

寰波科技股份有限公司
SmartAnt Telecom Co., Ltd.
3F, No. 58, Park Avenue II,
Science-based Industrial Park, Sec.
Hsinchu 30075, Taiwan, R.O.C.
Tel. (03) 578-3002 Fax. (03) 578-3312

Documents For Approval

Customer : 研華科技股份有限公司

1. SmartAnt Product Description: 802.11 a/b/g/n Embedded Main antenna.
2. Part Number: **ADV05-22058A**
3. Date: 9.April.2009
4. Customer approved Product Number: **1750004681**

Embedded Antenna

for 2400 – 2500 MHz & 5150 – 5875 MHz

Version 1

ADV05-22058A

Electrical Specification

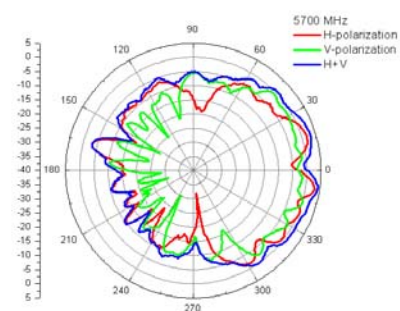
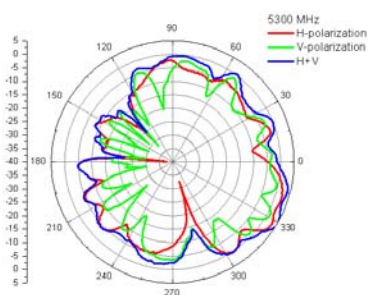
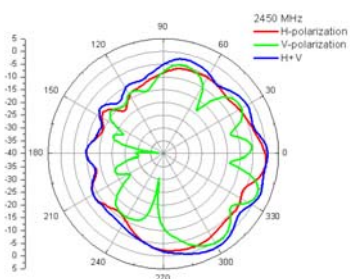
Frequency range	2400 MHz-2500 MHz	5150 MHz-5875 MHz
Gain	≥ -5 dBi	
VSWR	2.0 : 1 (max.)	
Power handling	2 W (cw)	
Impedance	50 Ohm	
Connector	I-PEX	
Cable	$\varnothing$ 1.13 mm, Main antenna, Black ,360 mm	



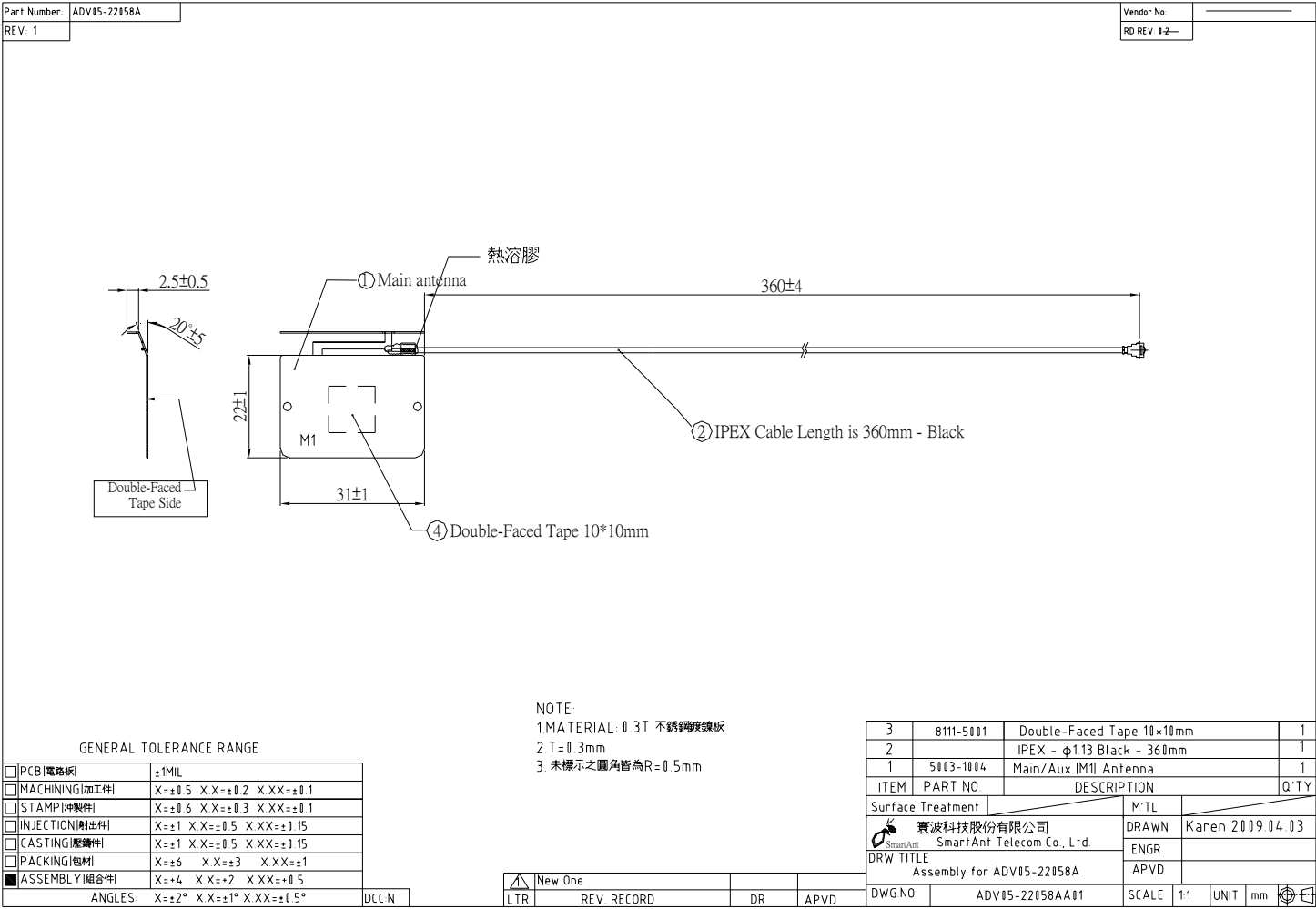
Environmental & Mechanical Characteristics

Temperature	-10°C to +55°C
Humidity	95% @ 55°C
Weight	0.3 g
Dimensions	31 x 22 x 4.5 mm

Main Antenna



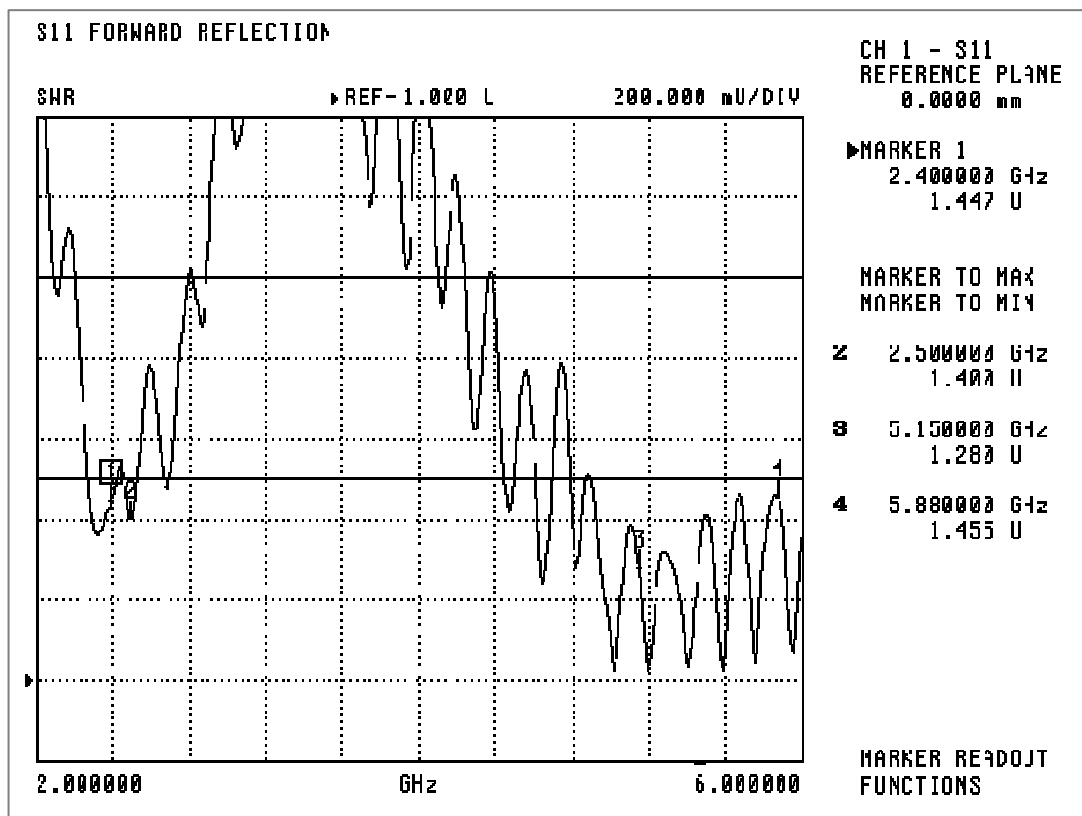
Product Drawing



Main Antenna

VSWR=2.0

VSWR=1.5



Material Approval - Reflector (1/1)

