

Leonardo – Helicopters

AW HERO PROGRAM QUALITY REQUIREMENTS FOR SUPPLIERS OF AWHERO

(QRS/AWHERO/001)

Issue Date: June 2022

Issue: 01

Copyright 2022 Leonardo S.p.a.

This document contains proprietary information of Leonardo S.p.a.; the use of such information by the recipient is allowed only in relation to the purposes for which the document was received. Reproduction or disclosure of the document and any annexes is not permitted without the express consent of Leonardo S.p.a. .

Company General Use

Company General Use

ROLES

Role	Organisational unit
Author / Document Owner	AW HERO Quality System
Approver	[see CPR.000.09]
LH-OS section Owner	[see CPR.000.09]
Key Stakeholders	Supplier AWHERO Procurement & Supply Chain Quality System - AWHEREO Supplier Quality Assurance
Other Stakeholders	AWHERO Engineering AWHERO Quality Control AWHERO Material Planning & Control AWHERO Manufacturing Engineering AWHERO Production & Experimental A/C Build

CHANGES LOG

Issue	Approval Date	Main changes	Affected paragraphs
01	June 2022	First Edition - Replacement of QRS_AWHEREO_001 Issue A and Updates of overall document by integration with QRS_AWHEREO_002 Issue A moved on Appendix 1	<ul style="list-style-type: none"> - General revision of the document QRS_AWHEREO_001 Issue A - Introduction of Appendix 1 "Requirements for design and development suppliers of airborne and ground station equipment".

REFERENCE DOCUMENTS

Documents level	Document code (paragraph) and title
External Documents	
Mandatory	EN 9100:2018; EN9110:2018; EN 9120:2018; ISO 9001:2015
Guidelines	AS 9102, Aerospace First Article Inspection Requirements ISO 10006, Quality Management in projects
Higher Level LH-OS Documents	QRS01, Quality Requirements for Suppliers QRS101, First Article Inspection QRS104, Special Processes / NDT Qualification and Critical Processes Requirements, Equipment and Personnel QRS107, Management of Non-Conformances, Deviation Permits and Continued Airworthiness QRS118, Requirements for Laboratories and Manufacturers of Non-Airborne Equipment for LH Engineering
Connected LH-OS Documents	CPR.033.13 Control of records NTA023R - Agusta Technical Specification - Marking of parts STA-100-81-02 - Agusta Technological Process Specification - Packaging and preservation of parts and assemblies of aircraft to put into storage QRS01, Quality Requirements for Suppliers

CONTENTS

Contents	3
1 Introduction	4
<i>1.1 Acronyms, Definitions and Templates</i>	<i>4</i>
1.1.1 Acronyms	4
1.1.2 Definitions	4
1.1.3 Forms	5
2 Purpose.....	6
2.1 Scope	6
2.2 Effective Date	6
3 General Requirements.....	7
4 Engineering Requirements.....	8
5 Manufacturing Engineering.....	9
6 Production Equipment.....	12
7 Production	13
8 Tests required	14
9 Quality Requirements.....	15
<i>9.1 Management of nonconformities.....</i>	<i>16</i>
9.2 Requests for modifications.....	16
10 Special Processes.....	17
11 First Article Inspection (FAI).....	18
12 Documentation Requirements	19
13 Marking of Parts.....	20
14 Weight Control.....	21
15 Logistics, Preservation, Packaging and SHIPMENT.....	22
16 Annexes, Appendices and Forms.....	23

1 INTRODUCTION

This document defines the Quality Requirements applicable to AWHEREO program Supply Chain. This edition of the "QUALITY REQUIREMENTS FOR SUPPLIERS OF AWHEREO" integrates the general requirements of the previous QRS_AWHEREO_001 specification with the requirements of the oldest QRS_AWHEREO_002 specification dedicated to Design Suppliers (now integrated as Appendix 1 within this document).

