



ASSOCIATION CONNECTING
ELECTRONICS INDUSTRIES®

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
May 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.

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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.

ACKNOWLEDGMENTS

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SECTION 1.1

COMPANY DESCRIPTION

| |
|-------------------------------------|
| DATE COMPLETED 01 / March / 2014 |
|-------------------------------------|

| GENERAL INFORMATION | | |
|---|------------------------------------|--|
| LEGAL NAME Sonic Technology (India), Inc. | | |
| PHYSICAL ADDRESS C-9, GIDC Electronics Estate, Sector 25 | | |
| CITY Gandhinagar | STATE Gujarat | ZIP 382025 |
| PROVINCE | COUNTRY India | |
| TELEPHONE NUMBER +91 79232 87517 | FAX NUMBER +91 79232 87515 | TELEX NUMBER |
| E-MAIL ADDRESS cad@sonictechindia.com | MODEM NUMBER | DATE FOUNDED 2002 <input type="checkbox"/> PUBLIC <input checked="" type="checkbox"/> PRIVATE |
| INTERNET URL www.sonictechindia.com | FTP SITE ftp.sonictechindia.com | |

| MANAGEMENT |
|--|
| PRESIDENT Mr. Robert M. Keisler |
| CHIEF EXECUTIVE OFFICER Mr. Roger Patel |
| VICE PRESIDENT OF MANUFACTURING Mr. Robert M. Keisler |
| VICE PRESIDENT OF MARKETING/SALES Mr. James Thompson |
| DIRECTOR OF QUALITY/CUSTOMER SERVICE Mr. Carl L Schlemmer |
| SENIOR MANAGER QUALITY Mr. J.V.Nagabhushan |
| WASTE TREATMENT MANAGER (POLLUTION PREVENTION) Mr. Himanshu Patel |

| CORPORATE DESCRIPTION | NUMBER OF EMPLOYEES | | COMMENTS |
|------------------------|---------------------|------------|--|
| | CORPORATE | SITE | |
| DESIGN AND DEVELOPMENT | N/A | N/A | No design activities are being done at Sonic facility. |
| ENGINEERING | 4 | 14 | |
| MANUFACTURING CONTROL | 1 | 5 | |
| MANUFACTURING | DIRECT | 88 | |
| | INDIRECT | 13 | |
| QUALITY CONTROL | QUALITY ENGINEERS | 1 | 9 |
| | INTERNAL AUDITORS | | 5 |
| GENERAL MANAGEMENT | 5 | 3 | |
| ADMINISTRATION | 2 | 1 | |
| TOTAL | 13 | 138 | We have one more PCB shop in USA: National Technology, Inc., 1101 Carnegie Street, Rolling Meadows, IL-60008, Near Chicago. Hence, in this document we have considered only those positions for number of employees under corporate heading, which are mainly supporting STII activities and are stationed at National Technology. |

SECTION 1.2

SITE DESCRIPTION

(TO BE COMPLETED FOR EACH SITE)

DATE COMPLETED: 01 / March / 2014
ATTACH APPROPRIATE CHARTS (OPTIONAL)

| MANUFACTURING FACILITY | | |
|--|--|-----------------------|
| COMPANY NAME: | Sonic Technology (India), Inc. | |
| PHYSICAL ADDRESS: | C-9, GIDC, Electronics Estate, Sector 25 | |
| CITY: Gandhinagar | STATE: Gujarat | ZIP: 382025 |
| PROVINCE: - | COUNTRY: India | |
| TELEPHONE NUMBER: +91 79232 87517 | FAX NUMBER: +91 79232 87515 | TELEX: |
| E-MAIL ADDRESS: cad@sonictechindia.com | MODEM NUMBER: - | YEARS IN BUSINESS: 11 |
| INTERNET URL: www.sonictechindia.com | FTP: ftp.sonictechindia.com | |
| PRINCIPLE PRODUCTS/SERVICES/SPECIALTIES: Double Sided and Multilayer Printed Circuit Boards | BUSINESS CHARACTERIZATION (HIGH VOLUME, QUICK TURN-AROUND, ETC.): Medium to High volume Production | |

| FACILITY MANAGEMENT | TITLE | REPORTS TO (Function/Job Title) |
|---|-------------------------|---------------------------------|
| OVERALL OPERATION RESPONSIBILITY FOR THIS SITE Mr. Roger Patel | CEO | |
| MANUFACTURING Mr. Shankar B.Patil | Production Manager | CEO/President |
| TECHNICAL/ENGINEERING Mr. Pankaj Patel | CAD/Engineering Manager | CEO/President |
| MATERIALS/PRODUCTION CONTROL Mr. Shankar B.Patil | Production Control | CEO/President |
| PURCHASING Mr. Himanshu Patel | Purchasing Manager | CEO |
| QUALITY Mr. J.V. Nagabhusan | Senior Manager Quality | CEO |
| SALES REPRESENTATIVE Mr. Roger Patel | CEO | |
| WASTE MANAGEMENT Mr. Himanshu Patel | Waste Treatment Manager | CEO |

| BUILDINGS | AGE | AREA (Sq. Ft.) | Construction (Wood/Brick) | SYSTEMS (INDICATE % COVERAGE) | | | | | | |
|-------------------|------------------|----------------|---------------------------|-------------------------------|---------|-------------|------------------|---------------------------------|-----------------|-------|
| | | | | Power Conditioning | Heating | Ventilation | Air Conditioning | Sprinklers (Fire Extinguishers) | Waste Treatment | Other |
| Office | 11 years | 9K | Brick | 100% | NA | 100% | 100% | 100% | NA | |
| Manufacturing | 11 years | 52K | Brick | 100% | NA | 100% | 60% | 100% | 100% | |
| Storage | 11 years | 15K | Brick | 100% | NA | 100% | 20% | 100% | NA | |
| Planned additions | Work In-progress | 30K | Brick | | | | | | | |

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

| PLANT PERSONNEL (TOTAL EMPLOYEES) | | | | | | | | | | |
|-----------------------------------|----------|--------|-------------------------|--------------------------------|--------------|--------------|-------|-----------|------------|-------------------------|
| Regular | Contract | Office | Technical / Engineering | Production (direct & indirect) | Full-Time QA | Part-Time QA | Union | Non-Union | Union Name | Contract Expires (Date) |
| 38 | 100 | 4 | 14 | 106 | 14 | 0 | 0 | All (138) | N/A | N/A |

| COMMENTS |
|----------|
| |

SECTION 2.1 PROCESS

DATE COMPLETED
01 / March / 2014

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 | <input checked="" type="checkbox"/> Subtractive <input type="checkbox"/> Thin Foil Subtractive less than .5 oz. <input type="checkbox"/> Semi-Additive <input checked="" type="checkbox"/> Additive (Electro-less) <input checked="" type="checkbox"/> Black Hole <input type="checkbox"/> Thick Film Paste and Fire <input type="checkbox"/> Thin Film Semi-conductor Sputtering <input type="checkbox"/> Other: | Using copper clad laminates (print-etch) Electroless plating is exclusively for PTH Black hole process is exclusively for PTH |
| B | PTH Materials and Processes | <input checked="" type="checkbox"/> Acid Copper <input type="checkbox"/> Pyro-Phosphate Copper <input type="checkbox"/> Full Built Electro-Less <input type="checkbox"/> Gold Paste <input type="checkbox"/> Copper Paste <input type="checkbox"/> Gold Conductor Sputtering <input type="checkbox"/> Nickel Conductor Sputtering <input type="checkbox"/> Other: | Copper electro-plating process |
| C | Permanent Over-plating | <input checked="" type="checkbox"/> Tin <input type="checkbox"/> Tin-Lead <input type="checkbox"/> Tin-Nickel Alloy <input type="checkbox"/> Nickel <input type="checkbox"/> Nickel Gold (Hard) <input type="checkbox"/> Nickel Gold (Soft) <input type="checkbox"/> Nickel Rhodium <input type="checkbox"/> Conductive Polymer <input type="checkbox"/> Other: | Electroplating process |

| | | | |
|---|-----------------------------|--|--|
| D | Permanent Selective Plating | <input type="checkbox"/> Tin <input type="checkbox"/> Tin-Lead <input type="checkbox"/> Tin-Nickel Alloy <input type="checkbox"/> Nickel <input checked="" type="checkbox"/> Nickel Gold (Hard) <input checked="" type="checkbox"/> Nickel Gold (Soft) <input type="checkbox"/> Nickel Rhodium <input checked="" type="checkbox"/> Other: Immersion Silver | For TAB plating Electroless Nickel Immersion Gold |
| E | Permanent Mask or Coating | <input type="checkbox"/> Photo Dry Film <input checked="" type="checkbox"/> Photo Liquid <input type="checkbox"/> Image Transfer Screen Mask <input type="checkbox"/> Conformal Coating Solder Mask <input type="checkbox"/> Cover Coat <input type="checkbox"/> Other: | LPISM process |
| F | Other Surface Finishes | <input type="checkbox"/> Tin-Lead Fused <input type="checkbox"/> Immersion Tin <input checked="" type="checkbox"/> Solder Leveled <input type="checkbox"/> Roll Soldered <input type="checkbox"/> Electro-less Solder Fused <input type="checkbox"/> Solder Bumped Lands <input type="checkbox"/> Solder Paste Fused <input type="checkbox"/> Azole Organic Protective Covering <input type="checkbox"/> Flux Protective Covering <input checked="" type="checkbox"/> Other: Immersion Silver & ENiG Finishes | Both standard and lead-free HAL |

SECTION 2.2

ELECTRICAL TEST EQUIPMENT

DATE COMPLETED
01 / March / 2014

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 | <input type="checkbox"/> <200 <input type="checkbox"/> 200 <input type="checkbox"/> 500 <input type="checkbox"/> 1000 <input type="checkbox"/> 2000 <input type="checkbox"/> 3000 <input type="checkbox"/> 4000 <input type="checkbox"/> 5000 <input checked="" type="checkbox"/> >5000 <input type="checkbox"/> Other: | |
| B | Number of Nodes | <input type="checkbox"/> <500 <input type="checkbox"/> 500 <input type="checkbox"/> 1000 <input type="checkbox"/> 2000 <input type="checkbox"/> 3000 <input type="checkbox"/> 4000 <input type="checkbox"/> 5000 <input type="checkbox"/> 6000 <input checked="" type="checkbox"/> >6000 <input type="checkbox"/> Other: | |
| C | Probe Point Pitch | <input type="checkbox"/> >1.0 [.040] <input type="checkbox"/> 1.0 [.040] <input type="checkbox"/> 0.8 [.032] <input type="checkbox"/> 0.65 [.025] <input type="checkbox"/> 0.50 [.020] <input checked="" type="checkbox"/> 0.40 [.016] <input type="checkbox"/> 0.30 [.012] <input type="checkbox"/> 0.20 [.008] <input type="checkbox"/> <0.20 [.008] <input type="checkbox"/> Other: | |

| | | | |
|---|----------------------|---|--|
| D | Test % Single Pass | <input type="checkbox"/> None <input type="checkbox"/> <60% <input type="checkbox"/> 60% <input type="checkbox"/> 70% <input type="checkbox"/> 80% <input type="checkbox"/> 90% <input checked="" type="checkbox"/> 95% <input type="checkbox"/> 99% <input checked="" type="checkbox"/> 100% <input type="checkbox"/> Other: | <p>Actual FPY is at 93% (Year 2013)</p> <p>100% test of total production-run</p> |
| E | Probe Accuracy (DTP) | <input type="checkbox"/> >0.2 [.008] <input type="checkbox"/> 0.2 [.008] <input type="checkbox"/> 0.15 [.006] <input type="checkbox"/> 0.125 [.005] <input type="checkbox"/> 0.1 [.004] <input checked="" type="checkbox"/> 0.075 [.003] <input type="checkbox"/> <0.075 [.003] <input type="checkbox"/> Other: | |
| F | Grid Density | <input type="checkbox"/> Single Side Grid <input type="checkbox"/> Double Sided Grid <input checked="" type="checkbox"/> Double Density Grid <input checked="" type="checkbox"/> Double Density Double Sided <input type="checkbox"/> Quad Density <input type="checkbox"/> Double Sided Quad Density <input checked="" type="checkbox"/> Flying Probe <input type="checkbox"/> Other: | |
| G | Netlist Capability | <input type="checkbox"/> Golden Board <input type="checkbox"/> IPC-D-356 <input checked="" type="checkbox"/> Net List Extraction <input checked="" type="checkbox"/> CAD/CAM Net List Compare <input type="checkbox"/> Other: | |

