:±0.35		

UP~600	:±1.5
600~900	:±2.4
900~OVER	:±3.1

THIRD ANGLE PROJECTION

Description: PACKING

A4 SIZE

Part No. FHS-A7015S61

REV. --

SCALE	---	UNIT	mm	USED ON	COOLER

SHEET 1 OF 2

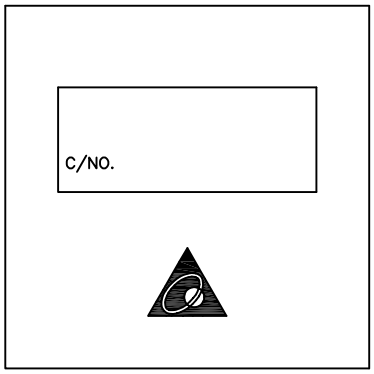
ISSUE DATE:

DF-PSLA4V-3R00

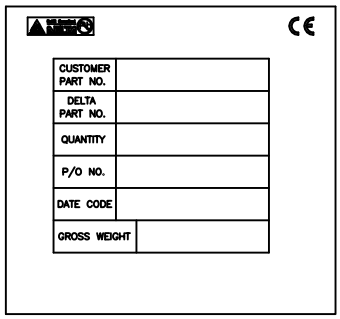
CARTON ILLUSTRATE	SIZE	553(L)*260(w)*260(H)(mm)	PACKING QUANTITY	3 LAYERS/CARTON
	MATERIAL	3 LAYERS"BC" FLUTE	CARTON WEIGHT	0.70 kg (REF.)

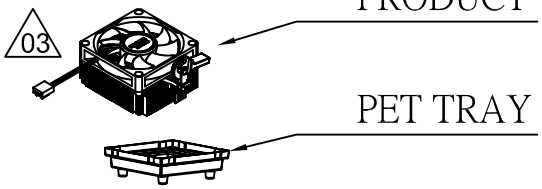
CARTON OUTSIDE DEMONDTRATE

FRONT

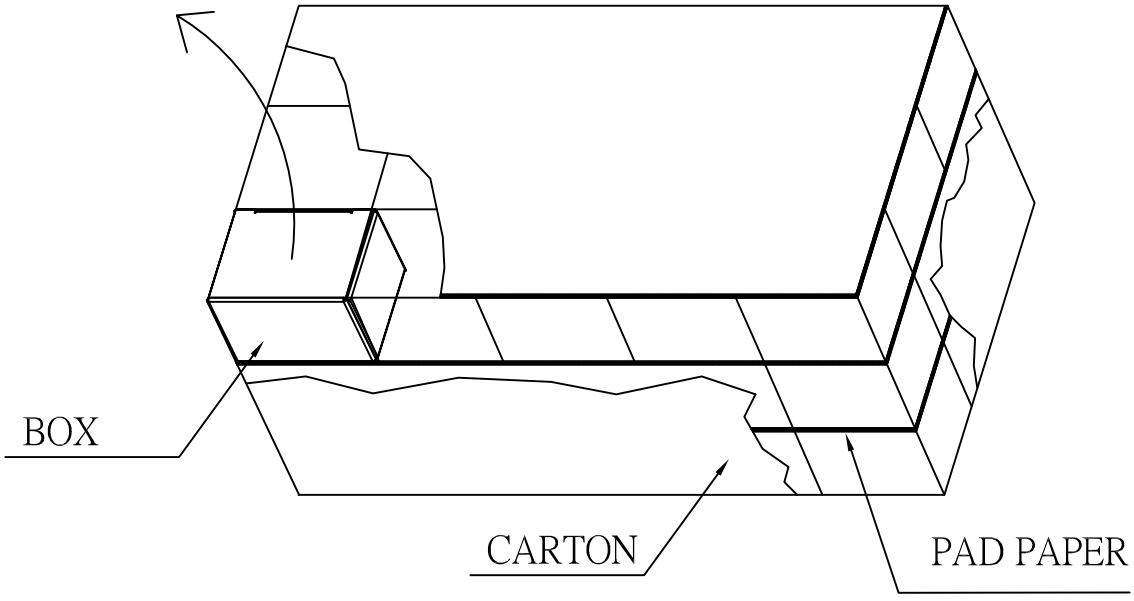


BACK





(ONE LABEL PER CARTON)



台達電子工業股份有限公司
DELTA ELECTRONICS, INC.

DELTA MODEL: FHS-A7015S61

Drawn:

CUSTOMER NAME: STD

CUSTOMER P/N: FHS-A7015S61

DIMENSIONAL TOLERANCES HOLES : ±0.05 ANGLES : ±0.5°

(√)		( )		( )		( )	
<30	:±0.25	DECIMALS		UP~100	:±0.2	250~300	:±0.4
>30~100	:±0.35	X	:±0.3	100~150	:±0.25	300~350	:±0.45
>100~300	:±0.5	X.X	:±0.2	150~200	:±0.3	350~400	:±0.5
ABOVE 300	:±0.6	X.XX	:±0.1	200~250	:±0.35		

UP~600	:±1.5
600~900	:±2.4
900~OVER	:±3.1

THIRD ANGLE PROJECTION

Description: PACKING

A4 SIZE

Part No. FHS-A7015S61

REV. --

SCALE	---	UNIT	mm	USED ON	COOLER

SHEET 2 OF 2

ISSUE DATE:

4. Fan

Fan Specification

SPECIFICATION FOR APPROVAL

Customer T M P B U

Description S U P E R F L O F A N

CustomerP/N: R E V .

Delta Model No. AUB0712MB-AL3G REV. 00

Sample Issue No.

Sample Issue Date APR.13.2011

PLEASE SEND ONE COPY OF THIS SPECIFICAITON BACK AFTER YOU SIGNED APPROVAL FOR PRODUCTION PRE-ARRANGMENT.

APPROVED BY:

DATE :

DELTA ELECTRONICS, INC.
TAOYUAN PLANT
252, SHANG YING ROAD, KUEI SAN INDUSTRIAL ZONE TAOYUAN SHIEN, TAIWAN, R.O.C.
TEL:886-(0)3-3591968
FAX:886-(0)3-3591991

DELTA ELECTRONICS, INC.
252, SHANG YING ROAD, KUEI SAN
TAOYUAN HSIEN 333, TAIWAN, R. O. C.
TEL : 886-(0)3-3591968
FAX : 886-(0)3-3591991

SPECIFICATION FOR APPROVAL

****

Customer:	TMPBU	
Description:	SUPERFLO FAN	
Customer P/N:		REV:
Delta Model NO.:	AUB0712MB-AL3G	Delta Safety Model No.: AUB0712MB
Sample Rev:	00	Issue NO:
Sample Issue Date:	APR.13.2011	Quantity:

1. SCOPE:

THIS SPECIFICATION DEFINES THE ELECTRICAL AND MECHANICAL CHARACTERISTICS OF THE DC BRUSHLESS AXIAL FLOW FAN. THE FAN MOTOR IS WITH SINGLE PHASE AND FOUR POLES.

2. CHARACTERS:

ITEM	DESCRIPTION
RATED VOLTAGE	12 VDC
OPERATION VOLTAGE	10.0 - 13.8 VDC
INPUT CURRENT	0.10 (MAX. 0.24) A
INPUT POWER	1.20 (MAX. 2.88) W
SPEED	3400±10% R.P.M.
MAX. AIR FLOW (AT ZERO STATIC PRESSURE)	0.589 (MIN. 0.529) M^3/MIN. 20.77 (MIN. 18.69) CFM
MAX. AIR PRESSURE (AT ZERO AIRFLOW)	3.02 (MIN. 2.44) mmH_2O 0.123 (MIN. 0.096) $inchH_2O$
ACOUSTICAL NOISE (AVG.)	29.6 (MAX. 33.6) dB-A
INSULATION TYPE	UL: CLASS A

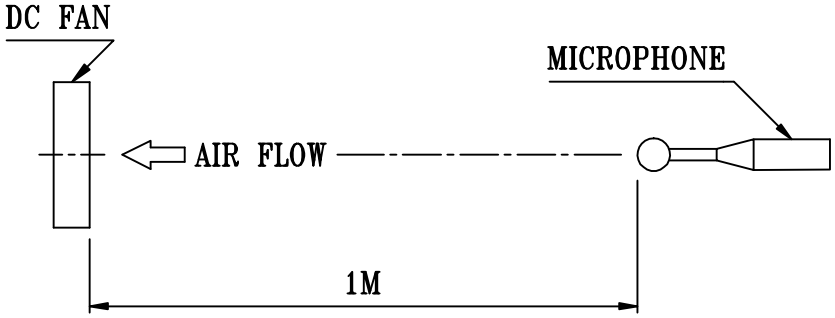
(continued)

PART NO:

DELTA MODEL: AUB0712MB-AL3G

INSULATION STRENGTH	10 MEG OHM MIN. AT 500 VDC (BETWEEN FRAME AND (+) TERMINAL)
DIELECTRIC STRENGTH	5 mA MAX. AT 500 VAC 50/60 Hz ONE MINUTE, (BETWEEN FRAME AND (+) TERMINAL)
EXTERNAL COVER	OPEN TYPE
LIFE EXPECTANCE	50,000 HOURS CONTINUOUS OPERATION AT 40 °C WITH 15 ~ 65 %RH.
ROTATION	CLOCKWISE VIEW FROM NAME PLATE SIDE
OVER CURRENT SHUT DOWN	THE CURRENT WILL SHUT DOWN WHEN LOCKING ROTOR.
LEAD WIRE	UL 1061 -F- AWG #26 BLACK WIRE: NEGATIVE(-) RED WIRE: POSITIVE(+) BLUE WIRE: TACHOMETER OUTPUT(FOO) YELLOW WIRE: SPEED CONTROL(PWM)

NOTES: 1. ALL READINGS ARE MEASURED AFTER STABLY WARMING UP THROUGH 10 MINUTES.
2. THE VALUES WRITTEN IN PARENS , ( ), ARE LIMITED SPEC.
3. ACOUSTICAL NOISE MEASURING CONDITION:



NOISE IS MEASURED AT RATED VOLTAGE IN FREE AIR IN ANECHOIC CHAMBER WITH B & K SOUND LEVEL METER WITH MICROPHONE AT A DISTANCE OF ONE METER FROM THE FAN INTAKE.

PART NO:

DELTA MODEL: AUB0712MB-AL3G

3. MECHANICAL:

3-1. DIMENSIONS ---------- SEE DIMENSIONS DRAWING

3-2. FRAME ---------- PLASTIC UL: 94V-0

3-3. IMPELLER ---------- PLASTIC UL: 94V-0

3-4. BEARING SYSTEM ---------- SUPERFLO BEARING

3-5. WEIGHT ---------- 47 GRAMS

4. ENVIRONMENTAL:

4-1. OPERATING TEMPERATURE ---------- -10 TO +60 DEGREE C

4-2. STORAGE TEMPERATURE ---------- -40 TO +70 DEGREE C

4-3. OPERATING HUMIDITY ---------- 5 TO 90 % RH

4-4. STORAGE HUMIDITY ---------- 5 TO 95 % RH

5. PROTECTION:

5-1. LOCKED ROTOR PROTECTION

IMPEDANCE OF MOTOR WINDING PROTECTS MOTOR FROM FIRE IN 96 HOURS OF LOCKED ROTOR CONDITION AT THE RATED VOLTAGE.

5-2. POLARITY PROTECTION

BE CAPABLE OF WITHSTANDING IF REVERSE CONNECTION FOR POSITIVE AND NEGATIVE LEADS.

6. RE OZONE DEPLETING SUBSTANCES:

6-1. NO CONTAINING PBBs, PBBOs, CFCs, PBBEs, PBDPEs AND HCFCs.

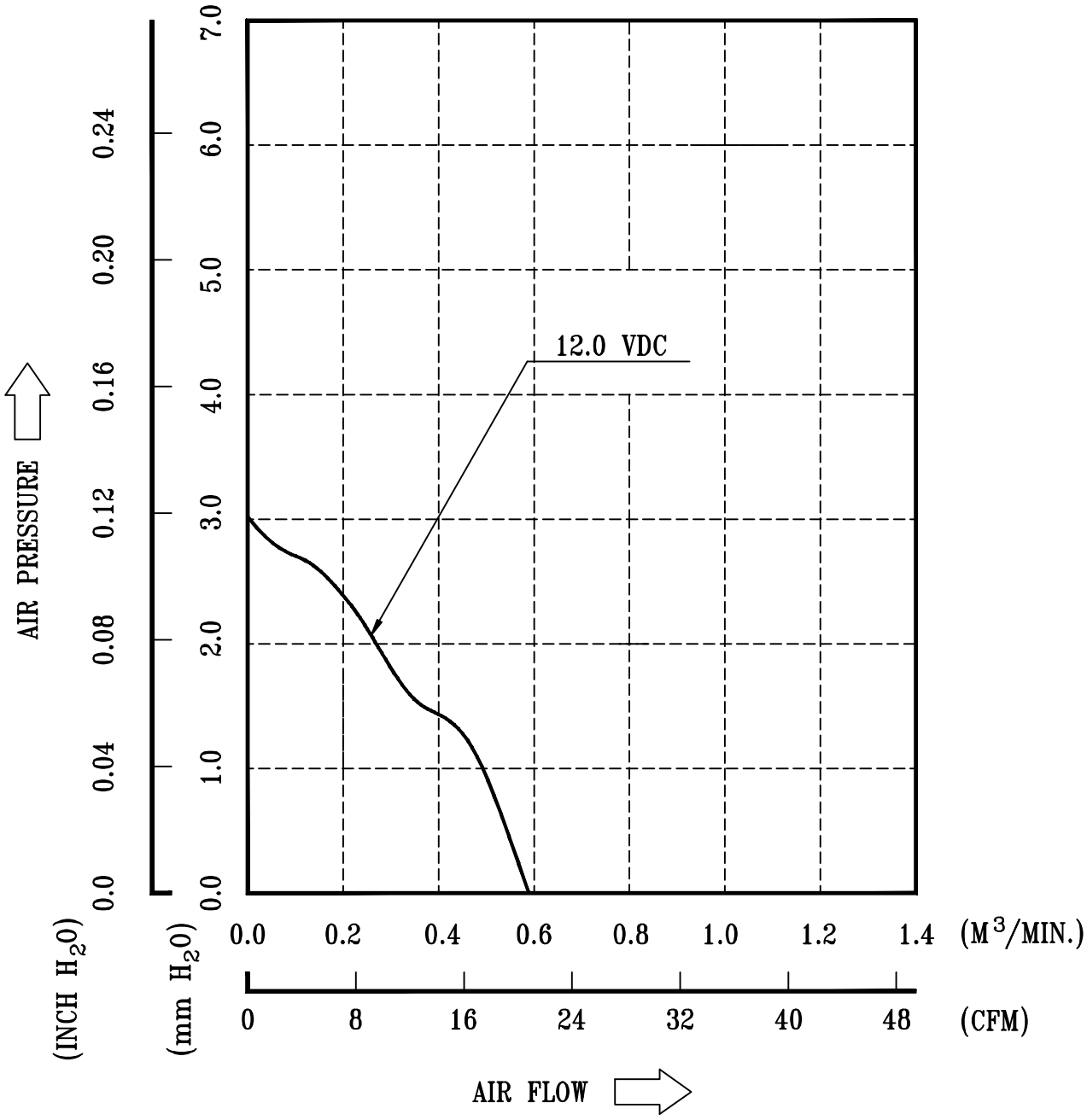
7. PRODUCTION LOCATION

7-1. PRODUCTS WILL BE PRODUCED IN CHINA OR THAILAND OR TAIWAN.

PART NO:

DELTA MODEL: AUB0712MB-AL3G

8. P & Q CURVE:



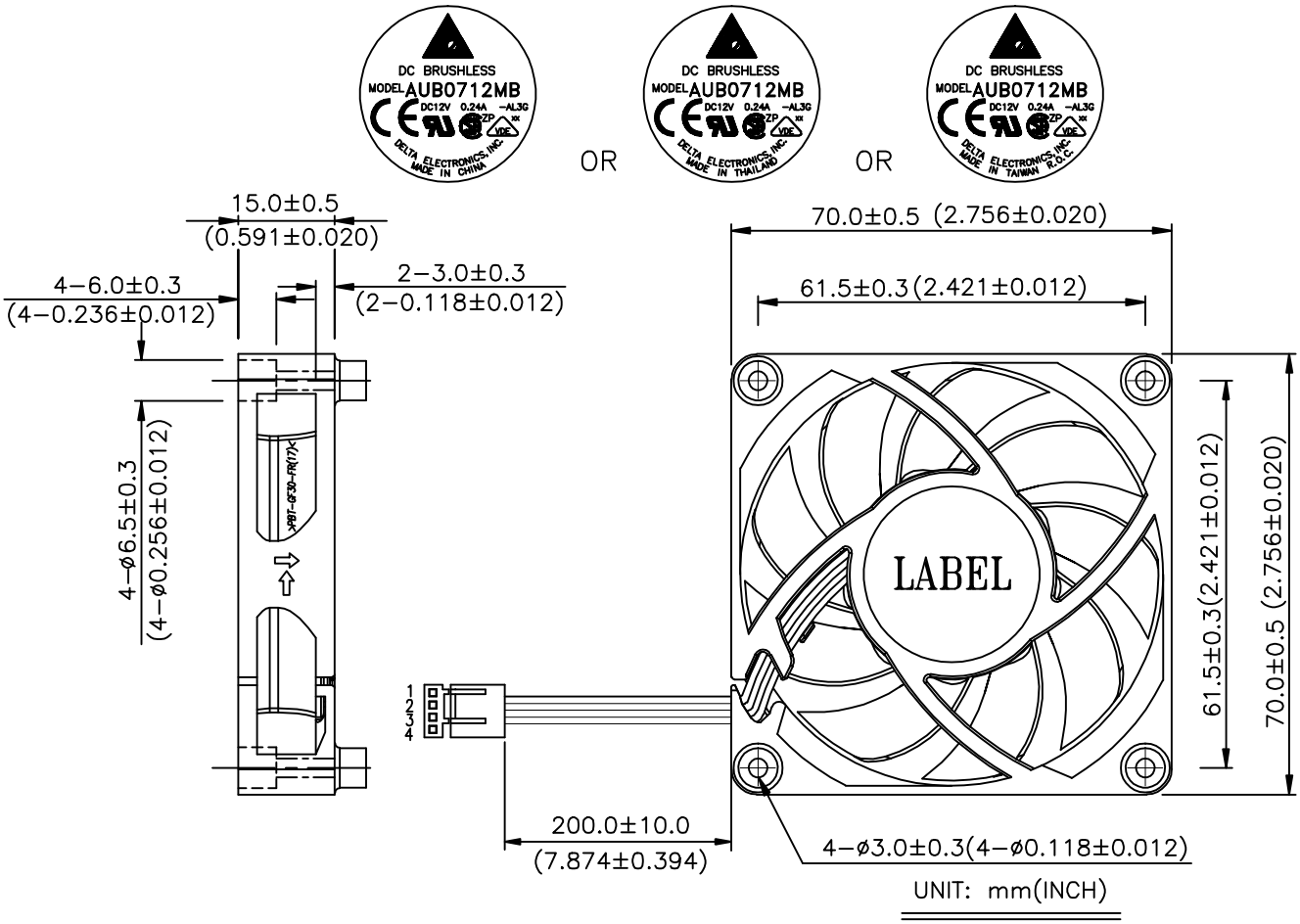
* TEST CONDITION: INPUT VOLTAGE ----- OPERATION VOLTAGE
TEMPERATURE ------ ROOM TEMPERATURE
HUMIDITY ---------- 65%RH

