

Welcome to HTD Group

ShenZhen HTD Circuits Co.,Ltd

MANKUN TECHNOLOGY CO.,LTD

Company Profile



- HTD Group/MANKUN TECHNOLOGY CO.,LTD was founded in 2001.
- Total area is 150,000 M² with a build capacity of 1,800,000 M² annually.
- Presently we employee over 1400 staff in 3 different locations.
- Our mission is simple; Make is easy for our clients to do business, reduce client inventory costs, and provide the highest knowledgeable staff.

Meeting our Mission

At HTD Group, we invest highly in our people and processes. With HTD as your PCB partner, you will receive:

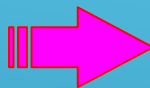
- ▶ Access to our online quote/order system. Easily price and order boards from your home or office 24x7.
- ▶ An experienced account manager at your disposal to help with any and all PCB related items. Our Account Managers are highly trained in both product knowledge and relationship management.
- ▶ Eastern and Western Managers on staff and available to answer questions and ensure orders flow smoothly.
- ▶ True global inventory management and warehousing available
- ▶ Unsurpassed Quality Control. 100% of our boards are tested BEFORE shipping!
- ▶ An organization that continually invests in the latest technological advances to stay ahead of the competition.
- ▶ Our commitment to always seek ways to build more environmentally friendly PCB boards.

Key Milestones

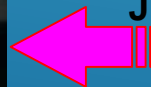
- Dec. 2003** Founded Mankun Electronic Co., Ltd. in Shenzhen for Double side and Multilayer Rigid PCBs.
- Apr. 2008** Established Ji'an Mankun Technology Park.
- Jan. 2010** Started mass production.
- Aug. 2010** Introduced our ERP System
- Dec. 2010** Passed ISO9001:2008 QSA Certification
- Jan. 2011** Passed ISO14001:2004 EMS Certification
- May. 2011** Passed ISO/TS16949:2009 QSA Certification

Corporate Overview

HTD Group/Mankun Electronic Co.,Ltd
DS and Multilayer Rigid PCBs.



Ji'An HTD Group / Mankun Technology Co.,Ltd.
Rigid-Flex DS and Multilayer Rigid PCB





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Plant Locations



Jian HTD Group/ Mankun Technology Co., Ltd.

DS and Multilayer Rigid PCBs

Shenzhen HTD Group/ Mankun Electronic Co., Ltd.

