Assembly of Fiber Optic Sensors

1. **Scope of the Work:**

Fiber Optic sensors consists of Photonic Commercial Off the Shelf (COTS) components that need to be assembled on a mechanical housing. The assembly consists of activities such as fiber splicing, fiber routing and fiber winding. This also involves testing and characterisation of the fiber optic components at each stage of the assembly.

2. **Description of the Work:**

There are three different activities involved in Fiber optics sensor assembly.

Activity 1:

Testing and evaluation of fiber optic components.

- The components listed are fiber pigtailed laser source, fused fiber couplers, isolators, Mode field adaptors, pump combiners, pin diode detectors , optical fibers.
- Evaluate the optical performance of the above mentioned optical and optoelectronic components as per the datasheet and data acquisition.
- Test reports of individual components

Activity 2:

Splicing and Routing of optical fibers

- Optical fibers of different geometry need to be spliced, recoated and routed as per the requirements of the sensor.
- Assembled sensor with well protected splice joints and properly routed fiber
- Assembly logsheet for each activity

Activity 3:

Winding of fiber optic coil, testing and evaluation

- Coil winding of approximately 1 km of optical fiber for various sensor applications.
- Testing of coils
- Test reports for each coil with identification

3. **From LEOS the following resources will be made available**
    1. The vendor can carry out the activity in LEOS under the supervision of LEOS Engineer.
    2. The components to be tested, assembled and wound.
    3. Equipment for splicing and winding.
    4. The test plan, assembly procedure and winding procedure .
    5. Test and measurement equipment.

4. **Safety precautions to be followed by vendors**

The vendor personnel should strictly adhere to the general work rules and procedures followed at LEOS and keep harmonious relations with staff during their stay at LEOS. The personnel of vendor must adhere to all the safety guidelines while handling

components, cards, packages, while testing and transporting, particularly the ESD protection measures such as wearing ESD overcoats, shoes / chapel, wrist - band etc.

5. **Delivery terms**
   The fiber optic sensor assembly shall be complete within a period of 05 months from the date of reckoning of the activity.
   The date of reckoning shall be date of Issue-of-components / date of availability of the mechanical fixtures, test jigs, electronic cards, test equipment whichever is the latest.
6. **Payment** : On successful completion of the activities along with completion reports and test reports.

Technical Justification

The indent is for the assembly of fiber optic sensors. Fiber Optic sensors consists of Photonic Commercial Off the Shelf (COTS) components that need to be assembled on a mechanical housing. The assembly consists of activities such as fiber splicing, fiber routing and fiber winding. This also involves testing and characterisation of the fiber optic components at each stage of the assembly. Presently, activities related to Fiber optic gyroscope, laser doppler velocimeter, FMCW lidar, Monostatic LDV are going on in FOSS. Hence to cater to all the requirements, this indent is essential.