



Project and Quality Management Specification for the Procurement of RF Components for the HPTB of DTTU

DTT ID:
TLM-SPT-52021

Page:
1/30

External ID:
N.A.

Rev. 1.0

Access:

☐ contractual

☐ open

☒ restricted

Project and Quality Management Specification for the Procurement of RF Components for the High-Power Test Bed of DTTU

Project Details



DTT S.c.a.r.l.

This document is issued for the execution of the DTTU project

DTT ID Number

TLM-SPT-52021

External ID Number

N.A.

DMS ID Number

DTT2023_05959

Authors & Contributors

S. Ceccuzzi, G.L. Ravera

Distribution List

FSN-UTG

Abstract

This document is the project and quality management specifications for the procurement of radiofrequency components, required to set up a high-power testbed for solid-state transmitters within the DTTU (Divertor Tokamak Test facility Upgrade) project.

1.0	04/08/2023	Issued for approval	S. Ceccuzzi	C. Fabbri D. Bonetti	G. Granucci	F. Romanelli
Rev.	Date	Issuing Description	Prepared by	Checked by	Approved by	Authorized by



Project and Quality Management Specification for the Procurement of RF Components for the HPTB of DTTU

DTT ID:
TLM-SPT-52021

Page:
2/30

External ID:
N.A.

Rev. 1.0

Rev.	Summary of Modifications
1.0	First issue



Project and Quality Management Specification for the Procurement of RF Components for the HPTB of DTTU

DTT ID:
TLM-SPT-52021

Page:
3/30

External ID:
N.A.

Rev. 1.0

Table of Contents

1	Introduction	5
2	Acronyms, abbreviations and definitions	6
3	References	6
4	Ownership and responsibilities	8
4.1	Enea responsibilities	8
4.2	Contractor responsibilities.....	8
4.3	Ownership.....	8
5	Documentation	9
5.1	Summary of main contract documents	9
5.2	Contents of the main documents	9
5.2.1	Quality Plan (QP)	9
5.2.2	Progress Report and minutes of the progress meetings	10
5.2.3	Technical Proposal.....	10
5.2.4	Technical Design Report.....	11
5.2.5	Test Plan	11
5.2.6	Test Report	11
5.2.7	User Manual	11
5.2.8	Acceptance Data Package	11
6	Project management requirements.....	13
6.1	Objectives and deliverables of the contract	13
6.2	Contract management.....	13
6.3	Work Breakdown Structure	13
6.4	Organization chart	14
6.5	Control Plan	14
6.6	Time schedule	14
6.7	Resource management and staff qualification.....	15
6.8	Qualification for special processes	15
6.9	Material resources	15
6.10	Assessment and validation management.....	15
6.11	Acceptance and delivery requirements.....	16
6.11.1	Review of the Acceptance Data Package and Release Note.....	16
6.11.2	Acceptance of documentation	16
6.12	Subcontracting management	16
6.13	Health, safety and environment	16
6.14	Intellectual property	17
6.15	Risk and opportunity management	18



Project and Quality Management Specification for the Procurement of RF Components for the HPTB of DTTU

DTT ID:
TLM-SPT-52021

Page:
4/30

External ID:
N.A.

Rev. 1.0

6.16	Lessons learned.....	18
7	Quality management requirements	19
7.1	Scope of the Quality Plan.....	19
7.2	Non-conformities and deviation management	19
7.2.1	Nonconformity management.....	20
7.2.2	Deviation management.....	20
7.3	Traceability and identification	21
7.4	Document management.....	21
7.4.1	Information and documentation management	22
7.4.2	Documentation control	22
7.4.3	Document format	22
7.5	Visits, inspections and audits.....	23
8	Templates.....	24



Project and Quality Management Specification for the Procurement of RF Components for the HPTB of DTTU

DTT ID:
TLM-SPT-52021

Page:
5/30

External ID:
N.A.

Rev. 1.0

1 Introduction

ENEA – National Agency for New Technologies, Energy and Sustainable Economic Development – is responsible for the fulfilment of the project “Divertor Tokamak Test facility Upgrade” (DTTU), submitted to the public call D.D. 3264/2021 “Rafforzamento e creazione di Infrastrutture di Ricerca”. This project, approved on August 8th, 2022, is aimed at upgrading the Divertor Tokamak Test facility (DTT), a tokamak device allowing for the magnetic confinement of a deuterium plasma.

DTT will be installed at the ENEA research centre in Frascati, hereinafter abbreviated as DTT site, and is conceived to study innovative solutions to the problem of power exhaust in next-generation nuclear fusion reactors, like ITER and DEMO, under a technological and scientific viewpoint. To this aim, DTT needs a significant amount of additional heating that will be partially provided by an Ion Cyclotron Heating (ICH) system, able to inject electromagnetic waves into the plasma at the cyclotron frequency of the ion species. The radiofrequency (RF) transmission lines of ICH systems are mainly constituted by RF components in rigid coaxial cable which have low attenuation in the typical ICH frequency range from 30 to 100 MHz.

The DTTU project includes the development and test of a RF amplification system in the frequency range from 60 to 90 MHz, consisting of two solid-state transmitters, each one with a nominal power of 1.2 MW. The test of such RF source requires to set up a High Power Test Bed (HPTB) that shall allow Enea to carry out the acceptance tests of the solid-state transmitters.

The HPTB consists of RF components and high power dummy load that will interface with some auxiliary units required for their operation, as for example power supplies, local control units, pressurization and cooling units. The present project and quality management specification (MS) pertains to a supply contract for the procurement of RF components and dummy loads for the HPTB of the DTTU project. The associated technical specification (TS) [1] defines the detailed technical requirements of the supply. The organization appointed to provide the goods to which the TS and MS relate will be referred to as Contractor. The present document defines the project and quality management specification that

- A Bidder shall comply with during the pre-award phase.
- The Contractor shall comply with during the post-award phase.

During the contract execution, the quality management system of the Contractor and its subcontractors shall comply with the requirements defined in this document and in the associated TS. Such quality management system shall be described in a dedicated Quality Plan, specific for the procurement and compliant with the requirements given in this document.



