SUNSIGHT AAT RF PANEL ANTENNA ALIGNMENT SYSTEM

AAT Models AAT30 and AAT15

Issue 5

6/7/2019

www.sunsight.com

support@sunsight.com

+1 321-244-9443 x2

Document Change History

Issue	Date	Description
1	02/05/2016	Original Issue
2	02/15/2016	Report generation added
3	04/26/2016	Basic Description and Operation added Photographs reformatted Quick Start Guide merged into this document Safety warnings added Table of Contents added
4	06/23/2017	iOS device connection added Menu table added Photo reporting added Tilt/roll calibration instructions added Troubleshooting added
5	06/07/2019	Updated to support new firmware release including Android app to use any Android device (OS 6.0 or higher) to capture and embed photos. Adds Virtual Reality Interference Reporting (VRIR) feature. Also eliminates requirement to use Sunsight supplied tablets in MW kits

Contents

Safety

The AAT should be handled with the following considerations:

⚠ There are no user-serviceable parts within the AAT. All internal repairs must be performed by Sunsight Instruments.

⚠ **Use only the Sunsight supplied smart charger to recharge the LiFePO4 battery pack. Use of a non-approved battery charger will void the battery warranty and can damage the battery pack.**

⚠ Never attempt to recharge the batteries outdoors in inclement conditions.

⚠ Never short the battery terminals, attempt to disassemble the battery pack, or dispose of the pack in a fire. Any exhausted battery packs must be disposed of properly. CONTACT SUNSIGHT INSTRUMENTS IF YOU ARE UNSURE OF HOW TO PROPERLY DISPOSE OF THE BATTERY.

⚠ The AAT is water resistant, but not waterproof. Do not submerge or leave the unit in standing water. All sealing caps and doors must be secured while in use, particularly during inclement weather.

 Avoid impacting, dropping or rough handling of the AAT. The AAT contains sensitive electronic components. Rough handling may result in internal component damage.

 Care should be taken to avoid impact to the black GPS antennas on the top of the AAT.

If you suspect the AAT is operating incorrectly, contact Sunsight Instruments or an authorized Sunsight Instruments distributor for support.

www.sunsight.com support@sunsight.com +1 321-244-9443 x2

Introduction

This document provides instructions and best practices on how to use the AAT30 and AAT15. For the remainder of this document, the term AAT will refer to both the AAT30 and AAT15 products.

It is important that all users review the free video training series on the Sunsight Instruments website at www.sunsight.com/training. In addition to free video training, Sunsight Instruments offers an online certification program, which may be required by some customers. Upon successful completion of an online exam, a certificate is issued that is valid for one year.

A good starting point is the AAT Quick Start Video. Follow this link to view the AAT Quick Start Video –
https://www.youtube.com/watch?v=Wa6s3jK8SiE

Please check the Sunsight Instruments website periodically for new products and updates at www.sunsight.com.

Attention New Users!!

*****PLEASE REVIEW THE FREE TRAINING VIDEOS AT https://www.sunsight.com/index.php/training*****

Sunsight strongly recommends that all users take time to:

- Read and understand all safety precautions.
- Read and understand the operating instructions in this guide.
- **Learn to mount the AAT properly**. **Always mount the AAT as high as possible and in a way that allows the GPS antennas at the top of the AAT to have an unimpeded view of the sky**. This is the most common mistake made by new users. Remember that the user's hands, head, body, etc. can block GPS signals, as will most physical obstructions.
- Learn the tips for obtaining GPS - based azimuth. Under normal conditions, azimuth acquisition should take less than 5 minutes, typically less than 2. Please refer to the training videos for more detail.

Quick Start Guide

This document describes the function of the AAT in great detail. It contains significant information to better use the AAT in various field situations, along with introducing advanced features and techniques. For basic usage of the AAT, the **Quick Start Guide** may be adequate.

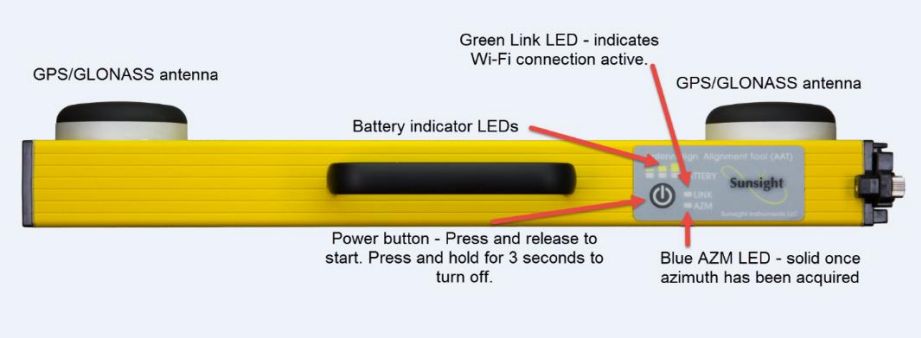
To view the Quick Start Guide for the AAT30 and AAT15, please select from the documents displayed at this support link –
https://www.sunsight.com/support/aat-xx-support/

