Welcome to O-leading

O-Leading strives to be your one stop solution partner in EMS supply chain, including PCB design, PCB fabrication and PCB assembly (PCBA),We provide some of the most advanced PCB technology, including HDI PCBs,multilayer PCBs, Rigid-Flexible PCBs.We can support from quick turn prototype to medium & mass Production.

In general, our global customers are very impressed with our services:Rapid response, competitive price and quality commitment.Providing more valuable technical service and overall solution is the way O-leading forward.

Looking to the future, O-leading will concentrate on the innovation and development of electronics manufacturing technology as always, and make persistent efforts on PCB & PCBA one-stop service to provide first-class services and create more value for our customers.

PLEASE CLICK THESE FOR MORE INFORMATION <u>electronics multilayer and double-sided</u>

Product Description



Top quality Rigid-Flexible PCB manufacturer

Email:fancy@o-leading.com











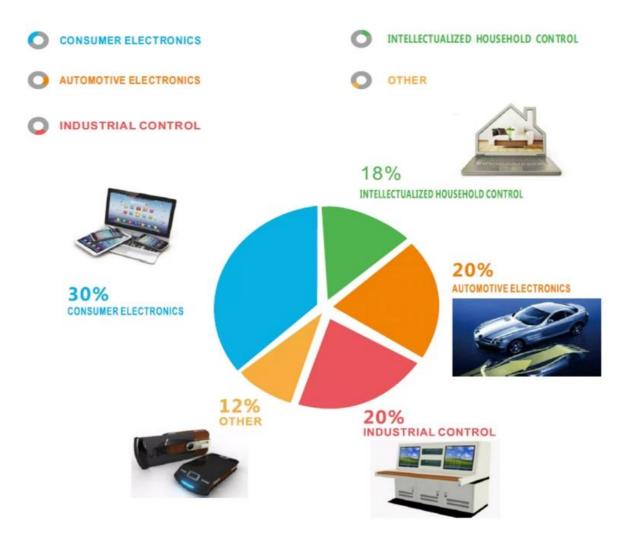


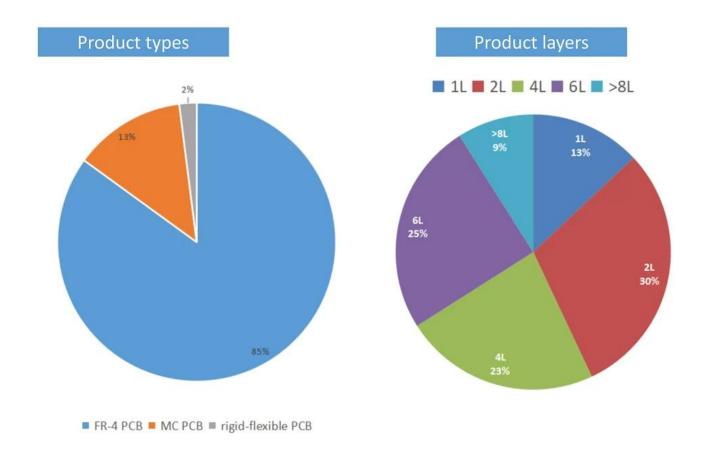


Production Process

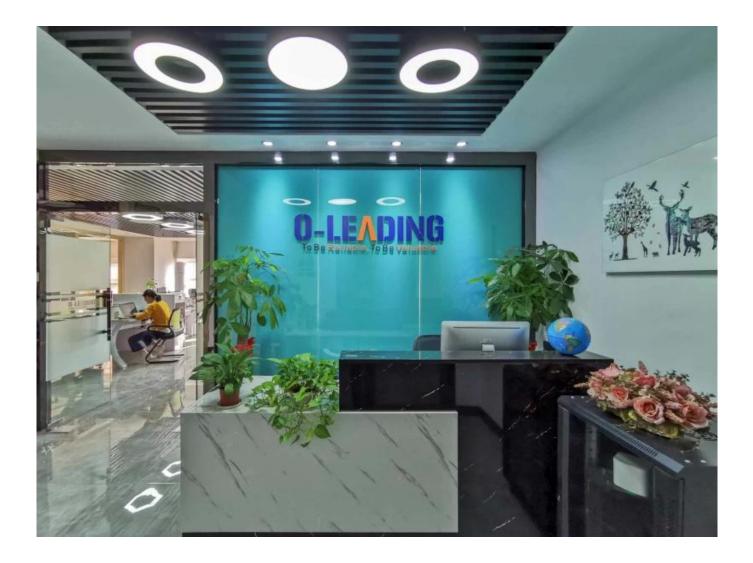
18 years experience in one-stop PCB and PCBA, we can make your idea come true,