Project and Quality Management Specification for the Procurement of RF Components for the HPTB of DTTU

DTT ID:
TLM-SPT-52021

Page:
6/30

External ID:
N.A.

Rev. 1.0

2 Acronyms, abbreviations and definitions

ADP	Acceptance Data Package
Bidder	Tenderer for the supply of the present specification
Contractor	Party appointed by Enea to perform the supply of the present specification
CP	Control Plan
DEC	Enea technical officer (Direttore dell'Esecuzione del Contratto) in charge for the implementation and monitoring the scope of the contract.
DMS	Document Management System
DTT	Divertor Tokamak Test facility
DTT site	ENEA Frascati research centre – Via Enrico Fermi 45 – 00044 Frascati (RM) – Italy
DTTU	Divertor Tokamak Test facility Upgrade
DUVRI	Documento Unico di Valutazione dei Rischi da Interferenze
FAT	Factory Acceptance Test
HPTB	High Power Test Bed
HSE	Health, Safety, and Environment
ICH	Ion Cyclotron Heating
IP	Intellectual Property
KOM	Kick-Off Meeting
MS	Project and Quality Management Specification (the present document)
NCR	NonConformity Report
QP	Quality Plan
QR	Quality Representative of the Contractor for the contract
RF	Radiofrequency
RUP	Enea responsible officer (Responsabile Unico del Progetto) in charge for the correct execution of the contract and for communicating all technical, contractual actions, and decisions to the Contractor.
SAT	Site Acceptance Test
Subcontractor	Party (if any) responsible to perform part of the contract tasks in place of the Contractor
TDR	Technical Design Report
TRO	Technical Responsible Officer, person in charge of the contract for the Contractor
TS	Technical Specification [1]
Vendor	Party that manufactures or supplies equipment and services to the Contractor or to the subcontractors
WBS	Work Breakdown Structure

3 References

- [1] TXI-SPT-52010 - Technical Specification for the Procurement of RF Components for the High-Power Test Bed of DTTU.






Project and Quality Management Specification for the Procurement of RF Components for the HPTB of DTTU

DTT ID:
TLM-SPT-52021

Page:
7/30

External ID:
N.A.

Rev. 1.0

-  [2] SPG-HSE-001-DTT (ENG) - HSE Requirements for Supplier and Contractor.
-  [3] QMS-PRO-20000 - Document Coding and Item Numbering.
-  [4] QMS-PRO-20004 - Management of Documentation issued by Suppliers/Contractors.



Project and Quality Management Specification for the Procurement of RF Components for the HPTB of DTTU

DTT ID:
TLM-SPT-52021

Page:
8/30

External ID:
N.A.

Rev. 1.0

4 Ownership and responsibilities

4.1 Enea responsibilities

Enea is responsible for:

- Parameters, specifications and requirements reported in the TS and their compliance with the needs and documentation of DTT.
- Providing and updating (if any) the information for the manufacturing and the installation.
- Review and possible approval of the documentation issued by the Contractor.
- The approval of subcontractors and vendors selected by the Contractor, when such option is allowed by the documents of the call for tender, by the contract, and by Italian laws.
- The review and approval of the documentation issued by the Contractor within the contract.
- Monitoring the status of the procurement through established meetings, inspections, visits, audits, videoconferences and reports.
- Witnessing prescribed and agreed tests.
- Installation and test of the components at the DTT site.
- Accepting the deliverables, if they comply with the TS, the MS, the contract, the call for tender rules, the applicable international standards, and the Italian laws.

4.2 Contractor responsibilities

For all goods covered by the contract, the Contractor is responsible for the activities outlined in section 4 of the TS. Contractor responsibilities also include:

- Preparation, issue, update, and implementation of a specific Quality Plan (QP) for the supply with all relevant documents and activities.
- To ensure that any activity of subcontractors and vendors complies with the TS, the MS, and the QP.

In the QP, the Contractor shall identify the key roles for contract accomplishment and detail the breakdown of responsibilities. In particular, the Contractor shall provide the name and contact details of:

1. The Technical Responsible Officer (TRO) in charge of the contract who shall:
 - Coordinate the planning, performance, and control of the work, including the work assigned to subcontractors.
 - Keep the time schedule.
 - Prepare and issue the Progress Reports.
2. The Quality Representative (QR) for the contract who shall:
 - Be independent from the TRO.
 - Ensure that the QP, quality procedures, and detailed work instructions are observed during the execution of the contract in order to guarantee that all contractual quality requirements are met.
 - Assess and control the quality management of subcontractors.

Enea shall be promptly informed of any change concerning the TRO or the QR.

4.3 Ownership

After the delivery of a given contract asset to the DTT site, the ownership of that asset will be transferred from the Contractor to Enea. The ownership transfer does not relieve the Contractor from its obligations and responsibilities towards the contract and the warranty.



Project and Quality Management Specification for the Procurement of RF Components for the HPTB of DTTU

DTT ID:
TLM-SPT-52021

Page:
9/30

External ID:
N.A.

Rev. 1.0

5 Documentation

5.1 Summary of main contract documents

Contract documentation shall include all documents listed in Table 1 according to the time schedule of section 5 of the TS. Table 1 is not exhaustive; for example it does not include all legal and financial documents prescribed by the call for tender, the contract, Italian laws and applicable European directives. Unless already defined in the TS or the present specification, the review lead times for documents requiring approval will be agreed at the KOM. Documents that are approved by Enea will be an integral part of contract documentation.