1.1 Acronyms, Definitions and Templates

1.1.1 Acronyms

ATP	Acceptance Test Procedure
ATR	Acceptance Test Report
CoC	Certificate of Conformity
DDP	Declaration of Design & Performance
FAI	First Article Inspection
FAIP	First Article Inspection Plan
FAIR	First Article Inspection Report
LH PISA	Leonardo Helicopters Pisa
NDI	Non-Destructive Inspection
P/N	Part Number
PO	Purchase Order
RAC	Corrective Action Request
S/N	Serial Number
SQA	Supplier Quality Assurance
STF	Technical Specification of Supply
TSD	Technical Specification for delivery

1.1.2 Definitions

In the text that follows the company Leonardo Helicopters based in Pisa is referred to as the "LH" and may be indicated with the abbreviation LH-PISA.

FAI: First article inspection. The purpose of the FAI is to validate the production process so as to ensure the consistency, conformity and reproducibility of production to specifications.

Quality Requirements for Suppliers of AWHEREO	QRS/AWHEREO/001	Page 5/23
	June 2022	

Qualification: process by which the supplier is required to demonstrate compliance with the requirements of this specification and the validation of the production process through the Quality Requirements reported in the "Q.R." of the P.O.

Quality Requirements: for the Quality Requirements codes, suppliers are required to comply with and apply the General and Particular Requirements specified for each item listed in the order.

Requalification: process by which the supplier is required to demonstrate the maintenance and compliance status of this specification.

All definitions in the document QRS-01 and in the other applicable modules.

1.1.3 Forms

The applicable forms (see § 16) are available at the following link:

<https://www.leonardo.com/it/suppliers/supplier-portal/helicopters/quality-requirements-for-suppliers>

Quality Requirements for Suppliers of AWHEREO	QRS/AWHEREO/001	Page 6/23
	June 2022	

2 PURPOSE

This Specification sets out the Quality requirements that apply to external Suppliers from whom products and services have been sourced in developing the AWHEREO system, for which LH PISA has the design and responsibilities.

2.1 Scope

This Specification is an integral part of the purchase orders referred to and shall be complied with by the Supplier according to the purchase order issued to it by the LH Procurement department. In accepting the purchase order, the Supplier contractually undertakes to meet the requirements of this Specification, save for any exceptions that are not applicable that shall be notified in writing on acceptance of the order.

2.2 Effective Date

The date of issue of the document.

Quality Requirements for Suppliers of AWHEREO	QRS/AWHEREO/001	Page 7/23
	June 2022	

3 GENERAL REQUIREMENTS

R.3.1 The LH standard rule for P.O. confirmation apply to the order acceptance.

R.3.2 By acceptance, is assumed that Supplier has verified the feasibility of the activities requested and it is therefore able to undertake the relative risks and comply in full with all requirements of this Specification. Any exceptions or deferments requested for requirements that cannot be fully met in, shall be indicated by the Supplier before acceptance of the order, suitably compiling the matrix in Annex 1, that shall be submitted for assessment and final approval.

R.3.3 The Supplier declares, in accepting this order, that it is familiar with all reference documentation attached to the order.

Except as otherwise agreed in the purchase order, if the purchase order is not consistent with any documentation attached or referred to, the following order of precedence shall be observed:

- a) the purchase specification or technical/contractual specifications (IF PRESENT)
- b) the purchase order
- c) the supplier's offer

R.3.4 Product delivery shall be On-Time and On-Quality in compliance with P.O. conditions. Any change or amendment shall be authorised by written notice to LH.

R.3.5 The applicable requirements for acceptance of the supply are included in the order and, if present, in attached technical and contractual documentation.

R.3.6 The order will be tested by checking the procured product or service. Payment of the invoice will be subject to successful testing and final approval for supply acceptance.

R.3.7 The general conditions of supply applicable and attached to Purchase Orders establish requirements that ban the use, prevent and manage parts considered suspicious or counterfeit.

