修订对照表 Revise Description List

C	D
2 范围 Scope 此文件适用于 TTM 亚太区工厂的供应商 This procedure applies to suppliers of TTM AP sites. TTM 亚太区工厂包括：TTM AP sites include： 皆利士多层线路版（中山）有限公司 Kalex Multi-layer Circuit Board (Zhongshan) Ltd., named TTM ZS 广州添利电子科技有限公司 Guangzhou Termbray Eletronics Technology Limited, named TTM GZ 惠州美锐电子科技有限公司 Merix Printed Circuits Technology Limited, named TTM HY 东莞美维电路有限公司 DONGGUAN MEADVILLE CIRCUITS LIMITED, named TTM DMC 东方线路制造有限公司 Oriental Printed Circuits Limited , named TTM OPCM	2 范围 Scope 此文件适用于 TTM 亚太区工厂的供应商 This procedure applies to suppliers of TTM AP sites. TTM 亚太区工厂包括：TTM AP sites include： 皆利士多层线路版（中山）有限公司 Kalex Multi-layer Circuit Board (Zhongshan) Ltd., named TTM ZS 广州添利电子科技有限公司 Guangzhou Termbray Eletronics Technology Limited, named TTM GZ 惠州美锐电子科技有限公司 Merix Printed Circuits Technology Limited, named TTM HY 东莞美维电路有限公司 DONGGUAN MEADVILLE CIRCUITS LIMITED, named TTM DMC *TTM Technologies Malaysia Sdn. Bhd., named TTM PNG*
15 记录保持要求 Record Retention Requirements 记录保留要求是基于工业标准和特定的客户要求。请参考以下 TTM 亚太区各厂对记录保存年限的要求。 Record retention requirements are based on industry standards and specific customer requirements. Please refer to the following requirements for the record retention from TTM AP sites. TTM GZ: 20years TTM ZS: 30years TTM HY: 40years TTM DMC: 有害物质相关记录要求保存 10 年，品质相关记录要求保存 5 年。Hazardous substance related records required maintain 10 years, quality related records required maintain 5 years. TTM OPCM: 3 years	15 记录保持要求 Record Retention Requirements 记录保留要求是基于工业标准和特定的客户要求。请参考以下 TTM 亚太区各厂对记录保存年限的要求。 Record retention requirements are based on industry standards and specific customer requirements. Please refer to the following requirements for the record retention from TTM AP sites. TTM GZ: 20years TTM ZS: 30years TTM HY: 40years TTM DMC: 有害物质相关记录要求保存 10 年，品质相关记录要求保存 5 年。Hazardous substance related records required maintain 10 years, quality related records required maintain 5 years. TTM PNG: 有害物质相关记录要求保存 10 年，品质相关记录要求保存 5 年。Hazardous substance related records required maintain 10 years, quality related records required maintain 5 years.
NA	调整附录的页码

5 责任 Responsibility

本手册经供应商签署后立即生效，最新版本生效默认取代过往版本。本手册中如中英文冲突，以中文为准。

This manual will take effect immediately after being signed by the supplier, and the latest version will take effect and replace the previous version by default. If there is a conflict between Chinese and English in this manual, the Chinese version shall prevail.

5 责任 Responsibility

本手册经供应商签署后立即生效，*除非文件更新涉及供应商品质要求相关内容，否则以供应商签署的版本为准。任何不涉及供应商品质要求的版本更新，不需要重新签署手册。*本手册中如中英文冲突，以中文为准。

This manual will take effect immediately after being signed by the supplier. Unless the document update relates to the supplier's quality requirements, the version signed by the supplier shall prevail. Any version update that do not involve supplier quality requirements do not require a re-signing of the manual. If there is a conflict between Chinese and English in this manual, the Chinese version shall prevail.

目录 Contents

1 目的 Objective

供应商品质手册定义了对供应商的品质要求。
The Supplier Quality Manual describes the requirement for selected suppliers regarding quality control.

2 范围 Scope

此文件适用于 TTM 亚太区工厂的供应商 This procedure applies to suppliers of TTM AP sites.
TTM 亚太区工厂包括：TTM AP sites include：

皆利士多层线路版（中山）有限公司 Kalex Multi-layer Circuit Board (Zhongshan) Ltd., named TTM ZS
广州添利电子科技有限公司 Guangzhou Termbray Eletronics Technology Limited, named TTM GZ
惠州美锐电子科技有限公司 Merix Printed Circuits Technology Limited, named TTM HY
东莞美维电路有限公司 DONGGUAN MEADVILLE CIRCUITS LIMITED, named TTM DMC
TTM Technologies Malaysia Sdn. Bhd., named TTM PNG

3 品质声明 Quality Statement

品质是维持客户满意度和持续业务发展的关键。供应商应通过品质管理体系、生产流程、技术能力的持续改善以提高产品以及服务质量，达到零缺陷，提高客户满意度；我们也需借此提供给我们的客户或潜在客户同样的服务。
Quality is the key for customer satisfaction and continual business success. Suppliers shall commit to customer satisfaction and strive for zero defects through continuously improving quality management system, manufacturing process & technology capability and therefore improve quality of products & services that we provide to our customers and potential customers.

供应商所供产品首先应满足来自于 TTM 的 PO、采购协议、双方签署的产品规格书要求，其次应满足国际或行业标准，如 IPC。同时须符合国际及当地的法律法规。
Supplier's products should first meet PO, purchase agreement and product specifications signed by both parties, and secondly meet international or industry standards, such as IPC. At the same time, supplier should comply with international and local laws and regulations.

4 简称 Abbreviation

简称 Abbreviation	英文 English	中文 Chinese
SQA	Supplier Quality Assurance Department	供应商品质保证部
SAQ	Supplier Assessment Questionnaire	供应商评核问卷
SCAR	Supplier Corrective Action Request	供应商纠正行动要求
PPAP	Production Part Approval Process	生产产品认可程序
RoHS	Restriction of the use of certain Hazardous substances (RoHS)	危害物质的限制使用
LAR	Lot Acceptable Rate	批合格率
SCN	Supplier Change Notification	供应商变更通知
TTM AP	TTM Asia Pacific	TTM 亚太区

5 责任 Responsibility

供应商必须满足本手册的要求，未能满足这些要求可能会影响现在或将来与 TTM 亚太区的业务，TTM 亚太区工厂有可能对品质事件进行索赔。

Suppliers are responsible for meeting the Supplier Quality Manual requirement. Failure to meet these requirements may result in the review of existing and/or future business with TTM AP. TTM AP may seek claims on these quality failures.

除非有其他协议，供应商应对提供给 TTM AP 的产品品质、服务负有全责（包括但不局限于：物料的选择、流程控制、车间、测试、操作、包装等）。供应商也有责任承担供货产品的品质差异导致的损失。
Unless otherwise agreed, Suppliers have full responsibility for the quality (including but not limited to consistency, material selection and process, workmanship, testing, handling and packing) of the products & services supplied by suppliers to TTM AP. It is also suppliers' responsibility to accept liabilities caused from their quality discrepancies.

TTM 对供应商的质量，环境，有害物质，RBA 等要求将在 TTM 网站上及时更新，供应商应定期登录 TTM 网站及时了解最新要求并严格遵守执行，如 TTM 未收到任何偏离要求并批准, TTM 默认供应商正按最新要求在执行。
TTM's requirements for suppliers' quality, environment, hazardous substances, RBA, etc. will be updated on the TTM website in a timely manner. Suppliers shall regularly log on to the TTM website to keep abreast of the latest requirements and strictly comply with them. If TTM does not receive any deviation requirements and approve them, TTM defaults that the supplier is implementing the latest requirements.

本手册经供应商签署后立即生效，*除非文件更新涉及供应商品质要求相关内容，否则以供应商签署的版本为准。任何不涉及供应商品质要求的更新，不需要重新签署手册。*本手册中如中英文冲突，以中文为准。
This manual will take effect immediately after being signed by the supplier. *Unless the document update relates to the supplier's quality requirements, the version signed by the supplier shall prevail. Any update that do not involve supplier quality requirements do not require a re-signing of the manual.* If there is a conflict between Chinese and English in this manual, the Chinese version shall prevail.

6 总要求 General Requirements

6.1 合规要求 Compliance requirement

政府法规一致性：TTM 亚太区工厂要求所有的供应商必须满足政府的法律，法规要求。
Government Regulatory Compliance： TTM AP demands all suppliers to be in compliance with all applicable statutory and regulatory requirements.