Table 1. List of contract documentation with deadline/periodicity

Document	Reference	Deadline/periodicity
Connected with the call for tender		
Quality Plan – proposal	§ 5.2.1	In the response to the call
Technical Proposal	§ 5.2.3	In the response to the call
Test Plan – proposal	§ 5.2.5	In the response to the call
Connected with the Kick-Off Meeting (KOM)		
Quality Plan – preliminary	§ 5.2.1	Prior to KOM
Quality Plan – official	§ 5.2.1	1 month after KOM
Connected with the Technical Design Report (TDR)		
Technical Design Report	§ 5.2.4	M02, M04
Final Test Plan	§ 5.2.5	M02, M04
Connected with checks and tests		
Invitation to test attendance (with definite dates and place)	–	2 weeks before tests
Test Report	§ 5.2.6	2 weeks after tests
Connected with the delivery of contract goods		
User Manual for batch #1	§ 5.2.7	1 month before M09
User Manual for batch #2	§ 5.2.7	1 month before M15
Acceptance Data Package for batch #1	§ 5.2.8	M11
Acceptance Data Package for batch #2	§ 5.2.8	M17
Throughout the duration of the contract		
Progress Report	§ 5.2.2	Monthly or otherwise agreed
Meeting minutes	§ 5.2.2	3 working days after the meeting
Update of Quality Plan and/or attachments	§ 5.2.1	Whenever necessary
Transportation and customs documents	–	At every transportation
Invoices and other financial documentation	–	As per contract

5.2 Contents of the main documents

5.2.1 Quality Plan (QP)

The guidelines for the preparation of the QP are given in sections 6 and 7.



Project and Quality Management Specification for the Procurement of RF Components for the HPTB of DTTU

DTT ID:
TLM-SPT-52021

Page:
10/30

External ID:
N.A.

Rev. 1.0

The QP shall undergo different stages of development. The first QP is presented in the response to the call for tender and is subjected to evaluation for the selection of the Contractor. It is a meaningful outline of the quality plan, where the plans, schedules and explanation of the provisions to comply with contract requirements are provided. It shall include at least a preliminary version of

- Working Breakdown Structure (see section 6.3).
- Organization Chart (see section 6.4).
- Control Plan (see section 6.5).
- Time Schedule (see section 6.6).
- Risk Management Plan (see section 6.15).
- Documentation Schedule (see section 7.4.1).

After the contract signature, the QP shall be upgraded according to the following sequential steps:

1. Prior to the KOM, the Contractor shall issue a preliminary QP; the parties shall discuss the improvements to be implemented and the particular provisions to be included.
2. With the timing given in Table 1, the Contractor shall submit for approval to Enea an official QP, updating the preliminary Quality Plan.
3. The Contractor shall not begin any manufacturing or purchase activity until Enea approves the official Quality Plan in writing.
4. During the execution of the contract, the Contractor shall update the Quality Plan (or parts of it) as/if required and shall submit it for approval to Enea. No update can be implemented until Enea approves it in writing.

5.2.2 Progress Report and minutes of the progress meetings

Progress Reports shall be prepared and sent to Enea on a monthly basis, or otherwise agreed during KOM. They shall report in particular on:

- Time schedule, planned and ongoing activities, deadlines and milestones, regarding the present and next periodic interval.
- Accomplishment of results and milestones, termination of activities, and validation of solutions.
- Advancement of activities (planned versus actual progress percentages).
- Next expected results.
- Encountered issues or doubts during present periodic interval.
- Proposed corrective actions to return to the baseline schedule in the event of any delay.
- Proposed mitigation for any known risk to the schedule.
- Ongoing and next actions.
- Proposed deviations and non-conformities with their state of acceptance.

The Contractor shall organize periodic progress meetings, either in-person or virtual. The periodicity of the progress meetings shall be agreed during the KOM and can be changed during the contract to better fit its phases.

The Contractor shall draw up the minutes of KOM and progress meetings according to the timing given in Table 1 and circulate them to all attendees for review and comment prior to their upload to the DTT DMS. The minutes of progress meetings can replace the Progress Reports.

5.2.3 Technical Proposal

A preliminary Technical Proposal covering the overall scope of the supply shall be presented in the response to the call for tender and is subjected to evaluation for the selection of the Contractor. The



Project and Quality Management Specification for the Procurement of RF Components for the HPTB of DTTU

DTT ID:
TLM-SPT-52021

Page:
11/30

External ID:
N.A.

Rev. 1.0

proposed technical solutions are binding for the post-award phase if the Bidder is selected to perform the supply, unless different choices are requested by Enea to meet the TS and the MS.

The contents of the Technical Proposal are described in section 11 of the TS.

5.2.4 Technical Design Report

The Technical Design Report (TDR) shall detail the item(s) to be realized. It may be either a single document or, if useful for clarity, a set of separate and well-identified documents.

The contents of the TDR are described in section 11 of the TS.

5.2.5 Test Plan

The Test Plan provide a detailed description of the tests to be performed during the execution of the contract. If necessary, it can be split into separate documents according to the test typology.

The Test Plan will undergo two stages of development, which are

1. Test Plan at tender/proposal level that is presented in the response to the call for tender and is subjected to evaluation for the selection of the Contractor. The proposed plan is binding for the post-award phase if the Bidder is selected to perform the supply, unless different tests are requested by Enea to meet the TS.
2. Final Test Plan that shall be approved by Enea with the same deadlines of the Technical Design Report. The approved Test Plan will be an integral part of the specifications. Enea approval does not relieve the Contractor from its obligations towards the contract, the TS, the MS, and applicable standards. Some details concerning test procedures can be specified later on, but not later than the invitation to test attendance and shall be approved by Enea.

The contents of the Test Plan are described in section 11 of the TS.

5.2.6 Test Report

The Contractor shall submit for approval to Enea written records (i.e. Test Reports) of all performed tests, including those performed outside its premises whether Enea attended or not, and material certificates. A test is passed only after the approval of the corresponding Test Report by Enea. No component shall be dispatched to the DTT site until Enea approves all Test Reports associated with that component.

The contents of the Test Reports are described in section 11 of the TS.

5.2.7 User Manual

The Contractor shall issue a User Manual with all useful instructions concerning the use of contract goods, e.g., with reference to installation, handling, transport, storage, operation, maintenance, troubleshooting, calibration, repair, remote interfacing, safety, etc.

The contents of the User Manual are described in section 11 of the TS.

5.2.8 Acceptance Data Package

At the end of the SAT of each batch of components, the Contractor shall issue the Acceptance Data Package (ADP), i.e., a dossier including and updating all documents, information and drawings provided during the



Project and Quality Management Specification for the Procurement of RF Components for the HPTB of DTTU

DTT ID:
TLM-SPT-52021

Page:
12/30

External ID:
N.A.

Rev. 1.0

contract. The ADP declares and demonstrates the compliance of the deliverables in all respects with the applicable specifications, drawings, and requirements..

