Motivation

TECHNICAL REASONS

Subject	Reasons for the single-source contract award regarding Test mass substrates

1 Reason for the procurement requirement

The ETpathfinder project is an R&D-field laboratory for the Einstein Telescope, aiming to demonstrate key-technologies for Einstein Telescope, such as ultra-low-noise laser interferometry with cryogenic silicon test masses.

2 Scope of the assignment

- The polishing of 4 mirror substrates.

3 Estimated contract value

The estimated contract value for the purchase is: €390.000,- excluding VAT.

4 Market

A European tender procedure for the shaping and polishing of mirrors for the ETpathfinder has been carried out in 2022. Four potential suppliers had shown interest in this tender, but no bids were submitted. An evaluation with these parties showed that the assignment was technically unfeasible and/or financially unprofitable for many suppliers. Therefore was decided to carry out a negotiated procedure without notice and award the contract to Carl Zeiss SMT GmbH.

5 Procurement procedure and motivation

The contract is awarded by negotiated procedure without notice with reference to Article 2.32(1)(b) of the the Public Procurement Act 2012. This article stipulates that the contract may be awarded without notice if the contract can only be performed by one specific contractor,

a) because competition is lacking for technical reasons, or
b) because exclusive rights, including intellectual property rights, must be protected and there is no reasonable alternative or substitute.

In this case, it concerns a) Competition is lacking for technical reasons:

- the European tender procedure in 2022 ended in a no bid. Evaluation with interested parties provided the insights that the assignment was technically unfeasible and/or financially unprofitable for many suppliers.
- The two main surfaces of the ETpathfinder mirror substrates require very accurate and strong curvatures: Each main surface requires a concave radius of curvature of 14.5m +/- 0.1m, the rear surface a convex radius of curvature of 9.0m +/- 0.1m

and a horizontal wedge of 0.007deg + 0.002deg -0.0 deg between these two surfaces. The curvatures of the 4 main test masses determine the optical mode in the two Fabry Perot arm cavities of the ETpathfinder interferometer. Matching these two arm cavity modes as close as possible is essential in order to obtain perfect destructive interference at the output of the interferometer. Non-identical radii of curvature1 will create reduced interference and hence reduced common mode noise suppression. It will be necessary to use the exact same reference spheres as were used for the first batch of mirrors and hence guaranteeing that the radii of curvatures of the existing and to be produced polished silicon substrates are compatible for installation the main ETpathfinder interferometer. Therefore, for reasons of interoperability, the contract will be awarded to Carl Zeiss SMT GmbH.

There are no other market parties known that can provide what is requested (see paragraph 5) and there is also no reasonable alternative or substitute.
For this reason, the contract will be awarded to Carl Zeiss SMT GmbH .

Publication of awarded contract
In accordance with Article 2.37(e) of the Aw 2012, the contract awarded will be announced on TenderNed.

Annexes:
1. ETpf_Specification
2. ET-0345A-21_v3
3. ETPF_Mirror_polishing_interoperability