Our Team



Factory PCB





Drilling Machine



Pattern Plating Machine



Scrubbing Machine



Developing Machine



Routing Machine



High-speed flying probe machine



E-test Machine

- Factory SMT













合作伙伴 Customers



Certifications



Test Report

No. SZXEC1900530401 Date: 30 Mar 2019 Page 1 of 6

O-LEADING SUPPLY CHAIN (HK) CO.,LIMITED 1313 FLOOR 13, FORTUNE BUILDING, DANSHUI TOWN, HUIYANG DISTRICT, HUIZHOU, GUANGDONG, CHINA

The following sample(s) was	s/were submitted and identified on behalf of the clients as : OSP
SGS Job No. :	RP19-005089 - SZ
Date of Sample Received :	22 Mar 2019
Testing Period :	22 Mar 2019 - 30 Mar 2019
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 sample(s), the results of Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBBs), Polybrominated diphenyl ethers (PBDEs) and Pithalates such as Bis(2-ethylhexyl) phthalate (DEHP), Butyl benzyl phthalate (BBP), Dubuyl phthalate (DBP), and Disobutyl phthalate (DBP) comply with the limits as et by RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU.

Signed for and on behalf of SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch



Approved Signatory



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6-755) 25328888 1 (86-755) 83106190 e sgs.china@sgs.com Member of the SGS Group (SGS SA)



Test Report

Test Results :

Test Part Description :

Specimen No. SGS Sample ID Description SN1 SZX19-005304.001 Green"PCB"

Remarks :

(1) 1

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

- (2) MDL = Method Detection Limit (3) ND = Not Detected (< MDL)
- (3) ND = Not Detected (< MDL
 (4) "-" = Not Regulated

RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU

Test Method : With reference to IEC 62321-4:2013+A1:2017. IEC62321-5:2013. IEC62321-7-2:2017. IEC 62321-6:2015 and IEC62321-8:2017, analyzed by ICP-OES, UV-Vis and GC-MS.

No. SZXEC1900530401

Date: 30 Mar 2019

Page 2 of 6

Test item(s)	Limit	Unit	MDL	001
Cadmium (Cd)	100	mg/kg	2	ND
Lead (Pb)	1,000	mg/kg	2	8
Mercury (Hg)	1,000	mg/kg	2	ND
Hexavalent Chromium (Cr(VI))	1,000	mg/kg	8	ND
Sum of PBBs	1.000	mg/kg		ND
Monobromobiphenyl		mg/kg	5	ND
Dibromob iphen yl	14	mg/kg	5	ND
Tribromobiphenyl	<i>.</i>	mg/kg	5	ND
Tetrabromobiphenyl		mg/kg	5	ND
Pentabromobiphenyl		mg/kg	5	ND
Hexabromobiphenyl		mg/kg	5	ND
Heptabromobiphenyl		mg/kg	5	ND
Octabromobiphenyl		mg/kg	5	ND
Nonabromobiphenyl		mg/kg	5	ND
Decabromobiphenyl		mg/kg	5	ND
Sum of PBDEs	1,000	mg/kg		ND
Monobromodiphenyl ether		mg/kg	5	ND
Dibromodiphen yl ether		mg/kg	5	ND
Tribromodiphenyl ether	-	mg/kg	5	ND
Tetrabromodiphenyl ether		mg/kg	5	ND
Pentabromodiphenyl ether		mg/kg	5	ND



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Member of the SGS Group (SGS SA)