PART NO:

DELTA MODEL: AUB0712MB-AL3G

9. DIMENSION DRAWING:

LABEL:



NOTES:

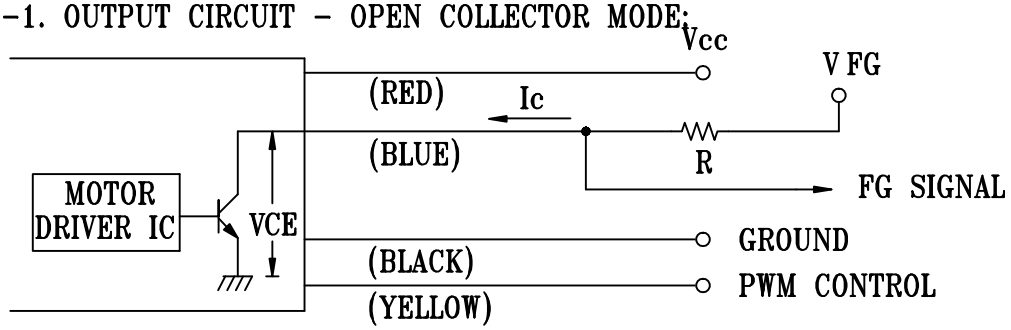
1. LEAD WIRE: UL1061 AWG#26
   PIN 1: BLACK WIRE---(-)
   PIN 2: RED WIRE----(+)
   PIN 3: BLUE WIRE---(FOO)
   PIN 4: YELLOW WIRE---(PWM)
2. HOUSING: EST 25403H00-0400 OR MOLEX 47054-1000 OR EQUIVALENT
3. TERMINAL: EST 25402T0P-0200 OR MOLEX 2759T 08-50-0113 OR EQUIVALENT
4. THIS PRODUCT IS RoHS COMPLIANT

PART NO:

DELTA MODEL: AUB0712MB-AL3G

10. FREQUENCY GENERATOR (FG) SIGNAL:

10-1. OUTPUT CIRCUIT - OPEN COLLECTOR MODE:



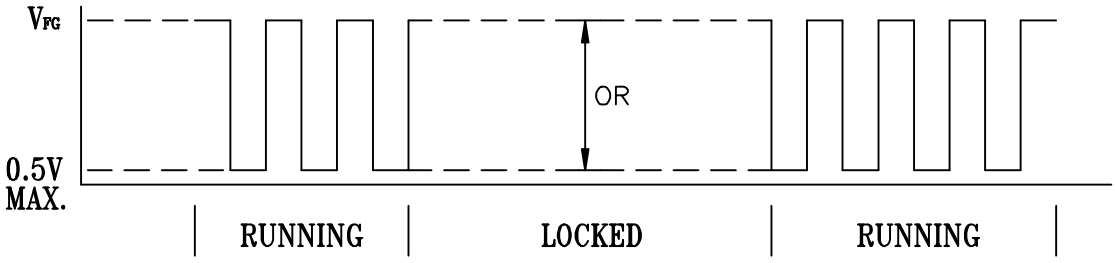
CAUTION: THE FG SIGNAL LEAD WIRE MUST BE KEPT AWAY FROM "+" LEAD WIRE & "-" LEAD WIRE.

10-2. SPECIFICATION:

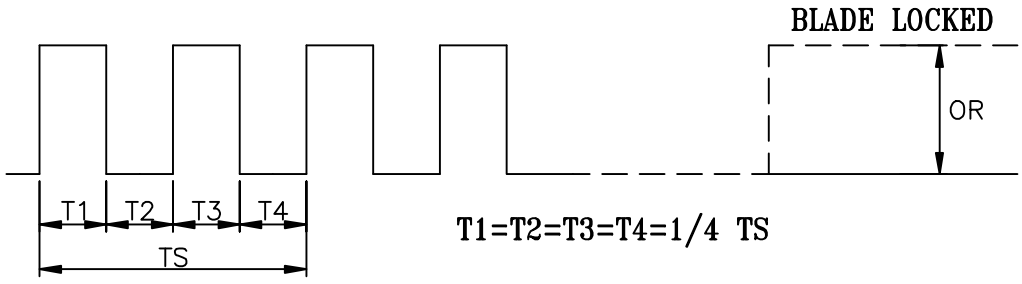
V_{CE} (sat)=0.5V MAX. V_{FG} =5.0V TYP. (Vcc MAX.)

I_C =5mA MAX. $R \geq V_{FG}/I_C$

10-3. FREQUENCY GENERATOR WAVEFORM:



FAN RUNNING FOR 4 POLES



T1=T2=T3=T4=1/4 TS

N=R.P.M

TS=60/N(SEC)

*VOLTAGE LEVEL AFTER BLADE LOCKED

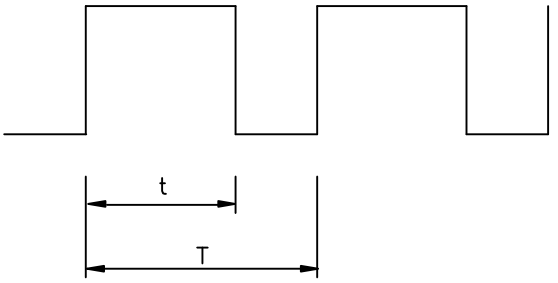
*4 POLES

PART NO:

DELTA MODEL: AUB0712MB-AL3G

11. PWM CONTROL SIGNAL:

SIGNAL VOLTAGE RANGE: 0~13.8 VDC



HIGH SIGNAL: 13.8 VDC MAX. 2.8 VDC MIN.

LOW SIGNAL: 0.8 VDC MAX. 0 VDC MIN.

DUTY CYCLE= $\frac{t}{T}$ *100(%)

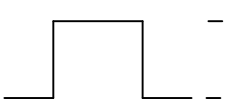
- FOR REDUCING THE SWITCHING NOISE, THE PREFERRED OPERATING POINT FOR THE FAN IS 25K HZ.
- AT 100% DUTY CYCLE,THE ROTOR WILL SPIN AT MAXIMUM SPEED.
- AT 0 % DUTY CYCLE,THE ROTOR WILL SPIN AT MIXIMUM SPEED.
- WITH CONTROL SIGNAL LEAD DISCONNECTED,THE FAN WILL SPIN AT MAXIMUM SPEED.

12. SPEED VS PWM CONTROL SIGNAL:

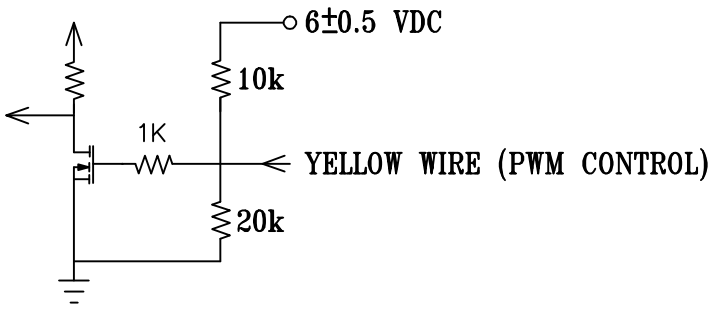
(AT 25°C, RATED VOLTAGE & PWM SIGNAL AS FOLLOW)

DUTY CYCLE (%)	SPEED R.P.M.	CURRENT (A) TYP.
100	3400±10%	0.10
0	800±250	0.04

* PWM SIGNAL
PWM FREQUENCY = 25KHz



13. PWM CONTROL LEAD WIRE INPUT IMPEDANCE:



Application Notice

1. Delta will not guarantee the performance of the products if the application condition falls outside the parameters set forth in the specification.
2. A written request should be submitted to Delta prior to approval if deviation from this specification is required.
3. Please exercise caution when handling fans. Damage may be caused when pressure is applied to the impeller, if the fans are handled by the lead wires, or if the fan was hard-dropped to the production floor.
4. Except as pertains to some special designs, there is no guarantee that the products will be free from any such safety problems or failures as caused by the introduction of powder, droplets of water or encroachment of insect into the hub.
5. The above-mentioned conditions are representative of some unique examples and viewed as the first point of reference prior to all other information.
6. It is very important to establish the correct polarity before connecting the fan to the power source. Positive (+) and Negative (-). Damage may be caused to the fans if connection is with reverse polarity, if there is no foolproof method to protect against such error specifically mentioned in this spec.
7. Delta fans without special protection are not suitable where any corrosive fluids are introduced to their environment.
8. Please ensure all fans are stored according to the storage temperature limits specified. Do not store fans in a high humidity environment. We highly recommend performance testing is conducted before shipping, if the fans have been stored over 6 months.
9. Not all fans are provided with the Lock Rotor Protection feature. If you impair the rotation of the impeller for the fans that do not have this function, the performance of those fans will lead to failure.
10. Please be cautious when mounting the fan. Incorrect mounting of fans may cause excess resonance, vibration and subsequent noise.
11. It is important to consider safety when testing the fans. A suitable fan guard should be fitted to the fan to guard against any potential for personal injury.
12. Except where specifically stated, all tests are carried out at room (ambient) temperature and relative humidity conditions of 25°C, 65% RH. The test value is only for fan performance itself.
13. Be certain to connect an " 4.7μF or greater" capacitor to the fan externally when the application calls for using multiple fans in parallel, to avoid any unstable power.

EC Declaration of Conformity

Issuer's name and address:

Delta Electronics Inc.
6F, No. 186, Ruey Kuang Road
11491 NEIHU, TAIPEI
TAIWAN

Product: Fan for building-in, IT-equipment

Type designation: AUB0612VH/SH/EH; AUB0624VH/SH/EH; AUB0648VH/SH/EH; AUB0612LD/MD/HD/HHD/VHD; AUB0624LD/MD/HD/HHD/VHD; EFB1312LE/ME/HE/HHE/VHE/SHE; EFB1324LE/ME/HE/HHE/VHE/SHE; EFB1348LE/ME/HE/HHE/VHE; EFB0912LF/MF/HF/HHF/VHF/SHF; EFB0924LF/MF/HF/HHF/VHF/SHF; AFB1512L/M/H; AFB1712L/M/H; AUB0505LB/MB/HB; AUB0512LB/MB/HB/HHB; AUB0524LB/MB/HB/HHB; EFB1248L/M/H/HH/VH/SH; KFB03205LA/MA/HA/LP/MP/HP; EFB0812LF/MF/HF/HHF/VHF/SHF/EHF; EFB0824LF/MF/HF/HHF/VHF/SHF/EHF; AFB1212L/M/H/HH/VH/SH; AFB1224L/M/H/HH/VH/SH; EFC0912AE/BE; AFB0505LD/MD/HD; AFB0512LD/MD/HD/HHD/VHD; AFB0524LD/MD/HD/HHD/VHD; ASB0712L/M/H/HH/VH; ASB0724L/M/H/HH/VH; EFB0805LL/L/M/H/HH; EFB0812LL/L/M/H/HH/VH/SH/EH; EFB0824LL/L/M/H/HH/VH/SH/EH; EFB0848L/M/H/HH/VH/SH/EH; AUB/ASB0505LD/MD/HD; AUB/ASB0512LD/MD/HD/HHD/VHD; AUB/ASB0524LD/MD/HD/HHD/VHD; FFB0624HHE/VHE/SHE/EHE; EFC0812A/B; EFC0912A/B; FFC0912DE; FFC0924DE; AUB0812LLD/SHD; AUB0824LLD/LD/MD/HD/HHD/VHD/SHD; AFB0812LLD/LD/MD/HD/HHD/VHD/SHD; AFB0824LLD/LD/MD/HD/HHD/VHD/SHD; EUB0605LB/MB/HB/HHB; EUB0612LB/MB/HB/HHB/VHB; EUB0624LB/MB/HB/HHB/VHB; FFC1348CE; KFB1712LT/MT/HT; KFB1724LT/MT/HT; KFB1748LT/MT/HT; EFC0612AA/BA; FFC1224DE; FFC1248DE; FFC1248CE; BFC1212C-STD/F00/F05/F05R; BFC1212C-R00/R05/R05R/RR0/RR05/RR05R; BFC1224C-STD/F00/F05/F05R; BFC1224C-R00/R05/R05R/RR0/RR05/RR05R; BFC1248C-STD/F00/F05/F05R; BFC1248C-R00/R05/R05R/RR0/RR05/RR05R; AFB0605LC/MC/HC; AFB0612LC/MC/HC/HHC/VHC; AFB0624LC/MC/HC/HHC/VHC; AUB/ASB1212L/M/H/HH/VH/SH; AUB/ASB1224L/M/H/HH/VH/SH; AFB/AUB/ASB0405LB/MB/HB/HHB; AFB/AUB/ASB0412LB/MB/HB/HHB/VHB/SHB; AFB/AUB/ASB0424LB/MB/HB/HHB/VHB/SHB; AFB/AUB/ASB04505LA/MA; AFB/AUB/ASB04512LA/MA/HA; EFB/EUB/ESB0405LA/MA/HA/HHA; EFB/EUB/ESB0412LA/MA/HA/HHA/VHA; KFB1012MS/HS/HHS; KFB1024MS/HS/HHS; KFB1048MS/HS/HHS; KFC1012DS; KFC1024DS; KFC1048DS; AFB0712LLB/LB/MB/HB/HHB/LC/MC/HC/HHC; AFB0724LLB/LB/MB/HB/HHB/LC/MC/HC/HHC; AUB/ASB0712LLB/LB/MB/HB/HHB; AUB/ASB0724LLB/LB/MB/HB/HHB; AFC1212/AE/BE/DE; AFC1224/AE/BE/DE; AFC1248/AE/BE/DE; GFB0405MF/HF/HHF; GFB0412MF/HF/HHF/VHF; GFB0424MF/HF/HHF/VHF; FFB0412MN/HN/HHN/VHN; FFB0424MN/HN/HHN/VHN; GFB1212MW/HW/HHW/VHW; GFB1224MW/HW/HHW/VHW; GFB1248MW/HW/HHW/VHW; GFB0812HHG/VHG/SHG; GFB0824HHG/VHG/SHG; EFC0912BF; EFC0924AE/BE; BFB1048LL/L/M/H; KFB0112H; FFC0924A/B; FFB0912HH/VH/SH; FFB0924HH/VH; FFB0948HH/VH; AFB0912LD/MD/HD/HHD/VHD; AUB0912LD/MD/HD/HHD/VHD; AFB0924LD/MD/HD/HHD/VHD; AUB0924LD/MD/HD/HHD/VHD; AFC0512AA/BB; AFC0612AB/BB; EFC1748DG-S41P; BFB1012 VH; AFB0712HD/HHD/VHD; AFB0724HD/HHD/VHD; EFC1748DG; FFB1212HH/VH/SH/EH; FFB1224HH/VH/SH/EH; FFB1248HH/VH/SH/EH; GFB0412SHE; GFB0612HHG/VHG/SHG; GFB0912HHG/VHG/SHG; GFB0624HHG/VHG; GFB0924HHG/VHG; GFB0948HHG/VHG; BFB05512MA/HA/HHA; EFC1212DF; EFC1224DF; EFC1248DF; EFC1212D; EFC1224D; EFC1248D; AFC1212D; AFC1224D; AFC1248D; FFC0848CE; FFC0912CE; EFB0812LB/MB/HB/HHB; EFB0824LB/MB/HB/HHB; KFB1748HHT; FFB0412SHN; AFB1548EH; AFC1548D; AFB1748EH; AFC1748D; AFB0712VHB; AFB0712HHB-P117; AFB0605LD/MD/HD/HHD; AUB0605LD/MD/HD/HHD; AFB0605L/M/H; BFB0612MB/HB; AFB0705L/M/H; GFB1212VHG; GFB1224SHG; FFB0612HHE/VHE/SHE/EHE/GHE; AFC0912DE [new version]; AFB0912EHE/GHE/UHE

The designated product is in conformity with the European Directive:

2006/95/EC

"Council Directive on the harmonization of the laws of the Member States relating to electrical equipment designed for use within certain voltage limits".

The technical documentation and full compliance with the standards listed below proves the conformity of the product with the requirements of the above-mentioned EC Directive:

DIN EN 60950-1 (VDE 0805 Teil 1):2011-01; EN 60950-1:2006 + A11:2009 + A1:2010
DIN EN 60950-1/A12 (VDE 0805-1/A12):2011-08; EN 60950-1/A12:2011-02
IEC 60950-1(ed.2);am1

The VDE Testing and Certification Institute (EU Identification No.0366), Merianstr. 28, 63069 Offenbach (Germany), has tested and certified the product.