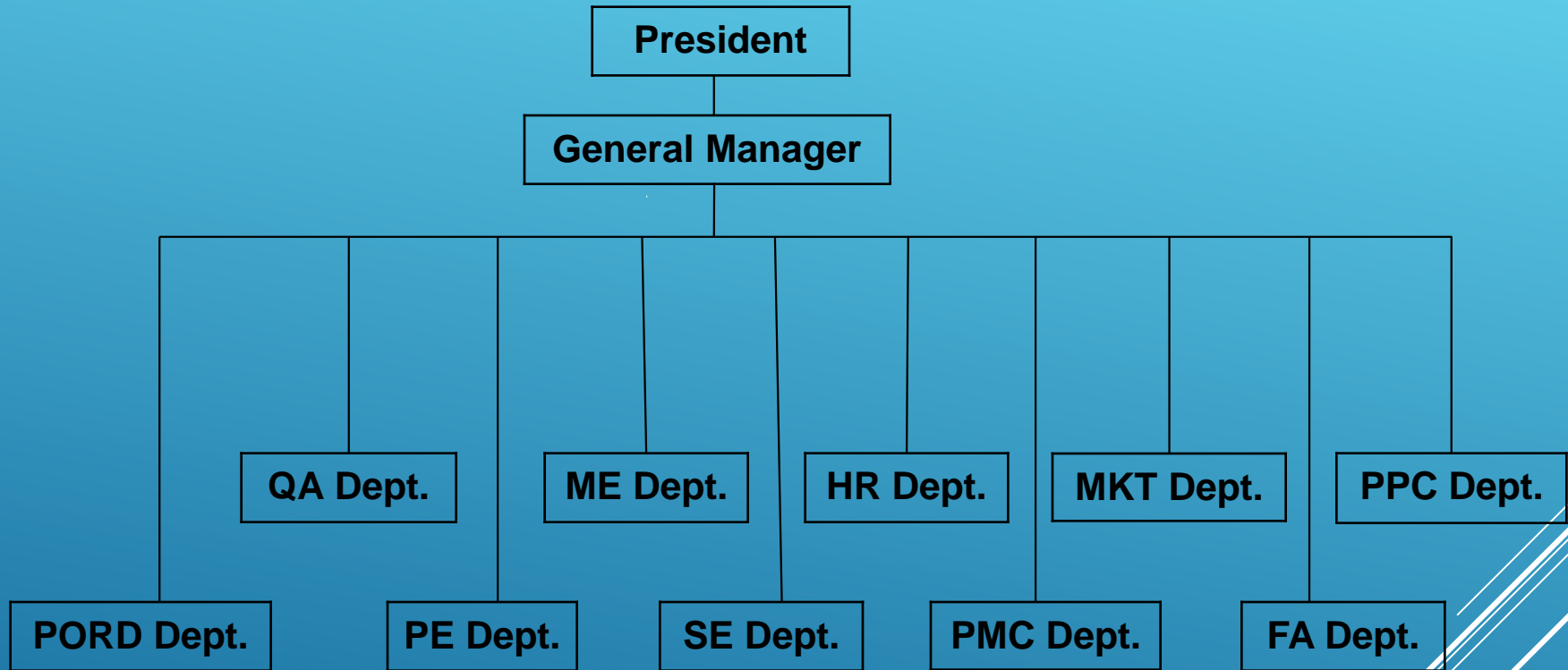
DS and Multilayer Rigid PCBs

Mankun/HTD Group East-China Industrial Park





Organizational structure Chart





HTD GROUP

Management philosophy



- Integrity
- Innovation
- Beneficial Relationships
- Social Responsibility



The Developing Trend of New Project Business

HTD GROUP

Regional
Advancing Enterprise
→ International
Group Company
地域性的先進事業
→ 國際性大企業

Mankun East-China
Industrial Park
in Jiangxi
江西满坤华东工业园

High-RF&HDI PCBs
高端 RF&HDI PCB

Multi-Type of PCBs
双面多层, 特殊板料

Normal &
Automotive DS
普通双面&汽车双面

The Stock
Market
in China

中国股票市
场挂牌上市

Preparing Get
Listed on
the Stock
Market
in China
中国股票市
场挂牌前准备

10

Technique
Evolution
Goal
技术进
化方向

New
Project
Business
新事业
规划

年度

2008

2009

2010

2011

2012

2013

2014

2015

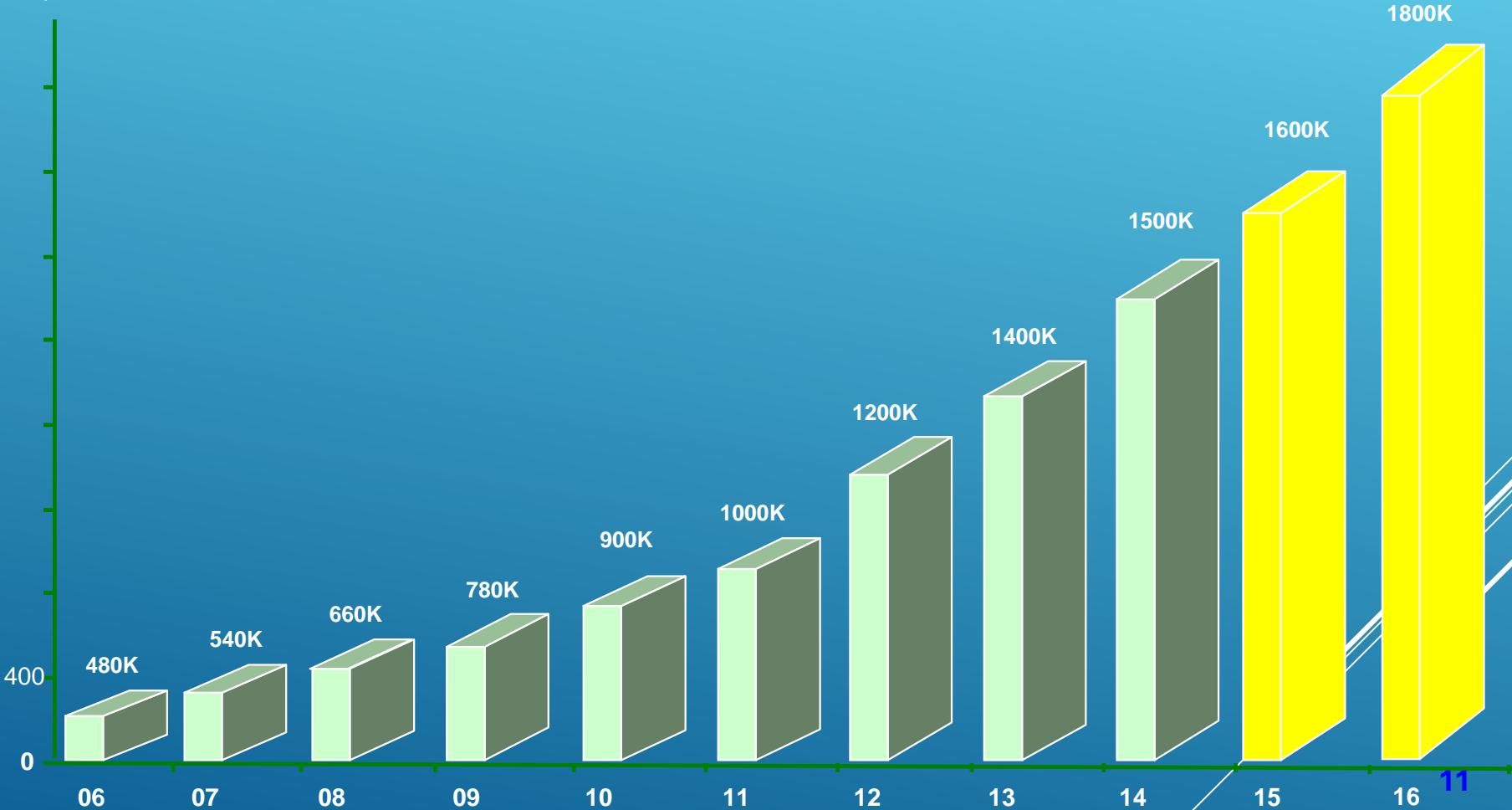
New Plant in
Jiangxi China
中国江西新厂



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Annual Capacity Schedule