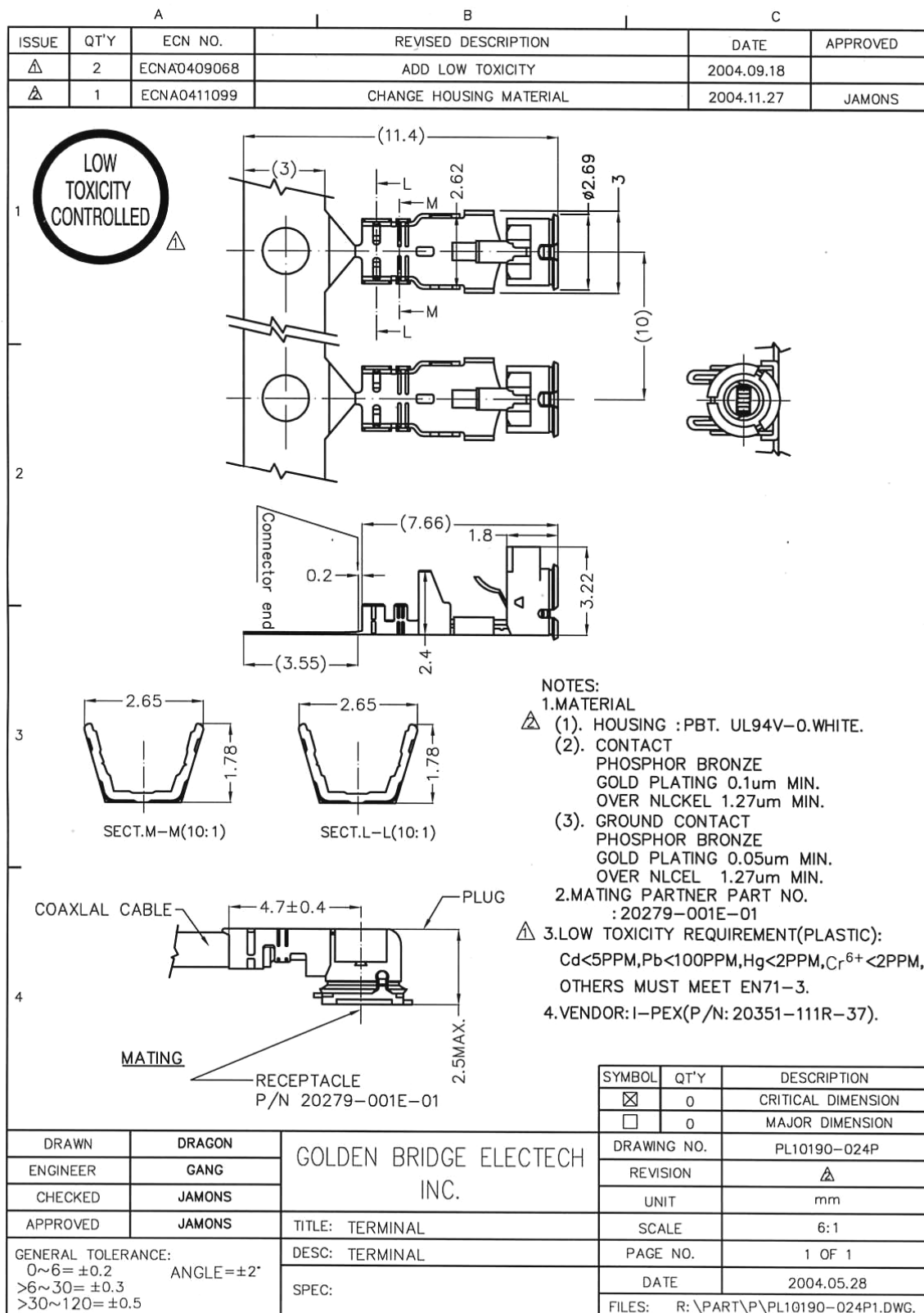
中國鋼鐵股份有限公司
CHINA STEEL CORPORATION
中華民國高雄市中港區中興路1號
TAIWAN, REPUBLIC OF CHINA, (07)801-9427
TEL:(07)802-1111 FAX:(07)802-2511 (07)801-9427

品質證明書 TEST CERTIFICATE



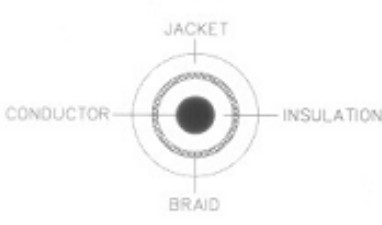
產品名稱 PRODUCT NAME		HR SHEET-COIL		證明書編號 CERTIFICATE NO.		970116H0103	
發票號碼 INVOICE NO.		XW75272720		中鋼訂單編號 CSC ORDER NO.		DH2902C	
客戶編號 CUSTOMER NO.		43822723		證明書日期 T/C ISSUE DATE		JAN 16, 2008	
交運日期 SHIPPING DATE		JAN 15, 2008					
客戶訂單編號 CUSTOMER ORDER NO.							
T/C		01					
JIS G3131 SPHC, GENERAL PURPOSES (GP).							
強遠鋼鐵股份有限公司 CHIANG-YI STEEL CO., LTD.							
JIS G3131 SPHC, GENERAL PURPOSES (GP).							
CSC MILL INSPECTION							
T/C 01							
拉伸試驗 *1 G.L.=50 MM 樣品 樣品 樣品 Y.S. T.S. EL. N/MM2 %							
試片編號 SAMPLE ID.							
鋼捲號碼 COIL NO.							
爐號 HEAT NO.							
MATERIAL DESCRIPTION							
厚度 mm 1.98 1219 COIL 1 20.8856C874 664118 35739.5							
寬度 mm 1219 COIL 1 20.8856C874 664118 35440.6							
長度 mm 1219 COIL 1 20.8856C874 664118 35440.6							
數量 PCS 1 20.8856C874 664118 35440.6							
重量 KGS 1 20.8856C874 664118 35440.6							
TOTAL 2 41.610							
*01 拉伸試驗 TENSILE TEST							
KG/MM2 = N/MM2 / 9.80665 INF: FOR REFERENCE ONLY							
TEL 4509852							
茲證明本表所列產品，均係材料規格製造及試驗，並符合規格之要求。 WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HEREIN HAS BEEN MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIREMENT OF THE ABOVE MATERIAL SPECIFICATION.							
SURVEYOR TO							
Li Wei 冶金技術部 課長 GENERAL MANAGER MET							

Material Approval – Connector (1/1)



A2

Material Approval – Cable (1/1)

