

IPC-1710A

OEM Standard for Printed Board Manufacturers' Qualification Profile

Developed by the OEM council of the IPC, the MQP sets the standard for assessing PWB manufacturers capabilities and allows PWB manufacturers to more easily satisfy customer requirements.

IPC-1710A

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A standard developed by IPC

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FOREWORD

It is not intended that this Manufacturers' Qualification Profile (MQP) satisfies all the requirements of the customer, however, conscientious maintenance of this document and or registration to ISO 9000 requirements should satisfy the major concerns. Thus, audits should be simpler, required less frequently, and facilitate less paper work as customers and suppliers work closer to meeting each others needs.

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SECTION 1.1			DATE	
COMPLETED				
COMPANY DESCRIPTION				
GENERAL INFORMATION				
LEGAL NAME				
PHYSICAL ADDRESS				
CITY		STATE	ZIP	
PROVINCE		COUNTRY		
TELEPHONE NUMBER		FAX NUMBER	TELEX	
NUMBER				
E-MAIL ADDRESS		MODEM NUMBER		
		DATE FOUNDED	PUBLIC	PRIVATE
INTERNET URL		FTP SITE		
MANAGEMENT				
PRESIDENT				
CHIEF OPERATING OFFICER				
VICE PRESIDENT OF MANUFACTURING				
VICE PRESIDENT OF QUALITY				
VICE PRESIDENT OF MARKETING/SALES				
VICE PRESIDENT OF CUSTOMER SERVICE				
WASTE TREATMENT MANAGER (POLLUTION PREVENTION)				
CORPORATE DESCRIPTION		NUMBER OF EMPLOYEES		
		CORPORATE	SITE	
COMMENTS				
DESIGN AND DEVELOPMENT				

ENGINEERING			
MANUFACTURING CONTROL			
MANUFACTURING	DIRECT		
	INDIRECT		
QUALITY CONTROL	QUALITY ENGINEERS		
	INTERNAL AUDITORS		
	GENERAL MANAGEMENT		
ADMINISTRATION			
TOTAL			

SECTION 1.2

DATE

COMPLETED

SITE DESCRIPTION	(TO BE COMPLETED FOR EACH SITE)	ATTACH
-------------------------	---------------------------------	--------

APPROPRIATE CHARTS (OPTIONAL)

MANUFACTURING FACILITY		
COMPANY NAME		
PHYSICAL ADDRESS		
CITY	STATE	ZIP
PROVINCE	COUNTRY	
TELEPHONE NUMBER	FAX NUMBER	TELEX

E-MAIL ADDRESS	MODEM NUMBER	YEARS IN
----------------	--------------	----------

BUSINESS

INTERNET URL	FTP
PRINCIPLE PRODUCTS/SERVICES/SPECIALTIES	BUSINESS CHARACTERIZATION

(HIGH VOLUME, QUICK TURN-AROUND, ETC.)

FACILITY MANAGEMENT	TITLE
	REPORTS TO (Function/Job Title)

OVERALL OPERATION RESPONSIBILITY FOR THIS SITE	
--	--

MANUFACTURING	
---------------	--

TECHNICAL/ENGINEERING	
-----------------------	--

MATERIALS/PRODUCTION CONTROL	
------------------------------	--

PURCHASING	
------------	--

QUALITY	
---------	--

SALES REPRESENTATIVE	
----------------------	--

WASTE MANAGEMENT	
------------------	--

BUILDINGS				SYSTEMS (INDICATE % COVERAGE)					
	AGE	AREA (Sq. Ft.)		Construction (Wood/Brick)		Power Conditioning			
	Heating	Ventilation	Air Conditioning	Sprinklers	Waste Treatment	Other			
Office									
Manufacturing									
Storage									
Planned additions									

SAFETY AND REGULATORY AGENCY REQUIREMENTS			
Are fire extinguishers functional and accessible to employees?		YES	NO
What is the distance to the nearest fire station? (in minutes)			
Minutes			
Do you conform to local/federal environmental protection agency requirements?		YES	
NO		Date of last OSHA visit	Date of last EPA visit
Are you currently operating under a waiver or in violation of local government requirements?		YES	
NO		Other Agency Audits, UL, ISO 9000, NECQ, CSA Approval	
and Number		UL #	CSA #
Other		ISO 9000#	
Do you have a safety program? Describe below.		YES	NO
Waste Number		Trade Waste Account Number	Hazardous