Quality Requirements for Suppliers of AWHEREO	QRS/AWHEREO/001	Page 8/23
	June 2022	

4 ENGINEERING REQUIREMENTS

R.4.1 Suppliers of Design & Development which provides parts, systems or equipment that have an impact on the airworthiness of the AWHEREO product (on-board equipment or equipment belonging to the Ground Station), shall meet the additional requirements defined in Appendix 1 “REQUIREMENTS FOR DESIGN AND DEVELOPMENT SUPPLIERS OF AIRBORNE AND GROUND STATION EQUIPMENT”.

For Design & Development Suppliers that do not have impacts on the airworthiness of the AWHEREO product (e.g. test benches, apparatus, etc...), including Laboratories providing services (testing and measurements) for qualification, shall meet the requirements in QRS-118.

5 MANUFACTURING ENGINEERING

5.1 Work Cycles and Control Plan

R.5.1.1 The Supplier is responsible for preparing the work cycles for each part/assembly to build. The main objective in defining work cycles shall be the standardisation of the production cycles. The work method shall be aligned with the technological capacity of the Supplier and shall be based on known, consolidated technologies so as to minimise risks.

Moreover, it shall guarantee process repeatability with the required quality, and the work cycles shall be managed so as to ensure product traceability as required by standards applicable to the aviation industry.

R.5.1.2 At least the following information shall be contained in the work cycles:

- The part/assembly number
- The chronological sequence of the manufacturing stages/operations
- A description of operations (if necessary also with the aid of instruction sheets)
- The equipment necessary for each operation
- The production bill of materials for the materials/items to pick and process/assemble
- testing operations (intermediate and final acceptance)
- Heat treatment
- Surface treatment
- International standard procedures or internal reference procedures

R.5.1.3 Where the Supplier develops specific equipment to develop the commissioned parts/assemblies (excluding equipment that may be purchased on the market), special tools or part-programmes for numerical control machines (machines that remove chips and/or measuring machines), said equipment shall be coded.

During the prototype stage, the operating sequences of the work cycles may be optimised by Manufacturing Engineering, and therefore during this stage, temporary modifications may be added to the Work Orders that shall be managed according to the procedures indicated in the Supplier's internal procedures and Quality System.

R.5.1.4 All production documents shall be generated and filed in the company IT system of the Supplier that shall give LH a true copy of the original.

R.5.1.5 All operations covered by the specification and classified as "*Critical*" shall be highlighted, putting an appropriate letter next to the description of the operation and the wording "*CRITICAL OPERATION*" as the first line of the description of the operation. If there is an operating or instruction sheet for the operation, the sheet shall be stamped with the wording "*CRITICAL OPERATION*".

R.5.1.6 In the case of Critical parts, the Supplier, whether qualified to EASA POA Part21G or to EN 9100, shall attach the following documentation to the certificate of conformity:

1. Operating cycle
2. Work order
3. Dimensional report
4. Datasheets on special processes
5. Datasheets on non-destructive tests
6. Any Concession and/or Deviation Permit

5.2 Management of amendments to manufacturing documents

R.5.2.1 A manufacturing document may need to be amended or revised, for the following reasons:

- A. Project changes to optimise the product;
- B. Changes by Manufacturing Engineering for production or any industrial production requirements;

Any project changes will be reported by LH with the issue of a new design data set.

In relation to these changes, the Supplier's Manufacturing Engineering Department will update the Work Cycle and any documents attached and give evidence to LH.

With reference to the issue of new revisions of applicable models/designs, LH will agree with the Supplier on the introduction of such changes and when they become effective.

The Supplier's Manufacturing Engineering Department will introduce the variations reported by LH in a specific notice to the cycle.

R.5.2.2 For elements classified as CRITICAL, in the case where the project changes notified have an impact on the final characteristics and/or on the relative qualification programme, or when considered appropriate, LH may request the supplier to revise the qualification through the issue of a new FAI plan

When the work cycle is changed, the cycle must be automatically recorded by the IT cycle management system to introduce the new revision.