| | | | |
|----------|----------------------------|--|--|
| <p>H</p> | <p>Test Voltage</p> | <p><input type="checkbox"/> <20 VDC <input type="checkbox"/> 20 VDC <input type="checkbox"/> 40 VDC <input type="checkbox"/> 60 VDC <input type="checkbox"/> 80 VDC <input type="checkbox"/> 100 VDC <input type="checkbox"/> 500 VDC <input type="checkbox"/> 1000 VDC <input type="checkbox"/> >1000 VDC <input checked="" type="checkbox"/> Other: 12 VDC to 250 VDC</p> | <p>Range: 12 VDC to 250 VDC</p> |
| <p>J</p> | <p>Impedance Meas</p> | <p><input type="checkbox"/> Micro Section <input type="checkbox"/> Inboard Circuit <input type="checkbox"/> Coupon <input type="checkbox"/> Manual TDR <input type="checkbox"/> Automated TDR <input type="checkbox"/> Other:</p> | <p>Controlled impedance boards are currently not being produced at our facility.</p> |
| <p>K</p> | <p>Impedance Tolerance</p> | <p><input type="checkbox"/> None <input type="checkbox"/> >20% <input type="checkbox"/> 20% <input type="checkbox"/> 15% <input type="checkbox"/> 10% <input type="checkbox"/> 7% <input type="checkbox"/> 5% <input type="checkbox"/> 2% <input type="checkbox"/> <2% <input type="checkbox"/> Other:</p> | <p>Not applicable</p> |

SECTION 2.3

PRODUCT TYPE

DATE COMPLETED
01 / March / 2014

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 | |
| | <input checked="" type="checkbox"/> Rigid Printed Board <input type="checkbox"/> Flex Printed Board <input type="checkbox"/> Rigid/Flex Board <input type="checkbox"/> Rigid Back Plane <input type="checkbox"/> Molded Product <input type="checkbox"/> Ceramic Printed Board <input type="checkbox"/> Multichip Module <input type="checkbox"/> Laminated Multichip Module <input type="checkbox"/> Deposited Dielectric Multichip Modules <input type="checkbox"/> Other: | |
| B | Circuit Mounting Type | |
| | <input checked="" type="checkbox"/> Single Sided <input checked="" type="checkbox"/> Double Sided <input checked="" type="checkbox"/> Multilayer <input type="checkbox"/> Single-sided Bonded to Substrate <input type="checkbox"/> Double-sided Bonded to Substrate <input type="checkbox"/> Multilayer Bonded to Substrate <input type="checkbox"/> Constrained Multilayer <input type="checkbox"/> Distributed Plane Multilayer <input type="checkbox"/> Other: | |
| C | Via Technology | |
| | <input type="checkbox"/> No-Vias <input checked="" type="checkbox"/> Thru Hole Vias <input checked="" type="checkbox"/> Buried Vias <input checked="" type="checkbox"/> Blind Vias <input checked="" type="checkbox"/> Thru Hole & Blind Vias <input checked="" type="checkbox"/> Thru Hole & Buried Vias <input type="checkbox"/> Thru Hole Buried & Blind Vias <input type="checkbox"/> Buried & Blind Vias <input checked="" type="checkbox"/> Other: Plugged Vias | Trial production in-progress Trial production in-progress Trial production in-progress Trial production in-progress Plugging using non-conductive polymer ink |

| | | | |
|---|------------------------|---|---|
| D | Laminate Material | <input type="checkbox"/> Phenolic <input type="checkbox"/> Epoxy Paper <input checked="" type="checkbox"/> Epoxy Glass <input type="checkbox"/> Modified Epoxy Composite <input type="checkbox"/> Polyamide Film & Reinforce <input type="checkbox"/> Cyanate Ester <input type="checkbox"/> Teflon <input type="checkbox"/> Ceramic Glass Types <input type="checkbox"/> Various Combinations <input checked="" type="checkbox"/> Other: RoHS Compliant Laminates | |
| E | Core Material | <input checked="" type="checkbox"/> No Core <input type="checkbox"/> Polymer <input checked="" type="checkbox"/> Copper <input type="checkbox"/> Aluminum <input type="checkbox"/> Graphite <input type="checkbox"/> Copper Invar/Copper <input type="checkbox"/> Copper Moly/Copper <input type="checkbox"/> Other: | Prepreg or un-claded inner cores / laminates Copper claded inner cores and laminates. Copper foil for top & bottom layers of MLBs |
| F | Copper Thickness (Oz.) | <input type="checkbox"/> 1/8 Minimum <input type="checkbox"/> 1/4 Minimum <input type="checkbox"/> 3/8 Minimum <input checked="" type="checkbox"/> 1/2 Nominal <input checked="" type="checkbox"/> 1 Nominal <input checked="" type="checkbox"/> 2 Nominal <input checked="" type="checkbox"/> 3-5 Max <input type="checkbox"/> 6-9 Max <input type="checkbox"/> >10 <input type="checkbox"/> Other: | |
| G | Construction | <input checked="" type="checkbox"/> ≤4 Planes <input checked="" type="checkbox"/> >4 Planes <input checked="" type="checkbox"/> THK to TOL ≤0.2 mm <input type="checkbox"/> THK to TOL >0.2 mm <input checked="" type="checkbox"/> Bow/Twist ≤1% <input type="checkbox"/> Bow/Twist >1% <input checked="" type="checkbox"/> ≤0.3 mm Profile Tolerance <input type="checkbox"/> 0.3 mm Profile Tolerance <input type="checkbox"/> Other: | |

| | | | |
|---|-----------------------|---|--|
| H | Coatings and Markings | <input checked="" type="checkbox"/> ≤ 0.1 mm Mask Clearance <input checked="" type="checkbox"/> > 0.1 mm Mask Clearance <input checked="" type="checkbox"/> One Side (Legend) <input checked="" type="checkbox"/> Two Side (Legend) <input checked="" type="checkbox"/> None (Legend) <input checked="" type="checkbox"/> UL Material Logo <input checked="" type="checkbox"/> U.L. V ₀ Logo <input type="checkbox"/> U.L. V ₁ Logo <input type="checkbox"/> U.L. V ₂ Logo <input type="checkbox"/> Other: | |
|---|-----------------------|---|--|

SECTION 2.4

PRODUCT COMPLEXITY

DATE COMPLETED
01 / March / 2014

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 | <input type="checkbox"/> <250 [10.00] <input type="checkbox"/> 250 [10.00] <input type="checkbox"/> 350 [14.00] <input type="checkbox"/> 450 [17.50] <input checked="" type="checkbox"/> 550 [21.50] <input type="checkbox"/> 650 [25.50] <input type="checkbox"/> 750 [29.50] <input type="checkbox"/> 850 [33.50] <input type="checkbox"/> >850 [33.50] <input type="checkbox"/> Other: | |
| B | Total Board Thickness | <input type="checkbox"/> 1,0 [.040] <input type="checkbox"/> 1,0 [.040] <input type="checkbox"/> 1,6 [.060] <input type="checkbox"/> 2,0 [.080] <input type="checkbox"/> 2,5 [.100] <input checked="" type="checkbox"/> 3,5 [.135] <input type="checkbox"/> 5,0 [.200] <input type="checkbox"/> 6,5 [.250] <input type="checkbox"/> >6,5 [.250] <input type="checkbox"/> Other: | |
| C | Number Conductive Layers | <input checked="" type="checkbox"/> 1-4 <input checked="" type="checkbox"/> 5-6 <input checked="" type="checkbox"/> 7-8 <input type="checkbox"/> 9-12 <input type="checkbox"/> 13-16 <input type="checkbox"/> 17-20 <input type="checkbox"/> 21-24 <input type="checkbox"/> 25-28 <input type="checkbox"/> >28 <input type="checkbox"/> Other: | Produced in volume run Produced in volume run Produced in small quantities |

| | | | |
|---|--------------------------------|---|-----------------------------------|
| D | Dia Drilled Holes | <input type="checkbox"/> >0,5 [.020] <input type="checkbox"/> 0,5 [.020] <input type="checkbox"/> 0,4 [.016] <input type="checkbox"/> 0,35 [.014] <input type="checkbox"/> 0,30 [.012] <input checked="" type="checkbox"/> 0,25 [.010] <input type="checkbox"/> 0,20 [.008] <input type="checkbox"/> 0,15 [.006] <input type="checkbox"/> <0,15 [.006] <input type="checkbox"/> Other: | |
| E | Total PTH TOL (Max-Min) | <input type="checkbox"/> >0,250 [.010] <input type="checkbox"/> 0,250 [.010] <input type="checkbox"/> 0,200 [.008] <input type="checkbox"/> 0,150 [.006] <input type="checkbox"/> 0,125 [.005] <input type="checkbox"/> 0,100 [.004] <input checked="" type="checkbox"/> 0,075 [.003] <input type="checkbox"/> 0,050 [.002] <input type="checkbox"/> <0,050 [.002] <input type="checkbox"/> Other: | |
| F | Hole Location TOL DTP | <input type="checkbox"/> >0,50 [.020] <input type="checkbox"/> 0,50 [.020] <input type="checkbox"/> 0,40 [.016] <input type="checkbox"/> 0,30 [.012] <input type="checkbox"/> 0,25 [.010] <input type="checkbox"/> 0,20 [.008] <input type="checkbox"/> 0,15 [.006] <input checked="" type="checkbox"/> 0,10 [.004] <input type="checkbox"/> <0,10 [.004] <input type="checkbox"/> Other: | |
| G | Internal Layer Clearance (Min) | <input type="checkbox"/> >0,350 [.014] <input type="checkbox"/> 0,350 [.014] <input type="checkbox"/> 0,250 [.010] <input type="checkbox"/> 0,200 [.008] <input type="checkbox"/> 0,150 [.006] <input checked="" type="checkbox"/> 0,125 [.005] <input type="checkbox"/> 0,100 [.004] <input type="checkbox"/> 0,075 [.003] <input type="checkbox"/> <0,075 [.003] <input type="checkbox"/> Other: | Assumed as spacing between tracks |