PLANT PERSONNEL (TOTAL EMPLOYEES)							
Regular	Contract	Office	Technical/ Engineering	Production	Full-Time QA	Part-Time	
QA	Union	Non- Union	Union Name	Contract Expires (Date)			

COMMENTS

SECTION 2.1 PROCESS

DATE COMPLETED

This section is intended to provide overview information on the processes used to fabricate printed board products. **Site Capability Snapshot (Please Check all that apply)**

	Designators	Remarks
A	Conductor Forming Processes	Subtractive Thin Foil Subtractive less than .5 oz. Semi-Additive Additive (Electro-less) Black Hole Thick Film Paste and Fire Thin Film Semi-conductor Sputtering Other:
B	PTH Materials and Processes	Acid Copper Pyro-Phosphate Copper Full Built Electro-Less Gold Paste Copper Paste Gold Conductor Sputtering Nickel Conductor Sputtering Other:
C	Permanent Over-plating	Tin Tin-Lead Tin-Nickel Alloy Nickel Nickel Gold (Hard) Nickel Gold (Soft) Nickel Rhodium Conductive Polymer Other:
D	Permanent Selective Plating	Tin Tin-Lead Tin-Nickel Alloy Nickel Nickel Gold (Hard) Nickel Gold (Soft) Nickel Rhodium Other:
E	Permanent Mask or Coating	Photo Dry Film Photo Liquid Image Transfer Screen Mask Conformal Coating Solder Mask Cover Coat Other:
F	Other Surface Finishes	Tin-Lead Fused Immersion Tin Solder Leveled Roll Soldered Electro-less Solder Fused Solder Bumped Lands Solder Paste Fused Azole Organic Protective Covering Flux Protective

Covering Other:

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SECTION 2.2 ELECTRICAL TEST EQUIPMENT

DATE

COMPLETED

This section is intended to provide overview information on the test equipment and testing capability of the manufacturer. **Site Capability Snapshot (Please Check the column that applies furthest to the right.)**

	Designators		Remarks
A	Number of Nets	<200 200 500 1000 2000 3000 4000 5000 >5000	Other:
B	Number of Nodes	<500 500 1000 2000 3000 4000 5000 6000 >6000	Other:
C	Probe Point Pitch	>1.0 [.040] 1.0 [.040] 0.8 [.032] 0.65 [.025] 0.50 [.020] 0.40 [.016] 0.30 [.012] 0.20 [.008] <0.20 [.008]	Other:
D	Test % Single Pass	None <60% 60% 70% 80% 90% 95% 99% 100%	Other:
E	Probe Accuracy (DTP)	>0.2 [.008] 0.2 [.008] 0.15 [.006] 0.125 [.005] 0.1 [.004] 0.075 [.003] <0.075 [.003]	Other:
F	Grid Density	Single Side Grid Double Sided Grid Double Density Grid Double Density Double Sided Quad Density Double Sided Quad Density Flying Probe	Other:
G	Netlist Capability	Golden Board IPC-D-356 Net List Extraction CAD/CAM Net List Compare	Other:
H	Test Voltage	<20 VDC 20 VDC 40 VDC 60 VDC 80 VDC 100 VDC 500 VDC 1000 VDC >1000 VDC	Other:
J	Impedance Meas	Micro Section Inboard Circuit Coupon Manual TDR Automated	Other:
K	Impedance Tolerance	None >20% 20% 15% 10% 7% 5% 2% <2%	Other:

SECTION 2.3 PRODUCT TYPE

DATE

COMPLETED

This section is intended to provide overview information on the printed board product types being fabricated by the manufacturer. **Site Capability Snapshot (Please Check all that apply.)**

