“As a partnering supplier for Airmar, our success means success for your company.

The contents of this Supplier Quality Support manual outline requirements and guidance for our suppliers.

It is intended to help you grow in this partnership and understand overall Quality expectations of product delivered to Airmar.

The primary objective of Airmar’s Purchasing group is the timely acquisition of goods and services at the lowest total cost, highest Quality, and on-time delivery. Elements of total cost in addition to basic price include transportation, storage, service, technical assistance, materials management, and compatible and correct invoicing. Airmar Purchasing will evaluate each of these and other criteria to decide which proposal represents greatest value or lowest total cost to the company.”

- Airmar Technology Corporation
The following are topics covered in this manual:

Product Quality
- Airmar acronyms
- How Airmar inspects receipted material
- MRB (Material Review Board) Cases
- Airmar Inspection Report
- Root Cause Analysis
- SCAR (Supplier Corrective Action Request)

Delivery
- Documentation
- Packaging
- Labeling
- Environmental regulations
- Recording of inspection results
- Disaster Recovery

Cost Containment
- First Article Inspection process

Responsiveness
- Notifications to Airmar

These key process indicators are focus areas to help Airmar determine supplier ratings and sustain a positive relationship with our suppliers. Please contact our Purchasing or Quality Department if you have any questions. All current and new suppliers are strongly encouraged to have their Quality Management Systems Registered to the latest revision of ISO9001 and operated in accordance with and accredited by a third party certification body.
Product Quality

- **Airmar acronyms & Definitions**

These are the most common acronyms used by Airmar in our specifications, correspondence, and reports:

- **AQL**  
  Acceptable Quality Level
- **ASL**  
  Approved Supplier List
- **CofC**  
  Certificate of Compliance
- **FAI**  
  First Article Inspection
- **MRB**  
  Material Review Board
- **NCM**  
  Non-Conforming Material
- **PO**  
  Purchase Order
- **RTV**  
  Return To Vendor
- **REACH**  
  Registration, Evaluation, Authorization and  
  Restriction of Chemicals
- **RoHS**  
  Restriction of Hazardous Substances
- **SCAR**  
  Supplier Corrective Action Request
- **SCIP**  
  Substances of Concern In articles as such or in  
  complex objects (Products) established under the  
  Waste Framework Directive (WFD)
- **SCN**  
  Supplier Change Notification
- **SVHC**  
  Substance of Very High Concern
- **UAI**  
  Use-As-Is

**UAI & Notify** Use-As-Is and notify supplier that nonconforming  
**Supplier** material was found in receipt

- **How Airmar inspects receipted material**

When Airmar receives material:

1. the containers are first inspected for any damage incurred  
   during delivery;
2. Samples are removed for visual/cosmetic  
   nonconformances (AQL =4%);
3. All required documentation is checked for accuracy  
   against the PO requirements;
4. Ten (10) or more pieces are measured against the  
   drawing revision specified in the PO;
5. Nonconformances are recorded on an MRB Report.
Product Quality (cont’d)

If material supplied to Airmar is found to be nonconforming, either an MRB Case or Inspection Report may be sent to you:

- **MRB (Material Review Board) Cases**

<table>
<thead>
<tr>
<th>What Airmar observed for nonconformances</th>
<th>Airmar’s Order No.</th>
<th>What Airmar is requesting to make material conforming</th>
</tr>
</thead>
</table>

**MRB Case**

- **MRB Case ID**
- **Non-Conformance**
- **Site**
- **Part No.**
- **City Submitted**
- **Source Type**
- **Notes**
- **Order No.**
- **Line No.**
- **Release No.**
- **Receipt No.**
- **Serial No.**
- **Lot/Batch No.**
- **WDR No.**

<table>
<thead>
<tr>
<th>Disposition Code</th>
<th>Disposition Description</th>
<th>Disposition Information</th>
<th>Quantity</th>
<th>Complete</th>
<th>Date Completed</th>
<th>Completed By</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXAMPLE: Rework</td>
<td>EXAMPLE: Internal Rework</td>
<td>EXAMPLE: Rework required to replate holes</td>
<td>XX</td>
<td>TRUE</td>
<td>MM/DD/YEAR</td>
<td>RLIIGHTHALL</td>
</tr>
</tbody>
</table>

**Airmar Inspection Report**

- **Supplier**
- **PO Number**
- **Release No.**
- **Ordered Part Rev**
- **Part No.**