The contents of the ADP are described in section 11 of the TS.



Project and Quality Management Specification for the Procurement of RF Components for the HPTB of DTTU

DTT ID:
TLM-SPT-52021

Page:
13/30

External ID:
N.A.

Rev. 1.0

6 Project management requirements

This section provides the Contractor with guidelines for the preparation of the QP. It gives directions on the project management requirements that the Contractor shall fulfil during the execution of the contract. The subjects of next subsections shall be addressed in the QP. They are not limiting and can be complemented by the Contractor.

Further provisions concerning legal, procedural, and financial aspects are given in the call for tender and in the contract.

6.1 Objectives and deliverables of the contract

The Contractor shall describe the scope and deliverables of the contract.

The deliverables of the supply are described in the TS and include the associated documentation. The Contractor shall issue a table including all items to be supplies, specifying:

- Deliverable number and quantity.
- Level of subcontracting.
- All associated documents.

6.2 Contract management

The activities of the contract shall begin with an official Kick-Off Meeting (KOM) where the items of the following non-exhaustive list shall be discussed and agreed:

- Confirmation of the specifications, specific requirements and contractual input.
- Discussion and review of the QP.
- Presentation of the preliminary CP.
- Documentation review lead time.
- Plans for contract implementation.
- Frequency of review of Documentation Schedule, Control Plan, and Progress Reports (if not agreed otherwise, at least once a month).
- Contents of the Progress Reports.
- Contents of the Technical Design Report.
- Contents of the Acceptance Data Package.
- Detailed schedule of contract activities, including milestones.
- Frequency, agenda and location of the proposed meetings.

The Contractor shall be responsible to issue the minutes of the KOM and any other official meeting with Enea.

6.3 Work Breakdown Structure

The Contractor shall provide a detailed Work Breakdown Structure (WBS) of activities to be performed during the execution of the contract. The level of detail shall allow for a proper control of these activities, including process qualification activities, procurement activities, and manufacturing and measurement activities. The WBS shall describe how subcontracted activities (if any) are linked with internal activities.



Project and Quality Management Specification for the Procurement of RF Components for the HPTB of DTTU

DTT ID:
TLM-SPT-52021

Page:
14/30

External ID:
N.A.

Rev. 1.0

6.4 Organization chart

The Contractor shall provide information about the proposed structure that will be mobilized for the execution of the contract. Key roles for contract accomplishment and the breakdown of responsibilities shall be detailed through an organization chart.

6.5 Control Plan

The Contractor shall develop a Control Plan (CP) that describes work sequences, including process validation, quality verifications and intermediate inspections.

The CP shall include at least the following items:

- All activities and tests to be performed to comply with the TS and other applicable requirements.
- List of required hold points, witness points, reviews, notification points and report points.

For each operation, the CP shall:

- Identify applicable requirements and instructions/procedures.
- Identify whether it has to be witnessed or notified.
- Keep track of its verification and completion.

The level of detail in the CP shall be such as:

- To prevent the inadvertent bypassing of critical operations.
- To enable an adequate planning, monitoring and verification of key activities.
- To encompass all contract phases, including the activities performed by subcontractors.

To ensure that all operations are performed as directed in the CP, the document shall be directly accessible to those carrying out the work.

When updated, the CP shall be sent to Enea for approval. The acceptance of the CP by Enea does not relieve the Contractor from any contractual obligation or responsibility.

An example of Control Plan form is attached at the end of the MS. The CP will be used to verify the compliance of outputs (documents produced by the Contractor and listed in the column "Records" of the form) with Enea acceptance criteria (coming from TS and listed in the columns "Specification" and "Criteria" of the form). These outputs/records are produced applying testing procedures, process procedures, instructions, drawings developed by the Contractor (to be specified under the column "Standard, Procedure, DRW" of the form).

6.6 Time schedule

The Contractor shall develop and keep up-to-date a detailed Time Schedule of all activities to be performed during the execution of the contract, including the activities that are subcontracted or acquired from vendors. The Time Schedule shall include at least:

- Contract milestones.
- Technical milestones.
- Payment milestones.
- Contract phase gate reviews.
- Control points described in the CP.
- Issue of deliverables.

It shall be realized in a planning tool accepted by Enea (see section 7.4.3). All activities in the Time Schedule shall have predecessors and successors, except for start and finish milestones. Any exception shall be promptly justified by the Contractor and accepted by Enea. The critical path in the Time Schedule, i.e., the



Project and Quality Management Specification for the Procurement of RF Components for the HPTB of DTTU

DTT ID:
TLM-SPT-52021

Page:
15/30

External ID:
N.A.

Rev. 1.0

longest sequence of activities that determines the minimum duration to complete all contract activities, shall be reliable, robust, and identifiable.

The Contractor shall describe its approach to manage and monitor the Time Schedule. The Contractor shall specify the precise process to report the Time Schedule evolution to Enea.

6.7 Resource management and staff qualification

The Contractor shall describe its resource management system, detailing where applicable:

- The list of expertise needed during each contract phase with the associated available resources.
- The number and type of personnel involved in each operation defined in the CP.
- Specific experience and training for the personnel.
- Specific qualifications for particular operations.

If requested by Enea, the Contractor shall provide proof that all workers involved in contract activities are properly qualified.

For the staff that needs qualification, especially if involved in critical activities, the Contractor shall implement an internal qualification programme. Staff qualification shall be done according to applicable standards for each case. A file with the documentation relating to the staff that needs qualification and the qualification plan shall be prepared. This file does not need to be submitted to Enea, but shall be kept by the Contractor/subcontractors for inspection and audit purposes.

Subcontracting shall not exempt the Contractor from its responsibility to supervise and inspect activities requiring qualified staff.

6.8 Qualification for special processes

The Contractor and subcontractors shall be responsible for the qualification tests of the manufacturing processes when qualification is required. In this case, qualification tests shall be carried out before undertaking the corresponding processes. The Contractor shall submit the qualification records to Enea for approval, along with the corresponding process execution procedures.

Process qualification shall be included in the CP.

The provisions of this section also apply to the qualification of specific operators for these processes when required by the corresponding standards.