SQ.M/Y





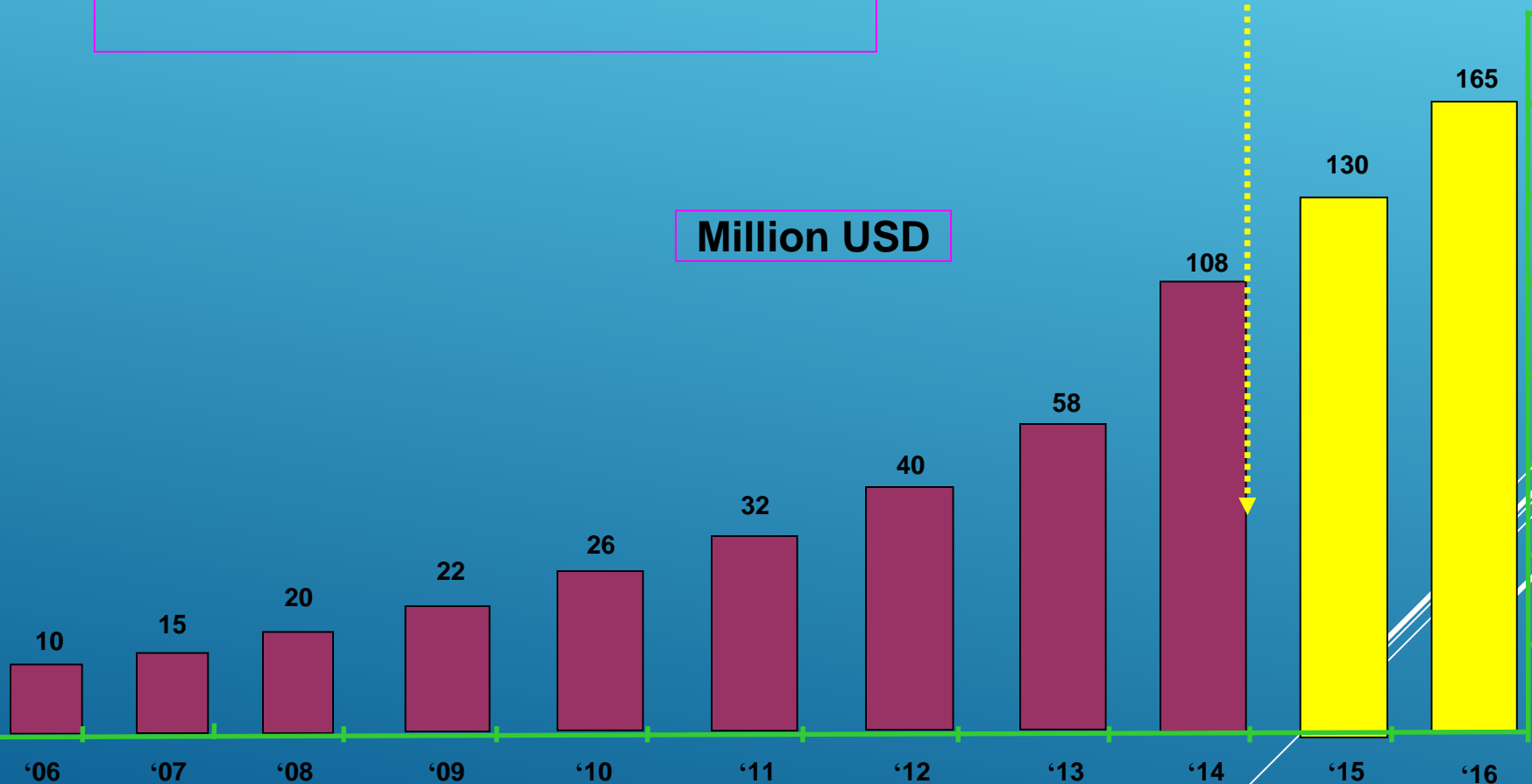
HTD GROUP

Consistent Growth

Continuous Grow In Last 8 Years

Annual Sales Growth Plan

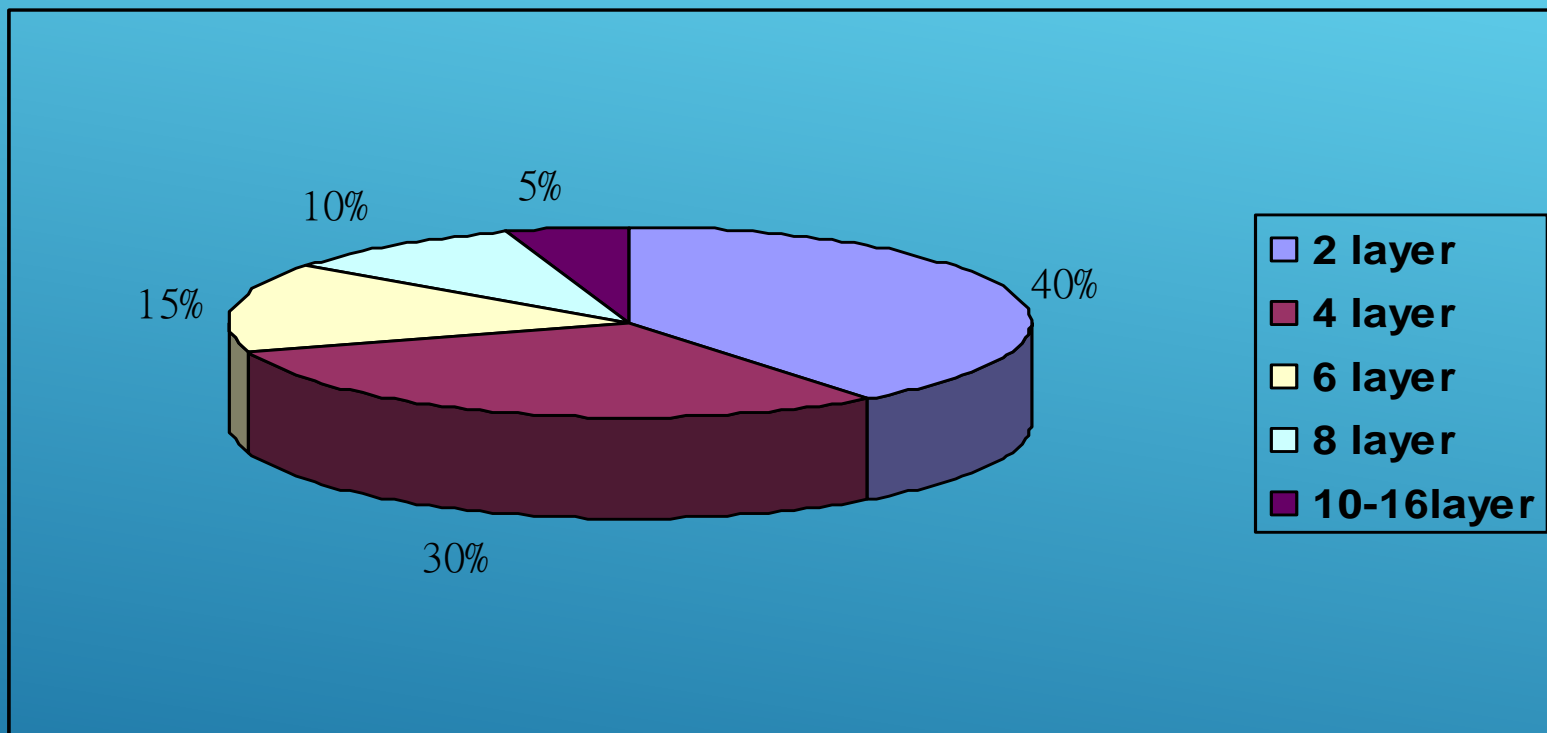
Million USD





HTD GROUP

Production Distribution



High Quality . World Class Service . Aggressive Pricing



Production scale

Design Capacity: Dec. 2015: 1,600,000 Annual Sq. M

Dec. 2016: 1,800,000 Annual Sq. M

- **Single & Double Sided PCB** **55K Sq. m/Monthly**
- **Multi-Layer(4-8Layers)** **60K Sq. m/Monthly**
- **Special Double Sided PCB** **25K Sq. m/Monthly**
(Carbon, Peelable, Aluminum Base)
- **Surface Finish Options**
 - **Immersion Ni/Au**
 - **Organic Solderability Preservatives(OSP)**
 - **Immersion Tin**
 - **Immersion Silver**
 - **Lead Free HASL**



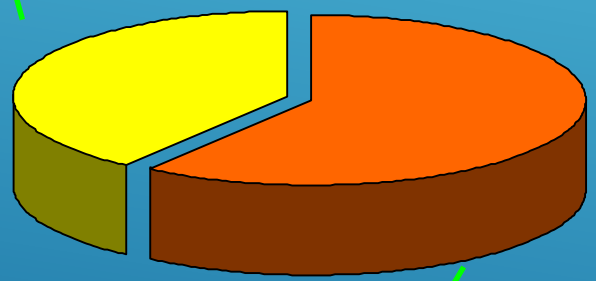
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Sales By Geography

