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Quality Requirements for the Supply of Manufacturing to the Defence Systems Business Unit of Leonardo S.p.a.

SUMMARY:

This document specifies the specific quality requirements applicable to Manufacturing supplies to the Defence Systems Business Unit of Leonardo S.p.a.

The general quality requirements for supplies to Leonardo-SDI are specified in the PQA004-L-IT-D procedure.

	Responsibility/Unit	Name/Signature
Author[s]		
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For conformance to original Italian edition

Date: 2022/10/28

M. Romagnoli

Process Authority - Product Quality Assurance

AMENDMENT RECORD

Rev.	Date	BMSCP	Description	Authors
00	15/03/2018	-	First issue	D. Bartoli, C. Pagni A. Decima
01	22/10/2018	054	Whole document: updated ref. to UNI EN 9100:2018; Para. 1.2: added applicability of PQA010-L and PQA011-L when Design and Development activities are required (HW/SW); Para. 1.3: removed the possibility that the IC value is not defined in the PO; - updated Table 1; - specified the meaning of "prototype"; Para. 2.1: Removed notes for applicability of AQAP-2110, EN-9100, ISO-9001; Added ref. to documents PQA010-L and PQA011-L; Para. 4: Added ref. to requirement in PQA004-L (Acceptance of the purchased product or service); Para. 5.3.1: Removed subdivision into subpar.; - In Table 2 modified lists of required documents from the supplier; - In Table 2 included info relevant to: Industrial ownership, documents approval and delivery timing; Appendix A: Updated table 3 according to the modified Table 2 in para 5.3.1	C. Pagni

Rev.	Date	BMSCP	Description	Authors
02	28/04/2020	205	Whole document: logo updated and "Division" replaced with "Business Unit" (change not tracked); Par. 1.3 and 5.3.1: Added indication for RQF code Par. 2.1: Added references to ROHS, CLP, and to document IND005-T; Par.2.2: Added references to templates: CFM103-T, IND100-T, PQA049-T and RKM004-T Par. 3.2: Added ROHS and SVHC Par. 5.1: Changed the title of the paragraph Par. 5.2.1 Added indications for the use of IND005-T document and IND100-T template Par. 5.2.2 Updated the requirements for validation of the production process (FAI) Par. 5.3.1: REACH and ROHS documentation added in the table; added reference to the special cases of Appendix C; added Configuration Report for C2 products; added reference to the IND100-T format Par. 5.3.3: Modified the Req. for sending the Technical Data Sheets now required for each supply; introduced the SVHC criterion in req. REACH; added req. ROHS; added req. for the transmission via email of the ROHS and REACH forms and the Safety Data Sheets. Par. 5.4.1: Changed the requirement for suppliers who hold the Design Authority and the Industrial Property of Built-to-SDI Specification products; changed the requirement for Class II modifications. Appendix A: added references to IND100-T, CFM103-T, RKM004-T, PQA049-T templates; added reference to the Configuration Register and description of the Configuration Management Plan; Appendix B.1.1: applicability extended to the particular cases of Appendix C Appendix B.3: added possible use of IND100-T template; extended req. 6.2 to subcontractors; detailed req. 8 for products in partial configuration; detailed req. 11 for aerospace products and critical items. Appendix B.4.1.7: added reference to the Supplier Portal Appendix B.4.4: added reference to the applicable Forms Added Appendix C: added special requirements for the supply of products in incomplete configuration and for the supply of electrical / electronic cables designed by Leonardo-SDI.	C. Pagni
03	18/06/2020	216	Par. 1.3: Modified Table 1 (Classification Index for Manufacturing supplies); Par. 5.3.1: Modified Table 2 (Documentation requested from the supplier)	C. Pagni
04	29/03/2022	542	Modified code and template of the document according with updated company standard; Para.1.3 and Table 1: Added new codes RQF=C4,C5,C6 – Modified definition of the C3 code; Para. 2.1: Added AER(EP).P-145, AQAP-2310, UNI EN 9102; removed AER-Q-2110 – Added the extended definition of REACH, ROHS, CLP; Para. 2.2: Added ref. to PRG651-T-IT-D and module for REACH declaration; Para. 3.1: Removed entries that are included in the FAI Glossary at para. B.2; Para. 5.1: Modified title and contents, in line with the new RQF codes; Para. 5.1.1: Removed paragraph (already present in PQA004-L-IT-D); Para. 5.3.1: Updated Table 2 "Documents requested from the supplier" (added cases of RQF=C4, C5, C6); Para. 5.3.3: Updated requirements for REACH and ROHS;. Para. B.1.1/1 – Specified that FAI applies to a *"representative sample"* of the first production run; Para. B.3: Modified FAI Reqs: Introduction and reqs. n° 1, 6, 7,10 for better specification (traced) - reqs. n° 2, 3, 9 for better wording (not traced); Para. B.4.6 – Modified requirements for FAI Form compilation; Para. B.5 – Added facsimile of *FAI Form 1-2* e *FAI Form 3* from IND100-T.	C. Pagni

Rev.	Date	BMSCP	Description	Authors
05	28/10/2022	781	Whole document: Updated ref. to BMS documents to which the code has been changed (not traced) Para 5.3.1 – Modified Table 2 as follows: - for RQF codes C4,C5, C6, the End-of-Manufacture test dossier shall not be delivered but made available for viewing at the supplier premises; - for RQF codes C4,C5, a Configuration Management Plan is required, which can be included in the Quality Plan; - for RQF code C3, the GANTT is no more required; - clarified Note (6)	C. Pagni

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1 INTRODUCTION

1.1 Purpose

This document defines the quality requirements for supplies of Manufacturing to the Defence Systems Business Unit of Leonardo S.p.A. (hereinafter Leonardo– SDI).

More general quality requirements applicable to any supplies are specified in the Leonardo-SDI policy PQA004-L-IT-D [1].

1.2 Applicability

This document applies to **Type C** supplies as identified in document PQA004-L-IT-D, i.e. supplies resulting from manufacturing activities for configured products.

This document does not apply to supplies of: COTS and standardised items, raw and semi-finished products, exploding devices, ammunition and weapons, services and work performance. The quality requirements for these types of supplies are contained in specific documents referenced in PQA004-L-IT-D.

If the supplier is also required to carry out HW and/or SW design and development activities, these activities shall comply with the requirements of Leonardo-SDI PQA010-L-IT-D and PQA011-L-IT-D.

In the event of conflict between the requirements of this document and the applicable statutory and regulatory requirements, the latter shall have priority, followed by those of the PO (and referenced documents), and lastly the requirements specified in this document.

1.3 RQF Code

As described in PQA004-L-IT-D, each item of a Purchase Order is classified by Type (letter) and Classification Index (number), which depend on the characteristics and complexity of the requested product or service.

Type and Classification Index are summarized in the **RQF Code**, that is associated to each PO item, and allows identification of the activities and documents the supplier shall provide.

RQF Code = <Type> + <Classification Index>

For example:

RQF = C1 *indicates a supply of Manufacturing (Type C) of complex/critical level (Index 1)*

The following table shows the RQF code values with their associated characteristics. The activities and documents required of the supplier are specified in the following paragraphs.

[1] PQA004-L-IT-D and all other PQAxxx-L policies related to quality requirements for supplies to Leonardo-SDI are available on the Suppliers WEB Portal of Leonardo-Spa /Electronics Division /Defence Systems BU.

RQF	Characteristics of the supply
C1	**COMPLEX/CRITICAL PRODUCTS**[2] Products to which one or more of the followings apply: • The functionality can be correlated, even indirectly[3], to persons and/or system safety; • The product is highly complex in terms of geometric shape, structural frame and / or system engineering; • The realization of the product requires the use of multiple technological disciplines or mono-disciplinary but highly complex technologies • The manufacturing process is critical: construction drawings prescribe strict manufacturing tolerances, the use of special processes, and / or operations that require specific controls. • The realization is so critical that a robust system of planning, management and control is required for the technical, quality and program activities of the production process; • The production process is particularly expensive in terms of time and costs.
C2	**IMPORTANT PRODUCTS**[2] Products not Class 1, for which one or more of the followings apply: • The product has important performance capabilities, correlated, even indirectly[3], to mission operations or to an onerous replacement process in terms of time and cost; • Manufacturing is complex but does not involve processing criticalities other than the application of special processes; • The manufacturing and control process is mature and consolidated.
C3	**COMMON PRODUCTS**[2] Products not Class 1 nor Class 2, for which one or more of the followings apply: • Basic custom-made (built-to-drawing) parts. The production involves a single technological discipline and ordinary machining procedures. Strict tolerances or specific technical constraints are not imposed. Planning the sequence of the fabrication phases is not required. • Prototypes (see definitions at page 8)
C4	Product as for C1 but such that the Industrial and the Intellectual Properties belong to the supplier
C5	Product as for C2 but such that the Industrial and the Intellectual Properties belong to the supplier
C6	Product as for C3 but such that the Industrial and the Intellectual Properties belong to the supplier

Table 1– RQF Code for Manufacturing Supplies

Hereafter a non-exhaustive list of possible products to which this document applies.