ISSUE	QTY	ECN NO.	REVISED DESCRIPTION	DATE	APPROVED																																										
0																																															
1 2 3 4 UL 1354 80°C 30V COAXIAL CABLE 1.CONDUCTOR: 32AWGx1C,SILVER PLATED COPPER WIRE. 2.INSULATION:FEP,ø0.70±0.02mm,SELF-COLOR. 3.SHIELD: BRAID (16/4/0.05) TINNED PLATED COPPER WIRE,COVERAGE 90% NOM. 4.JACKET:FEP,ø1.13+0.08/-0.05mm,COLOR: BLACK,GB COLOR: 000,NO MARKING. NOTE: 1.OPERATION TEMPERATURE:80°C 2.ELECTRICAL PROPERTIES: 2-1.INSULATION RESISTANCE:DC/250V 1000Mohm.m MIN.. 2-2.VOLTAGE RATING :30V. 2-3.WITHSTAND VOLTAGE:AC/500V RMS FOR ONE MINUTE. 2-4.CONDUCTOR RESISTANCE:LESS THAN 520ohm/KM(at 20°C) 2-5.CAPACITANCE: 97pF/M(NOMINAL) 2-6.IMPEDANCE: 50±2 ohm @ TDR. 2-7. <table border="1" style="margin-left: 20px; border-collapse: collapse;"> <thead> <tr> <th colspan="2">NOM. ATTENUATION(dB/M)</th> </tr> </thead> <tbody> <tr><td>0.1GHz</td><td>0.64</td></tr> <tr><td>0.4GHz</td><td>1.3</td></tr> <tr><td>0.8GHz</td><td>1.9</td></tr> <tr><td>1.0GHz</td><td>2.1</td></tr> <tr><td>1.5GHz</td><td>2.6</td></tr> <tr><td>1.9GHz</td><td>2.9</td></tr> <tr><td>2.4GHz</td><td>3.3</td></tr> <tr><td>3.0GHz</td><td>3.7</td></tr> <tr><td>5.2GHz</td><td>5.0</td></tr> <tr><td>5.8GHz</td><td>5.3</td></tr> <tr><td>6.0GHz</td><td>5.4</td></tr> </tbody> </table>  JACKET INSULATION BRAID CONDUCTOR 3.VENDOR: GOLDEN BRIDGE ELECTECH OR EQUIVALENT.						NOM. ATTENUATION(dB/M)		0.1GHz	0.64	0.4GHz	1.3	0.8GHz	1.9	1.0GHz	2.1	1.5GHz	2.6	1.9GHz	2.9	2.4GHz	3.3	3.0GHz	3.7	5.2GHz	5.0	5.8GHz	5.3	6.0GHz	5.4																		
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Material Approval – Tape G4000 (1/2)

SONY

Technical Data Sheet

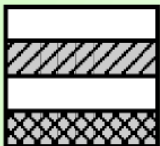
High-strength high-performance both-sided adhesive tape

G4000

Advantages

- ☐ Both-sided adhesive tape containing base material with stronger adhesion than conventional tape
- ☐ Superior initial adhesiveness
- ☐ This is the next generation of adhesive tape, whose impact on the global environment is small, because, unlike conventional tape, organic solvents are not used at coating.

Basic structure

	Name	Thickness
	Acryl adhesive	(About 55 μm)
	Nonwoven fabric	(About 40 μm)
	Acryl adhesive	(About 55 μm)
	Release film	(About 120 μm)

Specifications

Main component of the adhesive	Acrylic resin	Adhesive thickness (incl. base material)	0.15 mm
Color	Transparent and colorless	Shape	Stamped products
Base material	Nonwoven fabric		Rolled products

Sony Chemicals Corporation

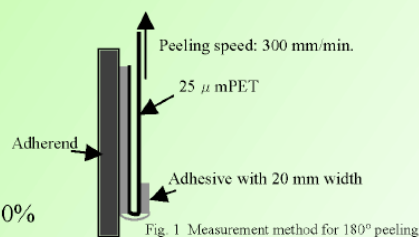
Material Approval - Tape G4000 (2/2)

SONY

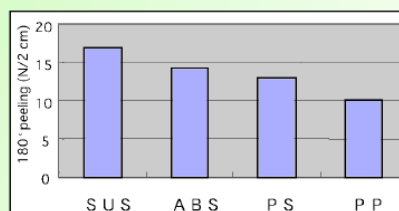
Characteristics

1. Peeling strength (180° peeling)

- Tape width: 20 mm
- Bonding condition: One stroke with 2 kg roller
- Leave the specimen for one day at room temperature.
- Atmosphere for measurement: 23°C ± 5°C, 65% ± 10%
- Peeling speed: 300 mm/min.
- Backing material: 25 µm PET



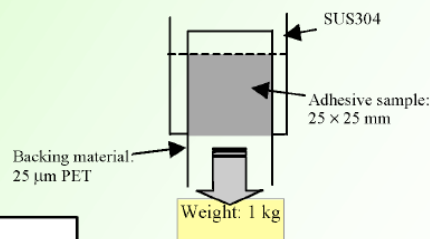
(N/2cm)				
Adherend	S U S	A B S	P S	P P
Peeling strength	16.8	14.1	13.0	9.93



2. Tenacity

- The area of tape attached: 25 × 25 mm
- Adherend: SUS304
- Bonding condition: One stroke with 2 kg roller
- Load: 1 kg
- Measure the gap (mm) after one hour.

Measurement temperature	40 °C	60 °C	80 °C
Gap (mm)	0.3	0.4	0.6



3. Ball Tack (J. Dow method)

Ball Tack (Ball No.)	7 to 8
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Note: This report is based on our reliable experiments. However, it does not mean that the performance described in this report is guaranteed.
Use the products under your responsibility after sufficiently studying the intended use and service condition of the products.

Sony Chemicals Corporation

Material Approval – PE Bag (1/1)

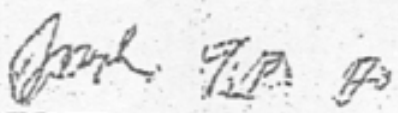
 亞洲聚合股份有限公司林園廠
Asia Polymer Corporation Lin-Yuan Plant
P. O. BOX 2, LIN-YUAN
KAOHSIUNG MISTEN, TAIWAN,
REPUBLIC OF CHINA
TELEPHONE:
(07)0412031~5

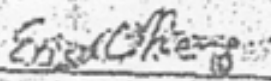
Head Office: 3, Tun Hwa S Rd, Sec. 1, Taipei, 105, Taiwan, R.O.C.
Factory: 3, Industrial Rd, Lin-Yuan, Kaohsiung, Taiwan, R.O.C.

CERTIFICATION(證明函) 03/11/2004

This is to certify that our LDPE & EVA resins do not incorporate the following materials in the production process.
本公司所生產之 LDPE 與 EVA 產品，於製造時不添加下列物質：

1. Cadmium and compounds(鎘及其化合物)
2. Lead and compounds(鉛及其化合物)
3. Mercury and compounds(水銀及其化合物)
4. Hexavalent Chromium and compounds(六價鉻及其化合物)
5. Arsenic (As) and compounds(砷及其化合物)
6. Antimony (Sb) and compounds(銻及其化合物)
7. Barium (Ba) and compounds(鋇及其化合物)
8. Chromium and compounds(鉻及其化合物)
9. Selenium (Se) and compounds(硒及其化合物)
10. PBBs, PBDE, PBBEs (聚溴聯苯及其鹽)
11. PCBs, PCTs (聚氯聯苯及其鹽)
12. HCFC / CFC(氯氟碳 / 氯氟化合物)
13. PCN, (多氯化奈酮)
14. TBBP-A-bin (四溴雙酚)
15. CP, Chlorinated paraffins(氯化石蠟)
16. PCP, Pentachlorophenol(五氯酚)
17. Asbestos (石棉)
18. Azo compounds (偶氮化合物)
19. Formaldehyde (甲醛)
20. Organic tin compounds (有機錫化合物)
21. Mirex (滅蟻靈)

R & D Manager : 
(Joseph Y.P. Ho)

Plant Manager : 
(Eric Chang)

Material Approval – CTN (1/2)

material: B Fluoropolymer (16kg)

Part No: 8401-0061

REV: 1.1

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REV: 1.1

Part No: 8401-0061

Material Approval – CTN (2/2)

山 健 包 裝 股 份 有 限 公 司 材 質 證 明 書

日 期:

料 號:

數 量:

PO/NO.:

材 質: AB 楞 18 kg/m²

	基 重(g/m ²)	等 級	破裂強度(kgf/m ²)
面 紙	230	A	8.5
B 楞	100	A	0
芯 紙	100	A	1.5
A 楞	100	A	0
底 紙	230	A	8.5

