Pre-Recording Checklist for SLAM Scans

☐ **Data Management**

- Offload all data and flights from the USB drive, erase all data, and format the USB drive to FAT32 using the GUI.

☐ **Firmware Check**

- Ensure that the RESEPI is running the latest firmware version. The firmware version can be found in the top right corner of the GUI.

☐ **Map Out a Loop-Closure Route**

- Identify a path that allows the scan to start and end in the same location, forming a full loop.
- Plan a logical route through the environment for even coverage.

☐ **Limit Excessive Looping**

- Loop closures should occur at key points but not excessively.
- Avoid looping around every small object or scene feature.

☐ **Identify Areas of Concern**

- Note regions with inclines, narrow hallways, or large open spaces that may affect SLAM performance.
- Plan brief angle adjustments only if needed for terrain changes.

☐ **Ensure LiDAR Visibility**

- Confirm that throughout the path, the LiDAR will have clear line-of-sight to structural features.

☐ **Secure the RESEPI Unit**

- Mount RESEPI firmly to the handheld SLAM kit using the designated bracket.
- Ensure cables are not strained and that LiDAR has clear, unobstructed view of the environment.

☐ **Choose Mounting Configuration**

- Standard Configuration (LiDAR flat/horizontal): Recommended for most indoor or level scans, shown in Figure 1.
- Angled Configuration (LiDAR tilted): Use only when mapping long-term inclines or declines, shown in Figure 2.

Figure 1. Standard Configuration.

Figure 2. Angled Configuration.

☐ **Power Connection**

- Connect RESEPI to power via one of the following:
  - XT60
  - Skyport
  - Binder Connector
  - Ethernet (GEN-II only)
- Ensure power supply is 9–36VDC (up to 45V max) with 24–28W available.

☐ **Insert USB Drive**

- Use the provided USB drive formatted as FAT32.
- Confirm that the drive is securely inserted into the USB port for data logging.

☐ **Attach GNSS Antenna (if applicable)**

- Only applicable to those doing georeferenced SLAM scans.

☐ **Power On the Device**

- Press the Power Button to turn on RESEPI.
- Wait until the system has fully initialized (watch status LEDs or GUI load).

☐ **Connect to RESEPI Wi-Fi**

- SSID is printed on the unit label.
- Password: LidarAndINS
- Connect using a laptop, phone, or tablet.

☐ **Open Web Interface**

- Open a browser and go to: 192.168.12.1

☐ **Configure SLAM Settings**

- Within Status tab configure the SLAM Settings to Indoor or Outdoor
    - Not a requirement, as this can be adjusted in post processing

☐ **Set IMU Orientation Based on Configuration**

- Go to: Settings > Geometry > Vehicle to IMU Rotation
- Click Save

☐ **Set "Record Without GNSS"**

- For GNSS denied SLAM, enable "Record Without GNSS"
- For georeferenced SLAM, disable "Record Without GNSS"

☐ **Enable Interstitial Points Filtering (Optional)**

- For scanning in metallic/structured areas (e.g. stadiums, HVAC, temporary structures), go to Settings > LiDAR Service
- Enable "Interstitial Points Filtering" to reduce stray points.

☐ **Start in a GNSS-Friendly Area (if applicable)**

- If doing georeferenced SLAM, begin the mission outdoors with open sky and minimal obstructions near the GNSS antenna.

☐ **Wait for Time Fix (if applicable)**

- For GEN-II devices or georeferenced scans, in the Web GUI, check the INS Status window.
- Confirm that:
    - Date/time are correct
    - Status message reads: "Ready to log"

☐ **Confirm Drive has Sufficient Space**

- Offload any previous data and format if needed.
- RESEPI will write new scan data to the drive once logging starts.
- Avoid using a drive that is nearly full.

☐ **Ensure All Cables are Secure**

- Power, antenna, and data cables should be fully seated and strain-relieved.

☐ **Stabilize the Unit for IMU Initialization**

- Be prepared to hold RESEPI still for ~10 seconds immediately before pressing “Start”.