**Summary:** EXAMPLE: 16/319

**EXAMPLE of Airmar Inspection results**

- **Variables**
- **Notes**
- **Defect Found**
- **Defective**
- **Test Question**
- **Type of Measurement**
- **Unit of Measure**

<table>
<thead>
<tr>
<th>Tag</th>
<th>Defect Found</th>
<th>Defective</th>
<th>Test Question</th>
<th>Type of Measurement</th>
<th>Unit of Measure</th>
<th>Special Characteristic</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>002</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>003</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**EXAMPLE of Airmar Inspection results**

- **Notes:**
- **Quantity**
- **Inspection Code**
- **Sample Size**

<table>
<thead>
<tr>
<th>Tag</th>
<th>Notes</th>
<th>Quantity</th>
<th>Inspection Code</th>
<th>Sample Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>005</td>
<td></td>
<td>10 PCS</td>
<td>10 PIECE INSPECTION</td>
<td>10</td>
</tr>
<tr>
<td>006</td>
<td></td>
<td>10 PCS</td>
<td>10 PIECE INSPECTION</td>
<td>10</td>
</tr>
</tbody>
</table>

![Image of Airmar Inspection Report]

- **Analysis No.:** EXAMPLE: 16/319
- **Last Activity Date:** MM/DD/YYYY

- ![Image of MRB Case](image-url)
Product Quality (cont’d)

These reports contain information about the Order, the nonconformance, and our request to replace or rework the material so it conforms to expected quality.

▪ Root Cause Analysis

When material is dispositioned as nonconforming, Airmar’s MRB team may request a root cause analysis be performed by the supplier. It is important that your evaluation identifies a process-related issue that resulted in the nonconformance(s). [Please note: “re-training” or termination/change of an employee is not an acceptable root cause.]

Airmar recommends that you follow the 5-WHY problem solving approach to determine root cause. An example 5-Why follows:

The 5-WHY approach

This technique is a simple and effective tool for solving problems. Its primary goal is to find the exact reason that causes a given problem by asking a sequence of “Why” questions. The 5-Why method helps your team focus on finding the root cause of any problem.

Refer to Figure 1 in the Appendix of this Manual for a 5-WHY template. There are numerous sources online to help you with applying this problem solving technique.
Product Quality (cont’d)

In some instances it may help to view the sequence of asking reiterative “why’s” when constructed in this way:

- The first W is What.
- The second W is Where.
- The third is When.
- The fourth is Who.
- The fifth is How and a final Why.

The objective is always to determine a process-related issue that is the root cause. (Process, not people.)

- **SCAR (Supplier Corrective Action Request)**

  The SCAR form (Appendix, Figure 2) should be used to document your determination of root cause. Please access this form from the Airmar website airmar.com. Expected turn-around time for SCAR completion is two weeks.

Delivery

- **Documentation**

  Incoming documents:

  Reference Airmar’s PO for specific documentation requirements. This could include CofC’s, test data, inspection data, etc.. It is the supplier’s responsibility to review all PO’s issued to them from Airmar.
Delivery (cont’d)

- **Documentation**

  **Revisions**
  Suppliers must review PO’s to ensure that the revision on the supplier’s copy matches Airmar’s current part drawing revision.

  Some Airmar drawings may have a Revision for the Part No. and a separate Revision for the Doc. No, on the same drawing – as shown on the right: Rev 03 and Rev 06

  Other Airmar drawings will have both a *Part No. Rev* and *Doc. No. Rev*, as shown on the right:

  A packing list must be included with every shipment. The packing list will indicate the Airmar PO No., Airmar Part No. and Description, Terms of Delivery, Packing List No., and quantity shipped. (Multiple containers are to be marked *Box X of Y shipped.*) Suppliers must ensure that the correct Part Number, Revision level, process, or raw material(s) are shipped as directed on the PO, or any other defined requirements.
Delivery (cont’d)

- **Packaging**

Your packaging is expected to prevent damage to product due to handling and transportation and environment.

Each unit needs to be protected from damaging other units in the same container. Segregated compartments can minimize damage but depending on placement, the material is still prone to movement and contact with other material during handling by the carriers.