	Designators	Remarks
A	Product Type	Rigid Printed Board Flex Printed Board Rigid/Flex Board Rigid Back Plane Molded Product Ceramic Printed Board Multichip Module Laminated Multichip Module Deposited Dielectric Multichip Modules Other:
B	Circuit Mounting Type	Single Sided Double Sided Multilayer Single-sided Bonded to Substrate Double-sided Bonded to Substrate Multilayer Bonded to Substrate Constrained Multilayer Distributed Plane Multilayer Other:
C	Via Technology	No-Vias Thru Hole Vias Buried Vias Blind Vias Thru Hole & Blind Vias Thru Hole & Buried Vias Thru Hole Buried & Blind Vias Buried & Blind Vias Other:
D	Laminate Material	Phenolic Epoxy Paper Epoxy Glass Modified Epdxy Composite Polyimide Film & Reinforce Cyanate Ester Teflon Ceramic Glass Types Various Combinations Other:
E	Core Material	No Core Polymer Copper Aluminum Graphite Copper Invar/Copper Copper Moly/Copper Other:
F	Copper Thickness (Oz.)	1/8 Minimum 1/4 Minimum 3/8 Minimum 1/2 Nominal 1 Nominal 2 Nominal 3-5 Max 6-9 Max >10 Other:
G	Construction	≤4 Planes >4 Planes THK to TOL ≤0.2 mm THK to TOL >0.2 mm Bow/Twist ≤1% Bow/Twist >1% ≤0.3 mm Profile Tolerance 0.3 mm Profile Tolerance Other:
H	Coatings and Markings	≤0.1 mm Mask Clearance >0.1 mm Mask Clearance One Side (Legend) Two Side (Legend) None (Legend) UL Material Logo U.L. V ₀ Logo U.L. V ₁ Logo U.L. V ₂ Logo Other:



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SECTION 2.4 PRODUCT COMPLEXITY

DATE

COMPLETED

This section is intended to provide overview information on product complexity being fabricated by the manufacturer. (Please check the column that applies farthest to the right)

	Designators	Remarks
A	Board Size Diagonal	<250 [10.00] 250 [10.00] 350 [14.00] 450 [17.50] 550 [21.50] 650 [25.50] 750 [29.50] 850 [33.50] >850 [33.50] Other:
B	Total Board Thickness	1,0 [.040] 1,0 [.040] 1,6 [.060] 2,0 [.080] 2,5 [.100] 3,5 [.135] 5,0 [.200] 6,5 [.250] >6,5 [.250] Other:
C	Number Conductive Layers	1-4 5-6 7-8 9-12 13-16 17-20 21-24 25-28 >28 Other:
D	Dia Drilled Holes	>0,5 [.020] 0,5 [.020] 0,4 [.016] 0,35 [.014] 0,30 [.012] 0,25 [.010] 0,20 [.008] 0,15 [.006] <0,15 [.006] Other:
E	Total PTH TOL (Max-Min)	>0,250 [.010] 0,250 [.010] 0,200 [.008] 0,150 [.006] 0,125 [.005] 0,100 [.004] 0,075 [.003] 0,050 [.002] <0,050 [.002] Other:
F	Hole Location TOL DTP	>0,50 [.020] 0,50 [.020] 0,40 [.016] 0,30 [.012] 0,25 [.010] 0,20 [.008] 0,15 [.006] 0,10 [.004] <0,10 [.004] Other:
G	Internal Layer Clearance (Min)	>0,350 [.014] 0,350 [.014] 0,250 [.010] 0,200 [.008] 0,150 [.005] 0,125 [.005] 0,100 [.004] 0,075 [.003] <0,075 [.003] Other:
H	Internal Layer Conductor Width (Min)	>0,250 [.010] 0,250 [.010] 0,200 [.008] 0,150 [.006] 0,125 [.005] 0,100 [.004] 0,075 [.003] 0,050 [.002] <0,050 [.002] Other:
J	Internal Layer Process Allowance	>0,100 [.004] 0,100 [.004] 0,075 [.003] 0,050 [.002] 0,040 [.0015] 0,030 [.0012] 0,025 [.001] 0,020 [.0008] <0,020 [.0008] Other:
K	External Layer Clearance (Min)	>0,350 [.014] 0,350 [.014] 0,250 [.010] 0,200 [.008] 0,150 [.006] 0,125 [.005] 0,100 [.004] 0,075 [.003] <0,075 [.003] Other:
L	External Layer Conductor Width (Min)	>0,250 [.010] 0,250 [.010] 0,200 [.008] 0,150 [.006] 0,125 [.005] 0,100 [.004] 0,075 [.003] 0,050 [.002] <0,050 [.002] Other:
M	External Layer Process Allowance	>0,100 [.004] 0,100 [.004] 0,075 [.003] 0,050 [.002] 0,040 [.0015] 0,030 [.0012] 0,025 [.001] 0,020 [.0008] <0,020 [.0008] Other:
N	Feature Location DTP	>0,50 [.020] 0,50 [.020] 0,40 [.016] 0,30 [.012] 0,25 [.010] 0,20 [.008] 0,15 [.006] 0,10 [.004] <0,10 [.004] Other:

All Dimensions are in millimeters [inches shown in brackets]

SECTION 2.5 QUALITY DEVELOPMENT

DATE

COMPLETED

This section is intended to provide overview information on the quality systems in place in the manufacturing facility. Site Capability Snapshot (Please Check all that apply.)