Description of the AAT System

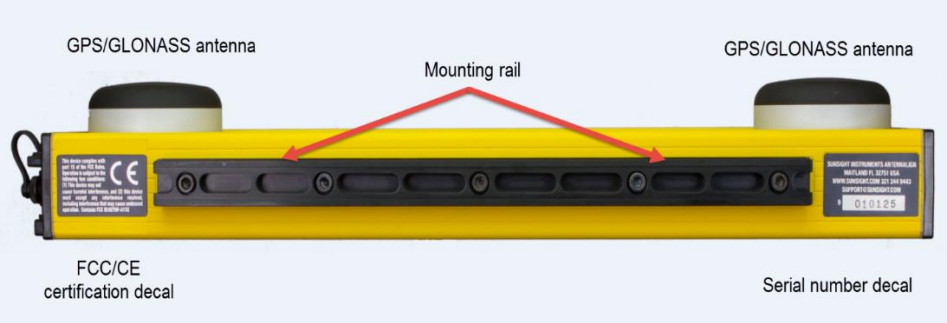
The AAT is a battery operated tool that measures azimuth, tilt, roll and height. Typical use of the AAT is for aligning RF cellular panel antennas. The AAT kit comes with all the basic items needed to perform most antenna alignment tasks.

AAT30 With Standard Accessories

AAT Front View

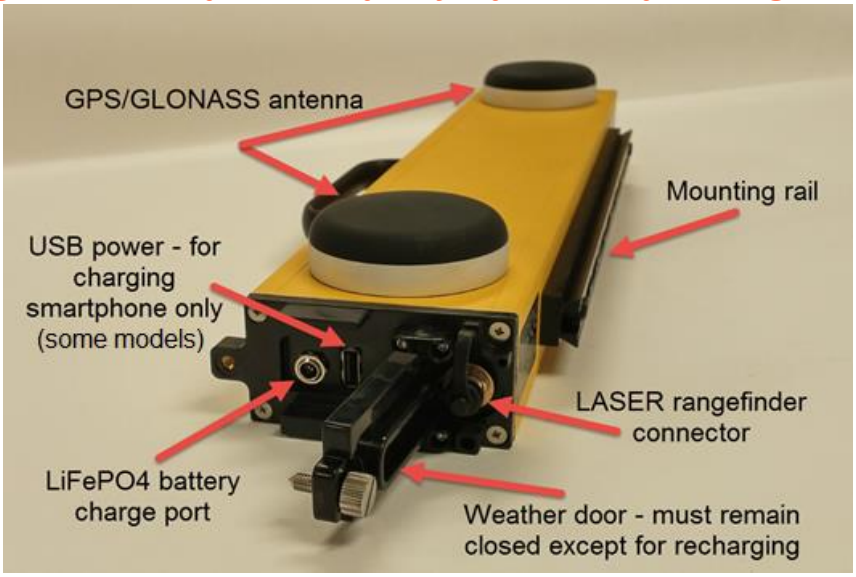


AAT Back View



AAT Charge Ports and LASER Rangefinder Connection Port

Important— use only the Sunsight supplied charger. Other chargers will not charge the battery correctly or fully. Battery damage may occur.



Basic Operation of the AAT

To begin using the AAT, it is helpful to understand how the AAT functions.

- The AAT is operated by accessing the unit using the Wi-Fi connection from another Wi-Fi device.
- The Wi-Fi device used to access the AAT can be **most any smartphone, tablet or laptop** supporting standard Wi-Fi (802.11b/g/n). For the purpose of this document, the Wi-Fi device will be called the **Handheld Controller**.
- The AAT acts as its own Wi-Fi hotspot.
- The AAT can be accessed by the **Sunsight app** if using an Android device of Android OS 6.0 or higher. Using the app will allow taking of photos during the alignment data capture process. These photos become part of the alignment reports. You can download the Sunsight Android app and required AAT firmware from: https://www.sunsight.com/support/aat-xx-support
- To use the Sunsight Android app to access the AAT, power up the AAT and the handheld controller, launch the Sunsight app and connect to the AAT. The AAT's start page will be displayed.
- If using a handheld controller other than the Android device with app, go the Wi-Fi hotspot list and choose the AAT Wi-Fi hotspot named AAT 9010xxxx, where xxxx is the AAT serial number. Once connected, open browser (preferably Chrome) and navigate to **192.168.0.50**. The AAT's start page will be displayed. As a reminder, no pictures can be captured when using this method of access.
- No more than one Wi-Fi user should be connected to the AAT at a time. Multiple users connected simultaneously to an AAT may cause operational issues for the AAT.

Capturing and Recording Alignment Data with the AAT

The AAT can measure and record alignment results in two ways: **Quick Capture** mode OR **Profile** mode

Quick Capture mode allows the user to mount the AAT and capture the actual measurements with no need for pre-programming alignment targets. Quick Capture reports do not include the target data that would be in the Profile mode reports. Photos can be captured in the report.

