
ABC Company – Supplier Audit

John Power Supplier - Audit Report (25th Nov 2010)

Audit Location: John Power Ltd
Taiwan

Audit Date: 16 - 17th July 2012

Attendees: John Power Representative
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1 Outline

A Supplier Technical Audit has been performed onsite at the John Power factory (the supplier), located at <ADDRESS>. This audit was conducted to address the high fallout rate detected by ABC company (the client) incoming inspection and to ensure that John Power implements the corrective actions recommended & actively resolves the issues to prevent such failures from occurring in the future.

The audit is based on John Power Quality Control Plan on Model No: S-Y58-012-120.

2 Scope

The technical audit is used to identify any weaknesses in the processes or manufacturing system employed by the supplier.

All these weakness will lead to poor parts, product, or assemblies being shipped to <the client>. We expect John Power to implement the corrective actions outlined within this report to strengthen the processes identified and ensure products are delivered to a high quality standard in the future.

3 Products Supplier to <the client>

John Power Supply supplies power supply units to <the client> that provide 3V3, 5V, and 12V outputs for use in computer systems. The supplies are, at times, assembled with fans for cooling which have shown a tendency to fail in operation.

This audit focuses on the entire manufacturing facility, but further detail has been placed on <product A> to halt the supply of defective components.

4 Executive Summary

The exercise of conducting a technical audit at John Power Supply has been successful in finding flaws in the manufacturing process. John Power suffers from issues related to their processes used for manufacturing PCBA's and holes in their current quality control system.

Fixing these issues would result in better manufacturing yield, quality, and performance.

The failures identified are more than likely to have an impact on quality in the field.

In general the management & floor-staff at John Power were found to be helpful, eager to learn and willing to change. This represents a good basis for improving their current performance and should enable future audits to focus on improving yield & throughput.

5 Audit Plan

An audit meeting was conducted involving representatives from John Power and GMR Solutions. This meeting was held to go through the meeting agenda and objectives.

Table 1: Audit Area

S/No	Audit Area
1	In-coming inspection area
2	Store area
3	PCBA production area
4	Box build production area
5	Packaging area
6	QC area
7	Debug area
8	FG Store area
9	Go through the 20 failure units failure analysis and the corrective actions

5.1 Process Audit Finding & Observations

The following issues have been identified during the audit conducted on the John Power’s <location> factory:

Highlighted in blue are the actions given by the John power supplier.

Table 2: Process Audit not following SOP Finding & Observations

S/No	Issues	Actions	Status
1	Wave Solder machine pre-heater zone was not functioning but was still being used.	1) Why was the machine still being used? Actions: a) The wave solder machine was immediately stop and fixed within 3 hours. B) If the wave solder machine was not running properly, needed to stop using until it repaired. The PCBA board, which was already mounted, needed to change to other wave solder. 2) How to prevent such issue from happening? Actions: a) When wave solder was working, all parameters must be consistent with work instruction. Trained all the machine operators on these criteria. b) Our IPQC worker will check these parameters of wave solder. If the parameters were abnormal, they will make note on the report and stop the machine from using.	Closed, 16 th Nov Closed, 16 th Nov Closed, 16 th Nov Closed, 16 th Nov
2	Two operators did not route the earth wire correctly before casing up the SMPS.	1) Why the operators did not follow the SOP? Actions: a) Immediately recall all the units in the production line for rework. b) Immediately added in one station to perform the cable routing & gluing of this earth wire before the product proceeds to final assembly. c) Updated the SOP to include the route & glue station.	Closed, 16 th Nov Closed, 16 th Nov Closed, 16 th Nov
3	The receiving store operator did not wear an ESD strip when handling & kitting IC components.	1) Enhanced the ESD awareness and training. Actions: a) We would train the person who hand out the material in the warehouse, and make them realize the parts will be damaged by static, and make practice in working.	Closed, 16 th Nov

5.2 Other Area of Opportunities for Improvement

Table 3: Opportunities for Improvement

S/No	Station	Actions	Status
4	IQC area	<p>IQC did not have the IC date code interpretation. There was no checking on the MSD control and IC manufacturing year.</p> <p>Actions:</p> <p>1) Get all IC's component date code interpretation.</p> <p>2) Added in IQC check on the date code. a) When inspect the material, need to confirm the production circle, the material within one year will be allowed into the warehouse, and then revise the material instruction of inspection.</p> <p>3) Use only max 2 years ago date code a) We will check the stock of material. The material for more than 2 years will be returned to our supplier, and we only use the material within 2 years.</p> <p>4) Update SOP</p> <p>5) Ensure their SMT Sub-con implement MSD control</p> <p>6) IQC need to implement MSD control for those IC return from the SMT sub-con)</p>	<p>Closed, 20th Nov</p> <p>Closed, 20th Nov</p> <p>Closed, 20th Nov</p> <p>Open</p> <p>Open</p> <p>Open</p>
5	Manual insert station	<p>Small/light components not soldered after wave solder.</p> <p>Actions:</p> <p>1) The small/light components should form kink leads to prevent bad solder contact, which need touch up and could cause lifted pad issues.</p>	Open
6	2 nd wave solder station	<p>Marking on the board to differentiate between 1st and 2nd wave solder.</p> <p>Actions:</p> <p>1) Applied blue mark on the board edge to segregate between the 1st wave solder.</p> <p>2) Update SOP</p>	<p>Closed, 16th Nov</p> <p>Open</p>
7	Touch up station	<p>Too many points to touch up after the wave solder.</p> <p>Actions:</p> <p>1) Break the touch up process into two sections to ensure operator can focus rather than the whole board.</p> <p>2) To perform DFM on this board and the objective is to reduce touch up after wave solder. (Example: Q1 & Q2 lead holes opening is too big, result = always need to touch up)</p>	<p>Closed, 16th Nov</p> <p>Open</p>
8	ICT station	<p>No retest limit.</p> <p>Actions:</p> <p>1) Limit the number of times to retest for those failure units to 3.</p> <p>2) Update SOP</p>	<p>Closed, 17th Nov</p> <p>Open</p>