單位主管: 謝森芳

品管員: 袁秋蓮

Products Inspection Plan

Smartant P/N(型/料號): ADV05-22058A				Inspection Date(日期): 04/10/2009				Doc No: PM09-033				Rev.: 1	
Description(規格名稱): Assembly for ADV05-22058A Φ1.13 Black								Manufacturing(製造商): N/A					
1.Inspection Item : Dimension/Function (檢驗項目: 尺寸/功能)								Sample size(抽樣數): 1					
No	Defect			Apparatus (檢驗儀器)	Specification(規格)- Photo __1__		Inspection Record						
	CR	MA	MI				NO 1	NO 2	NO 3	NO 4	NO 5	Judgment (判定)	
1		V		游標卡尺/ 捲尺	1	360 ± 4 mm (356~364)	358					OK	
					2	31±1mm (30~32)	31.01				OK		
					3	22±1mm (21~23)	22.02				OK		
2.Inspection Item : Appearance (檢驗項目: 外觀)					Apparatus : Visual (檢測儀器: 目視)			Sample Size(抽樣數):					
No	Defect			Specification(規格)- Photo __2__	NG Q'ty	No	Defect			Specification(規格) - Photo ____	NG Q'ty		
	CR	MA	MI				CR	MA	MI				
1		V		需與圖面吻合。		9			V	銅片/IPEX 表面允許刮傷、凹陷、凸起、氧化。但手指紋不允許。			
2		V		銅片表面不可有、剝落、龜裂、異色、電鍍不良之現象。		10			V	目視不得有毛邊、毛邊須在 0.2mm 以下不允許，不得有傷人之毛邊。			
3	V			不可有缺料、混料、錯料。		11			V	IPEX Cable ---Black			
4		V		不可外觀變形、成型不良。		12			V	銅片/IPEX 表面允許擦傷、磨傷。			
5		V		外型尺寸不合規格。		13			V	銅片表面水紋痕、滴淚狀紋可允許。			
6			V	銅片切斷面處允許生鏽、鏽斑、氧化。		14			V	銅片表面不可有油漬、色漬、髒污。			
7			V	熱溶膠此為固定焊接點使用，確定其有無確實黏著於焊點。		15			V	銅片背面須貼付 Double-Faced Tape 10*10mm，但其外觀不作檢驗。			
8			V	焊接處熱溶膠不列入外觀檢驗項目。		16			V	包裝盒不作外觀檢驗。			
Description(說明):													
1. 檢驗重點重要項目如上 NO:1~16。													
點規卡依據中華民國品質學會發行版。(EFA QC-C0192).													
Photo_1_						Photo_2_							
1				First Issued(新建立)									
Rev				Engineering Change Description				Issue				Approval	
Proposer: (申請人) Jimmy 04/09/'09				QA Approval: (QA 核准) Clark 04/10'09				PM Approval: (PM 核准) May 04/10/'09				Customer Confirmation: (客戶確認)	

Flow(作業流程): 1.申請人→QA 檢驗判定核准→PM 核准→由 PM 編號及分發(放於網路上)歸檔

2.如需要客戶確認→提供給業務→客戶確認→PM 分發(放於網路上)歸檔。



寰波科技股份有限公司

SmartAnt Telecom Co.,Ltd

Environment-Related Substances Report

Product Description : Ant 2.4/5G ϕ 1.13 360/580MM(B)IPEX OF M1

SmartAnt P/N : ADV05-22058A

Customer P/N :



2009/4/9

ENVIRONMENT-RELATED SUBSTANCES TO BE CONTROLLED-ADV05-22058A

Item				Test Item(Cr6+,Hg,Pb,PBBs,PBBEs<1000ppm,Cd<100ppm)						Report No.	Pass / Fail
				Cd	Pb	Hg	Cr VI	PBBs	PBBEs		
1	Antenna Components	Ø1.13 Cable Black & Gray	Sheath / Gray	N.D	N.D	N.D	N.D	N.D	N.D	CE/2007/A4663	Pass
			Sheath / Black	N.D	N.D	N.D	N.D	N.D	N.D	CE/2008/B1636	Pass
			Outer Conductor	N.D	N.D	N.D	Negative	----	----	CE/2008/B1640	Pass
			Insulation	N.D	N.D	N.D	N.D	N.D	N.D	CE/2008/B1639	Pass
			Inner Conductor	N.D	N.D	N.D	Negative	----	----	CE/2008/B1641	Pass
2	I-PEX Connector		Housing-Black	N.D	23	N.D	N.D	N.D	N.D	CE/2008/31207	Pass
			Coetact	N.D	20	N.D	N.D	N.D	N.D	CE/2008/31217	Pass
			Ground Contact	N.D	17	N.D	N.D	N.D	N.D	CE/2008/31216	Pass
3	Antenna Components	SUS BEND PLANT		N.D	N.D	N.D	Negative	N.D	N.D	CE/2009/10355A	Pass
4		Solder Wire		N.D	242	N.D	N.D	N.D	N.D	CE/2008/32645	Pass
5		Double-Faced Tape		N.D	N.D	N.D	N.D	N.D	N.D	CE/2007/91193	Pass
6	Packing	Carton & Box	裱面紙板	N.D	20	N.D	N.D	N.D	N.D	CE/2008/32428	Pass
			瓦楞芯紙	N.D	21	N.D	N.D	N.D	N.D	CE/2008/32427	Pass
			白膠	N.D	N.D	N.D	N.D	N.D	N.D	KE/2008/32592 CE/2008/22385	Pass
			油墨	N.D	N.D	N.D	N.D	N.D	N.D	CE/2008/12889 CE/2008/77012	Pass
7		PE Bag		N.D	N.D	N.D	N.D	N.D	N.D	CE/2008/71425	Pass

Remarks:

ND = Not Detected ; "----" = Not Conducted;Negative=Absence of Cr(VI)coating/surface layer



Test Report

No. : CE/2007/A4663 Date : 2007/10/31 Page : 1 of 5

LANTERRA INDUSTRIAL CO., LTD.
F. 14, NO. 92, SHING TEH RD., SAN CHUNG CITY, TAIPEI, TAIWAN



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

Sample Description : KHCX-32AWG-SB-TA, KHCX-30AWG-SB-TA,
KHCX-36AWG-SB-TA
Style/Item No. : KHCX-32AWG-SB-TA, KHCX-30AWG-SB-TA,
KHCX-36AWG-SB-TA
Other Info. : GRAY JACKET
Sample Receiving Date : 2007/10/22
Testing Period : 2007/10/22 TO 2007/10/31

Test Requested : In accordance with the RoHS Directive 2002/95/EC, and its amendment directives.

Test Method : With reference to IEC 62321, Ed.1 111/54/CDV,
Procedures for the Determination of Levels of Regulated
Substances in Electrotechnical Products.
(1) Determination of Cadmium by ICP-AES.
(2) Determination of Lead by ICP-AES.
(3) Determination of Mercury by ICP-AES.
(4) Determination of Hexavalent Chromium for non-metallic
samples by UV/Vis Spectrometry.
(5) Determination of PBB and PBDE by GC/MS.

Test Result(s) : Please refer to next page(s).

Conclusion : Based on the performed tests on submitted samples, the test results are **compliant with** the limits of RoHS Directive 2002/95/EC and its subsequent amendments.

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



Test Report

No. : CE/2007/A4663

Date : 2007/10/31

Page : 2 of 5

LANTERRA INDUSTRIAL CO., LTD.

