ASSOCIATION CONNECTING
ELECTRONICS INDUSTRIES®

IPC-1720A

Assembly Qualification Profile

Developed by the OEM council of the IPC, IPC-1720A categorized an electronic assembly manufacturer's capabilities and supplies the OEM customer with detailed, substantive information.

IPC-1720A
July 2004 **A standard developed by IPC**

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The material in this standard was developed by the OEM Council of the Institute for Interconnecting and Packaging Electronic Circuits.

FOREWORD

It is not intended that this Assembly Qualification Profile (AQP) 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.

CONTENTS

HOW TO USE THE AQP

Although the AQP is for a single site or location, information about the overall company is helpful in establishing the relationship of the existing site to the total company and to other sites or divisions. The first page of section 1 is intended to convey the overall company description and is reflected in the optional financial review detailed in section 8. The remainder of the AQP is devoted to information about a single site (see section 9 for examples).

Although intended to be site specific, the AQP may be used to convey total corporate capability. When this practice is preferred, section 1.2 (intended for site description) is modified to reflect total corporate capability, as are all other sections of the AQP.

The Electronic Assembly Manufacturer should keep all sections current. In the initial contact between the manufacturer and a new customer, an abbreviated AQP will suffice (site description from Sections 1 and 2). Access to AQP in electronic media is suggested in order to facilitate the appropriate manufacturer/user information interchange. The remaining sections of the AQP provide details of the site assembly capability and the quality principles that have been incorporated into the systems used to manufacture products. The information is of use to the assembly company in assessing where the organization stands on implementing quality and technology; the same data helps the customer in determining how well the manufacturers' capability matches the customer need.

ACKNOWLEDGMENTS

The IPC is indebted to the members of the OEM council who participated in the development of this document. A note of thanks is also expressed to the members of the Electronic Manufacturing Services Industry (EMSI) for their review and critique and construction recommendations in finalizing the principles developed for the AQP.

Although the IPC is grateful for all the involvement and individual contributions made in completing the AQP, a special acknowledgment is extended to the following individuals. It was their dedication and foresight that made this publication possible.

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Ronic Assoc. Inc.

Kevin Sheehan
Standard Microsystems Corporation

Mario Suarez-Solis
Encore Computer Corp.

SECTION 1.1

DATE COMPLETED
08/30/2023

COMPANY DESCRIPTION

GENERAL INFORMATION			
LEGAL NAME Gorilla Circuits			
PHYSICAL ADDRESS 1445 Oakland Road			
CITY San Jose		STATE CA	ZIP 95112
PROVINCE		COUNTRY USA	
TELEPHONE NUMBER 408-294-9897		FAX NUMBER 408-297-1540	TELEX NUMBER
E-MAIL ADDRESS brett@gorillacircuits.com	MODEM NUMBER	DATE FOUNDED ☐ PUBLIC ☒ PRIVATE	
INTERNET URL www.gorillacircuits.com		FTP SITE	

MANAGEMENT
PRESIDENT Mario Borjon
CHIEF OPERATING OFFICER Hershel Petty
VICE PRESIDENT OF MANUFACTURING Stephen Kersten
VICE PRESIDENT OF QUALITY Nellie Gutierrez
VICE PRESIDENT OF MARKETING/SALES Brett Dobens
VICE PRESIDENT OF CUSTOMER SERVICE Hillary Rocheleau
VICE PRESIDENT OF PURCHASING Mario Borjon

CORPORATE DESCRIPTION		NUMBER OF CORPORATE EMPLOYEES	NUMBER OF SITE EMPLOYEES	COMMENTS
DESIGN AND DEVELOPMENT				
ENGINEERING		5		
MANUFACTURING CONTROL		7		
MANUFACTURING	DIRECT	173		
	INDIRECT			
QUALITY CONTROL	QUALITY ENGINEERS	3		
	INTERNAL AUDITORS	3		
	GENERAL MANAGEMENT	2		
ADMINISTRATION		25		
TOTAL		207		

SECTION 1.2

DATE COMPLETED

SITE DESCRIPTION

(TO BE COMPLETED FOR EACH SITE)

ATTACH APPROPRIATE CHARTS (OPTIONAL)

MANUFACTURING FACILITY

COMPANY NAME	Gorilla Circuits		
PHYSICAL ADDRESS	2060 Ringwood Avenue		
CITY San Jose	STATE CA	ZIP 95131	
PROVINCE	COUNTRY USA		
TELEPHONE NUMBER 408-294-9897	FAX NUMBER 408-297-1540	TELEX	
E-MAIL NUMBER sales@gorillacircuits.com	MODEM NUMBER	YEARS IN BUSINESS 6 years	
PRINCIPLE PRODUCTS/SERVICES/SPECIALTIES Turnkey, fab and assembly	BUSINESS CHARACTERIZATION (HIGH VOLUME, QUICK TURN-AROUND, ETC.) High Quality, med vol, proto type, quick turn, high tech		

FACILITY MANAGEMENT	TITLE	REPORTS TO (Function/Job Title)
OVERALL OPERATION RESPONSIBILITY FOR THIS SITE Ted Nguyen	General Manager	President
MANUFACTURING Dan Nguyen	Production Manager	General Manager
TECHNICAL/ENGINEERING Sang Bui	Process Engineer	General Manager
MATERIALS/PRODUCTION CONTROL Sean Jefferes	Assembly Kitting Manager	General Manager
PURCHASING Cody Vendenburgh	Purchasing Manager	General Manager
QUALITY Nellie Gutierrez	Director of Quality	President
SALES REPRESENTATIVE Brett Dobens	VP OF Sales	President
WASTE MANAGEMENT Fermin Aviles	Waste Management	VP of Operations

BUILDINGS / SYSTEMS (INDICATE % COVERAGE)

	AGE	AREA (Sq. Ft.)	Construction (Wood/Brick)	Power Conditioning	Heating	Ventilation	Air Conditioning	Sprinklers	Waste Treatment	Other
Office	20yrs	6k	BRK	X	X	X	X	X		
Manufacturing	20yrs	20k	BRK	X	X	X	X	X	X	
Storage	20yrs	2k	BRK	X	X	X	X	X		
Planned additions	N,A	N,A	N,A	X	X	X	X	X		

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)	3 Minutes
Do you conform to local/federal environment 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, CSA Approval and Number	☒ UL # E46606 ☐ CSA # ☒ ISO 9001-2008_ Reg# A 11516 Reg Date 08-30-2014
Do you have a safety program? Describe	☒ YES	☐ NO	Hazardous Waste Number Trade Waste Account Number	

PLANT PERSONNEL (TOTAL EMPLOYEES)

Permanent	Contract	Office	Technical/ Engineering	Production	Full-Time QA	Part-Time QA	Union	Non-Union	Union Name	Contract Expires (Date)
60	10	2	4	60	8	0	0	all		

SECTION 2.1
PRODUCT TYPE

DATE COMPLETED

This section is intended to provide overview information on the product types being fabricated by the manufacturer.

Site Capability Snapshot (Please Check all that apply)

	Designators		Remarks
A	Electronic Assembly Type	☒1A Medical ☒1B Commercial ☒1C Government ☒1X Automotive ☐ ☐2C ☐2X ☐2Y ☐2Z ☐Other:	
B	Board Construction Type	☒Rigid Printed Board ☒Flex Printed Board ☒Rigid Flex Board ☒Rigid Back Plane ☐Molded Board ☐MCM-C Ceramic Modules & Hybrids ☐MCM-L Laminated Modules ☐MCM-D Deposited Dielectric ☐Other:	
C	Board Size Diagonal	☐<250 [10.00] ☐250 [10.00] ☐350 [14.00] ☐450 [17.50] ☐350 [14.00] ☐650 [25.50] ☐750 [29.50] ☐850 [33.50] ☒>850 [33.50] ☐Other:	

D	Maximum Thru Hole Work Area	☐<300 CM^2 <[50 IN^2] ☐300 CM^2 [50 IN^2] ☐600 CM^2 [100 IN^2] ☐1000 CM^2 [160 IN^2} ☐1500 CM^2 [203 IN^2] ☐2100 CM^2 [330 IN^2] ☐2800 CM^2 [430 IN^2] ☐3600 CM^2 [550 IN^2] ☒3600 CM^2 [550 IN^2] ☐Other:	
E	Maximum SMT Work Area	☐<300 CM^2 <[150 IN^2] ☐300 CM^2 [50 IN^2] ☐600 CM^2 [100 IN^2] ☐1000 CM^2 [160 IN^2] ☐1500 CM^2 [230 IN^2] ☐1000 CM^2 [160 IN^2] ☐2800 CM^2 [430 IN^2] ☐3600 CM^2 [550 IN^2] ☒>3600 CM^2 [550 IN^2] ☐Other:	
F	Distance Wiring Terminals & Connectors	☒Solid Wire ☒Standard Wire ☒Shielded Wire ☒Coax Wire ☒Terminal Bifurcated & Turret ☒Clip & Pin Terminals ☒Crimped Terminals ☒Board Connectors ☒Backplane Connectors ☐Other:	
G	Cable & Harness (Multiple Wire)	☒Hi Power Eq. or Lgr. 10 Gauge ☒Lower Power Thinner than 10 Gauge ☒Electrical Cable (Wire) ☐Optical Cable (Glass) ☒Electrical Harness ☐Optical Harness ☒Ribbon Cable Harness ☒Combination Harness ☐Other:	
H	Mechanical Assembly Operations	☒Electronic Hardware ☒Mechanical Hardware ☒Shielding Hardware ☒Thermal Conductive Hardware	

		☒Front Panel Hardware ☒Jumper Wires ☐Molded Cable ☒Final System Assembly (Box Build) ☐Other:	
J	Completed End Product	☒Consumer Products ☒General Purpose Computers ☒Telecommunications Products ☒Commercial Aircraft Products ☒Industrial & Automotive Products ☒High Performance Military ☒Outer Space (LEO & GEO) ☒Military Avionics ☒Automotive (Under the Hood) ☐Other:	

*For product type description, see Glossary, Section 10.1

SECTION 2.2
PROCESSES

DATE COMPLETED

This section is intended to provide overview information on the assembly processes used by the manufacturer.