6.2 质量管理体系要求 QMS requirement

品质管理系统：所有供应商必须通过 ISO9001 认证，对于汽车产品物料供应商（板材，PP，绿油）要求通过 IATF 认可的认证机构获得最新版 IATF16949 质量体系认证。如有要求，必须提供现行认证证书的副本。为确保认证续期或进行修订，供应商还应向 TTM 提供最新修订的证书。如若尚未取得认证，应提供详细认证计划。用于航空业的产品建议取得 AS9100 认证。
Quality Management System: All suppliers shall provide ISO9001 certification. Suppliers of materials that provide laminate, prepreg and soldermask for automotive products are required to get the latest version of IATF16949 certification by an IATF recognized certification body. A copy of current registration certificate must be provided upon request. Suppliers are also requested to provide TTM with the latest revision certificate for certification renewals or when amendments are made. If the certification has not been obtained, a detailed certification plan should be provided. Aerospace material suppliers are recommended to get AS9100 certification.

6.3 环境管理体系要求 Environmental Management System

TTM AP 期望供应商关注环境问题，实施 ISO14001 或同等标准的环境管理体系。如符合并获得最新的 ISO14001 证书，可优先考虑供货资格。

TTM AP expects its suppliers to focus on environmental issue by implementing environmental management systems according to ISO14001 or equivalent standard. Supplier with management systems meeting the latest ISO14001 and get the certificated， it would be an advantage in qualification.

6.4 有害物质控制要求 Hazardous Substance Control requirement

供应商的产品,部件、材料及生产过程都应遵守法律，法规对有害物质的限制和禁止,遵循国家有关规定,如欧盟 WEEE, RoHS, REACH，EVL 指令以及双方商议的独立客户的要求。所有供应商都要按要求每年提供第三方的 ROHS 测试报告（如 SGS 报告）和有公司官方印章的有害物质保证书。除非另有通知，TTM 默认为供应商符合所有适用法规的最新版本。

Suppliers should be compliance to regulations for restricted or banned substance in manufactured products, components, materials, and processes, compliance to applicable regulations such as EU WEEE, RoHS , REACH and ELV Directives, compliance to individual customer's requirement under mutual agreement. include Halogen free requirement for Halogen free material. All suppliers should submit 3rd RoHS test report (e.g. SGS report) on an annual basis. All suppliers need to submit the Supplier Hazardous Substance Guarantee Letter form with Official Stamp on to TTM AP sites. Unless otherwise informed, TTM deems that suppliers are in compliance with the latest version of all applicable regulations.

6.5 责任商业联盟要求 RBA (Responsible Business Alliance) requirement

责任商业联盟的主要责任是确保电子供应链的工作环境是安全的，尊重工人，以及制造过程对环境负责。

The Responsible Business Alliance outlines standards to ensure that working conditions in the electronics supply chain are safe, that workers are treated with respect and dignity, and that manufacturing processes are environmentally responsible.

供应商在其所有活动中，必须完全遵守其经营所在国的法律、法规和规章，并完全遵守责任商业联盟。除非得到通知，TTM 认为供应商应遵守 RBA 的最新版本。

Suppliers, in all of their activities, must operate in full compliance with the laws, rules and regulations of the countries in which they operate an also in full compliance with the Responsible Business Alliance. Unless informed, TTM deem that suppliers comply to the latest version of RBA.

供应商应致力于按照国际公认的社会和道德原则以及国际公认的社会和道德公约的原则，例如联合国《世界宣言》，进行道德行为和尊重人权。在人权问题上，遵守国际劳工组织（ILO）的公约和建议，并有适当的内部指导方针。

Suppliers shall be committed to ethical conduct and respect for human rights in accordance with the principles of internationally recognized social and ethical with the principles of internationally recognized social and ethical conventions, for instance the United Nations' Universal Declaration on Human Rights, International Labor Organization's (ILO) Conventions and Recommendations and have internal guidelines in place to do so.

供应商应在商业实践中保持开放、诚实、信任和诚信的文化，以防止利益冲突，从而实践高水平的商业纪律。此外，供应商应遵守所有适用的法律和监管要求，如《反海外腐败法》等。

Supplier should practice a high level of business discipline by maintaining a culture of openness, honesty, trust and integrity in business practices against conflicts of interest.Also suppliers should be in compliance with all applicable Statutory and Regulatory requirements such as FCPA (Foreign Corrupt Practices Act) etc.

6.6 验收抽样方案 Acceptance Sampling Plans

所有抽样方案的验收等级应为零缺陷(即 C=0)

The Acceptance level for all sampling plans shall be Zero defects (i.e. C=0)

6.7 PPAP 要求 PPAP Requirement

对于供应商生产的用在汽车上的零部件或应 TTM AP 客户要求应提交 PPAP，例如板料，半固化树脂片，阻焊油墨，散热片，如无特别要求则默认提交等级为 Level 3。无论 TTM 是否要求提交，供应商都应在必要时更新其 PPAP 文件中的所有适用项目，以反映生产过程。要求供应商保留所有完成的 PPAP 包装的副本，并确保在要求时可以随时查阅。
For suppliers producing parts used on automotive applications or TTM AP customer requirement，such as laminate, prepreg, solder mask and heat sink, level 3 PPAP submission is required by default during sample submission. Suppliers are required to update as necessary all applicable items in their PPAP file to reflect the production process, regardless of whether TTM requests a submission. Suppliers are required to maintain copies of all completed PPAP packages and ensure that they are readily available for review upon requested.

6.8 产品控制 Product control

供应商应确保所有货物交付时严格遵守他们的功能规范,描述,设计标准,图纸,样品和原型及其他客户要求。
Supplier shall ensure that all Goods delivered strictly comply with their functional specifications, descriptions, design criteria, drawings, samples and prototypes, and other requirements from customer.

6.9 过程控制 Process control

供应商应当使用最佳监测技术和工具控制成品的质量和服务,这些技术和工具包括但不限于:流程图，根本原因分析，流程能力研究，风险分析，失效模式和效应分析（FMEA），可靠性计算，测量系统分析，重复性和再现性研究，统计流程控制（SPC），纠正及预防行动（CAPA），流程和产品稽查。供应商应建立并保持一个由合适的有经验的人员执行的质量测量系统和质量分析过程，结果根据与 TTM AP sites 协议的要求及格式传达。
Supplier shall control the quality of its finished goods and services through the use of best-in-class monitoring techniques and tools including, but not limited to: process-flows, Root Cause Analysis, Capability Studies, Risk Analysis，Failure Mode and Effect Analysis (FMEA), Reliability Calculation, Measurement System Analysis, Gage R&R studies, Statistical Process Control (SPC), Corrective Actions and Preventative Actions(CAPA),and process and product audits. Supplier shall establish and maintain an adequate quality measurement system and quality analysis process executed by appropriately skilled personnel. Results will be communicated toTTM AP sites in a mutually agreed format on a regular basis and upon request of the TTM AP.

6.10 包装 Packaging

供应商应确保所使用的包装能够有效地保护产品在使用时免受任何潜在的损害。包装应符合当前行业规范以及所有适用的当前政府和法规。除非有特别规定，货物的包装应满足 TTM AP 工厂的要求，供应商应对由于未能妥善保存,包装和处理货物造成的任何损失或损害负责。
Supplier shall ensure that packaging is used that is effective in protecting product through point of use from any potential damage. Packaging should conform to current industry specification as well as all applicable current governmental and regulatory regulations. If not specified otherwise, goods shall be packed and meet TTM AP sites requirements, supplier shall be responsible for any loss or damage due to its failure to properly preserve, package and handle the goods.

6.11 出货检查报告（CoC）Outgoing Inspection Report and COC (Certification of Compliance)

供应商每批出货应提供出货检查报告 / CoC,供应商所提供的数据必须准确、真实、且与产品有明确的对应性和可追溯性。TTM AP 工厂有权力在供应商现场确认这些数据。
Suppliers are required to provide the outgoing inspection report/COC for every delivery lot. All the data provided by supplier should be accurate, real, and correspondence with the product and can be traceable. TTM AP sites reserve the right to verify these data on supplier side if necessary.

6.12 追溯性要求 Traceability

供应商被要求有一个有效的材料控制系统，至少包括生产批次标识，生产日期和可追溯性的所有零部件和材料在制造过程中使用。必须保持记录，并随时提供生产批号/日期码，提供可追溯能力。如果检测到一个事件时,所有其他可能的次品可以有效地识别与控制，直到已经采取有效的纠正措施。

Supplier is required to have an effective material control system in place that at a minimum includes production lot identification, date of manufacture and traceability of all parts and materials utilized in the manufacturing process. Records must be maintained and readily available for every production lot code/ date code produced providing traceability capability. In the event an incident is detected, all other possible defective Goods can be effectively identified and contained until such time as corrective measures can be taken.