F. 14, NO. 92, SHING TEH RD., SAN CHUNG CITY, TAIPEI, TAIWAN



Test results by chemical method (Unit: mg/kg)

Test Item (s):	Method (Refer to)	Result	MDL	RoHS Limit
		No.1		
Cadmium (Cd)	(1)	n.d.	2	100
Lead (Pb)	(2)	n.d.	2	1000
Mercury (Hg)	(3)	n.d.	2	1000
Hexavalent Chromium Cr(VI) by alkaline extraction	(4)	n.d.	2	1000
Sum of PBBs	(5)	n.d.	-	1000
Monobromobiphenyl		n.d.	5	-
Dibromobiphenyl		n.d.	5	-
Tribromobiphenyl		n.d.	5	-
Tetrabromobiphenyl		n.d.	5	-
Pentabromobiphenyl		n.d.	5	-
Hexabromobiphenyl		n.d.	5	-
Heptabromobiphenyl		n.d.	5	-
Octabromobiphenyl		n.d.	5	-
Nonabromobiphenyl		n.d.	5	-
Decabromobiphenyl		n.d.	5	-
Sum of PBDEs (Mono to Nona) (Note 4)		n.d.	-	1000
Monobromobiphenyl ether		n.d.	5	-
Dibromobiphenyl ether		n.d.	5	-
Tribromobiphenyl ether		n.d.	5	-
Tetrabromobiphenyl ether		n.d.	5	-
Pentabromobiphenyl ether		n.d.	5	-
Hexabromobiphenyl ether		n.d.	5	-
Heptabromobiphenyl ether		n.d.	5	-
Octabromobiphenyl ether		n.d.	5	-
Nonabromobiphenyl ether		n.d.	5	-
Decabromobiphenyl ether		n.d.	5	-
Sum of PBDEs (Mono to Deca)		n.d.	-	-

TEST PART DESCRIPTION:

NO.1 : GRAY PLASTIC JACKET

- Note :
1. mg/kg = ppm
 2. n.d. = Not Detected
 3. MDL = Method Detection Limit
 4. According to 2005/717/EC DecaBDE is exempt.
 5. "-" = Not Regulated

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Test Report

No. : CE/2007/A4663

Date : 2007/10/31

Page : 3 of 5

LANTERRA INDUSTRIAL CO., LTD.

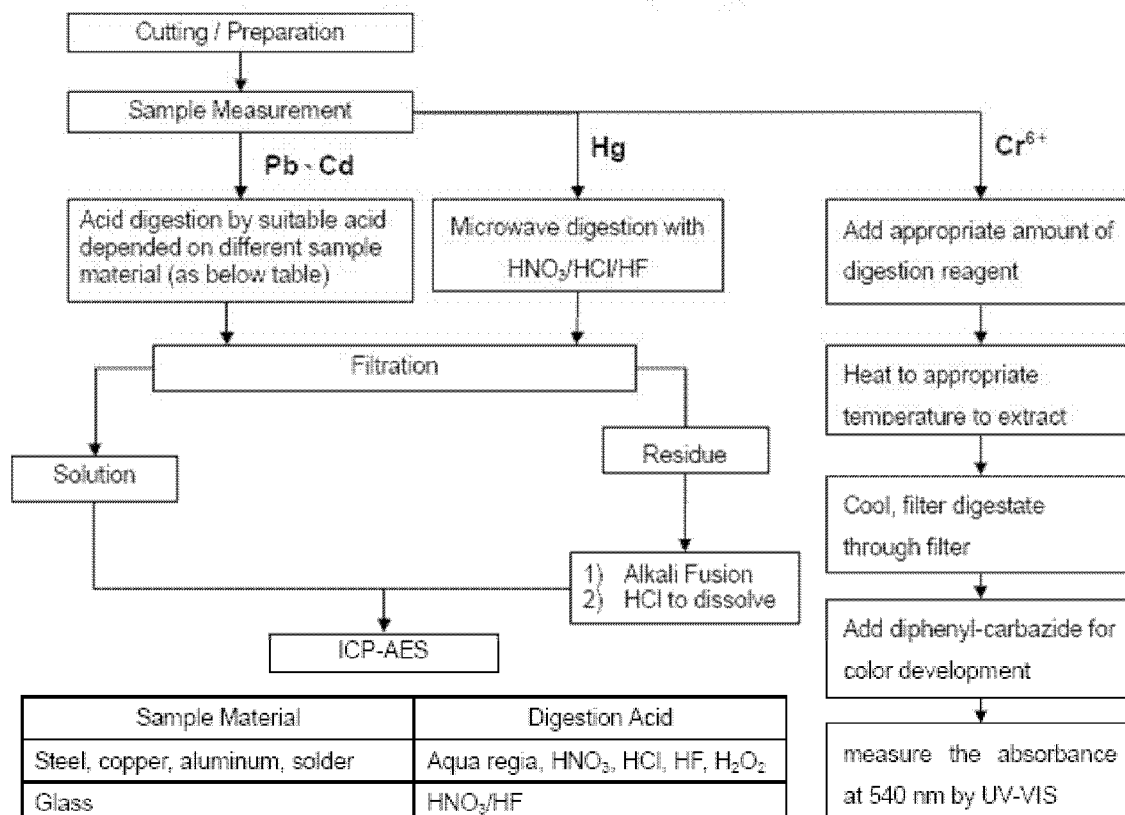
F. 14, NO. 92, SHING TEH RD., SAN CHUNG CITY, TAIPEI, TAIWAN



- 1) These samples were dissolved totally by pre-conditioning method according to below flow chart.
(Cr⁶⁺ test method excluded)

- 2) Name of the person who made measurement: Troy Chang

- 3) Name of the person in charge of measurement: Chenyu Kung



Sample Material	Digestion Acid
Steel, copper, aluminum, solder	Aqua regia, HNO ₃ , HCl, HF, H ₂ O ₂
Glass	HNO ₃ /HF
Gold, platinum, palladium, ceramic	Aqua regia
Silver	HNO ₃
Plastic	H ₂ SO ₄ , H ₂ O ₂ , HNO ₃ , HCl
Others	Any acid to total digestion

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Test Report

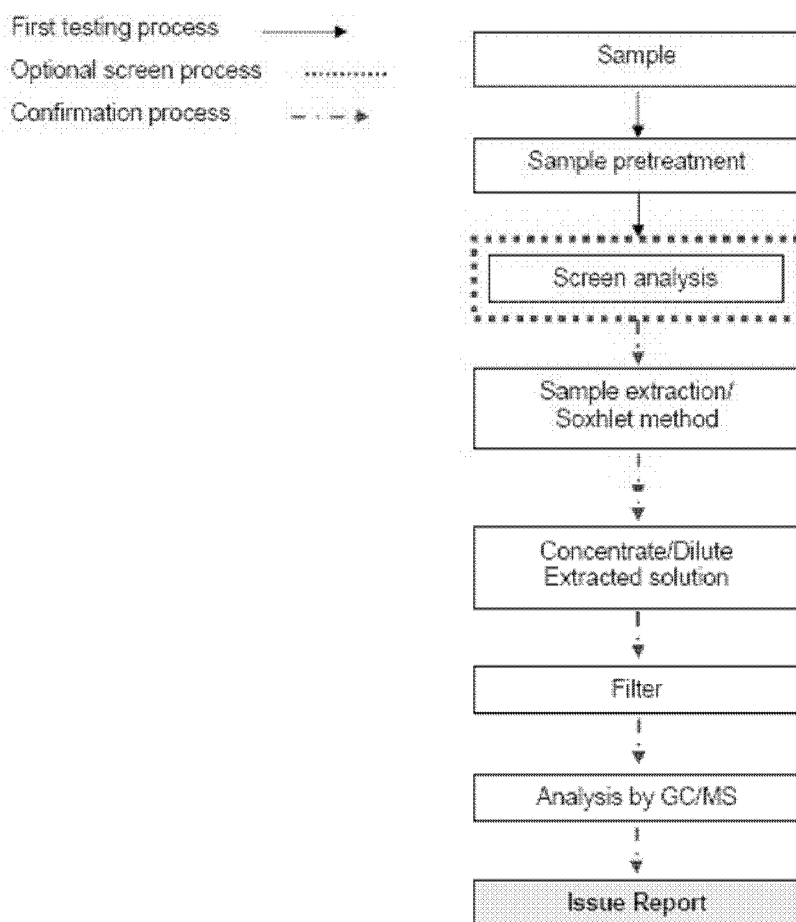
No. : CE/2007/A4663 Date : 2007/10/31

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LANTERRA INDUSTRIAL CO., LTD.
F. 14, NO. 92, SHING TEH RD., SAN CHUNG CITY, TAIPEI, TAIWAN