Last two digits of the year in which the CE marking was affixed:

Certificate No.	128374
File Reference	1164100-2611-0003 / 165575 / FG13 / CNGD-SXU

2012.04.12

(Place, Date)

(Legally binding signature of the issuer)

ONLINE CERTIFICATIONS DIRECTORY

GPWV2.E132003
Fans, Electric - Component

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Fans, Electric - Component

See General Information for Fans, Electric - Component

DELTA ELECTRONICS INC E132003
252 SHANG YING RD
KUEI SHAN
TAOYUAN HSIEN, 333 TAIWAN

DC fans, Model AFB followed by 0405, followed by HA, HHA, LA or MA, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0505, followed by HB, LB or MB, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0512, followed by HB, HHB, LB or MB, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0605, followed by H, L or M, followed by R00, R05, RR0 or RR05, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0805, followed by H, L or M, followed by (Y); Model AFB followed by 0612, 0624, followed by EH, SH, VH, followed by (Y); Model AFB0612LB followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0612, 0624, 0812, 0824, 0912 or 0924, followed by H, HB, HH, HHB, L, LB, LLB, M, MB, SHB or VHB, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Models ASB0412MA, ASB0412LA, ASB0405MA followed by (Y); Model ASB followed by 0405, 0412, followed by HA, HHA, LA or MA, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model ASB followed by 0505, followed by HB, LB or MB, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model ASB followed by 0512, 0524, followed by HB, HHB, LB or MB, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model ASB followed by 0812, 0824, followed by HB, HHB, LB, LLB, MB, SHB or VHB, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model ASB followed by 0612 or 0624, followed by H, HH, L or M, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model ASB followed by 0812, followed by L or M, followed by (Y); Model ASB followed by 0912 or 0924, followed by H, L or M, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AUB followed by 0505, 0512 or 0524, followed by HB, HHB, LB or MB, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AUB followed by 0612, 0624, followed by H, HH, L or M, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AUB followed by 0912, 0924, followed by H, HH, L, M or VH, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AUB followed by 0612 or 0624, followed by L, M, H or HH, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AUB followed by 0812 or 0824, followed by HB, HHB, LB, LLB, MB, SHB or VHB, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AUB followed by 0924, followed by L, M, H, HH or VH, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model BFB followed by 1212, followed by H, HH, L, LL, M or VH, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model BFB followed by 1224, followed by H, HH, L, LL, M or VH, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model BFB followed by 1248, followed by H, HH, L, LL, M, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model BFC followed by 1012, followed by A, B or C, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model DFB followed by 0405 or 0412, followed by H, L, LL, M, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model DFB followed by 0612, 0812, 0912, 0824 or 0924 followed by H, L or M, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model DFB followed by 0612, 0812, 0824, 0912 or 0924, followed by HH, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model DFB followed by 0424, followed by H, L, LL, M, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model DFB followed by 0612, 0624, followed by H, HH, L or M, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model DFC followed by 0612, 0812 or 0912, followed by "A" or "B", followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model DFD followed by 0612 or 0624, followed by H, HH, L or M, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model SB followed by 0412, followed by H, L, LL or M, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model SB followed by 0612, 0624, followed by HH, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model SB followed by 0612, 0624, 0812, 0824, followed by H, L or M, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model SB followed by 0612, 0624, followed by HD, LD or MD, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model SB followed by 0812, 0824, followed by HH, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model SB followed by 0812, followed by MSA or MSG, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFC0612D(Y) where (Y) may be A through Z, 0 through 9, "-" or blank; Models AFB0612DH-8G33(Y), E47199(Y), E47159(Y), DTC-CDA(Y), DTC-CDC(Y), FFR1212DHE(Y), FFR0812DHE(Y), KFB0612HD-8K16(Y), BFB0712HB-8A97(Y), KUC1012D(Y) series, where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Models TFA1424AG(Y), TFA1424AGL(Y), TFA1448(X)G(Y), TFA1448AGL(Y) series, where (X) may be A, B or C, (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank

Model AFB followed by 02505, followed by HA, HHA, LA or MA, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 02512, followed by HA, HHA, LA or MA, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0305, followed by -HA, -LA, -LLA, MA, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0312, followed by -HA, LA, LLA, MA, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 03505, followed by HA, LA, MA, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0405, followed by HD, LD or MD, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 03512, followed by LA, MA or HA, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0405, 0412 or 0424, followed by HD, HHD, LD, MD, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0412 or 0424, followed by HD, HHD, LD or MD, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0505, 0512, followed by HA, LA or MA, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0524, followed by HB, HHB, LB or MB, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0605, followed by HB, HHB, LB, LLD, MB, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0605, followed by LLD, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0605, followed by HA, LA or MA, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0612, followed by HA, HB, HHB, LA, MA or MB, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0612 or 0624, followed by HD, HHD, LB, LD, LLD, MD, VHB or VHD, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model AFB followed by 0624, followed by HB, HHB, LB, MB or VHB, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or

through Z, 0 through 9, "-" or blank.

Model EFC followed by 0912, followed by AE or BE.

Model HFB followed by 0605, 0612 or 0624, followed by HB, HD, HHB, HHD, LB, LD, MB or MD.

Model AFB followed by 1212 or 1224, followed by H, HH, L, M, SH or VH, followed by (Y); Model AFB1212SH-SV15(Y); Models EFC0412DD-4M2M (Y), FFB0612EHE-SP06(Y), FFB0612EHE-SP05(Y), FFB0612EHE-4M04(Y), FFB0612EHE-6A46(Y), GFC0812DW(Y), GFB0812DHW(Y), GFB0812UHW (Y), GFB0812GHW(Y), KFC1948DT(Y), KFB1948EHT(Y), KFB1948SHT(Y), KFB2248HT(Y), KFB2248HHT(Y), KFC2248DT(Y), PFR0812UHE(Y), PFR0812DHE(Y), PFR0812XHE(Y) Series, where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank.

Model KFB followed by 03205, followed by HP, LP or MP; Model KFB followed by 03205, followed by HA, LA or MA.

Model FFB followed by 1312, 1324, 1348, followed by EHE(Y), SHE(Y) or VHE(Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model FFC followed by 1312, 1324, 1348, followed by DE(Y); Model FFC1424DG(Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank.

Model AFB followed by 0505, followed by HD, LD or MD; Model AFB followed by 0512, 0524, followed by HD, HHD, LD, MD or VHDASB03505L; Models AFC1212D-8B30(Y), AFB1212M-8B42(Y), TFA0948AE(Y) Series, where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank.

Model FUB followed by 0412, 0424, followed by HN, HHN, MN or VHN.

Model KFB followed by 1712, 1724, 1748, followed by HT, LT or MT; Models KFB1024MS, KFB1024HS, KFB1024HHS, KFB1024VHS(Y), KFB1748SHT(Y), KFB1748VHT(Y), KFB1012MS, KFB1012HS, KFB1012HHS, KFB1048MS, KFB1048HS, KFB1048HHS, KFC1012DS, KFC1024DS, KFC1048DS, KFB1724VHT(Y), KFB1724SHT(Y), KFC1724DT(Y), NFC0812D(Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank.

Models KFB1024HHS, KFB1024HS, KFB1024MS.

Model EFB followed by 0805, followed by H, HH, L, LL or M, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model EFB followed by 0812 or 0824, followed by EH, H, HH, L, LL, M, SH or VH, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank; Model EFB followed by 0848, followed by EH, H, HH, L, M, SH or VH, followed by (Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank.

Models VHDAFB08(W)(Z), AUB0824(Z), AUB0812SHD, AUB0812LLD, AUB0812(X)(Y) Series, where (W) may be 12 or 24, (Z) may be SHD, VHD, HHD, HD, MD, LD or LLD, (X) may be VHD, HHD, HD, MD or LD, (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank.

Model EFC followed by 0812 or 0912, followed by A or B.

Models EFB, EUB followed by 0605, followed by HB, HHB, LB or MB; Models EFB, EUB followed by 0612 or 0624, followed by HB, HHB, LB, MB or VHB.

Models FFC1224DE(Y), FFC1248CE(Y), FFC1248DE(Y), FFC0812DE(Y), FFB1248XHE-M(Y), FFC1248DE-M(Y), FFB1448GHE-M(Y), FFB1448UHE-M (Y), FFB1424GHE-M(Y), FFB1424UHE-M(Y), where (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank.

Models FFB0412(X)(Y), FFB0424(X)(Y) Series, where (X) may be MN, HN, HHN or VHN,(Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank.

Models FFB0612GHE(Y), FFB0612(X)E(Y), FFB0624(X)E(Y), FFB0648SHE(Y), where (X) may be HH, VH, SH or EH, (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank.

Model FFB0624EHE-SV61.

Model FFB followed by 0412 or 0424, followed by HHN, HN, MN or VHN, may be followed by FOO, ROO or STD.

Model ASB or AUB followed by 0505, followed by HD, LD or MD; Model ASB or AUB followed by 0512 or 0524, followed by HD, HHD, LD, MD or VHD.

Model EFC followed by 0612BA, 0612AA.

Model AFB followed by 0612 or 0624, followed by LC, MC, HC, HHC, VHC; Model AFB followed by 0605, followed by LC, MC, HC; Model AUB or ASB followed by 1212 or 1224, followed by L, M, H, HH, VH, SH; Model EUB or ESB followed by 0912 or 0924, followed by L, M, H, HH, VH.

Models X0405Y(Y), X0412Q(Y), ASB0405Y(Y), ASB0412Y(Y), EFB0412MA-SM(Y), EFB0405HA-T6AC(Y), where X may be EFB, ESB or EUB, Y may be HA, HHA, LA or MA, Q may be HA, HHA, LA, MA or VHA, (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank.

Models (T)0405(X)B(Y), (T)04(V)(U)B(Y), (T)04505LA(Y), (T)04505MA(Y), (T)04512LA(Y), (T)04512MA(Y), (T)04512HA(Y), (Z)0512(X)(Y), ADB0612(X)(Y), BUB0524(W)D(Y), ASB02505LLA(Y), ASB02505(W)A(Y), ASB0424(A)A-A(Y) Series, where (T) may be AFB, AUB or ASB, (A) may be H, HH or VH, (T) may be AFB, AUB or ASB, (V) may be 12 or 24, (U) may be L, M, H, HH, VH, SH, (X) may be L, M, H or HH, (Z) may be ADB or AUB, (W) may be L, M, H, HH or VH, (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank.

Model 5F175.

Models AFB0712(Z)C(Y), AFB0724(Z)C(Y), (X)0712(W)B(Y), (X)0724(W)B(Y) series, where (X) may be AFB, AUB or ASB, (Z) may be L, M, H or HH, (W) may be LL, L, M, H or HH, (Y) may be xxxxx, where x may be A through Z, 0 through 9, "-" or blank.

Models HUB0705Y, HUB0712Q, HUB0724Q, HUB0805Y, HUB0812Q, HUB0824Q, where Y may be H, L or M, Q may be H, HH, L or M.

CSA INTERNATIONAL

CERTIFICATION RECORD

The company named below has been authorized by CSA International to represent the products listed in this record as "CSA Certified" and to affix the CSA Mark to these products according to the terms and conditions of the CSA Service Agreement and applicable CSA program requirements (including additional Markings).

File No: 091949_0_000

Class No: 3812 01 FANS AND BLOWERS

SUBMITTOR

4510824 Delta Electronics Inc
252 Shang Ying Rd
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Taoyuan Hsien, 333
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Thailand

4753103 Delta Electronics (Dongguan) Co Ltd
HeTianXia High Tech Industrial Pk

AUB0624LD	24	50	-
AUB0624M	24	160	-
AUB0624MD	24	60	-
AUB0624HD	24	80	-
AUB0624HHD	24	110	-
AUB0624VHD	24	140	-
AUB0624MB	24	80	F00 F05 R00 R05
AUB0624SH	24	200	STD R00 F00
AUB0624VH	24	180	STD R00 F00
AUB0624VHB	24	150	F00 F05 R00 R05
AUB0648EH	48	210	STD R00 F00
AUB0648SH	48	140	STD R00 F00
AUB0648VH	48	110	STD R00 F00

Note: Series AUB06XXX
1. Impellers removable without use of tools.
2. Condition of Acceptability: Accessibility to live parts to be determined at the end product.

AUB0712L	12	80	STD, F00, R00
AUB0712M	12	120	STD, F00, R00
AUB0712H	12	180	STD, F00, R00
AUB0712HH	12	210	STD, F00, R00
AUB0712VH	12	560	STD, F00, R00
AUB0712HH-5B22	12	400	0 to 9, A to Z
AUB0712HH-T6L1	12	400	0 to 9, A to Z, blank or "-"
AUB0712HH-5G85	12	400	0 to 9, A to Z
AUB0712LLB	12	120	STD, F00, R00
AUB0712LB	12	140	STD, F00, R00
AUB0712MB	12	240	STD, F00, R00
AUB0712HB	12	330	STD, F00, R00
AUB0712HHB	12	450	STD, F00, R00
AUB0712LD	12	90	0 to 9, A to Z
AUB0712MD	12	170	0 to 9, A to Z
AUB0712HD	12	260	0 to 9, A to Z
AUB0712HHD	12	330	0 to 9, A to Z

VDE Prüf- und Zertifizierungsinstitut

GUTACHTEN MIT FERTIGUNGSÜBERWACHUNG

CERTIFICATE OF CONFORMITY WITH FACTORY SURVEILLANCE

Delta Electronics Inc.
6F, No. 186, Ruey Kuang Road
11491 NEIHU, TAIPEI
TAIWAN

ist berechtigt, für ihr Produkt /
is authorized to use for their product

Einbauventilator für IT-Geräte
Fan for building-in, IT-equipment

die hier abgebildeten markenrechtlich geschützten Zeichen
für die ab Blatt 2 aufgeführten Typen zu benutzen /
the legally protected Marks as shown below for the types referred to on page 2 ff.

REG.-Nr. 1764 oder/or REG.-Nr. 1764 oder/or VDE-REG.-Nr. 1764

Geprüft und zertifiziert nach /
Tested and certified according to

DIN EN 60950-1 (VDE 0805 Teil 1):2011-01; EN 60950-1:2006 + A11:2009 + A1:2010
DIN EN 60950-1/A12 (VDE 0805-1/A12):2011-08; EN 60950-1/A12:2011-02
IEC 60950-1(ed.2);am1

Aktenzeichen: 1164100-2611-0003 / 165575
File ref.:

VDE Prüf- und Zertifizierungsinstitut GmbH
VDE Testing and Certification Institute
Zertifizierungsstelle / *Certification*

Ausweis-Nr. 128374 Blatt 1
Certificate No. *Page*

Weitere Bedingungen siehe Rückseite und Folgeblätter /
further conditions see overleaf and following pages

Offenbach, 2000-05-26
(letzte Änderung/updated 2012-03-27)

VDE Zertifikate sind nur gültig bei Veröffentlichung unter: http://www.vde.com/zertifikat
VDE certificates are valid only when published on: *http://www.vde.com/certificate*

VDE

Name und Sitz des Genehmigungs-Inhabers / *Name andregistered seat of the Certificate holder*
Delta Electronics Inc., 6F, No. 186, Ruey Kuang Road, 11491 NEIHU, TAIPEI, TAIWAN

Aktenzeichen / *File ref.*
1164100-2611-0003 / 165575 / FG13 / CNGD-SXU

letzte Änderung / *updated* 2012-03-27

Datum / *Date* 2000-05-26

Dieses Blatt gilt nur in Verbindung mit Blatt 1 des Gutachtens mit Fertigungsüberwachung Nr. 128374.
This supplement is only valid in conjunction with page 1 of the Certificate of Conformity with factory surveillance No. 128374.

Einbauventilator für IT-Geräte
Fan for building-in, IT-equipment

Typ(en) / *Type(s)*:

AUB0612VH/SH/EH	**DC 12V**
AUB0624VH/SH/EH	**DC 24V**
AUB0648VH/SH/EH	**DC 48V**
AUB0612LD/MD/HD/HHD/VHD	**DC 12V**
AUB0624LD/MD/HD/HHD/VHD	**DC 24V**
EFB1312LE/ME/HE/HHE/VHE/SHE	**DC 12V**
EFB1324LE/ME/HE/HHE/VHE/SHE	**DC 24V**
EFB1348LE/ME/HE/HHE/VHE	**DC 48V**
EFB0912LF/MF/HF/HHF/VHF/SHF	**DC 12V**
EFB0924LF/MF/HF/HHF/VHF/SHF	**DC 24V**
AFB1512L/M/H	**DC 12V**
AFB1712L/M/H	**DC 12V**
AUB0505LB/MB/HB	**DC 5V**
AUB0512LB/MB/HB/HHB	**DC 12V**
AUB0524LB/MB/HB/HHB	**DC 24V**
EFB1248L/M/H/HH/VH/SH	**DC 48V**
KFB03205LA/MA/HA/LP/MP/HP	**DC 5V**
EFB0812LF/MF/HF/HHF/VHF/SHF/EHF	**DC 12V**
EFB0824LF/MF/HF/HHF/VHF/SHF/EHF	**DC 24V**
AFB1212L/M/H/HH/VH/SH	**DC 12V**
AFB1224L/M/H/HH/VH/SH	**DC 24V**
EFC0912AE/BE	**DC 12V**
AFB0505LD/MD/HD	**DC 5V**
AFB0512LD/MD/HD/HHD/VHD	**DC 12V**
AFB0524LD/MD/HD/HHD/VHD	**DC 24V**
ASB0712L/M/H/HH/VH	**DC 12V**
ASB0724L/M/H/HH/VH	**DC 24V**
EFB0805LL/L/M/H/HH	**DC 5V**
EFB0812LL/L/M/H/HH/VH/SH/EH	**DC 12V**
EFB0824LL/L/M/H/HH/VH/SH/EH	**DC 24V**
EFB0848L/M/H/HH/VH/SH/EH	**DC 48V**
AUB/ASB0505LD/MD/HD	**DC 5V**
AUB/ASB0512LD/MD/HD/HHD/VHD	**DC 12V**
AUB/ASB0524LD/MD/HD/HHD/VHD	**DC 24V**
FFB0612HHE/VHE/SHE/EHE/GHE	**DC 12V**
FFB0624HHE/VHE/SHE/EHE	**DC 24V**

Fortsetzung siehe Blatt 3 /
continued on page 3

Name und Sitz des Genehmigungs-Inhabers / *Name andregistered seat of the Certificate holder*
Delta Electronics Inc., 6F, No. 186, Ruey Kuang Road, 11491 NEIHU, TAIPEI, TAIWAN

Aktenzeichen / *File ref.*
1164100-2611-0003 / 165575 / FG13 / CNGD-SXU

letzte Änderung / *updated* 2012-03-27

Datum / *Date* 2000-05-26

Dieses Blatt gilt nur in Verbindung mit Blatt 1 des Gutachtens mit Fertigungsüberwachung Nr. 128374.
This supplement is only valid in conjunction with page 1 of the Certificate of Conformity with factory surveillance No. 128374.