2014

Export 45%

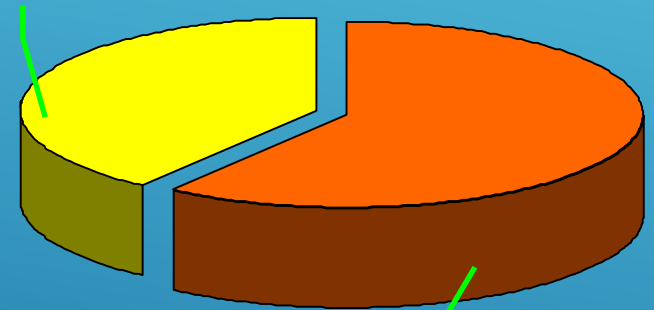
55% Mainland China



2015

China 45%

55% Export

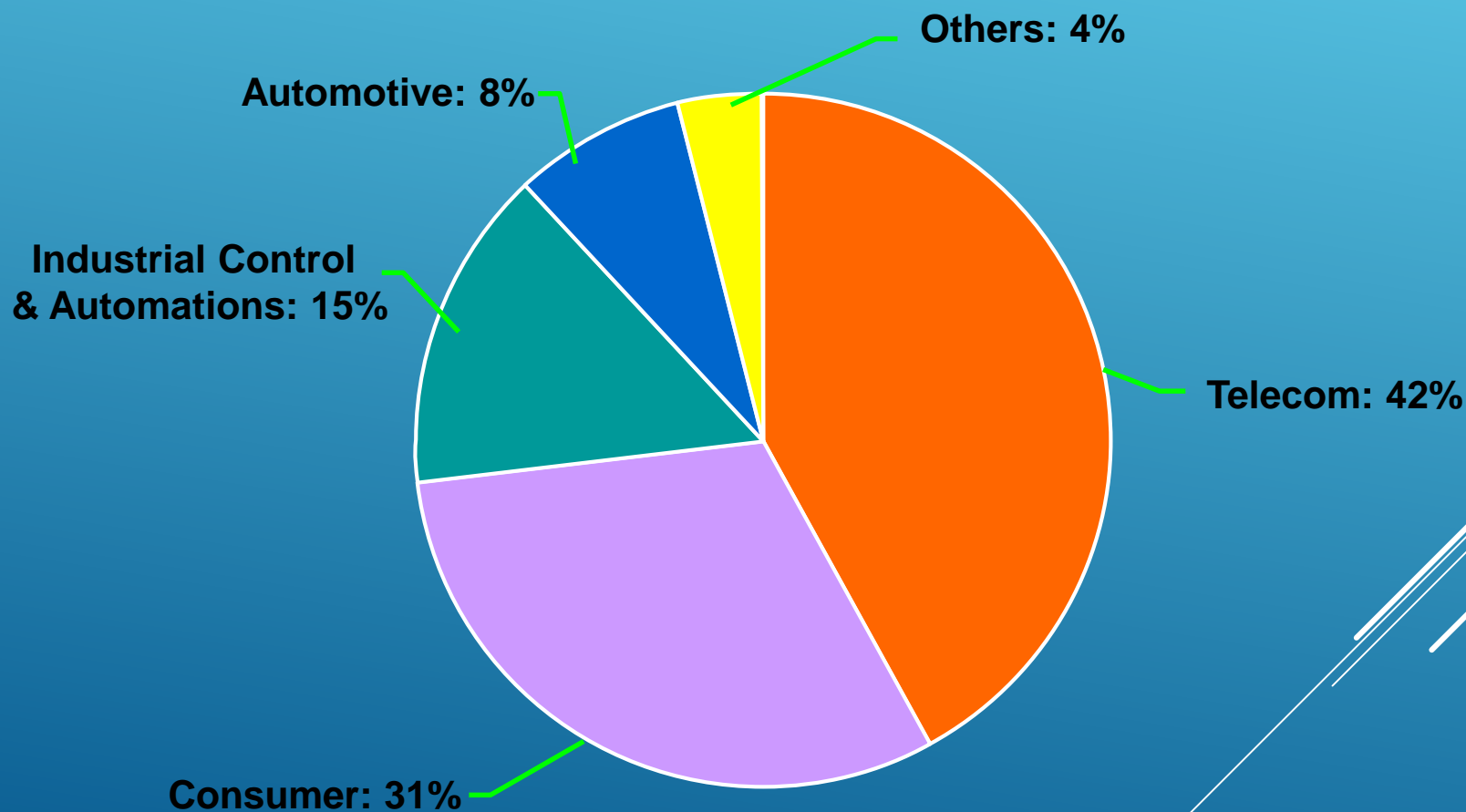




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Sales Segmentation

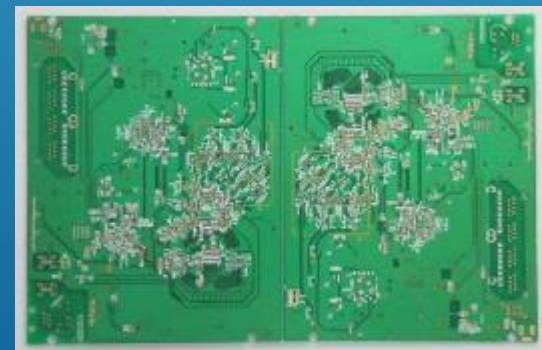
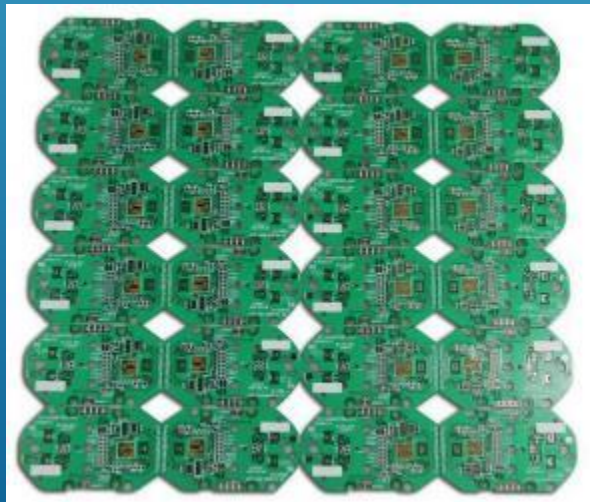
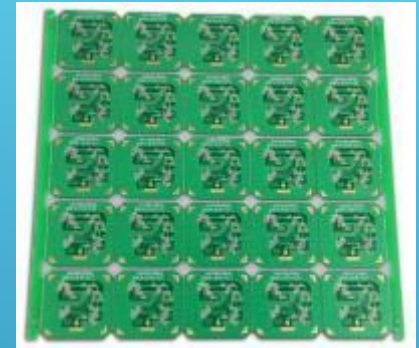
Total \$130 Million



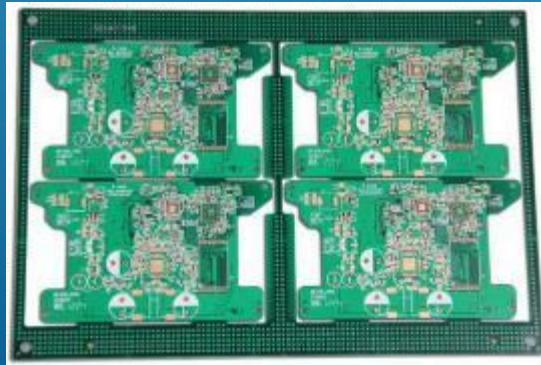
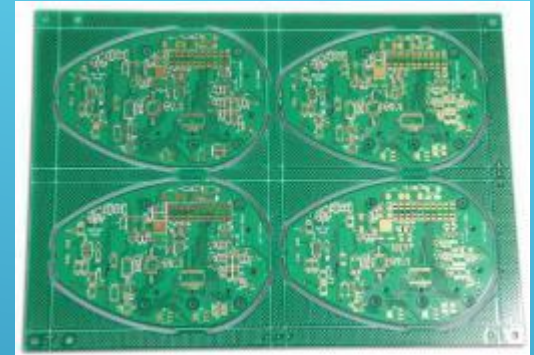
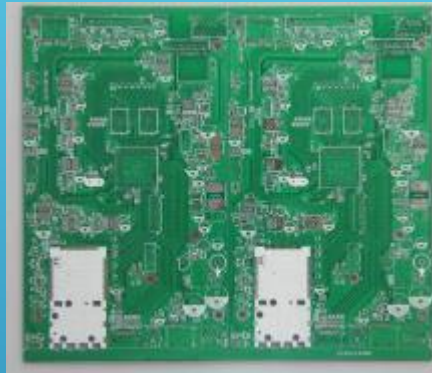
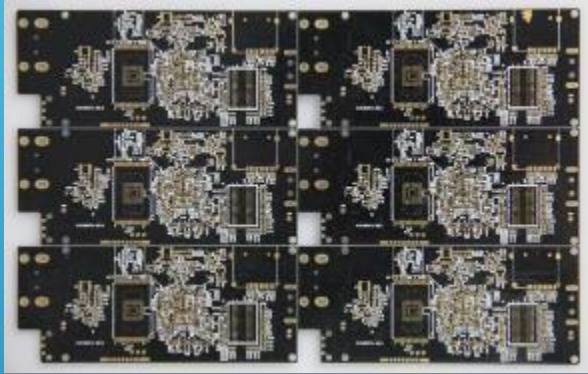


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Telecommunication Application



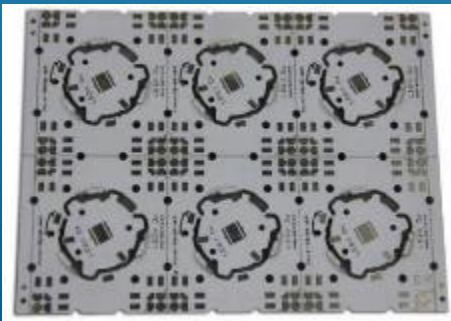
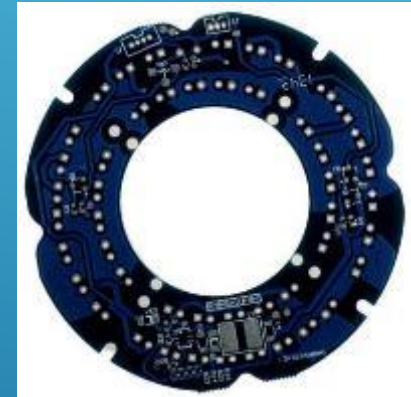
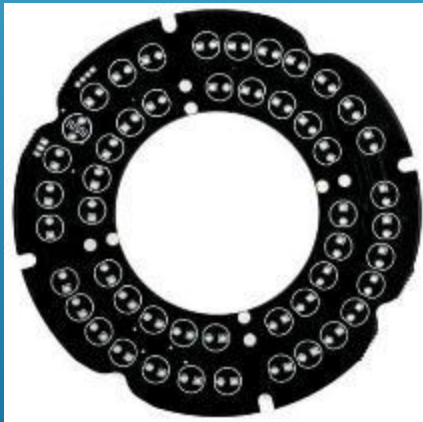
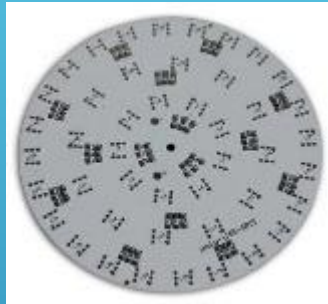
Consumer Application