Site Capability Snapshot (Please Check all that apply)

	Designators		Remarks
A	Through Hole Insertion	☒Two Leaded-Axial ☒Two Leaded Radial ☒Multiple Leaded ≤6-Radial ☒Single-In-Line Packages (SIPS) ☒Dual In-Line Pkgs. (DIPS) ≤24 PION ☒Dual In-Line Pkgs. >24 PION ☒Pin Grid Arrays (PGA's) ☒Component Sockets ☒Card Edge/Two Piece Connectors ☐Other:	
B	Surface Mount Placement	☒Chip Resistors/Cap. (Reel) ☒Bulk Chip Resistors/Cap. ☒Tantalum Capacitor ☒Metal Faced Components (MELFS) ☒Sm. Outline Diodes (SODS) ☒Sm. Outline Transistors (SOTS) ☒Sm. Outline IC's (SOIC's) ☒Variable Resistor Trim Pots ☒Surface Mount Sockets/Test Pts. Connect ☐Other:	
C	High Pin Count	☒Chip-on-Tape (Molded ring) >0.4 mm pitch ☒Chip-on-Tape (Molded ring) ≤0.3mm pitch ☒Quad Flat Pack (QFP) ≤0.4mm pitch ☒Quad Flat Pack (QFP) ≤0.3mm pitch ☒Shrink Quad Flat Pack (SQFP) ☒Thin Small Outline Pkg. (TSOP) ☒Ball/Post Grid Array >1.0mm pitch ☒Ball/Post Grid Array ≤1.0mm pitch ☒Land Grid Array Any Pitch ☐Other:	

D	Bare Chip Attachment	☐Thermal Wire Bonding ☐Ball Bonding ☐Ultrasonic Wiring Bonding ☐Beam Lead Chip Bonding ☐Generic Tape Automated Bonding ☐Custom Tape Automated Bonding ☒Flip Chip on Ceramic or Glass Based ☒Flip Chip on Rigid Printed Boards ☒Flip Chip on Flex Circuit Boards ☐Other:	
E	Attachment Techniques	☒Hand Soldering ☐Hot Bar Soldering ☒Focused Hot Air Soldering ☒Wave Soldering ☒IR Reflow Soldering ☐Vapor Phase Soldering ☒Hot Air Convection Soldering ☐Laser Soldering ☒Conductive Adhesive Attachment ☐Other:	
F	Cleaning & Cleanliness Testing	☒No Clean/Never Clean System ☒Aqueous Cleaning In-line Sys. ☐Aqueous Cleaning Static Soak ☐Modified Solvent Clean. In-line ☐Modified Solvent Clean. Static Soak ☒Ultrasonic Agitation Cleaning ☒Ionic Salt/Residue Test ☐Organic Contaminate Impreg. Test ☐Surface Insul. Resist. (SIR) Test ☐Other:	
G	Coating & Encapsulation	☐Bare Die-Glob Top ☐Bare Die-Total Assembly ☐Assembly (1 or 2 sides) Epoxy Coating ☐ Assembly (1 or 2 sides) Polyurethane Coating ☐Assembly (1 or 2 sides) Acrylic Coating ☐Assembly (1 or 2 sides) Vacuum Dep Coating ☐Encapsulation Exterior Access (Test) ☐Encap. Ex-access (Tuning) ☐Encap. Entire Assembly (Thin Coat ☐Other:	
H	Inspection	☒In-coming ☒In-Process ☒Final Inspection ☒100% Inspection	

		☒Audit Inspection ☒Manual ☒Semi-Automatic ☒Automatic ☐Other:	
J	Testing & Repair	☒Test Equipment Design ☐Test Equipment Fabrication ☒Test Development ☒Failure Analysis ☒Repair Depot ☒Rework Depot ☐Other:	

SECTION 2.3
TESTING

DATE COMPLETED

This section is intended to provide detailed information on the test, equipment and testing capability of the manufacturer.

Site Capability Snapshot (Please Check all that apply)

	Designators		Remarks
A	Test Type	☐Automatic Test Generation ☒X-Ray Joint Evaluation ☒Cleanliness Testing ☐Auto in-circuit Electronic Assembly ☐Electro-magnetic Interference ☒Auto Function Electronic Assembly ☒System Level Test Electrical ☒System Level Test Function ☐System Level Test Environmental ☐Other:	
B	Test Fixture Type	☐No Fixture ☒One-sided Probe Generic Electrical ☐Cam Shell Test-Generic Electrical ☐Custom Fixture Electrical ☐Dedicated Test Bed Electrical ☐Humidity Test ☐Temperature Test ☐Vibration Test ☐Shock Test ☐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] ☒<.20 [.008] ☐Other:	
D	No. of Probe Points	☐<200 ☐200 ☐500 ☐1000 ☐1500 ☐2000	

		☐2500 ☐3000 ☒>3000 ☐Other:	
E	No. of Test Vectors	☐<500 ☐500 ☐1000 ☐2000 ☐3000 ☐4000 ☐5000 ☐6000 ☒>6000 ☐Other:	
F	Environmental Stress Screening	☐Burn-in at Temperature ☐Burn-in with Temperature Cycling ☐Burn-in Hi Temperature Cycles ☐Burn-in with Temperature Cycles ☐Burn-in with Temperature Cycles Hi-humidity ☐Power Cycling On-Off ☐Vibrations Testing ☐Shock Test ☐Salt Spray Testing ☐Other:	

SECTION 2.4
PRODUCT COMPLEXITY

DATE COMPLETED

This section is intended to provide overview information on the product complexity being fabricated by the manufacturer. Based on component density.

Site Capability Snapshot (Maximum Component Density*)

*PERCENT COMPONETN AND LAND AREA/AVAILABLE BOARD AREA

(Please Check all that apply)

	Designators		Remarks
A	Type 1A	☐<30 ☐30 ☐40 ☐50 ☐60 ☐70 ☐80 ☐90 ☒>90 All Components ☐Other:	
B	Type 1B	☐<30 ☐30 ☐40 ☐50 ☐60 ☐70 ☐80 ☐90 ☒>90 ☐Other:	
C	Type 1C	☐<30 ☐30 ☐40 ☐50 ☐60 ☐70 ☐80 ☐90 ☒>90 ☐Other:	
D	Type 1X	☐<30 ☐30 ☐40	

		☐50 ☐60 ☐70 ☐80 ☐90 ☐>90 ☐Other:	
E	Type 2B	☐<30 ☐30 ☐40 ☐50 ☐60 ☐70 ☐80 ☐90 ☐>90 ☐Other:	
F	Type 2C	☐<30 ☐30 ☐40 ☐50 ☐60 ☐70 ☐80 ☐90 ☐>90 ☐Other:	
G	Type 2X	☐<30 ☐30 ☐40 ☐50 ☐60 ☐70 ☐80 ☐90 ☐>90 ☐Other:	
H	Type 2Y	☐<30 ☐30 ☐40 ☐50 ☐60 ☐70 ☐80	

		☐90 ☐>90 ☐Other:	
J	Type 2Z	☐<30 ☐30 ☐40 ☐50 ☐60 ☐70 ☐80 ☐90 ☐>90 ☐Other:	

SECTION 2.5
PRODUCT VOLUME

DATE COMPLETED

This section is intended to provide overview information on the volume of product being fabricated by the manufacturer.

Site Capability Snapshot (Please Check all that apply)

	Designators		Remarks
A	Volume of Electrical Assembly	☒Prototype ☒Low (Under 100) ☒Low-Medium (To 1,000) ☒Medium (To 5,000) ☒Medium (To 10,000) ☒Medium-High (To 20,000) ☒High (To 50,000) ☒High To 500,000) ☐Other:	
B	Volume of Discrete Wiring	☒Prototype ☒Low (Under 100) ☒Low-Medium (To 1,000) ☒Medium (To 5,000) ☒Medium (To 10,000) ☒Medium-High (To 20,000) ☒High (To 50,000) ☒High To 500,000) ☐Other:	
C	Volume Cable/Harness	☒Prototype ☒Low (Under 100) ☒Low-Medium (To 1,000) ☒Medium (To 5,000) ☒Medium (To 10,000) ☒Medium-High (To 20,000) ☒High (To 50,000) ☒High To 500,000) ☐Other:	
D	Volume Mechanical	☒Prototype ☒Low (Under 100) ☒Low-Medium (To 1,000) ☒Medium (To 5,000) ☒Medium (To 10,000) ☒Medium-High (To 20,000) ☒High (To 50,000) ☒High To 500,000) ☐Other:	

E	Volume Full System	☒Prototype ☒Low (Under 100) ☒Low-Medium (To 1,000) ☒Medium (To 5,000) ☒Medium (To 10,000) ☒Medium-High (To 20,000) ☒High (To 50,000) ☒High (To 500,000) ☐Other:	

SECTION 2.6
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		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	Assembly Program Manager ☒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 Instructions 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 Certified ☐Other:	

SECTION 2.7
SERVICES

DATE COMPLETED

This section is intended to provide overview information on the customer services offered by the manufacturer in addition to the assembly manufacturing services.

Site Capability Snapshot (Please Check all that apply)

	Designators		Remarks
A	Component Procurement	☒Consignment ☒Passive Thru-Hole ☒Passive SMT ☒I/C SMT ☒I/C SMT ☒Hi-Pin Count (Peripheral) ☒Hi-Pin Count (Array) ☒Bare Die (CHIPS) ☒ASIC's ☐Other:	
B	Board Procurement	☒Consignment ☒Single Sided ☒Double Sided ☒Multilayer (Rigid) ☒Multilayer (Rigid-Flex) ☒Metal Core Boards ☒CTE Boards ☒MCM's & Hybrids ☒PCMCIA's ☐Other:	
C	Design Services	☐Outsource ☒Simulation ☒Circuit Analysis ☒Placement & Routing ☒Design Rule Implementation ☒Impedance Control ☒High Speed ☒MCM's (L) (C) or (D) ☒ASIC's ☐Other:	

SECTION 3.0

MASTER EQUIPMENT LISTING
FORM AQP 20

DATE COMPLETED

Please complete a Master Equipment List. You may use your own form or the AQP Form 20.

IDENTIFICATION	EQUIPMENT NAME/DESCRIPTION	MANUFACTURER TYPE/MODEL	EQUIPMENT LIMITS	ACCURACY	CALIBRATION FREQUENCY	REMARKS
A001	AOI 755LL	755LL				
A002	EKRA X5	X5				
A003	FUJI AIMEX 2	AIMEX 2				
A004	TRIDENT LD	LD				
A005	AXI 7600LL	7600LL				
A006	ERSA POWERFLOW N2 XL	N2 XL				
A007	ERSA VERSAFLOW 366	366				
A008	SPI 7007	7007				
A009	X SERIES STENCIL CLEANER	CLEANER				
A010	STORM WASHER	WASHER				
A011	FUJI AIMEX 2	AIMEX 2				
A012	FUJI AIMEX 2	AIMEX 2				
A013	DI WATER FILTRATION SYSTEM	DI SYSTEM				

SECTION 4

DATE COMPLETED

TECHNOLOGY PROFILE SPECIFICS

4.1 ADMINISTRATION

4.1.1 CAPACITY PROFILE	EST %	COMMENTS
A) Total Capacity in units per month (based on best quarter)	20000	
B) Presently running at ____ % of total unit capacity.	60	
C) Revenue from manufacturing services. Revenue from non-manufacturing activities.	 **Total** 100%	
D) Work dedicated to consignment. Work dedicated to turnkey.	35% 65% **Total** 100%	consigned turnkey