UL Product iQ™



E490354

ZPMV2.E490354 - WIRING, PRINTED - COMPONENT

Wiring, Printed - Component

See General Information for Wiring, Printed - Component

O-LEADING SUPPLY CHAIN (HK) CO LTD

ROOM 1205, 12/F TAI SANG BANK BLDG 130-132 DES VOEUS ROAD CENTRAL, HONG KONG

	Cond	Width			Max			Max			
		Min	Cond	SS/	Area	Solo	der	Oper		Meets	с
	Min	Edge	Thk	DS/	Diam	Lim	its	Temp	Flame	UL796	т
Туре	mm(in)	mm(in)	mic(mil)	DSO	mm(in)	с	sec	с	Class	DSR	L
Multilayer (m	ass laminate) p	rinted wiring l	ooards.								
O-LEADING- 401	0.1 (0.004)	0.3 (0.012)	34 (1.34)	DS	12.7 (0.5)	260	10	130	V-0	-	-
O-LEADING- 407	0.08 (0.003)	0.2 (0.008)	17 (0.67)	DS	9.7 (0.4)	260	10	130	V-0	All	-
Multilayer pri	nted wiring bo	ards.	A								
O-LEADING- 408	0.125 (0.005)	0.125 (0.005)	12 (0.47) Int:136	DS	50.8 (2.0)	280	20	130	V-0	All	*
Single layer p	rinted wiring b	oards.	n.					600	3 7	200	
O-LEADING- 002	0.38 (0.015)	1.14 (0.045)	34 (1.34)	SS	19.1 (0.8)	260	10	105	V-0	All	-
O-LEADING- 003	0.38 (0.015)	1.14 (0.045)	34 (1.34)	SS	19.1 (0.8)	260	10	130	V-0		-
O-LEADING- 033	0.15 (0.006)	0.3 (0.012)	34 (1.34)	SS	25.4 (1.0)	260	10	120	V-0	All	-
O-LEADING- 205	0.1 (0.004)	0.3 (0.012)	34 (1.34)	DS	69.6 (2.7)	260	10	130	V-0	All	-
O-LEADING- 206	0.15 (0.006)	0.33 (0.013)	17 (0.67)	DS	69.6 (2.7)	260	10	130	V-0	All	-
O-LEADING- D01	0.14 (0.006)	0.15 (0.006)	33 (1.30)	DS	25.4 (1.0)	260	10	130	V-0	All	*
O-LEADING- S01	0.25 (0.010)	0.25 (0.010)	17 (0.67)	SS	25.4 (1.0)	260	4	130	V-0	All	*

WIRING, PRINTED - COMPONENT | UL Product iQ

O-LEADING- S02	0.2 (0.008)	0.2 (0.008)	17 (0.67)	SS	25.4 (1.0)	260	4	130	НВ		*
O-LEADING- S03	0.25 (0.010)	0.25 (0.010)	34 (1.34)	SS	25.4 (1.0)	260	4	130	V-0	All	*

* - CTI marking is optional and may be marked on the printed wiring board.

Marking: Company name or file number and type designation. May be followed by a suffix to denote factory identification or burning test classification.