6.9 Material resources

The Contractor shall provide information on machines and process equipment to be used during the execution of the contract.

6.10 Assessment and validation management

The Contractor shall demonstrate how the compliance with the CP is controlled and recorded during the execution of the contract. This includes the following subjects:

- Issue, signature and dating of records for each completed operation to assure Enea that all operations of the CP have been properly performed and controlled.
- Identification and record of each report generated during the performance of a particular operation (e.g. test reports or non-conformity reports) and, where possible, identification of improvement opportunities.



Project and Quality Management Specification for the Procurement of RF Components for the HPTB of DTTU

DTT ID:
TLM-SPT-52021

Page:
16/30

External ID:
N.A.

Rev. 1.0

- Access to Contractor premises, personnel and completed work activities for third-party audit or inspection.

6.11 Acceptance and delivery requirements

The Contractor shall indicate how, when and by whom acceptance and delivery are controlled. The Contractor shall ensure that subcontractors implement the same procedure to control the acceptance and delivery.

6.11.1 Review of the Acceptance Data Package and Release Note

Prior to deliveries, the Contractor shall organize a deliverable status acceptance review in accordance with the contract requirements. This includes at least:

- Review of the documentation (ADP) to be provided in accordance with the Documentation Schedule.
- Achievement of the technical requirements or performance test reports.
- Review of qualification proof for special processes and personnel.
- Review of the records and justification of all changes and dispensations (Non-conformity Reports, Deviation Requests).
- Information regarding the management of intellectual property.

This review is formalized with a Release Note, signed by the TRO, approved by Enea and included in the ADP. An example of Release Note form is attached at the end of the MS. After approving the Release Note, the RUP will give his written approval to the deliverable dispatch.

6.11.2 Acceptance of documentation

The approval of documentation by Enea does not relieve the Contractor from contractual obligations and responsibilities. The Contractor is responsible for any repair when the failure is directly attributable to its manufacturing and processes.

6.12 Subcontracting management

Concerning the management of subcontractors, the Contractor shall refer to the requirements included in the call for tender and in the contract. The Contractor shall ensure that each subcontractor has a quality system compliant with the present MS; an assessment report shall be issued for each subcontractor. The Contractor shall undertake all necessary actions to establish and maintain the quality in subcontractor premises in compliance with the MS and the TS.

6.13 Health, safety and environment

The Contractor is obligated to comply with, and operate in accordance with Health, Safety and Environment (HSE) current legislation in force in the country where the supply is installed (i.e., Italian legislation).

The Contractor shall carefully analyze and apply all safety requirements in order to guarantee that the supply will be in compliance with the national regulation/technical standard for the manufacturing and supply.

For the activities at the DTT site (if any), the Contractor shall act in accordance with local health, environmental and safety regulation.



Project and Quality Management Specification for the Procurement of RF Components for the HPTB of DTTU

DTT ID:
TLM-SPT-52021

Page:
17/30

External ID:
N.A.

Rev. 1.0

The Contractor shall ensure that its personnel and subcontractor personnel accept and adhere to the highest HSE, radiation protection, and quality standards.

The Contractor shall (where applicable as per assigned scope of work):

- Take all actions necessary to protect all its employees (including those provided by subcontractors) from any exposure to hazardous situation and adopt all measures needed to reduce, as low as reasonably practicable, any injury or damage to people or property in accordance with the HSE risk assessment.
- Ensure that all relevant information regarding HSE and radiation protection aspects are properly handed over from shift to shift through formalized and documented handover notes and meeting in overlapping for the key HSE and technical personnel.
- Immediately notify to Enea of any incidents (real and/or potential) that occur (or might occur) in the performance of the contracted activities at the DTT site (i.e., SAT and technical assistance during qualification and assembling phases, according to contractual scope of work).
- Provide and maintain in good operating conditions all safety and environmental critical equipment identified in the risk assessment.
- Take all necessary measures to prevent and/or limit, within the levels required by applicable laws, any discharge from any source under its care.
- Provide, in case of use of chemicals/hazardous substances or products, the relevant specific SDS (Safety Data Sheet), that shall be kept up to date and easily accessible by all employees.
- Inform the workforce of risk control measures and HSE procedures, work instructions and plans.
- Train all personnel appointed for safety critical jobs (e.g., first aid, works at height).
- Foresee adequate HSE induction session for all personnel and visitors involved on the worksite.
- Provide adequate Personal Protective Equipment (PPE), in accordance with risk evaluation, so required for the specific type of work being carried out or for the area to be visited. For PPE requiring specific training, the Contractor shall ensure the evidence that adequate training has been provided (e.g., registers, certifications).

The Contractor shall also follow the applicable HSE requirements of SPG-HSE-001-DTT [2]. Should any conflict arise between the SPG-HSE-001-DTT [2] and the other documentation, the latter prevails.

The present supply can be framed within the provision of art. 26, par. 3, Title I, of Legislative Decree 81/08. Therefore, attached to the contract, the DUVRI (Documento Unico di Valutazione dei Rischi da Interferenze) is provided to the Contractor.

At the start of on-site activities (if any), a dedicated coordination meeting, between DTT, the Contractor, and the organizations appointed for on-site activities, is required (art. 26 par. 2, Legislative Decree 81/08) to verify and identify prevention and protection measures and to manage interferences (if any).

6.14 Intellectual property

The Contractor shall identify all results of activities undertaken in the frame of the contract that may take the form of an invention, information, trade secrets, designs, drawings, processes, software, database etc., including the creation of any Intellectual Property (IP).

The Contractor shall inform Enea in the Progress Reports and in correspondence of the Release Notes about any IP related information.

The declaration of IP foreground shall be submitted to Enea as a standalone self-explaining document as soon as foreground is created. Each item shall include a short description of the item to allow the easy understanding of its nature.



Project and Quality Management Specification for the Procurement of RF Components for the HPTB of DTTU

DTT ID:
TLM-SPT-52021

Page:
18/30

External ID:
N.A.

Rev. 1.0

The Contractor shall inform Enea about any IP relevant issue, such as requests for access to IP by third parties or any IP issue that may impede the performance of the contract.

The Contractor shall identify in the IP reports any confidential information to ensure the confidentiality and the proper management of strategic IP information such as trade secrets or information on patentable subject matters.