6.13 供应链管理 Supply chain management

供应商必须对自己的供应链进行管理，供应商应确保其供应商在一个适当的质量管理体系内,确保在整个供应链的质量和交付性能。供应商须将采购要求传递给其下一级供应商，并详细记录并保存其与下一级供应商的采购活动的相关过程
Supplier is responsible for its own supply chain. Supplier shall ensure that its suppliers have in place an adequate quality management system to ensure quality and delivery performance throughout the entire supply chain. Supplier needs to detail down the requirement when they processing their purchasing documents to their sub-tier supplier. Supplier needs to document the requirements when processing purchasing documents to sub-suppliers.

6.14 偏差 Deviation

当供应的产品不符合要求时可能导致货物延期，供应商需要在 24 小时内响应，原则上来说，TTM AP 工厂不接受有偏差的产品，TTM AP 在生产过程中，仅小偏差可能造成大经济损失，或者干扰或导致生产停产的风险，需经过 TTM AP 工厂的书面批准方可接收，同时因此偏差所造成的任何损失将由供应商承担。

Supplier needs to alert TTM AP Sites within 24 hours when they aware that theirs shipment contain of nonconforming products and this might lead to late shipment. In principle, TTM AP sites will not accept deviations on products. Only in case of minor deviations and large economic loss and / or risk of disturbance or stop of production of TTM AP production process, will deviations be accepted and only after TTM AP approval confirmed in writing. TTM AP may charge Supplier for any costs incurred as a result of any deviation.

6.15 拒收及纠正预防行动 Rejects and Corrective & Preventive Actions

TTM AP 保留拒收对已经交付但不符合规范要求产品货物的权力，规范包括：采购订单要求的规格、TTM AP 的基本规格要求、IPC 标准、国际标准或中国标准、相关行业标准及预期用途等。一旦发生任何拒收，供应商应在 TTM 指定的时间内进行确认并应当采取一切必要行动，以避免在 TTM AP 产生进一步停产停线的情形。同时供应商需要按照规定的要求时间限制提供 8D 格式的 SCAR。
TTM AP reserves the right to reject deliveries or products that are not in conformance with the specifications (such as specification indicated in Purchasing order, TTM AP General Specification/Requirements, IPC standards, international/domestic standards, the standards of the industry concerned, and intended application. In the event of any rejection, supplier shall confirm within the time specified by TTM and shall take all necessary actions to avoid further production stop at TTM AP location. In this case, the supplier will have to provide SCAR (in 8D format) report according to required timeline.

确认原材料不合格时，供应商须按照与 TTM 商定好的处理方式进行处理：
When it is confirmed that the raw material is nonconformance, the supplier must deal with it in accordance with the treatment method agreed with TTM.

退货：签订好退货协议后，必须于 3 天（适用于中国境内供应商）或 10 天（适用于中国境外供应商）内拉出 TTM 暂存区域的不合格品，逾期 TTM 根据实际情况收取供应商保管储存费。
Return: After signing the return agreement, the nonconformance in the TTM temporary storage area must be pulled out within 3 days (applicable to suppliers in China) or 10 days (applicable to suppliers outside of China).TTM will charge the supplier for storage fee based on the actual situation if any overdue.

换货：供应商在 TTM 规定的期限内提供合格的供应商产品替换不合格原材料，逾期 TTM 收取供应商停产损失费，包括人工成本、TTM 紧急交付其客户而额外增加的运费及因逾期产生的其它费用。
Replacement: The supplier shall replace the nonconformance materials with qualified materials within the specified time. If any overdue, TTM will charge the supplier for loss of production stoppage, including labor costs, additional freight incurred by TTM for urgent delivery to its customer and other cost.

6.16 持续改善 Continuous improvement

供应商应当有某种正式的持续改进项目，这些项目可根据 TTM AP sites 的要求提供。
Supplier shall have some kind of formal Continuous Improvement program in place. The program should be provided to TTM AP sites upon request.

6.17 应急预案 Contingency Plans

供应商须制定应急计划（如自然灾害、公用事业的供应中断、劳资纠纷、劳动力短缺、关键设备故障、瘟疫或供应链中的其他干扰），以便在紧急情况下保证客户的产品供应。
Supplier is required to establish contingency plans (e.g. natural disaster, utility interruptions, labor dispute, labor shortages, key equipment failure, Epidemic failure or other disturbances in the supply chain) to protect the customer's supply of products in the event of an emergency.

6.18 假冒伪劣品政策 Counterfeit Parts Policy

TTM AP 只接受原始认可厂商所生产的材料，不接受假冒伪劣产品。因假冒产品产生的一切后果均由供应商承担。
TTM AP only accepts genuine raw materials from original material manufacturers. All consequences arising from counterfeit products shall be borne by the supplier.

所有符合性证明（文件，资料，报告，记录等）均真实。
All compliance evidences （Documents, information, report etc. ）

6.19 供应商质量窗口 Supplier Quality Contact Window

为确保供应商与 TTM AP 之间沟通顺畅，供应商必须指定一名负责人作为双方有效传递质量管理信息的窗口。供应商质量管理负责人负责接收和保管最新版的《供应商质量手册》及其补充协议（如有），并负责对供应商组织内部的各部门进行《供应商质量手册》及其补充协议（如有）之培训。供应商质量责任人如有变更，应该提前一个月知会 TTM AP
To ensure smoothly communication between supplier and TTM AP, supplier shall appoint one quality responsible person who acts as a central point of contact to TTM. The responsible person shall receive and keep the latest version of SQAM and Addendum agreement (if applicable), and shall take the responsibility to forward and train all the requirements in SQAM and Addendum agreement (if applicable) to internal departments. Supplier should inform TTM one month in advance if the responsible person of quality contact window need to be changed.

作为 TTM ZS 的供应商，供应商应指定产品安全官，作为与 TTM ZS 联系的中心窗口。每个供应商的生产工厂应指定一个 PSO。这一要求需要延伸到整个供应链。产品安全官的要求如下：

As TTM ZS's suppliers. They shall appoint Product safety Officer who acts as a central point of contact to TTM ZS. One PSO shall be designated per supplier's production plant. This requirement needs to be cascaded down to entire supply chain. The requirement of PSO are followings.

PSO 应当具备以下证明的知识 The PSO shall have proven knowledge about

1) 提供组件的功能, 本工厂生产产品的细节及如何正确使用在车辆上或供应链中的相应的后续客户 (Tier 2 和随后的分层供应商)。如有必要，材料使用建议(如原材料、材料)必须在上述要求内协调一致.
   Functionality of the supplied component, the details of production at own site and proper use in the vehicles or with the respective subsequent client in the supply chain (Tier 2 and subsequent Tiered suppliers). If necessary, material usage recommendations (e.g. raw materials, materials) must be coordinated and agreed within the aforementioned requirement.
2) 《产品安全法》和《产品责任法》
   Product Safety Act and the Product Liability Act
3) 风险评估方法及其应用
   Risks Assessment methods and their application

PSO 需要如下任务 The PSO does have following tasks

在产品开发阶段为消除及预防，或与产品安全相关的缺陷(错误预防)做出贡献、开发和设置优先级
Contributing to, developing, and setting priorities for eliminating or preventing product safety-relevant defects in the product development phase (error prevention).

1） 独立工作，在产品开发和其他产品改进(如 FMEA 或风险评估程序)过程中，当存在与产品相关的影响时，启动和验证产品、过程和工程相关的决策。
   Working independently, initiating and verifying product, process, and engineering-relevant decisions in the course of product development and additional product enhancement (e.g. FMEA or risk assessment procedures) provided that there is an impact relevant to safety.
2） 准备、维护和加强“lessons learned”清单，以便对设计、生产、工艺或产品安全相关方面的材料性能进行合格评审。
   Preparing, maintaining, and enhancing “lessons learned” checklists for the qualified review of designs, production, processes, or for the material properties under product-safety relevant aspects.
3） 执行或启动和评估组件或材料分析与检测的目标适应症与产品安全有关的偏差处于初期阶段。
   Executing or initiating and assessing component or material analyses with the goal of detecting indications of deviations relevant to product safety at an early stage.
4） 独立执行或启动定期检查的过程, 当前系列的生产、材料, 产品确认的产品安全适当的和可预见的使用或滥用和引入以及跟踪(直接)措施的相关的偏差。
   Independently executing or initiating regular inspections of processes, production, material, and products of the current series for the confirmation of product safety for proper and predictable use or misuse and the introduction as well as tracking of (immediate) measures in the case of relevant deviations.
5） 评估产品在发生故障时发生故障的概率和频率。
   Assessing the probability and frequency of failure of the affected product in the event of failure.
6） 在发生投诉, 补救措施计划, 实施和长期的有效性验证。这些措施的有效性应由供应商 PSO 评审、确认并以书面形式形成文件。
   In the event of a complaint, the planned remedial measures, their implementation and long-term effectiveness shall be verified. The effectiveness of the measures shall be reviewed, confirmed, and documented in writing by the supplier PSO.
7） 如果发生投诉或自愿声明，应通过组件质量保证负责人进行沟通。供应链下游客户(N 层)应提前确定各自的联系人。
   In the event of a complaint or voluntary declaration, communication shall be directed via the person responsible for component QA. The respective contact persons shall be determined in advance for downstream clients in the supply chain (tier N).