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Process Capability

Layer Count1Layer-32LayerFinished copper thickness1/3oz-12ozMin Line width/spacing internal3.0mil/3.0milMin Line width/spacing external4.0mil/4.0milMax Aspect Ratio10:1Board thickness0.2mm-5.0mmMax Panel size(inches)635*1500mmMinimum Drilled Hole Size4milPlated Hole Tolerance+/-3milBlind/Buried Vias (AII Types)YESVia Fill(Conductive,Non-Conductive)YESBase MaterialFR-4,FR-4high Tg.Halogen free material,Rogers,Aluminium base,Polyimide,Heavy Copper					
Finished copper thickness 1/3or 12or Min Line width/spacing internal 3.0ml/3.0ml Min Line width/spacing internal 4.0ml/4.0ml Max Aspect Ratio 10:1 Bard fluckness 0.2mm-3.0mm Max Panel siz(inches) 6.55*1500mm Minimum Drilled Hole Size 4mil Plated Hole Tolerance +/-3mil Bill/Grund Vias (All Types) YES Via Fill(Conductive, Non-Conductive) YES Base Material FR-4, FR-4high Tg.Halogen free material.Rogers, Aluminium base, Polyimide, Heavy Copper Surface finishes HASL.OSP, ENIG, HAL-LF, Immersion silver, Immersion Tin, Cold fingers, Carbon ink SMT Production Capabilities FR-4, CEM-1, CEM-3, Aluminum-based board Max PCB size 50x50mm PCB Material FR-4, CEM-1, CEM-3, Aluminum-based board Min PCB size 50x50mm PCB Thickness 0.5-4mm Min Components size 0201 Standard chip size component 0603 and larger Component max height 15mm Min lead pitch 0.3mm Min lead pitch 0.4mm	PCB Production Capabilities				
Min Line width/spacing internal 3.0mil/3.0mil Min Line width/spacing external 4.0mil/4.0mil Max Aspect Ratio 10:1 Board thickness 0.2mm-5.0mm Max Parel Size(Inches) 635*1500mm Minumur Drilled Hole Size 4mil Plated Hole Tolerance +/-3mil Blind/Buried Vias (AII Types) YES Via Fill(Conductive, Non-Conductive) YES Sufface finishes HASLOSP.ENIG.HAL-LF.Immersion Silver.Immersion Tin,Gold fingers,Carbon ink SMT Production Capabilities FR-4, CEM-1, CEM-3, Aluminum-based board Max PCB size 510x460mm Min PCB size 0.5mm-4.5mm PCB Thickness 0.5-4mm Min Components size 0201 Standard chip size component 0603 and larger Component max height 15mm Min lead pitch 0.3mm	Layer Count	1Layer-32Layer			
Min Line width/spacing external 4.0mil/4.0mil Max Aspect Ratio 10:1 Max Aspect Ratio 0.2mm-5.0mm Max Panel size(inches) 635*1500mm Minimum Drilled Hole Size 4mil Plated Hole Tolerance +/-3mil Blind/Buried Vias (All Types) YES Via FIII(Conductive, Non-Conductive) YES Base Material FR4.FR-Ahigh Tg.Halogen free material.Rogers.Aluminium base.Polyimide.Heavy Copper SUTF Production Capabilities HASL_OSP.ENIG.HAL-LF.Immersion Tin.Gold fingers.Carbon ink SMT Production Capabilities FR-4,CEM-1,CEM-3,Aluminum-based board Max PCB size 50x50mm PCB Material S10x460mm Min PCB size 50x50mm PCB Thickness 0.5-4mm Min Components size 0201 Standard chip size component 0603 and larger Component max height 15mm Min lead pitch 0.3mm	Finished copper thickness	7			
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SMT Production CapabilitiesPCB MaterialFR-4,CEM-1,CEM-3,Aluminum-based boardMax PCB size510x460mmMin PCB size50x50mmPCB Thickness0.5mm-4.5mmBoard thickness0.5-4mmMin Components size0201Standard chip size component0603 and largerComponent max height15mmMin lead pitch0.3mm	Dase Material	TR-4, FR-4mgn Tg. Halogen free h	laterial, rogers, Auminium base, roryinnue, reavy copper		
PCB MaterialFR-4,CEM-1,CEM-3,Aluminum-based boardMax PCB size510x460mmMin PCB size50x50mmPCB Thickness0.5mm-4.5mmBoard thickness0.5-4mmMin Components size0201Standard chip size component0603 and largerComponent max height15mmMin lead pitch0.3mmMin BGA ball pitch0.4mm	Surface finishes	HASL, OSP, ENIG, HAL-LF, Immers	ion silver,Immersion Tin,Gold fingers,Carbon ink		
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Min lead pitch0.3mmMin BGA ball pitch0.4mm	Standard chip size component		0603 and larger		
Min BGA ball pitch 0.4mm	Component max height		15mm		
	Min lead pitch		0.3mm		
Placement precision +/-0.03mm	Min BGA ball pitch		0.4mm		
	Placement precision		+/-0.03mm		

Packaging & Delivery

Shipping service





Express

Quick Turn Lead Time					
Layer Count:	Lead Tim	Special Requirement			
1L/2L	2-3days	24 Hours,48 Hours			
4L	3-4days	48 Hours			
6L	4-5days	72 Hours			
8L	5-6days	NA			
10L	6-7days	NA			
12L	7-8days	NA			
14L	8-9days	NA			

	Standard Lead Time					
Layer Count:	Sample Lead Time	Volume order lead time				
2L	4 days	10 days				
4L	5 days	11 days				
6L	6 days	12 days				
8L	8 days	14 days				
10L	10 days	16 days				
12L	12 days	18 days				
14L	14 days	20 days				
16-32L	18 days	24 days				

FAQ

1. How do O-Leading ensure quality?

Our high quality standard is achieved with the following.

1.1 The process is strictly controlled under ISO 9001:2008 standards.

1.2 Extensive use of software in managing the production process

1.3 State-of-art testing equipments and tools. E.g. Flying Probe, X-ray Inspection, AOI (Automated Optical Inspector) and ICT (in-circuit testing).

1.4.Dedicated quality assurance team with failure case analysis process

1.5.Continuous staff training and education

2. How do O-Leading keep your price competitive?

Over the last decade, prices of many raw materials (e.g. copper, chemicals) had doubled, tripled or quadrupled; Chinese currency RMB had appreciated 31% over US dollar; And our labor cost also increased significantly.