[2] The term “Product” means any Systems/Sub-systems/, Equipment/Device, or their assemblies, sub-assemblies, components.
[3] For example for installation aspects

Key function non-metallic materials
Seats and protection for crew, turrets, floors, panels, armour made from composite or ceramic materials, ferrules, etc.

Welded structures and mechanical components
- Shell shells, ballistic protection, racks, carriages/mounts, etc.;
- Parts made from undefined materials for machining by stock removal, cold moulding, bending, calendering, etc.

Plant/systems
An assembly of interconnected components and assemblies, functionally and/or physically assembled so as to form a functional logical unit designed to achieve a service.

Processing of materials furnished by customer
Activity performed by the Supplier using its own equipment and resources on material owned by Leonardo-SDI or the End Customer. This commodity classification also includes the activities carried out “under a phase contract” (partial activity as part of an internal Leonardo-SDI manufacturing process).

Electrical panels, consoles
Assemblies capable of performing, either independently or by interconnecting with other assemblies, specific functions.

Complete assemblies
Assemblies of components or equipment designed to perform well-defined functions within a plant or system; they are usually able to perform independently.

Electrical and electronic components and assemblies (custom-made or with P/N)
- Electrical components and assemblies, circuit boards
- Assembled cables.

Optical and electro-optical component assemblies
Parts or assemblies which perform functions of panoramic vision, detection or sighting of the weapon system operating in the visible or infra-red spectrum, whether or not equipped with sight line stabilisation and whether or not coupled with telemetry laser pulse transmitters. Generally produced by specialized companies based on specifications shared with OTO Melara.

Hydraulic and pneumatic components (custom-made or with P/N)
Parts or sub-assemblies for the production and/or distribution of fluid energy: pipes and hoses, pumps, maximum pressure, sequence and pressure-reduction valves, electrically and mechanically controlled directional valves, servo valves, proportional valves, bag and piston accumulators, cylinders, servo cylinders, motors, cams, tanks, etc.

Machining Equipment
Devices to aid processing intended for internal use and not for sale.
They may be equipped with mechanically, hydraulically or pneumatically operated locking items and include a human-machine interface for their control.

Inspection/Testing Equipment
Devices that allow for the verification of geometric, mechanical, hydraulic, electrical, electronic, functional, and software characteristics.
They may also allow functional tests and measurements to be carried out.

Lifting Equipment
Devices for lifting a product in its final configuration or parts thereof.

Logistic Equipment
Devices for carrying out the verification and maintenance tasks defined in the maintenance plan drawn up for the product. Depending on the level of maintenance required, they may also locate faults and diagnose the equipment under test.

Prototypes[4]
In this document “prototype” means a product (assembly, sub-assembly, component) made by the supplier according with Leonardo-SDI drawings, and deputed to:

- Evaluation of technical choices operated by Leonardo-SDI during the development of a project;
- Verification/Validation of a Design developed by Leonardo-SDI
- Definition by Leonardo-SDI of the Production Line and the relevant Manufacturing and Control documents during the development of a new product (Concurrent Engineering approach)

The prototype concept implies, for the supplier:

- Responsibility for manufacturing the product in accordance with the construction drawings, establishing a cooperation relationship with Leonardo-SDI (see PQA004-L-IT-D paragraph *"Determination and review of requirements"*);
- Application of the quality standards typical of that manufacturing activity, following its internal Quality System

[4] Prototypes intended as outputs of a Design and Development supply and used for demonstrating design verification/validation are not the subject of this document and they are addressed in PQA010-L-IT-D.

2 REFERENCES

2.1 Documents

	Code	Title
	Contractual (applicable when required by the PO or the Contract)	
D1.	AER(EP).P-145	Requirements for Maintenance Organisations
D2.	AQAP 2110 Ed D	NATO Quality Assurance Requirements for Design, Development and Production
D3.	AQAP 2210 Ed A	NATO supplementary Software Quality Assurance Requirements to AQAP-2110 or AQAP 2310.
D4.	AQAP-2310 ed. B	NATO Quality management system requirements for aviation, space and defence suppliers
D5.	UNIEN 9100:2018	Quality Management Systems-Requirements for Aviation, Space and Defense Organizations.
D6.	UNI EN 9102:2016	Quality systems – First article inspection
D7.	UNI EN ISO 3834:2006	Quality requirements for fusion welding of metallic materials
D8.	UNI EN ISO 9001:2015	Quality Management System – Requirements.
D9.	ISO/IEC 17025:2005	General requirements for the competence of testing and calibration laboratories
	International Reference Standards	
D10.	ACMP 2100	Configuration Management Contractual Requirements.
D11.	AQAP 2070	NATO Mutual Government Quality Assurance (GQA) Process
D12.	AQAP 2105	NATO Requirements for deliverable Quality Plans
D13.	ISO 10005:2019	Quality Management System - Guidelines for quality plans
D14.	ISO 10007:2017	Quality Management System - Guidelines for configuration management
D15.	UNI EN ISO 10012:2004	Measurement Management Systems – Requirements for measurement processes and measuring equipment.
D16.	ISO 10013:2001	Guidelines for quality management system documentation
D17.	UNI EN ISO 19011:2018	Guidelines for auditing management systems
D18.	SAE AS9102	Aerospace First Article Inspection Requirement
D19.	STANAG 4107	Mutual Acceptance of Government Quality Assurance and usage of the Allied Quality Assurance Publications (AQAP)
D20.	STANREC 4427	Configuration Management in System Life Cycle Management
D21.	UNI EN/AS 9102	Quality Systems - First Article Inspection

	Code	Title
	Mandatory Requirements[5]	
D22.	---	Finmeccanica – Leonardo Organizational, Management and Control Model pursuant to Legislative Decree no. 231, 8 June 2001
D23.	---	Finmeccanica- Leonardo Group Code of Ethics and Anti-Corruption Code
D24.	---	Consolidated Law on Health and Safety in the Workplace, Legislative Decree 81 of 9 April 2008 as amended
D25.	---	Royal Decree-Law 262 of 16 March 1942, as amended, and integrations 'CIVIL CODE', in particular Book IV - Title III.
D26.	---	Law 192 of 18 June 1998 and Legislative Decree 231 of 9 October 2002, Rules on Subcontracting
D27.		Regulation (EU) No 1907/2006 of the European Parliament and of the Council of 18 December 2006
D28.		Regulation (EC) n. 1907/2006 of 18 December 2006 of the European Parliament and of Council concerning the registration, evaluation, the authorization and restriction of chemical substances and subsequent amendments (REACH Regulation).
D29.		Directive 2011/65 / EU of 8 June 2011 of the European Parliament and of Council on the restriction of the use of certain hazardous substances in electrical and electronic equipment (recast) and subsequent amendments - (RoHS Directive).
D30.		Regulation (EC) n. 1272/2008 of 16 December 2008 of the European Parliament and of Council on classification, labeling and packaging of substances and mixtures which modifies and repeals directives 67/548/EEC and 1999/45/EC and amends the (EC) regulation n. 1907/2006 (Text with EEA relevance) and subsequent amendments - (CLP Regulation)
	Internal Reference Documentation	
D31.	PQA004-L-IT-D	Quality Requirements for Supplies to the Defence Systems Business Unit of Leonardo S.p.A.
D32.	PQA008-L-IT-D	Quality requirements for the Supply of Special Processes
D33.	PQA010-L-IT-D	Quality Requirements for the supply of Design and Development
D34.	PQA011-L-IT-D	Quality Requirements for the supply of Software Design and Development
D35.	QUA017-T-IT-D	List of approved suppliers of Special Processes/NDT and their sub-tier supply chain
D36.	IND005-T	Industrial Engineering Documentation (IE Documentation) - Filling by suppliers.

2.2 Template/Form/Checklist

	Code	Title
T1.	Form 1, EN9102	Part Number Accountability https://www.sae.org/aaqg/publications/as9102af1.doc

[5] Any mandatory requirements may be indicated in the PO.

	Code	Title
T2.	Form 2, EN9102	Product Accountability *(Raw Material, Specifications and Special Process(es), Functional Testing)* https://www.sae.org/aaqg/publications/as9102af2.doc
T3.	Form 3, EN9102	Characteristic Accountability *(Verification and Compatibility Evaluation)* https://www.sae.org/aaqg/publications/as9102af3.doc
T4.	CFM103-T-IT-D	Template for the suppliers' Configuration Management Plan
T5.	IND100-T-IT-D	Template for Industrial Engineering Documentation (IE Documentation),
T6.	PQA049-T-IT-D	Template for the suppliers' Quality Plan
T7.	RKM004-T-IT-D	Template for the suppliers' Risk Management Plan
T8.	---	Leonardo Spa form for REACH Declaration (available on the Leonardo S.p.a. supplier portal)
T9.	PRG651-T-IT-D	Template for ROHS Certificate.