Designators	
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Remarks	
A	Strategic Plan Functional Steering Committee Formed TQM Plan & Philosophy Established & Published Documented Quality Progress Review Implementation & review of Project Team Recommendations TQM Communicated throughout organization Controlled New process Start-up Management Participates in TQM Audits Employee Recognition Program Total TQM Plan/Involvement Customer Training Other:
B	Employee Involvement Certified Training Available Training of Employee Base TQM Team Trained Design of Experiment Training and Use New Process Implementation Training Support Personnel Training Advanced Statistical Training Quality Functional Deployment Ongoing Improvement Program for Employees Other:
C	Quality Manual Quality Manual Started Generic Quality Manual for Facility 10% of manufacturing depts. have process specifications 25% of manufacturing depts. have process specifications 50% of manufacturing depts. have process specifications Non-manufacturing Manuals Developed 25% of all departments have quality manuals 50% of all departments have quality manuals All Manufacturing and support depts. have controlled quality manual Other:
D	Instructions Work Instructions Started Quality Instructions Started 10% Work Instructions Completed 10% Quality Instructions Completed 25% Work Instructions Completed, Controlled 25% Quality Instructions Completed, Controlled 50% Work Instructions Completed, Controlled 50% Quality Instructions Completed, Controlled Quality and work Instruct. Completed, Controlled Other:
E	SPC Implementation IPC-PC-90 Plan Exists Training Started Process Data Collected & Analyzed All Employees Trained First Process Stable & Capable Several Major Processes Stable & Capable Continued Improvement of Stable Processes Additional Mfg Processes under Control All Processes Under Control Other:
F	Supplier Programs/Controls Supplier Rating Program Monthly Analysis Program Key Problems Identified Supplier Reviews Performance Data provided TQM Acceptance by suppliers 10% of Suppliers Using SPC 25% of Suppliers Using SPC 50% of Suppliers Using SPC All Key Suppliers using Certified parts program Other:
G	Third Party IPC-QS-95 Instrument Controls in Place Measurement System in Control IPC-PC-90 Document Controls in Place Reduced Lot Sampling 10% of Processes Under Audit Control 50% or Greater of Processes Under Audit Control ISO-9003 Certified ISO-9002 Certified ISO-9001 Other:

SECTION 3	DATE					
COMPLETED						
EQUIPMENT PROFILE (Pre-Site Audit)						
* Examples of equipment limitations include: min/max board size & min/max working area						
3.1	PHOTOTOOL CAPABILITY	YES	NO	EQUIPMENT	QTY	
	A) AOI of phototool					
	B) AOI CAD reference (CAM)					
	C) Photoplotting					
	D) Photo reductions					
	E) Film scan and conversion					
	F) Film processing air-dried force-dried processed in automatic processor					
	G) Media types silver halide film glass diazo					

3.2	DRILLING EQUIPMENT	YES	NO	EQUIPMENT	QTY	
	EQUIPMENT LIMITS					
	A) Manual					
	B) Optical (single spindle)					
	C) N.C. drill					
3.3	ROUTING EQUIPMENT	YES	NO	EQUIPMENT	QTY	
	EQUIPMENT LIMITS					
	A) Edge beveler					
	B) Hand router (pin router)					
	C) N.C. router					
	D) N.C. driller/router					
	E) Scoring (profile)					
	F) Scoring (straight line)					

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3.4	MECHANICAL EQUIPMENT	YES	NO	EQUIPMENT	QTY	
	EQUIPMENT LIMITS					
	A) Punch press					
	B) Shear					
	C) Milling machine					
3.5	HOLE PREPARATION (DESMEAR)	YES	NO	EQUIPMENT	QTY	
	EQUIPMENT LIMITS					
	A) Permagnate					
	B) Plasma					
	C) Mechanical					
	D) Etchback					
3.6	PRIMARY IMAGE APPLICATION	YES	NO	EQUIPMENT	QTY	
	EQUIPMENT LIMITS					
	A) Dry film					
	B) Hand screening					
	C) Machine screening					
	D) Wet film					
	E) Liquid photoimageable					
3.7	TYPE OF TREATMENT FOR MULTILAYER INNERLAYERS	YES	NO			
	EQUIPMENT	QTY	EQUIPMENT LIMITS			
	A) Black oxide					
	B) Red oxide					
	C) Copper scrub					
	D) Durabond					
	E) Other					