Profile mode allows the user to preprogram the AAT with target data that is displayed/compared with the actual measurements in the field. Resulting reports show both target and measured data. Photos can be captured in the report as well. Profiles can be entered using the Handheld Controller (smartphone, tablet, or laptop) prior to climbing. Up to 256 sets of target data may be entered. There are numerous optional data fields available when using the Profile mode. The optional data fields include site

data such as antenna make/model, serial numbers, notes, etc. **If the user and their customer can agree on what data is to be collected, the subsequent reports will provide the fastest and most complete method of recording and reporting alignment work.** It is highly suggested to work with the customer to agree on the data to be collected ahead of time.

Reporting Alignment Data with the AAT

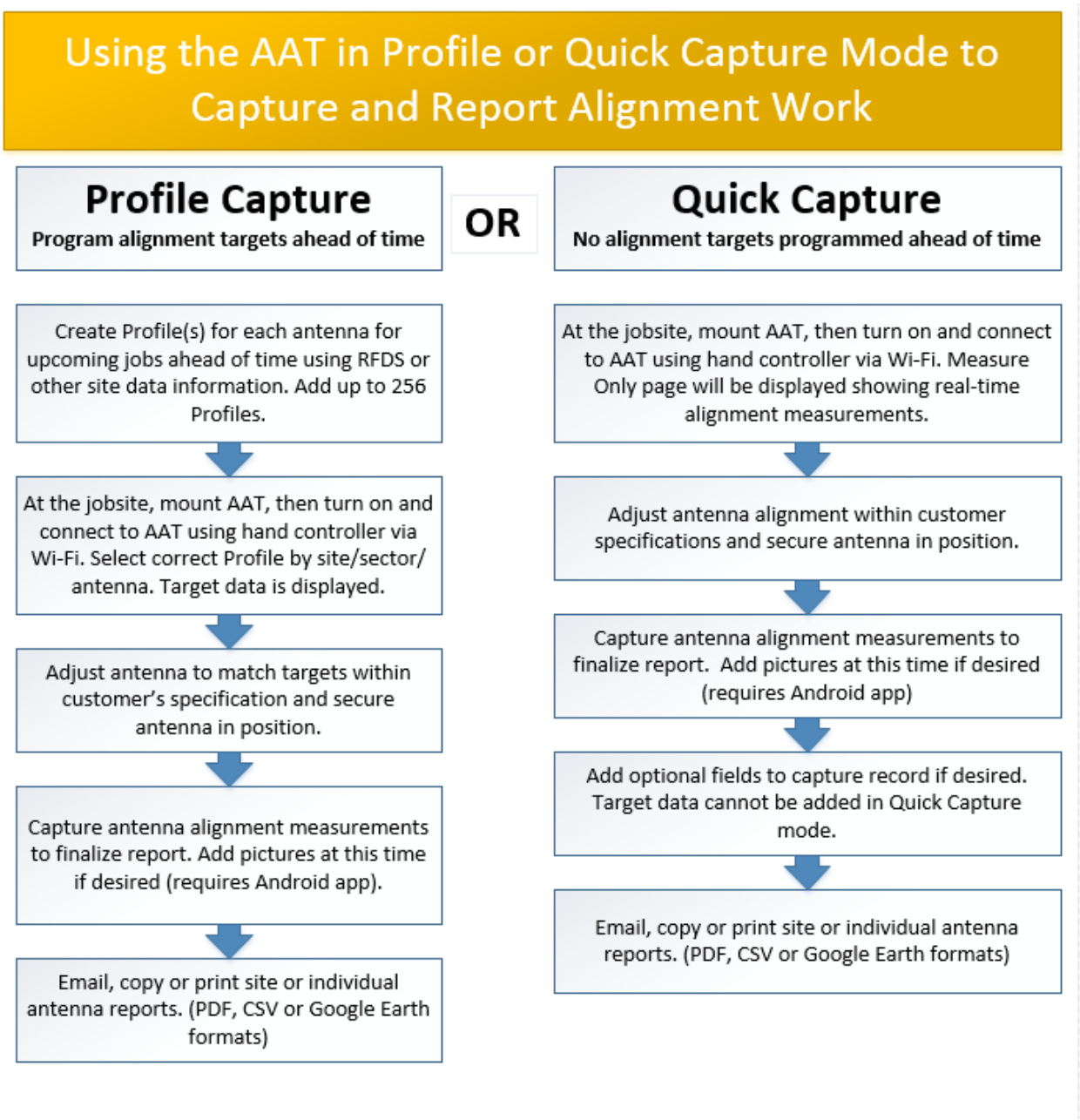
Reports can be generated for a single alignment record (i.e. a single antenna) or a full site record (i.e. where several alignment records create one report). Reports are downloaded to the handheld controller or laptop from the AAT, from there they can be emailed or printed.

The AAT can capture measurement results and generate:

- **PDF measurement reports with photos that contain embedded measurement data** (separate reports for each antenna, or multiple antennas in one site report)
- **Bulk CSV measurement files** (both import and export). Allows user to import and create Profiles from Excel or other spreadsheet programs. Allows export of alignment results for consumption by Excel or other spreadsheet programs
- **Google Earth files**. The Google Earth files can be used to determine potential RF obstructions directly in Google Earth. The History feature can be used to determine if new obstacles have recently arisen using the **Virtual Reality Interference Reporting (VRIR)** feature (patent pending).