The system that manages the work cycles must contain a table of revisions and updates to the cycles and the revision bars must be evident on the cycles.

Any retroactive actions concerning ongoing production shall be introduced in existing Work Orders that have already been issued, manually or digitally, with a stamp affixed alongside the change.

In the case of updates referred to Technological Specifications, the Supplier's Manufacturing Engineering Department shall, in addition to any changes to work cycles, revise the related documents (Process Datasheets), listing the reasons for the change.

If the Supplier's Manufacturing Engineering Department requests changes to be made to work cycles, said changes shall be only due to management and/or processing requirements to optimise the method during the industrial production stage.

Quality Requirements for Suppliers of AWHEREO	QRS/AWHEREO/001	Page 11/23
	June 2022	

R.5.2.3 In the case of changes to the process cycle relative to specific items classified as CRITICAL, the Supplier shall inform LH of the changes made through the issue of a new FAI plan along with the new process cycle

R.5.2.4 The Supplier's Industrial Engineering Department is authorised exclusively under its own responsibility to modify the works cycles for items classified as non-critical or cycle operations that are non-critical, provided the cycle is recorded in the system and a new revision is opened.

6 PRODUCTION EQUIPMENT

R.6.1 Any manufacturing and control equipment the costs of which are borne by LH are the property of LH and the supplier shall give LH the project data of the equipment (3D mathematical designs and 2D designs).

R.6.2 The supplier shall provide a complete list of equipment, through the *TOOLING INVENTORY*, that shall contain the following data:

- the tool code
- the index of equipment revisions
- the P/N
- the number of tools
- the reason for a change to a tool, if present, or for the construction of a new tool
- Any requirement for periodic controls, if necessary
- the conditions of the tools (if modified)
- the control date

R.6.3 Identification plates shall be provided for each tool, for:

- ✓ Identification
- ✓ Periodic control, if applicable
- ✓ Revisions
- ✓ Weight

R.6.4 The Supplier will be responsible for the maintenance and good working order of the equipment.

On request of LH, the Supplier is responsible for giving LH the equipment produced and referred to in the Tooling Inventory (that must also include any equipment supplied by LH).

The colour assigned to the production scales is RAL 3005.

Quality Requirements for Suppliers of AWHEREO	QRS/AWHEREO/001	Page 13/23
	June 2022	

7 PRODUCTION

R.7.1 Parts/assemblies/kit shall be produced according to R. 5.1.1.

R.7.2 A hard copy of the Work Order, which is a true copy of the original, shall be made available to LH or request.

R.7.3 Production shall ensure that the quality levels set out in the design requirements and in applicable drawings and/or technical specifications are met.

R.7.4 Production shall follow the company procedures and indications of the Supplier, which must be included in the Supplier's Quality Plan (if any).

R.7.5 For these aspects, the Supplier is responsible for the serial number of the parts and, unless otherwise agreed between the parties, will develop the FAI according to the Qualification Plan (FAIP).

R.7.6 In the Qualification plan applicable to the supply, the supplier shall list the special applicable processes, indicating the processes to be carried out at the supplier's site, and those to be carried at sub supplier's sites.

R.7.7 In the case of special processes or critical operations carried out at sub supplier's sites, the supplier shall specify the name of the company that must be an LH-approved company.

Quality Requirements for Suppliers of AWHEREO	QRS/AWHEREO/001	Page 14/23
	June 2022	

8 TESTS REQUIRED

R.8.1 Reference is made to the Design Data Set and/or specifications applicable to the Order.

R.8.2 If functional acceptance testing (ATP) is required, the outcome of this test shall be documented in a Test Report (ATR).

Where required by applicable specifications, the following shall also be documented:

- Non-destructive tests (NDT)
- Destructive tests
- Dimensional controls

For equipment produced to specifications, for which compliance with a certain performance is required (referred to in the specification), a Design and Performance statement (DDP) with the parameters reached is required.