6.15 Risk and opportunity management

The Contractor shall prepare and implement a Risk Management Plan for the supply covered by the contract.

The Contractor shall describe the provisions implemented to reduce the Contract exposure to risks and to seize possible opportunities regarding the expected performance and the time schedule. This includes at least the following subjects:

- Preliminary risk analysis and assessment report in terms of expected performances and time schedule.
- Associated list of actions to implement in order to reduce the exposure of contract execution to risks.
- Plan to upgrade the two previous documents.

Further requirements are specified in section 6.1 of the standard ISO 9001:2015.

6.16 Lessons learned

The Contractor shall maintain a list of the lessons learnt.



Project and Quality Management Specification for the Procurement of RF Components for the HPTB of DTTU

DTT ID:
TLM-SPT-52021

Page:
19/30

External ID:
N.A.

Rev. 1.0

7 Quality management requirements

This section provides the Contractor with guidelines for the preparation of the QP. It gives directions on the quality management requirements that the Contractor shall fulfil during the execution of the contract. The subjects of next subsections shall be addressed in the QP. They are not limiting and can be complemented by the Contractor.

As far as anything relating to the execution of the contract is concerned, the Contractor shall implement a quality management system in accordance with ISO 9001:2015. The QP shall be structured in accordance with ISO 10005:2018.

7.1 Scope of the Quality Plan

The QP shall describe the quality management system implemented by the Contractor to ensure that:

- Contract requirements are met.
- Evidence of such compliance is maintained.

The QP shall cover the whole scope of the contract, including the work performed by subcontractors. The level of detail of the QP shall be consistent with:

- The technical requirements of the contract.
- The complexity of involved economic operators, functions, and activities.
- The degree of design innovation.
- The involvement of innovative processes.
- The involvement of processes that cannot be fully verified by inspection or test.
- The degree to which the compliance can be demonstrated by inspection or test.
- Design, performance and manufacturing margins.

7.2 Non-conformities and deviation management

Divergences from the contract requirements can be classified as

- Nonconformity: any condition that does not comply with a specified requirement.
- Deviation: a modification to a specified requirement.

Specified requirements include the requirements of the TS, the MS, and any document issued in connection with the contract and agreed with Enea.

The Contractor shall adopt a nonconformity and deviation management system in case of divergences from the contract requirements. Any divergence needs to be documented and its management represented in a process flowchart. The Contractor shall:

- Record the sequential number of Deviation Requests and Non-conformity Reports.
- Maintain an electronic register of all Deviation Notices, Deviation Orders, Deviation Requests and Non-conformity Reports issued in respect of the contract, which must contain an indication of their distribution and acceptance status.

Deviations and remedial actions to non-conformities shall be subjected to Enea approval, which does not relieve the Contractor from its contractual obligations and responsibilities.

Non-conformity Reports, Deviation Requests, Deviation Orders and assessment reports on deviation consequences are an integral part of the contract and shall be included in the ADP.

The Contractor shall ensure that subcontractors implement the same procedures to control deviations and non-conformities.



Project and Quality Management Specification for the Procurement of RF Components for the HPTB of DTTU

DTT ID:
TLM-SPT-52021

Page:
20/30

External ID:
N.A.

Rev. 1.0

7.2.1 Nonconformity management

The Contractor shall describe and implement a nonconformity management system able to

- Detect any non-conformity and segregate the non-conforming element of the supply.
- Maintain an up-to-date register of all nonconformities and their associated remedial actions and periodically submit it to Enea.
- Ensure that, when appropriate, corrective actions are implemented to prevent the repetition of non-conformities.
- Ensure that appropriate improvements, in the form of preventive actions, are implemented to prevent future non-conformities.

If the Contractor considers that a non-conformity has occurred or Enea notifies the Contractor (in the form of a field observation report or in an audit report) that, in its opinion, a non-conformity has occurred, then the Contractor shall issue, within 5 working days, a non-conformity report. An example of Nonconformity Report form is attached at the end of the MS.

The Contractor shall indicate how, when and by whom non-conformities are processed, including those originating from subcontractors.

In the case of a major nonconformity, i.e. divergence with impact on a requirement of the TS or the MS,

- The nonconformity report shall be sent to Enea with a proposal for remedial actions to remedy the non-conformity.
- Remedial actions shall be implemented only after a written acceptance by Enea.

In the case of a minor nonconformity, i.e. divergence with no impact on the requirements of the TS and the MS,

- The Contractor can take remedial actions to resolve the nonconformity within its own quality system.
- The nonconformity report shall be sent to Enea for information with a description of implemented remedial actions.

The timing for the management of non-conformities will be defined at the KOM.

7.2.2 Deviation management

This section shall describe and implement a deviation management system, which includes deviation processes initiated by the Contractor/subcontractors and by Enea.

This system shall ensure that:

- Deviation requests are approved by Enea before any implementation.
- Status of deviations are made available to Enea when requested.

7.2.2.1 Deviation Requests originating from the Contractor/subcontractors

The Contractor shall discuss with Enea any modification to a previously approved contract requirement. If the proposal is deemed beneficial, the Contractor shall request the approval by Enea by issuing a Deviation Request. An example of Deviation Request form is attached at the end of the MS. The Deviation Requests shall contain or refer to all relevant information to allow for an informed decision to be taken. In particular, they shall include an assessment of the deviation consequences in terms of technical performance, cost, delay, and risk.



Project and Quality Management Specification for the Procurement of RF Components for the HPTB of DTTU

DTT ID:
TLM-SPT-52021

Page:
21/30

External ID:
N.A.

Rev. 1.0

The deviation shall be implemented only after the reception of a deviation order issued by Enea through the same form of the Deviation Request.

7.2.2.2 *Deviation Requests originating from Enea*

The Contractor shall issue an impact assessment report for each deviation notice received from Enea. The report shall contain or refer to all relevant information to allow for an informed decision on the course of action to be taken. In particular, it shall address the consequences of the deviation in terms of technical performance, cost, delay, and risk.

The deviation shall be implemented only after the reception of a deviation order issued by Enea through the same form of the Deviation Request.