Follow this link to learn more about the VRIR feature - https://www.youtube.com/watch?time_continue=7&v=gbR0NaZ5N6g

Methods for Collecting Alignment Data



Typical Order of Operations for using the AAT (Android app or Browser Method)

Before arriving at the site:

1) Charge the AAT and Handheld Controller.
2) Create profiles (Profile mode only) for antennas to be aligned.

At the site:

Before climbing:

- Power on the AAT and Handheld Controller.
- Connect the Handheld Controller to the AAT using the Sunsight Android app or web browser by connecting to the Wi-Fi hotspot.
- Run the AAT on the ground at the job site and verify azimuth acquisition (blue **AZM** LED solid on AAT). This will take a few minutes. Performing this step will save time on the tower.
- Power off the AAT before climbing. Performing this step will save time on the tower.

On the tower:

- Secure mount to the antenna to be measured.
- Secure the AAT to its mount.
- Power on the AAT and Handheld Controller.
- Connect the Handheld Controller to the AAT
- Align the antenna and capture data using Quick Capture mode or Profile mode. Generate reports. Reports can be generated on the tower or at later time.

Details for Connecting the Handheld Controller to the AAT

The AAT is accessed via Wi-Fi using a handheld controller (smartphone, tablet, or laptop). There are two different methods for connection, 1) using the Sunsight Android app on a handheld controller (Android smartphone or tablet using OS 6.0 or higher) or 2) directly in a web browser. The Android app includes more AAT features (including the ability to capture photos to include in alignment reports). The web browser access provides a more basic method to operate the AAT when using non–Android devices (IoS/Apple devices, Windows, or Linux).

Connecting using the Sunsight Android app (preferred)

This method of connection requires a standard Android device running Android OS version 6.0 or higher. In addition, the AAT must have a firmware load of r005v45 or higher. The installation of the Sunsight app on the Android handheld controller is a one-time procedure and does not interfere with any other operation of the Android device. Sunsight offers an optional relatively inexpensive, rugged Android tablet for this application, **but it is not required**.

After completing the installation of the Android app, the AAT can be accessed quickly going forward.

To Install the Sunsight Android app (one time procedure) - Download and install the Sunsight Android app from the support page at: https://www.sunsight.com/support/aat-xx-support/.

Once the app is installed, the process for connecting to the AAT is as follows:

- Power on the AAT
- Power on and enable Wi-Fi on the Android handheld controller.
- Launch the "Sunsight AAT" app
- Tap "Scan for AATs"
- Highlight the appropriate AAT serial number from the dropdown list and click or tap "Connect to AAT"
- Once connected, the green Link LED on the AAT keypad will turn solid and the Measure Only page will appear on the handheld controller.

Connecting Using Basic Web Browser Access (no Sunsight app)

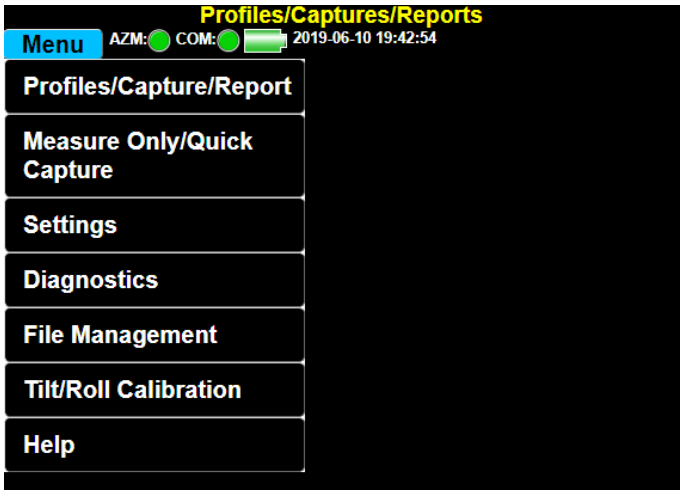
This method Applies to non-Android devices (iOS/Apple, Windows, or Linux). It provides access to the AAT, but does not provide for taking pictures during the data capture process. To make this connection process faster, a web shortcut can be made on the handheld controller that points to the IP address indicated below.

- Power on the AAT.
- Power on the handheld controller to be used with the AAT.
- Enable Wi-Fi if not already enabled.
- Go to Wi-Fi hotspot list on the handheld controller and choose the Wi-Fi network "AAT 901xxxx" where the x's represent the serial number of the AAT.
- Access the AAT by opening a web browser and navigating to: ***192.168.0.50***

***NOTE: If the Wi-Fi device is taken out of range of the AAT Wi-Fi broadcast, the device may automatically attempt to connect to another Wi-Fi network or the cell network. This feature may be disabled by the user, if desired. See device owner's manual for more information.**

Using the AAT Menus and Displays

Once connected to the AAT, the user may select various AAT options by clicking or tapping the **Menu** button on the handheld controller.