<table>
<thead>
<tr>
<th>PCBAs packed one per smaller section (LEFT), and two per larger section.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smaller sections with a SINGLE unit per section offers the <em>better</em> protection. Larger sections with two or more units per section are much more prone to material movement and subsequent damage during delivery. ENSURE THAT MATERIAL CANNOT CONTACT CONTAINER WALL</td>
</tr>
</tbody>
</table>

**Loose fitting dividers** are never sufficient to prevent movement during delivery.

Units in contact with the shipping container wall are prone to damage:

- **X**
Delivery (cont’d)

Packaging (cont’d)

Metal products are another example of material prone to damage during delivery when packed inadequately.

![Image of damaged packaging]

Besides the container damage, the internal divider used here was not able to prevent metal housings from contacting and then damaging each other. The blue fishnet material did not prevent damage.

Packaging must give consideration for minimal effort and time required to UNPACK the units after receipt at Airmar.

Your product and packaging and all the materials used in the manufacture of the product and packaging must conform to all governmental, safety and environmental regulations applicable to the country of manufacture, sale, and delivery.

All electro-static sensitive devices (ESD) shall be properly packaged to provide protection from electrostatic discharge. All ESD sensitive products shall be clearly identified with an ESD warning on each tray, tube, or tape/reel within the shipment.

We will inform you of any other specific packaging requirements on our PO.
Delivery (cont’d)

- **Labeling:**
  Labeling needs to be protected from the elements during transport and delivery to Airmar. (3.5” x 5” labels are recommended (ex. Avery Dennison 5168)). Please note that Airmar may specify labeling requirements on our PO.

- **Environmental regulations**
  Airmar ships product worldwide and adheres to a number of international regulatory requirements. The material you provide is incorporated into our product and as a result, Airmar requires that you comply with the following environmental regulations:
  - RoHS (EU latest revision)
  - REACH (EU latest revision)
  - Prop65
  - Conflict Minerals
  - SCIP Waste Framework Directive
  - Ozone Depleting Chemicals

Airmar uses Assent Compliance, Inc. to support our compliance with these Directives. Our suppliers will be requested to update their environmental position via Assent, every year or when a regulation is updated (i.e. REACH typical updates every Jan and July), or if their previous submission was incomplete. Since our products go to global markets, your support here is necessary for us to use your material in our products.

Airmar expects our suppliers will operate in an environmentally responsible manner and scrutinize its manufacturing processes, identify potential hazards, and use preventive measures to reduce or eliminate potential hazards. All waste material that is generated is to be disposed of in compliance with applicable laws.
Delivery (cont’d)

■ Recording of inspection results

Dimensional/variable data points require an actual measurement to indicate pass/fail – these cannot be recorded as “Visual OK” or similar.

Inspection records should record actual data where there is a specification for variable data; not check marks. Check marks are allowed for attribute data.

Any data that is outside specification must be clearly marked as nonconforming.

Entries may NOT be left blank, nor recorded as “N/A”.

IMPORTANT: Critical dimensions are designated on Airmar drawings by an oval and must be measured and recorded during your inspection process and maintained as quality records. These critical dimension measurements are the responsibility of Suppliers’ Outgoing Inspection, not Airmar’s Incoming Inspection. Supplier records that capture these inspection results by our suppliers must be available for Airmar review.

An Airmar-approved go-nogo gage, mating part, or reference standard is acceptable for determining conformance. Using such a gage still requires that inspection/data sheets record conformity to the part drawing. You may use a check mark or “OK” in this instance but please reference the specific standard/gage used. This equipment must be included on your equipment Calibration schedule. A supplier is expected to protect and make periodic checks of a go-nogo gage, mating part, or reference standard used and account for normal wear over time that will adversely affect inspection results.
Delivery (cont’d)

- **Disaster Recovery** Suppliers to Airmar shall have a disaster recovery and business contingency plan in place that minimizes the risk to Airmar in the event of a natural disaster, labor dispute, or other disturbances in the supply chain. Evidence of the process shall be made available for review upon request.

Cost Containment

Airmar does not require its suppliers to submit cost containment proposals or reports but it is expected that processes within your Quality Management System have proactive measures to contain costs of supplied material/product/service to Airmar.

- **FAI (First Article Inspection)**
  
  It is important that Airmar be informed immediately of any changes to Supplier process, material, or supply chain. (Also see Required Notifications within the Responsiveness section of this Manual).