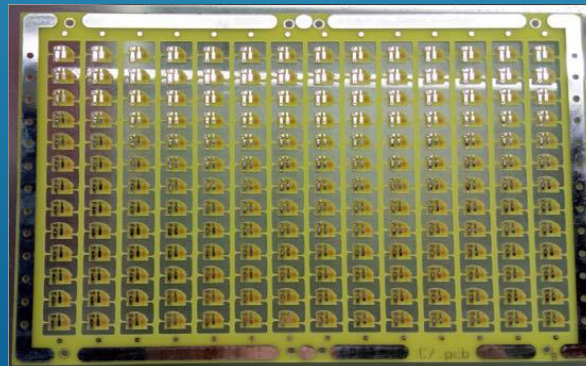
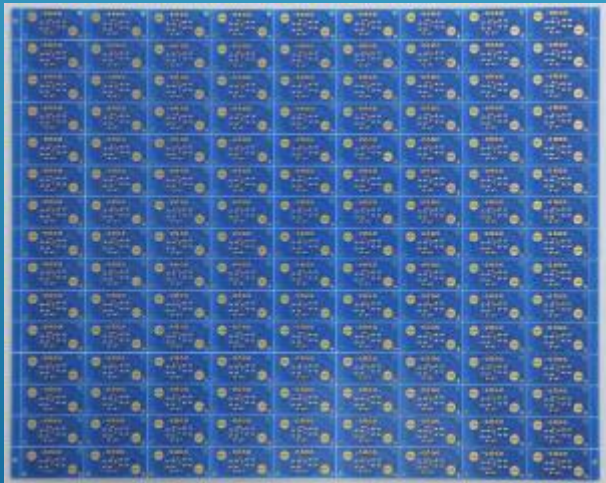
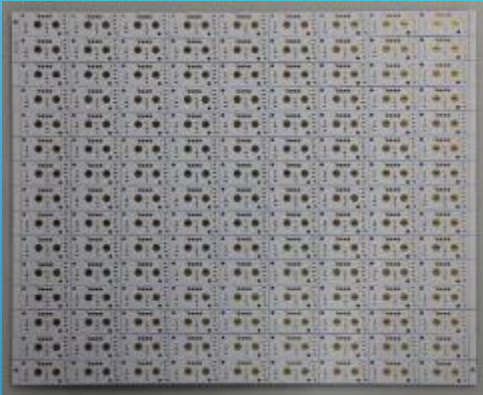


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LED Lighting Application



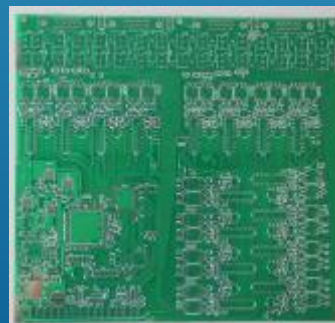
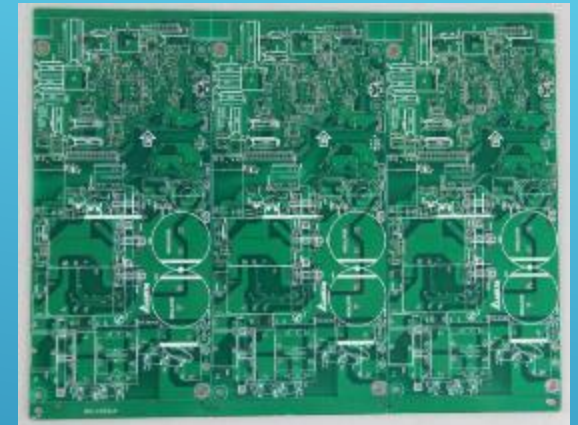
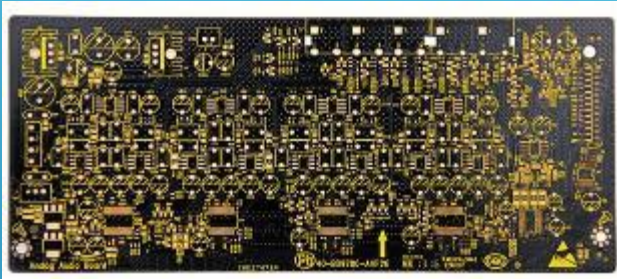
Automotive Application





Industrial Control & Automations

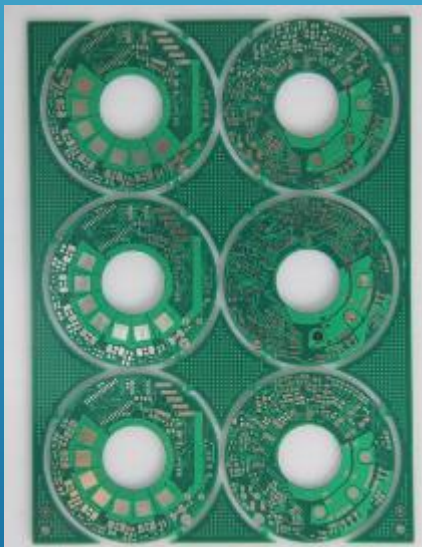
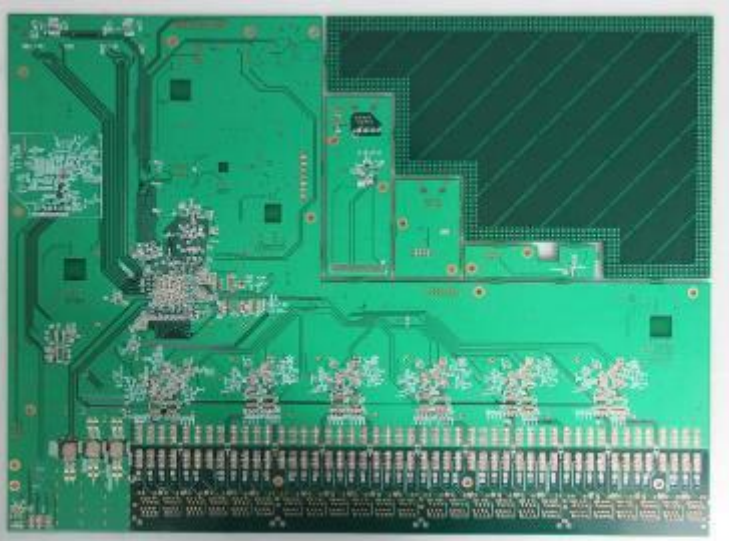
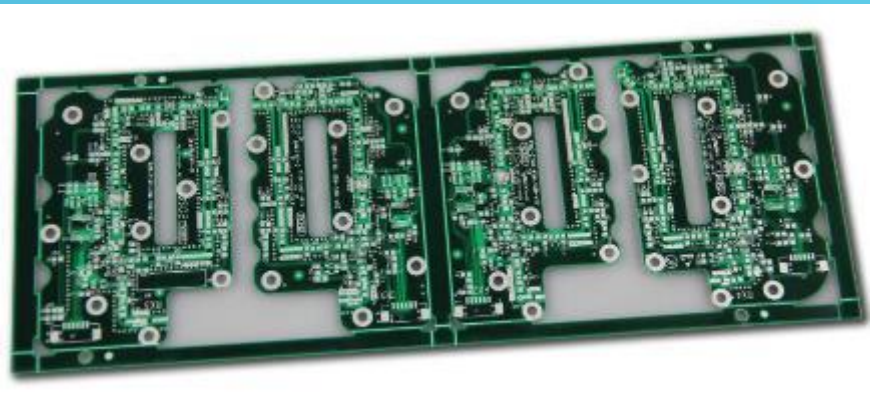
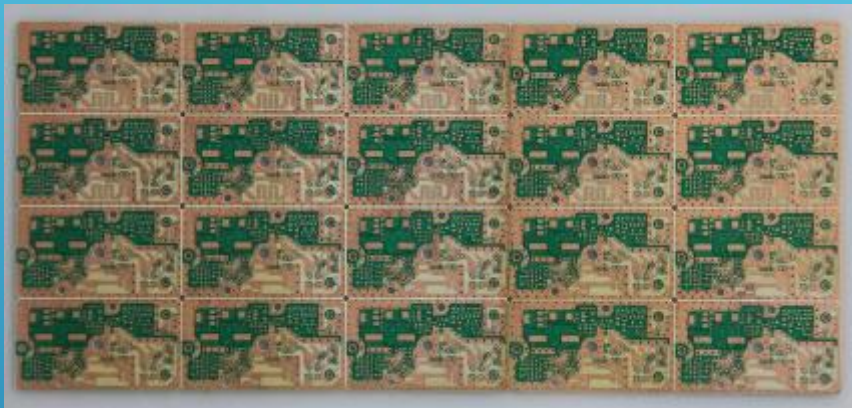
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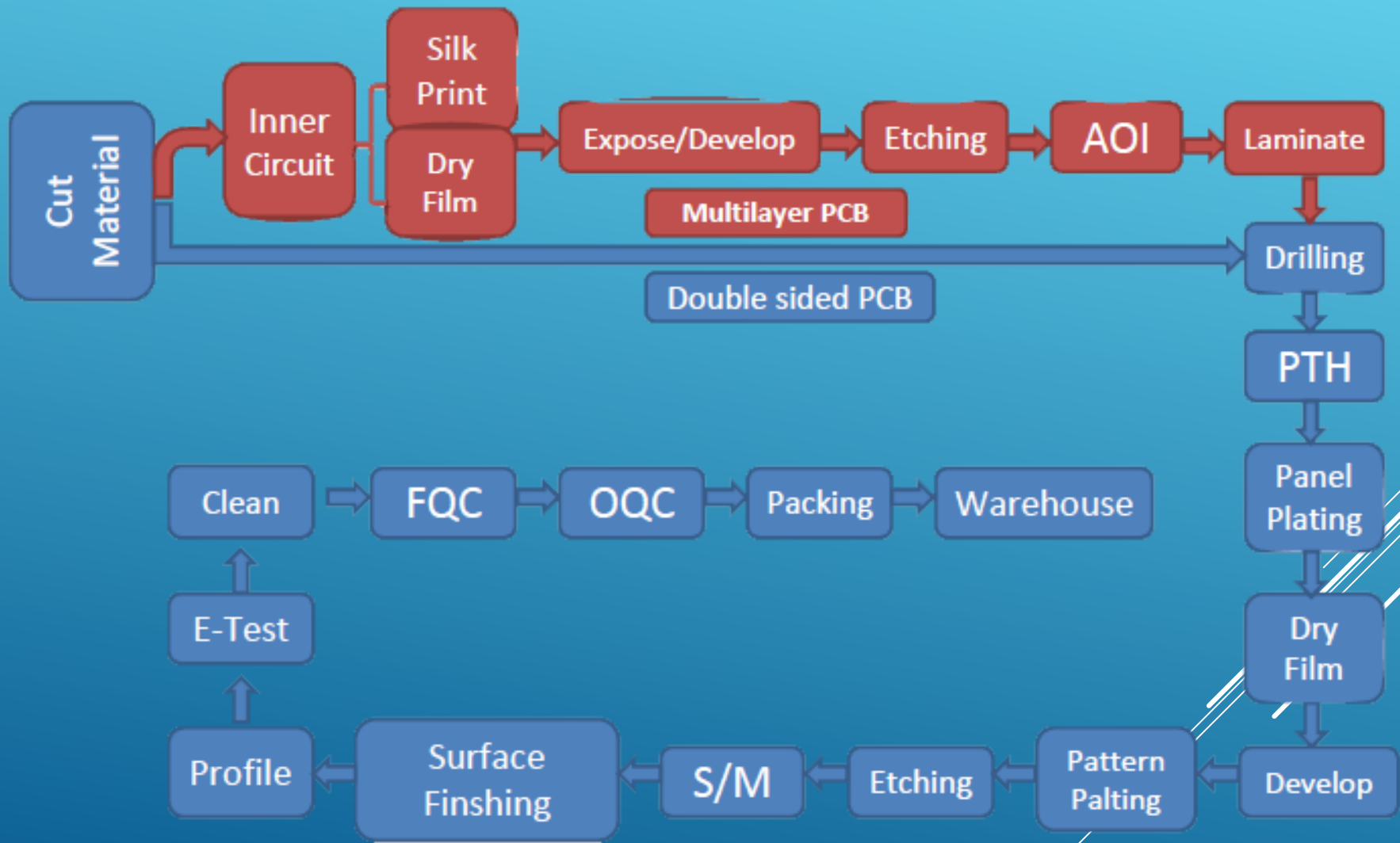
Others