| | | | |
|---|--------------------------------------|---|-----------------------------------|
| H | Internal Layer Conductor Width (Min) | <input type="checkbox"/> >0,250 [.010] <input type="checkbox"/> 0,250 [.010] <input type="checkbox"/> 0,200 [.008] <input type="checkbox"/> 0,150 [.006] <input checked="" type="checkbox"/> 0,125 [.005] <input type="checkbox"/> 0,100 [.004] <input type="checkbox"/> 0,075 [.003] <input type="checkbox"/> 0,050 [.002] <input type="checkbox"/> <0,050 [.002] <input type="checkbox"/> Other: | |
| J | Internal Layer Process Allowance | <input type="checkbox"/> >0,100 [.004] <input checked="" type="checkbox"/> 0,100 [.004] <input type="checkbox"/> 0,075 [.003] <input type="checkbox"/> 0,050 [.002] <input type="checkbox"/> 0,040 [.0015] <input type="checkbox"/> 0,030 [.0012] <input type="checkbox"/> 0,025 [.001] <input type="checkbox"/> 0,020 [.0008] <input type="checkbox"/> <0,020 [.0008] <input type="checkbox"/> Other: | Assumed as scaling factor |
| K | External Layer Clearance (Min) | <input type="checkbox"/> >0,350 [.014] <input type="checkbox"/> 0,350 [.014] <input type="checkbox"/> 0,250 [.010] <input type="checkbox"/> 0,200 [.008] <input type="checkbox"/> 0,150 [.006] <input checked="" type="checkbox"/> 0,125 [.005] <input type="checkbox"/> 0,100 [.004] <input type="checkbox"/> 0,075 [.003] <input type="checkbox"/> <0,075 [.003] <input type="checkbox"/> Other: | Assumed as spacing between tracks |
| L | External Layer Conductor Width (Min) | <input type="checkbox"/> >0,250 [.010] <input type="checkbox"/> 0,250 [.010] <input type="checkbox"/> 0,200 [.008] <input type="checkbox"/> 0,150 [.006] <input checked="" type="checkbox"/> 0,125 [.005] <input type="checkbox"/> 0,100 [.004] <input type="checkbox"/> 0,075 [.003] <input type="checkbox"/> 0,050 [.002] <input type="checkbox"/> <0,050 [.002] <input type="checkbox"/> Other: | |

| | | | |
|---|----------------------------------|---|---------------------------|
| M | External Layer Process Allowance | <input type="checkbox"/> >0,100 [.004] <input checked="" type="checkbox"/> 0,100 [.004] <input type="checkbox"/> 0,075 [.003] <input type="checkbox"/> 0,050 [.002] <input type="checkbox"/> 0,040 [.0015] <input type="checkbox"/> 0,030 [.0012] <input type="checkbox"/> 0,025 [.001] <input type="checkbox"/> 0,020 [.0008] <input type="checkbox"/> <0,020 [.0008] <input type="checkbox"/> Other: | Assumed as scaling factor |
| N | Feature Location DTP | <input type="checkbox"/> >0,50 [.020] <input type="checkbox"/> 0,50 [.020] <input type="checkbox"/> 0,40 [.016] <input type="checkbox"/> 0,30 [.012] <input type="checkbox"/> 0,25 [.010] <input type="checkbox"/> 0,20 [.008] <input type="checkbox"/> 0,15 [.006] <input checked="" type="checkbox"/> 0,10 [.004] <input type="checkbox"/> <0,10 [.004] <input type="checkbox"/> Other: | |

All Dimensions are in millimeters [inches shown in brackets]

SECTION 2.5

QUALITY DEVELOPMENT

DATE COMPLETED
01 / March / 2014

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 | <input checked="" type="checkbox"/> Functional Steering Committee Formed <input checked="" type="checkbox"/> TQM Plan & Philosophy Established & Published <input checked="" type="checkbox"/> Documented Quality Progress Review <input checked="" type="checkbox"/> Implementation & review of Project Team Recommendations <input checked="" type="checkbox"/> TQM Communicated throughout organization <input checked="" type="checkbox"/> Controlled New process Start-up <input checked="" type="checkbox"/> Management Participates in TQM Audits <input checked="" type="checkbox"/> Employee Recognition Program <input checked="" type="checkbox"/> Total TQM Plan/Involvement Customer Training <input checked="" type="checkbox"/> Other: ISO Certified (By: AQA under ANAB Accreditation) |
| B | Employee Involvement | <input checked="" type="checkbox"/> Certified Training Available <input checked="" type="checkbox"/> Training of Employee Base <input checked="" type="checkbox"/> TQM Team Trained <input checked="" type="checkbox"/> Design of Experiment Training and Use <input checked="" type="checkbox"/> New Process Implementation Training <input checked="" type="checkbox"/> Support Personnel Training <input type="checkbox"/> Advanced Statistical Training <input checked="" type="checkbox"/> Quality Functional Deployment <input checked="" type="checkbox"/> Ongoing Improvement Program for Employees <input type="checkbox"/> Other: |
| C | Quality Manual | <input type="checkbox"/> Quality Manual Started <input checked="" type="checkbox"/> Generic Quality Manual for Facility <input type="checkbox"/> 10% of manufacturing depts. have process specifications <input type="checkbox"/> 25% of manufacturing depts. have process specifications <input type="checkbox"/> 50% of manufacturing depts. have process specifications <input type="checkbox"/> Non-manufacturing Manuals Developed <input type="checkbox"/> 25% of all departments have quality manuals <input type="checkbox"/> 50% of all departments have quality manuals <input checked="" type="checkbox"/> All Manufacturing and support depts. have controlled quality manual <input type="checkbox"/> Other: |

| | | | |
|---|---------------------------------|--|------------------------------|
| D | Instructions | <input type="checkbox"/> Work Instructions Started <input type="checkbox"/> Quality Instructions Started <input type="checkbox"/> 10% Work Instructions Completed <input type="checkbox"/> 10% Quality Instructions Completed <input type="checkbox"/> 25% Work Instructions Completed, Controlled <input type="checkbox"/> 25% Quality Instructions Completed, Controlled <input type="checkbox"/> 50% Work Instructions Completed, Controlled <input type="checkbox"/> 50% Quality Instructions Completed, Controlled <input checked="" type="checkbox"/> Quality and work Instructions Completed, Controlled <input type="checkbox"/> Other: | |
| E | SPC Implementation IPC-PC-90 | <input type="checkbox"/> Plan Exists <input type="checkbox"/> Training Started <input checked="" type="checkbox"/> Process Data Collected & Analyzed <input type="checkbox"/> All Employees Trained <input type="checkbox"/> First Process Stable & Capable <input checked="" type="checkbox"/> Several Major Processes Stable & Capable <input checked="" type="checkbox"/> Continued Improvement of Stable Processes <input type="checkbox"/> Additional Mfg. Processes under Control <input type="checkbox"/> All Processes Under Control <input type="checkbox"/> Other: | |
| F | Supplier Programs/Controls | <input checked="" type="checkbox"/> Supplier Rating Program <input type="checkbox"/> Monthly Analysis Program <input checked="" type="checkbox"/> Key Problems Identified <input type="checkbox"/> Supplier Reviews Performance Data provided <input type="checkbox"/> TQM Acceptance by suppliers <input type="checkbox"/> 10% of Suppliers Using SPC <input type="checkbox"/> 25% of Suppliers Using SPC <input type="checkbox"/> 50% of Suppliers Using SPC <input checked="" type="checkbox"/> All Key Suppliers using certified parts program <input type="checkbox"/> Other: | |
| G | Third Party IPC-QS-95 | <input type="checkbox"/> Instrument Controls in Place <input type="checkbox"/> Measurement System in Control IPC-PC-90 <input checked="" type="checkbox"/> Document Controls in Place <input checked="" type="checkbox"/> Reduced Lot Sampling <input type="checkbox"/> 10% of Processes Under Audit Control <input checked="" type="checkbox"/> 50% or Greater of Processes Under Audit Control <input type="checkbox"/> ISO-9003 Certified <input type="checkbox"/> ISO-9002 Certified <input checked="" type="checkbox"/> ISO-9001:2008 <input type="checkbox"/> Other: | Sampling checks at AQL stage |

SECTION 3

EQUIPMENT PROFILE (Pre-Site Audit)

| |
|-------------------------------------|
| DATE COMPLETED 01 / March / 2014 |
|-------------------------------------|

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

| 3.1 PHOTOTOOL CAPABILITY | YES | NO | EQUIPMENT | QTY | EQUIPMENT LIMITS |
|---|-------------------------------------|--------------------------|---|--------|--|
| A) AOI of photo tool | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Camtek ORION | 2 | For selective/critical types only |
| B) AOI CAD reference (CAM) | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Using CAM-350 Station | 1 | Additionally, we have 14 Barco "U CAM" Stations. 11 at STII & 3 at NTI. |
| C) Photo plotting | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Gerber "Silver Writer" Laser Plotter | 1 | |
| D) Photo reductions | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Gerber "Silver Writer" Laser Plotter | 1 | For phototool scaling purpose |
| E) Film scan and conversion | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Diazo Exposure Machines Technilith Dry Developer | 2 1 | For image duplication from black and white (silver halide) films to diazo films. |
| F) Film processing <input type="checkbox"/> air-dried <input type="checkbox"/> force-dried <input checked="" type="checkbox"/> processed in automatic processor | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Film Processors: (a) DuPont (b) Glunz & Jensen | 1 1 | |
| G) Media types <input checked="" type="checkbox"/> silver halide film <input checked="" type="checkbox"/> glass <input checked="" type="checkbox"/> diazo | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Glass-Glass Registration System from Multiline (for inner cores of MLBs) | | Master Films: Silver Halide B&W Production Copies: Diazo Films |

| 3.2 DRILLING EQUIPMENT | YES | NO | EQUIPMENT | QTY | EQUIPMENT LIMITS |
|-----------------------------|-------------------------------------|-------------------------------------|--|--------|------------------|
| A) Manual | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | |
| B) Optical (single spindle) | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | |
| C) N.C. Drill | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Excellon Mark VI Pluritec GIGA 8888 | 4 3 | |

| 3.3 ROUTING EQUIPMENT | YES | NO | EQUIPMENT | QTY | EQUIPMENT LIMITS |
|-----------------------------|-------------------------------------|-------------------------------------|------------------------------|-----|--|
| A) Edge beveller | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Excellon Mark V | 1 | We procure cut panels in ready to use with edge beveled for standard format sizes. We use "Excellon machine" for routing in case of multilayer panels. |
| B) Hand router (pin router) | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | |
| C) N.C. router | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Excellon Mark VI | 1 | |
| D) N.C. driller/router | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Excellon Mark V | 3 | |
| E) Scoring (profile) | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | Profile scoring concept is not clear |
| F) Scoring (straight Line) | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Gecko and Accuscore Machines | 3 | Straightline & jump score |

| 3.4 MECHANICAL EQUIPMENT | YES | NO | EQUIPMENT | QTY | EQUIPMENT LIMITS |
|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------|--|
| A) Punch press | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | |
| B) Shear | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Wysong Cutter Machine | 1 1 | For laminate shearing For prepreg cutting |
| C) Milling machine | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | |

| 3.5 HOLE PREPARATION (DESMEAR) | YES | NO | EQUIPMENT | QTY | EQUIPMENT LIMITS |
|--------------------------------|-------------------------------------|-------------------------------------|-----------|-----|------------------|
| A) Permanganate | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Hand Line | 1 | |
| B) Plasma | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | |
| C) Mechanical | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | |
| D) Etchback | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Hand Line | 1 | |

| 3.6 PRIMARY IMAGE APPLICATION | YES | NO | EQUIPMENT | QTY | EQUIPMENT LIMITS |
|-------------------------------|-------------------------------------|-------------------------------------|-----------------------------------|-----|------------------|
| A) Dry film | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Dynachem Laminators Model: 300 | 2 | |
| B) Hand screening | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | |
| C) Machine screening | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | |
| D) Wet film | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | |
| E) Liquid photoimageable | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | |

| 3.7 TYPE OF TREATMENT FOR MULTILAYER INNERLAYERS | YES | NO | EQUIPMENT | QTY | EQUIPMENT LIMITS |
|--|-------------------------------------|-------------------------------------|----------------------------|-----|------------------|
| A) Brown oxide | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Atotech Horizontal Process | 1 | |
| B) Red oxide | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | |
| C) Copper scrub | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | |
| D) Durabond | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | |
| E) Other | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | |

| 3.8 LAMINATION | YES | NO | MATERIAL | QTY | APPLICATION TECHNIQUE |
|-----------------------|-------------------------------------|--------------------------|------------------|-----|-----------------------|
| A) High pressure | <input checked="" type="checkbox"/> | <input type="checkbox"/> | TMP Vacuum Press | 2 | |
| B) High temperature | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | |
| C) Vacuum | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | |
| D) Vacuum assist | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | |
| E) Foil heat assist | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | |
| F) Separate cool-down | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | |

| 3.9 ELECTROLESS COPPER PLATING | YES | NO | EQUIPMENT | QTY | EQUIPMENT LIMITS |
|---|-------------------------------------|-------------------------------------|-----------|-----|------------------|
| A) Fully additive application | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Hand Line | 1 | |
| B) Electroless deposition (semi additive) | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | |
| C) Through-hole and via | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | |

| 3.10 COPPER ELECTROPLATING | YES | NO | EQUIPMENT | QTY | EQUIPMENT LIMITS |
|----------------------------|-------------------------------------|-------------------------------------|-----------|-----|--|
| A) Copper sulfate | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Hand Line | 1 | 8 Manual Copper, 2 Manual Tin Stations and Treatment Tanks |
| B) Pyrophosphate | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | |
| C) Copper fluoborate | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | |
| D) Other | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | |

| 3.11 TIN/LEAD SURFACE PLATINGS/COATINGS | YES | NO | EQUIPMENT | QTY | EQUIPMENT LIMITS |
|--|-------------------------------------|-------------------------------------|------------------------------|-----|--------------------------------|
| A) Tin/lead electroplated | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | |
| B) Immersion tin or tin/lead (electroless) | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | |
| C) Hot air solder leveled (HASL) | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Penta Solder Leveling System | 2 | Standard & Lead-free processes |

| 3.12 FUSING PROCESSES | YES | NO | EQUIPMENT | QTY | EQUIPMENT LIMITS |
|-------------------------------|-------------------------------------|-------------------------------------|----------------|-----|--------------------------------|
| A) I.R. reflow | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | |
| B) Hot oil reflow | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | |
| C) Horizontal (hot air level) | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | |
| D) Vertical (hot air level) | <input checked="" type="checkbox"/> | <input type="checkbox"/> | See 3.11 Above | 2 | Standard & Lead-free processes |

| 3.13 NICKEL SURFACE PLATING | YES | NO | EQUIPMENT | QTY | EQUIPMENT LIMITS |
|-----------------------------|-------------------------------------|--------------------------|-----------|-----|------------------|
| A) Electroless nickel | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Hand Line | 1 | |
| B) Electroplated nickel | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Hand Line | 1 | For TAB plating |

| 3.14 GOLD SURFACE PLATING | YES | NO | EQUIPMENT | QTY | EQUIPMENT LIMITS |
|---------------------------|-------------------------------------|--------------------------|-----------|-----|------------------|
| A) Electroless gold | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Hand Line | 1 | |
| B) Electroplated gold | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Hand Line | 1 | For TAB plating |

| 3.15 PALLADIUM SURFACE PLATING | YES | NO | EQUIPMENT | QTY | EQUIPMENT LIMITS |
|--------------------------------------|--------------------------|-------------------------------------|-----------|-----|------------------|
| A) Electroless palladium (immersion) | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | |
| B) Electroplated palladium | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | |

| 3.16 SOLDERMASK | YES | NO | EQUIPMENT | QTY | EQUIPMENT LIMITS |
|--------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-----|------------------|
| A) Screened deposited image | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | |
| B) Dry film photoimageable | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | |
| C) Liquid photoimageable | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Circuit Automation DP1500 & DP10 | 3 | |
| D) Dry film/liquid combination | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | |

| 3.17 ORGANIC SURFACE PROTECTION | YES | NO | EQUIPMENT | QTY | EQUIPMENT LIMITS |
|---------------------------------|--------------------------|-------------------------------------|-----------|-----|------------------|
| A) Benzotriazole | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | |
| B) Imidazole | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | |
| C) Benzimidazole | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | |

| 3.18 MICROSECTION CAPABILITY | YES | NO | EQUIPMENT | QTY | EQUIPMENT LIMITS |
|-------------------------------|-------------------------------------|-------------------------------------|-------------------------|-----|------------------|
| A) Manual | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | |
| B) Single cavity automated | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Buehler & Bainpol Metco | 2 | |
| C) Multiple cavity automated | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | |
| D) Plating thickness analysis | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Nikon Microscope | 1 | |

| 3.19 CHEMICAL ANALYSIS | YES | NO | EQUIPMENT | QTY | EQUIPMENT LIMITS |
|----------------------------|-------------------------------------|--------------------------|--|-----|--|
| A) Etching chemistry | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Equipped Chemical LAB | 1 | Alkaline Etchant |
| B) Plating chemistry | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Equipped Chemical LAB with Perkin Elmer AAS Unit | 1 | Acid Copper, Tin, Nickel, Gold and Silver. |
| C) Effluent (PPM) analysis | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Equipped Chemical LAB | 1 | |

| 3.20 ELECTRICAL TEST EQUIPMENT | YES | NO | EQUIPMENT | QTY | EQUIPMENT LIMITS |
|--------------------------------|-------------------------------------|-------------------------------------|---|--------|-------------------------------|
| A) Continuity and shorts | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Bed of Nails (Mania Versa Tower) Flying Probe Testers | 2 2 | |
| B) Fixture development | <input checked="" type="checkbox"/> | <input type="checkbox"/> | NC Drill | 1 | |
| C) Flying probe test | <input checked="" type="checkbox"/> | <input type="checkbox"/> | ATG A3 Testers | 2 | Same as mentioned at 3.20 (A) |
| D) Impedance control | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | |

DATE COMPLETED
01 / March / 2014

MASTER EQUIPMENT LISTING

FORM MQP 10 REF:

Please complete a Master Equipment List. You may use your own form or the MQP Form 10.

| IDENTIFICATION | EQUIPMENT NAME/DESCRIPTION | MANUFACTURER TYPE/MODEL | EQUIPMENT LIMITS | ACCURACY | CALIBRATION FREQUENCY | REMARKS |
|----------------|----------------------------|-------------------------|------------------|----------|-----------------------|---------|
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

Please refer to the attached documents for details on equipments & calibration status:

(a) Equipments PDF File → 
Equipment Status_NOV 2013.pc

(b) Calibration PDF File → 
Calibration Status_2013-14.pdf

SECTION 4


TECHNOLOGY PROFILE SPECIFICS

4.1 ADMINISTRATION

| 4.1.1 CAPACITY PROFILE | EST % | COMMENTS |
|--|---------|--|
| A) Total annual capacity in square meters (surface area) | 120,000 | Based on two sides of panels (surface area) |
| B) Presently running at ____ % of capacity | 60% | Based on one main shift operation with second & night shifts in some of the departments. |

| 4.1.2 PERCENTAGE OF DOLLAR VOLUME | EST % | COMMENTS |
|-------------------------------------|-------|--|
| A) Single sided (rigid) | 1.0 | Data is based on 2013 production records |
| B) Double sided (rigid) | 44 | |
| C) Multilayer (rigid) | 55 | |
| D) Single side (unreinforced-flex) | 0 | |
| E) Double sided (unreinforced-flex) | 0 | |
| F) Multilayer (unreinforced-flex) | 0 | |
| G) Multilayer (rigid/flex) — | 0 | |

| 4.1.3 PANEL PRODUCTION PROFILE | UNITS PER MONTH |
|---------------------------------------|---|
| A) Size of a production lot in panels | |
| 1) Normal | 100 panels Note: Multiple "lots" are used for large releases |
| 2) Smallest | 1 panel |
| B) Number of panels per month | |
| 1) High Production | 22,200 |
| 2) Medium Production | 17,000 |
| 3) Low Production | 11,000 |
| 3) Short run | 5200 |
| 4) Prototype | Prototype done at this facility as per customer requirements |

| | | | |
|--|-------------------------------------|-------------------------------------|---|
| C) Average lead time (delivery) as defined in B) | | | |
| 1) High Production | | 4 weeks | |
| 2) Medium Production | | 3 weeks | |
| 3) Low Production | | 2 weeks | |
| 3) Short run | | 2 weeks | |
| 4) Prototype Quick turn - No. of days <u>10</u> . | | Lead-time is ten days | |
| D) Product delivered in full panel or array sub-panel format | | | |
| 1) Total in panel or array format | | 70% | |
| 2) Scored format | | 60% | |
| 3) Tab breakaway format | | 10% | |
| 4) Other | | 0% | |
| 5) Total to customer layout | | 85% | |
| 6) Total to manufacturing layout | | 15% | |
| E) Product delivered in board format | | | |
| 1) Total in board format | | 30% | |
| 2) Extracted: scored to size | | 1% | |
| 3) Extracted: sheared to size | | 0% | |
| 4) Extracted: routed to size | | 100% | |
| | | | |
| 4.1.4 APPROVAL AND CERTIFICATION | YES | NO | COMMENTS |
| A) Company approvals | | | |
| 1) UL approval | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Our products are approved by UL. UL File # E97071 |
| 2) Canadian standards | <input type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 3) MIL-P-55110 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 4) MIL-P-50884 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 5) ISO-9002 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 6) ISO-9001:2008 | <input checked="" type="checkbox"/> | <input type="checkbox"/> |  Certificate 2011-14. pdf Our existing certificate has a validity of only till 9 th FEBRUARY 2014. Re-registration assessment is completed on 29 th & 30 th January 2014. |

| | | | |
|------------------------------------|-------------------------------------|-------------------------------------|---|
| 7) ISO-14000 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 8) BABT | <input type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 9) EEC | <input type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 10) Customer Satisfaction | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Tracked and compiled data on monthly basis as per internal format. |
| B) Other certification information | | | |
| 1) Laminate | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Standard brands like Isola & Nanya laminates are in use. |
| 2) Quality standards | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Our product conforms to customers specification, wherever available. Otherwise, we refer to IPC specifications: IPC 600 & IPC 6012. |
| 3) Equipment calibration | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Refer to detailed Master Equipment Listing on page number 22. |

| 4.1.5 CUSTOMER INTERFACE PROFILE | YES | NO | COMMENTS |
|--------------------------------------|-------------------------------------|--------------------------|--|
| A) Modem capability | <input checked="" type="checkbox"/> | <input type="checkbox"/> | We receive customer data through FTP (File Transfer Protocol) and having 2.1 mbps in-house internet line modem (CYGNUS). |
| B) Baud rate | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 2.1 mbps |
| C) Data verification technique | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Through CAD system using UCAM software |
| D) Engineering change order process | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Through "Pro Cim" system |
| E) Job status reporting to customers | <input checked="" type="checkbox"/> | <input type="checkbox"/> | "Pro Cim" system generated data to customer by e-mail |

| 4.1.6 OTHER CAPABILITIES | YES | NO | COMMENTS |
|--|-------------------------------------|-------------------------------------|--|
| A) Facility research and development | <input type="checkbox"/> | <input checked="" type="checkbox"/> | No R&D service offered by Sonic |
| B) (Automated) On-line shop floor control/MRP system | <input checked="" type="checkbox"/> | <input type="checkbox"/> | "Pro Cim" system customized for facility requirements and needs. |
| C) Process control system | <input checked="" type="checkbox"/> | <input type="checkbox"/> | "Pro Cim" system customized for facility requirements and needs. |
| D) Operator training system | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Documented utilizing facility network system. |