3 DEFINITIONS AND ACRONYMS

3.1 Definitions

Definition	Description
Airworthiness	The ability of an Aircraft or other avionics system / equipment to operate in flight and on the ground without significant risk to the crew, ground personnel, passengers (as applicable) or other third parties.
Design Authority (D.A.)	This means technical responsibility for the project. For supplies that require the supplier to undertake the design phase, the Design Authority is the supplier. Said supplier shall be responsible for clarifying and defining as fully as possible all of the elements necessary for defining and carrying out the activities entrusted to it. Leonardo-SDI is responsible for communicating the requirements against which the Design should be produced: therefore, it shall always provide the Technical Specification and the Supply Specification attached to the PO.
IE Documentation	See IND100-T-IT-D
FAI	A complete, independent and documented physical and functional verification process to confirm that the production methods adopted have produced an acceptable item as specified in the drawings, purchase order, technical specifications and/or other applicable documents.
Fit, Form and Function (3F or FFF)	Often called 3F or FFF, these define the characteristics of a component. If the fit, form and function requirements are the same then the parts are interchangeable.
Supplier	The company that undertakes to build goods and/or carry out work and/or perform services that Leonardo S.p.A. Defence Systems Business Unit requests in writing through orders, purchase contracts or contracts, in compliance with the technical, quality and supply specifications attached and the contractual obligations indicated.
IND100-T-IT-D	It is a technical document (Template IND100-T-IT-D) consisting of an EXCEL file that contains the information necessary to manufacture a part in accordance with the applicable configuration. In particular, it contains: the sequential planning of manufacturing activities; the controls to be performed during and at the end of the manufacturing process (including FAI activities) in order to ensure accomplishment of the drawing/specification requirements; the acceptance criteria; indications for recording the control results, and the associated responsibilities. The IND100-T-IT-D document, partially pre-filled by Leonardo-SDI, is transmitted to suppliers at the bidding stage along with the IND005-T document that provides a guidance for its use and management.
Purchase Order and Framework Agreement	Written agreement, signed by Leonardo SpA Defence Systems Business Unit and the Supplier for the purpose of establishing, regulating or extinguishing a legal relationship of a financial nature, for corresponding services (obligations to give and/or do)
Manufacturing and Control Plan (MCP)	The Manufacturing and Control Plan (MCP) is the summary document that represents the sequential planning of the manufacturing activities and controls to be carried out. It specifies the methods of execution and the associated responsibilities, parameters to be recorded, and the acceptance criteria.

Definition	Description
Intellectual/Industrial Property (IP)	Intellectual property means all rights regarding the protection of works that have creative character (copyright) including software and databases as established by Law 633 of 22/04/1941. Industrial property is defined as all rights concerning the protection of the innovative contribution of industrial creations (e.g. patents, trademarks) according to the provisions of Italian Legislative Decree No. 30 of 10/02/2005. Leonardo-SDI has a policy of retaining the exclusive intellectual and industrial property of the information and documentation transmitted to the supplier, for the realisation of the supply articles, as well as the exclusive intellectual and industrial property of the results of the definition and design activities of the supply articles and the related documentation.
Prototype	Product, system, subsystem, assembly, part, intended for use in: • Experimentation with design choices and • Verification/Validation of the Design by Engineering • Definition of the Manufacturing and Control documents and of the Production Line in Concurrent Engineering by Production Examples: assembly of mechanical components, or an assembly of electrical/electronic components, wiring harness, etc.
Technical Specification	This is the tool by which the essential technical requirements are transmitted to the Supplier in order to allow for the supply to be produced independently; this document is constituted of technical drawings, descriptions for uniquely defining the supply, its requirements and its verification and testing methods.
Experimentation	Experimental activity for evaluation of design choices
Statement of Work (SOW) or Supply Specification	This is the instrument with which the activities to be carried out and the organizational methodologies required are transmitted to the Supplier so that it can comply with the applicable obligations of the supply. In particular: – it defines the activities that shall be carried out, the contractual supplies, the organizational methodologies required to carry out the activities, the Reviews and Audits, the plan, the specific quality requirements for that order and the standards to be complied with (except for the minimum legal requirements to always be complied with), the supply documentation requirements, the requests for particular documentary and procedural standards. – it avoids ambiguities and conflicts of authority.
Prototype status	Status on the configuration management system that allows the acquisition of prototypes only for the purposes indicated in the definition (see Prototype)
Released status	Status on configuration management system for the acquisition of products, systems, subsystems, assemblies, parts for Standard Production
Validation	Confirmation supported by objective evidence that the requirements relating to a specific intended use or application have been met
Verification	Confirmation supported by objective evidence that specified requirements have been met

Further definitions are provided at para. B2 – FAI Glossary.

3.2 Acronyms

Acronym	Description
AQAP	Allied Quality Assurance Publication
CLP	Classification, Labelling and Packaging; (EU regulation No 1272/2008)
COC	Certificate of Conformity
COTS	Commercial off the shelf
D.A.	Design Authority
EAR	Export Administration Regulations
FAI	First Article Inspection
FAIR	First Article Inspection Report
GQA	Government Quality Assurance
GQAR	Government Quality Assurance Representative
HW	Hardware
IP	Industrial Property
ISO	International Standardization Organization
ITAR	International Traffic in Arms Regulations
MCP	Manufacturing and Control Plan (alias Piano di Fabbricazione e Controllo (PFC))
NATO	North Atlantic Treaty Organization
NC	Nonconformity
NDT	Non-Destructive Tests
OU	Organizational Unit
PBS	Product Breakdown Structure
PHST	Packaging Handling Storage Transportation
PO	Purchase Order
PRR	Production Readiness Review
QMS	Quality Management System
QS	Quality System
REACH	Registration, Evaluation, Authorization and restriction of Chemicals (EU regulations 1907/2006)
ROHS	Restriction of Hazardous Substances EU Directive (Directive 2011/65/UE)
RQF	Supply Quality Requirement *(Requisito Qualità Forniture)*
SDI	Defence Systems
STANAG	Standardization Agreement
SVHC	Substance of Very High Concern
SW	Software

4 GENERAL REQUIREMENTS

The following general requirements are applicable and are defined in the document PQA004-L-IT-D:

- Supplier evaluation and monitoring;
- Transmission of supply requirements;
- Leonardo-SDI Interfaces with the Supplier;
- General requirements for the Supplier's Quality System;
- Documentation;
- Determining and reviewing requirements;
- Management of supplies from sub-tiers;
- Identification and traceability
- Configuration Management;
- Acceptance of the purchased product or service;
- Control of nonconforming products;
- Product preservation;
- Management of materials owned by Leonardo-SDI;
- Right of access and support for the customer and GQAR

5 SPECIFIC REQUIREMENTS

5.1 Information for external providers

Whereas the quality requirements for external supplies are specified in purchase orders, in textual mode and through the RQF code, the communication of technical requirements is carried out in different modes depending on the industrial and intellectual property of the products supplied.

Industrial property of Leonardo-SDI

When Leonardo-SDI holds the industrial property of a product, the manufacturer is required to produce one or more copies basing on drawings or manufacturing dossiers attached to the PO. Such documents may be generated by Leonardo-SDI or any its external provider; in the latter case the provider, although has transferred the industrial property, may have retained the intellectual property of the product.

Whenever Leonardo-SDI holds the industrial property of a product, the RQF code indicated on the PO is one of C1, C2 and C3.

Industrial property of the supplier

This is the case where the supplier is required to produce one or more copies of a product basing on drawings or manufacturing dossiers already in its possession, of which it holds the intellectual property (and therefore the design authority) and the industrial property. Leonardo-SDI commissions the supply by indicating in the PO the P/N of the requested product or attaching to the PO a Needs Specification that the product is required to meet.

5.2 Production

5.2.1 Production planning and control

The supplier shall apply a production process suitable to provide evidence that activities are carried out under controlled conditions.

Before starting work, the supplier shall send the following documents to Leonardo-SDI, according to the criteria of Table 2: the Quality Plan, the time schedule of the activities (GANTT), the Risk Management Plan and the Configuration Management Plan.

Where applicable, the supplier shall also send a schedule of the batching of the parts which make up the supply.

The production process shall be defined in a Manufacturing and Control Plan (MCP) which includes: the sequence of the production phases, identification of sub-supplies with relevant sub-suppliers and planned incoming tests, the internal and external machining, the control points with or without Leonardo-SDI witnessing, and quality records to be retained.

The MCP shall include or refer the necessary Machining, Assembly and Control Procedures which describe the manufacturing activities and the product acceptance criteria, and shall be submitted to Leonardo-SDI for approval if the Business Unit holds the Industrial Property for the product.

As a support to the above activities, the supplier shall apply the requirements contained in IND100-T-IT-D according the indications of Leonardo-SDI IND005-T[6]

It is a supplier's responsibility to ensure the availability of suitable equipment, resources and personnel for manufacturing the requested products, as well as to respect the contractual scheduling.