Main Menu

Profiles/Capture/Report

- View profiles and captures currently stored in the AAT,
- Create new profiles
- Capture data to existing profiles
- Generate reports

Measure Only/Quick Capture

- View real-time alignment data
- Perform Quick Captures
- Microwave Alignment (available for

Settings

- Select AAT website text and background colors
- Select metric or US height units
- Select Latitude and Longitude display – Degrees Minutes Seconds or Decimal format
- Owner Information – Owner information will be included on every jobsite report generated by the AAT
- User Logins – select to require username and password to access the AAT and store user-created credentials
- Clear All Data – erases Owner information and user-created credentials
- Firmware Update – update the AAT with new firmware downloaded from https://www.sunsight.com/support/aat-xx-support/
    - ❖ NOTE: Firmware update will erase reports currently stored on the AAT. Be sure to generate all reports from the tool prior to updating firmware!

Diagnostics

- Displays GPS diagnostic information
- Cycle Slips, Satellites, and Signal to Noise should all display OK or Excellent.
- Any indicator of Poor generally requires repositioning of the AAT for GPS signal optimization.

File Management

- Upload .AAT file to the tool – Advanced users only
- Download .AAT file from the tool for record keeping.
- Use FTP to transfer files between the AAT and a computer – Advanced users only
- Erase All Contents – erases ALL site data from the AAT's internal memory. Use with caution.

Tilt/Roll Calibration

- View date of last calibration
- Recalibrate the AAT tilt and roll sensors

Help

- View the Quick Start Guide originally shipped with the AAT directly on the AAT internal website. The Quick Start Guide and RF Panel Alignment instructions are also available for download from:
  https://www.sunsight.com/support/aat-xx-support/

Detailed Instructions for Using the AAT to Align Standard RF Panel Antennas

Choose Alignment Mode

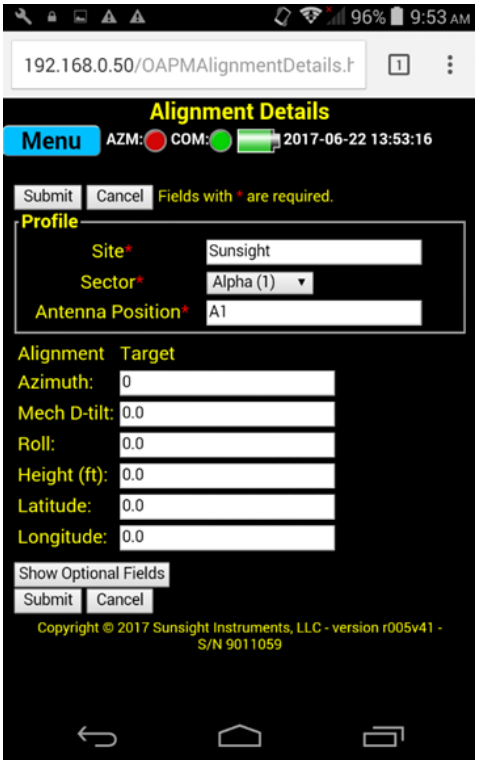
Before climbing, decide whether the Quick Capture mode (no target data) or the Profile mode (target data programmed ahead of time) will be used. If using Quick Capture mode, no preparation is required.

If using **Profile** mode:

Create a New Profile for alignment data:

- Click or tap the **Menu** button, then select **Profiles/Capture/Report**
- Click or tap the **New Profile** button.
- Input Site, Sector and Antenna Position. Input target data provided in the RFDS for the job site.
- Input any desired optional information (antenna S/N, notes, etc.)

******Note: Required fields and target values cannot be modified once a profile has been created.*** Optional fields may be modified or added after capture.



- Click or tap either **Submit** button available at the top and bottom of page to save the data. ***No data is saved until the Submit button is used.***

- The AAT will validate and store the information input by the user, then site information will be displayed on-screen.
- To add additional antennas to a jobsite, click or tap the **Clone** button. Using the Clone button copies all data from the current profile into a new profile. By changing Sector, Antenna Position and/or Target data as necessary in the new profile, the new profile can be added with minimal effort. In this way, the user can quickly create all profiles for an entire site before climbing. ***Always click the Submit button to save information to the AAT!***

Mounting the AAT on the Antenna

Attach the AAT panel side-mount to the antenna to be measured. Ensure mount is positioned as high on the antenna as possible. **Positioning the mount as high as possible is CRITICAL!** GPS signals are line-of-sight and the best and fastest alignment results require the best view of the sky.

- Check that the grips and strap buckle are perpendicular to the backplane of the antenna. **See Figures 1a & 1b** below.
- While holding the mount in position on the antenna, loop mount strap around antenna, then under mount crossbar and into the ratchet buckle. ***BE SURE STRAP IS POSITIONED UNDER CROSS BAR!***
- Pull slack from poly portion of strap to reduce slack.
- Use the ratchet buckle to tighten strap. Once the slack is removed from the strap, 2–3 clicks is usually sufficient to secure mount. ***DO NOT OVERTIGHTEN!***
- Ensure mount sits square on back/side of antenna. Adjust mount position as necessary.