8） PSO 应就信息的质量和机密性(关于错误模式、限制、故障概率等的明确信息)提供建议。
The PSO shall advise with respect to the quality and confidentiality of the information (clear information regarding the error pattern, limitation, probability of failure, etc).

.

能力 Competencies

PSO 应直接向管理、工厂经理或质量保证经理汇报。PSO 应该能够启动当前系列的组件或材料的屏蔽的安全和 image-relevant 投诉, 等等。(如果这些威胁系列应用程序安全原因), 包括资源控制对比测试,验证,分析等
The PSO should report directly to management, the plant manager or the quality assurance manager. The PSO should be able to initiate the blocking of components or materials of the current series in the event of safety and image-relevant complaints, etc. (also if these threaten series application for reasons of safety), including resource control with regard to bench tests, validation, analyses, etc.

7 供应商稽查 Supplier Audit

TTM AP 工厂指定人员或外部机构可在收到合理的事先通知后，在（a）供应商，（b）供应商分包商，和（c）供应商的供应商；（i）经营场所和（ii）储存设施进行稽查，以验证和检查供应商的质量管理体系，确保符合 TTM AP 工厂要求和应用。TTM AP 工厂应被允许检查供应商或供应商分包商提供的与 TTM AP 产品有关的货物和/或服务的所有文件。如下情况时，TTM AP 审核时机：（a）新供应商选择；（b）新项目开发；（c）重大质量问题；（d）年度审核；（e）SQA 认为必要的其他原因时。
TTM AP sites, his designates or external bodies may conduct, upon reasonable prior notice, audits at (a) Supplier's, (b) Supplier's subcontractor's, and (c) Supplier's suppliers; (i) premises and (ii) storage facilities in order to verify and inspect Supplier's quality management system to ensure compliance with TTM AP requirements and applicable standards. TTM AP shall be permitted to inspect all files related to goods and/or services supplied by supplier or supplier's subcontractors related to TTM AP product. TTM AP could carry out audit when (a) New supplier selection, (b) New projects development, (c) Major quality issues, (d) Annual audit, (e) Other causes SQA considers necessary.

TTM AP 工厂及其客户、监管机构保留去供应商或供应商的下一级供应商进行现场稽查的权利，稽查内容包括订单要求、记录、产品和过程是否符合要求。

TTM AP sites, its customer, and regulatory authorities reserve the right to visit suppliers'/Vendors' facilities involved in the order and to verify their records, product and process conformity.

稽查的形式可能包括现场审核和问卷审核或者虚拟审核，不管哪种形式，供应商有责任进行预稽查以确认符合 TTM AP 工厂的要求. 在审核过程中积极配合审核员获取所需要的证明材料，审核后按要求提供整改方案和证据，供应商应满足 SQA 代表提出的所有合理要求。
The form of audit may include on site audit, questionnaire audit or virtual audit. Regardless of the form, it is the responsibility of the supplier to perform a pre-audit to confirm compliance to TTM AP sites' procedures. Supplier shall actively cooperate with the auditor to obtain the required certification materials during the audit, and provide improvement plans and evidence as required after the audit. Supplier shall meet all reasonable requirements of the SQA representative.

7.1 年度系统稽查 Annual System Audit

SQA 将根据上一次稽查的结果对供应商进行全面的系统稽查。年度稽查将采用统一的稽查表，在年度稽查前，TTM AP 会将稽查表发给供应商进行自评，自评结果需按照 TTM AP 邮件要求的时间及时提交。
SQA may perform a full system audit based on the audit result in the last audit. TTM AP will send the audit checklist to supplier for self-assessment before official audit. Supplier shall return the result of self-assessment to TTM AP per TTM AP requirement by emails in time.

7.2 流程稽查 Process Audit

SQA 可能会通过定期稽查供应商来监控供应商的流程,以确保流程没有发生非法更改。这些稽查的频率由 TTM AP 工厂的 SQA 依据生产数量，流程和产品的重要性,过去的历史表现及其他因素来决定。
SQA may require periodic surveillance audits of its suppliers to assure that processes are following documented procedures and have not incurred undocumented changes. The frequency of these audits shall be determined by TTM AP sites' SQA and will be dependent upon the amount of produced, criticality of process or product, past performance history, and other factors.

7.3 产品稽查 Product Audit

SQA 将对提供汽车部件的供应商进行产品稽查以验证产品测量的有效性。
Automotive part suppliers will be subjected to product audit to re-valid measurement. This audit will be performed by SQA.

7.4 品质事件稽查 – 8D 稽查 Quality Incident Audit – 8D audit

TTM AP 鼓励供应商通过运用质量稽查的手段，对问题的彻底跟进来争取在品质系统上的持续改善，当稽查中发现任何不符合项时，供应商必须提供围堵措施，改善计划和执行状况给稽查者。特别稽查一般用于，但不限于以下情况：TTM AP encourages suppliers to strive for continuous improvements in their quality systems through the use of quality audits, with thorough follow-up in areas of concern. When any non-conformity is found during an audit, an improvement plan and implementation status must be submitted along with countermeasures to the auditor. Special audit can be taken, which typical activities may include, but are not limited to the following:

1） 持续的品质问题
As a result of ongoing problems with quality
2） 新产品启动
Start-up of a new product
3） 必要时验证供应商品质系统和差距分析
Evaluation of supplier quality systems and gap analysis, where required
4） 供应商变更确认
Supplier Change Notification (SCN) verification
5） 首件确认
First Piece evaluation

7.5 飞检 Unannounced Audit

为了验证和确认供应商的质量管理体系、流程控制、产品检验是否符合 TTM AP 的要求，确认过往品质投诉改善措施的执行状况，TTM AP 导入“飞检制度”，此稽查不会提前通知，所有的稽查要求和项目均在首次会议上提出，飞检制度一般用于但不限于以下情况：
In order to verify that Supplier's quality management system, process control, product inspection meet the requirements of TTM AP, and the quality compliant corrective actions implement status, SQA will conduct unannounced Audit to verify the effective. All the audit requests and items will be introduced in the opening meeting. The typical activities in this audit may include, but not limited to the following items:

1） 首板确认 First piece evaluation
2） 变更确认 Change verification
3） 8D 改善确认 8D improvement verification
4） 客户特殊要求确认 Special customer requirements verification
5） 制程管控 Process control
6） 其他 Others

稽查过程中，供应商应满足 SQA 代表提出的合理要求并提供相关的产品/服务，支持文件或允许与相关员工的沟通，全

程派人员陪同。其他稽查事项等同于正常稽查。

During the audit, the supplier should support all reasonable requirements from SQA representative, provide all documents related to goods or services and allow the communication with related personnel. Escorts are required throughout the audit. Other items follow up the normal audit.

8 供应商变更管理 Change Management

变更管理包括：（a）TTM AP 工厂的工程变更（ECO）影响到所购买的产品; (b) 供应商的变更会影响到 TTM AP 工厂的生产，流程，材料和周期时间等。

To define and describe the management of changes including :(a) TTM AP sites' Engineering Change Order (ECO) which affects purchased parts ,(b)Supplier's material change which may affects TTM AP sites' production ,process ,material ,cycle time ,etc.