At the end of the manufacturing process, the supplier shall submit 100% of the products to the industrial acceptance test and record the results in the applicable control forms.

The supplier shall compile a dossier with all of the records required to provide evidence of the correct application of the production process and the results of the final tests.

Leonardo-SDI reserves the right to carry out checks during the production activities carried out by the supplier.

5.2.2 Validation of the production process (FAI)

For a production process implemented for the first time, if requested in the purchase order, the supplier shall carry out a verification of this process on the first article produced or the first production batch (First Article Inspection). The relevant records shall be submitted to Leonardo-SDI for approval.

Verification can include an inspection by Leonardo-SDI according to the methods described in Appendix A. The FAI shall be repeated if a suspension of the production process exceeding two years has occurred since the last production carried out for the type of article covered by the order.

Records of FAI activities shall be performed according the indications in Appendix B.

[6] IND100-T-IT-D is a pre-filled template, prepared by Leonardo-SDI Industrial Engineering, to be completed (as agreed) by the supplier. For each P/N it contains the information relating to the sequential planning of manufacturing activities and the controls to be carried out in the various stages of production (including FAI activities). It specifies the methods of execution, the acceptability criteria, the registration methods and the associated responsibilities, with correlation to the applicable configuration. IND105-T provides a guidance for use of IND100-T-IT-D.

5.2.3 Special Processes

Where manufacturing activities involve *Special Processes*, the requirements specified in PQA008-L-IT-D shall apply.

5.2.4 Conformity of the equipment with the regulations in force

All equipment shall comply with Legislative Decree 81/2008 an subsequent amendments, and, where applicable, with the applicable European Directives relevant to CE marking, in order to adequately protect operators from potentially dangerous situations such as moving parts, contact with high voltages or temperatures, overturning, dangerous protrusions, improper use, etc.

5.3 Documentation

5.3.1 Supply documentation

According to their RQF code, indicated in the Purchase Order, the products shall be manufactured and delivered accompanied by documentation according to Table 2.

Further documents and/or specific requirements may be expressly requested by Leonardo-SDI in the order itself or in other documents referred to in the order.

Table 2 - Documents requested from the supplier

Documents	RQF Code						Leonardo-SDI Acceptance Required	Date of dispatch to Leonardo-SDI
	C1	C2	C3	C4	C5	C6		
Quality Plan (QP)	X	(6)		X	(6)		Yes	Within 1 month from PO acceptance
GANTT/Planning	X	X					Yes	Within 1 month from PO acceptance
				X	X		To be made available for examination within 1 month from PO acceptance	
Risk Management Plan (RMP)	X	(5)		X			Yes	Within 1 month from PO acceptance
Configuration Management Plan (CMP)	(5)	(5)		(5)	(5)		Yes	Within 1 month from PO acceptance
Manufacturing and Control Plan (MCP)	X	X					Yes	Within 1 month from PO acceptance
MCD - Manufacturing & Control Dossier (see Appendix A)	X	X		X	X		To be made available on request at the supplier premises, for examination	
FAIR (FAI Documentation – See Appendix B	(2)						Yes	With invitation to Finale Acceptance Test
				(2)			To be made available on request at the supplier premises, for examination	
Special Process Control Procedures (PPS)	X	(1)	(1)				Yes	Within 1 month from PO acceptance
				X	(1)	(1)	To be made available on request at the supplier premises, for examination	
Special Process Certificates (CPS)	X	(1)	(1)	X	(1)	(1)	---	At delivery, for supply acceptance
FMD - Final Manufacturing Dossier (see Appendix A)	X	X		X	X		To be made available on request at the supplier premises, for examination	
End-of-Manufacture Test Dossier (Visual, Dimensional and Functional Controls)	X	X	X				---	At delivery, for supply acceptance
				X	X	X	To be made available on request at the supplier premises, for examination	
Configuration Register (CR)	X	X					---	At delivery, for supply acceptance
User Manual (UM)	(3)	(3)	(3)	(3)	(3)	(3)	---	At delivery, for supply acceptance
Acceptance Test Procedure (ATP)	X	X		X	X		Yes	1 month before the Final Acceptance Test
Acceptance Test Report (ATR)	X	X		X	X		Yes	At delivery, for supply acceptance
Certificate of Conformity (CoC)	X	X	X	X	X	X	---	With invitation to Finale Acceptance Test
EC Declaration of Conformity (ECDC)	(4)	(4)	(4)	(4)	(4)	(4)	---	At delivery, for supply acceptance (as applicable)
REACH Declaration and Safety Data Sheets (SDS) (see para. 5.3.3)	X	X	X	X	X	X	---	At delivery, for supply acceptance (as applicable)
ROHS certificate (see para. 5.3.3)	X	X	X	X	X	X	---	At delivery, for supply acceptance (as applicable)
Technical Data Sheets (TDS) (see para. 5.3.3)	X	X	X	X	X	X	---	At delivery, for supply acceptance (as applicable)
Other certificates according to the specific characteristics and requirements of the supply	X	X	X	X	X	X	---	At delivery, for supply acceptance (as applicable)

(1) If Special Processes are applied; (2) Only if FAI is required in the PO; (3) Required for any type of Tools/Equipment; (4) Required for Tools/Equipment or other products subject to safety requirements according to any EU directives related to CE marking; (5) May be included in the Quality Plan unless otherwise stated in the PO; (6) Required if the supplied product is an assembly for which application of Special Processes and/or subcontracted machining are planned.

- NOTE-1: where applicable, some documents can be provided as a part of the IND100-T-IT-D format (see para. 3.1)
- NOTE-2: additional requirements for special cases are given in Appendix C

5.3.2 Control of quality records

Records required to demonstrate that the supply meets the specified requirements shall be controlled by the supplier in order to assure their identification, storage, preservation and retrieval according the requirements of PQA004-L-IT-D.

5.3.3 Documentation required by current legislation

In addition to the documents listed in the previous paragraphs, and depending on the intrinsic characteristics of the supplied product, the Technical Data Sheets, Safety Data Sheets and any other document and/or certification required by the current regulations shall also be delivered with the supplied product.

In particular:

A) Technical Data Sheets (TDS)

When the suppled item contains non-metallic materials and/or chemical substances, the relevant TECHNICAL DATA SHEETS shall be supplied which describe the characteristics of such materials/substances.

The list of substances for which a data sheet is to be delivered shall include at least:

a. Painting products (paints, solvents, thinners, catalysts, fillers, etc.);
b. Products used/usable for cleaning (soaps, acids, alkalis, detergents, etc.);
c. Adhesives and sealants (adhesives, mastics, sealants, adhesion promoters, etc.) used;
d. Lubricants (oils, greases, cleaners) used;
e. Welding materials (electrodes, welding wire, flux pastes, sealing pastes, insulating pastes, non-stick pastes, etc.)
f. Composite materials used;
g. Various types of resins used;
h. Thermal, acoustic, fire-resistant, self-extinguishing insulating materials, etc. contained in the product;
i. Special metal sheets used;
j. Technical gases used;
k. Grinding products (metallic or non-metallic grit for sand-blasting, lubricant-cooling liquids, penetrating liquids, diesel);
l. Products for purification systems (acids, alkalis, etc.)
m. Coolants used
n. Fire-extinguishing products (foams, powders, etc.)

The data sheets shall be sent to Leonardo-SDI together with each delivered supply.

B) REACh Declaration

Pursuant to the REACH regulation (EU standard 1907/2006), for each supplied item

a REACh declaration pursuant to Art. 33 shall be produced, to state the presence or absence of SVHC (substances of very high concern) in quantities exceeding 0.1% weight/weight. The supplier shall notify Leonardo-SDI using the specific form available on the supplier portal of Leonardo S.p.a.(link: https://www.leonardocompany.com/it/suppliers/supplier-portal).

The module shall be sent to Leonardo-SDI together with each supplied item and by e-mail to the following address: reach.declarations.electronics_ds@leonardocompany.com.

The number of the related purchase order shall be indicated in the e-mail subject line.

C) Safety Data Sheets (SDS)

In compliance with the REACh and CLP regulations, the Safety Data Sheet (SDS) in Italian language shall be provided for each chemical product, substance and/or mixture supplied. The sheets shall accompany each supplied item and shall also be sent by e-mail to the following address: reach.msds.electronics_ds@leonardocompany.com. The purchase order related to the supply shall be indicated in the e-mail subject line.

The contents of the Safety Data Sheets shall comply with the applicable legal requirements

D) RoHS Certificate

For supplies of Electrical and Electronic Equipment, in compliance with the RoHS 2011/65/EU regulation, the supplier is required to draw up a certification as indicated in the specific form PRG651-T-IT-D (fillable version available on the Suppliers Portal of Leonardo S.p.a. https://www.leonardocompany.com/it/suppliers/supplier-portal). The form shall accompany each supplied item and shall also be sent by e-mail to the address: reach.declarations.electronics_ds@leonardocompany.com.

The number of the related purchase order shall be indicated in the e-mail subject line.