  Ref. Supplier Change Notification form (Appendix, Figure 3)

- **FAI process:**
  
  FAI re-submissions apply when:
  - Product is modified by an Airmar Engineering change to its drawing(s) or material(s);
  - Use of other material or manufacture method than previously approved, or a change of source for sub-contracted parts, materials or services;
  - Product supplied following any change in process or methods of manufacture, control plan, or change to the print dimensions/characteristics, including any change to the revision of material or technical specification;
  - Product from replaced, modified, refurbished or rearranged existing tooling or equipment, including transfer to another facility.
Responsiveness

Notifications to Airmar

Required notifications:

- Notify Airmar of any changes made to: raw materials, methods, machinery, equipment used to measure/monitor, design, supplier, storage conditions/location, or manufacture location.

- Notify Airmar of shipments with nonconformances and the analysis of why material cannot be made conforming to specifications.

- If nonconformances were not questioned or authorized by Airmar in the past, this is not a reason to continue to accept those parameters during your future outgoing inspections. Suppliers must receive explicit allowances from Airmar for material delivered with deviations from requirements.

Order of precedence with respect to quality requirements:
1. Airmar Purchase Order;
2. Approved, documented deviations to Purchase Order, Drawings, Specifications;
3. Engineering drawings;

It is the responsibility of the Supplier to contact Airmar Purchasing for requirements clarifications if needed.

- Supplier shall maintain a list of qualified suppliers of materials, subcomponents and subcontracted services used in the manufacture of Airmar product and make this information available to Airmar upon request.

- New suppliers are required to complete the Airmar Supplier Questionnaire accessible on the Airmar website airmar.com.
APPENDIX

FIGURE 1: 5-WHY template for determining root cause – including *Specific Problem*, *Detection Failure*, and *Systemic Failure*

PLEASE NOTE: The following are NOT acceptable ROOT CAUSES:

- We are sorry for the inconvenience and will make sure this doesn’t happen again
- We hired new people and this was the cause of the problem.
- We will pay extra attention to this in the future.
- Operators were not trained properly.
- Condition was not questioned by Airmar in previous lots
FIGURE 2: **SCAR** *(Supplier Corrective Action Request)* form
Please access this form from the Airmar website [airmar.com](http://airmar.com)

<table>
<thead>
<tr>
<th>Supplier Evaluation &amp; Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>No fault found</td>
</tr>
<tr>
<td>Confirmed</td>
</tr>
</tbody>
</table>

**Preliminary Investigation:** Results of 5-WHY analysis - why the nonconformance was produced

**Process Root Cause Analysis:** Results of 5-WHY analysis - why the problem was not detected

**Corrective Action:** Steps implemented that will prevent recurrence | C/A implemented: |

**COMPLETED BY AIRMAR:**

- Accepted
- Rejected
- Reviewed by: __________________________ Date: ____________

[Image of SCAR form]
FIGURE 3: **Supplier Change Notification** (SCN) form

Please access this form from the Airmar website airmar.com

### Airmar Supplier Change Notification

(Please submit to your Airmar Purchasing Buyer)

**Date submitted to Airmar**

**Supplier Information**

- **Supplier Name**
- **Supplier Site City Country**
- **Airmar-assigned Supplier Number**
- **Airmar originator Name/Title**

**Supplier Technical Contact Regarding this Change**

- **Name/Title**
- **Phone**
- **Email**

**Scope of Change**

Affected Part No.'s Sold to Airmar

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Rev.</th>
<th>Qty</th>
<th>Rev.</th>
</tr>
</thead>
</table>

**Reason for change**

- Material
- Manufacture location
- Supplier
- Process
- Design
- Transfer of Tooling/Equipment
- Change to test or test inspection method
- Change in appearance
- Other

**Additional description of change:**

Airmar Review By: ___________________________ Date: ________________

Airmar Disposition: ___________________________ Copy sent to Supplier (Buyer) Copy uploaded to IFS (Buyer)

D-19868 Rev 1
ACKNOWLEDGMENT
(Please return completed form to Airmar Purchasing)

Please have your Quality Assurance representative sign and date Acknowledgment of receipt and understanding of this Supplier Quality Support manual, and return to your Airmar Purchasing point-of-contact.

_______________________________________ (company name) will adhere to the requirements outlined in this Supplier Quality Support manual for products, material and service provided to Airmar Technology Corporation.

Print name: _________________________________

Title: _________________________________

__________________________________        ______________
Signature                                                                  Effectivity date:

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