4.2 PROCESS ORIENTATION

| 4.2.1 LAMINATE MATERIAL | EST % | COMMENTS |
|--|----------------|--|
| A) Most commonly used laminates (G10, FR4, etc.) | 45 10 45 | Brand name: Nanya & Type: FR4 Brand name: Isola & Type: FR406 Brand name: Isola & Type: 185 HR & 370 HR |
| B) Other laminate material | | |
| 1) Planar resistor layers | 0 | UL approved <input type="checkbox"/> |
| 2) BT epoxy | 0 | UL approved <input type="checkbox"/> |
| 3) Kevlar | 0 | UL approved <input type="checkbox"/> |
| 4) Teflon | 0 | UL approved <input type="checkbox"/> |
| 5) Polyimide | 0 | UL approved <input type="checkbox"/> |
| 6) Cyanate ester | 0 | UL approved <input type="checkbox"/> |
| 7) Other | 100 | UL approved <input checked="" type="checkbox"/> Ref: UL File #E97071 Various high Tg & Td RoHs compliant laminates, as per customer requirements. |
| C) Specification to which laminate is purchased (check all that apply) <input type="checkbox"/> MIL-P-13949 <input type="checkbox"/> IPC-4204 <input checked="" type="checkbox"/> IPC-4101 <input checked="" type="checkbox"/> UL Approved <input type="checkbox"/> IPC-4103 <input type="checkbox"/> Other <input type="checkbox"/> IPC-4202 <input type="checkbox"/> IPC-4203 | | |
| D) Laminate storage <input checked="" type="checkbox"/> Uncontrolled <input checked="" type="checkbox"/> Humidity controlled <input checked="" type="checkbox"/> Temperature controlled <input type="checkbox"/> Dry box <input type="checkbox"/> JIT inventory | | Rigid laminates are stored under ambient environment. Prepreg materials are stored under humidity and temperature controlled environment. |
| E) Panel size configurations in X, Y dimensions maximum X <u>457.2</u> mm; Y <u>609.6</u> mm minimum X <u>304.8</u> mm; Y <u>406.4</u> mm other X ____ mm; Y ____ mm | | Standard Format Standard Format Note: Other panel sizes are reviewed to get best possible material utilization based on customer's board or array dimensions. |

| 4.2.2 | PROCESS PRECISION SPECIFICS | YES | NO | VALUE | COMMENTS |
|-------|---|-------------------------------------|-------------------------------------|-------|---|
| A) | Maximum printed board thickness built in volume | | | | |
| | 1) Single sided | X | | .125" | |
| | 2) Double sided | X | | .125" | |
| | 3) Multilayer | X | | .130" | |
| | 4) Rigid flex | | X | N/A | |
| B) | Printed board electrical performance capability | | | | |
| | 1) Impedance control | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | |
| | 2) Capacitance control | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | |
| | 3) Micro strip boards | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | |
| C) | Tooling system description | | | | |
| | 1) Same holes in panels used for all processes | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | |
| | 2) Optical registration | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | Process: Multiline system for multilayer film and post etch punch. |
| | 3) Other | <input type="checkbox"/> | <input type="checkbox"/> | | |

| 4.2.3 | OTHER PROCESS ORIENTATION SPECIFICS | YES | NO | SYSTEM | COMMENTS |
|-------|-------------------------------------|-------------------------------------|-------------------------------------|--------|----------------------------------|
| A) | Solder mask over bare copper | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | |
| B) | Plating/coating information | | | | |
| | 1) Tin/lead reflow | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | |
| | 2) Hot air leveling | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | |
| | 3) Azole organic | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | |
| | 4) Conductive | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | Immersion Silver & ENiG finishes |
| C) | Hole formation | | | | |
| | 1) Hole cleaning | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | High-pressure wash |
| | 2) Hole cleanliness verified | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | Visual checks |

4.3 PRODUCT DESCRIPTION***CONSISTENCY IMPLIES YIELDS IN EXCESS OF 80%**

| 4.3.1. THROUGH HOLE INSERTION | EST % | SIZE (MM) - +/- TOL | COMMENTS |
|---|-------|---|--|
| A) Smallest conductor width and tolerance produced with consistency | | | |
| 1) Outer layers (print and etch) | 5% | Size <u>0.127</u> mm Tol \pm <u>0.05</u> mm | Based on one ounce copper |
| 2) Inner layers (print and etch) | 30% | Size <u>0.127</u> mm Tol \pm <u>0.050</u> mm | Based on one ounce copper |
| 3) Outer layers (plated) | 30% | Size <u>0.127</u> mm Tol \pm <u>0.050</u> mm | Based on one ounce copper |
| 4) Inner layers (plated) | N/A | Size _____ mm Tol \pm _____ mm | |
| 5) Outer layers (additive plating) | N/A | Size _____ mm Tol \pm _____ mm | |
| 6) Inner layers (additive plating) | N/A | Size _____ mm Tol \pm _____ mm | |
| B) Smallest plated-through hole (PTH) and tolerance consistently produced in 1.5 mm thickness material or multilayer board | | | |
| 1) Minimum PTH diameter | 15% | Size <u>0.254</u> mm Tol \pm <u>0.076</u> mm | |
| 2) Largest panel where this hole can be controlled (across diagonal) | 15% | Size <u>762</u> mm Tol \pm <u>0.0762</u> .mm | Size mentioned is based on panel diagonal dimension of 24" X 18" panel format. |
| C) Largest hole size that can be drilled and plated through in a 1.25 mm diameter land while maintaining an annular ring of 0.125 mm in large/small boards | | | |
| 1) Largest board size (across diagonal) | | Size <u>762</u> mm | Hole size: Drilled size and not finished. |
| 2) Largest hole diameter | | Size <u>0.9144</u> mm | |
| 3) Smallest board size (across diagonal) | | Size <u>25.4</u> mm | Boards are processed in array / bigger panel formats as per production requirement |
| 4) Largest hole diameter | | Size <u>0.9144</u> mm | |
| D) Surface mount land pattern pitch (check all that apply) <input checked="" type="checkbox"/> 1.27mm [.050] <input checked="" type="checkbox"/> 0.63mm [.025] <input checked="" type="checkbox"/> 0.5mm [.020] <input type="checkbox"/> 0.4mm [.016] <input type="checkbox"/> 0.3mm [.012] <input type="checkbox"/> 0.25mm [.010] <input type="checkbox"/> Other _____ . | | | 0.5 mm (.020") pitch is our minimum process capability. |
| E) Solder mask dam between lands (check all that apply) <input checked="" type="checkbox"/> 1.27mm [.050] <input checked="" type="checkbox"/> 0.63mm [.025] <input checked="" type="checkbox"/> 0.5mm [.020] <input checked="" type="checkbox"/> 0.4mm [.016] <input checked="" type="checkbox"/> 0.3mm [.012] <input checked="" type="checkbox"/> 0.25mm [.010] <input checked="" type="checkbox"/> Other <u>.004"</u> | | | Minimum DAM of 0.1016 mm (.004") is our process capability. |
| F) Flatness tolerance (bow & twist) after reflow or solder coating <input type="checkbox"/> 1.5% <input checked="" type="checkbox"/> 1.0% <input type="checkbox"/> 0.5% <input checked="" type="checkbox"/> Other <u>0.75%</u> | | | As per IPC 600 & 6012 specifications. |

| 4.3.2 PRODUCT QUALITATIVE AND QUANTITATIVE INFORMATION | YES | NO | QUANTITY OF PANELS | NUMBER of DIMENSION | COMMENTS |
|---|--------------------------|-------------------------------------|--------------------|---------------------|--|
| A) Multilayer layer count | | | | | |
| 1) Maximum layers fabricated in volume (Maximum Lot) | X | | | | 6 layers in production mode. Maximum quantities vary depending on Sales booking. |
| 2) Maximum layers fabricated in prototype (Minimum Lot) | X | | | | 8 layers in small run lot. |
| B) Buried vias produced consistently in volume | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | It is under trial-run. |
| 1) Size | | | | | |
| 2) Number of layers | | | | | |
| B) Blind vias produced consistently in volume | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | It is under trial-run. |
| 1) Size | | | | | |
| 2) Number of layers | | | | | |
| 1) Controlled depth drilling | <input type="checkbox"/> | <input checked="" type="checkbox"/> | | | Done for counter-sink holes both PTH & NPTH. |
| 2) Total number of layers | | | | | |

4.4. TESTING CAPABILITY

| 4.4.1 TEST AND TEST EQUIPMENT CAPABILITY | YES | NO | COMMENTS |
|---|-------------------------------------|-------------------------------------|--|
| A) SMT centerline pitch that can be electrically tested <input checked="" type="checkbox"/> 0.63mm [.025] <input checked="" type="checkbox"/> 0.5mm [.020] <input type="checkbox"/> 0.4mm [.016] <input type="checkbox"/> 0.3mm [.012] <input type="checkbox"/> 0.25mm [.010] <input type="checkbox"/> Other | | | Our testing process capability is 0.5 mm (.020") minimum pitch. |
| B) Double sided simultaneous electrical testing | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Using Flying Probe / Bed of Nails Testers. |
| 1) Equipment type | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Flying Probe Tester (ATG A3) & Bed of Nails Tester (Mania "Versa Tower") |
| 2) X-ray fluorescence inspection equipment | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Gnenbrook X-Ray Inspection Unit. CMI Unit - Model# XRX 990-D |
| 3) TDR equipment | <input type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 4) Hi-pot test equipment | <input type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 5) Four-wire kelvin tester | <input type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 6) Capacitance meter | <input type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 7) Cleanliness testing | <input type="checkbox"/> | <input checked="" type="checkbox"/> | |

| 4.4.2 AUTOMATED OPTICAL INSPECTION USAGE | EST % | COMMENTS |
|--|-------|--|
| A) Before etching | 0 | |
| B) After etching | 40 | |
| C) Internal layers | 80 | |
| D) Final inspection | 0 | |
| E) Other | 0 | |
| F) Conductor/clearance normally inspected by AOI equipment | | |
| 1) <input type="checkbox"/> 0.05mm [.002] | | |
| 2) <input type="checkbox"/> 0.05-.10mm [.002-.004] | | |
| 3) <input checked="" type="checkbox"/> >.10mm [.004] | | AOI use is primarily for inner cores of multilayer boards and dense double sided boards. Photo tool AOI inspection as per manufacturing feasibility. |
| 4) <input checked="" type="checkbox"/> Planes | | We do sampling AOI. |
| G) CAD download to AOI | 100% | |

SECTION 5

QUALITY PROFILE

| |
|-------------------------------------|
| DATE COMPLETED 01 / March / 2014 |
|-------------------------------------|

| GENERAL INFORMATION | |
|--|-------------------------------|
| COMPANY NAME Sonic Technology (India), Inc. | |
| CONTACT Mr. J.V. Nagabhushan | |
| TELEPHONE NUMBER +91-79-23287517 | FAX NUMBER +91-79-23287515 |