5.4 Configuration Management

In addition to the requirements of PQA004-L-IT-D, the requirements of this paragraphs apply.

5.4.1 Management of Configuration Changes

If during manufacturing the supplier deems it appropriate/necessary to introduce Class I (Major) changes to the product configuration, the following cases occur:

- If Leonardo-SDI holds the Design Authority[7] and the Industrial Property of the product, the supplier shall submit to Leonardo-SDI a formal Change Proposal of the project. The change can be introduced on the product by the supplier only after approval by the Business Unit, which will send the construction documents suitably updated. Subsequently the supplier shall update the dossier of contractual requirements and the manufacturing control documentation affected by the change.

- If the supplier holds the Design Authority for the product but the Industrial Property belongs to Leonardo-SDI, the supplier shall submit to Leonardo-SDI a formal Change Proposal for the project. Only after Leonardo-SDI's approval the supplier will be allowed to update the project documentation and introduce the change on the product. If necessary, the supplier shall update the manufacturing control documentation affected by the change accordingly.

- If the supplier holds the Design Authority and the Industrial Property of a product built according to SDI Specification, and during the supply period (including the supply of spare parts in accordance with the contractual indications) it intends to introduce Major changes to the product configuration, it is required to request the prior authorization by Leonardo SDI.

Class I (Major) is any change that has an impact on the interchangeability of a product in terms of Form, Fit or Function. Changes that do not alter the interchangeability of a product are defined as Class II (Minor) and do not require the authorization of Leonardo-SDI. Anyway the supplier shall submit in advance Class II (Minor) Changes to Leonardo-SDI for verification of class correctness.

[7] This case also applies if Leonardo-SDI is the intermediary to another Design Authority, as for products built under licence.

5.4.2 Reporting Problems

If any problem is detected during manufacturing, the supplier shall promptly report to Leonardo-SDI in accordance with the contractual provisions and the parties shall agree on the solution, which shall be managed according to the contractual terms.

5.4.3 Variations during construction

If, during manufacture, Leonardo-SDI intends to modify the technical construction documentation, will inform the supplier in order to jointly assess the impact of the change and its applicability; the parties shall manage the economic/time consequences according to the contractual terms.

5.4.4 Management of manufacturing documents and tools

All documents and tools used for manufacturing and control by the supplier (internal procedures, work cycles, programs for mechanical processing, moulds, control gauges, etc.) shall:

- Be univocally identified (identification shall be reported in the Manufacturing & Control Plan when this is required);
- Be managed under configuration control. The reference baseline is the one used to produce the first article in the series (or the product successfully submitted to FAI, if required by order);
- Any changes to the above document baseline shall be communicated to Leonardo-SDI and may be subject to PRR (Production Readiness Review) and FAI (at the decision of Leonardo-SDI)

The above without prejudice to the responsibility (always and in any case) of the supplier in the realization of the product in conformance with the contractual requirements.

Appendix A – DOCUMENTS TO BE SUPPLIED

Document	Description
ATP/ATR	**Acceptance Test Procedure**: Procedure for acceptance of the supply. Proof of practical use can be requested for the first supply or in case of significant structural or functional changes. The ATP shall be associated with the relevant Acceptance Test Report (ATR), filled with the results of the acceptance tests.
ATR	**See ATP/ATR**
EOMTR	**End-of-Manufacturing Test Report/Sheet**: reports the results of internal final tests performed at the end of the manufacturing process.
DCC	**Dimensional Control Certificate** - shows the measurements made during the inspection and replaces the TC if the drawing is exhaustive for the inspection of the part. If ATP is applied, it is associated with the ATR.
CMP	**Configuration Management Plan**: Document that describes the Configuration Management methods applied to the supply in compliance with the applicable standard and the provisions of the contract (see PQA004-L-IT-D and relative template CFM103-T-IT-D available on the Leonardo SpA Supplier Portal). If not required as a separate document, the CMP shall be a part of the Quality Plan for the supply.
COC	**Certificate of Conformity:** (See PQA004-L-IT-D)
SPC	**Special Process Certificate:** certificate for the use of a special process (see PQA008-L-IT-D)
CR	**Configuration Register:** document associated to each manufactured item to describe the "as-built" hierarchical structure of the product, identifying the component parts by Part Number, Revision Index and Serial Number.
CC	**Calibration Certificate:** necessary when the apparatus is subject to calibration verification, i.e. when it incorporates instruments subject to calibration.
CEDC	**CE Declaration of Conformity:** is a legal document which the Manufacturer or authorized representative established in the European Community signs, with assumption of responsibility, to state that the product meets all of the requirements of the applicable EU directive and regulations. The declaration shall be related to the S/N of the supplied item, shall report the data required by the applicable Directives and be signed by the supplier's Legal Representative. This documentation shall be sent to Leonardo-SDI together with the supply. The names with the relative roles shall be reported in full in a legible form. Leonardo-SDI reserves the right to ask the Supplier for documentation certifying the authorization to draw up and sign this Declaration.
FMD	**Final Manufacturing Dossier:** Consists of the MCD plus the collection of all records and certificates relating to controls and tests carried out on the product during its manufacture.
FAIR	**First Article Inspection Report:** Specific additional documentation to be provided in cases where the manufacture is carried out for the first time or a certain time has elapsed since the last manufacturing carried out (see Appendix A and IND100-T template).
GANTT	**GANTT/Planning:** Document containing a detailed time schedule for the activities planned by the supplier for the execution of the order. In its simplest form it consists of a GANTT chart
PL	**Parts List:** Structured list of the parts that make up the supplied product
MI	**User Manual:** manual for the use and safety of the equipment, containing the list of spare parts, etc. in accordance with the applicable Directives.
MCD	**Manufacturing & Control Dossier:** Set of documents necessary to manufacture a product under controlled conditions. It includes: - Construction drawings and related parts lists, - Manufacturing and control plan - Work cycles - Instructions and operating procedures - Test sheets and / or procedures - Special process management procedures
MCP	**Manufacturing Control Plan**: Describes the plans for production activities: list of purchased components and associated incoming tests, fabrication working phases and relevant controls, including methods to be applied, acceptance criteria, and records to be generated. The MCP also specifies the control points selected for quality assurance activities of Leonardo-SDI and its final customer (See details in PQA004-L-IT-D and template IND100-T-IT-D).

Document	Description
RMP	**Risk Management Plan:** Document describing the supplier's plans to identify, control and mitigate the operational and technical risks associated with the supply (see PQA004-L-IT-D and relative template RKM004-T-IT-D available on the Leonardo SpA Supplier Portal).
QP	**Quality Plan:** (see PQA004-L-IT-D and relative template PQA049-T-IT-D available on the Leonardo SpA Supplier Portal)
SPP	**Special Process Procedures:** set of control documents, intermediate test results and anything else related to the special processes used in the manufacture of the product (see PQA008-L-IT-D)
TDS	**Technical Data Sheet:** Document which describes the technical characteristics of non-metallic materials and/or chemical substances.
SDS	**Safety Data Sheet:** legal document in which the hazardous properties of a chemical product are listed, and indications are given for safe operation of the product.

Table 3 - Description of the Supplied Documents

Any special cases are listed in Appendix C

Appendix B - FIRST ARTICLE INSPECTION (FAI)

B.1. Introduction

B.1.1. *Purpose*

The purpose of First Article Inspection (FAI) is to:

1. Validate the Supplier's production processes, confirming on a representative sample of the first production batch that the manufacturing processes used are capable of producing products that comply with the applicable requirements and technical documentation;
2. Verify that the production processes are applied systematically and therefore they are stable and repeatable.

The purpose of this appendix is to define:

- ✓ The requirements to be met by the supplier when controlling the first production run (hereinafter First Article Inspection) for products supplied to Leonardo-SDI,
- ✓ The documentation required to provide evidence of the checks carried out on the cycle and the equipment used.

B.1.2. *Applicability*

This Appendix applies to all supplies for which execution of FAI is requested according to indication of Table 2.

Possible special cases are specified in Appendix C.