Figure 1a

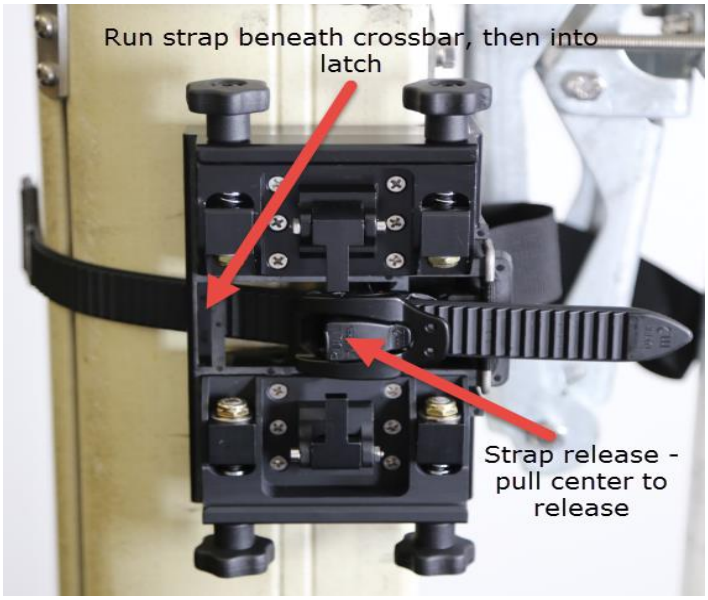
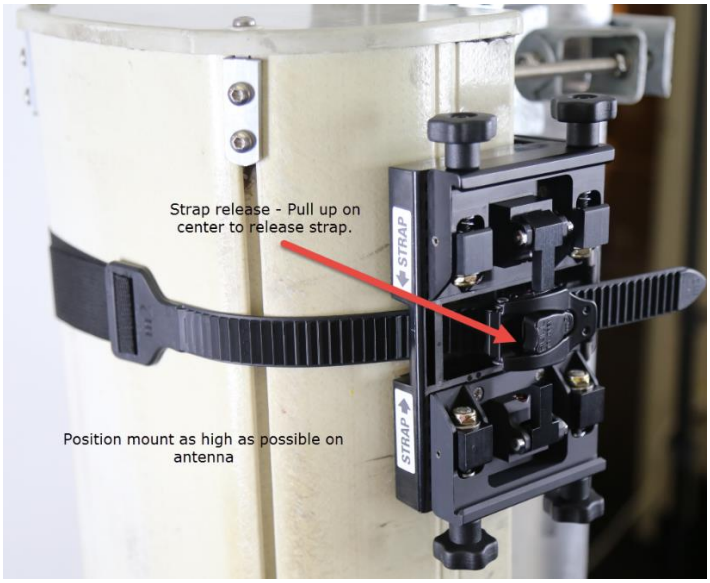
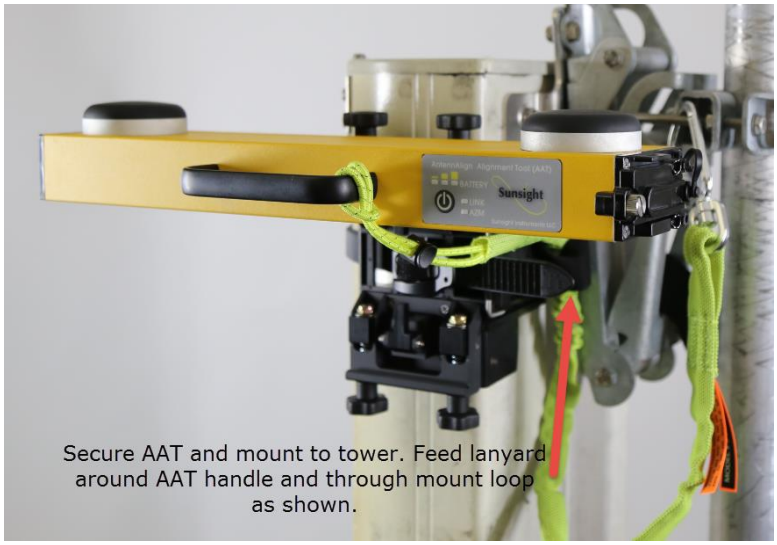


Figure 1b



- Install AAT measuring unit into the side mount by positioning upper lip of mounting rail on back of AAT into mount grip, then rotate AAT down into to security latch. User should feel AAT “click” into position.
- Tighten both mount thumbscrews completely.

- Use the included safety lanyard to secure AAT and mount to a secure point on the tower structure. Attach lanyard to AAT handle and through provided loop in mount strap.



Secure AAT and mount to tower. Feed lanyard around AAT handle and through mount loop as shown.

ALWAYS USE THE INCLUDED SAFETY LANYARD TO PROTECT AAT AND SIDE MOUNT FROM ACCIDENTAL FALLS

Alignment Procedure on the Antenna (AAT already mounted)

- Power on the AAT.
- Power on and enable Wi-Fi on the handheld controller being used to communicate with the AAT.
- Connect the handheld controller to the AAT using the Sunsight Android app or web browser. AAT's start page will be displayed.