EFC0812A/B	**DC 12V**
EFC0912A/B	**DC 12V**
FFC0912DE	**DC 12V**
FFC0924DE	**DC 24V**
AUB0812LLD/SHD	**DC 12V**
AUB0824LLD/LD/MD/HD/HHD/VHD/SHD	**DC 24V**
AFB0812LLD/LD/MD/HD/HHD/VHD/SHD	**DC 12V**
AFB0824LLD/LD/MD/HD/HHD/VHD/SHD	**DC 24V**
EUB0605LB/MB/HB/HHB	**DC 5V**
EUB0612LB/MB/HB/HHB/VHB	**DC 12V**
EUB0624LB/MB/HB/HHB/VHB	**DC 24V**
FFC1348CE	**DC 48V**
KFB1712LT/MT/HT	**DC 12V**
KFB1724LT/MT/HT	**DC 24V**
KFB1748LT/MT/HT	**DC 48V**
EFC0612AA/BA	**DC 12V**
FFC1224DE	**DC 24V**
FFC1248DE	**DC 48V**
FFC1248CE	**DC 48V**
BFC1212C-STD/F00/F05/F05R	**DC 12V**
BFC1212C-R00/R05/R05R/RR0/RR05/RR05R	**DC 12V**
BFC1224C-STD/F00/F05/F05R	**DC 24V**
BFC1224C-R00/R05/R05R/RR0/RR05/RR05R	**DC 24V**
BFC1248C-STD/F00/F05/F05R	**DC 48V**
BFC1248C-R00/R05/R05R/RR0/RR05/RR05R	**DC 48V**
AFB0605LC/MC/HC	**DC 5V**
AFB0612LC/MC/HC/HHC/VHC	**DC 12V**
AFB0624LC/MC/HC/HHC/VHC	**DC 24V**
AUB/ASB1212L/M/H/HH/VH/SH	**DC 12V**
AUB/ASB1224L/M/H/HH/VH/SH	**DC 24V**
AFB/AUB/ASB0405LB/MB/HB/HHB	**DC 5V**
AFB/AUB/ASB0412LB/MB/HB/HHB/VHB/SHB	**DC 12V**
AFB/AUB/ASB0424LB/MB/HB/HHB/VHB/SHB	**DC 24V**
AFB/AUB/ASB04505LA/MA	**DC 5V**
AFB/AUB/ASB04512LA/MA/HA	**DC 12V**
EFB/EUB/ESB0405LA/MA/HA/HHA	**DC 5V**
EFB/EUB/ESB0412LA/MA/HA/HHA/VHA	**DC 12V**
KFB1012MS/HS/HHS	**DC 12V**
KFB1024MS/HS/HHS	**DC 24V**
KFB1048MS/HS/HHS	**DC 48V**
KFC1012DS	**DC 12V**

Fortsetzung siehe Blatt 4 /
continued on page 4

Name und Sitz des Genehmigungs-Inhabers / *Name andregistered seat of the Certificate holder*
Delta Electronics Inc., 6F, No. 186, Ruey Kuang Road, 11491 NEIHU, TAIPEI, TAIWAN

Aktenzeichen / *File ref.*
1164100-2611-0003 / 165575 / FG13 / CNGD-SXU

letzte Änderung / *updated* 2012-03-27

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Dieses Blatt gilt nur in Verbindung mit Blatt 1 des Gutachtens mit Fertigungsüberwachung Nr. 128374.
This supplement is only valid in conjunction with page 1 of the Certificate of Conformity with factory surveillance No. 128374.

KFC1024DS	**DC 24V**	
KFC1048DS	**DC 48V**	
AFB0712LLB/LB/MB/HB/HHB/LC/MC/HC/HHC		**DC 12V**
AFB0724LLB/LB/MB/HB/HHB/LC/MC/HC/HHC		**DC 24V**
AUB/ASB0712LLB/LB/MB/HB/HHB	**DC 12V**	
AUB/ASB0724LLB/LB/MB/HB/HHB	**DC 24V**	
AFC1212/AE/BE/DE	**DC 12V**	
AFC1224/AE/BE/DE	**DC 24V**	
AFC1248/AE/BE/DE	**DC 48V**	
GFB0405MF/HF/HHF	**DC 5V**	
GFB0412MF/HF/HHF/VHF	**DC 12V**	
GFB0424MF/HF/HHF/VHF	**DC 24V**	
FFB0412MN/HN/HHN/VHN	**DC 12V**	
FFB0424MN/HN/HHN/VHN	**DC 24V**	
GFB1212MW/HW/HHW/VHW	**DC 12V**	
GFB1224MW/HW/HHW/VHW	**DC 24V**	
GFB1248MW/HW/HHW/VHW	**DC 48V**	
GFB0812HHG/VHG/SHG	**DC 12V**	
GFB0824HHG/VHG/SHG	**DC 24V**	
EFC0912BF	**DC 12V**	
EFC0924AE/BE	**DC 24V**	
BFB1048LL/L/M/H	**DC 48V**	
KFB0112H	**DC 12V**	
FFC0924A/B	**DC 24V**	
FFB0912HH/VH/SH	**DC 12V**	
FFB0924HH/VH	**DC 24V**	
FFB0948HH/VH	**DC 48V**	
AFB0912LD/MD/HD/HHD/VHD	**DC 12V**	
AUB0912LD/MD/HD/HHD/VHD	**DC 12V**	
AFB0924LD/MD/HD/HHD/VHD	**DC 24V**	
AUB0924LD/MD/HD/HHD/VHD	**DC 24V**	
AFC0512AA/BB	**DC 12V**	
AFC0612AB/BB	**DC 12V**	
EFC1748DG-S41P	**DC 42V**	
BFB1012 VH	**DC 12V**	
AFB0712HD/HHD/VHD	**DC 12V**	
AFB0724HD/HHD/VHD	**DC 24V**	
EFC1748DG	**DC 48V**	
FFB1212HH/VH/SH/EH	**DC 12V**	
FFB1224HH/VH/SH/EH	**DC 24V**	
FFB1248HH/VH/SH/EH	**DC 48V**	

Fortsetzung siehe Blatt 5 /
continued on page 5

Name und Sitz des Genehmigungs-Inhabers / *Name andregistered seat of the Certificate holder*
Delta Electronics Inc., 6F, No. 186, Ruey Kuang Road, 11491 NEIHU, TAIPEI, TAIWAN

Aktenzeichen / *File ref.*
1164100-2611-0003 / 165575 / FG13 / CNGD-SXU

letzte Änderung / *updated* 2012-03-27

Datum / *Date* 2000-05-26

Dieses Blatt gilt nur in Verbindung mit Blatt 1 des Gutachtens mit Fertigungsüberwachung Nr. 128374.
This supplement is only valid in conjunction with page 1 of the Certificate of Conformity with factory surveillance No. 128374.

GFB0412SHE	**DC 12V**
GFB0612HHG/VHG/SHG	**DC 12V**
GFB0912HHG/VHG/SHG	**DC 12V**
GFB0624HHG/VHG	**DC 24V**
GFB0924HHG/VHG	**DC 24V**
GFB0948HHG/VHG	**DC 48V**
BFB05512MA/HA/HHA	**DC 12V**
EFC1212DF	**DC 12V**
EFC1224DF	**DC 24V**
EFC1248DF	**DC 48V**
EFC1212D	**DC 12V**
EFC1224D	**DC 24V**
EFC1248D	**DC 48V**
AFC1212D	**DC 12V**
AFC1224D	**DC 24V**
AFC1248D	**DC 48V**
FFC0848CE	**DC 48V**
FFC0912CE	**DC 12V**
EFB0812LB/MB/HB/HHB	**DC 12V**
EFB0824LB/MB/HB/HHB	**DC 24V**
KFB1748HHT	**DC 48V**
FFB0412SHN	**DC 12V**
AFB1548EH	**DC 48V**
AFC1548D	**DC 48V**
AFB1748EH	**DC 48V**
AFC1748D	**DC 48V**
AFB0712VHB	**DC 12V**
AFB0712HHB-P117	**DC 12V**
AFB0605LD/MD/HD/HHD	**DC 5V**
AUB0605LD/MD/HD/HHD	**DC 5V**
AFB0605L/M/H	**DC 5V**
BFB0612MB/HB	**DC 12V**
AFB0705L/M/H	**DC 5V**
GFB1212VHG	**DC 12V**
GFB1224SHG	**DC 24V**
AFC0912DE [new version]	**DC 12V**
AFB0912EHE/GHE/UHE	**DC 12V**

Zusatz zur Typenbezeichnung	Optional - Suffix 0 bis 9 oder A bis Z für optionale Signal-Ausgänge
Addition for type designation	*Optional - Suffix 0 to 9 or A to Z may be*

Fortsetzung siehe Blatt 6 /
continued on page 6

Name und Sitz des Genehmigungs-Inhabers / *Name andregistered seat of the Certificate holder*
Delta Electronics Inc., 6F, No. 186, Ruey Kuang Road, 11491 NEIHU, TAIPEI, TAIWAN

Aktenzeichen / *File ref.*
1164100-2611-0003 / 165575 / FG13 / CNGD-SXU

letzte Änderung / *updated* 2012-03-27

Datum / *Date* 2000-05-26

Dieses Blatt gilt nur in Verbindung mit Blatt 1 des Gutachtens mit Fertigungsüberwachung Nr. 128374.
This supplement is only valid in conjunction with page 1 of the Certificate of Conformity with factory surveillance No. 128374.

	added denoting optional signal lead
Nennspannung *Rated voltage*	min. DC 5V max. DC 48V
Nennstrom *Rated current*	siehe Anlagen zum Ausweis Nr.128374 *see Appendices to License No. 128374*
Umgebungstemperatur *Ambient temperature*	max. 70℃ (siehe Anlagen zum Ausweis Nr. 128374 ÜG) *(see Appendices to License No. 128374 ÜG)*
Schutzklasse *Class*	III
Schutzart *Degree of protection*	Einbauteil für Geräte der Informationstechnik *Component for IT equipment*
Einbaubedingungen *Built-in requirements*	Beim Einbau des genehmigten Erzeugnisses, der entsprechend der zugehörigen Installationsanleitung zu erfolgen hat, ist darauf zu achten, dass alle Anforderungen gemäß der oben genannten Bestimmung(en) eingehalten sind. *For the installation of the certified equipment, which has to be carried out according to the respective installation manual, all requirements of the standards mentioned above have to be fulfilled.*

Die Ventilatoren entsprechen dem Abschnitt 4.4.5.1c. Im End-system sollten entsprechende Schutzmaßnahmen getroffen werden, die das Berühren der beweglichen Teile des Ventilators durch den Benützer verhindern. Ein Warnsymbol oder ein Text in Übereinstimmung mit Abschnitt 4.4.5.2 sollen im Endgerät angebracht werden.
The fans are classified in accordance with clause 4.4.5.1c. Proper protection shall be provided in the end-system so that the possibility of contact by user with the moving parts of the fan is unlikely. A warning symbol or a warning statement in accordance with clause 4.4.5.2 shall be provided in the end-system.

Weitere Angaben *Further information*	siehe Anlagen Nr. 1 - 75 *see Appendices No. 1 - 75*

Fortsetzung siehe Blatt 7 /
continued on page 7

Name und Sitz des Genehmigungs-Inhabers / *Name andregistered seat of the Certificate holder*
Delta Electronics Inc., 6F, No. 186, Ruey Kuang Road, 11491 NEIHU, TAIPEI, TAIWAN

Aktenzeichen / *File ref.*	letzte Änderung / *updated*	Datum / *Date*
1164100-2611-0003 / 165575 / FG13 / CNGD-SXU	2012-03-27	2000-05-26

Dieses Blatt gilt nur in Verbindung mit Blatt 1 des Gutachtens mit Fertigungsüberwachung Nr. 128374.
This supplement is only valid in conjunction with page 1 of the Certificate of Conformity with factory surveillance No. 128374.

Dieser Zeichengenehmigungs-Ausweis bildet eine Grundlage für die EG-Konformitätserklärung und CE-Kennzeichnung durch den Hersteller oder dessen Bevollmächtigten und bescheinigt die Konformität mit den grundlegenden Schutzanforderungen der **EG-Niederspannungsrichtlinie 2006/95/EG** mit ihren Änderungen.
*This Marks Approval is a basis for the EC Declaration of Conformity and the CE Marking by the manufacturer or his agent and proves the conformity with the essential safety requirements of the **EC Low-Voltage Directive 2006/95/EC** including amendments.*

VDE Prüf- und Zertifizierungsinstitut GmbH
VDE Testing and Certification Institute
Fachgebiet FG13
Section FG13

VDE Prüf- und Zertifizierungsinstitut
Gutachten mit Fertigungsüberwachung

Ausweis-Nr. / Certificate No. 128374
Beiblatt / Supplement

Name und Sitz des Genehmigungs-Inhabers / *Name andregistered seat of the Certificate holder*
Delta Electronics Inc., 6F, No. 186, Ruey Kuang Road, 11491 NEIHU, TAIPEI, TAIWAN

Aktenzeichen / *File ref.*	letzte Änderung / *updated*	Datum / *Date*
1164100-2611-0003 / 165575 / FG13 / CNGD-SXU	2012-03-27	2000-05-26

Dieses Beiblatt ist Bestandteil des Gutachtens mit Fertigungsüberwachung Nr. 128374.
This supplement is part of the Certificate of Conformity with factory surveillance No. 128374.

Einbauventilator für IT-Geräte
Fan for building-in, IT-equipment

Fertigungsstätte(n)
Place(s) of manufacture

Referenz/*Reference* **30009495**	Delta Electronics (Dongguan) Co., Ltd. Hetianxia village 523300 SHIJIE TOWN, DONGGUAN CITY Guangdong CHINA
Referenz/*Reference* **30011790**	Delta Electronics (Jiang Su) Ltd. No. 1688 Jiangxing East Road Wujiang Economy Developm. Zone 215200 WUJIANG CITY, SUZHOU CITY Jiangsu CHINA
Referenz/*Reference* **30013236**	Delta Electronics (Thailand) Public Co., Ltd. 111 Moo 9 Wellgrow Industrial Est. Bangna-Trad Rd. Tambon Bangwa, Bangpakong TH-24180 CHACHOENGSAO

VDE Prüf- und Zertifizierungsinstitut GmbH
VDE Testing and Certification Institute
Fachgebiet FG13
Section FG13

VDE Prüf- und Zertifizierungsinstitut
Gutachten mit Fertigungsüberwachung

Ausweis-Nr. / Certificate No. 128374
Infoblatt / Info sheet

Name und Sitz des Genehmigungs-Inhabers / *Name andregistered seat of the Certificate holder*
Delta Electronics Inc., 6F, No. 186, Ruey Kuang Road, 11491 NEIHU, TAIPEI, TAIWAN

Aktenzeichen / *File ref.*	letzte Änderung / *updated*	Datum / *Date*
1164100-2611-0003 / 165575 / FG13 / CNGD-SXU	2012-03-27	2000-05-26

Dieses Blatt gilt nur in Verbindung mit Blatt 1 des Gutachtens mit Fertigungsüberwachung Nr. 128374.
This supplement is only valid in conjunction with page 1 of the Certificate of Conformity with factory surveillance No. 128374.

Genehmigung zum Benutzen des auf Seite 1 abgebildeten markenrechtlich geschützten Zeichens des VDE:

Grundlage für die Benutzung sind die Allgemeinen Geschäftsbedingungen (AGB) der VDE Prüf- und Zertifizierungsinstitut GmbH (www.vde.com\AGB-Institut). Das Recht zur Benutzung erstreckt sich nur auf die bezeichnete Firma mit den genannten Fertigungsstätten und die oben aufgeführten Produkte mit den zugeordneten Bezeichnungen. Die Fertigungsstätte muss so eingerichtet sein, dass eine gleichmäßige Herstellung der geprüften und zertifizierten Ausführung gewährleistet ist.
Die Genehmigung ist so lange gültig wie die VDE-Bestimmungen gelten, die der Zertifizierung zugrunde gelegen haben, sofern sie nicht auf Grund anderer Bedingungen aus der VDE Prüf- und Zertifizierungsordnung (PM102) zurückgezogen werden muss.
Der Gültigkeitszeitraum einer VDE-GS-Zeichengenehmigung kann auf Antrag verlängert werden. Bei gesetzlichen und / oder normativen Änderungen kann die VDE-GS-Zeichengenehmigung ihre Gültigkeit zu einem früheren als dem angegebenen Datum verlieren.
Produkte, die das Biozid Dimethylfumarat (DMF) enthalten, dürfen gemäß der Kommissionsentscheidung 2009/251/EG nicht mehr in den Verkehr gebracht oder auf dem Markt bereitgestellt werden.
Der VDE-Zeichengenehmigungsausweis wird ausschließlich auf der ersten Seite unterzeichnet.

Approval to use the legally protected Mark of the VDE as shown on the first page:
Basis for the use are the general terms and conditions of the VDE Testing and Certification Institute (www.vde.com\terms-institute). The right to use the mark is granted only to the mentioned company with the named places of manufacture and the listed products with the related type references. The place of manufacture shall be equipped in a way that a constant manufacturing of the certified construction is assured.
The approval is valid as long as the VDE specifications are in force, on which the certification is based on, unless it is withdrawn according to the VDE Testing and Certification Procedure (PM102E).
The validity period of a VDE-GS-Mark Approval may be prolonged on request. In case of changes in legal and / or normative requirements, the validity period of a VDE-GS-Mark Approval may be shortened.
Products containing the biocide dimethylfumarate (DMF) may not be marketed or made available on the EC market according to the Commission Decision 2009/251/EC.
The approval is solely signed on the first page.

5. Material RoHS Report

5.1 PBT+30%GF

5.2 AL6063-T5

5.3 SK7

5.4 SWRCH18A

5.5 PET OR PP AND INK

5.6 TC5121

Test Report

No. : CE/2012/A3314 Date : 2012/10/22

SHINKONG SYNTHETIC FIBERS CORPORATION
(SHINKONG INDUSTRY (HANGZHOU) CO., LTD.)
8F., NO. 123, SEC. 2, NANKING E. RD., TAIPEI, TAIWAN
(NO.1, AVENUE 6, ECONOMY & TECHNOLOGY DEVELOPMENT ZONE, HANGZHOU, CHINA)

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

Sample Description	:	THERMOPLASTIC POLYESTER RESIN
Style/Item No.	:	SHINITE ® PBT D202G30BK
Sample Receiving Date	:	2012/10/16
Testing Period	:	2012/10/16 TO 2012/10/22

==========

Test Requested	:	As specified by client, with reference to RoHS Directive 2011/65/EU Annex II to determine Cadmium, Lead, Mercury, Cr(VI), PBBs, PBDEs contents in the submitted sample.
Test Method	:	With reference to IEC 62321: 2008.
Test Result(s)	:	Please refer to next page(s).
Conclusion	:	Based on the performed tests on submitted samples, the test results of Cadmium, Lead, Mercury, Cr(VI), PBBs, PBDEs comply with the limits as set by RoHS Directive 2011/65/EU Annex II; recasting 2002/95/EC.