4.1.2 PERCENTAGE OF DOLLAR VOLUME	EST %	COMMENTS
* 1) Type 1A electronic assembly		
2) Type 1B electronic assembly		
3) Type 1C electronic assembly		
4) Type 1X electronic assembly		
5) Type 2B electronic assembly		
6) Type 2C electronic assembly		
7) Type 2X electronic assembly		
8) Type 2Y electronic assembly		
9) Type 2Z electronic assembly		
10) Wire wrap assembly		
11) Cable/harness assembly		
12) Mechanical assembly		
13) Full system assembly		

*** For description of product types, see glossary, Section 10.1**

4.1.3 UNIT PRODUCTION PROFILE	UNITS PER MONTH
A) What do you consider, in number of units per month the definition of the following (units=units per month)?	
1) High Production	100000
2) Medium Production	500000
3) Low Production	20000
4) Prototype Production	10000
B) What is your average lead-time (delivery) as defined in (A)?	
1) High Production	6 months
2) Medium Production	3 months
3) Low Production	2 months
4) Prototype Production Quick turn - No. of days 1-5	1 month

4.1.4 MARKETS SERVED	YES	NO	COMMENTS
A) Consumer Products	☒	☐	
B) General Purpose Computers	☒	☐	
C) Telecommunications Products	☒	☐	
D) Commercial Aircraft	☒	☐	
E) Industrial Products & Automotive	☒	☐	
F) High Performance Military	☒	☐	
G) Outer Space LEO & GEO	☒	☐	
H) Military Avionics	☒	☐	
J) Automotive (Under the Hood)	☒	☐	

4.1.5 APPROVAL & CERTIFICATION PROFILE	YES	NO	COMMENTS
What company approvals do you have?			
A) J-STD-001	☒	☐	
B) IPC-A-610	☒	☐	
C) MIL-STD-2000	☐	☐	
D) UL Approval	☐	☐	
E) UL Level 94V0	☐	☐	
F) UL Level 94V1	☐	☐	
G) UL Level 94V2	☐	☐	
H) Canadian Standards	☐	☐	
J) MIL-P-55110	☐	☐	
K) MIL-P-50884	☐	☐	
L) ISO-9003	☐	☐	
M) ISO-9002	☐	☐	
N) ISO-9001	☒	☐	
P) BABT	☐	☐	
Q) QC9000	☐	☐	
R) EEC	☐	☐	
S) Customer Evaluation	☐	☐	
T) Other			

4.1.6 CUSTOMER INTERFACE PROFILE	YES	NO	EQUIPMENT	COMMENTS
A) Modem capability/BAUD rate	☐	☐		
B) Ethernet capability	☐	☐		
C) Data verification	☐	☐		
D) Manufacturing data requirements:	☐	☐		
E) Engineering change order process:	☐	☐		
F) Method for job status reporting to customers:	☐	☐		

4.1.7 ADMINISTRATIVE PROFILE	YES	NO	QUANTITY	DEGREES	COMMENTS
A) Does the facility have a separate research and development dept.	☒	☐			
B) Is there an (automated) on-line shop floor control/MRP system	☒	☐			PCMRP
C) Quantity of engineers dedicated to supporting the following areas			(TOTAL)		
1) Materials	☒	☐	2		
2) Manufacturing	☒	☐	5		
3) Test	☒	☐	2		

4.2 PROCESS ORIENTATION

4.2.1 PLANT LAYOUT CHARACTERISTICS	YES	NO	COMMENTS
A) In-line Assembly Process	☒	☐	
B) Islands of Automation	☒	☐	
C) Placement Equipment Technology			(TOTAL)
1) In-line	☒	☐	
2) Sequential	☒	☐	
3) Simultaneous	☒	☐	

4.2.2 PROCESS PRECISION SPECIFICS	YES	NO	DIAMETER IN MM	COMMENTS
Please indicate the following standard tooling preferences for your mfg. eqpt.				
A) Vision alignment targets	☒	☐	fiducials	
1) Solder coated	☒	☐		
2) SMOBC	☒	☐		
B) Protective coating	☒	☐		
C) Placement equipment alignment	☒	☐	1mm	
1) Tooling holes required	☐	☒		
D) Electrical test tooling alignment holes	☐	☒		

4.2.3 NEW PROCESS QUALIFICATION	YES	NO	RESPONSIBLE PERSONNEL	COMMENTS
A) Instruction manual for new process introduction	☒	☐		
B) New process qualification procedure	☒	☐		
C) Responsible personnel:	☒	☐	Process Engineer	

4.3 PRODUCT DESCRIPTION

*Include average percentage defects/ assembly for units which utilize the following device types.

4.3.1. THROUGH HOLE INSERTION	YES	NO	PERCENT	MAX./MIN PACKAGE SIZE	COMMENTS
A) Axial Leads	☒	☐			
B) Radial Leads	☒	☐			
C) DIP	☒	☐			
D) Pin Grid Arrays	☒	☐			

4.3.2 SURFACE MOUNT COMPONENTS	YES	NO	PERCENT	MAX./MIN PACKAGE SIZE	MAX PIN COUNT	MIN. PITCH
A) Chip Capacitors/Resistors	☒	☐				
B) Small Outline Diodes (SODs)	☒	☐				
C) Small Outline Transistors (SOTs)	☒	☐				
D) Small Outline IC's (SOICs)	☒	☐				
E) Chip-on-tape (molded carrier ring)	☒	☐				
F) COB	☒	☐				
G) Quad Flat Packs (QFPs)	☒	☐				
H) Thin Small Outline Package (TSOP)	☒	☐				
J) Ball/Post Grid Array	☒	☐				
K) TAB	☒	☐				

4.3.3 PERCENTAGE OF UNITS PRODUCED IN YOUR MAIN BUSINESS CATEGORIES	YES	NO	PERCENT	PRODUCT DESCRIPTION	COMMENTS
A) Electronic assembly type	☒	☐	100		
B) Board construction type	☐	☐			
C) Board size, diagonal	☐	☐			
D) SMT working area	☐	☐			
E) THT working area	☐	☐			
F) Discrete wire	☐	☐			
G) Cable & Harness	☐	☐			
H) Mechanical assemblies	☐	☐			
J) Completed end product	☐	☐			

4.3.4 TOTAL BUSINESS DISTRIBUTION BY ASSEMBLY TYPES	YES	NO	PERCENT	COMMENTS
A) 1A	☐	☐		
B) 1B	☐	☐		
C) 1C	☐	☐		
D) 1X	☐	☐		
E) 2B	☐	☐		
F) 2C	☐	☐		
G) 2X	☐	☐		
H) 2Y	☐	☐		
J) 2Z	☐	☐		

4.3.5 TOTAL BUSINESS DISTRIBUTION BY BOARD ASSEMBLY TYPES	YES	NO	PERCENT	COMMENTS
A) Rigid	☒	☐	80	
B) Flex	☒	☐	10	
C) Rigid/Flex	☒	☐	10	
D) Molded Board	☐	☐		
E) Rigid Backplane	☐	☐		
F) Ceramic MCM's	☐	☐		
G) Laminated MCM	☐	☐		
H) Deposited dielectric MCM	☐	☐		
J) Discrete Wire Boards	☐	☐		

4.3.6 TOTAL BUSINESS DISTRIBUTION (REMAINING AREAS)	YES	NO	PERCENT	COMMENTS
A) Multi-wire Assemblies	☒	☐	25	
B) Cables and Harness	☒	☐	25	
C) Mechanical Assemblies	☒	☐	25	
D) Full System Assembly	☒	☐	25	

4.4. TESTING CAPABILITY

4.4.1 ELECTRICAL TEST SMT CENTERLINE PITCH MINIMUM	YES	NO	COMMENTS
A) 0.63mm [.025]	☒	☐	
B) 0.5mm [.020]	☒	☐	
C) 0.4mm [.016]	☒	☐	
D) 0.3mm [.012]	☒	☐	
E) 0.25mm [.010]	☒	☐	
F) Other	☐	☐	

4.4.2 PERFORM DOUBLE SIDED SIMULTANEOUS ELECTRICAL TESTING	YES	NO	EQUIPMENT	EQUIPMENT LIMITS
A) Can you perform double sided simultaneous electrical testing?	☒	☐		

4.4.3 BOUNDRY SCAN TESTING CAPABILITY	YES	NO	EQUIPMENT	EQUIPMENT LIMITS
A) Boundry scan testing capability?	☐	☐		

4.4.4 AUTOMATED OPTICAL INSPECTION USAGE?	YES	NO	EQUIPMENT	COMMENTS
A) Post paste application	☒	☐		
B) Pre-placement	☒	☐		
C) Post placement	☒	☐		
D) Post reflow	☒	☐		

4.4.5 FULL SYSTEM LEVEL TESTING	YES	NO	COMMENTS
A) Full system level testing?	☒	☐	
B) Can you develop these test systems in-house?	☐	☒	

4.4.6 DIRECT CAD DOWNLOAD TO TEST EQUIPMENT IN USE	YES	NO	COMMENTS
A) Direct CAD download to test equipment in use?	☒	☐	

4.4.7 RELIABILITY TESTING	YES	NO	EQUIPMENT	COMMENTS
A) Thermal (temperature/humidity)	☐	☐		
B) Vibration	☐	☐		
C) Shock	☐	☐		
D) Salt spray	☐	☐		

4.5 MATERIALS MANAGEMENT

4.5.1 MATERIAL SYSTEMS	YES	NO	SYSTEM	COMMENTS
A) MRP System	☒	☐		
B) Electronic data interface (EDI)	☐	☐		
C) Kitting capability	☒	☐		
D) Turn-key system	☒	☐		

SECTION 5

QUALITY PROFILE

DATE COMPLETED
08-30-23

GENERAL INFORMATION	
COMPANY NAME Gorilla Circuits	
CONTACT Nellie Gutierrez	
TELEPHONE NUMBER (408) 294-9897	FAX NUMBER 408-297-1540

This section of the Manufacturer's Qualification Profile is intended to describe the Total Quality Management (TQM) activity in place or being implemented at the manufacturing facility identified in the site description of this AQP.

To ease in the task of identifying the TQM program being planned or underway at the manufacturing site, the activities have been divided into twenty sections which, when completed, provide the total picture of the posture toward managing quality issues. Each section contains a number of questions with regard to the topic under review.

It is not the intent to have the questions be all encompassing, nor is every question applicable to all manufacturers. However, identification of the status, related to each questions, when considered as a whole will convey an impression of the progress that the company has achieved in adopting the principles of total quality management.

The twenty sections, in order of the occurrence are:

5.1 General Quality Programs
5.2 Receiving Inspection
5.3 Customer Satisfaction
5.4 Computer Integrated Manufacturing
5.5 Process Documentation
5.6 Quality Records
5.7 Skill, Training & Certification
5.8 Subcontractor Control
5.9 New Products/Technical Services
5.10 Calibration Control
5.11 Internal Audits
5.12 Statistical Process Control
5.13 Problem Solving
5.14 In-Process Control
5.15 Material Handling
5.16 Non-Conforming Material Control
5.17 Inspection and Test Plan
5.18 Product Inspection/Final Audit
5.19 Tooling Inspection, Handling, & Storage
5.20 Corrective Action

Each section provides a status report related to each question. The question may not be applicable, no activity has started as yet, or the company may have developed an approach to the issues raised by the questions. An (X) is indicated in the appropriate column. If deployment/implementation has started, the status is reported as percent deployment; this is indicated in column 4. The percentage number closely approximates the status of deployment. If deployment exists, the percentage results that have been achieved is indicated in column 5. Results are based on expected goals. Not providing percent information in either the deployment or results column implies a lack of activity in the particular area.