PBB/PBDE analytical FLOW CHART



Test Report

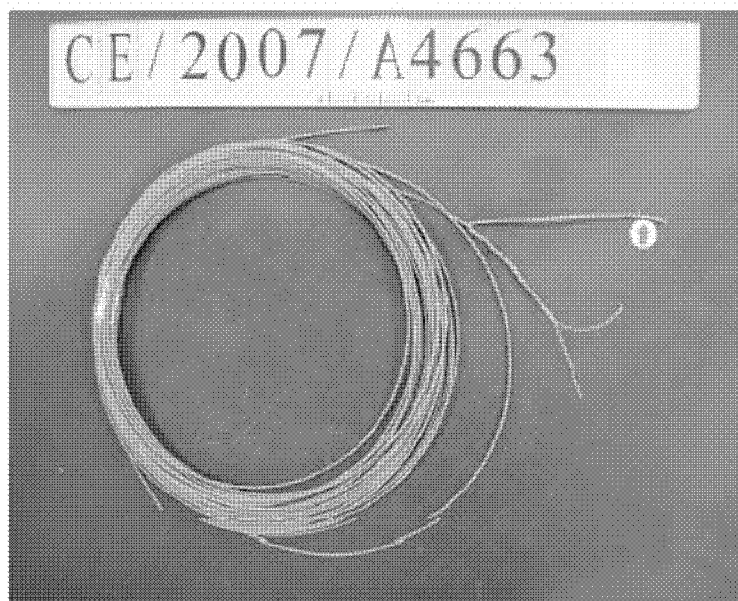
No. : CE/2007/A4663

Date : 2007/10/31

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LAN TERRA INDUSTRIAL CO., LTD.

F. 14, NO. 92, SHING TEH RD., SAN CHUNG CITY, TAIPEI, TAIWAN



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NO. 135-1, Wu Kung Road, Wu Ku Industrial Zone, Taipei county, Taiwan.



Test Report

No. : CE/2007/A4664

Date : 2007/10/29

Page : 1 of 4

LANTERRA INDUSTRIAL CO., LTD.

F. 14, NO. 92, SHING TEH RD., SAN CHUNG CITY, TAIPEI, TAIWAN



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

Sample Description : KHCX-32AWG-SB-TA, KHCX-30AWG-SB-TA,
KHCX-36AWG-SB-TA
Style/Item No. : KHCX-32AWG-SB-TA, KHCX-30AWG-SB-TA,
KHCX-36AWG-SB-TA
Other Info. : SILVER COLORED METAL FOIL
Sample Receiving Date : 2007/10/22
Testing Period : 2007/10/22 TO 2007/10/29

Test Requested : In accordance with the RoHS Directive 2002/95/EC, and its amendment directives.

Test Method : With reference to IEC 62321, Ed.1 111/54/CDV
Procedures for the Determination of Levels of Regulated
Substances in Electrotechnical Products.
(1) Determination of Cadmium by ICP-AES.
(2) Determination of Lead by ICP-AES.
(3) Determination of Mercury by ICP-AES.
(4) Determination of Hexavalent Chromium for metallic samples
by Spot test / Colorimetric Method.

Test Result(s) : Please refer to next page(s).

Conclusion : Based on the performed tests on submitted samples, the test
results are **compliant with** the limits of RoHS Directive
2002/95/EC and its subsequent amendments.


Nicole Chien / Supervisor
Signed for and on behalf of
SGS TAIWAN LTD.
Chemical Laboratory - Taipei

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TEL: 886-2-22261616 FAX: 886-2-22261717 EMAIL: sgs@sgs.tw



Test Report

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Date : 2007/10/29

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LAN TERRA INDUSTRIAL CO., LTD.

F. 14, NO. 92, SHING TEH RD., SAN CHUNG CITY, TAIPEI, TAIWAN



Test results by chemical method (Unit: mg/kg)

Test Item (s):	Method (Refer to)	Result	MDL	RoHS Limit
		No.1		
Cadmium (Cd)	(1)	n.d.	2	100
Lead (Pb)	(2)	11	2	1000
Mercury (Hg)	(3)	n.d.	2	1000
Hexavalent Chromium Cr(VI) by Spot test / boiling water extraction	(4)	Negative	See Note 4	#

TEST PART DESCRIPTION:

NO.1 : SILVER COLORED METAL

Note : 1. mg/kg = ppm

2. n.d. = Not Detected

3. MDL = Method Detection Limit

4. Spot-test:

Negative = Absence of Cr(VI) coating / surface layer.

Positive = Presence of Cr(VI) coating / surface layer;

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

Boiling-water-extraction:

Negative = Absence of Cr(VI) coating / surface layer.

Positive = Presence of Cr(VI) coating / surface layer;

the detected concentration in boiling-water-extraction solution is equal or greater than 0.02 mg/kg with 50 cm² sample surface area.

5. # = Positive indicates the presence of Cr(VI) on the tested areas

and result be regarded as not comply with RoHS requirement.

Negative indicates the absence of Cr(VI) on the tested areas and result be regarded as comply with RoHS requirement.

Test Report

No.: CE/2007/A4664

Date: 2007/10/29

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LANTERRA INDUSTRIAL CO., LTD.

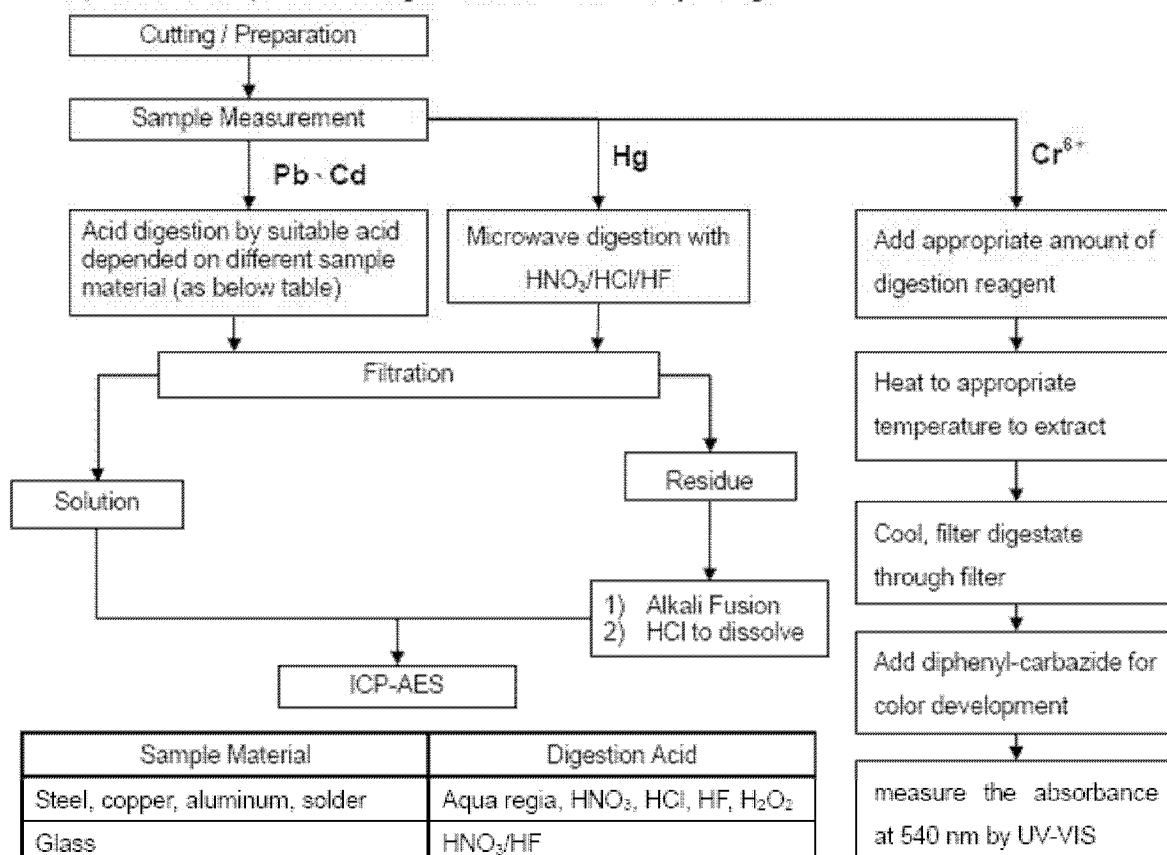
F. 14, NO. 92, SHING TEH RD., SAN CHUNG CITY, TAIPEI, TAIWAN



