**Annexure E**

**Details of ILS Package and Post Warranty Logistic Support   
for MINI Thermal Weapon Sight (TWS)**

# Maintenance Policy

LEOS will provide Integrated Logistic Supports (ILS)/Post Warranty Logistic Support (PWLS) through Rate Running Contract (RRC) for continued provision of spares/technical support.

The maintenance policy comprised of the following maintenance levels:

|  |  |  |  |
| --- | --- | --- | --- |
| **Maintenance Level** | **Scope** | **Execution** | **Location of maintenance facilities** |
| **O Level**  (FRU\* Replacement Level) | Operation/Replacement  /Maintenance(cleaning) of FRUs | User/operator | Field |
| **I Level**  (SRU\*\* Replacement Level) | Fault Identification and Repair/Replacement of SRUs | User’s Technical Team | User Workshops (505) |
| **D Level**  (SRU Repair Level) | Repair of TI Module | LEOS Technical Team | LEOS |

\* Field Replace Unit

\*\* Shop Replace Unit

# “O Level” Maintenance

## Concept

At this level, when the user declares Field Replaceable Unit (FRU) as faulty, the “O-Level” maintenance technician has to replace the faulty FRU with new one available in FRU spare parts stock. Then he sends the faulty FRU (Cat-II) to workshop (505) for repair. The repaired FRU is sent back to the FRU replacement level spare parts stock.

Moreover, when the user “FRU Replacement Level” tech declares the complete TI Sight as faulty, he sends the faulty Sight to workshop(505).

## Documentation

The documentation supplied at the “O-Level” maintenance is as follows:

* Mini TWS User/Operational Manual
* FRU Replacement Manual
* “FRU Replacement Level” Illustrated Parts Catalogue (IPC)

## Training

### Operational Training

Free of cost operational training will be provided at user’s premises. The purpose of this training is to train user to operating the Mini TWS. The successful trainees may train to other users.

### Maintenance Training

Free of cost maintenance training of FRUs will be provided at user’s premises. The purpose of this training is to train User’s field technicians for FRUs replacement/maintenance (cleaning of objective/eyepiece lenses). The successful trainees may train to other users.

## Necessary Facilities

No specific facilities are required at this level.?

## 2.5 “FRU Replacement Level” Maintenance Tool

Following tools are required:

* Cleaning Kit
* L-Key(M3) for picatinny rail mounting/dismounting

## “FRU Replacement Level” Spare Parts List

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Category** | **Description** | **Unit Price (PKR)** | **Qty** | **Total Price** | **Remarks** |
| Cat-I | Eye Guard |  | 25 |  | Cat-I parts are replaceable in the field |
| Objective Lens Cover |  | 25 |  |
| Rechargeable Battery |  | 15 |  |
| Cat-II | Interface Cable |  | 1 |  | Cat-II parts need to send workshop (505) in case of failure |
| Battery Charger |  | 1 |  |

# “I Level” Maintenance:

## Concept

At this level, the “I-Level” maintenance technician will perform the test procedures using “SRU replacement level” Special Tool and Test Equipment (STTE) for localizing the faulty Shop Replace Unit (SRU). Technician will be able to repair/replace the faulty SRU with new/operational SRU available in SRU spare parts stock.

**NOTE: If the fault is related to detector, detector biasing card and Image processing card; the TI module or Sight will be sent to LEOS through proper channel for repair/replacement.**

## Documentation

The documentation supplied at the “I-Level” maintenance is as follows:

* Mini TWS User/Operational Manual
* SRU Replacement Manual
* “SRU replacement level” Special Tool and Test Equipment (STTE) Technical Manuals
* “SRU Replacement Level” Illustrated Parts Catalogue (IPC)

## “SRU Replacement Level” Tech Training

Free of cost repair and maintenances training (10X Officer/Staff) of SRUs will be provided at workshop (505)/LEOS premises. The purpose of this training is to train User’s Technical team technicians for SRUs maintenance/replacement. Training completion certificates will be provided to successful trainees.