The quality descriptions requested are completed on the following pages by checking (X) the appropriate column to reflect the status of the manufacturing facility TQM program. Additional information may be provided as comments shown below, or on individual sections, or additional sheets as necessary.

COMMENTS

5.1 GENERAL QUALITY PROGRAMS		STATUS				
	DESCRIPTION OF PROGRAM	Not Applicable	Not Started	Approach Developed	Percent Deployed	Percent Results
1.	Are quality objectives and responsibilities clearly stated, widely distributed and understood through the company?				100%	100%
2.	Is there a quality function or well defined organization which provides customer advocate guidance to the total organization and is this position fully supported by management?				100%	100%
3.	Does a quality measurement system exist with clearly defined metrics and is it utilized as a management tool?				100%	100%
4.	Are work instructions approved and controlled; and are they under revision control?				100%	100%
5.	Are the quality procedures and policies current and available at the point of application; and are they under revision control?				100%	100%
6.	Are benchmark and customer satisfaction studies done to determine best in class for all products, services, and administrative functions; and are goals set so that quality is a competitive weapon?				100%	100%
7.	Are Statistical Process Control (SPC) principles understood by all levels of management?				100%	100%
8.	Are there programs with sufficient resources assigned to support corrective actions and prevention?				100%	100%
9.	Does management solicit and accept feedback from the work force?				100%	100%
10.	Is there management support of ongoing training (including quality training), and is it documented by an organizational training plan?				100%	100%
11.	Are there regular management reviews of elements of the quality improvement process, including feedback for corrective action, and are the results acted upon?				100%	100%
12.	Are the quality and reliability goals aggressive relative to customer expectations and targeted at continuous improvement?				100%	100%
13.	Are the people who are responsible for administering the quality assurance function technically informed?				100%	100%
14.	Does Management have a “defect prevention” attitude to achieve continuous quality improvement?				100%	100%

5.2 RECEIVING INSPECTION		STATUS				
	DESCRIPTION OF PROGRAM	Not Applicable	Not Started	Approach Developed	Percent Deployed	Percent Results
1.	Are receiving inspection facilities and equipment adequately and properly maintained?					100%
2.	Are receiving inspection procedures documented and followed?					100%
3.	Are receiving inspection results used for corrective and preventive action?					100%
4.	Are the procedures for storage and timely disposition of discrepant material in place and followed?					100%

COMMENTS

5.3 CUSTOMER SATISFACTION		STATUS				
	DESCRIPTION OF PROGRAM	Not Applicable	Not Started	Approach Developed	Percent Deployed	Percent Results
1.	Is there a measurement system in place to assess the customer's perception of complete performance?				100%	100%
2.	Is an independent (unbiased) customer survey routinely conducted?				100%	100%
3.	Is there an internal measurement system within the organization which correlates to the level of customer satisfaction?				100%	100%
4.	Are there specific goals for achieving Total Customer Satisfaction, both internal and external?				100%	100%
5.	To what extent are customer satisfaction goals disseminated and understood by everyone in the organization?				100%	100%
6.	Does management regularly review and assess all operating systems to determine if barriers to customer satisfaction exist and are appropriate action plans then implemented?				100%	100%
7.	Is there a method in place to obtain future customer requirements?				100%	100%
8.	Are all findings of customer dissatisfaction reported back to the proper organization for analysis and corrective action?				100%	100%
9.	Are customer satisfaction requirements formally defined and documented, and are they based on customer input?				100%	100%
10.	Do all support organizations understand their role in achieving total customer satisfaction?				100%	100%

5.4 COMPUTER INTEGRATED MANUFACTURING		STATUS				
	DESCRIPTION OF PROGRAM	Not Applicable	Not Started	Approach Developed	Percent Deployed	Percent Results
1.	Are systems integrated to allow electronic transfer of information between multiple systems to eliminate redundant data entry?				100%	100%
2.	Can customers electronically transfer CAD/CAM directly into manufacturing?			X		
3.	Can customers electronically transfer order information directly into the business system?				100%	100%
4.	Is data electronically shared between shop floor control and process control systems (i.e., CNC, SPC, Electrical Test, AOI, etc.)?				100%	100%
5.	Are planning systems (MRP, forecasting, capacity planning, financial planning, etc.) electronically integrated with operation systems (order processing, purchasing, inventory management, shop floor control, financial/cost control, etc.)?				100%	100%
6.	Is information available from system processes in real time (vs. batch processing)?				100%	100%
7.	Are processes and procedures documented and available on-line?				100%	100%
8.	Do all functional departments have system access to key financial, manufacturing, sales, and operational data, as it relates to their functional objectives?				100%	100%

COMMENTS

5.5 PROCESS DOCUMENTATION		STATUS				
	DESCRIPTION OF PROGRAM	Not Applicable	Not Started	Approach Developed	Percent Deployed	Percent Results
1.	Are manufacturing product, process, and configuration documents under issue control?				100%	100%
2.	Are “preliminary” and “special product” specifications controlled?				100%	100%
3.	Does the system ensure that the most current customer specifications are available to the manufacturing personnel?				100%	100%
4.	Does the system ensure that the most current material specifications are available to the procurement function?				100%	100%
5.	Are incoming orders reviewed for revisions and issue changes?				100%	100%
6.	Is conformance to customer specifications assured before an order is accepted?				100%	100%
7.	Is customer feedback provided when designs do not meet manufacturability requirements?				100%	100%
8.	Are critical characteristics classified relative to impact on product performance?				100%	100%
9.	Are customers informed of changes made to products controlled by customer drawings or specifications?				100%	100%
10.	Is there an effective internal deviation control procedure and, are customer requested deviations documented and followed?				100%	100%
11.	Do new product development procedures exist and are they followed in the design development process?				100%	100%

5.6 QUALITY RECORDS		STATUS				
	DESCRIPTION OF PROGRAM	Not Applicable	Not Started	Approach Developed	Percent Deployed	Percent Results
1.	Are records of inspection and process control maintained and available for review?				100%	100%
2.	Are records of equipment and equipment maintenance kept?				100%	100%
3.	Is the record and sample retention program defined?				100%	100%
4.	Are quality data used as a basis for corrective action?				100%	100%
5.	Are quality data used in reporting performance and trends to management?				100%	100%
6.	Are quality data used in supporting certifications of quality furnished to customers?				100%	100%
7.	Is field information used for corrective action?				100%	100%
8.	Does a cost of quality measurement system exist?				100%	100%
9.	Are customer reported quality problems responded to, and resolved in the time period requested?				100%	100%
10.	Is quality information on production material rejects provided to sub-suppliers with required corrective action?				100%	100%
11.	Is quality data collected, summarized and analyzed using automated techniques?				100%	100%

COMMENTS

5.7 SKILLS, TRAINING, & CERTIFICATION		STATUS				
	DESCRIPTION OF PROGRAM	Not Applicable	Not Started	Approach Developed	Percent Deployed	Percent Results
1.	Does management ensure that all personnel are trained in their role for achieving Total Customer Satisfaction?				100%	100%
2.	Do all personnel understand how their performance impacts internal and external customer satisfaction?				100%	100%
3.	Do all personnel who contact external customers reflect quality improvement programs?				100%	100%
4.	Do personnel participate in professional societies and growth programs?				100%	100%
5.	Are all personnel trained in sufficient detail to support key initiatives?				100%	100%
6.	Are the results of training evaluated and indicated program changes made?				100%	100%
7.	Does a policy exist which encourages the cross training and rotation of personnel, and is this policy used as the basis of job progression?				100%	100%
8.	Are performance standards participatively developed, and regularly applied for all personnel?				100%	100%
9.	Are Total Customer Satisfaction programs and resulting successes publicized to all personnel?				100%	100%
10.	Do goal setting and reward/incentive programs support the quality improvement process?				100%	100%

5.8 SUBCONTRACTOR CONTROL		STATUS				
	DESCRIPTION OF PROGRAM	Not Applicable	Not Started	Approach Developed	Percent Deployed	Percent Results
1.	Are requirements defined, communicated, and updated to ensure that the supplier understands expectations?				100%	100%
2.	Does a system exist which measures the performance of the supplier and communicates such information to the supplier? (i.e., supplier rating system)				100%	100%
3.	Have the organization's processes been characterized to identify the critical requirements for the suppliers products?				100%	100%
4.	Have the capabilities of the supplier's processes been assessed and considered in the establishment of the requirements?				100%	100%
5.	Have partnerships been established with suppliers, and is assistance provided to ensure that each supplier has the capability to consistently supply conforming products?				100%	100%
6.	Have quality and cycle time metrics and improvement goals been established participatively with the supplier?				100%	100%
7.	Has a system been established with the supplier for identification and verification of corrective action?				100%	100%
8.	Have the requirements for supplier materials been properly characterized and specified to ensure conformance of the product/service to the customer satisfaction requirements?				100%	100%
9.	Is there a supplier certification program or equivalent procured material/service continuous quality improvement program?				100%	100%
10.	Can all personnel who contract suppliers properly reflect appropriate quality improvement programs and status to them?				100%	100%

COMMENTS

5.9 NEW PRODUCTS/TECHNICAL SERVICES		STATUS				
	DESCRIPTION OF PROGRAM	Not Applicable	Not Started	Approach Developed	Percent Deployed	Percent Results
1.	Do new product/technology/service development policies and procedures exist, and do they result in clearly defined project plans with appropriate measureables and approvals?				100	100
2.	Is quantitative benchmarking used to evaluate all new products/technologies/services in comparison to best-in-class offerings?				100	100
3.	Does a roadmap exist to ensure continued development of leading edge, best-in-class products/technology/services?				100	100
4.	Is the capability of each operation which controls critical-to-function characteristics for new products, fully certified?				100	100
5.	Are statistical tools used in the development of robust (high yield) new processes, products, and services?				100	100
6.	When new product/technology/service requires a new process, is it developed jointly and concurrently with the customer and/or suppliers?				100	100
7.	Are computer simulation and design tools used to the maximum extent practicable in the design of new products/technologies/services?				100	100
8.	Are design reviews conducted on a scheduled basis, and do they properly address the process capability indices of critical-to-function characteristics, and of the product/service characteristics?				100	100
9.	Is the new product/technology/service, as produced by the process, verified to meet all customer satisfaction requirements?				100	100