B.2. FAI Glossary

Definition	Description
Attribute	The result of the control of a characteristic or property that is evaluated only as to whether it conforms or does not conform to the requirement but is not numerically quantified (e.g. pass-not pass or conforms-does not conform).
Balloon drawing	A drawing in which each characteristic or requirement is clearly marked with a unique identification number. The number can be within a circle or box for easy visual identification
Key Characteristic	Attribute or feature whose variation has a significant effect on product fit, form, function, performance, operating life or producibility, that requires specific actions for the purpose of controlling variation.
Design Characteristic	"Design Characteristics" are all of the dimensional, visual, functional (mechanical, electrical, embedded software, etc.) and property or performance characteristics of the materials constituting the object, as specified in the design documentation. "Design Characteristics" include process variables (e.g. heat treatment temperature and time), acceptability criteria (e.g. inspection class with penetrating liquids, acceptability standards), control procedures and welding sequences.
Drawing Requirements	These are the requirements indicated in the drawing, the bill of materials (if not mentioned in the drawing), the specifications or the purchase documents according to which the article is produced. They also include all notes, specifications and lower-level drawings.
Evaluation	Measurement, inspection or test to determine conformity of a characteristic with the requirements of the design.
FAI	A complete, independent and documented physical and functional verification process to confirm that the production methods adopted have produced an acceptable item as specified in the drawings, purchase order, technical specifications and/or other applicable documents.
FAI Plan	See FAI Planning
FAIR	FAIR is a set of documents and records, issued or drawn up for each individual part and/or assembly constituting the object of the FAI and organized according to the UNI EN/AS 9102 standard.
Inaccessible Characteristic	A characteristic that can only be assessed when it is generated without sacrificing the part. For example, inaccessible dimensions such as internal dimensions of castings or welded joints, or inaccessible non-dimensional characteristics such as chemical and physical properties
FAIR Module	The FAIR Module is composed by the *'FAI form 1-2'* and *'FAI form 3'* sheets of the EXCEL file IND100-T-IT-D. It is pre-filled by Leonardo-SDI for purpose of specifying the intermediate and final controls the supplier shall carry out to ensure the product compliance to the technical requirements.
Compiled FAIR Module	The FAIR Module when populated with the results of the controls carried out. If the supplier has received the IND100-T-IT-D template pre-filled by Leonardo-SDI, the "Compiled FAIR Module" is composed by the *FAI form 1-2'* and *'FAI form 3'* sheets of IND100-T-IT-D completed with the supplier data. UNI EN 9100 certified suppliers may register FAI activity using their own internal forms or Forms 1, 2, 3 as required by the UNI EN 9102 standard.
FAI Planning	All of the activities that shall be carried out before production begins and that are included in a document called an FAI Plan

Definition	Description
First Production Batch **(First Production Run)**	The first group of one or more parts which are the result of a defined production process which is to be used for the future production of the same part. Prototype parts or parts made using methods other than those envisaged by the production process shall not be considered as part of the First Production Run.

B.3. REQUIREMENTS

This paragraph states the requirements for suppliers performing and documenting the First Article Inspection (FAI).

The supplier is responsible for FAI activities performed under the contract. At completion of the FAI activities the supplier shall send the FAI Report and related attachments for approval to Leonardo-SDI Industrial Engineering, together with the notice for FAI acceptance test.

In case of conflict between UNI EN 9102 and this PQA006-L-IT-D document, the latter shall prevail.

Requirement 1

The FAI shall be performed on an article representative of the first production batch. The Supplier shall not proceed with delivery before the FAI has been approved by Leonardo-SDI. The FAI requirements shall be extended to all sub-suppliers. The outcome of the FAI is binding for the continuation of series production.

Requirement 2

The Supplier shall send the FAI Plan to Leonardo-SDI within one month of receiving the order. The document shall contain the activities carried out by sub-suppliers.

FAIs carried out by sub-suppliers are an integral part of the FAI performed on the product supplied to Leonardo-SDI under the contract.

Requirement 3

The FAIs carried out on individual parts (FAI Form 1 /field 13= Detail) installed into a supplied assembly are an integral part of the FAI for the assembly (FAI Form 1 / field 13= Assembly).

Requirement 4

The Supplier shall notify Leonardo-SDI of the start of planned activities at least 15 working days before the activities are carried out.
Leonardo-SDI reserves the right to participate in any phase indicated in the FAI Plan.
In addition, the supplier shall notify Leonardo-SDI in writing of the intention to apply amendments to the FAI Plan at least 10 working days prior to their actual application.

Requirement 5

The Supplier shall carry out the FAI on the first production batch: any exceptions are to be authorized in writing by Leonardo-SDI.

Requirement 6

The Supplier shall repeat the FAI, in whole or in part, in case of:

1 Design changes are introduced that affect interchangeability (3F);
2 Changes are made on the production process, on control methods, on the production site of the supplier or any sub-suppliers, on source materials or equipment that could affect interchangeability (3F);
3 Changes are made to numerical control programs or other programming languages that could affect interchangeability (3F);
4 Natural events or events caused by human factors occur that could affect the production process;
5 Two or more years have passed since the last batch was produced, or as otherwise specified by Leonardo-SDI.

Requirement 7

The FAI requirement can be satisfied by a partial FAI (FAI - Form 1 /field 14 = Partial FAI), rather than a full FAI (Form 1 /field 14 = Full FAI). In such case the partial FAI shall address only the differences between the current configuration and a previously approved configuration.

The FAI requirement can be fulfilled by a previously approved FAI, carried out on identical characteristics of a similar product manufactured with the same equipment, the same production cycle, the same materials and at the same production site.

Requirement 8

The FAI does not apply to:

1 COTS materials;
2 “Deliverable” software;
3 Commercial metallic and non-metallic raw materials;
4 Prototypes;
5 Repaired materials.

Full FAI does not apply to products in partial configuration (see Appendix C).

Requirement 9

The FAI is not complete (FAI Form 1 /field 19 = Not Complete) until all nonconformities affecting the product have been closed and the corrective actions necessary to eliminate the causes have been implemented. In such case a partial FAI (Form 1 /field 14 = Partial FAI) shall be repeated only on nonconforming characteristics.

Requirement 10

FAI results shall be documented by the supplier (see para. B.4.6)

Requirement 11

The Supplier shall properly retain the FAI documentation for at least 10 years unless otherwise indicated in the PO and shall provide Leonardo-SDI with a copy of the FAI if requested, at no additional cost unless provided for in the PO (15 years for the documentation relating to aeronautical products and items with criticality level 1 according to the indications given on the Title Block of the drawings).

Requirement 12

If the FAIR is incomplete, partially incorrect or not passed, Leonardo-SDI reserves the right to have the Supplier partially or completely repeat the FAI at no additional cost.

Requirement 13

The item submitted to FAI shall be identified by marking according to the drawing (if the drawing does not provide for identification, a label shall be used to identify the item or to report its identification on its packaging).

B.4. KEY FEATURES OF THE FAI

B.4.1. Action plan for conducting the FAI

The Supplier shall carry out the FAI under its own responsibility, on one or more representative items (as agreed with Leonardo-SDI) from the first production batch.

The FAI action plan is the set of the activities to be carried out before starting the production process of a supply subject to FAI. The plan shall include:

1. Verify that the applicable configuration referenced in the PO matches the product received;
   Identify all of the characteristics to be checked, as indicated in the applicable technical documentation. These characteristics shall be tracked during the FAI process and shall be identified in the drawings (e.g. Balloon Drawing), in the specifications and in the whole applicable technical documentation, and shall be recorded in FAIR Form 3.
2. Identify the key characteristics to ensure that these are properly verified during the production process;
3. Define the methods for validating the 3D measurement programs, with relevant evidences to be provided in support of the validation of the measurement program;
4. Review the manufacturing plans, the working instructions and the applicable technical documentation to verify their clarity and detail and the definition of the control sampling methods;
5. Verify that the qualifications of the personnel assigned to the activities indicated in the production process are suitable for the planned special and critical operations and processes;
6. Verify that the sub-tiers providing parts of the supply are able to provide all the evidence in support of the FAI;
7. Verify that sub-tiers of special processes, critical processes and NDT are listed in QUA017-T-IT-D (document available on the Leonardo SpA Supplier Portal).
   Identify the equipment to be used to support the production process and verify that the calibrations are still valid during the period of use, according to the procedures of its Quality Management System;
8. Verify the presence of the functional test procedure and send it to Leonardo-SDI for approval;
9. Verify the presence of the packaging and shipping procedure, according to the procedures of the supplier's Quality Management System, and send it to Leonardo-SDI for approval;
10. Check for the presence of any nonconformities recorded in the past (if any), making the appropriate corrections to the manufacturing process.

B.4.2. FAI Plan

The supplier shall send the FAI Plan to Leonardo-SDI within one month from receipt of the PO, the schedule shall be a table or a GANTT chart that shows:

1. The date of availability at the supplier's premises of the materials procured for carrying out the activities, with proper identification of all the supplied items;
2. The dates of the activities reported in the MCP with particular emphasis on those relating to special processes and all planned inspections (with identification of holding points and witness points). The FAI Plan and the MCP shall contain all the necessary controls to verify the characteristics identified on the drawings by the "ballooning" method;
3. The delivery date of the MCP, ATP and FAIR;
4. The dates of the final tests.

On a monthly basis (to be agreed with the supplier), joint audits will be carried out with Leonardo-SDI and the supplier in order to verify the effective performance of the planned activities. In the event of significant deviations between the plan and progress, the frequency of the progress meetings shall be increased.