## Necessary Facilities

The SRU replacement level maintenance requires at least the following facilities and infrastructure.

* Class 10,000 Clean Room equipped with:
* Class 100 Clean Workstation (Laminar Flow Workstation)

## “SRU Replacement Level” Maintenance STTE

Following STTE are required:

* Thermal Imager Test Bench (already available at 505)
* Cable Test JIG
* Button & Wiring Test JIG
* OLED Module Test JIG
* TI Module Test JIG
* Nitrogen Leak Test Bench :Razzaq sb
* Diopter Telescope :Razzaq sb
* Special Toolkit

## “SRU Replacement Level” Spare Parts List

|  |  |
| --- | --- |
| S. No. | **Nomenclature** |
|  | Interface Cable |
|  | Interface Connector |
|  | Buttons and Wiring assembly |
|  | OLED Display |
|  | Display driver board |
|  | Interface PCB |
|  | Video Processing PCB |
|  | Detector Biasing PCB |
|  | Detector |
|  | Firmware/Software |
|  | Eyepiece assembly |
|  | IR Objective Lens Assembly |
|  | Mechanical Housing |
|  | Picatinny Rail |

# “D Level” Maintenance:

## Concept

At this level, the “D-Level” maintenance tech at LEOS will further investigate and localized the error. The Special Tool and Test Equipment (STTE) will be used for fault localization as well as for repairing the faulty part/component of the SRU. LEOS technicians will repair/replace the faulty part/component and repaired TI module/ sight to user workshop.

# Permissive Repair Schedule (PRS):

Permissive Repair schedule (PRS) is attached in Appendix-I

**PERMISSIVE REPAIR SCHEDULE (PRS)**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Main Equipment** | **Item** | | **Action Required** | | | | **Interval for Maintenance/ Repair** | **Remarks** |
| **Sub-Assembly Part Number** | **Nomenclature** | **1st Level**  **(O Level)** | **2nd Level**  **(I Level)** | **3rd Level**  **(D Level)** | **STTE**  **(O & I Level)** |
| 218-026-0000 | 218-026-0001 | Eye Guard | Replace | - | - | No STTE |  |  |
| 218-026-0002 | Objective Lens Cover | Replace | - | - | L-Key |  |  |
| 218-026-0003 | Rechargeable Battery | Check/ Replace | - | - | No STTE |  |  |
| 218-026-0004 | Battery Charger | Check/ Replace | - | - | No STTE |  |  |
| 218-026-0005 | Interface Cable | replace | Check/Repair | - | Cable Test JIG |  |  |
| 218-026-0006 | Interface Connector | - | Check/replace | - |  |  |  |
| 218-026-0007 | Buttons and Wiring assembly | - | Check/Repair/replace | - | Button & Wiring Test JIG |  |  |
| 218-026-0008 | OLED Display | - | Check/replace | - | OLED Module  Test JIG |  |  |
| 218-026-0009 | Display driver board | - | Check/Repair/replace | - | OLED Module  Test JIG |  |  |
| 218-026-0010 | Interface PCB | - | Check/Repair/replace | - | TI Module Test JIG |  |  |
| 218-026-0011 | Video Processing PCB | - | Check | Repair/Replace | TI Module Test JIG |  |  |
| 218-026-0012 | Detector Biasing PCB | - | Check | Repair/Replace | TI Module Test JIG |  |  |
| 218-026-0013 | Detector | - | - | Check/Replace | No STTE |  |  |
| 218-026-0014 | Firmware/Software |  | Check/Replace | Upgrade | No STTE |  |  |
| 218-026-0015 | Eyepiece assembly | - | Check /replace | - | No STTE |  |  |
| 218-026-0016 | IR Objective Lens Assembly | - | Check/replace | - | No STTE |  |  |
| 218-026-0017 | Mechanical Housing | - | Check/replace | - | No STTE |  |  |
| 218-026-0018 | Picatinny Rail | - | Check/replace | - | No STTE |  |  |