5.10 CALIBRATION CONTROL		STATUS				
	DESCRIPTION OF PROGRAM	Not Applicable	Not Started	Approach Developed	Percent Deployed	Percent Results
1.	Are calibration and preventative maintenance programs in place and documented?				100	100
2.	Are calibration and maintenance personnel trained?				100	100
3.	Is traceability to NIST maintained?				100	100
4.	Is quality measurement and control equipment current, effective, and sufficiently integrated with production equipment?				100	100
5.	Is the history of quality measurement and control equipment documented?				100	100
6.	Has repeatability of measuring devices and inspection or testing processes been established and monitored? Note: are gauge capability studies conducted and GR&R ratios acceptable (<10%)?				100	100
7.	Are calibration and preventative maintenance cycles on schedule?				100	100
8.	Is the use of non-calibrated equipment for design and production purposes prohibited?				100	100
9.	Are tools and fixtures used as criteria or acceptability of product/work fully qualified and identified?				100	100
10.	Are calibration intervals defined in accordance with industry standards or manufacturer's recommendations and the calibration history of the equipment?				100	100

COMMENTS

5.11 INTERNAL AUDITS		STATUS				
	DESCRIPTION OF PROGRAM	Not Applicable	Not Started	Approach Developed	Percent Deployed	Percent Results
1.	Are regular reviews of the product/process conducted and are goals/plans established to continually improve?				100	100
2.	Are the processes/products properly documented and controlled? Do they include appropriate customer requirements and are they executed in conformance to the documentation?				100	100
3.	Are the required quality checks built into the operations within the manufacturing, field installation, and service process, and is the resulting data maintained and promptly acted upon?				100	100
4.	Are there specific goals for achieving Total Customer Satisfaction, both internal and external?				100	100
5.	Does a process change control system exist, and are customers informed of changes made to products and processes with customer approval prior to the change, when required?				100	100
6.	Are the operators within the process provided with written work instructions and are they trained?				100	100
7.	Is the receipt, handling, storage, packaging and release of all material, including customer provided items, at all stages, specified and controlled to prevent damage or deterioration, and to address obsolete material?				100	100
8.	Is there a first in/first out (FIFO) system in place, and is it followed?				100	100

5.12 STATISTICAL PROCESS CONTROL		STATUS				
	DESCRIPTION OF PROGRAM	Not Applicable	Not Started	Approach Developed	Percent Deployed	Percent Results
1.	Have the personnel who will be responsible for guiding the implementation of SPC been designated?				100	100
2.	Are statistical techniques used to reduce variation in the engineering process before the start of production?				100	100
3.	Is the quality system dependent upon process rather than product controls?				100	100
4.	Is the capability of critical processes and machines measured and monitored with CPK's >1.5, and targeted with CP of 2.0?				100	100
5.	Are incapable processes or machines targeted for improvement or replacement?				100	100
6.	Is SPC implemented for all critical processes?				100	100
7.	Are procedures that control the reaction to out-of-control situations adequate and effective?				100	100
8.	Are operators trained in the use of appropriate statistical techniques, and are they properly applying them?				100	100
9.	Are advanced problem solving techniques used by engineers to solve problems? (Design of Experiments, planned experimentation, advanced diagnostic tools, etc.)				100	100
10.	Are control charts and other process controls properly implemented?				100	100
11.	Is statistical process control being practiced in work centers and are yields being recorded and plotted on a scheduled basis, with respect to upper and lower control limits?				100	100

COMMENTS

5.13 PROBLEM SOLVING		STATUS				
	DESCRIPTION OF PROGRAM	Not Applicable	Not Started	Approach Developed	Percent Deployed	Percent Results
1.	Are employees trained in problem solving techniques, in comparison to the needs of the organization?				100	100
2.	Does the organization utilize participative problem solving techniques to identify, measure and resolve internal and external problems?				100	100
3.	Are problem solving efforts timely and effective?				100	100
4.	Are applied resources sufficient to remove problem solving constraints?				100	100
5.	Are statistical techniques used for problem solving?				100	100
6.	Are quality data used to identify barriers, and to determine the priority of problems?				100	100
7.	Is there a policy/procedure that includes the use of problem solving techniques to systematically drive reduction in variability?				100	100

5.14 IN-PROCESS CONTROL		STATUS				
	DESCRIPTION OF PROGRAM	Not Applicable	Not Started	Approach Developed	Percent Deployed	Percent Results
1.	Are process capabilities established and maintained on all major processes? (critical parameters)				100	100
2.	Are in-process inspections, test operations, and processes properly specified and performed?				100	100
3.	Are in-process inspection facilities and equipment adequate?				100	100
4.	Are the results of in-process inspections used in the promotion of effective preventative action and corrective action?				100	100
5.	Is preventative maintenance performed on the equipment and facilities?				100	100
6.	Are housekeeping procedures adequate and how well are they followed?				100	100
7.	Are process management plans established, and are critical parameters followed?				100	100
8.	Are work areas uncluttered and free of excess work-in-process, supplies, debris, etc? Is the environment conductive to producing quality work? Is proprietary information adequately protected?				100	100
9.	Are certifications and in-process inspection results used in making final acceptance decisions?				100	100
10.	Are methods and procedures for the control of metallurgical, chemical, and other special processes established and followed?				100	100

COMMENTS

5.15 MATERIAL HANDLING		STATUS				
	DESCRIPTION OF PROGRAM	Not Applicable	Not Started	Approach Developed	Percent Deployed	Percent Results
1.	Are procured material releases from receiving inspection clearly identified, as to acceptance status?				100	100
2.	Are procedures to facilitate limited life materials, such as prepreg, in place, properly controlled, and monitored?				100	100
3.	Are procured items identified with some means of traceability (serial number, lot number, date code, etc.)?				100	100
4.	Are procedures and facilities adequate for storage, release and control of materials?				100	100
5.	Are in-store and in-process materials properly identified and controlled?				100	100
6.	Is in-process material protected from corrosion, deteriorization, and damage?				100	100
7.	Are ESD Policies and Procedures in place for handling electronic components?				100	100

5.16 NON-CONFORMING MATERIAL CONTROL		STATUS				
	DESCRIPTION OF PROGRAM	Not Applicable	Not Started	Approach Developed	Percent Deployed	Percent Results
1.	Is non-conforming material identified, segregated from regular production material, and properly dispositioned?				100	100
2.	Are non-conforming materials properly identified and controlled to prevent inadvertent use?				100	100
3.	Is the review and disposition of non-conforming materials defined, and are provisions made for inclusion of the customer in disposition decision?				100	100
4.	Are procedures for controlling non-conforming materials, and for ensuing corrective action, in place and followed?				100	100
5.	Do procedures provide for material review by a committee consisting of Quality and Engineering (as a minimum), to determine the disposition of non-conforming materials? (deviating from drawings or specification)				100	100
6.	Do supplier's procedures and controls for corrective action prevent recurrence of non-conformances?				100	100
7.	Is there a system for coordinating necessary corrective action with purchasing personnel?				100	100
8.	Does the corrective action extend to all applicable causes of non-conformance (e.g., design, workmanship, procedures, equipment, etc.)?				100	100

COMMENTS

5.17 INSPECTION AND TEST PLAN	STATUS

DESCRIPTION OF PROGRAM		Not Applicable	Not Started	Approach Developed	Percent Deployed	Percent Results
1.	Are statistical techniques used in determining the acceptability of finished goods to customer requirements?		X			
2.	Are periodic tests conducted to audit reliability and environmental performance of the final product?			X		
3.	Is CPK tracking performed for critical characteristics, with plans to achieve CPL = 1.5 with a target of CP of 2.0?		X			
4.	Is root cause failure analysis performed for internal and external failures, and is appropriate corrective action implemented?				100	100
5.	Are test and inspection personnel trained in the procedures of their operations, and are those procedures being followed?				100	100
6.	Is the new product/technology/service, as produced by the processes, verified to meet all customer satisfaction requirements?				100	100

5.18 PRODUCT INSPECTION/FINAL AUDIT

STATUS

DESCRIPTION OF PROGRAM		Not Applicable	Not Started	Approach Developed	Percent Deployed	Percent Results
1.	Are final product acceptance procedures documented and followed?				100	100
2.	Are all specific customer product audits conducted, as required?				100	100
3.	Are inspectors trained for the tasks performed?				100	100
4.	Are flow charts or milestones developed with checkpoints readily available?				100	100
5.	Is a system in place which denotes inspection performed; e.g., use of initials, stamps, labels, bar codes, etc., affixed to production documentation?				100	100
6.	Is a quality system established and maintained for control of product/production documentation?				100	100
7.	Is “accept/reject” criteria defined and available for use?				100	100
8.	Is a final audit performed to ensure that all required verifications and tests, from receipt of materials through point of product completion, have been accomplished?				100	100
9.	Are packing and order checking procedures documented and followed?				100	100

COMMENTS

5.19 TOOLING INSPECTION, HANDLING, & STORAGE		STATUS				
	DESCRIPTION OF PROGRAM	Not Applicable	Not Started	Approach Developed	Percent Deployed	Percent Results
1.	Are temperature, humidity, laminar flow controls in place to prevent contamination, and to assure dimensional stability?				100	100
2.	Do operators use hairnets, gloves & lab coats in all sensitive assembly areas?				100	100
3.	Are work instructions and related forms in place to control all applicable tooling requirements, as stated in the customer's purchase order?				100	100
4.	Is customer provided tooling controlled with regard to handling, storage, and revision control?				100	100
5.	Are production fixtures controlled with regard to handling, storage, use life, and relationship to customer purchase order?				100	100
6.	Are customer-provided consignment materials inspected?				100	100
7.	Are customer-provided consignment materials controlled with regard to handling, storage and MRP?				100	100
8.	Are all tools, fixtures, and other devices, used for tooling inspection and control, maintained under the calibration control procedure?				100	100
9.	Are records showing initial acceptance, periodic checks, and any needs for rework and/or modification available?				100	100

5.20 CORRECTIVE ACTION		STATUS				
	DESCRIPTION OF PROGRAM	Not Applicable	Not Started	Approach Developed	Percent Deployed	Percent Results
1.	Are final acceptance inspection results used for corrective and preventative action?				100	100
2.	Is root-cause analysis performed for non-conformances? This includes, but is not limited to, non-conformances (problems) caused by suppliers, found/caused "in-house" during processing, or those reported by the customer.				100	100
3.	Is positive action taken to prevent recurrence of problems, and are there documented reports/records of each occasion?				100	100
4.	Do procedures and systems provide for ensuring that replies are made to customer requests for correction action within the time limit specified?				100	100
5.	Is corrective action controlled and documented for all applicable work centers?				100	100
6.	When corrections are made, is their effectiveness subsequently reviewed and monitored?				100	100

COMMENTS

SECTION 6

DATE COMPLETED	HISTORY #

MANUFACTURING HISTORY (See Section 2 Site Capability)(Should represent 70% of your business)

Please complete as many history profiles so that the total descriptions of products you manufacture account for production orders that reflect 70% of your business. History profiles are for assembly type families (assembly types may be grouped together if they are similar).