- 1) These samples were dissolved totally by pre-conditioning method according to below flow chart.
(Cr⁶⁺ test method excluded)

2) Name of the person who made measurement: Troy Chang

3) Name of the person in charge of measurement: Chenyu Kung



Sample Material	Digestion Acid
Steel, copper, aluminum, solder	Aqua regia, HNO ₃ , HCl, HF, H ₂ O ₂
Glass	HNO ₃ /HF
Gold, platinum, palladium, ceramic	Aqua regia
Silver	HNO ₃
Plastic	H ₂ SO ₄ , H ₂ O ₂ , HNO ₃ , HCl
Others	Any acid to total digestion

Test Report

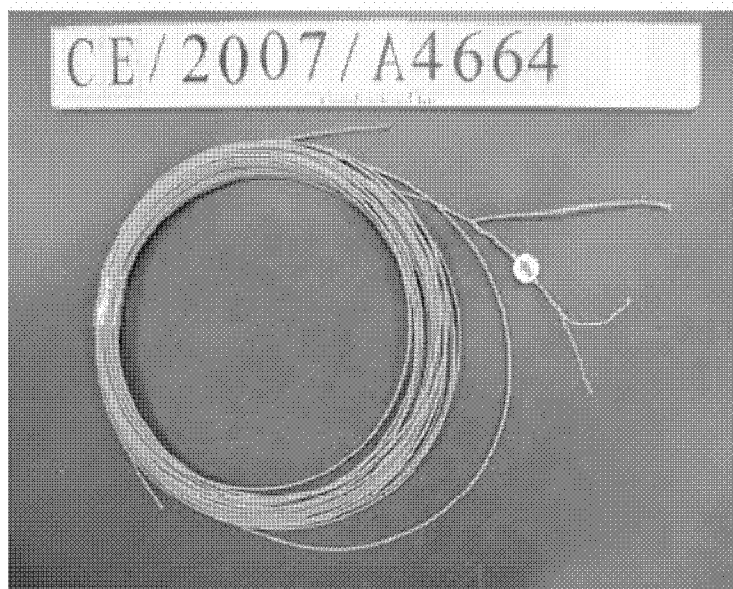
No. : CE/2007/A4664

Date : 2007/10/29

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LAN TERRA INDUSTRIAL CO., LTD.

F. 14, NO. 92, SHING TEH RD., SAN CHUNG CITY, TAIPEI, TAIWAN



** End of Report **



Test Report

No. : CE/2007/A4665

Date : 2007/10/29

Page : 1 of 5

LANTERRA INDUSTRIAL CO., LTD.

F. 14, NO. 92, SHING TEH RD., SAN CHUNG CITY, TAIPEI, TAIWAN



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

Sample Description : KHCX-32AWG-SB-TA, KHCX-30AWG-SB-TA,
KHCX-36AWG-SB-TA
Style/Item No. : KHCX-32AWG-SB-TA, KHCX-30AWG-SB-TA,
KHCX-36AWG-SB-TA
Other Info. : TRANSPARENT PLASTIC
Sample Receiving Date : 2007/10/22
Testing Period : 2007/10/22 TO 2007/10/29

Test Requested : In accordance with the RoHS Directive 2002/95/EC, and its amendment directives.

Test Method : With reference to IEC 62321, Ed.1 111/54/CDV
Procedures for the Determination of Levels of Regulated
Substances in Electrotechnical Products.
(1) Determination of Cadmium by ICP-AES.
(2) Determination of Lead by ICP-AES.
(3) Determination of Mercury by ICP-AES.
(4) Determination of Hexavalent Chromium for non-metallic
samples by UV/Vis Spectrometry.
(5) Determination of PBB and PBDE by GC/MS.

Test Result(s) : Please refer to next page(s).

Conclusion : Based on the performed tests on submitted samples, the test
results are **compliant with** the limits of RoHS Directive
2002/95/EC and its subsequent amendments.

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

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SGS TAIWAN LIMITED | NO. 136-1, Wu Kung Road, WuKu Industrial Zone, Taipei county, Taiwan.
TEL: 886-21 22001000 FAX: 886-21 22001027 E-MAIL: sgs@sgs.com.tw



Test Report

No. : CE/2007/A4665

Date : 2007/10/29

Page : 2 of 5

LANTERRA INDUSTRIAL CO., LTD.

F. 14, NO. 92, SHING TEH RD., SAN CHUNG CITY, TAIPEI, TAIWAN



Test results by chemical method (Unit: mg/kg)

Test Item (s):	Method (Refer to)	Result	MDL	RoHS Limit
		No.1		
Cadmium (Cd)	(1)	n.d.	2	100
Lead (Pb)	(2)	n.d.	2	1000
Mercury (Hg)	(3)	n.d.	2	1000
Hexavalent Chromium Cr(VI) by alkaline extraction	(4)	n.d.	2	1000
Sum of PBBs	(5)	n.d.	-	1000
Monobromobiphenyl		n.d.	5	-
Dibromobiphenyl		n.d.	5	-
Tribromobiphenyl		n.d.	5	-
Tetrabromobiphenyl		n.d.	5	-
Pentabromobiphenyl		n.d.	5	-
Hexabromobiphenyl		n.d.	5	-
Heptabromobiphenyl		n.d.	5	-
Octabromobiphenyl		n.d.	5	-
Nonabromobiphenyl		n.d.	5	-
Decabromobiphenyl		n.d.	5	-
Sum of PBDEs (Mono to Nona) (Note 4)		n.d.	-	1000
Monobromobiphenyl ether		n.d.	5	-
Dibromobiphenyl ether		n.d.	5	-
Tribromobiphenyl ether		n.d.	5	-
Tetrabromobiphenyl ether		n.d.	5	-
Pentabromobiphenyl ether		n.d.	5	-
Hexabromobiphenyl ether		n.d.	5	-
Heptabromobiphenyl ether		n.d.	5	-
Octabromobiphenyl ether		n.d.	5	-
Nonabromobiphenyl ether		n.d.	5	-
Decabromobiphenyl ether		n.d.	5	-
Sum of PBDEs (Mono to Deca)		n.d.	-	-

TEST PART DESCRIPTION:

NO.1 : TRANSPARENT PLASTIC

- Note :
1. mg/kg = ppm
 2. n.d. = Not Detected
 3. MDL = Method Detection Limit
 4. According to 2005/717/EC DecaBDE is exempt.
 5. "-" = Not Regulated

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Test Report

No.: CE/2007/A4665

Date: 2007/10/29

Page: 3 of 5

LAN TERRA INDUSTRIAL CO., LTD.