Capturing Alignment Data

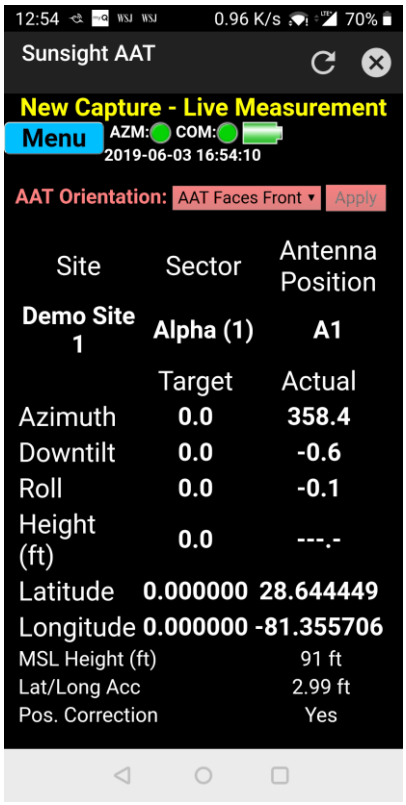
To capture alignment data, the user may choose the Quick Capture mode, or Align to an Existing Profile.

*** Note: The user may perform as many captures to a specific profile (antenna) as desired. The reports generated by the AAT will always display *only* the ***First*** - "As you found it" - and ***Final*** - "As you left it" - captures stored to a profile. This allows the user to capture the alignment of an antenna prior to work being performed, and again after aligning the antenna without the need to create separate profiles for "before" and "after" work.

Quick Capture

To perform a Quick Capture:

- Click or tap **Menu**, then select **Measure Only**. Live measurements are displayed.
- At the top of the display, ensure **Orientation** is correct. Orientation is used to tell the AAT whether it is mounted on the right, left, front or back of the antenna. Click the **Apply** button to save any change to Orientation.



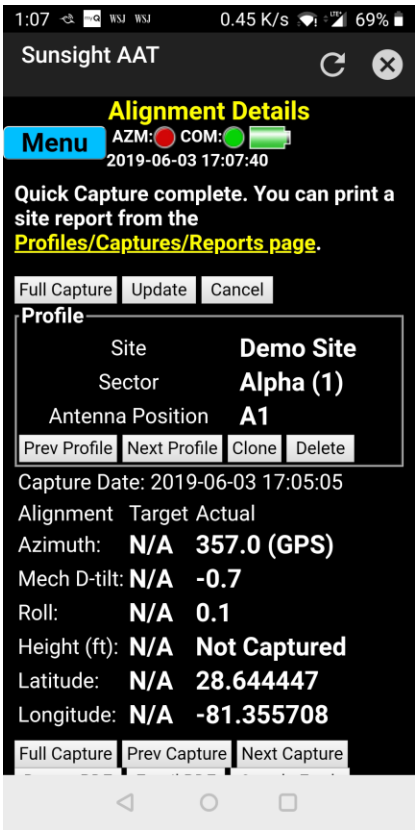
** Note: AAT mounting orientation is as viewed from behind the antenna. The handle side of the AAT is considered the front of the device. Example: If, from behind the antenna, the AAT handle points left, orientation must be set to "AAT Faces Left." Incorrect orientation will provide azimuth values +/- 90° or 180° above or below expected. Recheck orientation if this situation occurs.

- If capturing AGL height, refer to section - **Using LASER Tape Drop feature to capture Above Ground Level (AGL) height**. Return to this section and continue with the steps below after AGL is measured and displayed.
- Once the antenna is aligned as desired, click or tap the **Quick Capture** button.
- After the timer countdown, captured information will be displayed.

- Click or tap the **Next** button to input site information and save the capture to the AAT or select **Reject** to return to the live measurements page to begin again.
- Input **Site**, **Sector** and **Antenna Position**.

  *** NOTE: Target alignment data cannot be added when using the Quick Capture feature

- Click or tap either **Submit** button located at the top and bottom of the page to save the captured data. After saving the results, the display should be similar to this one:



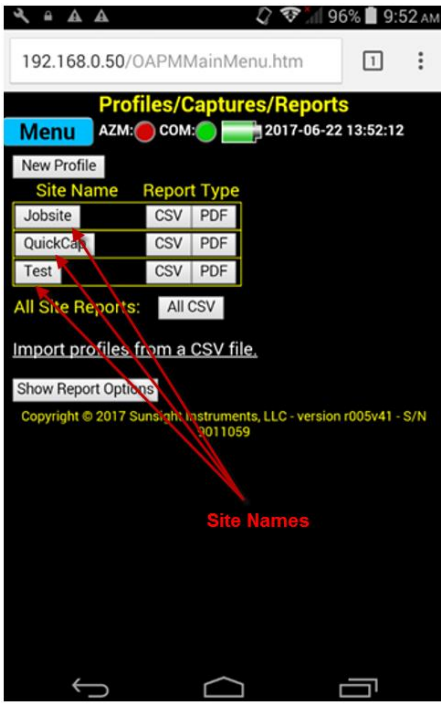
During the data capture process, photos can be taken that will appear in the final alignment report(s). This feature is only available when using the Sunsight Android app on the handheld controller. If performing "First" and "Final" captures on an antenna, only the second, or "Final," set of photographs will be stored to the report.