8.1 变更范围 Change Scope

所有供应商如需对所提供之物料做任何变更，供应商必须以书面的《供应商变更通知》通知所供货之 TTM AP 分厂，并在得到分厂书面回复同意后，方可执行变更。这些变更包括：

All supplier need to notice TTM AP sites in formal <Supplier Change Notification>before any changes on the supplied materials, and these changes cannot be implemented unless got TTM AP sites formal response approval. These changes include:

1） 产品变更，例如包装变更，品质文件变更（标准，CoC 变更），原材料变更等；
Product changes e.g. packing changes, quality document changes (Spec., CoC changes), raw materials changes, etc；

2） 流程变更，例如生产线变更，流程控制变更（技术，测试）等；
Process changes e.g. production line changes, process control changes (Technology, Testing), etc;

3） 业务变更，例如公司/产品名称变更，制作产地变更，产品停产等；
Business changes e.g. company/product rename, manufacturing site changes, material EOL etc.

8.2 变更分类 Change Classification

供应商须按照下方表 2-供应商变更管控一览表 中要求的时间向 TTM 分厂提出《供应商变更通知》，以获得 TTM AP 分厂对变更的评估认可。支持文件例如产品技术资料，MSDS，CoC,流程控制计划，流程验证/测试报告，第三方机构的环境物质的测试证明等资料应随变更通知一同提交给 TTM AP 分厂。备注:变更评估报告应描述变更是否影响产品质量和特性以及 PCB 的制造工艺和产品(包括原因和延伸)。

SCN need be issued following below Table2- Supplier change management list required notice Period, supporting documents such as product datasheet, MSDS, COC, process control plan, process evaluation/testing report, RoHS compliance certification by the third party when applicable, need be submitted with SCN. Remark: Change assessment report should describe if the change impact quality and characteristic of product and manufacture process and product of PCB (Include the reason and extend)

表 2-供应商变更管控一览表 Table 2 Supplier change management list

Classification 更改等级	更改项目 Change Items	通知时限 Notice Period	支持文件 Supporting documents	说明 remark
A	▪ 供应商或其原材料供应商发出的停止生产(EOL)导致的变更等 Changes resulted by supplier or sub-supplier material EOL	更改正式生效前18个月 18 months before change effect	▪ 替代物料相关数据如： ▪ Alternative material related data such as: ▪ 变更评估报告 Change evaluation report ▪ 更改后的品质报告 Chang ▪ 产品规格/说明 Product Data sheet ▪ 物料安全资料表MSDS ▪ 第三方环境物质检测报告和/或物质声明表 The 3rd party environmental management material inspection report ▪ 分厂需要的其它资料 Others if site needs	材料EOL相关要求请参考手册第9部分。 Material EOL related requirement please refer to Part 9 of the manual.
B	▪ 部分或全部工序转厂生产或订单外包制作（所转场地或承包商未被TTM AP认可） Transfer some or all production processes(The site has not been qualified by TTM AP)	更改正式生效前12个月 12months before change effect	▪ 变更评估报告 Change evaluation report ▪ 产品规格说明 Product Data sheet ▪ 物质安全资料表 MSDS ▪ 第三方环境管理物质检测报告 The 3rd party environmental management material inspection report ▪ 分厂需要的其它资料 Others if site needs	此处适用于对物料的性能,功能,参数,可靠性,品质有影响的更改。This is applicable for the changes that affect the performance of the material, functions, parameters, reliability and quality.
C	▪ 原材料更改 Raw material change ▪ 生产流程或制作工艺更改(包括生产线更改,设备更改,流程控制更改等) Technology change (Including production line, process control change etc.) ▪ 产品设计更改 Product Design change ▪ 部分或全部工序转厂生产或订单外包制作（所转场地或承包方为已被TTM AP认可） Transfer some or all production processes (The site has been qualified by TTM AP)	更改正式生效前6个月 6 months before change effect	▪ 变更评估报告 Change evaluation report ▪ 产品规格说明 Product Data sheet ▪ 物质安全资料表 MSDS ▪ 第三方环境管理物质检测报告 The 3rd party environmental management material inspection report ▪ 分厂需要的其它资料 Others if site needs	▪ 此处适用于对物料的性能,功能,参数,可靠性,品质有影响的更改. This is applicable for the changes that affect the performance of the material, functions, parameters, reliability and quality.
D	▪ 关键性能指标及产品性能之测试方法更改 Key Performance Indicators, Product Performance Inspection/Detective Method change ▪ 物料外观更改 Appearance change	更改正式生效前3个月 3 months before change effect	▪ 变更评估报告 Change evaluation report ▪ 更改后的品质报告 Quality Report after change ▪ 产品规格说明（可选）Product Data sheet (option) ▪ 物质安全资料表（可选）MSDS (option) ▪ 第三方环境管理物质检测报告（可选） The 3rd party environmental management material inspection report（option） ▪ 分厂需要的其它资料 Others if site needs	▪ 对物料的性能,功能,参数,可靠性,品质等均无影响 No effect to the performance of the material, functions, parameters, reliability and quality

E	▪ 公司名称/商标更改 Company Name /brand change ▪ 物料名称/标识更改 Material Name/ identification change ▪ 包装更改(大小,颜 色, 形状, 标签式样等) Package change(size/Color/Shape/label format and etc.) ▪ 运输条件更改（水运，陆运，空运等） Change of shipping conditions (water, land, air, and etc.) ▪ 特定要求（若有）的技术人员变更及品质管理者代表等关键人员的更改 Technical person with specific requirements(If applicable), and key management change such as quality management representative and etc. ▪ 检验/检查项目更改 Test/ Inspection Items change	更改正式生效前1个月 1 month before change effect	▪ 更改前后对比清单 A contrast list before and after change ▪ 检验/检查项目更改后的品质报告 Quality Report after Test/inspection items change ▪ 分厂需要的其它资料 Others if site needs	▪ 对物料的性能,功能,参数,可靠性,品质等均无影响 No effect to the performance of the material, functions, parameters, reliability and quality
F	▪ 物料数据/公司相关信息(如MSDS,品质手册等)的刷新/增加/修订/更改/更正勘误等 Material data/ company information Change (such as MSDS, Quality manual updated/revised/ amended etc.)	资料正式发布前一周 1 Week before information release	▪ 提供相关报告文件(如升级报告,版本说明,勘误表等) Relevant documents provided (such as updated report, version description, error list etc.) ▪ 分厂需要的其它资料 Others if site needs	▪ 对物料的性能,功能,参数,可靠性,品质等均无影响 No effect to the performance of the material, functions, parameters, reliability and quality

9 材料停产 Material End of Life (EOL)

当有材料停止生产计划时，供应商需要提前 18 个月通知 TTM AP 工厂采购及供应链团队。供应商应该与 TTM 工厂采购及供应链团队沟通协调，确保在备选资源方案未就绪前必须提供持续的供应。

Supplier shall inform TTM AP sites' PUR/GCM/SCM team at least 18 months in advance if there is material EOL plan. Supplier shall work with PUR and GCM/SCM team for a replacement or alternative solution and make sure continuous supply before a replacement or alternative solution is ready.

10 供应商绩效管理 Supplier performance management

10.1 供应商绩效评分 SPR (Supplier Performance Rating)

评分内容由四个要素组成：品质（25%）、交期(25%)、商业(30%)、技术(20%)。当实际品质分数连续 2 个季度质量总分低于 80%时，供应商必须提供改善计划，如果随后没有任何改善，SQA 将此事情上升至管理层，由管理层决定下一步的行动

The evaluation criterion is made up of for elements：Quality（25%）, Delivery（25%）, Commercial（30%）, Technology（20%）.Please see the appendix I for specific scoring rules. Supplier improvement action plan will be requested when quality performance score <80% for 2 Consecutive quarter SQA will escalate to top management for the further actions if no any improvement.