S/No	Station	Actions	Status
9	De-panelized station	No fixed locations to apply the cutter to break the panel tab. Actions: 1) Apply the cutter as non-trace & components area. 2) Update SOP	Closed, 16 th Nov Open
10	PCBA Visual inspection station	No 10x magnifying glass available for staff to use. Actions: 1) Added 10x magnifying glass for PBCA visual inspection station. 2) Update SOP	Closed, 17 th Nov Open
11	Hi-pot station	No known-good / known-faulty samples for daily Hi-pot tester verification. Actions: 1) Need to have known samples for Hi-pot tester daily verification.	Open
12	Functional Test station	Hot plugging the power during functional test. Actions: 1) Must connect up the connection before power up. This was to prevent arcing. This should apply to all functional test stations. 2) Update SOP.	Closed, 16 th Nov Open
13	ESD station	ESD wrist strap record sheets do not have a sign-off field. Actions: 1) We will consolidate the ESD wrist strap checking station and the supervisor should sign on the sheet.	Open
14	Debug station	All defective components, which having high fallout rate should send for failure analysis, especially the IC3 component. Actions: 1) The maintainer found the material is abnormal - passed to the IQC who returned to our supplier for analysis and corrective action.	Closed, 17 th Nov
15	Handling of PCBA level	Operators handling on PCBA board must be gentle. Actions: 1) We have heightened the carton in which workers put PCB, which let worker reach the PCB conveniently. 2) We have trained the workers about the way that they should pick up and put lightly. We do not allow them to throw the PCB.	Closed, 17 th Nov Closed, 17 th Nov

5.3 Quality Improvement Plan

Table 4: Quality Improvement Plan

S/No	Actions	Status
16	Change the full load burn-in time to 8 hours instead of 4 hrs.	Closed, 17 th Nov
17	Conduct ORT 5 units for every batch ship.	Closed, 17 th Nov
18	Do not use the IC3 date code 622J16 and purge the raw part in the store.	Closed, 17 th Nov
19	Any return unit by ABC COMPANY (the client) will need to perform the following test before teardown: a) Perform OQC test b) Go through production functional test stations	Closed, 17 th Nov

6 Failure Analysis & Corrective Action – 32 units

Failure Analysis was conducted to determine the root cause of failures on <ABC Company> incoming inspection test. All the failures related to IC3 were from IC date code 621H18, which was manufactured from Year 2006 week 21.

In total there were 1500 ordered using the IC3 date code 621H18.

Table 5: 30 units Failure Analysis & Corrective Action

S/No	Finding	Actions	Status
20	IC3 defective	20 pcs - Component supplier Failure Analysis (FA) result found this failure mode is caused by EOS/ESD. All the units were from date code 621H18	
		a) Component supplier replied on the date code interpretation.	Closed, 19 th Nov
		b) Why is year 2006 (621H18) manufacturing date codes being used in production?	Open
		c) We will check the stock of material. The material for more than 2 years will be returned to our supplier, and we only use the material within 2 years	Closed, 20 th Nov
		d) Component supplier to submit the FA reports including x-ray & photographic evidence of the failure mode.	Open
		e) We would return all those WIP units for 8hrs extended burn-in test.	Closed, 16 th Nov
21	Trace open	4 pcs - having the same location trace open issue Refer to the figure 1: Open Trace Photo	
		a) Apply the cutter as non-trace & components area.	Closed, 16 th Nov
22	Lifted pad/trace issue	3pcs showing lifted pad/trace issue	
		a) To implement the component kink leads to prevent unnecessary touch up that caused this issue.	Open
23	No Defect Found	4 pcs passed both their OQC and re-burn-in test.	
		a) Perform ORT test on these 4 units.	Open

7 Summary

GMR Solutions conducted a technical audit at John Power’s <location> manufacturing facility to determine the manufacturing process improvements and corrective actions were sufficient to ensure good quality will be shipped to ABC company.

The audit results show the factory has to improve the quality control system and manufacturing processes to meet the expectations of ABC Company.

It is GMR Solutions professional opinion that the product supplied by John Power is currently facing some manufacturing process and quality control system issues. There is a need for the corrective actions outlined in this report to be implemented in order to guarantee good quality in the field.

If all above weaknesses are corrected GMR Solutions believes that the supplier is able to provide a higher quality, more consistent product.

Based on GMR Solutions scoring matrix, John Power Ltd scored 5.8 out of 10 in this audit. With all the above corrective actions in place, the supplier would improve the scored to 7.0.

Table 6: GMR solutions Audit Score System Matrix

Supplier Scored	Recommendation
<4.5	Change supplier
4.6 to 5.5	Need half yearly audit, if 2 nd audit showed no improvement, change supplier.
5.6 to 8.0	Need yearly audit
>8.0	No audit required or Bi-yearly audit