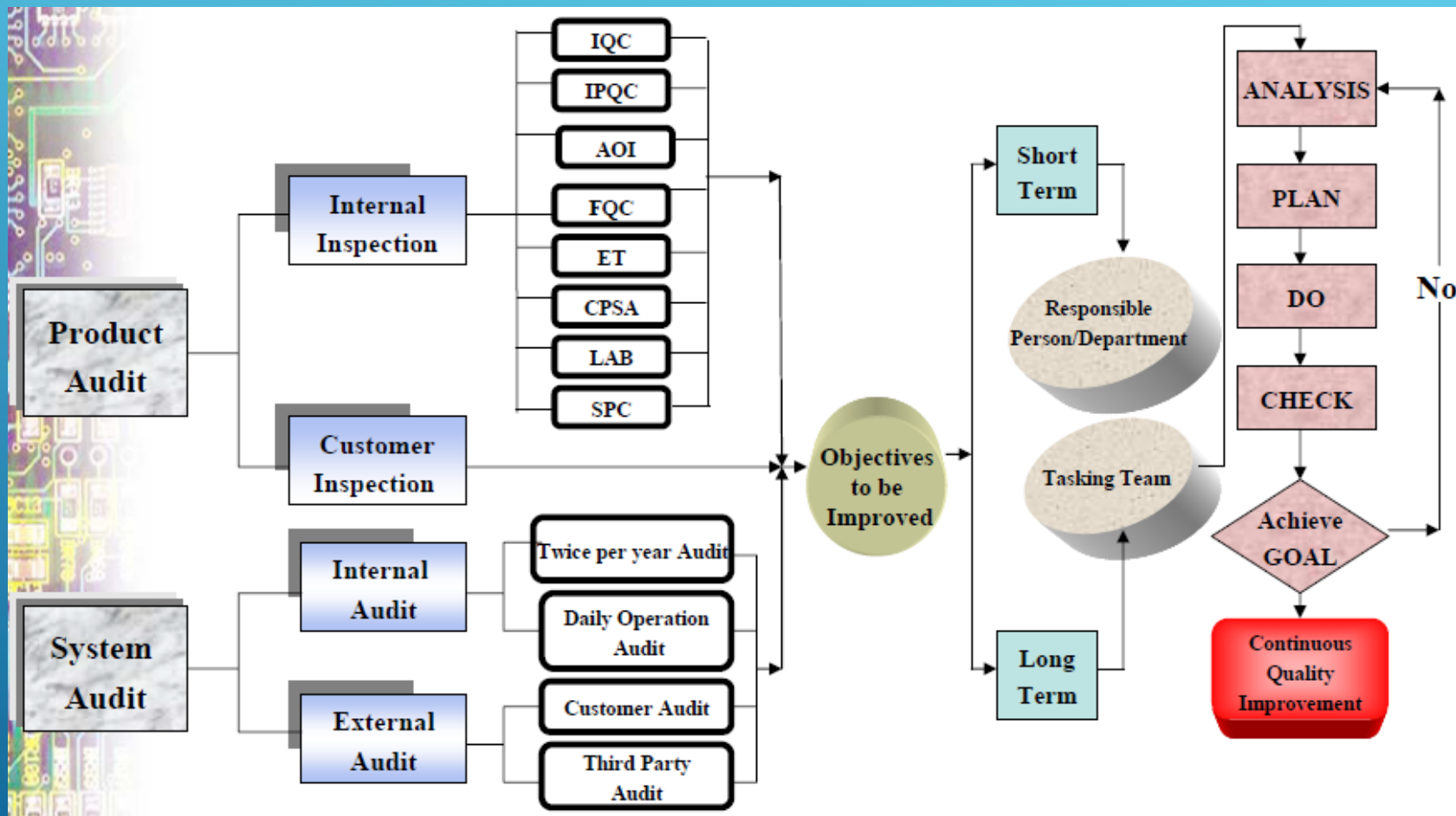


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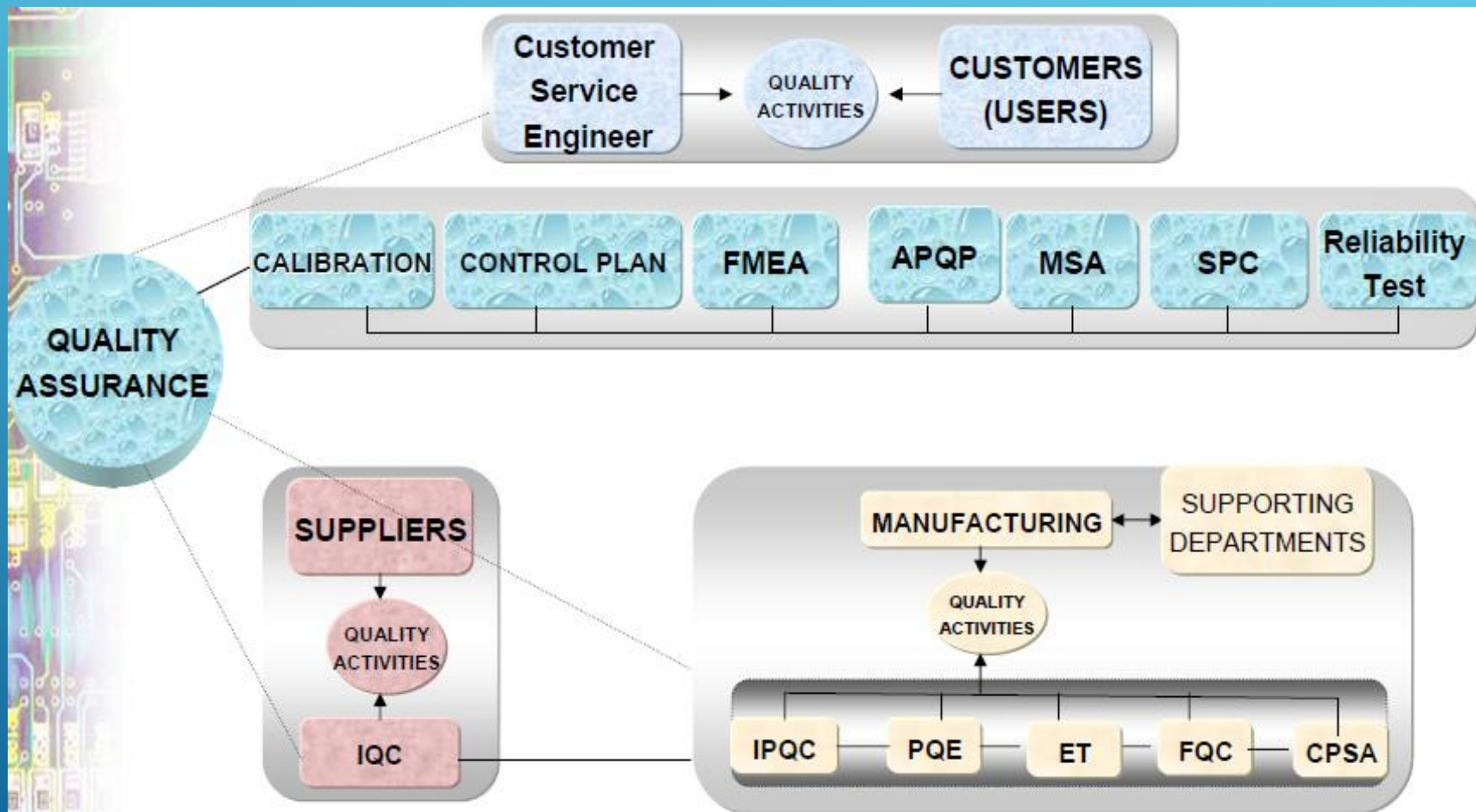
Flow Chart



Continues Quality Improvement



Quality Management System





Technology Capabilities

Engineering Standard And Capability		
Process	Item	Description
Cutting	Max.panel size	540×620mm
Lamination/Press	Layer counts	2-16L
Inner Layer	Min.trace width/gap	0.076mm/0.076mm
	Base copper thickness	1/3OZ - 4OZ
	Registration tolerance for inner layers	±0.05mm
	Registration tolerance for tracks layer	0.025mm
	The distance from hole edge to track edge in inner layer	0.33mm
	The distance of the pattern to PCB outline	0.5mm
Drilling	Min. drill size	0.2mm
	MAX. drill size	6.5mm
	Min. hole size	0.15mm
	PTH hole size tolerance	±0.05mm
	NPTH hole size tolerance	±0.025mm
	Aspect Ratio	10:01



Technology Capabilities

HTD GROUP

Process	Item		Description
Outer Layer	Min. trace width/gap		0.076mm/0.076mm
	Base copper thickness		1/3-4OZ
	Registration tolerance		±0.05mm
	Impedance control tolerance		±10%
	The distance from pattern edge to V-cut line		0.4mm
	The Min distance from NPTH ring to edge of line		0.15mm/0.15mm
	Line to line		0.1mm
	Line to PAD		0.1mm
	PAD to PAD		0.1mm
	The distance from pattern edge to PCB outline	routing	0.2mm