Quality Requirements for Suppliers of AWHERO	QRS/AWHERO/001	Page 15/23
	June 2022	

9 QUALITY REQUIREMENTS

R.9.1 LH reserved the right to plan and conduct quality audits to evaluate the supplier's organisation, processes and production capacity, with the aim of establishing the capacity to offer products and services conforming to the requirements of purchase specifications, in order to consequently approve the Supplier.

Approval is finalised to the registration within the AWHERO Qualified Suppliers List.

R.9.2 In this regard, LH has the right to access, at all levels of the supply chain involved, the infrastructure and areas used to produce the procured product, and all applicable records (according to the terms and purposes indicated by the purchase order and contractual documentation). This right also applies to the customer and to aeronautical, civil and military authorities.

R.9.3 As a consequence of the above, according to the terms and procedures agreed for the audit, the Supplier shall make available its own structures/resources and any work documents, besides all clarifications requested in relation to the supply, in particular concerning controls of the following aspects/activities:

- Organisational and production capacity;
- Documentation relative to any process, material, equipment, instrument used to produce the supply;
- The records maintained by the supplier, in particular relative to the approval of its suppliers for special processes;
- Documentary evidence on compliance with requirements concerning the processes, methodologies, standards and instruments (hardware and software), applied to develop the activities required by this specification;

R.9.4 With the acceptance of the Order, the supplier undertakes to:

- notify product nonconformities to LH;
- ban making available and processing nonconforming products, unless approval is received;
- notify modifications relative to the product and/or process, or organisational or logistic changes, or changes in (sub)suppliers; when specified, the modifications in question are also subject to approval;
- control the suppliers involved with the P.O., and transfer to them the product requirements, including applicable customer requirements.

R.9.5 If a nonconformity in relation to specified requirements is identified, the Supplier shall take all corrective actions necessary to remedy the nonconformity in the required time .

R.9.6 Intermediate controls (where required) and final control of acceptance of the supply, have to be carried out according to the procedures and terms established in the process cycles.

Quality Requirements for Suppliers of AWHEREO	QRS/AWHEREO/001	Page 16/23
	June 2022	

R.9.7 The Supplier shall keep all technical or other information regarding the work required by this order confidential and shall not disclose it to third parties. Failure to observe the above may result in taking legal action against the Supplier to protect its intellectual property.

R.9.8 Unless otherwise agreed in contracts, ownership of all items designed or developed in conformity to the LH specifications is exclusive LH right that will therefore have full rights to said.

9.1 Management of nonconformities

R.9.1.1 If the Supplier identifies a significant nonconformity in the delivery of the end product, during processing stages, and if the nonconformity has an effect on the quality of the end product or on the delivery times agreed on, the Supplier shall notify to LH of the nonconformity identified and arrange for all corrective measures necessary to eliminate the cause of the nonconformity.

R.9.1.2 After the product has been supplied to the Supplier, and if nonconformities in relation to the specified requirements are identified, the Supplier shall take all appropriate corrective measures, even if nonconformities are identified after acceptance of the supply.

R.9.1.3 According to Q.R. request, a Certificate of Conformity (CoC), or EASA Form 1 in the case of a POA, shall be included with the delivered Parts

R.9.1.4a Any requests for Concession/Deviation Permit, shall be sent to LH Quality Control.

R.9.1.4b Parts with ongoing requests for Concession/Deviation Permit, not yet approved by LH Engineering shall not be delivered.

R.9.1.4c Requests for Concession/Deviation Permit approved by LH shall be indicated in the Certificate of Conformity.

R.9.1.5 The supplier is required to adopt all preventive measures and controls in order to prevent the possibility of counterfeit or suspect counterfeit parts being used.

9.2 Requests for modifications

R. 9.2.1 Requests for modifications shall be sent to the AWHEREO Manufacturing Engineering for preliminary evaluation. AWHEREO Engineering is responsible for final approval of the proposed modification.

R. 9.2.2 Any modification will be made official through updated revision of construction drawings. Until that such drawings are not issued, all deviations due to request for modifications formally approved by LH shall be reported in Concession/Deviation Permit, by using applicable LH form.