10.2 供应商品质评分要素（25%）Supplier Quality Rating Elements (25%)

a) 流程 DPPM, 投诉事件及客户投诉（10 分）Line DPPM, Incident & Customer Complaint (10pts)

b)

流程 DPPM 1. 0 <DPPM ≤ 200 (-1) 2. 200 <DPPM ≤ 500 (-2) 3. 500 <DPPM ≤ 1000 (-3) 4. 1000 <DPPM ≤ 1500 (-4) 5. 1500<DPPM ≤ 2000 (-5) 6. Thereafter, deduct 1pt every 500DPPM increase. 依此类推，每上升 500DPPM 减 1 分	统计流程投诉事件和净损失 Number of incidents & net loss from production line will be counted. ▪ No. of incident: -2pts every incident 投诉事件：每个扣 2 分 ▪ Net loss in $ from incidents 事件造成的损失： 1. Net loss≤ USD 10K (-1) 净损失≤ USD 10K (扣 1 分) 2. If net loss > USD 10K,deduct 1pt every 10K 如果净损失> USD 10K，每 10K 减 1 分 经验证因供应商材料/产品导致的客户投诉 Customer complaint with verified root cause related to supplied material/product. 1. RMA value ≤ USD 20K (-1) 客户退货价值≤ USD 20K (-1) 2. RMA value > USD 20K, deduct 1pt every 20K increased. 客户退货价值> USD 20K,每增加 20K 扣 1 分
Incident means out of control quality behavior leading to abnormal yield loss (in batches), functional/safety/reliability failures may include, but are not limited to the following: 事件指导致批量不合格/功能性/安全性/可靠性的品质事件包括但不限于以下事情： Repeated issues 重复发生问题 Mixture 混料 SCN Violation 违背 SCN 要求 False reports 假报告 engineering problems 工程问题 ***“Batch”: The same defect quantity exceed 30sq.ft for the same part number at one time. 批量：同一缺陷，同一个型号在同一时间内报废超过 30sq.ft	

c) Lot Acceptance Rate (LAR) applied for IQC items only (5pts).
LAR（适用于 IQC 物料）-（5 分）

IQC inspected lot qty.≥ 50 IQC 检查批数≥ 50	IQC inspected lot qty.< 50 IQC 检查批数< 50
99% ≤ LAR < 100% (-1) 98% ≤ LAR < 99% (-2) 97% ≤ LAR < 98% (-3) 96% ≤ LAR < 97% (-4) LAR < 96% (-5)	No. of lot rejected=1 (-2) 退货 1 批扣 2 分 No. of lot rejected=2 (-4) 退货 2 批扣 4 分 No. of lot rejected≥3 (-5) 退货 3 批或以上扣 5 分

备注：针对无需 IQC 检查的项目，分数点综合至 DPPM，投诉及客户投诉。
Remark: for non-IQC item, Scoring point to be integrated into line DPPM, incidents & customer complaints.

d) 品质改善和投诉处理（5 分）Quality Improvement & Complaint Handling (5pts)

- 重复品质事件（即流程投诉，客户投诉）（每 1 个重复事件扣 2 分）
  Repeated quality issue (i.e. line incidents, customer complaints) (-2 /every repeated issue)
- 8D 报告（需要有纠正行动并且进行了验证）延迟
  Delayed SCAR report with corrective action defined & verified
  - ☞ Delay 1-5 days (-1/report) 延迟 1-5 天，每 1 个报告扣 1 分
  - ☞ Delay > 5days (-2/report) 延迟超过 5 天，每 1 个报告扣 2 分
- 激励分：供应商发起的品质改善方案在 TTM 流程能减少材料检查费用，减少材料报废费用，提升合格率
  Incentive point: Supplier has initiated quality improvement program that helps to reduce material inspection cost, material scrap cost, as well yield improvement in TTM process
  - ☞ 确认每个项目每年能节省≥ USD50K （加 2 分）
    Verified ≥ USD50K annualized saving or by project base (+2)
  - ☞ 确认每个项目每年能节省≥ USD100K （加 4 分）
    Verified ≥ USD100K annualized saving or by project base (+4)

Remarks 备注:

- 重复投诉： 同样问题在 12 个月内发生
  Repeated issue: same issue occurred within a period of 12month
- 对于激励分，改善结果必须经过厂内的品质小组验证和确认
  For incentive point, the improvement result should be verified/justified by plant quality team

e) 系统，品质协议和一致性（5 分）System, Quality Agreement & Compliance (5pts)

- 系统认证（最新状态）System Certificate (the most recent status)
  - ☞ 要求的品质和环境系统认证（例如 ISO9001，TS16949，AS9000，ISO14001 等）没有但有认证计划和时间表。（扣 1 分/要求的认证）
    Required quality & environmental system certificates(such as ISO9001, TS16949, AS9000, ISO14001 & etc.) are not available but with plan and timeline (-1/required certificate)
  - ☞ 要求的品质和环境系统认证没有且无计划和时间表。（扣 2 分/要求的认证）
    Required quality & environmental system certificates are not available and without plan & timeline (-2/required certificate)
  - ☞ 激励分：其他的系统认证（不是强制的）例如 QC080000，可以认为有附加的价值（加 1 分/额外的有价值的认证）
    Incentive point: Other system certificate (not mandatory) such as QC080000, can be considered as added value (+1/added value certificate)
- TTM 系统，流程，产品稽查（最近的稽查结果）
  TTM System, Process, Product Audit (The most recent audit result)
  - ☞ TTM 稽查的结果为“条件性认可”（扣 2 分）
    Concluded “conditional/limited approval/acceptable” from audit by TTM team (-2)
  - ☞ TTM 稽查的结果为“不认可/失败”（扣 4 分）
    Concluded “disapproval or failed” from audit by TTM team (-4)
- 品质协议（最新状态）和一致性 Quality Agreement(the most recent status) & Compliance
  - ☞ 未按 TTM 的要求签署品质协议（扣 1 分/品质协议）
    Supplier has not signed quality agreement as requested by TTM (-1/quality agreement)
    ）

- ☞ 发现与品质协议有不符合的地方（（扣 1 分/不符合项）
  Supplier has found non-compliance to signed quality agreement (-1/non-compliance)
  ）
- ☞ 发现与地方，国际法律，法规规则或与第 2 方或第 3 方报告不符合的地方（（扣 2 分/不符合项）
  Supplier has found non-compliance to local, international regulation/law as per local government or 2nd/3rd part report (-2/non-compliance)

10.3 供应商品质目标 Supplier Quality Target

TTM AP SQA 会通过 PPM，Lot 合格率（LAR），投诉事件和重复投诉事件，及时提交及反应率等指标来持续控制供应商的表现，年初时会根据供应商上一年度的表现制定新一年度的品质目标。供应商管理层必须采取有效行动来达成 TTM AP 工厂 KPI 目标，强烈建议指派一个特定的工作组，并委派一名负责的专业人员进行统筹领导以确保目标的达成。
TTM AP sites' SQA continually monitors supplier performance based on quality incident issued per million parts shipped (PPM), Lot Acceptance Rate (LAR),incidents and repeated incidents, timely submissions and responses etc. The target will be set at the beginning of every year per the supplier quality performance in the last year. Supplier management is expected to take effective actions to achieve TTM AP sites' KPI targets. It is highly recommended that a specific task force is assigned and a responsible professional is delegated to lead to achieve the KPI target.

如有以下任何一种的不良品质表现，供应商最高管理者本人或最高管理者指定的与之有同等决策权力的高级管理人员必须到 TTM AP 工厂参与改善措施的检讨.
For any of below poor quality performance status, the supplier top management or who specified by the top management that have the same decision-making power of the high managers must participate quality improvement actions review in TTM AP sites

1） 一个月内连续 3 个或 3 个以上交货批次出现同一质量问题
   3 or more consecutive batches of delivery for the same quality problems within 1 month.
2） 连续 3 个月来料批合格率达不到目标
   LAR can't meet the target for 3 consecutive months
3） 原材料出现重大品质异常
   Critical quality issue from raw material
4） DPPM 连续 3 个月达不到目标
   DPPM can't meet the target for 3 consecutive months

11 供应商纠正行动要求(SCAR) Supplier Corrective Action Request)

供应商的产品与要求不符时，供应商/分包商应使用适当的工具（如 5 问法、鱼骨图、故障树分析等），确定根本原因，确定和验证纠正措施，防止不符合项再次发生，并提供 SCAR。
For any non-conformity found with products from suppliers. Suppliers/subcontractors shall use appropriate tools (such as 5 WHY, fishbone, fault tree analysis, etc.), to identify root cause, define & verify corrective action, prevent recurrence of the non-conformity and document problem solving plan/activities, status and results with provided SCAR form.

供应商应根据以下时间表及要求，采用 SCAR 表格向 TTM AP 报告问题的解决状态。
Suppliers are required to report the problem solving status using the provided SCAR form to TTM AP in accordance with the following timeline or as requested timeline by individual plant.

11.1 SCAR 填写手册- 下面是标准化 SCAR 的填写 SCAR Filling Handbook- The following is to normalize SCAR filling.

D1-形成跨功能团队 Form a Cross-Functional Team (CFT)

这一步定义了 8D 团队的组成。团队应该是是跨功能小组，应包括以下成员：流程所有者，QA 的一位成员和其他与围堵，分析，纠正和预防此问题有关的成员，成员的名字和在公司架构的位置必须在报告上列明。
This step defines the composition of the 8D team. The team should be cross-functional and should include as members the process owner, a member from QA, and others who will be involved in the containment, analysis, correction and prevention of the problem. The names of the members as well as their positions in the company organization must be enumerated in this part of the report.