SGS TAIWAN LTD

Chenyu Kung / Operation Manager
Signed for and on behalf of
SGS TAIWAN LTD.
Chemical Laboratory – Taipei

Test Report

No. : CE/2012/A3314 Date : 2012/10/22

SHINKONG SYNTHETIC FIBERS CORPORATION
(SHINKONG INDUSTRY (HANGZHOU) CO., LTD.)
8F., NO. 123, SEC. 2, NANKING E. RD., TAIPEI, TAIWAN
(NO.1, AVENUE 6, ECONOMY & TECHNOLOGY DEVELOPMENT ZONE, HANGZHOU, CHINA)

Test Result(s)

PART NAME No.1 : BLACK PLASTIC PELLETS

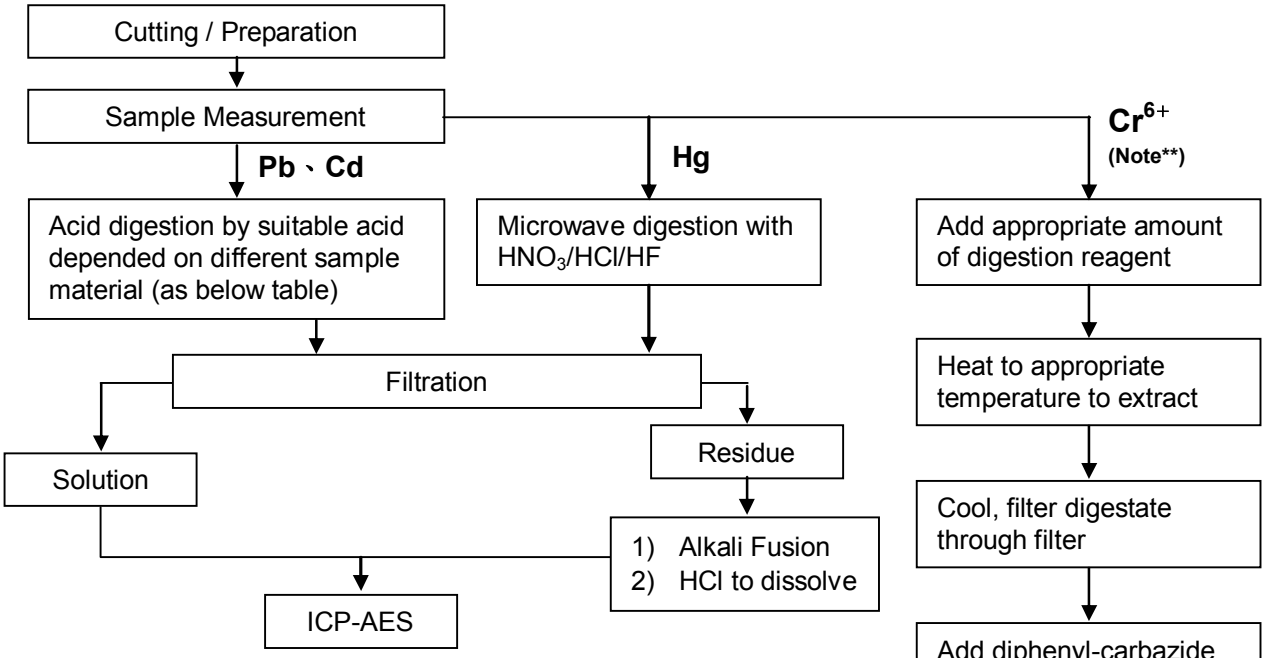
Test Item(s)	Unit	Method	MDL	Result No.1	Limit
Cadmium (Cd)	mg/kg	With reference to IEC 62321: 2008 and performed by ICP-AES.	2	n.d.	100
Lead (Pb)	mg/kg		2	12	1000
Mercury (Hg)	mg/kg		2	n.d.	1000
Hexavalent Chromium Cr(VI)	mg/kg	With reference to IEC 62321: 2008 and performed by UV-VIS.	2	n.d.	1000
Sum of PBBs	mg/kg	With reference to IEC 62321: 2008 and performed by GC/MS.	-	n.d.	1000
Monobromobiphenyl	mg/kg		5	n.d.	-
Dibromobiphenyl	mg/kg		5	n.d.	-
Tribromobiphenyl	mg/kg		5	n.d.	-
Tetrabromobiphenyl	mg/kg		5	n.d.	-
Pentabromobiphenyl	mg/kg		5	n.d.	-
Hexabromobiphenyl	mg/kg		5	n.d.	-
Heptabromobiphenyl	mg/kg		5	n.d.	-
Octabromobiphenyl	mg/kg		5	n.d.	-
Nonabromobiphenyl	mg/kg		5	n.d.	-
Decabromobiphenyl	mg/kg		5	n.d.	-
Sum of PBDEs	mg/kg		-	n.d.	1000
Monobromodiphenyl ether	mg/kg		5	n.d.	-
Dibromodiphenyl ether	mg/kg		5	n.d.	-
Tribromodiphenyl ether	mg/kg		5	n.d.	-
Tetrabromodiphenyl ether	mg/kg		5	n.d.	-
Pentabromodiphenyl ether	mg/kg		5	n.d.	-
Hexabromodiphenyl ether	mg/kg		5	n.d.	-
Heptabromodiphenyl ether	mg/kg		5	n.d.	-
Octabromodiphenyl ether	mg/kg		5	n.d.	-
Nonabromodiphenyl ether	mg/kg		5	n.d.	-
Decabromodiphenyl ether	mg/kg		5	n.d.	-

Note：

1. mg/kg = ppm；0.1wt% = 1000ppm
2. n.d. = Not Detected
3. MDL = Method Detection Limit
4. " - " = Not Regulated

SHINKONG SYNTHETIC FIBERS CORPORATION
(SHINKONG INDUSTRY (HANGZHOU) CO., LTD.)
8F., NO. 123, SEC. 2, NANKING E. RD., TAIPEI, TAIWAN
(NO.1, AVENUE 6, ECONOMY & TECHNOLOGY DEVELOPMENT ZONE, HANGZHOU, CHINA)

1) These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr^{6+} test method excluded)
2) Name of the person who made measurement: Climbgreat Yang
3) Name of the person in charge of measurement: Troy Chang



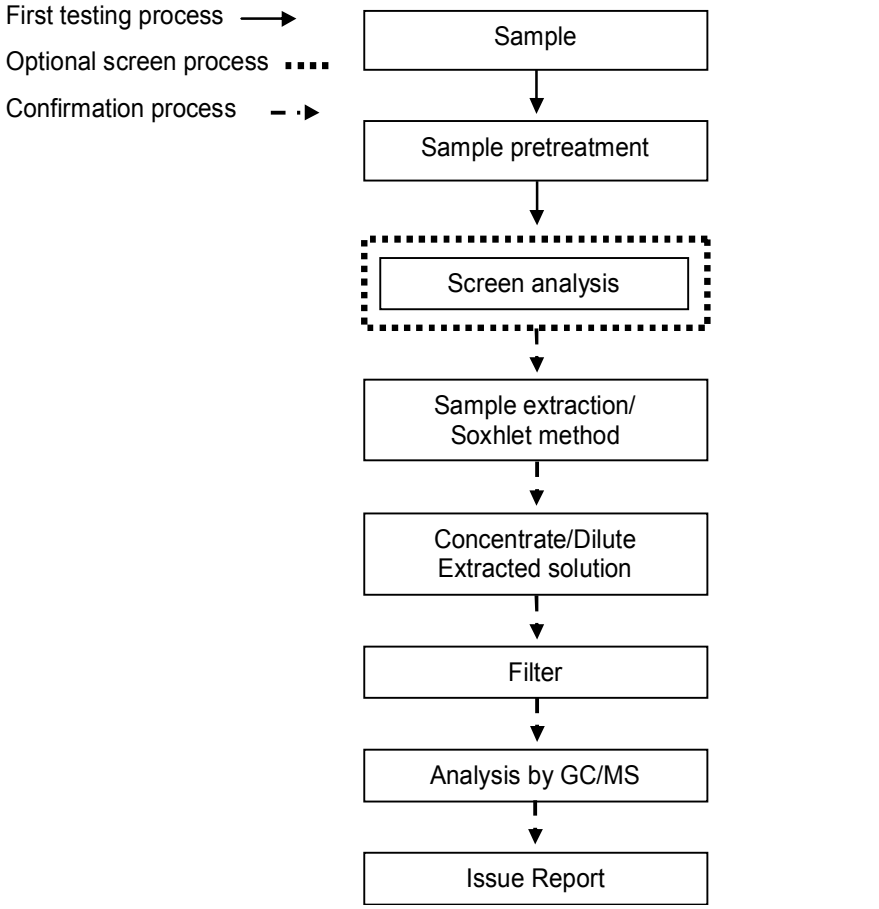
Sample Material	Digestion Acid
Steel, copper, aluminum, solder	Aqua regia, HNO_3, HCl, HF, H_2O_2
Glass	HNO_3/HF
Gold, platinum, palladium, ceramic	Aqua regia
Silver	HNO_3
Plastic	H_2SO_4, H_2O_2, HNO_3, HCl
Others	Added appropriate reagent to total digestion

Note :** (1) For non-metallic material, add alkaline digestion reagent and heat to 90~95℃.
(2) For metallic material, add pure water and heat to boiling.

SHINKONG SYNTHETIC FIBERS CORPORATION
(SHINKONG INDUSTRY (HANGZHOU) CO., LTD.)
8F., NO. 123, SEC. 2, NANKING E. RD., TAIPEI, TAIWAN
(NO.1, AVENUE 6, ECONOMY & TECHNOLOGY DEVELOPMENT ZONE, HANGZHOU, CHINA)

PBB/PBDE analytical FLOW CHART

- Name of the person who made measurement: Roman Wong
- Name of the person in charge of measurement: Troy Chang



Test Report

No. : CE/2012/A3314 Date : 2012/10/22

SHINKONG SYNTHETIC FIBERS CORPORATION
(SHINKONG INDUSTRY (HANGZHOU) CO., LTD.)
8F., NO. 123, SEC. 2, NANKING E. RD., TAIPEI, TAIWAN
(NO.1, AVENUE 6, ECONOMY & TECHNOLOGY DEVELOPMENT ZONE, HANGZHOU, CHINA)

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

CE/2012/A3314

** End of Report **

Test Report

HANG YUE(CHINA)ENTERPRISES COMPANY LIMITED

HENGXING INDUSTRY BUILDING,YINHE SOUTH ROAD,SHUINAN ZONE,SHIJIE TOWN,DONGGUAN,P.R.C

The following sample(s) was/were submitted and identified on behalf of the clients as : AL6063

SGS Job No. :	GC120601982 - GZ
Date of Sample Received :	14 Jun 2012
Testing Period :	14 Jun 2012 - 20 Jun 2012
Test Requested :	Selected test(s) as requested by client.
Test Method :	Please refer to next page(s).
Test Results :	Please refer to next page(s).
Conclusion :	A: Based on the performed tests on submitted samples, the results of Lead, Mercury, Cadmium, Hexavalent chromium comply with the limits as set by RoHS Directive 2011/65/EU Annex II; recasting 2002/95/EC.

Signed for and on behalf of
SGS-CSTC Ltd.

Silva Zhou
Approved Signatory

SGS-CSTC Standards Technical Services Co., Ltd. Guangzhou Testing Laboratory
198 Kezhu Road,Scientech Park Guangzhou Economic & Technology Development District,Guangzhou,China 510663 t (86-20) 82155555 f (86-20) 82075113 www.cn.sgs.com
中国·广州·经济技术开发区科学城科珠路198号 邮编: 510663 t (86-20) 82155555 f (86-20) 82075113 e sgs.china@sgs.com
Member of the SGS Group (SGS SA)

Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description
1	CAN12-077386.001	Silvery metal

Remarks :

(1) 1 mg/kg = 1 ppm = 0.0001%

(2) MDL = Method Detection Limit

(3) ND = Not Detected (< MDL)

(4) "-" = Not Regulated

A: RoHS Directive 2011/65/EU

Test Method : With reference to IEC 62321:2008

(1) Determination of Cadmium by ICP-OES.

(2) Determination of Lead by ICP-OES.

(3) Determination of Mercury by ICP-OES.

(4) Determination of Hexavalent Chromium by Spot test / Colorimetric Method using UV-Vis.

Test Item(s)	Limit	Unit	MDL	*001*
Cadmium (Cd)	100	mg/kg	2	ND
Lead (Pb)	1,000	mg/kg	2	11
Mercury (Hg)	1,000	mg/kg	2	ND
Hexavalent Chromium (CrVI)	-	-	◇	Negative

Notes :

(1) The maximum permissible limit is quoted from the directive 2011/65/EU, Annex II

(2)◇Spot-test:

Negative = Absence of CrVI coating, Positive = Presence of CrVI coating;

(The tested sample should be further verified by boiling-water-extraction method if the spot test result is Negative or cannot be confirmed.)

◇Boiling-water-extraction:

Negative = Absence of CrVI coating

Positive = Presence of CrVI coating; the detected concentration in boiling-water-extraction solution is equal or greater than 0.02 mg/kg with 50 cm2 sample surface area.

For corrosion protection coatings on metals: Information on storage conditions and production date of the tested sample is unavailable and thus results of Cr(VI) represent status of the sample at the time of testing.

198 Kezhu Road,Scientech Park Guangzhou Economic & Technology Development District,Guangzhou,China 510663 t (86-20) 82155555 f (86-20) 82075113 www.cn.sgs.com
中国·广州·经济技术开发区科学城科珠路198号 邮编: 510663 t (86-20) 82155555 f (86-20) 82075113 e sgs.china@sgs.com

B: PFOS (Perfluorooctane Sulfonates)

Test Method : With reference to US EPA Method 3550C: 2007, analysis was performed by HPLC-MS.

Test Item(s)	Unit	MDL	001
Perfluorooctane Sulfonates (PFOS) and related Acid,Metal Salt and Amide	mg/kg	10	ND

Notes :

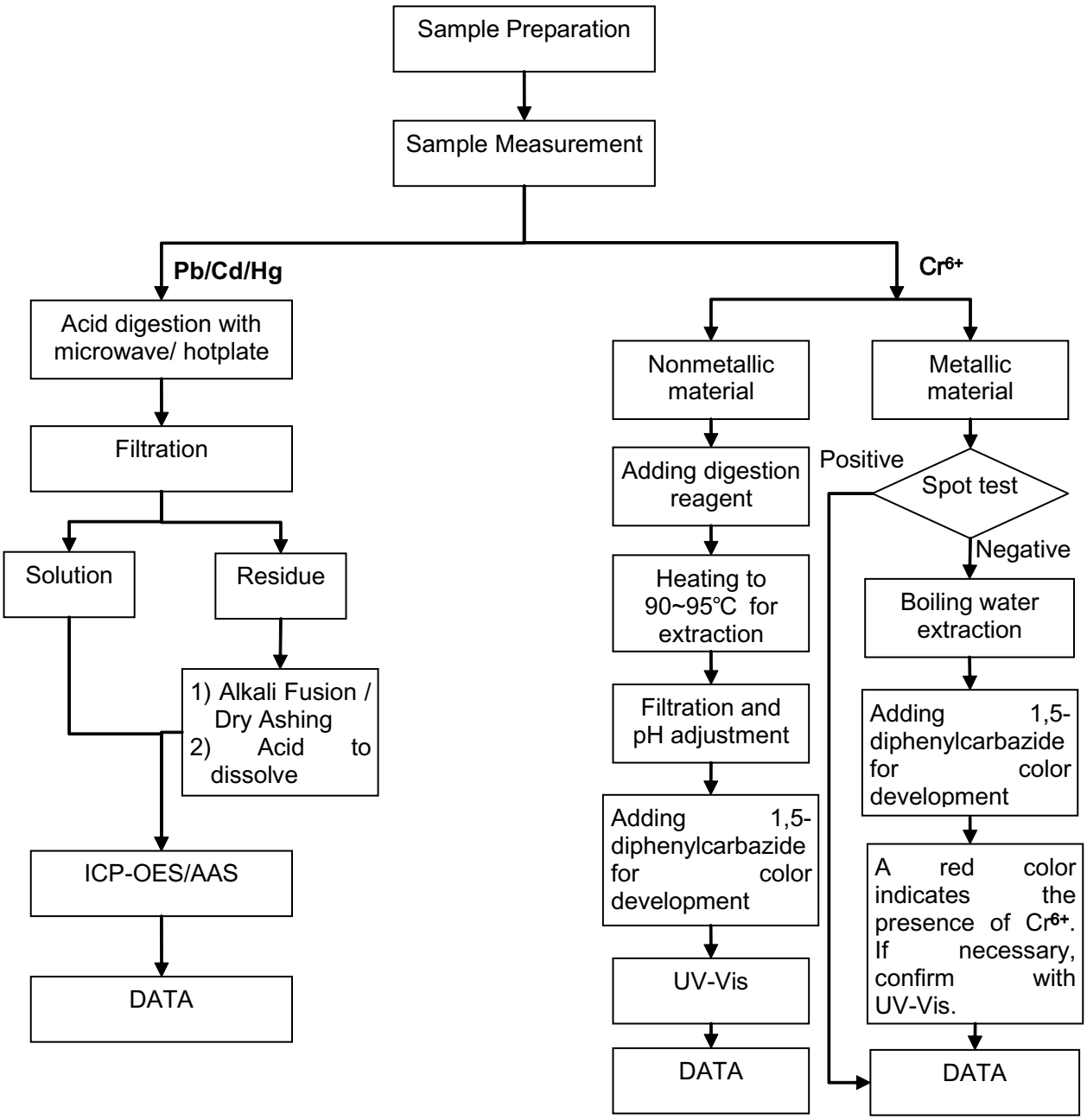
For reference: commission regulation (EU) No 757/2010 amending regulation (EC) No 850/2004:
(1) For the purposes of this entry, Article 4(1) (b) shall apply to concentrations of PFOS equal to or below 10 mg/kg (0,001 % by weight) when it occurs in substances or in preparations.
(2) For the purposes of this entry, Article 4(1) (b) shall apply to concentrations of PFOS in semi-finished products or articles, or parts thereof, if the concentration of PFOS is lower than 0,1 % by weight calculated with reference to the mass of structurally or micro-structurally distinct parts that contain PFOS or, for textiles or other coated materials, if the amount of PFOS is lower than 1µg /m2 of the coated material.

