

SPECIFICATION SHEET

**SUPPLY, INSTALLATION AND DEPLOYMENT OF MULTICORE FIBER
WITH ORIGIN AND DESTINATION IN ICFO THROUGH AN OPEN
PROCEDURE SUBJECT TO HARMONIZED REGULATION**

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CLAUSE 1. Object of the contract

The purpose of this contract is to deploy a multicore fiber (MCF) link between the ICFO's origin-destination headquarters in Castelldefels.

CLAUSE 2. Needs to satisfy

ICFO Optoelectronics Group (OptoGroup) needs to establish a long-distance MCF link to perform diverse experiments in quantum communications.

The existing fiber-based optical communications networks have an advantage over other long-distance communication channels. However, single-mode fiber (SMF) is a limited technology in data transmission capacity and dimensionality of data coding. The development of novel fiber technologies such as MCF increases the data transmission capacity and opens access to study new quantum communication schemes. The current quantum communication tests based on MCF have been limited in controlled environments. So, MCF's compatibility with the already deployed optical fiber worldwide is fundamental to reaching its technological maturity. For this purpose, deploying a long MCF link will enable testing, among other aspects, the capability for high-dimensional data coding and phase stability among cores under environmental noise and actual climate conditions.

CLAUSE 3. Process overview

The fiber link will establish a secure optical communication channel for quantum communication research. Its deployment involves a Multitube loose dielectric Cable containing an MCF, among other fibers. The necessary conditions for the MCF deployment are pointed out below.

1. Route proposal for installing the MCF link between the ICFO's origin-destination headquarters in Castelldefels. The route must include the location of a splice box-type PDI to splice the required MCF sections along the total link. The splice boxes should be located less than 4 km from each other with a total link length of around 18 km. Drafting complete technical project.
1. Supply and installation of Maxcell-type geotextile mesh with up to 3 cells for the sections of cable that the project requires, according to the proposal route.
2. Inspection and cleaning of the fiber conduit. Together with the installation of the guide rope.
3. Laying, recovery or clearing in conduit, or concrete channel of a communications cable of any dimension, with manual means, blowing or floating.
4. Laying, recovering, or clearing a communications cable of any size inside buildings, galleries, or frontage and stapling cable through poles or tubular. It also has to include horizontal aerial cable laying.
5. Splice box supply for up to 48 fiber optic fusions. It must include a junction box with trays and accessories necessary to make up to 48 fusions.

CLAUSE 4. Installation

1. The proposal will include installation, uninstallation or manipulation of the junction box, distributor or rosette.
2. The installation must include displacement, previous setting out, box assembly according to the manufacturer's prescriptions, fixing in the indicated place, sealing entry ports, labeling, and supply of small materials.
3. Installation must include signaling day with a company specialized and approved by roads for lane cutting or actions that require it according to regulations or work authorization. The day may include specific machinery for work with negative lifting equipment.

CLAUSE 5. Warranty and support

1-year warranty starting at the installation of the MCF is ready. The warranty will include defects and damage to the installation of the MCF.

CLAUSE 6. Delivery time

The MCF deployment will be within 2 months, starting from obtaining the permissions.

CLAUSE 7. Financing

This equipment was supported by EuroQCI/PDA

CLAUSE 8. Target price

The target price for the system is 118.000,00 € (VAT excluded):

- 97.000,00 € (VAT excluded): corresponding to the supply itself.
- 21.000,00 € (VAT excluded): corresponding to the conducting use fee (10.500,00 € (VAT excluded): per year)

Castelldefels, on the date of its digital signature

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