However, O-Leading have kept our pricing steady. This owns entirely to our innovations in reducing cost, avoiding wastes and improving efficiency. Our prices are very competitive in the industry at the same quality level.

We believe in a win-win partnership with our customers. Our partnership will be mutually beneficial if we can provide you an edgeon cost and quality.

3. What kinds of boards can O-Leading process?

Common FR4, high-TG and halogen-free boards, Rogers, Arlon, Telfon, aluminum/copper-based boards, PI, etc.

4. What data are needed for PCB & PCBA production?

4.1 BOM (Bill of Materials) with reference designators: component description, manufacturer's name and part number.

4.2 PCB Gerber files.

4.3 PCB fabrication drawing and PCBA assembly drawing.

4.4 Test procedures.

4.5 Any mechanical restrictions such as assembly height requirements.

5. What's the typical process flow for multi-layer PCB?

 $\begin{array}{l} \mbox{Material cutting} \rightarrow \mbox{Inner dry film} \rightarrow \mbox{inner etching} \rightarrow \mbox{Inner AOI} \rightarrow \mbox{Multi-bond} \rightarrow \mbox{Layer stack up Pressing} \rightarrow \mbox{Drilling} \rightarrow \mbox{PTH} \rightarrow \mbox{Panel Plating} \rightarrow \mbox{Outer Dry Film} \rightarrow \mbox{Pattern Plating} \rightarrow \mbox{Outer etching} \rightarrow \mbox{Outer AOI} \rightarrow \mbox{Solder Mask} \rightarrow \mbox{Component Mark} \rightarrow \mbox{Surface finish} \rightarrow \mbox{Routing} \rightarrow \mbox{E/T} \rightarrow \mbox{Visual Inspection.} \end{array}$

6. What's the key equipments for HDI manufacturing?

Key equipment list is as following: Laser drilling machine, Pressing machine, VCP line, Automatic Exposing machine, LDI and etc.

The equipments we have are the best in the industry, laser drilling machines are from Mitsubishi and Hitachi, LDI machines are from Screen(Japan), Automatic Exposing machines are also from Hitachi, all of them make we can meet customer's technical requirements.

7. How many types of surface finish O-lead can do?

O-the leader has the full series of surface finish, such as: ENIG, OSP, LF-HASL, gold plating (soft/hard), immersion silver, Tin, silver plating, immersion tin plating, carbon ink and etc. .. OSP, ENIG, OSP + ENIG commonly used on the HDI, we usually recommend that you use a client or OSP OSP + ENIG if BGA PAD size less than 0.3 mm.

8. What's your capability for FPC? Can O-Leading provide SMT service also?

O-Leading can fabricate FPC from single layer to 8layer, the working panel size can be as large as 2000mm*240mm, please find the details in the page "Flex Capability" We also provide SMT one stop service to customer.

9. What are the main factors which will affect the price of PCB?

Material; Surface finish; Technology difficulty; Different quality criteria; PCB characteristics; Payment terms; Different manufacturing countries.

10. What's the definition of PCB, PWB and FPC and what's the difference?

PCB is short for Printed Circuit Board; PWB is short for Printed Wire Board, same meaning as Printed Circuit Board; FPC is short for Flexible Printed Board.

11. What factors should be considered when choosing the material for a PCB board?

Below factors should be considered when we choose the material for PCB: The material's Tg value should be greater than the operation temperature; Low CTE material has good performance of thermal stability; Good thermal resistance performance: Normally PCBs are required to resist 250°C for at least 50s. Good flatness; In consideration of the electrical properties, low loss/high permittivity material is used on high frequency PCB; Polyimide glass fiber substrate used for flexible PCB; Metal core is used when the product has strict requirement of heat dissipation.

12. What's the merits of O-leading's rIgid-flex PCB?

O-leading's rigid-flex PCB has the characters of both FPC and PCB, so it can be used in some special products. Some part is flexible while the other part rigid, it can help save product's interior space, reduce product volume and improve performance.

13. How to you make the impedance calculation?

The impedance control system is done using some test coupons, the SI6000 soft and the CITS 500s equipment from POLAR INSTRUMENTS.

The equipment measures the impedance on a representative track configuration coupon of which the client has given us a determinate value and tolerance.