SGS-CSTC Standards Technical Services Co., Ltd. Guangzhou Testing Service Chemical Laboratory
198 Kezhu Road,Scientech Park Guangzhou Economic & Technology Development District,Guangzhou,China 510663 t (86-20) 82155555 f (86-20) 82075113 www.cn.sgs.com
中国·广州·经济技术开发区科学城科珠路198号 邮编: 510663 t (86-20) 82155555 f (86-20) 82075113 e sgs.china@sgs.com
Member of the SGS Group (SGS SA)

ATTACHMENTS

RoHS Testing Flow Chart

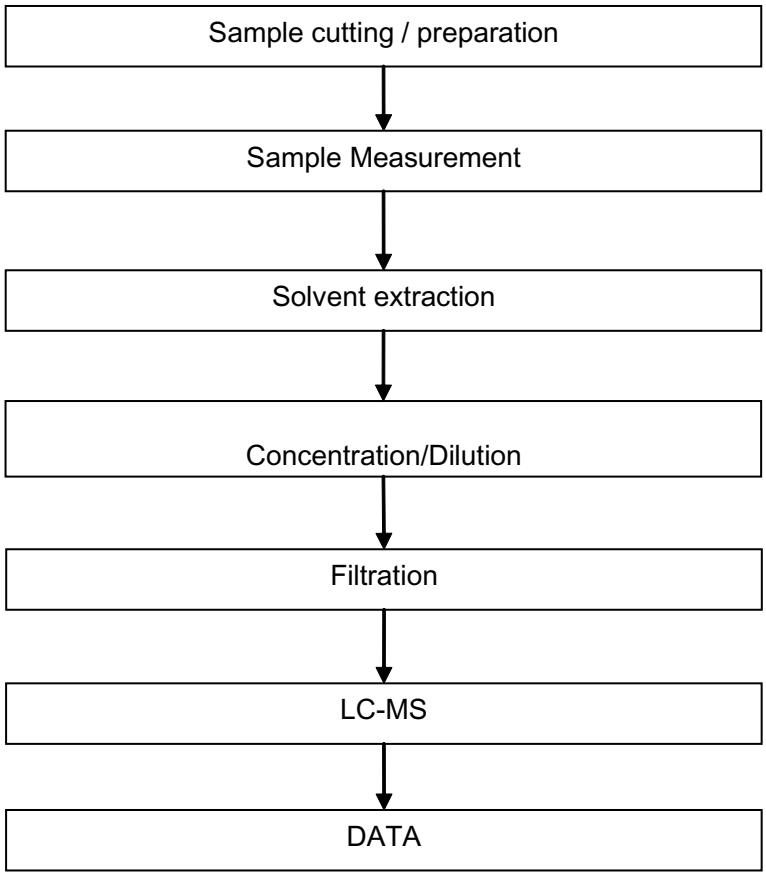
1) Name of the person who made testing: Bella Wang
2) Name of the person in charge of testing: Adams Yu
3) These samples were dissolved totally by pre-conditioning method according to below flow chart (Cr6+ test method excluded).



ATTACHMENTS

PFOA / PFOS Testing Flow Chart

1) Name of the person who made testing: Cindy Huang
2) Name of the person in charge of testing: Ryan Yang



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中国·广州·经济技术开发区科学城科珠路198号 邮编: 510663 t (86-20) 82155555 f (86-20) 82075113 e sgs.china@sgs.com

Sample photo:

CAN12-077386.001

SGS authenticate the photo on original report only

*** End of Report ***

SGS-CSTC Standards Technical Services Co., Ltd. Guangzhou Testing Laboratory Chemical Laboratory
198 Kezhu Road,Scientech Park Guangzhou Economic & Technology Development District,Guangzhou,China 510663 t (86-20) 82155555 f (86-20) 82075113 www.cn.sgs.com
中国·广州·经济技术开发区科学城科珠路198号 邮编: 510663 t (86-20) 82155555 f (86-20) 82075113 e sgs.china@sgs.com

DONGGUAN TAILIAN STAINCES STEEL CO.,LTD
FENGHUANGGANG JINTANG RORD NO.58 TANGXIA TOWN DONGGUAN CITY OF GUANGDONG CHINA

The following sample(s) was/were submitted and identified on behalf of the clients as : SK7

SGS Job No. :	13487673 - GZ
Internal Reference No. :	GC111122373-5.2
Date of Sample Received :	15 Nov 2012
Testing Period :	15 Nov 2012- 18 Nov 2012
Test Requested :	Selected test(s) as requested by client.
Test Method :	Please refer to next page(s).
Test Results :	Please refer to next page(s).
Conclusion :	Based on the performed tests on selected part of submitted sample(s), the results of Lead, Mercury, Cadmium, Hexavalent chromium comply with the limits in RoHS Directive 2011/65/EU Annex II; recasting 2002/95/EC.

Signed for and on behalf of
SGS-CSTC Ltd.

Merry Lv
Approved Signatory

SGS-CSTC Standards Technical Services Co., Ltd. Guangzhou Testing Service Center Chemical Laboratory
198 Kezhu Road,Scientech Park Guangzhou Economic & Technology Development District,Guangzhou,China 510663 t (86-20) 82155555 f (86-20) 82075113 www.cn.sgs.com
中国·广州·经济技术开发区科学城科珠路198号 邮编: 510663 t (86-20) 82155555 f (86-20) 82075113 e sgs.china@sgs.com
Member of the SGS Group (SGS SA)

Test Results :

Test Part Description :

Specimen No	SGS Sample ID	Description
1	CAN11-109476.002	Silver-grey metal sheet

Remarks :

(1) 1 mg/kg = 1 ppm = 0.0001%

(2) MDL = Method Detection Limit

(3) ND = Not Detected (< MDL)

(4) "-" = Not Regulated

RoHS Directive 2011/65/EU

Test Method : With reference to IEC 62321:2008

(1) Determination of Cadmium by ICP-OES.

(2) Determination of Lead by ICP-OES.

(3) Determination of Mercury by ICP-OES.

(4) Determination of Hexavalent Chromium by Spot test / Colorimetric Method using UV-Vis.

Test Item(s)	Limit	Unit	MDL	*002*
Cadmium (Cd)	100	mg/kg	2	ND
Lead (Pb)	1,000	mg/kg	2	ND
Mercury (Hg)	1,000	mg/kg	2	ND
Hexavalent Chromium (CrVI)	-	-	◇	Negative

Notes :

(1) The maximum permissible limit is quoted from the directive 2011/65/EU, Annex II

(2) ◇ Spot-test:

Negative = Absence of CrVI coating, Positive = Presence of CrVI coating;

The tested sample should be further verified by boiling-water-extraction method if the spot test result is Negative or cannot be confirmed.

◇ Boiling-water-extraction:

Negative = Absence of CrVI coating; Positive = Presence of CrVI coating

The detected concentration in boiling-water-extraction solution is equal or greater than 0.02 mg/kg with 50 cm^2 sample surface area.

For corrosion protection coatings on metals: Information on storage conditions and production date of the tested sample is unavailable and thus results of Cr(VI) represent status of the sample at the time of testing

198 Kezhu Road,Scientech Park Guangzhou Economic & Technology Development District,Guangzhou,China 510663 t (86-20) 82155555 f (86-20) 82075113 www.cn.sgs.com
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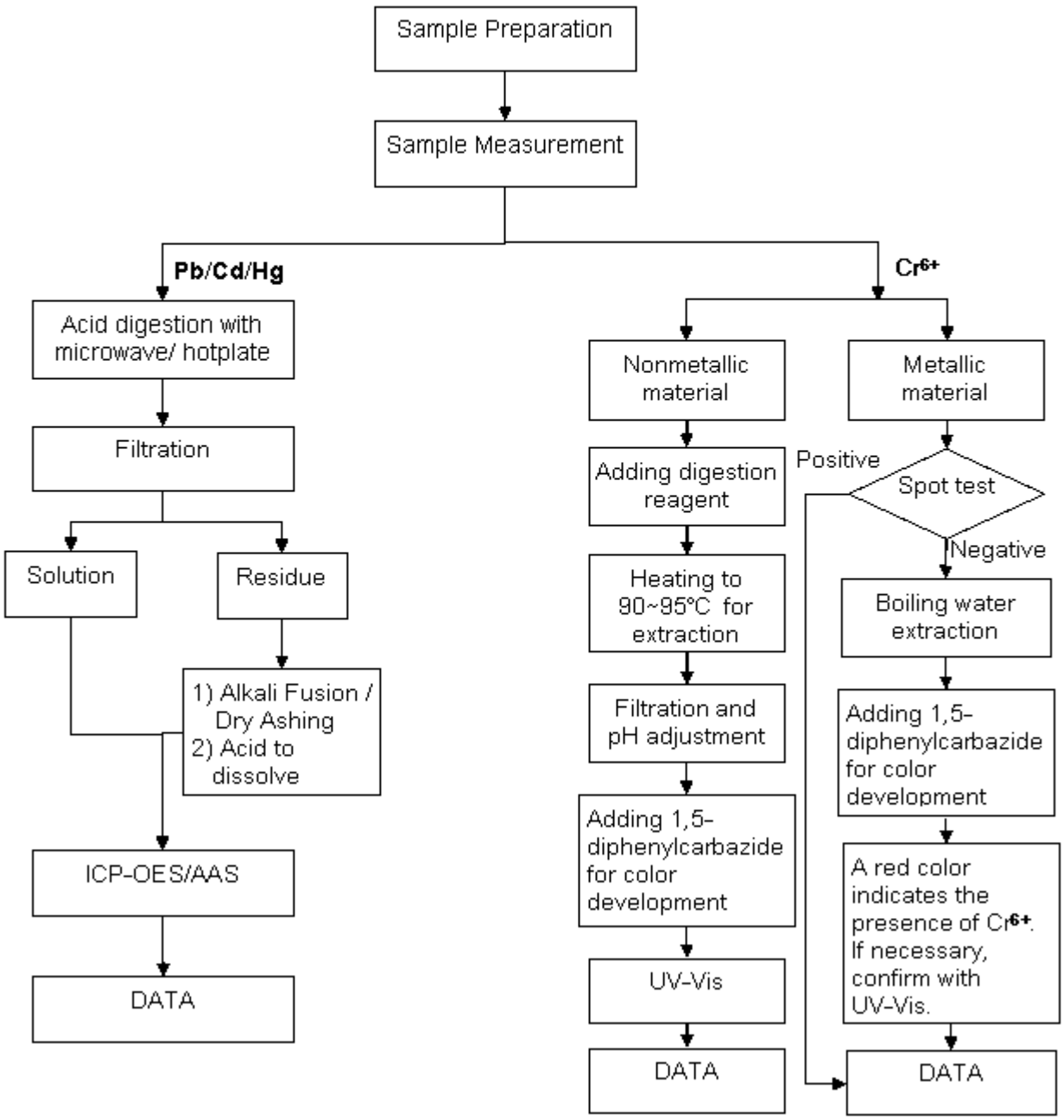
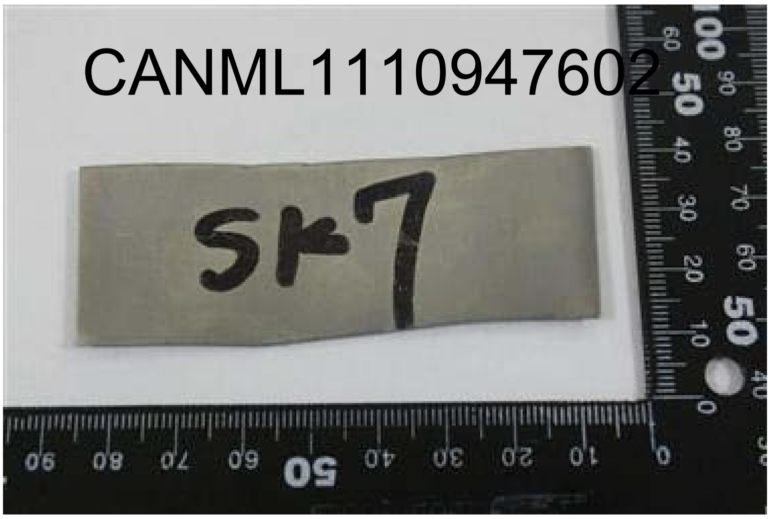
ATTACHMENTS

RoHS Testing Flow Chart

1) Name of the person who made testing: Bella Wang / Ross Zhan
2) Name of the person in charge of testing: Adams Yu
3) These samples were dissolved totally by pre-conditioning method according to below flow chart (Cr6+ test method excluded).



Sample photo:



CAN11-109476.002

SGS authenticate the photo on original report only

*** End of Report ***

DONGGUAN YILIANG METAL PRODUCTS CO.,LTD.

PING SHAN DALANG DONG GUAN GUANG DONG
CHINA

The following sample(s) was/were submitted and identified on behalf of the clients as : WIRE

SGS Job No. :	GC121122926 - GZ
Client Ref. Info. :	SWRCH18A
Supplier :	B(in chinese as宝钢)
Date of Sample Received :	19 Nov 2012
Testing Period :	19 Nov 2012 - 22 Nov 2012
Test Requested :	Selected test(s) as requested by client.
Test Method :	Please refer to next page(s).
Test Results :	Please refer to next page(s).
Conclusion :	Based on the performed tests on submitted samples, the results of Lead, Mercury, Cadmium, Hexavalent chromium comply with the limits as set by RoHS Directive 2011/65/EU Annex II; recasting 2002/95/EC.

Signed for and on behalf of
SGS-CSTC Ltd.

Merry Lv
Approved Signatory

Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description
1	CAN12-156834.001	Silver-gray metal rod

Remarks :

(1) 1 mg/kg = 1 ppm = 0.0001%

(2) MDL = Method Detection Limit

(3) ND = Not Detected (< MDL)

(4) "-" = Not Regulated

RoHS Directive 2011/65/EU

Test Method : With reference to IEC 62321:2008

(1) Determination of Cadmium by ICP-OES.

(2) Determination of Lead by ICP-OES.

(3) Determination of Mercury by ICP-OES.

(4) Determination of Hexavalent Chromium by Spot test / Colorimetric Method using UV-Vis.

Test Item(s)	Limit	Unit	MDL	001
Cadmium (Cd)	100	mg/kg	2	ND
Lead (Pb)	1,000	mg/kg	2	ND
Mercury (Hg)	1,000	mg/kg	2	ND
Hexavalent Chromium (CrVI)	-	-	◇	Negative

Notes :

(1) The maximum permissible limit is quoted from the directive 2011/65/EU, Annex II

(2)◇Spot-test:

Negative = Absence of CrVI coating, Positive = Presence of CrVI coating;

(The tested sample should be further verified by boiling-water-extraction method if the spot test result is Negative or cannot be confirmed.)

◇Boiling-water-extraction:

Negative = Absence of CrVI coating

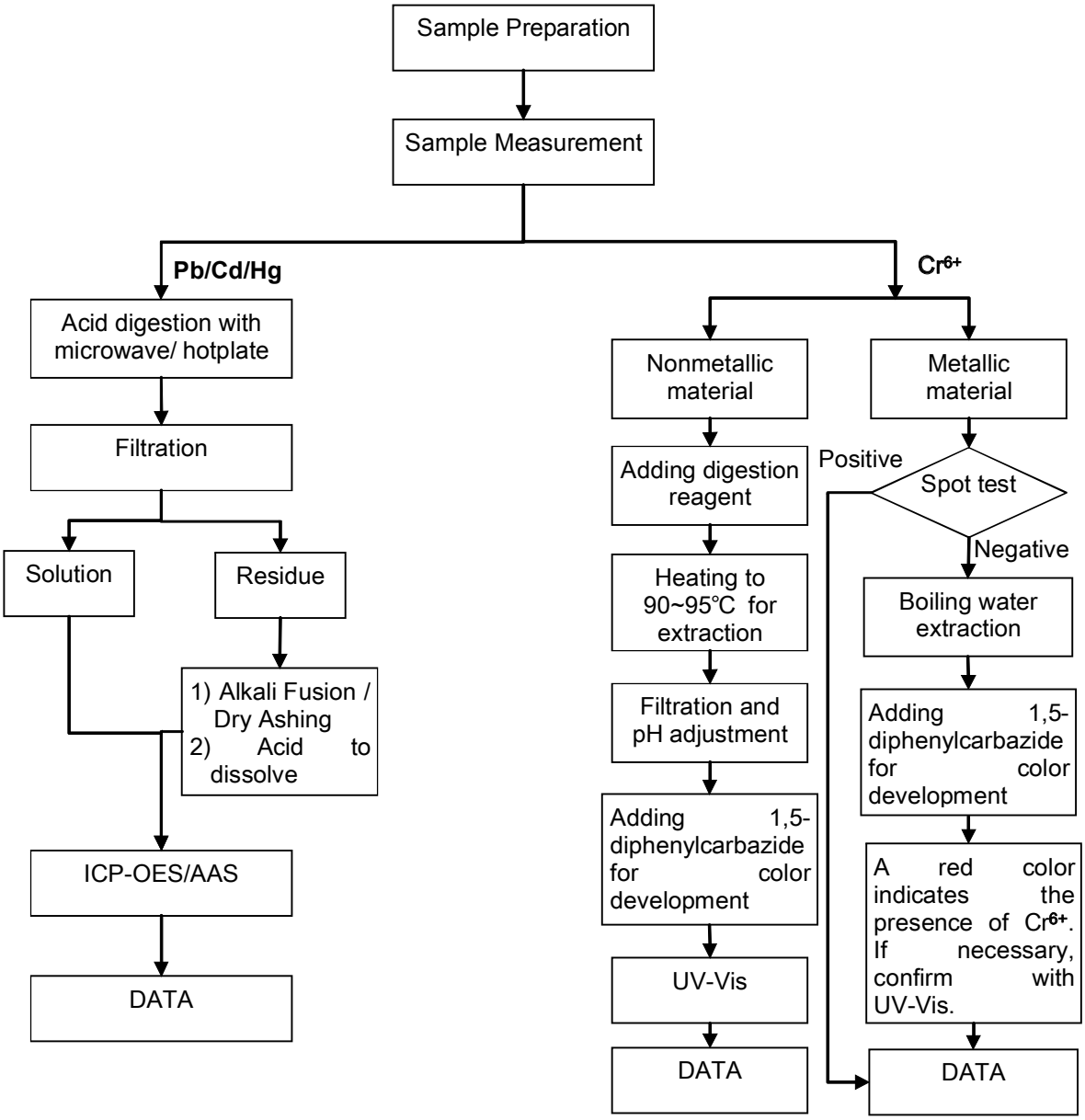
Positive = Presence of CrVI coating; the detected concentration in boiling-water-extraction solution is equal or greater than 0.02 mg/kg with 50 cm2 sample surface area.

For corrosion protection coatings on metals: Information on storage conditions and production date of the tested sample is unavailable and thus results of Cr(VI) represent status of the sample at the time of testing.

ATTACHMENTS

RoHS Testing Flow Chart

1) Name of the person who made testing: Michael Tso
2) Name of the person in charge of testing: Adams Yu
3) These samples were dissolved totally by pre-conditioning method according to below flow chart (Cr6+ test method excluded).



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中国·广州·经济技术开发区科学城科珠路198号 邮编: 510663 t (86-20) 82155555 f (86-20) 82075113 e sgs.china@sgs.com

Sample photo:

CAN12-156834.001

SGS authenticate the photo on original report only

*** End of Report ***

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中国·广州·经济技术开发区科学城科珠路198号 邮编: 510663 t (86-20) 82155555 f (86-20) 82075113 e sgs.china@sgs.com

Test Report

Report No. RLSZE001526960001

Applicant DONGGUAN SUNWAY PRINTING INDUSTRY CO.,LTD
Address YINLING INDUSTRIAL, XIAQIAO GUANLONG ROAD, DONGCHENG ZONE, DONGGUAN CITY, GUANGDONG PROVINCE, CHINA

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

Sample Name	PET
Part No.	MZ0050
Color	哑银
Material	PET
Sample Received Date	Dec. 18, 2012
Testing Period	Dec. 18, 2012 to Dec. 20, 2012

Test Requested As specified by client, to test Diisobutyl phthalate(DIBP) in the submitted sample and it was tested as a whole.