7.3 Traceability and identification

The Contractor shall ensure traceability of materials and manufacturing processes.

The Contractor shall define in QP the methodology to ensure the traceability, explaining:

- How products and processes requiring traceability are identified.
- Which methods and equipment are selected to ensure traceability.
- How the traceability of items is recorded.
- Which type of traceability has been selected including proper justification: individual items, batch production, etc.

The Contractor shall ensure that a bidirectional and unequivocal relationship between parts, materials or products, assemblies and associated documentation or records is established and maintained.

The Contractor shall be capable to trace data, personnel and equipment related to procurement, manufacturing, inspection, test, assembly, integration and operations activities.

The Contractor shall be capable to trace back and trace forward the locations of materials from raw stock.

The Contractor shall establish controls to ensure that:

- Identification numbers are assigned in a systematic and consecutive manner.
- Identification numbers of scrapped or destroyed items are not used again.
- Identification numbers, once allocated, are not changed, unless the change is authorized by Enea.

The Contractor shall keep trace of any temporary marking which might be removed in further phases (e.g., welding).

7.4 Document management

All quality and technical official documentation as well as all exchanges of information between Enea and the Contractor shall be via the RUP/DEC and the TRO. All official documentation shall be in electronic format and in English. The documents for Italian authorities shall be in Italian too. Should any conflict or interpretation issue arise, the Italian text will prevail.

As far as document coding and item numbering are concerned, the Contractor shall follow the QMS-PRO-20000 procedure [3]. Such procedure provides directions on the coding and numbering system that shall be adopted for the preparation, compilation and identification of all types of document to be issued by the Contractor/subcontractors during the execution of the contract. The templates listed therein will be provided to the Contractor before the commencement of the contract.

All issued documents will be property of Enea.



Project and Quality Management Specification for the Procurement of RF Components for the HPTB of DTTU

DTT ID:
TLM-SPT-52021

Page:
22/30

External ID:
N.A.

Rev. 1.0

7.4.1 Information and documentation management

The Contractor shall provide all official documentation via the DTT document management system (DMS) ALFRESCO. Detailed information about the use of ALFRESCO is given the QMS-PRO-20004 procedure [4]. Contractor personnel will be provided with access to ALFRESCO.

The Contractor shall provide a Documentation Schedule, detailing all documents and records relevant to the implementation of the contract, including the work performed by subcontractors. An example of Documentation Schedule form is attached at the end of the MS. The Documentation Schedule shall list all documents to be uploaded in ALFRESCO for approval or information, depending on the directions provided by Enea.

During the contract phase the Documentation Schedule will be the reference for the document management within the contract. No activity can start until Enea approves the Documentation Schedule. The Documentation Schedule shall be updated whenever necessary. The approval of the Documentation Schedule or any technical document by Enea do not relieve the Contractor from its contractual obligations and responsibilities.

The Contractor shall keep all necessary documents and technical information relating to the contract for monitoring, quality assurance controls, checks and audits. The Contractor shall keep such documents for 5 years (or the regulatory period of time, whichever is longer) after the end of the contract or, if requested by Enea, the Contractor shall transfer requested documents to Enea at the end of the contract. The Contractor shall provide copies of the documentation whenever requested by Enea.

7.4.2 Documentation control

For all deliverables, including schemes and diagrams, the Contractor shall implement a drawing control system. The preparation, review, and approval of drawings shall be accomplished through controlled procedures that establish approval authorities and responsibilities.

The following classification applies to changes in drawings:

1. A change that modifies an approved design is a “drawing change” and shall be controlled according to the abovementioned non-conformity and deviation management system.
2. An alteration that does not affect an approved design is a “drawing modification” (namely a modification relating to the different stages of the drawing process, e.g. “as defined”, “as detailed” and “as built”).

7.4.3 Document format

The formats of provided electronic files shall be authorized in advance by Enea. The following formats can be accepted without explicit authorization:

- Portable Document Format (.pdf).
- Microsoft Word 2019 (.docx).
- Microsoft Excel 2019 (.xlsx).
- Microsoft PowerPoint 2019 (.pptx).
- Primavera P6 (.xer).
- Catia V5 (.catpart / .catproduct).
- AutoCAD 3D/2D (.dwg / .dxf).
- ISO 10303 (.step / .stp).
- Compressed archives (.zip).
- Scans, pictures and photos (.jpg / .png).



Project and Quality Management Specification for the Procurement of RF Components for the HPTB of DTTU

DTT ID:
TLM-SPT-52021

Page:
23/30

External ID:
N.A.

Rev. 1.0

- Movies (.avi).

The use of newer versions of a software shall be agreed with Enea. The editable/modifiable files shall be also accompanied by the files in Portable Document Format (PDF).

The additional costs necessary to manage a new file format or the new release of a software shall be covered by the Contractor.

7.5 Visits, inspections and audits

Enea or its representatives may carry out planned and documented visits, audits, and inspections to verify Contractor/subcontractor compliance with all quality and technical aspects of the contract.

Enea shall be informed of the Contractor/subcontractor audits, reviews, surveillance, and inspection activities. Notifications shall be sent in writing via email at least 2 weeks in advance. The Contractor shall be responsible for all expenses derived from Enea inspections or audits as a result of a wrong notification. When Enea cannot witness an important activity, e.g. a hold point, Enea may request to repeat such activity at its own expense. Moreover, Enea is responsible for the temporary stops of the activities.

Should any deficiency be found, the Contractor shall implement, or ensure that subcontractors implement, all necessary actions to put this deficiency right in accordance with an agreed time schedule.

The Contractor/subcontractors shall provide Enea with access to all documentation, premises, and personnel involved in the execution of the contract for the purpose of audit, review, surveillance and inspection. Restrictions can be allowed for reasons relating to security or military secret. Enea reserves the right to make unannounced visits to Contractor/subcontractor premises and free access shall be provided at all reasonable times. During Enea visits, the Contractor shall make an office, equipped with Internet access, available to Enea inside its premises.

Enea can require photographs and record video of anything connected with the contract (the obtained material shall remain confidential). Enea agrees to keep confidential any other information not relating to the contract that may be accessed during audit and surveillance activities.