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

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 | 5.11 Statistical Process Control |
| 5.2 New Products/Technical Services | 5.12 Problem Solving |
| 5.3 Customer Satisfaction | 5.13 In-Process Control |
| 5.4 Computer Integrated Manufacturing | 5.14 Receiving Inspection |
| 5.5 Process Documentation | 5.15 Material Handling |
| 5.6 Quality Records | 5.16 Non-Conforming Material Control |
| 5.7 Skill, Training & Certification | 5.17 Inspection and Test Plan |
| 5.8 Subcontractor Control | 5.18 Product Inspection/Final Audit |
| 5.9 Calibration Control | 5.19 Tooling Inspection, Handling, & Storage |
| 5.10 Internal Audits | 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 |
|---|
| Sonic Technology (India), Inc. is an ISO 9001-2008 certified company. Our certification body is AQA, having ANAB accreditation. |
| AQA is now merged with NSF-ISR, USA. A copy of ISO certificate is attached, please refer to Section 4.1.4 (6) of this document. |
| |
| |
| |

| 5.1 GENERAL QUALITY PROGRAMS | | STATUS | | | | |
|------------------------------|--|----------------|-------------|--------------------|------------------|-----------------|
| | | Not Applicable | Not Started | Approach Developed | Percent Deployed | Percent Results |
| DESCRIPTION OF PROGRAM | | | | | | |
| 1. | Are quality objectives and responsibilities clearly stated, widely distributed and understood through the company? | | | X | 100 | 90 |
| 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? | | | X | 100 | 100 |
| 3. | Does a quality measurement system exist with clearly defined metrics and is it utilized as a management tool? | | | X | 100 | 100 |
| 4. | Are work instructions approved and controlled; and are they under revision control? | | | X | 100 | 100 |
| 5. | Are the quality procedures and policies current and available at the point of application; and are they under revision control? | | | X | 100 | 100 |
| 6. | Are benchmark and customer satisfaction studies done to determine best in class for all products, services, and administrative functions; and are quality goals set? | | | X | 85 | 85 |
| 7. | Are Statistical Process Control (SPC) principles understood by all levels of management? | | | X | 100 | 80 |
| 8. | Are there programs with sufficient resources assigned to support corrective actions and prevention? | | | X | 100 | 100 |
| 9. | Does management solicit and accept feedback from the work force? | | | X | 100 | 100 |
| 10. | Is there management support of ongoing training (including quality training), and is it documented by an organizational training plan? | | | X | 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? | | | X | 100 | 100 |
| 12. | Are the quality and reliability goals aggressive relative to customer expectations and targeted at continuous improvement? | | | X | 100 | 100 |
| 13. | Are the people who are responsible for administering the quality assurance function technically informed? | | | X | 100 | 100 |
| 14. | Does Management have a "defect prevention" attitude to achieve continuous improvement? | | | X | 100 | 100 |

| 5.2 NEW PRODUCTS/TECHNICAL SERVICES | | STATUS | | | | |
|-------------------------------------|---|----------------|-------------|--------------------|------------------|-----------------|
| | | Not Applicable | Not Started | Approach Developed | Percent Deployed | Percent Results |
| DESCRIPTION OF PROGRAM | | | | | | |
| 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? | | | X | 70 | 70 |
| 2. | Is quantitative benchmarking used to evaluate all new products/technologies/services in comparison to best-in-class offerings? | | | X | 70 | 70 |
| 3. | Does a roadmap exist to ensure continued development of leading edge, best-in-class products/technology/services? | | | X | 80 | 80 |
| 4. | Is the capability of each operation which controls critical-to-function characteristics for new products, fully certified? | | | X | 100 | 100 |
| 5. | Are statistical tools used in the development of robust (high yield) new processes, products, and services? | | | X | 80 | 80 |
| 6. | When new product/technology/service requires a new process, is it developed jointly and concurrently with the customer and/or suppliers? | | | X | 100 | 80 |
| 7. | Are design reviews conducted on a scheduled basis which properly address the process capability indices of critical-to-function and product/service characteristics? | | | X | 100 | 80 |
| 8. | Is the new product/technology/service, as produced by the process, verified to meet all customer satisfaction requirements? | | | X | 100 | 100 |

| COMMENTS |
|----------|
| |

| 5.3 CUSTOMER SATISFACTION | | STATUS | | | | |
|---------------------------|--|----------------|-------------|--------------------|------------------|-----------------|
| | | Not Applicable | Not Started | Approach Developed | Percent Deployed | Percent Results |
| DESCRIPTION OF PROGRAM | | | | | | |
| 1. | Is there a measurement system in place to assess the customer's perception of complete performance? | | | X | 100 | 90 |
| 2. | Is an independent (unbiased) customer survey routinely conducted? | | | X | 80 | 80 |
| 3. | Is there an internal measurement system within the organization which correlates to the level of customer satisfaction? | | | X | 100 | 100 |
| 4. | Are there specific goals for achieving Total Customer Satisfaction, both internal and external? | | | X | 100 | 90 |
| 5. | To what extent are customer satisfaction goals disseminated and understood by everyone in the organization? | | | X | 100 | 90 |
| 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? | | | X | 100 | 90 |
| 7. | Is there a method in place to obtain future customer requirements? | | | X | 80 | 70 |
| 8. | Are all findings of customer dissatisfaction reported back to the proper organization for analysis and corrective action? | | | X | 100 | 90 |
| 9. | Are customer satisfaction requirements formally defined and documented, and are they based on customer input? | | | X | 90 | 90 |
| 10. | Do all support organizations understand their role in achieving total customer satisfaction? | | | X | 100 | 90 |

| 5.4 COMPUTER INTEGRATED MANUFACTURING | | STATUS | | | | |
|---------------------------------------|---|----------------|-------------|--------------------|------------------|-----------------|
| | | Not Applicable | Not Started | Approach Developed | Percent Deployed | Percent Results |
| DESCRIPTION OF PROGRAM | | | | | | |
| 1. | Are systems integrated to allow electronic transfer of information between multiple systems to eliminate redundant data entry? | | | X | 100 | 100 |
| 2. | Can customers electronically transfer CAD/CAM directly into manufacturing? | | | X | 100 | 100 |
| 3. | Can customers electronically transfer order information directly into the business system? | | | X | 100 | 100 |
| 4. | Is data electronically shared between shop floor control and process control systems (i.e., CNC, SPC, Electrical Test, AOI, etc.)? | | | X | 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.)? | | | X | 100 | 100 |
| 6. | Is information available from system processes in real time (vs. batch processing)? | | | X | 100 | 90 |
| 7. | Are processes and procedures documented and available on-line? | | | X | 80 | 80 |
| 8. | Do all functional departments have system access to key financial, manufacturing, sales, and operational data, as it relates to their functional objectives? | | | X | 100 | 80 |
| 9. | Are computer simulation and design tools used to the maximum extent practicable in the design of new products/technologies/services | | | X | 100 | 90 |

COMMENTS

We have "Procim" in place for integrated manufacturing data control.

| 5.5 PROCESS DOCUMENTATION | | STATUS | | | | |
|---------------------------|--|----------------|-------------|--------------------|------------------|-----------------|
| | | Not Applicable | Not Started | Approach Developed | Percent Deployed | Percent Results |
| DESCRIPTION OF PROGRAM | | | | | | |
| 1. | Are manufacturing product, process, and configuration documents under issue control? | | | X | 100 | 100 |
| 2. | Are "preliminary" and "special product" specifications controlled? | | | X | 100 | 100 |
| 3. | Does the system ensure that the most current customer specifications are available to the manufacturing personnel? | | | X | 100 | 100 |
| 4. | Does the system ensure that the most current material specifications are available to the procurement function? | | | X | 100 | 100 |
| 5. | Are incoming orders reviewed for revisions and issue changes? | | | X | 100 | 100 |
| 6. | Is conformance to customer specifications assured before an order is accepted? | | | X | 100 | 100 |
| 7. | Is customer feedback provided when designs do not meet manufacturability requirements? | | | X | 100 | 100 |
| 8. | Are critical characteristics classified, relative to impact on product performance? | | | X | 100 | 100 |
| 9. | Are customers informed of changes made to products controlled by customer drawings or specifications? | | | X | 100 | 100 |
| 10. | Is there an effective internal deviation control procedure and, are customer requested deviations documented and followed? | | | X | 100 | 100 |
| 11. | Do new product development procedures exist, and are they followed in the design development process? | | | X | 100 | 80 |

| 5.6 QUALITY RECORDS | | STATUS | | | | |
|------------------------|--|----------------|-------------|--------------------|------------------|-----------------|
| | | Not Applicable | Not Started | Approach Developed | Percent Deployed | Percent Results |
| DESCRIPTION OF PROGRAM | | | | | | |
| 1. | Are records of inspection and process control maintained and available for review? | | | X | 100 | 100 |
| 2. | Are records of equipment and equipment maintenance kept? | | | X | 100 | 100 |
| 3. | Is the record and sample retention program defined? | | | X | 100 | 100 |
| 4. | Are quality data used as a basis for corrective action? | | | X | 100 | 100 |
| 5. | Are quality data used in reporting performance and trends to management? | | | X | 100 | 100 |
| 6. | Are quality data used in supporting certifications of quality furnished to customers? | | | X | 100 | 100 |
| 7. | Is field information used for corrective action? | | | X | 100 | 100 |
| 8. | Does a cost of quality measurement system exist? | | | X | 80 | 80 |
| 9. | Are customer reported quality problems responded to, and resolved in the time period requested? | | | X | 100 | 95 |
| 10. | Is quality information on production material rejects provided to sub-suppliers with required corrective action? | | | X | 100 | 80 |
| 11. | Are computers used to collect and analyze quality data? | | | X | 100 | 100 |

COMMENTS**Section 5.6**

#8: Cost of quality measurement system exists, but usage as a tool at present is sporadic.

#10: It is done based on actual sub supplier involvement in corrective action investigations/root causes.

| 5.7 SKILLS, TRAINING, & CERTIFICATION | | STATUS | | | | |
|---------------------------------------|---|----------------|-------------|--------------------|------------------|-----------------|
| | | Not Applicable | Not Started | Approach Developed | Percent Deployed | Percent Results |
| DESCRIPTION OF PROGRAM | | | | | | |
| 1. | Does management ensure that all personnel are trained in their role for achieving Total Customer Satisfaction? | | | X | 100 | 100 |
| 2. | Do all personnel understand how their performance impacts internal and external customer satisfaction? | | | X | 100 | 90 |
| 3. | Do all personnel who contact external customers reflect quality improvement programs? | | | X | 100 | 100 |
| 4. | Do personnel participate in professional societies and growth programs? | | X | | | |
| 5. | Are all personnel trained in sufficient detail to support key initiatives? | | | X | 100 | 100 |
| 6. | Are the results of training evaluated and indicated program changes made? | | | X | 100 | 90 |
| 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? | | | X | 100 | 90 |
| 8. | Are performance standards participatively developed, and regularly applied for all personnel? | | | X | 100 | 100 |
| 9. | Are Total Customer Satisfaction programs and resulting successes publicized to all personnel? | | | X | 100 | 100 |
| 10. | Do goal setting and reward/incentive programs support the quality improvement process? | | | X | 50 | 50 |

| 5.8 SUBCONTRACTOR CONTROL | | STATUS | | | | |
|---------------------------|--|----------------|-------------|--------------------|------------------|-----------------|
| | | Not Applicable | Not Started | Approach Developed | Percent Deployed | Percent Results |
| DESCRIPTION OF PROGRAM | | | | | | |
| 1. | Are requirements defined, communicated, and updated to ensure that the supplier understands expectations? | | | X | 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) | | | X | 100 | 100 |
| 3. | Have the organization's processes been characterized to identify the critical requirements for the suppliers products? | | | X | 100 | 100 |
| 4. | Have the capabilities of the supplier's processes been assessed and considered in the establishment of the requirements? | | | X | 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? | | | X | 100 | 100 |
| 6. | Have quality and cycle time metrics and improvement goals been established participatively with the supplier? | | | X | 100 | 70 |
| 7. | Has a system been established with the supplier for identification and verification of corrective action? | | | X | 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? | | | X | 100 | 100 |
| 9. | Is there a supplier certification program or equivalent procured material/service continuous quality improvement program? | | | X | 100 | 100 |
| 10. | Can all personnel who contract suppliers properly reflect appropriate quality improvement programs and status to them? | | | X | 100 | 100 |

| COMMENTS |
|---|
| <p>Section 5.7 #4: Company QMS does not dictate any employee professional affiliation requirements. #10: Awards/Incentives are not mandatory based on QMS, but are given randomly per management consensus.</p> <p>Section 5.8 #4: Assessment is done based on information provided by suppliers in their certificate of compliance reports. #6: Metrics and goals have been established only with selective suppliers as applicable.</p> |