ASSEMBLY TYPE	DATE OF ORDER	COMPONENT DENSITY
BOARD TYPE	PRODUCTION QUANTITY	TOTAL YEARLY PRODUCTION %

LEGEND	
A = BOARD/PANEL	C = ASSEMBLY
B = COMPONENTS	D = TEST

CHECK ALL THAT APPLY (Dimensions are in millimeters, inches are in brackets)

	BOARD SIZE (ACROSS DIAGONAL)	☐ <250 [10.00]	☐ 250 [10.00]	☐ 350 [14.00]	☐ 450 [17.50]	☐ 550 [21.50]	☐ 650 [22.50]	☐ 750 [29.50]	☐ 850 [33.50]	☒ >850 [33.50]
A	SURFACE MOUNT MAXIMUM WORKING AREA	☐ <300 CM^2 <[50 IN^2]	☐ 300 CM^2 [50 IN^2]	☐ 600 CM^2 [100 IN^2]	☐ 1000 CM^2 [160 IN^2]	☐ 1500 CM^2 [230 IN^2]	☐ 2100 CM^2 [330 IN^2]	☐ 2800 CM^2 [430 IN^2]	☐ 3600 CM^2 [550 IN^2]	☒ >3600 CM^2 [550 IN^2]
	MAXIMUM THROUGH-HOLE WORKING AREA	☐ <300 CM^2 <[50 IN^2]	☐ 300 CM^2 [50 IN^2]	☐ 600 CM^2 [100 IN^2]	☐ 1000 CM^2 [160 IN^2]	☐ 1500 CM^2 [230 IN^2]	☐ 2100 CM^2 [330 IN^2]	☐ 2800 CM^2 [430 IN^2]	☐ 3600 CM^2 [550 IN^2]	☒ >3600 CM^2 [550 IN^2]
B	THROUGH HOLE INSERTION	☒ Two Leaded-Axial	☒ Two Leaded-Radial	☒ Multiple Leaded ≤6 - Radial	☒ Single-In-Line Packages-SIPS	☒ Dual In-line pkgs (DIPS) ≤24 PION	☒ Dual In-line pkgs (DIPS) >24 PION	☒ Pin Grid Arrays (PGA's)	☒ Component Sockets	☒ Card Edge/Two Piece Connect.
	SURFACE MOUNT PLACEMENT	☒ Chip Resistors/ Cap. (Reel)	☒ Chip Resistors/ Cap. (Bulk)	☒ Tantalum Capacitor	☒ Metal Faced Comp. (MELFS)	☒ Sm. Outline Diodes (SODS)	☒ Sm. Outline Transistors-SOTS	☒ Sm. Outline IC's (SOIC's)	☒ Var. Resistor Trim Pots	☒ Surf. Mt. Sockets /Test Pts.Con.
	HIGH PIN COUNT	☒ Chip-on-Tape (Molded ring) >0.4mm pitch	☒ Chip-on-Tape (Molded ring) ≤0.3mm pitch	☒ Quad Flat Pack (QFP) ≤0.4mm pitch	☒ Quad Flat Pack (QFP) ≤0.3mm pitch	☒ Shrink Quad Flat Pack (SQFP)	☒ Thin Small Out-line Pkg. (TSOP)	☒ Ball/Post Grid Array >1.0mm pitch	☒ Ball/Post Grid Array ≤1.0mm pitch	☒ Land Grid Array Any Pitch
	BARE CHIP ATTACHMENT	☐ Thermal Wire Bonding	☐ Ball Bonding	☐ Ultrasonic Wire Bonding	☐ Beam Lead Chip Bonding	☐ Generic Tape Automated Bond.	☐ Custom Tape Automated Bond.	☒ Flip Chip Ceramic /Glass Based	☒ Flip Chip on Rigid Printed Boards	☒ Flip Chip on Flex Circuit Boards
	ATTACHMENT TECHNIQUES	☒ Hand Soldering	☐ Hot Bar Soldering	☒ Focused Hot Air Soldering	☒ Wave Soldering	☒ IR Reflow Soldering	☐ Vapor Phase Soldering	☒ Hot Air Con-vection Soldering	☐ Laser Soldering	☒ Conductive Adhesive Attach.
C	CLEANING AND CLEANLINESS TESTING	☒ No Clean/Nev er Clean System	☒ Aqueous Clean. In-line System	☐ Aqueous Clean. Static Soak	☐ Modified Solvent clean. In-line	☐ Modified Solvent clean. static soak	☒ Ultrasonic agitation cleaning	☐ Ionic Salt /ResidueTest	☐ Organic Contami-nate Impreg. test	☐ Surface Insul. Resist. (SIR) Test
	COATING AND ENCAPSULATION	☐ Bare Die-Glob Top	☐ Bare Die-Total Assembly	☐ Asbly (1-2 sides) Epoxy coat	☐ Asbly (1- 2 sides) Polyurethane coat	☐ Asbly (1-2 sides) Acrylic coating	☐ Asbly (1- 2sides) vacuum Dep coat	☐ Encap. Exterior Access (Test)	☐ Encap. Ex-access (Tuning)	☐ Encapl. Entire asbly. (Thin Coat)
	TEST TYPE	☐ Automatic Test Generation	☒ X-Ray Joint Evaluation	☒ Cleanliness Testing	☐ Auto in-circuit Electronic Asbly	☐ Electromagnetic Interference	☐ Auto function Electronic Asbly	☒ System Level Test Electrical	☒ System Level Test Function	☐ System Level test environment al
D	NO. TEST VECTORS	☐ <500	☐ 500	☐ 1000	☐ 2000	☐ 3000	☐ 4000	☐ 5000	☐ 6000	☒ >6000
	ENVIRONMENTAL STRESS SCREENING	☐ Burn-in at Temperatur e	☐ Burn-in with Temp. Cycling	☐ Burn-in Hi Temp. Cycles	☐ Burn-in w/temp. cycles hi-hum	☐ Power Cycling On-Off	☐ Vibrations Testing	☐ Shock Test	☐ Salt Spray Testing	

SECTION 7

DATE COMPLETED

IDENTIFICATION OF PREVIOUS AUDITS (Optional)

Please complete as many forms as you feel reflect the intensity of your customer visits.

COMPANY AUDITORS	DATE OF AUDIT
AUDIT TEAM MEMBERS	AUDITOR REMARKS
	SPECIFICATIONS USED IN AUDIT
LENGHT OF AUDIT	
TEAM MEMBERS MAY BE CONTACTED AT	

COMPANY AUDITORS	DATE OF AUDIT
AUDIT TEAM MEMBERS	AUDITOR REMARKS
	SPECIFICATIONS USED IN AUDIT
LENGHT OF AUDIT	
TEAM MEMBERS MAY BE CONTACTED AT	

COMPANY AUDITORS	DATE OF AUDIT
AUDIT TEAM MEMBERS	AUDITOR REMARKS
	SPECIFICATIONS USED IN AUDIT
LENGHT OF AUDIT	
TEAM MEMBERS MAY BE CONTACT AT	

*REPEAT THIS FORM AS NECESSARY

SECTION 8

DATE COMPLETED

FINANCIAL REVIEW (OPTIONAL)

Please complete the following financial information that coincides with the company description and site information provided in section 1.

COMPANY FINANCIAL DESCRIPTION

LEGAL NAME		
TAXPAYER ID NUMBER	DUNS NUMBER	TRADING SYMBOL
ANNUAL SALES	PRIOR YEAR	YEAR-TO-DATE
FISCAL YEAR		
BANK	ACCOUNT NUMBER	
BANK ADDRESS	STATE	ZIP
PROVINCE	COUNTRY	
BANK TELEPHONE NUMBER	FAX NUMBER	
COMMENTS		

SITE FINANCIAL DESCRIPTION

SITE NAME		
TAXPAYER ID NUMBER	DUNS NUMBER	TRADING SYMBOL
ANNUAL SALES	PRIOR YEAR	YEAR-TO-DATE
FISCAL YEAR		
BANK	ACCOUNT NUMBER	
BANK ADDRESS	STATE	ZIP
PROVINCE	COUNTRY	
BANK TELEPHONE NUMBER	FAX NUMBER	
COMMENTS		

SECTION 9.0

DATE COMPLETED

AQP ELECTRONIC EDITING AND SAMPLE FORM

This MS Word template comes with editable fields. IPC has made this electronic document available for ease of completing, updating, and filing the MQP, as well as to give the laminate manufacturer and customer a common interface. Using the template enables laminate manufacturers to maintain several customer specific files without the endless stream of paperwork.

Editable fields are highlighted in gray. To complete the fields in the template, use the TAB key to toggle from field to field, entering the information as instructed in the introductory text for each section.

The developers of this MQP strongly suggest the person at the laminate manufacturing facility responsible for creating and maintaining the MQP write protect the file to be sent.

Pages 44-50 document an example of a completed IPC-1720A form.

SECTION 1.1 (EXAMPLE)

DATE COMPLETED
4/5/96

COMPANY DESCRIPTION

GENERAL INFORMATION			
LEGAL NAME Consolidated Electronic Assembly, Inc			
PHYSICAL ADDRESS 1473 Andrew Lane			
CITY Wichita		STATE KS	ZIP 67226
PROVINCE		COUNTRY USA	
TELEPHONE NUMBER (316) 497-6346		FAX NUMBER (316) 497-5426	TELEX NUMBER
E-MAIL NUMBER conele@MI.com	MODEM NUMBER	DATE FOUNDED: 1/1/73 ☒ PUBLIC ☐ PRIVATE	

MANAGEMENT
PRESIDENT John Lund
CHIEF OPERATING OFFICER Anthony Largo
VICE PRESIDENT OF MANUFACTURING Robert S. Fine
VICE PRESIDENT OF QUALITY Loretta Gingrich
VICE PRESIDENT OF MARKETING/SALES Jerald Newly
VICE PRESIDENT OF CUSTOMER SERVICE Joyce Kimble
VICE PRESIDENT OF PURCHASING Christopher B. Lang

CORPORATE DESCRIPTION		Number of Corporate Employees	Number of Site Employees	COMMENTS
DESIGN AND DEVELOPMENT		20	13	
ENGINEERING		16	10	
MANUFACTURING CONTROL		6	16	
MANUFACTURING	DIRECT	14	35	
	INDIRECT	35	120	
QUALITY CONTROL	QUALITY ENGINEERS	6	16	
	INTERNAL AUDITORS	2	4	
	GENERAL MANAGEMENT	1	6	
ADMINISTRATION		12	19	
TOTAL		112	239	

SECTION 1.2 (EXAMPLE)

SITE DESCRIPTION (TO BE COMPLETED FOR EACH SITE)

DATE COMPLETED 4/5/96

ATTACH APPROPRIATE CHARTS (OPTIONAL)

MANUFACTURING FACILITY

COMPANY NAME	Computer Operations (CEA Inc.) Plant B		
PHYSICAL ADDRESS	3714 22nd Ave.		
CITY Wichita	STATE KS	ZIP 67226	
PROVINCE	COUNTRY		
TELEPHONE NUMBER (316) 649-1730	FAX NUMBER (316) 648-2210	TELEX	
E-MAIL NUMBER	MODEM NUMBER	YEARS IN BUSINESS 16	
PRINCIPLE PRODUCTS/SERVICES/SPECIALTIES: Computer Peripherals, Mother Boards and Systems	BUSINESS CHARACTERIZATION (HIGH VOLUME, QUICK TURN-AROUND, ETC.): Medium Volume, Quick Delivery		

FACILITY MANAGEMENT	TITLE	REPORTS TO (Function/Job Title)
OVERALL OPERATION RESPONSIBILITY FOR THIS SITE: Harry Minepoll	Plant Manager	John Lund/COO
MANUFACTURING: Fred Donner	Director of Manufacturing	H. Minepoll/Plant Manager
TECHNICAL/ENGINEERING: Samuel Drake	Director of Engineering	H. Minepoll/Plant Manager
MATERIALS/PRODUCTION CONTROL: Anita Jerico	Director of Materials Mgmt	Fred Donner/Director of Mfg.
PURCHASING: Marilyn Danno	Purchasing Manager	Fred Donner/Director of Mfg.
QUALITY: Mary Donaghy	Quality Manager	Fred Donner/Director of Mfg.
SALES REPRESENTATIVE: Frank Personal	Sales Manager	H. Minepoll/Plant Manager
WASTE MANAGEMENT: Frank Lang	Environmental Manager	Fred Donner/Director of Mfg.