B.4.3. Preliminary activities for the FAI

The approval by Leonardo-SDI of the following documents is required prior to the conduct of FAI activities:

1. FAI Plan;
2. Test procedure (ATP);
3. Production control documents (e.g. MCP).

B.4.4. Conduct of the FAI

1 The FAI shall be performed on one or more items (as agreed with Leonardo-SDI) which are representative of the first production batch, known as the First Production Run;
2 The FAI shall be performed on all of the components which make up the assembly;
3 The FAI shall be performed and documented in accordance with UNI EN 9102 and this document;
4 Results from FAI shall be recorded according with the requirements of this Appendix B;
5 The supporting evidence for all checks referred to in the FAIR shall be an integral part of the FAIR;
6 The FAI shall be performed after the Product Readiness Review (PRR) when requested in the order.

B.4.5. Status of the FAI

The status of the FAI (Complete / Not complete) shall be recorded in the appropriate field of the FAI Form-1.

The status is “Not complete” when non-conformities relating to the inspected part are still open and corrective actions have yet to be introduced. In this case the supplier shall repeat the FAI only for the non-conforming characteristics.

B.4.6 Compiling FAI Forms

Suppliers who have received the IND100-T-IT-D file (IE_Documentation) and the IND005-T document from Leonardo-SDI, shall record the FAI results in the *FAI Form 1-2* and *FAI Form 3* of IND100-T-IT-D, in accordance with the indications of IND005-T.

Otherwise, the Supplier shall compile the Forms 1/2/3 required by the UNI EN 9102 standard (available on the SAE website), according with the requirements of the standard, or shall use other company formats as long as containing the same fields of the standard. Fields indicated as optional (O) can be excluded.

The forms shall be compiled in Italian or English language unless otherwise specified in the order.

FAI documentation shall include records that enable verification of the product compliance with the applicable engineering, design and specification requirements.

In para. B.5 and B.6 the FAI Forms of IND100-T-IT-D and UNI EN 9102 are presented.

B.5. FAI Form of IND100-T-IT-D

Facsimiles of FAI Forms contained in the Leonardo-SDI IND100-T-IT-D file are presented below.

IND100-T-IT-D - First page of FAI Form 1-2 (Fac-simile)

Formato di Stampa: A3

PRN_IND100-T rev. 04 - Template per documentazione IE (PFC Master).xlsx - FAI Form 1-2

	REPORT F.A.I. - Form 1-2 *First Article Inspection Report - Form 1-2*	**Codice Documento FAI** *FAI Document Code*	_0_00_FAI	**Revisione Documento IE** *Revision Level IE Document*	00
		(1) Codice Parte *Part Number (Leonardo)*		**(5) Revisione della Parte** *Part Revision Level*	0
(10) SOCIETA' EMITTENTE / *Issuing company (Leonardo SDI / Supplier Name and Code)*	0	**(6) Numero di Disegno** *Drawing Number*	#N/D	**(7) Revisione del Disegno** *Drawing Revision Level*	#N/D
ENTE EMITTENTE / *Issuing Department*	INGEGNERIA INDUSTRIALE (Industrial Engineering)	**Numero di Disegno del Fornitore** *Supplier Drawing Number*		**Revisione Disegno del Fornitore** *Supplier Drawing Revision Level*	
(2) DENOMINAZIONE / *Part Name*		**Numero Lotto di riferimento** *Lot Number*		**Quantità del Lotto** *Lot size*	
P/N ASSIEME SUPERIORE D'ACQUISTO *Part Number top assembly buy*		**(12) Num. Ordine di Acquisto** *Purchase Order Number*		**Numero Ordine di Lavoro** *Work Order Number*	
(11) Codice del Fornitore *Supplier Code*		**Numero ciclo di lavoro** *Work Cycle Number*		**Revisione ciclo di lavoro** / *Work Cycle Revision*	
(3) Numero di serie *Part Serial Number*		**(4) Codice FAI** *FAI Report Number*		**Riferimento alla doc. IE** *Manufact. Process Reference*	_0_00_IE
(13) FAI Item *FAI Item*	Detail FAI	**(8) MODIFICHE ADDIZIONALI** *ADDITIONAL CHANGES*			
(14) Tipo di FAI *Type of FAI*	Partial FAI	**Reason for Partial FAI:**	Evento accidentale che può compromettere la fabbricazione (A natural or man-made event which may adversely affect the manufacturing process)		

Livello *Level*	Tipo *Type*	(15) CODICE PARTE *PART NUMBER*	Revisione *Revision*	(16) DESCRIZIONE *PART NAME*	CODICE DOCUMENTO FAI (SE APPLICABILE > LCP=1) *FAI DOCUMENT CODE (IF APPLICABLE > LCP=1)*
0			0		
0			0		
0			0		
0			0		
0			0		
0			0		
0			0		
0			0		
0			0		
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0			0		
0			0		

Template: PRN_IND100-T rev. 04 - Template per documentazione IE (PFC Master).xlsx

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IND100-T-IT-D – Last page of FAI Form 1-2 (Fac-simile)

Formato di Stampa: A3 — PRN_IND100-T rev. 04 - Template per documentazione IE (PFC Master).xlsx - FAI Form 1-2

Livello *Level*	Tipo *Type*	(15) CODICE PARTE *PART NUMBER*	Revisione *Revision*	(16) DESCRIZIONE *PART NAME*	CODICE DOCUMENTO FAI (SE APPLICABILE > LCP=1) *FAI DOCUMENT CODE (IF APPLICABLE > LCP=1)*
0			0		
0			0		
0			0		
0			0		
0			0		
0			0		
0			0		
0			0		

(17) Numero di Serie delle Parti / *Part Serial Number*	Dettaglio presente nella documentazione IE relativa ai singoli componenti dell'Assieme (PN_IE) Foglio FAI Form 1-2 dei componenti ove il FAI è richiesto *These details can be found in the IE documentation of each component of the Assembly (PN_IE) Sheet FAI Form1-2 of the components where the FAI is requested*		
(18) Numero del FAI Report / *FAI Report Number*			
(5 Form 2) Materiale grezzo o Processo Speciale *Material or Process Name*			
(6 Form 2) Norma o Specifica relativa al materiale/processo *Specification Number*	Dettaglio presente nella documentazione IE relativa ai singoli componenti dell'Assieme (PN_IE) Foglio PFC dei componenti ove il FAI è richiesto *These details can be found in the IE documentation of each component of the Assembly (PN_IE) Sheet PFC of the components where the FAI is requested*	(10 Form 2) Numero di certificato *Certificate of Conformance Number*	Dettaglio presente nella documentazione IE relativa ai singoli componenti dell'Assieme (PN_IE) Foglio PFC dei componenti ove il FAI è richiesto *These details can be found in the IE documentation of each component of the Assembly*
(7 Form 2) Codice identificativo del materiale o del processo (se applicabile) *Code*		(11 Form 2) Codice della procedura di prova utilizzata *Functional Test Procedure Number*	
(8 Form 2) Fornitore del Materiale/Processo speciale *Special Process Supplier Code*		(12 Form 2) Codice del report di prova *Acceptance report number, if applicable*	
(9 Form 2) Processo speciale approvato dal cliente. *Customer Approval Verificatio*		(13 Form 2) Commenti *Comments*	

1) La firma certifica che tutte le caratteristiche sono state prese in esame, soddisfano i requisiti a disegno o sono adeguatamente documentate *Signature indicates that all characteristics are accounted for; meet drawing requirements or are properly documented for disposition.*	2) Indicare se il FAI è completo *Indicate if the FAI is complete*	FAI Completo - FAI Complete

DATA E FIRME (estesa e leggibile) / *Date and signatures (extended and readable)*

(19) Redatto da / *Written by* LEONARDO SDI / FORNITORE *(Supplier)*	(21) Verificato da / *Reviewed by*	(23) Approvato da / *Approved by*
Nome/ Name	Nome/ Name	Nome/ Name
Firma / Signature	Firma / Signature	Firma / Signature

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IND100-T-IT-D - FAI Form 3 (Fac-simile)

Formato di Stampa: A3

PRN_IND100-T rev. 04 - Template per documentazione IE (PFC Master).xlsx - FAI Form 3

	REPORT F.A.I. - Form 3 *First Article Inspection Report - Form 3*	**Codice Documento FAI** *FAI Document Code*	_0_00_FAI	**Revisione Documento IE** *Revision Level IE Document*	00
		Codice Parte *Part Number (Leonardo)*	#N/D	**Revisione della Parte** *Part Revision Level*	0
SOCIETA' EMITTENTE / *Issuing company (Leonardo SDI / Supplier Name and Code)*	0	**Numero di Disegno** *Drawing Number*	#N/D	**Revisione del Disegno** *Drawing Revision Level*	#N/D
ENTE EMITTENTE / *Issuing Department*	INGEGNERIA INDUSTRIALE (Industrial Engineering)	**Numero di Disegno del Fornitore** *Supplier Drawing Number*		**Revisione Disegno del Fornitore** *Supplier Drawing Revision Level*	
DENOMINAZIONE / *Part Name*		**Numero Lotto di riferimento**		**Quantità del Lotto** *Lot size*	
P/N ASSIEME SUPERIORE D'ACQUISTO *Part Number top assembly buy*		**Num. Ordine di Acquisto** *Purchase Order Number*		**Numero Ordine di Lavoro** *Work Order Number*	
Data di Esecuzione del Collaudo *Date of Acceptance Test*	17/02/2022	**Numero ciclo di lavoro** *Work Cycle Number*		**Revisione ciclo di lavoro /** *Work Cycle Revision*	
Numero di Caratteristiche da Collaudare *Number of Charateristics to be tested*	10	**Codice FAI** *FAI Report Number*			