| 5.9 CALIBRATION CONTROL | | STATUS | | | | |
|-------------------------|---|----------------|-------------|--------------------|------------------|-----------------|
| | | Not Applicable | Not Started | Approach Developed | Percent Deployed | Percent Results |
| DESCRIPTION OF PROGRAM | | | | | | |
| 1. | Are calibration and preventative maintenance programs in place and documented? | | | X | 100 | 100 |
| 2. | Are calibration and maintenance personnel trained? | | | X | 100 | 100 |
| 3. | Is traceability to NIST maintained? | X | | | | |
| 4. | Is quality measurement and control equipment current, effective, and sufficiently integrated with production equipment? | | | X | 100 | 100 |
| 5. | Is the history of quality measurement and control equipment documented? | | | X | 100 | 100 |
| 6. | Has repeatability of measuring devices and inspection or testing processes been established and monitored; are gauge capability studies conducted and GR&R ratios acceptable(<10%)? | | | X | 40 | 40 |
| 7. | Are calibration and preventative maintenance cycles on schedule? | | | X | 100 | 100 |
| 8. | Is the use of non-calibrated equipment for design and production purposes prohibited? | | | X | 100 | 100 |
| 9. | Are tools and fixtures used as criteria or acceptability of product/work fully qualified and identified? | | | X | 100 | 100 |
| 10. | Are calibration intervals defined in accordance with industry standards or manufacturer's recommendations and the calibration history of the equipment? | | | X | 100 | 100 |

| 5.10 INTERNAL AUDITS | | STATUS | | | | |
|------------------------|--|----------------|-------------|--------------------|------------------|-----------------|
| | | Not Applicable | Not Started | Approach Developed | Percent Deployed | Percent Results |
| DESCRIPTION OF PROGRAM | | | | | | |
| 1. | Are regular reviews of the product/process conducted and are goals/plans established to continually improve? | | | X | 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? | | | X | 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? | | | X | 100 | 100 |
| 4. | Are all pertinent methods of statistical quality control properly, effectively and efficiently used? | | | X | 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? | | | X | 100 | 100 |
| 6. | Are the operators within the process provided with written work instructions and are they trained? | | | X | 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? | | | X | 100 | 100 |
| 8. | Is there a first in/first out (FIFO) system in place, and is it followed? | | | X | 100 | 100 |

COMMENTS

Section 5.9 #6:
40% of gages in system require R&R studies to be performed as per defined plan.

| 5.11 STATISTICAL PROCESS CONTROL | | STATUS | | | | |
|----------------------------------|--|----------------|-------------|--------------------|------------------|-----------------|
| | | Not Applicable | Not Started | Approach Developed | Percent Deployed | Percent Results |
| DESCRIPTION OF PROGRAM | | | | | | |
| 1. | Have the personnel who will be responsible for guiding the implementation of SPC been designated? | | | X | 100 | 90 |
| 2. | Are statistical techniques used to reduce variation in the engineering process before the start of production? | | | X | 100 | 100 |
| 3. | Is the quality system dependent upon process rather than product controls? | | | X | 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? | | | X | 100 | 90 |
| 5. | Are incapable processes or machines targeted for improvement or replacement? | | | X | 100 | 100 |
| 6. | Is SPC implemented for all critical processes? | | | X | 100 | 100 |
| 7. | Are procedures that control the reaction to out-of-control situations adequate and effective? | | | X | 100 | 100 |
| 8. | Are operators trained in the use of appropriate statistical techniques, and are they properly applying them? | | | X | 90 | 80 |
| 9. | Are advanced problem solving techniques used by engineers to solve problems? (Design of Experiments, planned experimentation, advanced diagnostic tools, etc.) | | | X | 70 | 60 |
| 10. | Are control charts and other process controls properly implemented? | | | X | 90 | 90 |
| 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? | | | X | 100 | 90 |

| 5.12 PROBLEM SOLVING | | STATUS | | | | |
|------------------------|---|----------------|-------------|--------------------|------------------|-----------------|
| | | Not Applicable | Not Started | Approach Developed | Percent Deployed | Percent Results |
| DESCRIPTION OF PROGRAM | | | | | | |
| 1. | Are employees trained in problem solving techniques, in comparison to the needs of the organization? | | | X | 100 | 90 |
| 2. | Does the organization utilize participative problem solving techniques to identify, measure and resolve internal and external problems? | | | X | 100 | 90 |
| 3. | Are problem solving efforts timely and effective? | | | X | 100 | 90 |
| 4. | Are applied resources sufficient to remove problem solving constraints? | | | X | 100 | 90 |
| 5. | Are statistical techniques used for problem solving? | | | X | 90 | 80 |
| 6. | Are quality data used to identify barriers, and to determine the priority of problems? | | | X | 100 | 100 |
| 7. | Is there a policy/procedure that includes the use of problem solving techniques to systematically drive reduction in variability? | | X | | | |

| COMMENTS |
|---|
| <p>Section 5.12 #7: QMS does not document requirement for subject techniques to be utilized to reduce variability. Subject techniques are often used, but not as a procedural or mandatory requirements under QMS plan.</p> |

| 5.13 IN-PROCESS CONTROL | | STATUS | | | | |
|-------------------------|--|----------------|-------------|--------------------|------------------|-----------------|
| | | Not Applicable | Not Started | Approach Developed | Percent Deployed | Percent Results |
| DESCRIPTION OF PROGRAM | | | | | | |
| 1. | Are process capabilities established and maintained on all major processes? (critical parameters) | | | X | 100 | 100 |
| 2. | Are in-process inspections, test operations, and processes properly specified and performed? | | | X | 100 | 100 |
| 3. | Are in-process inspection facilities and equipment adequate? | | | X | 100 | 100 |
| 4. | Are the results of in-process inspections used in the promotion of effective preventative action and corrective action? | | | X | 100 | 100 |
| 5. | Is preventative maintenance performed on the equipment and facilities? | | | X | 100 | 100 |
| 6. | Are housekeeping procedures adequate and how well are they followed? | | | X | 100 | 80 |
| 7. | Are process management plans established, and are critical parameters followed? | | | X | 100 | 100 |
| 8. | Are work areas uncluttered and free of excess work-in-process, supplies, debris, etc? Is the environment conducive to producing quality work? Is proprietary information adequately protected? | | | X | 100 | 85 |
| 9. | Are certifications and in-process inspection results used in making final acceptance decisions? | | | X | 100 | 100 |
| 10. | Are methods and procedures for the control of metallurgical, chemical, and other special processes established and followed? | | | X | 100 | 100 |

| 5.14 RECEIVING INSPECTION | | STATUS | | | | |
|---------------------------|---|----------------|-------------|--------------------|------------------|-----------------|
| | | Not Applicable | Not Started | Approach Developed | Percent Deployed | Percent Results |
| DESCRIPTION OF PROGRAM | | | | | | |
| 1. | Are receiving inspection facilities and equipment adequately and properly maintained? | | | X | 100 | 100 |
| 2. | Are receiving inspection procedures documented and followed? | | | X | 100 | 100 |
| 3. | Are receiving inspection results used for corrective and preventive action? | | | X | 100 | 100 |
| 4. | Are the procedures for storage and timely disposition of discrepant material in place and followed? | | | X | 100 | 100 |

COMMENTS

5.14 Receiving Inspection:

We use standard brands and pre-qualified materials. We perform sampling checks only at receiving inspection. We insist on certificate of conformance (compliance) from our suppliers.

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

| 5.16 NON-CONFORMING MATERIAL CONTROL | | STATUS | | | | |
|--------------------------------------|---|----------------|-------------|--------------------|------------------|-----------------|
| | | Not Applicable | Not Started | Approach Developed | Percent Deployed | Percent Results |
| DESCRIPTION OF PROGRAM | | | | | | |
| 1. | Is non-conforming material identified, segregated from regular production material, and properly dispositioned? | | | X | 100 | 100 |
| 2. | Are non-conforming materials properly identified and controlled to prevent inadvertent use? | | | X | 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? | | | X | 100 | 100 |
| 4. | Are procedures for controlling non-conforming materials, and for ensuing corrective action, in place and followed? | | | X | 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) | | | X | 100 | 100 |
| 6. | Do supplier's procedures and controls for corrective action prevent recurrence of non-conformances? | | | X | 100 | 100 |
| 7. | Is there a system for coordinating necessary corrective action with purchasing personnel? | | | X | 100 | 100 |
| 8. | Does the corrective action extend to all applicable causes of non-conformance (e.g., design, workmanship, procedures, equipment, etc.)? | | | X | 100 | 100 |

| COMMENTS |
|----------|
| |

| 5.17 INSPECTION AND TEST PLAN | | STATUS | | | | |
|-------------------------------|--|----------------|-------------|--------------------|------------------|-----------------|
| | | Not Applicable | Not Started | Approach Developed | Percent Deployed | Percent Results |
| DESCRIPTION OF PROGRAM | | | | | | |
| 1. | Are statistical techniques used in determining the acceptability of finished goods to customer requirements? | | | X | 100 | 100 |
| 2. | Are periodic tests conducted to audit reliability and environmental performance of the final product? | | | X | 100 | 100 |
| 3. | Is CPK tracking performed for critical characteristics, with plans to achieve CPK = 1.5 with a target of CP of 2.0? | | | X | 100 | 100 |
| 4. | Is root cause failure analysis performed for internal and external failures, and is appropriate corrective action implemented? | | | X | 100 | 100 |
| 5. | Are test and inspection personnel trained in the procedures of their operations, and are those procedures being followed? | | | X | 100 | 100 |
| 6. | Is the new product/technology/service, as produced by the processes, verified to meet all customer satisfaction requirements? | | | X | 100 | 100 |

| 5.18 PRODUCT INSPECTION/FINAL AUDIT | | STATUS | | | | |
|-------------------------------------|--|----------------|-------------|--------------------|------------------|-----------------|
| | | Not Applicable | Not Started | Approach Developed | Percent Deployed | Percent Results |
| DESCRIPTION OF PROGRAM | | | | | | |
| 1. | Are final product acceptance procedures documented and followed? | | | X | 100 | 100 |
| 2. | Are all specific customer product audits conducted, as required? | | | X | 100 | 100 |
| 3. | Are inspectors trained for the tasks performed? | | | X | 100 | 100 |
| 4. | Are flow charts or milestones developed with checkpoints readily available? | | | X | 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? | | | X | 100 | 100 |
| 6. | Is a quality system established and maintained for control of product/production documentation? | | | X | 100 | 100 |
| 7. | Is "accept/reject" criteria defined and available for use? | | | X | 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? | | | X | 100 | 100 |
| 9. | Are packing and order checking procedures documented and followed? | | | X | 100 | 100 |

| COMMENTS | | | | | | |
|----------|--|--|--|--|--|--|
| | | | | | | |

| 5.19 TOOLING INSPECTION, HANDLING, & STORAGE | | STATUS | | | | |
|--|--|----------------|-------------|--------------------|------------------|-----------------|
| | | Not Applicable | Not Started | Approach Developed | Percent Deployed | Percent Results |
| DESCRIPTION OF PROGRAM | | | | | | |
| 1. | Are temperature, humidity, laminar flow controls in place to prevent contamination, and to assure dimensional stability? | | | X | 100 | 100 |
| 2. | Do operators use hairnets, gloves & lab coats in all photo lab and photo exposure areas? | | | X | 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? | | | X | 100 | 100 |
| 4. | Are customer provided artworks controlled with regard to handling, storage, revision control and relationship to converted production photo tools (working films)? | | | X | 100 | 100 |
| 5. | Are production photo tools (working films) controlled with regard to handling, storage, use life, and relationship to customer purchase order? | | | X | 100 | 100 |
| 6. | Are customer provided artworks and production photo tools (working films) inspected, including dimensional checks? | | | X | 100 | 100 |
| 7. | Are all tools, fixtures, and other devices, used for tooling inspection and control, maintained under the calibration control procedure? | | | X | 100 | 100 |
| 8. | Are records showing initial acceptance, periodic checks, and any needs for rework and/or modification available? | | | X | 100 | 100 |

| 5.20 CORRECTIVE ACTION | | STATUS | | | | |
|------------------------|---|----------------|-------------|--------------------|------------------|-----------------|
| | | Not Applicable | Not Started | Approach Developed | Percent Deployed | Percent Results |
| DESCRIPTION OF PROGRAM | | | | | | |
| 1. | Are final acceptance inspection results used for corrective and preventative action? | | | X | 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. | | | X | 100 | 100 |
| 3. | Is positive action taken to prevent recurrence of problems, and are there documented reports/records of each occasion? | | | X | 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? | | | X | 100 | 100 |
| 5. | Is corrective action controlled and documented for all applicable work centers? | | | X | 100 | 100 |
| 6. | When corrections are made, is their effectiveness subsequently reviewed and monitored? | | | X | 100 | 100 |

| COMMENTS |
|----------|
| |

SECTION 6 (CHECK ONE IN EACH LINE THAT APPLIES)