Enea shall have the right to be accompanied by third-party observers during agreed inspections and audits. For the purpose of the contract, Enea may appoint an independent inspection authority to certify that activities are carried out in accordance with agreed codes and standards. The third-party observers will be identified in advance and agreed with the Contractor. They shall be regarded as part of Enea staff. All observers will be bound by appropriate confidentiality obligations to be agreed in advance. The Contractor shall arrange free access for the inspectors so that they can carry out their duties. The Contractor shall provide the inspectors with copies of all relevant test reports to allow them to certify the compliance of deliverables with the technical requirements.



Project and Quality Management Specification for the Procurement of RF Components for the HPTB of DTTU

DTT ID:
TLM-SPT-52021

Page:
24/30

External ID:
N.A.

Rev. 1.0

8 Templates

The following forms, shown in next pages, are useful during the execution of the contract:

- A1: Control Plan Form
- A2: Documentation Schedule Form
- A3: Deviation Request Form
- A4: Nonconformity Report Form
- A5: Release Note Form

The Contractor can adopt its own templates provided that at least all fields specified in the annexed Templates are therein included.



Project and Quality Management Specification for the Procurement of RF Components for the HPTB of DTTU

DTT ID:
TLM-SPT-52021

Page:
27/30

External ID:
N.A.

Rev. 1.0

A3. DEVIATION REQUEST FORM

Section 1 – to be completed by the Contractor

DR Number:		Revision Number:		Sheet:		of	
1. DTT ID Number:							
2. Contract ID Ref.:		DMS ID Number:					
3. Contractor:							
4. Item/Subject:							
5. ORIGINAL REQUIREMENT:							
[always mention the reference document (title, number, version) where the requirement comes]							
6. DEVIATION PROPOSAL:							
7. JUSTIFICATION:							
8. LIST OF ATTACHMENTS:							
9. IMPACT ANALYSIS:							
9.1 OTHER ITEMS	<input type="checkbox"/> NO	<input type="checkbox"/> YES	Report:				
9.2 SCHEDULE	<input type="checkbox"/> NO	<input type="checkbox"/> YES	Report:				
9.3 PERFORMANCE & COST	<input type="checkbox"/> NO	<input type="checkbox"/> YES	Report:				
9.4 OTHER:	<input type="checkbox"/> NO	<input type="checkbox"/> YES	Report:				
Contractor's Technical Responsible			Contractor's Quality Representative				
Name	Signature	Date	Name	Signature	Date		

Section 2 – to be completed by Enea

Enea Technical Responsible Officer			Enea Representative		
1. DECISION:			2. COMMENTS:		
Name	Signature	Date	Name	Signature	Date

[Electronic Template will be made available to the Contractor]



Project and Quality Management Specification for the Procurement of RF Components for the HPTB of DTTU

DTT ID:
TLM-SPT-52021

Page:
28/30

External ID:
N.A.

Rev. 1.0

A4. NONCONFORMITY REPORT FORM

Section 1 – to be completed by the Contractor

1. DTT ID Number:		Rev. Number:		Sheet:		of	
2. Contract ID Ref.:		DMS ID Number:					
3. Contractor:							
4. Item:							
5. REQUIREMENT:							
6. DESCRIPTION OF NONCONFORMITY:							
7. PROPOSED REMEDIAL ACTION: <input type="checkbox"/> use as is <input type="checkbox"/> rework <input type="checkbox"/> repair <input type="checkbox"/> reject							
8. LIST OF ATTACHMENTS:							
9. PROPOSED NONCONFORMITY CATEGORY:							
<input type="checkbox"/> MINOR NONCONFORMITY							
<input type="checkbox"/> MAJOR NONCONFORMITY							
10. CORRECTIVE / PREVENTIVE ACTION:							
Contractor's Technical Responsible				Contractor's Quality Representative			
Name	Signature	Date	Name	Signature	Date		

Section 2 – to be completed by Enea

Enea Technical Responsible Officer			Enea Representative		
1. DECISION:			2. COMMENTS:		
Name	Signature	Date	Name	Signature	Date



Project and Quality Management Specification for the Procurement of RF Components for the HPTB of DTTU

DTT ID:
TLM-SPT-52021

Page:
29/30

External ID:
N.A.

Rev. 1.0

Section 3 – to be completed by Contractor

Final Result / Closing of NONCONFORMITY					
1. Description of actions performed					
2. List of attachments					
3. Result on product/process					
<input type="checkbox"/>	POSITIVE Brief description				
<input type="checkbox"/>	NEGATIVE Brief description				
4. Notes					
Contractor's Technical Responsible			Contractor's Quality Representative		
Name	Signature	Date	Name	Signature	Date

Section 4 – to be completed by Enea

Enea approval					
Enea Technical Responsible Officer			Enea Representative		
1. DECISION:			2. COMMENTS:		
Name	Signature	Date	Name	Signature	Date

[Electronic Template will be made available to the Contractor]



Project and Quality Management Specification for the Procurement of RF Components for the HPTB of DTTU

DTT ID:
TLM-SPT-52021

Page:
30/30

External ID:
N.A.

Rev. 1.0

A5. RELEASE NOTE FORM

Section 1 – to be completed by the Contractor

1. DTT ID Number:		Revision Number:		Sheet:		of	
2. Contract ID Ref.:		DMS ID Number:					
3. Contractor:							

Section 2 – Conformity statement to be completed by the Contractor

1. With the exception of the discrepancies listed below (section 2.6), we certify that the following equipment/service: (describe)					
2. Has been manufactured/performed, inspected and tested in accordance with the requirements described in the following documents: (Documents list)					
3. That the equipment/service is complete.					
4. That all relevant verifications, inspections and tests are complete and satisfactory.					
5. That the following documents are those required by the Contract: (Detailed list)					
6. List of any change proposal, deviation request and nonconformity report: (attached)					
Contractor's Technical Responsible			Contractor's Quality Representative		
Name	Signature	Date	Name	Signature	Date

Section 3 – to be completed by Enea

Enea Technical Responsible Officer			Enea Representative		
1. DECISION:			2. COMMENTS:		
Name	Signature	Date	Name	Signature	Date

[Electronic Template will be made available to the Contractor]