D2 –定义和描述问题 Define and describe the problem

问题（什么问题，发生时间，发生地点，检测方式）必须清楚在这一部分注明，最好能加上缺陷图片。
The problem (what, when, where and Mode of detection) should be clearly described in this part. It is recommended to add the defect picture.

D3 -围堵行动 Containment Actions

这一步解释了问题受影响的范围和全面的风险评估。供应商有责任从问题调查开始之后的 24 小时之内向 TTM AP 工厂汇报风险评估和围堵行动。所有因同一问题可能受影响的批号在释放之前必须清楚地识别及验证。潜在的受影响的批号必须在此报告中列明。
This discipline explains the affected extent of the problem and full risk assessment. Supplier is accountable to report the risk assessment and containment result to TTM AP sites Limited within 24hours based on initial problem investigation. All lots that are potentially affected by the same problem must be clearly identified and validated properly before release. Amount of potentially affected lots shall be enumerated in this portion of the report.

围堵必须包括在线生成，仓库的库存，只有风险被有效识别和处理后，才能释放这些产品，如在途产品有风险，也需要被召回
Containment must also include in-process products and inventory in warehouse. These products can only be released after the risks are effectively identified and dealt with. If the products in transit are at risk. They also need to be recalled.

D4 -根本原因分析（5 Why 方法或鱼骨图）Root Cause Analysis (5 Why Approach or Fishbone Diagram)

这个 8 D 流程步骤包括执行准确的缺陷模式的失效分析和调查根本原因的描述。应考虑与缺陷相关的可能的流程或操作。根本原因是基于逻辑数据推断,5-why 分析或鱼骨图的分析。缺陷分析必须注明为什么问题会发生，为什么问题会流至 TTM AP 工厂。为什么供应商的系统允许该问题的发生。
This 8D process step consists of performing the failure analysis on the exact defect mode and the description of root cause investigation. The possible process or operation the defect related should be considered. Root Cause has to be deduced based on logical data, 5-why approach or Fishbone. Failure Analysis shall address why the problem happened and why the defect escaped to TTM AP sites, and why does the supplier's system allow the problem to occur.

D5 -识别和执行永久纠正措施的可行性 Identify and Implement Permanent Corrective Actions on Feasibility

这一步是针对根本原因来识别所有可能的纠正措施。纠正措施的所有者和目标完成日期应当在报告的这一部分列出来，同时也建议解释与根本原因有关的每个纠正措施的意图。
This step is to identify all possible corrective actions to address the root cause of the problem. The owners of the corrective actions and the target dates of completion shall be enumerated in this section of the report. It is also suggested that the intention behind each corrective action be explained in relation to the root cause.

D6 –执行和验证纠正行动的有效性 Implement and validate effectiveness of Corrective Actions

执行工程分析,模拟实验或 DOE 试验来解释缺陷机制,验证和总结在 D4 中的根本原因。应提供实验报告或相关支持数据。
Perform Engineering analysis, simulation experiment or DOE experiment to explain the defect mechanism, verify and conclude the cause deduced in D4. Experiment report or related supporting data should be provided.

D7 -确定和实施永久预防措施 Identify and Implement Permanent Preventive Actions

预防措施意味着行动可以避免类似的问题在长时间内的重演，所有预防措施连同他们的负责人和目标完成日期必须在这一部分列出来。这一部分重要的因素是标准化纠正行动措施如 SOP/FMEA /CP 的更新， 或可能针对同一问题的所有产品的流程改进。支持文件应附在这一部分。
Preventive actions means the actions can prevent the reoccurrence of similar problem permanently in long term. All preventive actions must be enumerated, along with their owners and target dates of completion. An important aspect of this discipline is the standardization of corrective actions such as SOP /FMEA/Control plan update, or process improvements to all products that may possibly be subjected to the same issue. Supporting documents should be attached below.

供应商应该持续跟进所有在 D3/D5/D7 中列出的行动的有效性。“有效”是指执行这些行动之后在供应流程或后续出货中均在在认可的水平，没有类似的问题或缺陷。
The supplier should perform continuous follow up on the effectiveness of all actions stated in step D3/D5/D7. “Effective” means there is no similar problem or the defect under an acceptable level in supplier process and the following shipments after action implementation.

D8 –关闭和小组祝贺 Closure and congratulate the team.

本步骤需要确保所有的实施及有效性都得到验证，总结 8D 并保证有足够的证据供管理层审批。
This step is to ensure that all implementation and effectiveness are verified, conclude the 8D and ensure there are sufficient evidences for management approval.

11.2 8D 提交时限 Timeline for 8D submission

11.2.1 一般品质问题时限要求如下 The timeline requirement for general quality issues are as follows

8D 原则 8D Discipline		提交时限 Submitting term
D1	形成团队 Form the team	24 小时之内 Within 24hours
D2	问题描述 Problem Description	
D3	围堵行动 Containment Actions	
D4	根本原因分析 Root Cause Analysis	7 天之内 Within 7 days
D5	纠正行动 Corrective Actions	
D6	纠正行动的验证 Validated Root Cause	14 天之内 Within 14 days
D7	预防行动 Preventive Actions	
D8	管理层参与 Focus on top management involvement	90 天之内 Within 90 days

11.2.2 对于以下严重的品质问题和客户特别要求必须遵循 2485 原则 For the serious quality issue as below and customer special request will follow 2485 response principle.

1） 导致 PCB 客户停拉 Lead to PCB customer line down
2） 导致 PCB 生产中断 Result in stop of PCB product
3） 客户特别要求 Customer special request

No.	2485 原则 2485 Principle	提交时限 Submitting term
1	制定计划 Make plans	首次响应在 2 小时之内 First Response Within 2 hours
2	采取行动 Take actions	
3	确定问题 Problem identification	在 24 小时之内响应 Response Within 24 hours
4	锁定范围 Scope fixed	
5	确实根本原因 Root cause identification	48 小时之内 Within 48 hours
6	临时改善措施 Temporary improvement actions	
7	长期改善措施 Long term improvement actions	5 天之内 Within 5 days
8	8D 报告 8D report	

备注： 如果 SCAR 最终不能解决所关注的问题，TTM AP 会发出一个新的 SCAR 要求供应商给出更多的细节和分析。此 SCAR 要求在 1 周内完成。
Note: If the SCAR is not conclusive in resolving the quality concerns, TTM AP will issue a new SCAR to request for more details and analysis. To be completed within 1 week.

11.3 报告 Report

供应商应用附件的 8D 格式完成 8D 报告，报告经 SQA 经理/小组领导审批认可扫描后上传系统。
The supplier should finish the 8D report using the attached 8D form (Appendix IV). The report will be will be scanned and uploaded into system after approval and signed by SQA manager / team leader.

12 品质警报 Quality Alert

如果符合以下任何条件之一，SQA 将发出品质警告信。供应商应当提供合理的解释和改善行动.如果供应商没有反应及改善。将上报至管理层，供应商将会被考虑逐步淘汰或进一步商业评审。
SQA will issue warning letter to supplier for any of the below conditions. The supplier should provide reasonable explanation and improvement actions, if supplier does not show responsive to improvement. Escalation to top management is necessary. The supplier will be considered for phasing out or further business review..

1） 一个月内连续 3 个或 3 个以上交货批次出现同一质量问题
3 or more consecutive batches of delivery for the same quality problems within 1 month.
2） 导致生产线停拉的重大品质问题
Critical quality issue from raw material, result in stop of PCB production.
3） 供应商提供假信息和假报告
Provide counterfeit report and information
4） 未经 TTM AP 工厂认可的产品或信息的变更
Product or information change before TTM AP sites approval.

13 供应商资格取消 Supplier Disqualification

当满足以下任何一个条件时，TTM AP 工厂将邀请供应商最高管理层参加会议，启动取消供应资质流程。
TTM AP sites may kick-off supplier disqualification process by initiating a meeting with supplier's top management if any one of the following conditions is met.