		punching	0.3mm



Technology Capabilities

Process	Item		Description
Solder resistance	Min. soldmask thickness(without special Req.)		0.01mm
	The distance from pattern edge to soldmask opening		0.10mm
	Min solder resistant bridge(green oil)		0.10mm
	Min. solder resistant opening		0.08mm
	Registration tolerance		±0.05mm
	Via hole plug capability		≤0.6mm
Silkscreen	Min. silkscreen width		0.13mm
	Min. silkscreen height		0.8mm
Surface finished	OSP Thickness		0.2-0.5um
	Immersion SN Thinckness		0.2 - 0.5um
	Immersion Silver Thinckness		0.8 - 1.0um
	PB free HAL Thinckness		≥1.0um
	Enig(without special Req.)	Au thickness	0.025-0.1um
		Ni thickness	0.005mm



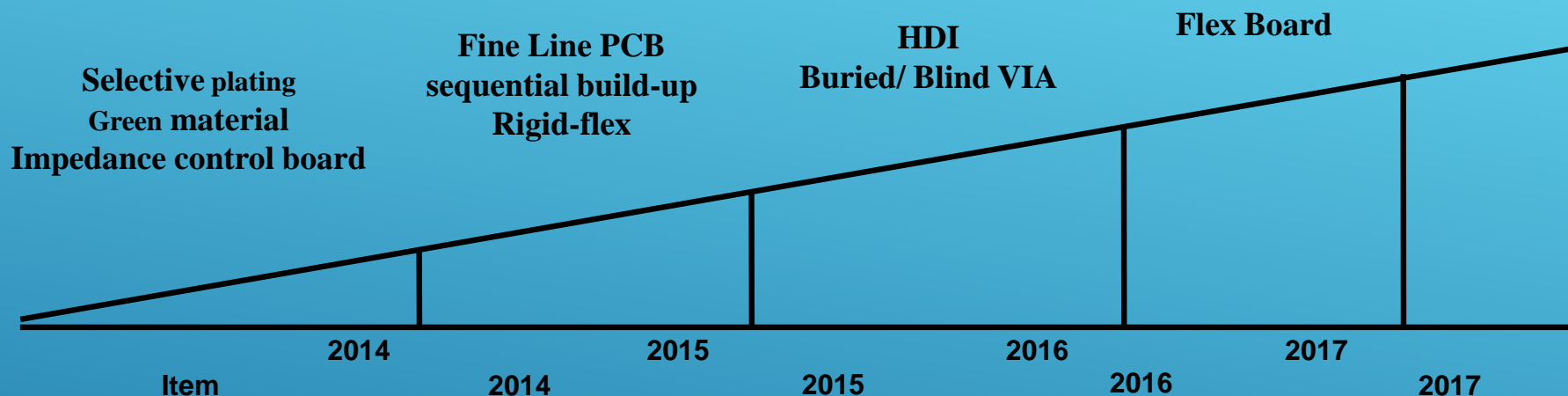
Technology Capabilities

Process	Item		Description
Mechanical finished	Min. slot hole		0.8mm
	Min. routing cut size		0.8mm
	Max. routing cut size		1.6mm
	Contour tolerance	routing	0.15mm
		punching	0.1mm
	V-CUT angle tolerance		$\pm 5^\circ$
	V-CUT core thickness		$\pm 0.05\text{mm}$
	Min V-CUT Size		100×100mm
	Min connector size after punching profile		1.0mm
	Min Punching slot		1×2mm
	Distance from Punching hole to Punching Slot		0.6mm(Laminate thickness≤1.2mm)
			1.6mm 1.6mm
Finished	Min. thickness		0.2mm
	Max. thickness		4.0mm
	Thickness tolerance		$\pm 5\%$
	Wrapping tolerance		≤0.5%