MANUFACTURING HISTORY

(See Section 2 Site Capability)

| |
|----------------------|
| DATE COMPLETED |
| Available on request |

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 board or board family (board types may be grounded together if they are similar).

| | | | |
|------------|---------------------|---------------------------|-----------|
| BOARD TYPE | DATE OF ORDER | MATERIAL | HISTORY # |
| VIA TYPE | PRODUCTION QUANTITY | TOTAL YEARLY PRODUCTION % | |

Dimensions in millimeters (inches in brackets)

| BOARD | | | HOLES | | |
|--|---|---|---|---|--|
| BOARD SIZE DIAGONAL | TOTAL BOARD THICKNESS | NUMBER CONDUCTIVE LAYERS | DIA DRILLED HOLES | TOTAL PTH TOL (MAX-MIN) | LOCATION TOL DTP |
| <input type="checkbox"/> <250 [<small><10.00</small>] | <input type="checkbox"/> <1,0 [<small><.040</small>] | <input type="checkbox"/> 1-4 [<small>1-4</small>] | <input type="checkbox"/> >0,5 [<small>>.020</small>] | <input type="checkbox"/> >0,250 [<small>>.010</small>] | <input type="checkbox"/> >0,50 [<small>>.020</small>] |
| <input type="checkbox"/> 250 [<small>10.00</small>] | <input type="checkbox"/> 1,0 [<small>.040</small>] | <input type="checkbox"/> 5-6 [<small>5-6</small>] | <input type="checkbox"/> 0,5 [<small>.020</small>] | <input type="checkbox"/> 0,250 [<small>.010</small>] | <input type="checkbox"/> 0,50 [<small>.020</small>] |
| <input type="checkbox"/> 350 [<small>14.00</small>] | <input type="checkbox"/> 1,6 [<small>.060</small>] | <input type="checkbox"/> 7-8 [<small>7-8</small>] | <input type="checkbox"/> 0,4 [<small>.016</small>] | <input type="checkbox"/> 0,200 [<small>.008</small>] | <input type="checkbox"/> 0,40 [<small>.016</small>] |
| <input type="checkbox"/> 450 [<small>17.50</small>] | <input type="checkbox"/> 2,0 [<small>.080</small>] | <input type="checkbox"/> 9-12 [<small>9-12</small>] | <input type="checkbox"/> 0,35 [<small>.014</small>] | <input type="checkbox"/> 0,150 [<small>.006</small>] | <input type="checkbox"/> 0,30 [<small>.012</small>] |
| <input type="checkbox"/> 550 [<small>21.50</small>] | <input type="checkbox"/> 2,5 [<small>.100</small>] | <input type="checkbox"/> 13-16 [<small>13-16</small>] | <input type="checkbox"/> 0,30 [<small>.012</small>] | <input type="checkbox"/> 0,125 [<small>.005</small>] | <input type="checkbox"/> 0,25 [<small>.010</small>] |
| <input type="checkbox"/> 650 [<small>25.50</small>] | <input type="checkbox"/> 3,5 [<small>.135</small>] | <input type="checkbox"/> 17-20 [<small>17-20</small>] | <input type="checkbox"/> 0,25 [<small>.010</small>] | <input type="checkbox"/> 0,100 [<small>.004</small>] | <input type="checkbox"/> 0,20 [<small>.008</small>] |
| <input type="checkbox"/> 750 [<small>29.50</small>] | <input type="checkbox"/> 5,0 [<small>.200</small>] | <input type="checkbox"/> 21-24 [<small>21-24</small>] | <input type="checkbox"/> 0,20 [<small>.008</small>] | <input type="checkbox"/> 0,075 [<small>.003</small>] | <input type="checkbox"/> 0,15 [<small>.006</small>] |
| <input type="checkbox"/> 850 [<small>33.50</small>] | <input type="checkbox"/> 6,5 [<small>.250</small>] | <input type="checkbox"/> 25-28 [<small>25-28</small>] | <input type="checkbox"/> 0,15 [<small>.006</small>] | <input type="checkbox"/> 0,050 [<small>.002</small>] | <input type="checkbox"/> 0,10 [<small>.004</small>] |
| <input type="checkbox"/> >850 [<small>>33.50</small>] | <input type="checkbox"/> >6,5 [<small>>.250</small>] | <input type="checkbox"/> >28 [<small>>28</small>] | <input type="checkbox"/> <0,15 [<small>.006</small>] | <input type="checkbox"/> <0,050 [<small><.002</small>] | <input type="checkbox"/> <0,10 [<small><.004</small>] |
| <input type="checkbox"/> Other: | <input type="checkbox"/> Other: | <input type="checkbox"/> Other: | <input type="checkbox"/> Other: | <input type="checkbox"/> Other: | <input type="checkbox"/> Other: |

CONDUCTORS

| INTERNAL ELEC CLEARANCE (MIN) | INTERNAL COND WIDTH (MIN) | INTERNAL PROCESS ALLOWANCE | EXTERNAL ELEC CLEARANCE (MIN) | EXTERNAL COND WIDTH (MIN) | EXTERNAL PROCESS ALLOWANCE | FEATURE LOCATION DTP |
|---|---|--|---|---|---|--|
| <input type="checkbox"/> >0,350 [<small>>.014</small>] | <input type="checkbox"/> >0,250 [<small>>.010</small>] | <input type="checkbox"/> >0,100 [<small>>.004</small>] | <input type="checkbox"/> >0,350 [<small>>.014</small>] | <input type="checkbox"/> >0,250 [<small>>.010</small>] | <input type="checkbox"/> >0,100 [<small>>.004</small>] | <input type="checkbox"/> >0,50 [<small>>.020</small>] |
| <input type="checkbox"/> 0,350 [<small>.014</small>] | <input type="checkbox"/> 0,250 [<small>.010</small>] | <input type="checkbox"/> 0,100 [<small>.004</small>] | <input type="checkbox"/> 0,350 [<small>.014</small>] | <input type="checkbox"/> 0,250 [<small>.010</small>] | <input type="checkbox"/> 0,100 [<small>.004</small>] | <input type="checkbox"/> 0,50 [<small>.020</small>] |
| <input type="checkbox"/> 0,250 [<small>.010</small>] | <input type="checkbox"/> 0,200 [<small>.008</small>] | <input type="checkbox"/> 0,075 [<small>.003</small>] | <input type="checkbox"/> 0,250 [<small>.010</small>] | <input type="checkbox"/> 0,200 [<small>.008</small>] | <input type="checkbox"/> 0,075 [<small>.003</small>] | <input type="checkbox"/> 0,40 [<small>.016</small>] |
| <input type="checkbox"/> 0,200 [<small>.008</small>] | <input type="checkbox"/> 0,150 [<small>.006</small>] | <input type="checkbox"/> 0,050 [<small>.002</small>] | <input type="checkbox"/> 0,200 [<small>.008</small>] | <input type="checkbox"/> 0,150 [<small>.006</small>] | <input type="checkbox"/> 0,050 [<small>.002</small>] | <input type="checkbox"/> 0,30 [<small>.012</small>] |
| <input type="checkbox"/> 0,150 [<small>.005</small>] | <input type="checkbox"/> 0,125 [<small>.005</small>] | <input type="checkbox"/> 0,040 [<small>.0015</small>] | <input type="checkbox"/> 0,150 [<small>.006</small>] | <input type="checkbox"/> 0,125 [<small>.005</small>] | <input type="checkbox"/> 0,040 [<small>.0015</small>] | <input type="checkbox"/> 0,25 [<small>.010</small>] |
| <input type="checkbox"/> 0,125 [<small>.005</small>] | <input type="checkbox"/> 0,100 [<small>.004</small>] | <input type="checkbox"/> 0,030 [<small>.0012</small>] | <input type="checkbox"/> 0,125 [<small>.005</small>] | <input type="checkbox"/> 0,100 [<small>.004</small>] | <input type="checkbox"/> 0,030 [<small>.0012</small>] | <input type="checkbox"/> 0,20 [<small>.008</small>] |
| <input type="checkbox"/> 0,100 [<small>.004</small>] | <input type="checkbox"/> 0,075 [<small>.003</small>] | <input type="checkbox"/> 0,025 [<small>.001</small>] | <input type="checkbox"/> 0,100 [<small>.004</small>] | <input type="checkbox"/> 0,075 [<small>.003</small>] | <input type="checkbox"/> 0,025 [<small>.001</small>] | <input type="checkbox"/> 0,15 [<small>.006</small>] |
| <input type="checkbox"/> 0,075 [<small>.003</small>] | <input type="checkbox"/> 0,050 [<small>.002</small>] | <input type="checkbox"/> 0,020 [<small>.0008</small>] | <input type="checkbox"/> 0,075 [<small>.003</small>] | <input type="checkbox"/> 0,050 [<small>.002</small>] | <input type="checkbox"/> 0,020 [<small>.0008</small>] | <input type="checkbox"/> 0,10 [<small>.004</small>] |
| <input type="checkbox"/> <0,075 [<small><.003</small>] | <input type="checkbox"/> <0,050 [<small><.002</small>] | <input type="checkbox"/> <0,020 [<small><.0008</small>] | <input type="checkbox"/> <0,075 [<small><.003</small>] | <input type="checkbox"/> <0,050 [<small><.002</small>] | <input type="checkbox"/> <0,020 [<small><.008</small>] | <input type="checkbox"/> <0,10 [<small><.004</small>] |
| <input type="checkbox"/> Other: | <input type="checkbox"/> Other: | <input type="checkbox"/> Other: | <input type="checkbox"/> Other: | <input type="checkbox"/> Other: | <input type="checkbox"/> Other: | <input type="checkbox"/> Other: |

SECTION 7

| |
|--|
| DATE COMPLETED 01 / March / 2014 (Rest Available on Request) |
|--|

IDENTIFICATION OF PREVIOUS AUDITS (Optional)

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

| | |
|---|--|
| COMPANY AUDITORS ISO Certification Audit Details: Our Certification Body for ISO 9001 2008 is: NSF-ISR (Previously known as AQA = American Quality Assessors) | DATE OF AUDIT 29 th & 30 th January 2014 Re-registration Audit (Start Registration Date: 2 NOVEMBER 2004) |
| AUDIT TEAM MEMBERS Mr. N. Vardraj Prabhu - Audit Team Leader Mr. D.P. Shaha - Audit Team Member | AUDITOR REMARKS To NSF-ISR (AQA): Recommendation to maintain registration |
| | SPECIFICATIONS USED IN AUDIT ISO 9001 2008 |
| LENGHT OF AUDIT Four Man Days | |
| TEAM MEMBERS MAY BE CONTACTED AT AQA International India, Office at Hyderabad. Telephone Nos: +91-40-23301618 / 23301554 / 23301582 | |
| 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 |
| Available on Request |

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

MQP ELECTRONIC EDITING

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.