F. 14, NO. 92, SHING TEH RD., SAN CHUNG CITY, TAIPEI, TAIWAN

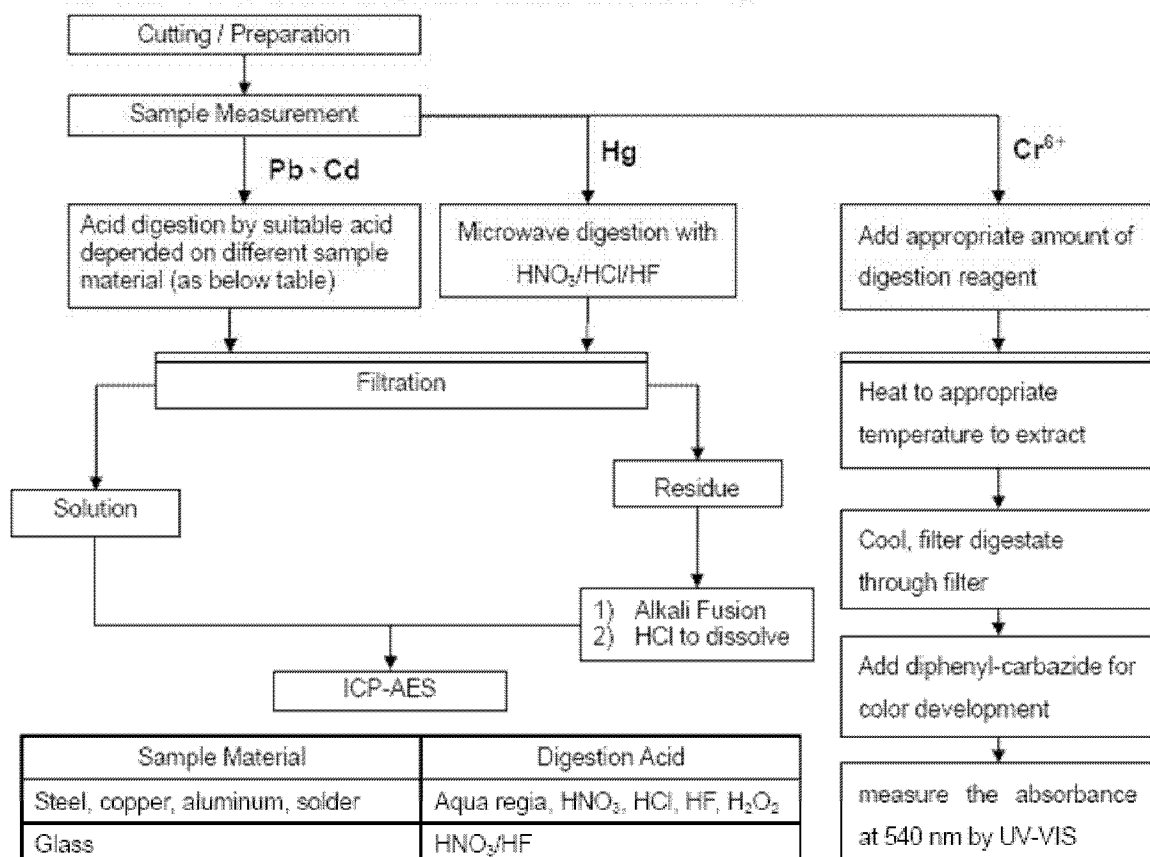


1) These samples were dissolved totally by pre-conditioning method according to below flow chart.

(Cr⁶⁺ test method excluded)

2) Name of the person who made measurement: Troy Chang

3) Name of the person in charge of measurement: Chenyu Kung



Sample Material	Digestion Acid
Steel, copper, aluminum, solder	Aqua regia, HNO ₃ , HCl, HF, H ₂ O ₂
Glass	HNO ₃ /HF
Gold, platinum, palladium, ceramic	Aqua regia
Silver	HNO ₃
Plastic	H ₂ SO ₄ , H ₂ O ₂ , HNO ₃ , HCl
Others	Any acid to total digestion



Test Report

No. : CE/2007/A4665

Date : 2007/10/29

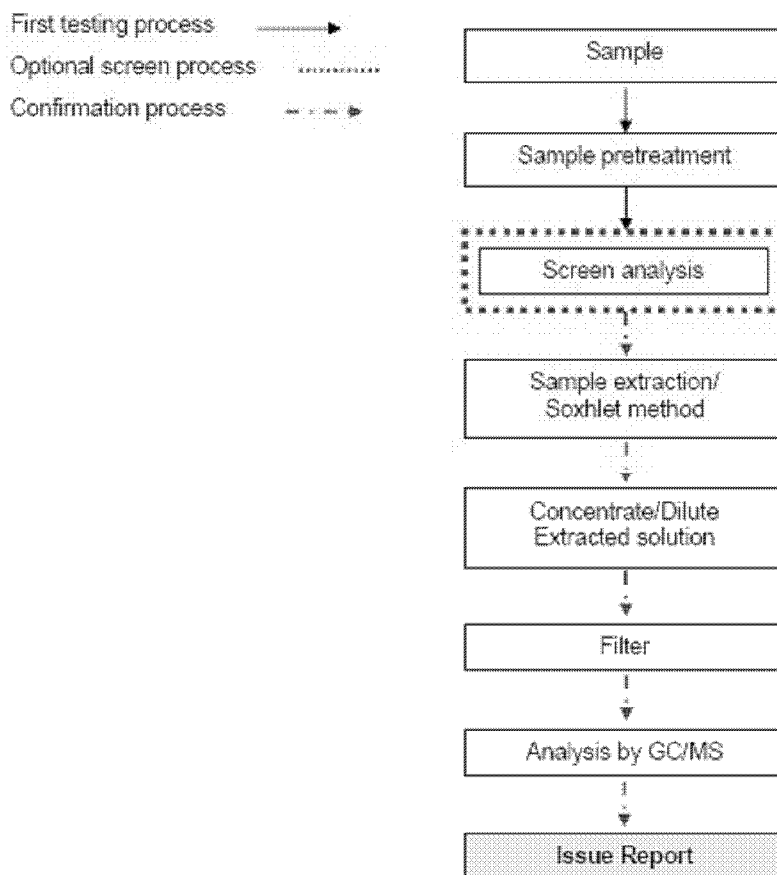
Page : 4 of 5

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F. 14, NO. 92, SHING TEH RD., SAN CHUNG CITY, TAIPEI, TAIWAN



PBB/PBDE analytical FLOW CHART



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SGS TAIWAN LIMITED

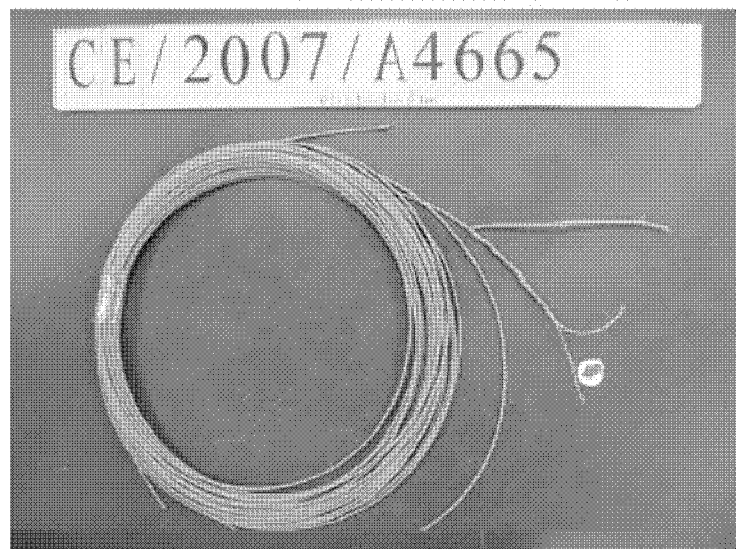
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t(886-2) 22963535 t(886-2) 2299-3237 www.sgs.com.tw

Test Report

No.: CE/2007/A4665 Date: 2007/10/29

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LAN TERRA INDUSTRIAL CO., LTD.
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Test Report

No. : CE/2007/A4666

Date : 2007/10/29

Page : 1 of 4

LANTERRA INDUSTRIAL CO., LTD.

F. 14, NO. 92, SHING TEH RD., SAN CHUNG CITY, TAIPEI, TAIWAN



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

Sample Description : KHCX-32AWG-SB-TA, KHCX-30AWG-SB-TA,
KHCX-36AWG-SB-TA
Style/Item No. : KHCX-32AWG-SB-TA, KHCX-30AWG-SB-TA,
KHCX-36AWG-SB-TA
Other Info. : SILVER COLORED METAL WIRE
Sample Receiving Date : 2007/10/22
Testing Period : 2007/10/22 TO 2007/10/29

=====

Test Requested : In accordance with the RoHS Directive 2002/95/EC, and its amendment directives.

Test Method : With reference to IEC 62321, Ed.1 111/54/CDV
Procedures for the Determination of Levels of Regulated
Substances in Electrotechnical Products.
(1) Determination of Cadmium by ICP-AES.
(2) Determination of Lead by ICP-AES.
(3) Determination of Mercury by ICP-AES.
(4) Determination of Hexavalent Chromium for metallic samples
by Spot test / Colorimetric Method.

Test Result(s) : Please refer to next page(s).

Conclusion : Based on the performed tests on submitted samples, the test results are **compliant with** the limits of RoHS Directive 2002/95/EC and its subsequent amendments.


Nicole Chien / Supervisor
Signed for and on behalf of
SGS TAIWAN LTD.
Chemical Laboratory - Taipei

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