BUILDINGS / SYSTEMS (INDICATE % COVERAGE)

	AGE	AREA (Sq. Ft.)	Construction (Wood/Brick)	Power Conditioning	Heating	Ventilation	Air Conditioning	Sprinklers	Waste Treatment	Other
Office	10	2,000	Brick	100%	100%	50%	85%	100%	-	-
Manufacturing	16	26,000	Stucco	100%	100%	5%	90%	100%	60%	-
Storage	3	6,000	Brick	0	50%	30%	10%	100%	-	-
Planned additions	1	10,000	Brick	100%	100%	30%	100%	100%	95%	-

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)	12 Minutes
Do you conform to local/federal environment protection agency requirements?	☒ YES	☐ NO	Date of last OSHA visit Date of last EPA visit	3/29/95 9/15/95
Are you currently operating under a waiver or in violation of local government requirements?	☐ YES	☒ NO	Other Agency Audits, UL, ISO 9000, CSA Approval and Number	☒ UL # 47625 ☐ CSA # _____ ☒ ISO 9001 Reg# 65493 Reg Date 04/95
Do you have a safety program? Describe	☒ YES	☐ NO	Hazardous Waste Number Trade Waste Account Number	AMI-4712 B14593 H47

PLANT PERSONNEL (TOTAL EMPLOYEES)

Permanent	Contract	Office	Technical/ Engineering	Production	Full-Time QA	Part-Time QA	Union	Non-Union	Union Name	Contract Expires (Date)
212	27	26	16	171	20	6	-	239	-	-

SECTION 2.1 (EXAMPLE)

DATE COMPLETED
4/5/96

PRODUCT TYPE

This section is intended to provide overview information on the product types being fabricated by the manufacturer.

Site Capability Snapshot (Please Check all that apply)

DESIGNATORS		1	2	3	4	5	6	7	8	9	OTHER	REMARKS
A	Electronic Assembly Type*	☒ 1A	☐ 1B	☒ 1C	☒ 1X	☐ 2B	☒ 2C	☒ 2X	☐ 2Y	☐ 2Z		
B	Board Construction Type	☒ Rigid Printed Board	☐ Flex Printed Board	☐ Rigid Flex Board	☒ Rigid Back Plane	☐ Molded Board	☐ MCM-C Ceramic Modules & Hybrids	☐ MCM-L Laminated Modules	☐ MCM-D Deposited Dielectric	☐ Discrete Wire Boards		
C	Board Size Diagonal	☐ <250 [10.00]	☐ 250 [10.00]	☐ 350 [14.00]	☒ 450 [17.50]	☐ 350 [14.00]	☐ 650 [25.50]	☐ 750 [29.50]	☐ 850 [33.50]	☐ >850 [33.50]		
D	Maximum Thru Hole Work Area	☐ <300 CM^2 <[50 IN^2]	☐ 300 CM^2 [50 IN^2]	☒ 600 CM^2 [100 IN^2]	☐ 1000 CM^2 [160 IN^2]	☐ 1500 CM^2 [230 IN^2]	☐ 2100 CM^2 [330 IN^2]	☐ 2800 CM^2 [430 IN^2]	☐ 3600 CM^2 [550 IN^2]	☐ >3600 CM^2 [550 IN^2]		
E	Maximum SMT Work Area	☐ <300 CM^2 <[50 IN^2]	☐ 300 CM^2 [50 IN^2]	☐ 600 CM^2 [100 IN^2]	☐ 1000 CM^2 [160 IN^2]	☒ 1500 CM^2 [230 IN^2]	☐ 1000 CM^2 [160 IN^2]	☐ 2800 CM^2 [430 IN^2]	☐ 3600 CM^2 [550 IN^2]	☐ >3600 CM^2 [550 IN^2]		
F	Discrete Wiring Terminals & Connectors	☒ Solid Wire	☐ Stranded Wire	☐ Shielded Wire	☒ Coax Wire	☐ Terminal Bifurcated & Turret	☐ Clip & Pin Terminals	☒ Crimped Terminals	☐ Board Connectors	☐ Backplane Connectors		
G	Cable & Harness (Multiple Wire)	☐ Hi Power Eq. or Lgr. 10 Gauge	☒ Lower Power Thinner than 10 Gauge	☐ Electrical Cable (Wire)	☐ Optical Cable (Glass)	☐ Electrical Harness	☐ Optical Harness	☒ Ribbon Cable Harness	☐ Combination Harness			
H	Mechanical Assembly Operations	☒ Electronic Hardware	☒ Mechanical Hardware	☒ Shielding Hardware	☒ Thermal Conductive Hardware	☐ Front Panel Hardware	☐ Jumper Wires	☐ Molded Cable	☐ Final System Assembly (Box Build)			
J	Completed End Product	☐ Consumer Products	☒ General Purpose Computers	☐ Telecommunications Products	☐ Commercial Aircraft Products	☐ Industrial & Automotive Products	☐ High Performance Military	☐ Outer Space (LEO & GEO)	☐ Military Avionics	☐ Automotive (Under the hood)		

* For product type description, see Glossary, Section 10.1

SECTION 2.7 (EXAMPLE)

DATE COMPLETED
4/5/96

SERVICES

This section is intended to provide overview information on the customer services offered by the manufacturer in addition to the assembly manufacturing services.

Site Capability Snapshot (Please Check all that apply)

DESIGNATORS		1	2	3	4	5	6	7	8	9	OTHER	REMARKS
A	Component Procurement	☒ Consignment	☒ Passive Thru-Hole	☒ Passive SMT	☒ I/C SMT	☒ I/C SMT	☒ Hi-Pin Count (Peripheral)	☒ Hi-Pin Count (Array)	☒ Bare Die (CHIPS)	☒ ASIC's		
B	Board Procurement	☒ Consignment	☒ Single Sided	☒ Double Sided	☒ Multilayer (Rigid)	☒ Multilayer (Rigid-Flex)	☒ Metal Core Boards	☐ CTE Boards	☐ MCM's & Hybrids	☐ PCMCIA's		
C	Design Services	☐ Outsource	☒ Simulation	☒ Circuit Analysis	☒ Placement & Routing	☒ Design Rule Implement ation	☒ Impedance Control	☒ High Speed	☒ MCM's (L) (C) or (D)	☒ ASIC's		

SECTION 3 (EXAMPLE)

EQUIPMENT PROFILE

DATE COMPLETED
4/5/96

* Examples of equipment limitations include: min/max board size & min/max working area

3.1 SOLDER PASTE APPLICATION	YES	NO	EQUIPMENT	QTY	EQUIPMENT LIMITS
A) Stencil	☒	☐		10	.01 DIA True Position
B) Screen	☒	☒			
C) Syringe	☒	☐		12	400 Dots/Hour

3.2 ADHESIVE APPLICATION	YES	NO	EQUIPMENT	QTY	EQUIPMENT LIMITS
A) Stencil	☐	☒			
B) Screen	☐	☒			
C) Syringe	☒	☐			
D) Pin Transfer	☒	☐	Parkinson Transfer	8	350 Dots/ Hour

3.3 SURFACE MOUNT PLACEMENT	YES	NO	EQUIPMENT	QTY	EQUIPMENT LIMITS
A) Chip Capacitors/Resistors	☒	☐	Fujiyama Y13	3	3000 Per Hour
B) Small Outline Diodes (SODs)	☒	☐	Fujiyama Y13	3	3000 Per Hour
C) Small Outline Transistors (SOTs)	☒	☐	Fujiyama Y13	3	3000 Per Hour
D) Small Outline ICs (SOICs)	☒	☐	Universal 217	2	2000 Per Hour Vision Assist
E) Chip-on-tape (molded carrier ring)	☒	☐			
F) Quad Flat Packs (QFPs)	☒	☐	Zevatech SMT9	3	1000 Per Hour Vision Verification
G) Thin Small Outline Package (TSOP)	☒	☐			
H) Ball/Post Grid Array	☒	☐			
J) Land Grid Array	☒	☐			

SECTION 4 (EXAMPLE)

DATE COMPLETED
4/5/96

TECHNOLOGY PROFILE SPECIFICS

4.1 ADMINISTRATION

4.1.1 CAPACITY PROFILE	EST %	COMMENTS
A) Total Capacity in units per month (based on best quarter)	160	Full Computer Systems
B) Presently running at ____ % of total unit capacity.	0	One Shift
C) Revenue from manufacturing services. Revenue from non-manufacturing activities.	80 20 **Total** 100%	
D) Work dedicated to consignment. Work dedicated to turnkey.	70 30 **Total** 100%	

4.1.2 PERCENTAGE OF DOLLAR VOLUME	EST %	COMMENTS
* 1) Type 1A electronic assembly	10%	Power Supplies
2) Type 1B electronic assembly		
3) Type 1C electronic assembly	30%	Audio Board/VGA Board
4) Type 1X electronic assembly	10%	Memory Module
5) Type 2B electronic assembly		
6) Type 2C electronic assembly	10%	Multimedia Assistant
7) Type 2X electronic assembly	25%	Computer Mother Board
8) Type 2Y electronic assembly		
9) Type 2Z electronic assembly		
10) Wire wrap assembly	3%	
11) Cable/harness assembly	4%	
12) Mechanical assembly	2%	
13) Full system assembly	6%	

*** For description of product types, see glossary, Section 10.1**

SECTION 6 (EXAMPLE)

DATE COMPLETED	HISTORY #
4/5/96	1

MANUFACTURING HISTORY

(See Section 2 Site Capability)(Should represent 70% of your business)

Please complete as many history profiles so that the total descriptions of products you manufacture account for production orders that reflect 70% of your business. History profiles are for assembly type families (assembly types may be grouped together if they are similar).