1) SPR 总分连续 4 次为红色级别（< 60 分）
Overall Supplier Performance Rating (SPR) in red category for 4 consecutive ratings（< 60）;
2) 系统稽查评分低于 60%

System audit scoring below 60%;

3) 有条件性认可（系统评分在 60%-70%）的供应商在 3 个月内无任何改善
No any improvements for conditional approved suppliers(system audit scoring 60%-70%) within 3 months
4) SPR-品质部分连续 4 次低于 60%（占总分 25）
SPR- Quality score < 60%（out of 25） in 4 consecutive ratings
5) 重大品质问题的重复发生（6 个月内 3 次或以上）
Reoccurrence of serious quality problems (4 times or above within 6 months)

14 重新认可 Re-Qualification

如果供应商因品质问题取消资格，供应商应当在 3 个月的宽限期改善。在这期限内，供应商的表现将被严格监控。如果达不到满意的水平，供应商资格将被取消。
The supplier was disqualified due to quality issue. Supplier shall improve within a three-month grace period. Supplier performance will be monitored tightly. Supplier will be disqualified if it does not improve to a satisfied level in the grace.

不合格的供应商将进入一年禁令。禁令期后可以通过重新认可取得资格。
A disqualified supplier will enter a 1-year ban period. It can be re-qualified if it pass the supplier selection and evaluation process after the ban period.

15 记录保持要求 Record Retention Requirements

供应商应该有程序定义控制记录和质量记录，记录应该清晰可查和按要求提供。
Supplier should have procedure to define the method for controlling records, and Quality records shall be maintained in a manner so they remain legible and retrievable upon request.

其他的记录保留要求参考汽车工业行动小组(AIAG)、国际航空航天质量小组(IAQG)、最新修订的 ISO 9001，IATF 16949,AS910,QC080000 对文件保留的要求。
Additional record retention requirements can be referenced per Automotive Industry Action Group (AIAG), International Aerospace Quality Group (IAQG), the latest revision of ISO 9001, and/or IATF16949, AS9100 and QC080000 documentation requirements and shall be maintained accordingly.

记录保留要求是基于工业标准和特定的客户要求。请参考以下 TTM 亚太区各厂对记录保存年限的要求。
Record retention requirements are based on industry standards and specific customer requirements. Please refer to the following requirements for the record retention from TTM AP sites.

TTM GZ: 20years
TTM ZS: 30years
TTM HY: 40years
TTM DMC: 有害物质相关记录要求保存 10 年，品质相关记录要求保存 5 年。
Hazardous substance related records required maintain 10 years, quality related records required maintain 5 years.
TTM PNG: 有害物质相关记录要求保存 10 年，品质相关记录要求保存 5 年。
Hazardous substance related records required maintain 10 years, quality related records required maintain 5 years.

16 相关记录 Related Record

供应商变更申请 Supplier change notice

Waiver Request for Nonconforming product

供应商有害物质保证书 Supplier Hazardous Substance Guarantee

有害物质不符合申报通知 Hazardous substance “Non-compliance” Acknowledgement

Notice

供应商纠正行动要求(SCAR) Supplier corrective action requirement

供应商年度审核单 Supplier annual audit checklist

以上表格在 TTM 供应商网站上有最新版本，需要时请在网站上下载最新版本。

The above form has the latest version on the TTM Supplier website, please download the latest version from the website if need.

https://www.ttm.com/en/suppliers/ttm-requirements-for-suppliers

17 关于本手册之补充协议 Addendum Agreement regarding to this supplier quality Manual

本手册作为 TTMAP 工厂通用之供应商品质管理手册，由于不同工厂之体系要求、产品差异及不同客户之特殊要求存在差异，对超出或严于本手册之特殊要求，TTMAP 分厂将通过附录 1 与相关供应商签订本手册之补充协议，从而规范传达及约束供应商满足以上超出或严于本手册之特殊要求。补充协议作为本手册要求之补充，与本手册具有同等效力。如补充协议要求与本手册要求存在差异处，以补充协议为准。

This manual is a general supplier quality manual of TTMAP sites. Due to the differences in quality system and products in TTM AP sites, and different customer’s special requirements, TTMAP factories will sign a addendum agreement to this manual with the relevant suppliers through Appendix 1. So as to communicate and constrain suppliers to meet the above special requirements that Stricter than or beyond this supplier quality manual. The addendum agreement shall be a supplement to the requirements of this Supplier Quality Manual and shall have the same effect as the Manual. In case of any discrepancy between the requirements of the Addendum Agreement and the requirements of this Manual, please regard this Addendum Agreement.

18 签署 Sign off

供应商应指派执行管理团队中的一员作为供应商代表，确保供应商手册中的要求传达到公司内部及下一级供应商。请在收到本供应商质量手册的一个月内，完成附录《品质一致性声明》的签署和盖章，并以 PDF 的形式回传给 TTM AP。
The supplier shall appoint a member of the Supplier’s Executive Management Team as the supplier representative to ensure that the requirements in the supplier manual are communicated internally and to the sub suppliers. Please sign off and stamp the appendix <Quality Compliance Declaration> to TTM AP with PDF form within 1 Month after receiving the Supplier Quality Manual.

19 附录 Appendix

19.1 附录 1：TTMAP 供应商品质手册之补充协议;

Appendix1: Addendum Agreement regarding to TTMAP supplier quality manual;

19.2 附录 2：供应商品质一致性声明 （供应商集团公司使用）

Appendix2: Supplier Declaration of Compliance (For Supplier Group Company Used)

19.3 附录 3： 供应商品质一致性声明（供应商公司使用）

Appendix3: Supplier Declaration of Compliance (For Supplier Company Used)

Appendix 1:

Addendum Agreement regarding to TTMAP supplier quality manual

TTMAP 供应商品质手册之补充协议

This Addendum Agreement is an addendum to the TTMAP Supplier Quality Manual, signed by TTM AP site:_____and the corresponding supplier _____ on,Date____Month___Year____, based on below special requirements:

本协议作为 TTMAP 供应商品质手册之补充，由 TTM AP 分厂_____及其供应商：_____于___年__月__日（“生效日期”）基于以下特殊要求签订,

（备注：以下特殊要求格式可根据内容进行调整，如需要也可插入表格等）

_____

_____

_____

Declaration: This Addendum Agreement has been signed by both Parties on the date above by their authorized representatives, and the Supplier undersigned agrees that they have sufficient authority to agree to this Agreement on behalf of their Company and restrain Supplier Company obey to the terms of this Addendum Agreement. In case of any discrepancy between the requirements of this Addendum Agreement and the TTM AP Supplier quality Manual, please regard this Agreement.

声明：双方于上述日期由其授权代表签订本协议，且供应商签名人同意他们有足够的权限代表其公司同意本协议并约束供应商公司遵守本补充协议的条款。如本协议要求与供应商手册要求存在差异，以本协议为准。

Sign 签署：

TTM AP plant 分厂：_____ Supplier 供应商：_____

Sign 签字：_____ Sign 签字：_____

Name 姓名：_____ Name 姓名：_____

Title 职位：_____ Title 职位：_____

Address 地址：_____ Address 地址：_____

Appendix2（For Supplier Group Company Used 供应商集团公司使用）:

Supplier Declaration of Compliance

供应商品质一致性申明

We, _____（Supplier Group Name）, hereby declare that, Our Group relevant subsidiary company/ plant will fully comply with the quality requirements illustrated in Supplier Quality Manual (Reference No: QAP-INT-050 D) and will develop quality strategies to achieve TTM AP expectation.

我司，_____（供应商集团公司名称），特此声明，我集团公司相关下属分公司/分工厂将严格遵守贵司《供应商品质手册》（文件编号：QAP-INT-050D）中的品质要求并进一步完善品质策略，以达到贵司的期望。

Supplier Group relevant subsidiary company/plant Name & Company Chop (Attachable pages are allowed)：
供应商分公司/分厂名称并加盖公司公章（可附页）：

_____	_____
_____	_____
_____	_____
_____	_____
Supplier Group Company Representative Name& Title ***供应商集团公司代表姓名及职位（请用正楷书写）***	***Supplier Group Company Representative Signature &Signed Date*** ***供应商集团公司代表签名及签署日期***

Appendix 3（For Supplier Company Used 供应商公司使用）:

Supplier Declaration of Compliance

供应商品质一致性申明

We, _____（Supplier Name）, hereby declare that, we will fully comply with the quality requirements illustrated in Supplier Quality Manual (Reference No: QAP-INT-050 *D*) and will develop quality strategies to achieve TTM AP expectation.

我司，_____（供应商名称），特此声明，我司将严格遵守贵司《供应商品质手册》（文件编号：QAP-INT-050*D*）中的品质要求并进一步完善品质策略，以达到贵司的期望。

Supplier Representative Name 供应商代表姓名（请用正楷书写）	**Supplier Appointment** 职位（请用正楷书写）
Supplier Representative Signature/ Company Chop 供应商代表签名/公司公章	**Signed Date** 签署日期