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Technology Road Map



Item	2014	2015	2016	2017
Line Width/Spacing	4 mil/4 mil	3 mil/ 3 mil	2 mil/2 mil	2 mil/2 mil
Achievable drill hole size	0.25mm	0.2mm	0.2mm	0.2mm
High layer count	12 layers	16 layers	18 layers	20 layers
PCB Type	Selective plating/Green material	Fine Line PCB/ Rigid-flex/ Rogers/ Teflon	HDI / Buried and Blind Board	Flex Board
Impedance control	$(50-100)\Omega \pm 10\%$	$(50-100)\Omega \pm 10\%$	$(50-100)\Omega \pm 5\%$	$(50-100)\Omega \pm 5\%$
Surface Finish	Lead Free HASL/ OSP/ Immersion Silver	Combination of Various surface finishing		
Lead Free Process Study	Halogen free Laminate			

Remark: in 2010, we achieved the Lead Free HASL and Immersion silver in mass production
in 2011, we achieved the immersion tin, blind VIA and flexible PCB in mass production



HTD GROUP

Main Equipment & apparatus List

Process	Equipment	Supplier	Quantity
PE	Photoplotter	Shen Zhen East Space Light	1
	Two Dimension Measuring Instrument	ZhengYe	1
CUTTING	Cuting Machine	KB	1
	Detach Board Machine	KB	1
	Milling Edge Machine	KB	1
	Milling Angle Machine	KB	1
	Baking Oven	WCX(WEI CHUANG XIN)	1
Innerlayer Coating	Auto Roller coater	群翊	1
Lamination	Auto Laminate Machine	WeiDi	2
	Auto Return Line	AnPu	1
	Brown Oxidation Line	AnPu	1
DRILLING	Pin Punching Machine	KB	1
	Drill Machine	Tai Wan TongTai	40
	Drill Bit Grind Machine	FU BANG	2



Main Equipment & apparatus List

Process	Equipment	Supplier	Quantity
PTH	Milling Board Machine	Universal	2
	PTH Line	Commend Machinery	1
	Panel Plating Line	Commend Machinery	1
	Baking Machine milling	Universal	1
ODF	Milling Board Machine	Universal	2
	Bonding Film Machine	Tai Wan C Sun MFG	2
	Expose Machine	Tai Wan C Sun MFG	5
	Develop Machine	Universal	2
PPTH	Pattern Plating Line	Commend Machinery	2
	Etching Machine	Universal	1
	AOI Machine	KangDai	1
	Repairing Machine	KangDai	1
	E-Tester	WangTongDa	5



Main Equipment & apparatus List

Process	Equipment	Supplier	Quantity
SOLDER MASK /LEGEND	Milling Board Machine	Universal	2
	Blender	Lian Xu Da	2
	Silk printing Machine	Dong Yuan Machinery	12
	Expose Machine	Tai Wan C Sun MFG	4
	Develop Machine	Universal	2
	Baking Oven	WCX(WEI CHUANG XIN)	12
	Print Net Machine	WCX(WEI CHUANG XIN)	1
ST	Immersion Au/Ni Line Immersion Silver Immersion Tin Lead Free HASL	YaMei Universal Zhengsheng	1
PROFILLING	Routing Machine	Shen Zhen Biao Te Fu Li Song	4
	Punching Machine	Yang Li Machinery	7
	V-Cut Machine	Jin Tai	4



Main Equipment & apparatus List

Process	Equipment	Supplier	Quantity
E-T	Ultrasonic washing	Universal	1
	E-TEST Machine	WTD	15
	Flying Probe Test Machine	Shen Zhen East Space Light	1
	Flying Probe Test Machine	XieLi	1
OSP	OSP Line	Universal	1
FQC	Baking Oven	WCX(WEI CHUANG XIN)	1
PACKAGE	Semi-Auto Vacuum Machine	Jia Cheng Bao	1
	Semi-Auto Package Machine	Shenzhen Xu Tian	1
PL/CL	Impedance Tester	TAIWAN JIEZHI	1
	Insulation Resistance Tester	Jiangsu Tonghui	1
	Steady TEP&HUMIDITY cycle Tester	ASIDA	1
	Gel Time Tester	ASIDA	1



Main Equipment & apparatus List

Process	Equipment	Supplier	Quantity
PL/CL	Box Resistor Stove	ASIDA	1
	Resin Flow Pressure Appratus	ASIDA	1
	Ionic contaminate Tester	ASIDA	1
	Hole/Surface Copper Thickness Survey Meter	OXFORD	1
	Solder-ability Test Tin Stove	ASIDA	1
	Auto Muller	ASIDA	1
	Microscope	ASIDA	1
	RoHS Tester ROHS	ASIDA	1
	Copper Adhesion Tester	ASIDA	1
	Core thickness tester V-CUT	ASIDA	1
	UV_VIS SPECTROPHOTOMETER	Shanghai Precision	1
	UV Spectrophotometer	Shanghai Jingmi	1
	PH Meter	Shanghai Hongyi	1



HTD GROUP

Main Manufacture Equipment



Auto Cutting Machine



Auto Scrub edging



Inner-layer coating



Brown Oxide Line



Inner AOI



Inner-layer CCD Exposure



HTD GROUP



Arranging Machine



Laminate Machine



Drilling Machine



Outer-Layer CCD Exposure



Panel Plating Line



PTH Line



HTD GROUP



Dry film Develop machine



Pattern Plating Line



Etching Stripping Line



LPI SM Developing



SM CCD Auto Exposure



AOI Machine 38





HTD GROUP



Tunnel Oven



Auto Silkscreen Machine



Immersion Au/Ni Line



CNC V-cut machine



Punch Machine



Routing Machine



HTD GROUP



Semi-auto V-cut



Optec Video MIC



Ultrasonic washing



E-tester



OSP Line



Immersion Silver



HTD GROUP



RoHS Tester



Microscope



Copper Thickness Survey Meter



Impedance Tester



Copper Adhesion Tester



UV Spectrophotometer

Main Detection Equipment



Ionic contaminate Tester



Insulation Resistance Tester



Steady TEP&HUMIDITY cycle Tester



Gel Time Tester



Resin Flow Pressure Apparatus



Box Resistor Stove



Production Lead Time List

Item	2 layer	4 layer	6 layer	8 layer	10 layer
Prototypes	5 working days	7 working days	8 working days	9 working days	10 working days
Mass Production	8 working days	10 working days	12 working days	14 working days	16 working days

Notes:

- 1. After Gerber data is confirmed, the delivery schedule will be started.
- 2. The total area of samples not exceed 15Ft².



HTD GROUP

Environmental Protection Facilities



Certifications



ISO:9001-2008



TS16949-2009



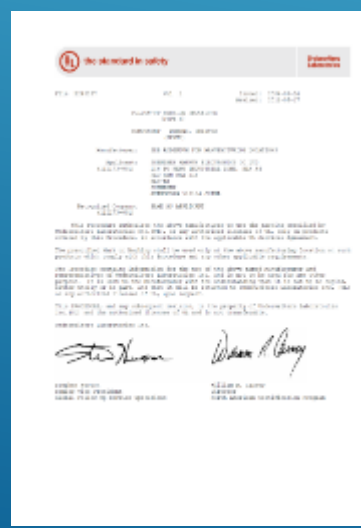
ISO:14001-2004



CUL



CQC



UL



SGS



Test Report

Main Customer

TP-LINK®
The Reliable Choice



Skyworth 创维



SONY
make.believe

 **DATALOGIC**
THE VISION IS YOURS

LITEON®

vtech

SV **AUTO**
德赛西威



HTD GROUP

Global Services





HTD GROUP

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