ASSEMBLY TYPE	DATE OF ORDER	COMPONENT DENSITY
2X	10/12/95	70%
BOARD TYPE	PRODUCTION QUANTITY	TOTAL YEARLY PRODUCTION %
Rigid	18,000	18K 10%

LEGEND	
A = BOARD/PANEL	C = ASSEMBLY
B = COMPONENTS	D = TEST

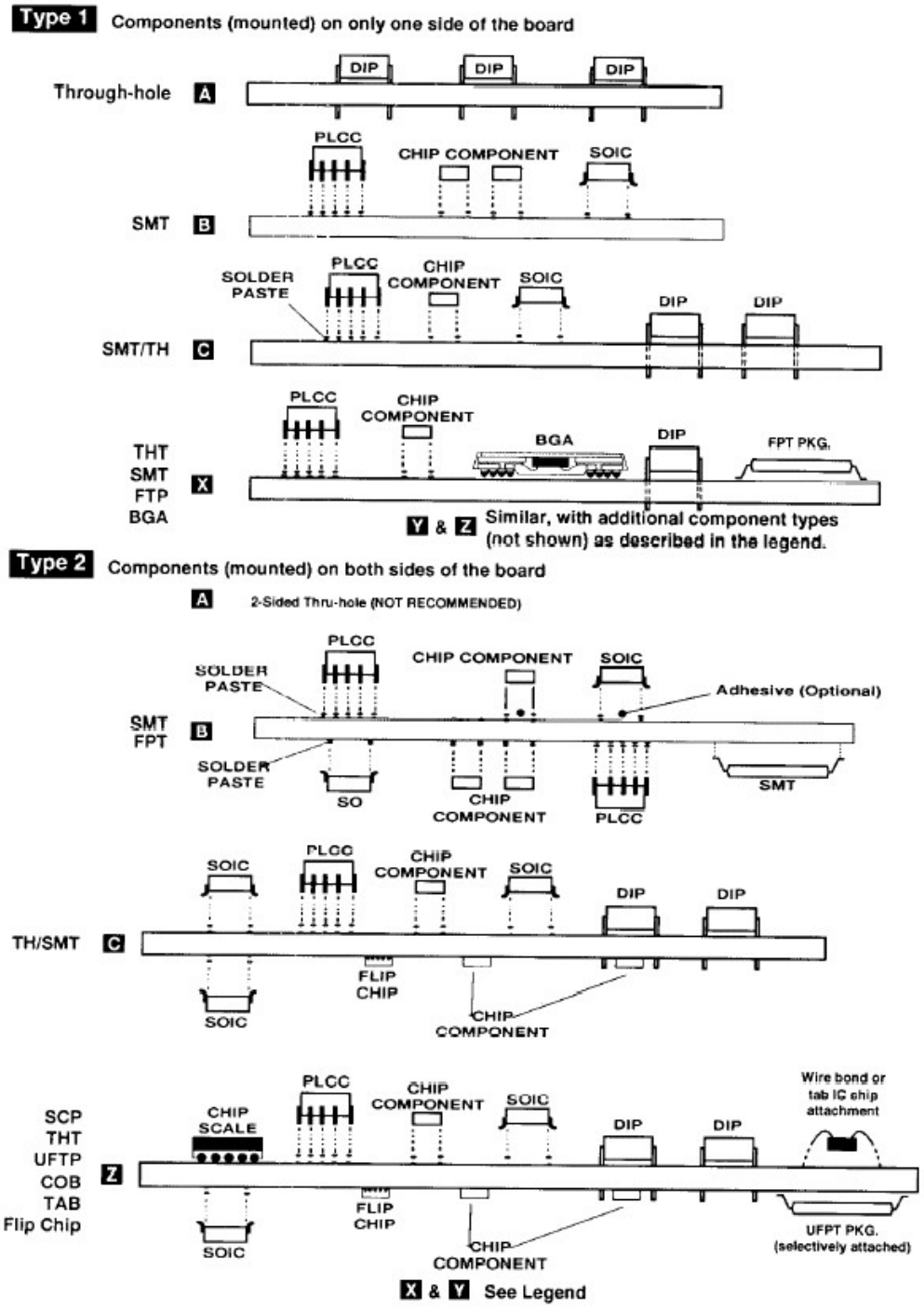
CHECK ALL THAT APPLY (Dimensions are in millimeters, inches are in brackets)

	BOARD SIZE (ACROSS DIAGONAL)	☐ <250 [10.00]	☐ 250 [10.00]	☐ 350 [14.00]	☐ 450 [17.50]	☒ 550 [21.50]	☐ 650 [22.50]	☐ 750 [29.50]	☐ 850 [33.50]	☐ >850 [33.50]
A	SURFACE MOUNT MAXIMUM WORKING AREA	☐ <300 CM² <[50 IN²]	☐ 300 CM² [50 IN²]	☐ 600 CM² [100 IN²]	☒ 1000 CM² [160 IN²]	☐ 1500 CM² [230 IN²]	☐ 2100 CM² [330 IN²]	☐ 2800 CM² [430 IN²]	☐ 3600 CM² [550 IN²]	☐ >3600 CM² [550 IN²]
	MAXIMUM THROUGH-HOLE WORKING AREA	☐ <300 CM² <[50 IN²]	☐ 300 CM² [50 IN²]	☐ 600 CM² [100 IN²]	☐ 1000 CM² [160 IN²]	☐ 1500 CM² [230 IN²]	☐ 2100 CM² [330 IN²]	☐ 2800 CM² [430 IN²]	☐ 3600 CM² [550 IN²]	☒ >3600 CM² [550 IN²]
B	THROUGH HOLE INSERTION	☒ Two Leaded-Axial	☒ Two Leaded-Radial	☒ Multiple Leaded ≤6 - Radial	☐ Single-In-Line Packages-SIPS	☒ Dual In-line pkgs (DIPS) ≤24 PION	☐ Dual In-line pkgs (DIPS) >24 PION	☐ Pin Grid Arrays (PGA's)	☐ Component Sockets	☒ Card Edge/Two Piece Connect.
	SURFACE MOUNT PLACEMENT	☒ Chip Resistors/ Cap. (Reel)	☐ Chip Resistors/ Cap. (Bulk)	☒ Tantalum Capacitor	☐ Metal Faced Comp. (MELFS)	☒ Sm. Outline Diodes (SODS)	☒ Sm. Outline Transistors-SOTS	☐ Sm. Outline IC's (SOIC's)	☐ Var. Resistor Trim Pots	☐ Surf. Mt. Sockets /Test Pts.Con.
	HIGH PIN COUNT	☐ Chip-on-Tape (Molded ring) >0.4mm pitch	☐ Chip-on-Tape (Molded ring) ≤0.3mm pitch	☒ Quad Flat Pack (QFP) ≤0.4mm pitch	☐ Quad Flat Pack (QFP) ≤0.3mm pitch	☐ Shrink Quad Flat Pack (SQFP)	☐ Thin Small Out-line Pkg. (TSOP)	☐ Ball/Post Grid Array >1.0mm pitch	☐ Ball/Post Grid Array ≤1.0mm pitch	☐ Land Grid Array Any Pitch
	BARE CHIP ATTACHMENT	☐ Thermal Wire Bonding	☐ Ball Bonding	☐ Ultrasonic Wire Bonding	☐ Beam Lead Chip Bonding	☐ Generic Tape Automated Bond.	☐ Custom Tape Automated Bond.	☐ Flip Chip Ceramic /Glass Based	☐ Flip Chip on Rigid Printed Boards	☐ Flip Chip on Flex Circuit Boards
	ATTACHMENT TECHNIQUES	☒ Hand Soldering	☐ Hot Bar Soldering	☐ Focused Hot Air Soldering	☒ Wave Soldering	☐ IR Reflow Soldering	☐ Vapor Phase Soldering	☒ Hot Air Con-vection Soldering	☐ Laser Soldering	☐ Conductive Adhesive Attach.
C	CLEANING AND CLEANLINESS TESTING	☒ No Clean/Never Clean System	☒ Aqueous Clean. In-line System	☐ Aqueous Clean. Static Soak	☐ Modified Solvent clean. In-line	☐ Modified Solvent clean. static soak	☐ Ultrasonic agitation cleaning	☒ Ionic Salt /ResidueTest	☐ Organic Contami-nate Impreg. test	☐ Surface Insul. Resist. (SIR) Test
	COATING AND ENCAPSULATION	☐ Bare Die-Glob Top	☐ Bare Die-Total Assembly	☐ Asbly (1-2 sides) Epoxy coat	☐ Asbly (1- 2 sides) Polyurethane coat	☒ Asbly (1-2 sides) Acrylic coating	☐ Asbly (1-2sides) vacuum Dep coat	☐ Encap. Exterior Access (Test)	☐ Encap. Ex-access (Tuning)	☐ Encapl. Entire asbly. (Thin Coat)
D	TEST TYPE	☐ Automatic Test Generation	☒ X-Ray Joint Evaluation	☒ Cleanliness Testing	☐ Auto in-circuit Electronic Asbly	☐ Electromagnetic Interference	☐ Auto function Electronic Asbly	☐ System Level Test Electrical	☐ System Level Test Function	☐ System Level test environmental
	NO. TEST VECTORS	☐ <500	☐ 500	☐ 1000	☒ 2000	☐ 3000	☐ 4000	☐ 5000	☐ 6000	☐ >6000
	ENVIRONMENTAL STRESS SCREENING	☒ Burn-in at Temperature	☐ Burn-in with Temp. Cycling	☐ Burn-in Hi Temp. Cycles	☐ Burn-in w/temp. cycles hi-hum	☐ Power Cycling On-Off	☐ Vibrations Testing	☐ Shock Test	☐ Salt Spray Testing	

SECTION 10
GLOSSARY OF TERMS

ATE	automatic test equipment
ATG	automatic test generation
BGA	gall grid array
CAD	computer aided design
CSP	chip-scale packaging
CTE	coefficient of thermal expansion
DCA	direct chip attachment
DFT	design for testability
DRC	design rule check
EMI	electromagnetic interference
ESD	electrostatic discharge
FPD	flat panel display
FR-4	epoxy-glass laminate
I/O	input/output
KGD	known-good die
MCM	multichip module
MIS	mounting and interconnection structure
MRC	manufacturing rules check
µBGA	micro ball grid array
PCB	printed circuit board
PGA	pin grid array
PWB	printed wiring board (see also PCB)
QFP	quad flat pack
SPC	statistical process control

SECTION 10.1
PRODUCT TYPE DESCRIPTION



Legend:
Class A = Through-hole component mounting only
Class B = Surface mounted components only
Class C = Simplistic through-hole and surface mounting intermixed assembly
Class X = Complex intermixed assembly, through-hole, surface mount, fine pitch BGA
Class Y = Complex intermixed assembly, through-hole, surface mount, ultra fine pitch, chip scale
Class Z = Complex intermixed assembly, through-hole, ultra fine pitch, COB, flip chip, TAB