	Caratteristiche da Collaudare *Charateristics to be tested*							**Risultati del Collaudo** *Test Results*			
	Numero di Ballonatura *Char Number*	**Riferimento di Localizzazione** *Reference Location*	**Tipo di Caratteristica** *Characteristic Designator*	**Caratteristica Critica** *Critical Characteristic*	**Requisito Nominale** *Nominal Requirement*	**Valore limite Inferiore** *Lower tolerance limit*	**Valore limite Superiore** *Upper Tolerance limit*	**% di controllo** *% Check*	**Valore Riscontrato** *Results*	**Attrezzatura** *Designed Tooling*	**Non Conformità** *Non-Conformance*	**Note**
										Numero di serie *Part Serial Number* >>>	
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												

Redatto da / *Written by*	**Data** / *Date*
Nome/Reparto _____ Firma _____	_____ /_____ /_____

Template: PRN_IND100-T rev. 04 - Template per documentazione IE (PFC Master).xlsx

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B.6. FAI Forms of UNI EN 9102

Facsimiles of the UNI EN 9102 FAI Forms are presented below

All fields of the forms are “colour coded” and “text-font coded” as follows:

Required (R)	“Yellow" background and **bold** font
Required, under certain conditions (CR)	"Blue” background and ***bold italic*** font
Optional (O)	“White” background 2 regular font

Form 1 - Part Number Accountability

Used to identify the item subject to FAI and the related sub-assemblies;

Form 2 - Product Accountability (Raw Material, Specifications and Special Process(s), Functional Testing)

Used to identify materials and/or special processes and/or functional tests identified as "design requirements";

Form 3 - Characteristic Accountability, Verification and Compatibility (Evaluation)

Used to record the results of the inspections carried out;

Company General Use

Form 1 EN9102 - P/N Accountability

1. Numero della parte Part number	2. Nome della parte Part Name	3. *Numero di serie* *Part Serial Number*	4. Numero Rapporto FAI *FAI Report Number*
5. *Revisione della parte* *Part Revision Level*	6. *Numero del disegno* *Drawing Number*	7. *Revisione disegno* *Drawing revision level*	8. *Modifiche aggiuntive* *Additional Changes*
9. Rif. processo di produzione Manufacturing Process Reference	10. Nome fornitore Organization Name	11. Codice del fornitore Supplier Code	12. N°. Ordine P.O. Number
13. FAI di un particolare Detail FAI ☐ FAI di assieme Assembly FAI ☐	14. FAI Completo Full FAI ☐ FAI parziale Partial FAI ☐	Numero della distinta della parte (incluso la revisione)	Baseline Part Number including revision level
		Motivo del FAI parziale: Reason for Partial FAI:	

a) Se la parte sopracitata è un particolare procedere al punto 19
a) If above part number is a detail part only, go to Field 19
b) Se la parte sopracitata è un assieme procedere alla sezione "INDICE" seguente
b) if above part number is an assembly, go to the "INDEX" section below.

ELENCO dei componenti o sottoassiemi richiesti per formare l'assieme sopracitato
INDEX of part numbers or sub-assembly numbers required to make the assembly noted above

15. *Numero della parte* *Part Number*	16. *Nome della parte* *Part Name*	17. *Serial Number parte* *Part Serial Number*	18. Numero del FAI *FAI Report Number*

1) La firma indica che tutte le caratteristiche descritte soddisfano le richieste del disegno o sono adeguatamente documentate per la disposizione.
Signature indicates that all characteristics are accounted for meet drawing requirements or are properly documented for disposition.

2) Indicare se il FAI è completo (vedi par. 5.4): ☐ FAI completo ☐ FAI non completo
Also indicate if the FAI is complete per Section 5. 4 : ☐ FAI complete ☐ FAI not complete

19. Firma Signature	20. Data Date
21. Controllato da *Reviewed by*	22. Data *Date*
23. Approvazione del cliente *Customer Approval*	24. Data *Date*

Company General Use

Form 2 EN9102 - Product Accountability

Responsabilità del prodotto – Materiale grezzo, Specifiche e Processi speciali, Collaudo funzionale
Raw Material, Special Process, Functional Testing (Materiali grezzi, processi speciali, test funzionali)

1. *Numero della parte* *Part number*	2. Nome della parte Part Name	3. *Numero di serie* *Part Serial Number*	4. Numero Rapporto FAI FAI Report Number

5. *Materiale o processo* *Material or process Name*	6. *Numero della specifica* *Specification Nr.*	7. Codice Code	8. *Codice del processo del fornitore* *Special Process Supplier Code*	9. *Approvazione del cliente* *Customer Approval Verification* (Yes/No/NA)	10. *Numero del certificato* *Certificate of Conformance nr.*

11. *Numero prova funzionale* *Functional Test Procedure Number*	12. *Numero del rapporto di accettazione (se applicabile).* *Acceptance report number, if applicable.*

13. Note. Comments.	
14. Preparato da Prepared by	15. Data Date

Company General Use

Form 3 EN9102 - Characteristic Accountability

Verification and Compatibility Evaluation

1. Numero della parte Part number				2. Nome della parte Part Name			3. *N°. di serie* *Part S/n*	4. Numero Rapporto FAI FAI Report Number
Caratteristiche da controllare *Characteristic Accountability*				Controllo / Valore ottenuto *Inspection / Test result*			Campo facoltativo *Optional Field*	
5. N° *Char N°*	6. *Riferimento* *Reference Location*	7. *Criticità attribuita* *Charateristic Designator*	8. Caratteristica richiesta Requirement	9. Valore ottenuto Result	10. *Strumento usato* *Designed Tooling*	11. *Numero della non conformità* *Non Conformance Number*	14. Inserire colonne, ecc, come richiesto dall'Organizzazione o dal Cliente Insert columns, etc, as required by Organization or Customer	
La firma indica che tutte le caratteristiche descritte soddisfano le richieste del disegno o sono adeguatamente documentate per la disposizione. The signature indicates that all characteristics are accounted for meet the drawing requirements or are properly documented for disposition.								
12. Compilato da Prepared by							13. Data Date	

Company General Use

Appendix C - SPECIAL CASES

C.1. Supply of products from Leonardo-SDI drawing, in not complete configuration (e.g. electronic devices and boards)

For supply of products from Leonardo-SDI drawing, ordered in non-complete configuration, for which FAI has been requested, the supplier shall provide documented information as an evidence of its partial FAI activities.

The FAI process will be then completed by Leonardo-SDI, who will record the relevant results and use the supplier's documents as a support for its activities and preparation of the complete FAI Report.

Items in not complete configuration are identified in the manufacturing list with the prefix "M" followed by the Part Number (for supplies to La Spezia and Brescia) or the suffix “/1” following the Part Number (for supplies to Livorno and Pozzuoli)

For this type of supply, in addition to the requirements of PQA004-L-IT-D and PQA006-L-IT-D (this document) further indications are given in the IND100-T-IT-D Template.

C.2. Supply of electric / electronic cables designed by Leonardo SDI

- For each type of:

  - Straight cables (cables that have a start connector and an end connector);
  - Branch cables (cables that can have more than one starting connector and more than one arrival connector);
  - Machined commercial cables (excluding fiber optic cables);
  - Coaxial cables (which have coaxial connectors);

  in the case of homogeneous supplies by the same supplier (i.e. same manufacturing process, homogeneous composition, same control process, …) for which FAI is required, the supplier shall submit to Leonardo-SDI for verification and approval the MCP applicable to that type of cable and the FAIR of at least one cable representative of each homogeneous type supplied.

  Approval of MCP and FAI will depend on the intermediate controls performed by Leonardo-SDI on the supplier’s manufacturing process (open cable for visual inspection and verification of the applied special processes).

  The FAI Report of the cable selected for verification shall include the Part Numbers of all other cables of the same type made by the same manufacturing/control process, so extending the validity of the FAI to such cables.

  Approval of the MCP by Leonardo-SDI confirms that the manufacturing/control process can be repeated for that type of cable. Any change to the process will lead to the repetition of the FAI or the performance of a partial FAI (delta FAI).

- For other types of cable (cables with sensors/transducers or electronic components; commercial cables processed if in optical fiber; optical cables, underwater cables, armored cables, other types not listed) MCP and FAI (when required) are requested from the supplier and evaluated for each specific Part Number. For each single item of these cables a functional test procedure is required that shall be verified and approved by Leonardo-SDI (Industrial Engineering).

In detail, for this type of supply, in addition to the requirements of PQA004-L-IT-D and PQA006-L-IT-D (this document) further indications are given in the IND100-T-IT-D Template.