Quality Requirements for Suppliers of AWHEREO	QRS/AWHEREO/001	Page 17/23
	June 2022	

10 SPECIAL PROCESSES

R.10.1 Special processes shall be referred to in the production cycles.

R.10.2 Supplier shall attach the process datasheets to the Certificate of Conformity, providing evidence of the qualification issued by LH and/or Nadcap certification.

Quality Requirements for Suppliers of AWHEREO	QRS/AWHEREO/001	Page 18/23
	June 2022	

11 *FIRST ARTICLE INSPECTION (FAI)*

R.11.1 FAI requirements apply according to Q.R. request. FAI report has to be provided according to QRS 101 (ref. AS9102).

R.11.2 The status of the FAIR (Open or Closed) must be reported in the Certificate of Conformity.

Quality Requirements for Suppliers of AWHEREO	QRS/AWHEREO/001	Page 19/23
	June 2022	

12 DOCUMENTATION REQUIREMENTS

R.12.1 Supplier is required to comply with, and apply the Quality Requirements “Q.R.” specified for each item according to P.O.

R.12.2 The Certificate of Conformity must report the Status of the issue of the drawing (for example Released or Pre-Release).

Quality Requirements for Suppliers of AWHEREO	QRS/AWHEREO/001	Page 20/23
	June 2022	

13 MARKING OF PARTS

R.13.1 The parts shall be identified according to the method specified on the drawing/Technical Bill of Materials, indicating: Part Number, Supplier Code, Serial Number (when requested).

Part Number ATA indicated on the applicable drawing

- the Supplier Code to agree on (3 digits)
- the Serial Number (minimum 3 digits, e.g.: S/N 001)
- Lot number (when the S/N is not requested)

Quality Requirements for Suppliers of AWHEREO	QRS/AWHEREO/001	Page 21/23
	June 2022	

14 WEIGHT CONTROL

R.14.1 Weight control shall be carried out using controlled instruments of which the measurement reliability is tested.

R.14.2 Weight control shall be repeated for each delivered part.

Quality Requirements for Suppliers of AWHEREO	QRS/AWHEREO/001	Page 22/23
	June 2022	

15 LOGISTICS, PRESERVATION, PACKAGING AND SHIPMENT

R.15.1 Unless otherwise indicated, Logistics, Preservation, Packaging and Shipment shall comply with the Purchase Order requirements.

R.15.2 Unless otherwise agreed, the Supplier is responsible for shipment, transport and delivery of the parts/assemblies and for all logistics, customs and insurance aspects

R.15.3 Supplier shall be responsible for preservation and packaging of the parts and shall guarantee the absence of contamination and of any damage of delivered parts.

R.15.4 Special measures shall be adopted for Critical parts, in warehouse storage as well as in handling and packaging operations.

R.15.5 The specification STA-100-81-02 applies to aircraft parts.

16 ANNEXES, APPENDICES AND FORMS

Annex A	QRS Requirements Compliance Matrix AWHEREO
Annex B	Deviation Permit Form
Annex C	Declaration of Process Qualification Form
Annex D	FAI declaration Form
Annex E	Claim to Supplier Form
Annex F	Concession Form
Annex G	Manufacturing Inspection Report
Annex H	FAI First Article Inspection Report, consisting of:
	Annex H1 PN Accountability
	Annex H2 Article Accountability
	Annex H3 Characteristic Accountability

Appendix 1 Requirements for Design on Development Suppliers of Airborne and Ground Station Equipment

Applicable Forms:

Annex	Form
A	F01 of QRS-AWHEREO-001
B	F02 of QRS-107
C	F01 of CPR-043-13
D	F04 of CPR-066-15
E	F01 of CPR-085-17
F	F01 of QRS-107
G	F01 of CPR-069-15
H1	F01 of QRS-101
H2	F02 of QRS-101
H3	F03 of QRS-101

Table Annex vs Form