Test Method

Test Item(s)	Test Method	Measured Equipment(s)	MDL
Diisobutyl phthalate(DIBP)	Refer to EN 14372:2004	GC-MS	50 mg/kg

Test Result(s) Please refer to the following page(s).

Tested by Rick Lin

Approved by

Danny Liu

Technical Manager

Reviewed by Vargas He

Date Dec. 20, 2012

No. 38798478

Centre Testing International (Shenzhen) Co., Ltd. Hongwei Industrial Zone, Bao'an 70 District, Shenzhen, Guangdong, China

Test Report

Report No. RLSZE001526960001

Test Result(s)

Tested Item(s)	CAS No.	EC No.	Result
Diisobutyl phthalate(DIBP)	84-69-5	201-553-2	N.D.

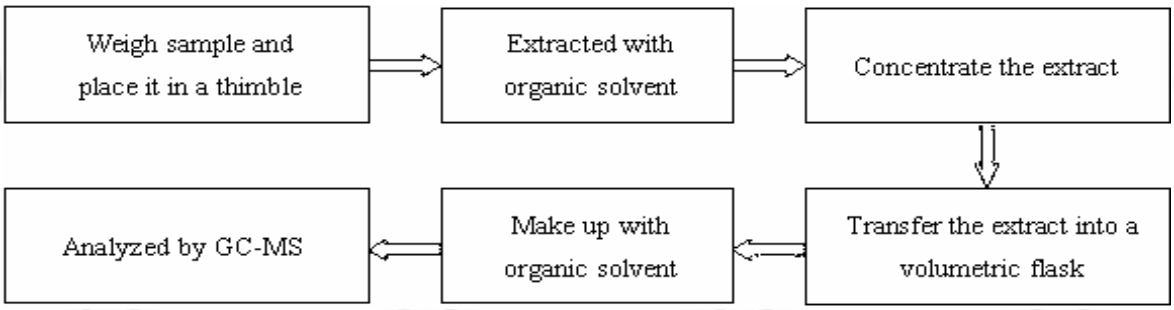
Tested Sample/Part Description Silver-white film with adhesive paste

Note: -MDL = Method Detection Limit

-N.D. = Not Detected (<MDL)

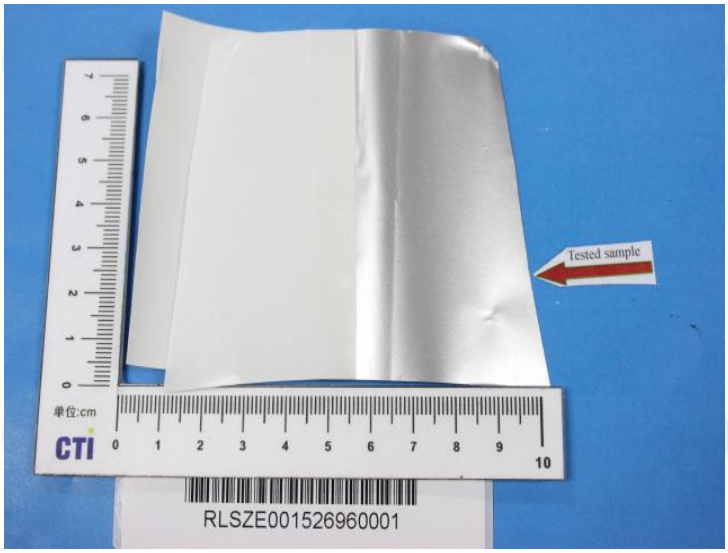
-mg/kg = ppm = parts per million

Test Process



Test Report

Photo(s) of the sample(s)



*** End of report ***

Test Report

Report No. RLSZF001577440003

Applicant DONGGUAN SUNWAY PRINTING INDUSTRY CO.,LTD
Address YINLING INDUSTRIAL, XIAQIAO GUANLONG ROAD, DONGCHENG ZONE, DONGGUAN CITY, GUANGDONG PROVINCE, CHINA

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

Sample Name	INK
Part No.	新宝龙黑
Color	Black
Material	INK
Manufacturer	深日
Sample Received Date	Feb. 2, 2013
Testing Period	Feb. 2, 2013 to Feb. 6, 2013

Test Requested As specified by client, to test Lead(Pb), Cadmium(Cd), Mercury(Hg), Hexavalent Chromium(Cr(VI)), Polybrominated Biphenyls(PBBs), Polybrominated Diphenyl Ethers(PBDEs), Fluorine(F), Chlorine(Cl), Bromine(Br), Iodine(I), Hexabromocyclododecane(HBCDD), Phthalates in the submitted sample(s).

Test Method Please refer to the following page(s).

Test Result(s) Please refer to the following page(s).

Tested by Rick Li Reviewed by Vargas He

Approved by Danny Liu Date Feb. 6, 2013

Technical Manager

No. 14465604

Test Report

Test Method

Test Item(s)	Test Method	Measured Equipment(s)	MDL
Lead(Pb)	IEC 62321:2008 Ed.1 Sec.10	ICP-OES	2 mg/kg
Cadmium(Cd)	IEC 62321:2008 Ed.1 Sec.10	ICP-OES	2 mg/kg
Mercury(Hg)	IEC 62321:2008 Ed.1 Sec.7	ICP-OES	2 mg/kg
Hexavalent Chromium(Cr(VI))	IEC 62321:2008 Ed.1 Annex C	UV-Vis	2 mg/kg
Polybrominated Biphenyls(PBBs)	IEC 62321:2008 Ed.1 Annex A	GC-MS	5 mg/kg
Polybrominated Diphenyl Ethers(PBDEs)	IEC 62321:2008 Ed.1 Annex A	GC-MS	5 mg/kg
Fluorine(F)	Refer to BS EN 14582:2007	IC	10 mg/kg
Chlorine(Cl)	Refer to BS EN 14582:2007	IC	10 mg/kg
Bromine(Br)	Refer to BS EN 14582:2007	IC	10 mg/kg
Iodine(I)	Refer to BS EN 14582:2007	IC	10 mg/kg
Phthalates	Refer to EN 14372:2004	GC-MS	50 mg/kg
Hexabromocyclododecane(HBCDD)	Refer to US EPA 3540C:1996	GC-MS	5 mg/kg

Test Result(s)

Tested Item(s)	**Result**
Lead(Pb)	N.D.
Cadmium (Cd)	N.D.
Mercury(Hg)	N.D.
Hexavalent Chromium(Cr(VI))	N.D.

Tested Item(s)	**Result**
Polybrominated Biphenyls(PBBs)	
Monobromobiphenyl	N.D.
Dibromobiphenyl	N.D.
Tribromobiphenyl	N.D.
Tetrabromobiphenyl	N.D.
Pentabromobiphenyl	N.D.
Hexabromobiphenyl	N.D.
Heptabromobiphenyl	N.D.
Octabromobiphenyl	N.D.
Nonabromobiphenyl	N.D.
Decabromobiphenyl	N.D.

Test Report

Tested Item(s)	Result
Polybrominated Diphenyl Ethers(PBDEs)	
Monobromodiphenyl ether	N.D.
Dibromodiphenyl ether	N.D.
Tribromodiphenyl ether	N.D.
Tetrabromodiphenyl ether	N.D.
Pentabromodiphenyl ether	N.D.
Hexabromodiphenyl ether	N.D.
Heptabromodiphenyl ether	N.D.
Octabromodiphenyl ether	N.D.
Nonabromodiphenyl ether	N.D.
Decabromodiphenyl ether	N.D.

Tested Item(s)	Result
Halogen(s)	
Fluorine (F)	994 mg/kg
Chlorine (Cl)	251 mg/kg
Bromine (Br)	N.D.
Iodine (I)	N.D.

Tested Item(s)	Result
Hexabromocyclododecane (HBCDD)	N.D.

Tested Item(s)	CAS No.	EC No.	Result
Phthalates			
Diisobutyl phthalate(DIBP)	84-69-5	201-553-2	N.D.
Dibutyl phthalate(DBP)	84-74-2	201-557-4	N.D.
Butylbenzyl phthalate(BBP)	85-68-7	201-622-7	N.D.
Di-2-ethylhexyl phthalate(DEHP)	117-81-7	204-211-0	N.D.
Di-n-octyl phthalate(DNOP)	117-84-0	204-214-7	N.D.
Diisononyl phthalate(DINP)	28553-12-0	249-079-5	N.D.
Diisodecyl phthalate(DIDP)	26761-40-0	247-977-1	N.D.
Di-n-hexyl phthalate (DNHP)	84-75-3	201-559-5	N.D.
Dimethoxyethyl phthalate (DMEP)	117-82-8	204-212-6	N.D.

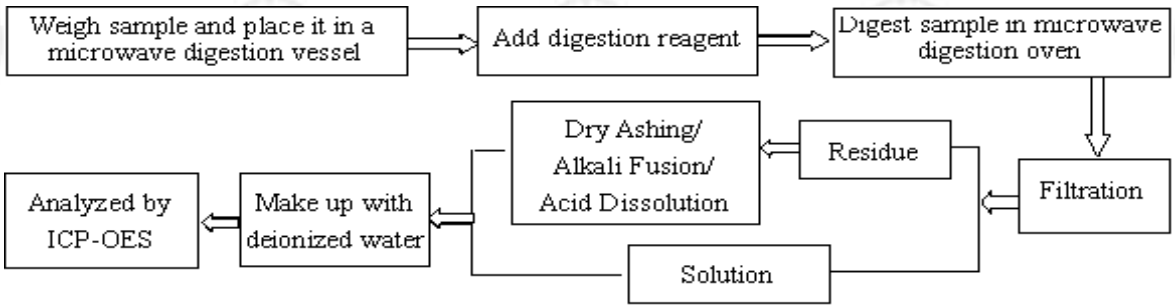
Tested Sample/Part Description Black ink

Note: **The sample(s) had been dissolved totally tested for Lead, Cadmium, Mercury.**
-MDL = Method Detection Limit
-N.D. = Not Detected (<MDL)
-mg/kg = ppm = parts per million

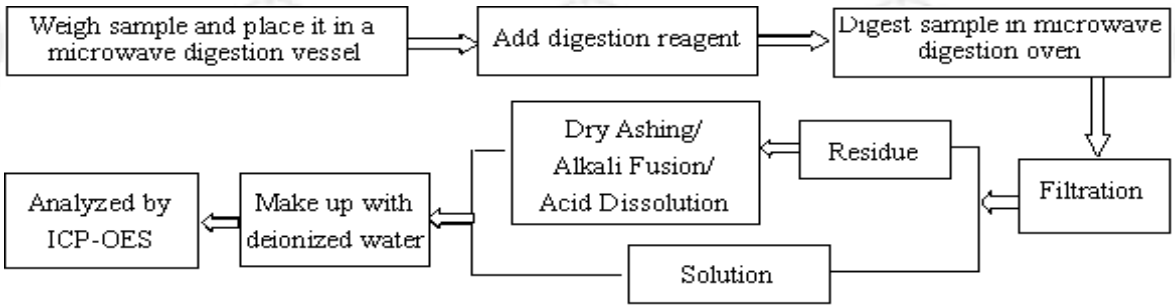
Test Report

Test Process

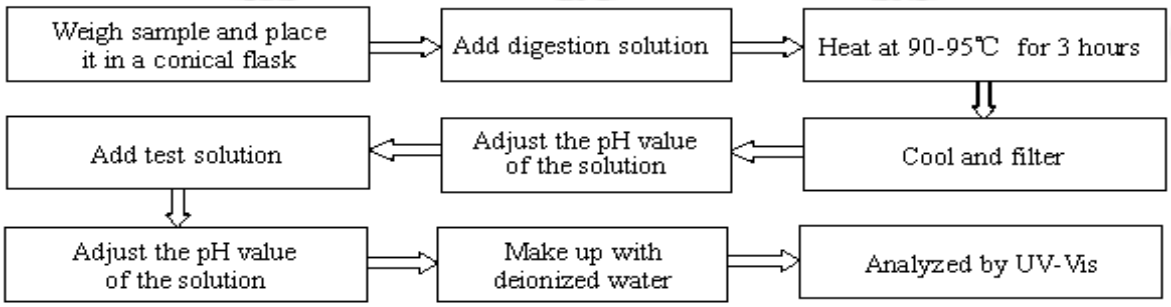
1. Lead(Pb), Cadmium(Cd)



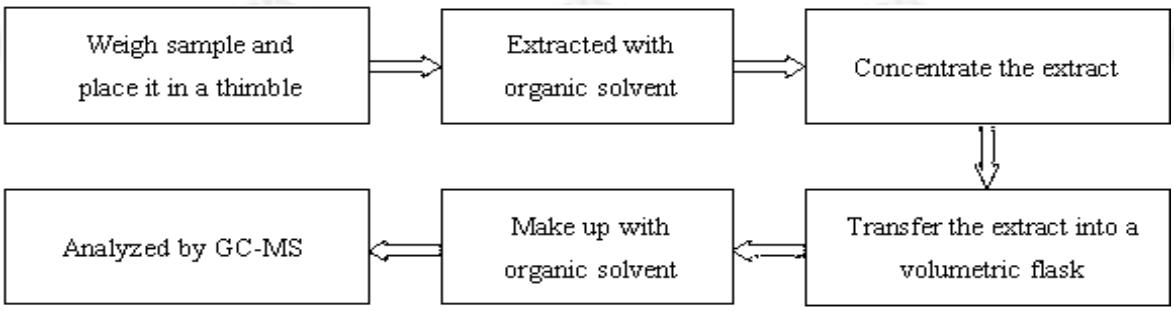
2. Mercury(Hg)



3. Hexavalent Chromium(Cr(VI))

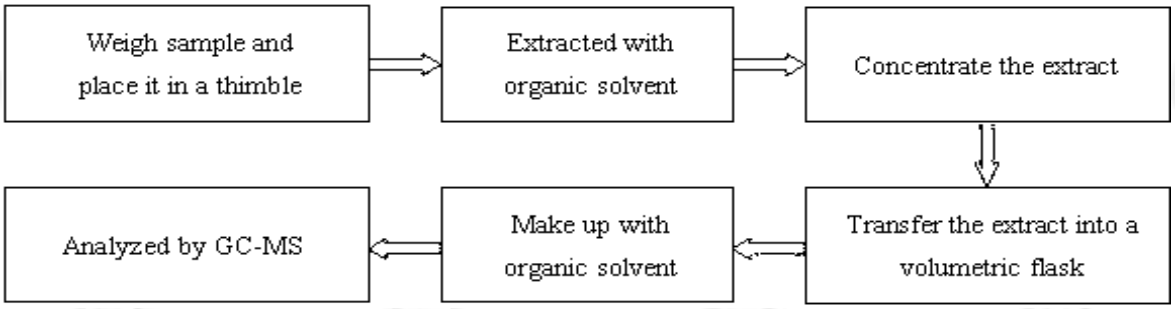


4. Phthalates

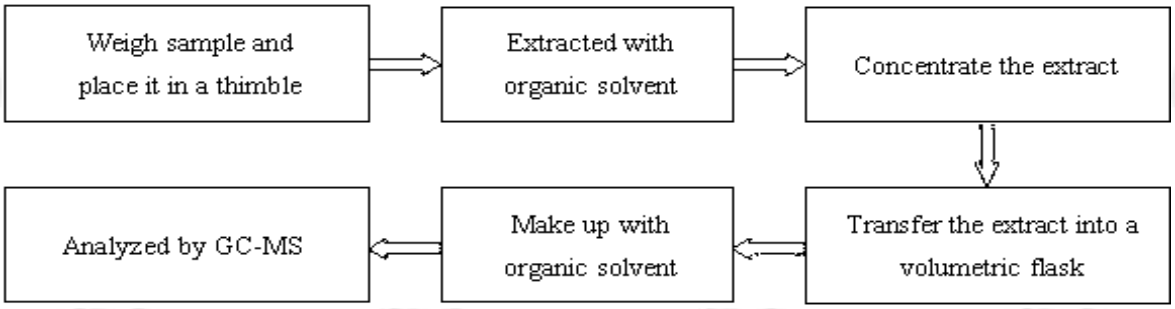


Test Report

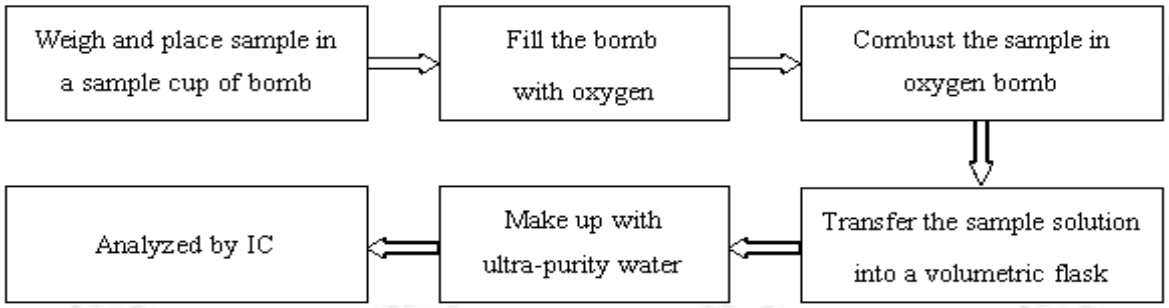
5. Polybrominated Biphenyls(PBBs), Polybrominated Diphenyl Ethers(PBDEs)



6. Hexabromocyclododecane(HBCDD)



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



Test Report

Photo(s) of the sample(s)

*** End of report ***

測試報告
Test Report

號碼(No.) : CE/2012/52081　日期(Date) : 2012/05/17　頁數(Page) : 1 of 11

喬越實業有限公司
SIL-MORE INDUSTRIAL LTD.
新北市三重區興德路100號16樓
16F, NO. 100, XINGDE RD., SANCHONG DISTRICT, NEW TAIPEI CITY 24158, TAIWAN

以下測試樣品係由客户送樣，且由客户聲稱並經客户確認如下 (The following samples was/were submitted and identified by/on behalf of the client as)：

樣品名稱(Sample Description)	:	DOW CORNING TC-5121 THERMALLY CONDUCTIVE COMPOUND
Lot No.	:	6733177
收件日期(Sample Receiving Date)	:	2012/05/11
測試期間(Testing Period)	:	2012/05/11 TO 2012/05/17

==========

測試結果(Test Results) : 請見下一頁 (Please refer to next pages).

Chenyu Kung / Operation Manager
Signed for and on behalf of
SGS TAIWAN LTD.
Chemical Laboratory – Taipei

測試報告
Test Report

喬越實業有限公司
SIL-MORE INDUSTRIAL LTD.
新北市三重區興德路100號16樓
16F, NO. 100, XINGDE RD., SANCHONG DISTRICT, NEW TAIPEI CITY 24158, TAIWAN

測試結果(Test Results)

測試部位(PART NAME)No.1 : 灰色膏狀 (GRAY PASTE)

測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測極限值 (MDL)	結果 (Result) No.1
鎘 / Cadmium (Cd)	mg/kg	參考IEC 62321: 2008方法, 以感應耦合電漿原子發射光譜儀檢測. / With reference to IEC 62321: 2008 and performed by ICP-AES.	2	3
鉛 / Lead (Pb)	mg/kg	參考IEC 62321: 2008方法, 以感應耦合電漿原子發射光譜儀檢測. / With reference to IEC 62321: 2008 and performed by ICP-AES.	2	n.d.
汞 / Mercury (Hg)	mg/kg	參考IEC 62321: 2008方法, 以感應耦合電漿原子發射光譜儀檢測. / With reference to IEC 62321: 2008 and performed by ICP-AES.	2	n.d.
六價鉻 / Hexavalent Chromium Cr(VI)	mg/kg	參考IEC 62321: 2008方法, 以UV-VIS檢測. / With reference to IEC 62321: 2008 and performed by UV-VIS.	2	n.d.
六溴環十二烷 / Hexabromocyclododecane (HBCDD) (CAS No.: 25637-99-4)	mg/kg	參考US EPA 3540C方法, 以氣相層析/質譜儀檢測. / With reference to US EPA 3540C method. Analysis was performed by GC/MS.	5	n.d.
鄰苯二甲酸甲苯基丁酯 / BBP (Benzyl butyl phthalate) (CAS No.: 85-68-7)	%	參考EN 14372, 以氣相層析/質譜儀檢測之. / With reference to EN 14372. Analysis was performed by GC/MS.	0.003	n.d.
鄰苯二甲酸二 (2-乙基己基)酯 / DEHP (Di- (2-ethylhexyl) phthalate) (CAS No.: 117-81-7)	%	參考EN 14372, 以氣相層析/質譜儀檢測之. / With reference to EN 14372. Analysis was performed by GC/MS.	0.003	n.d.

測試報告
Test Report

喬越實業有限公司
SIL-MORE INDUSTRIAL LTD.
新北市三重區興德路100號16樓
16F, NO. 100, XINGDE RD., SANCHONG DISTRICT, NEW TAIPEI CITY 24158, TAIWAN

測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測極限值 (MDL)	結果 (Result) No.1
鄰苯二甲酸二異癸酯 / DIDP (Di-isodecyl phthalate) (CAS No.: 26761-40-0)	%	參考EN 14372, 以氣相層析/質譜儀檢測之. / With reference to EN 14372. Analysis was performed by GC/MS.	0.01	n.d.
鄰苯二甲酸二異壬酯 / DINP (Di-isononyl phthalate) (CAS No.: 28553-12-0)	%	參考EN 14372, 以氣相層析/質譜儀檢測之. / With reference to EN 14372. Analysis was performed by GC/MS.	0.01	n.d.
鄰苯二甲酸二正辛酯 / DNOP (Di-n-octyl phthalate) (CAS No.: 117-84-0)	%	參考EN 14372, 以氣相層析/質譜儀檢測之. / With reference to EN 14372. Analysis was performed by GC/MS.	0.003	n.d.
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/質譜儀檢測之. / With reference to EN 14372. Analysis was performed by GC/MS.	0.003	n.d.
全氟辛烷磺酸 / Perfluorooctane sulfonates (PFOS-Acid, Metal Salt, Amide)	mg/kg	參考US EPA 3550C: 2007方法, 以液相層析/質譜儀檢測. / With reference to US EPA 3550C: 2007. Analysis was performed by LC/MS.	10	n.d.
全氟辛酸 (銨) / PFOA (CAS No.: 335-67-1)	mg/kg	參考US EPA 3550C: 2007方法, 以液相層析/質譜儀檢測. / With reference to US EPA 3550C: 2007. Analysis was performed by LC/MS.	10	n.d.
鹵素 / Halogen				
鹵素 (氟) / Halogen-Fluorine (F) (CAS No.: 14762-94-8)	mg/kg	參考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 (氯) / Halogen-Chlorine (Cl) (CAS No.: 22537-15-1)			50	n.d.
鹵素 (溴) / Halogen-Bromine (Br) (CAS No.: 10097-32-2)			50	n.d.
鹵素 (碘) / Halogen-Iodine (I) (CAS No.: 14362-44-8)			50	n.d.

測試報告
Test Report

喬越實業有限公司
SIL-MORE INDUSTRIAL LTD.
新北市三重區興德路100號16樓
16F, NO. 100, XINGDE RD., SANCHONG DISTRICT, NEW TAIPEI CITY 24158, TAIWAN

測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測極限值 (MDL)	結果 (Result) No.1
多溴聯苯總和 / Sum of PBBs	mg/kg	參考IEC 62321: 2008方法, 以氣相層析/質譜儀檢測. / With reference to IEC 62321: 2008 and performed by GC/MS.	-	n.d.
一溴聯苯 / Monobromobiphenyl			5	n.d.
二溴聯苯 / Dibromobiphenyl			5	n.d.
三溴聯苯 / Tribromobiphenyl			5	n.d.
四溴聯苯 / Tetrabromobiphenyl			5	n.d.
五溴聯苯 / Pentabromobiphenyl			5	n.d.
六溴聯苯 / Hexabromobiphenyl			5	n.d.
七溴聯苯 / Heptabromobiphenyl			5	n.d.
八溴聯苯 / Octabromobiphenyl			5	n.d.
九溴聯苯 / Nonabromobiphenyl			5	n.d.
十溴聯苯 / Decabromobiphenyl			5	n.d.
多溴聯苯醚總和 / Sum of PBDEs			-	n.d.
一溴聯苯醚 / Monobromodiphenyl ether			5	n.d.
二溴聯苯醚 / Dibromodiphenyl ether			5	n.d.
三溴聯苯醚 / Tribromodiphenyl ether			5	n.d.
四溴聯苯醚 / Tetrabromodiphenyl ether			5	n.d.
五溴聯苯醚 / Pentabromodiphenyl ether			5	n.d.
六溴聯苯醚 / Hexabromodiphenyl ether			5	n.d.
七溴聯苯醚 / Heptabromodiphenyl ether			5	n.d.
八溴聯苯醚 / Octabromodiphenyl ether			5	n.d.
九溴聯苯醚 / Nonabromodiphenyl ether			5	n.d.
十溴聯苯醚 / Decabromodiphenyl ether			5	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 (方法偵測極限值)
4. "-" = Not Regulated (無規格值)

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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1μg/m^2。

(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 1μg/m^2.)

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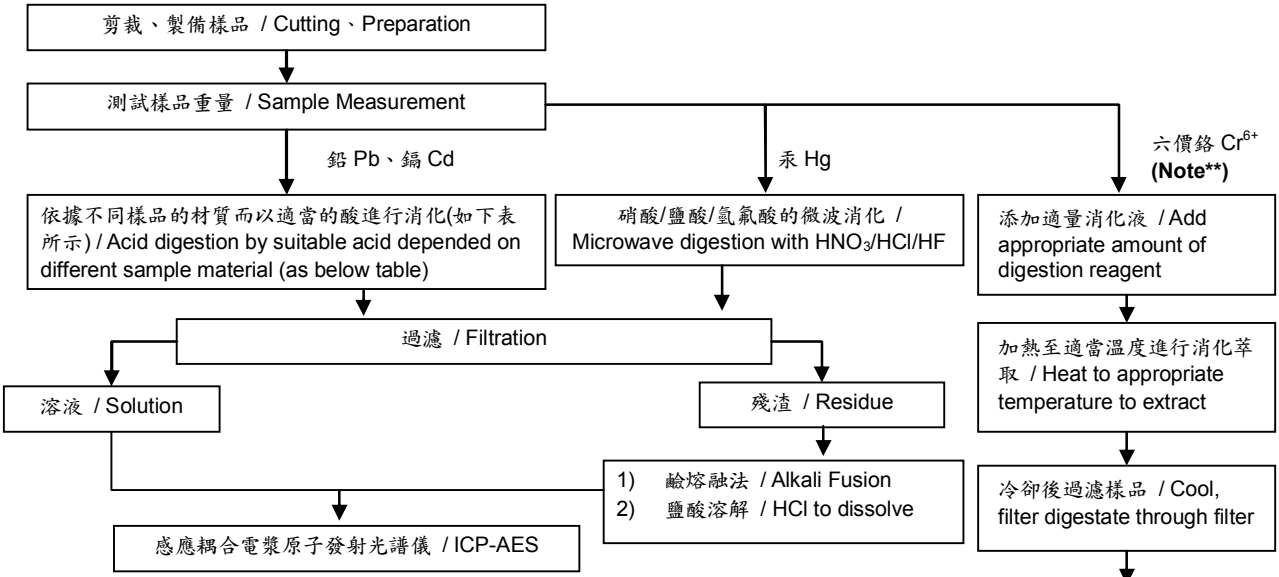
1) 根據以下的流程圖之條件，樣品已完全溶解。(六價鉻測試方法除外) / These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr^{6+} test method excluded)
2) 測試人員：楊登偉 / Name of the person who made measurement: Climbgreat Yang
3) 測試負責人：張啓興 / Name of the person in charge of measurement: Troy Chang



樣品材質 / Sample Material	消化酸液種類 / Digestion Acid
鋼, 銅, 鋁, 焊錫 / Steel, copper, aluminum, solder	王水, 硝酸, 鹽酸, 氫氟酸, 雙氧水 / Aqua regia, HNO_3, HCl, HF, H_2O_2
玻璃 / Glass	硝酸,氫氟酸 / HNO_3/HF
金, 鉑, 鈀, 陶瓷 / Gold, platinum, palladium, ceramic	王水 / Aqua regia
銀 / Silver	硝酸 / HNO_3
塑膠 / Plastic	硫酸, 雙氧水, 硝酸, 鹽酸 / H_2SO_4, H_2O_2, HNO_3, HCl
其他 / Others	加入適當的試劑至完全溶解 / Added appropriate reagent to total digestion

Note:** (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 90~95℃.
(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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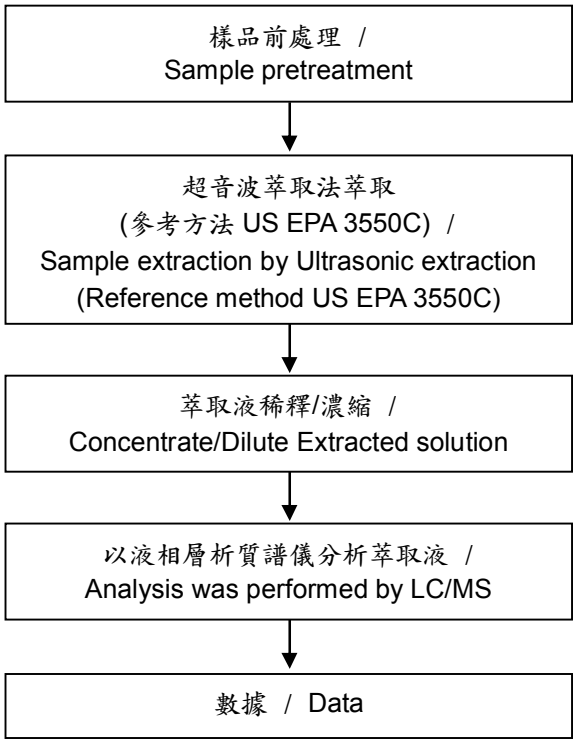
超音波萃取分析流程圖/
Analytical flow chart of Ultrasonic extraction (LC/MS) procedure

- 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

【測試項目: 全氟辛酸(銨)/全氟辛烷磺酸、雙酚 A、壬酚、辛酚 /
Test Items: PFOA/PFOS、Bisphenol A、NP、OP】



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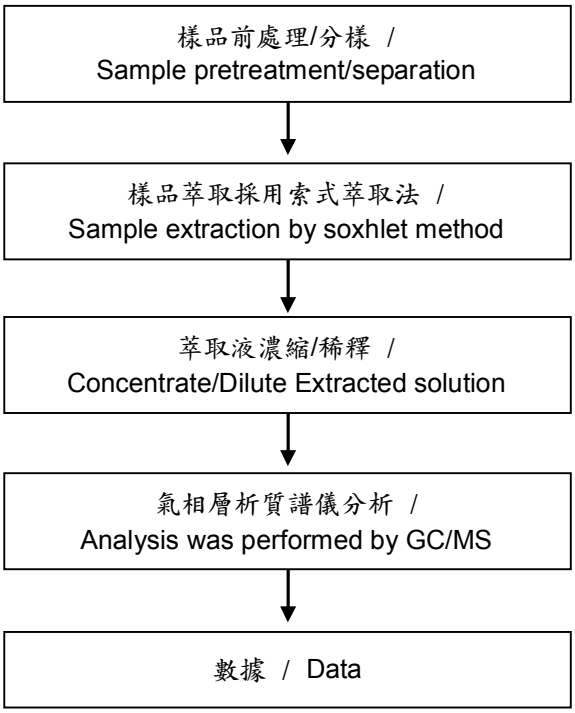
索式萃取分析流程圖 /
Analytical flow chart of Soxhlet extraction (GC/MS) procedure

- 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

【測試項目: 可塑劑、苯並三唑類化合物、六溴環十二烷、壬酚、單甲基二溴二苯基甲烷、有機磷化合物 / Test Items: Phthalate、Benzotriazole、HBCDD、NP、DBBT、Organic phosphorus compounds】



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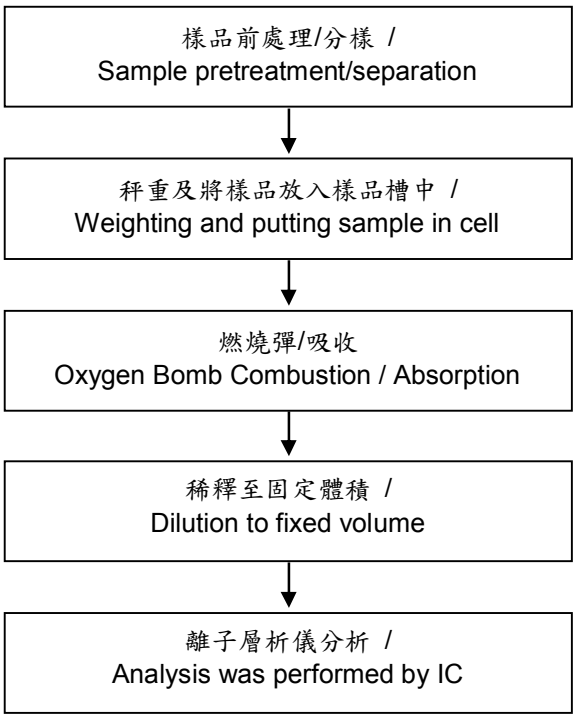
鹵素分析流程圖 / Analytical flow chart of halogen content

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



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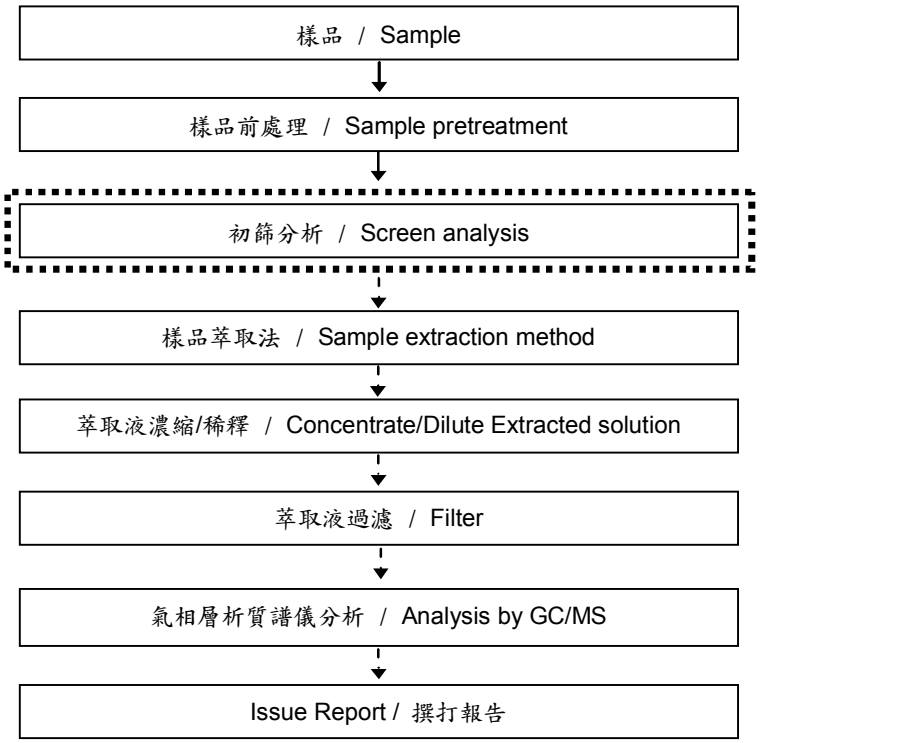
分析流程圖 / Analytical flow chart

- 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

【測試項目(Test Items): 多溴聯苯/多溴聯苯醚、四溴雙酚-A-雙 / PBB/PBDE, TBBP-A-bis】

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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*** 照片中如有箭頭標示，則表示爲實際檢測之樣品/部位. ***
(The tested sample / part is marked by an arrow if it's shown on the photo.)

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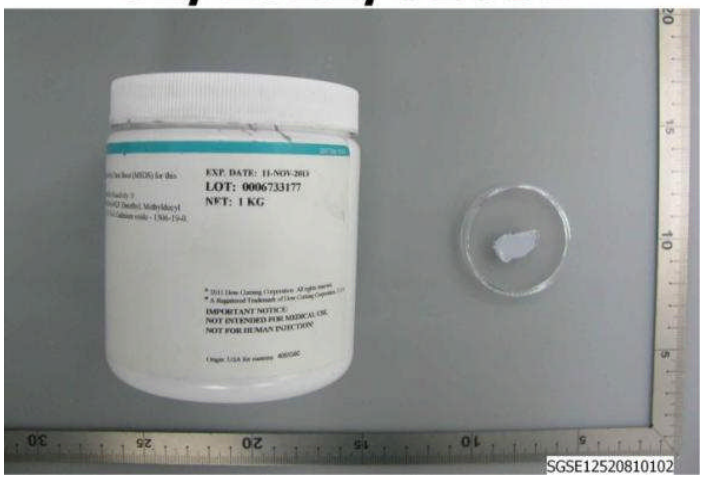

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** 報告結尾 (End of Report) **