When generating reports, photographs stored to the capture record with all alignment data embedded in the photo will be part of the report.

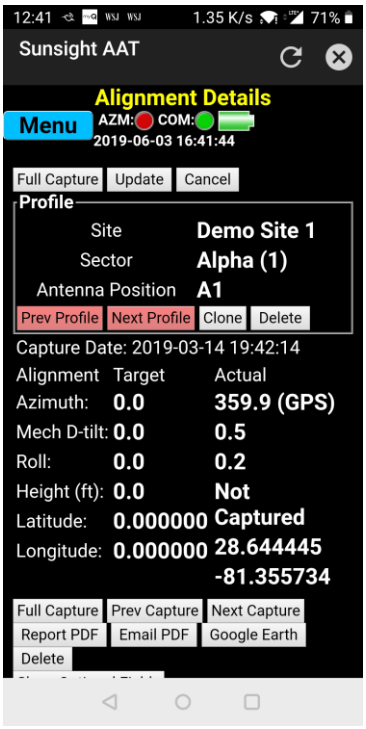
Profile Capture

Aligning to an Existing Profile

- Click or tap the Menu button, then select **Profiles/Capture/Report**.
- From the site list, **select the site name** for the work currently underway. The AAT will display the first profile for the chosen site.

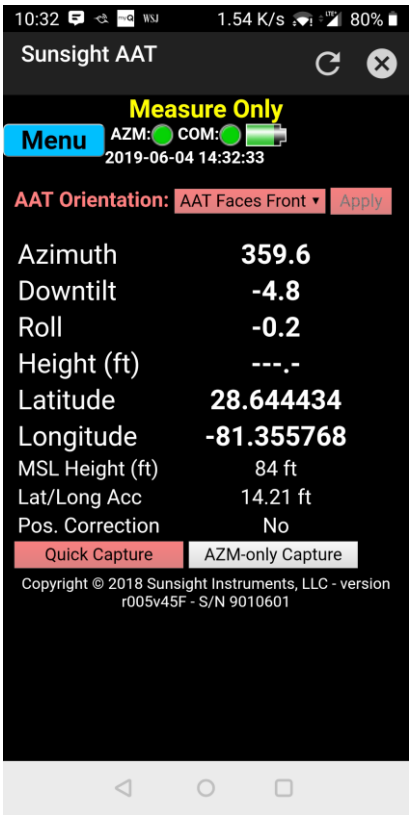


- Click or tap the **Prev Profile** and **Next Profile** buttons to scroll through available antenna positions stored under the job site until the antenna being aligned is displayed.



- Select the Profile by choosing **Full Capture. New Capture – Live Measurement** will be displayed

- At the top of the display, ensure **Orientation** is correct. Orientation is used to tell the AAT whether it is mounted on the right, left, front or back of the antenna. Click the **Apply** button to save any change to Orientation.



** Note: ATT mounting orientation is as viewed from behind the antenna. The handle side of the AAT is considered the front of the device. Example: If, from behind the antenna, the AAT handle points left, orientation must be set to "AAT Faces Left." Incorrect orientation will provide azimuth values +/- 90° or 180° above or below expected. Recheck orientation if this situation occurs.

- Align "Actual" measurements on-screen to match displayed target values. If no target values were input during profile creation, refer to RFDS for targets.
- If capturing AGL height, refer to section - **Using LASER Tape Drop feature to capture Above Ground Level (AGL) height**. Return to this section and continue with the steps below after AGL is measured and displayed.
- Click or tap the **Full Capture** button to capture all alignment data
- Select the required capture delay time by clicking or tapping the appropriate button. Extended delay time may be used to allow climber time to remove his/her weight from antenna boom, or in instances of heavy wind buffeting that might affect the alignment measurement (long delay collects many samples of measurements).
- Once the capture is complete, review captured data displayed on-screen.
- Click or tap the **Save** button to save captured data to the AAT.

- If captured data does not agree with target data, the user may choose to **Reject** the capture and perform a new capture.

During the data capture process, photos can be taken that will appear in the final alignment report(s). This feature is only available when using the Sunsight Android app on the handheld controller. If performing "First" and "Final" captures on an antenna, only the second, or "Final," set of photographs will be stored to the report.

When generating reports, photographs stored to the capture record with all alignment data embedded in the photo will be part of the report.

Post Alignment Procedures

- Once all alignment work has been completed, power down AAT and handheld Wi-Fi device. Remove AAT from the mount and store it safely away.
- Remove the mount from the antenna by lifting the ratchet strap buckle release.
- Secure all hardware for transport to ground.

After returning from the field

- Retrieve reports/records (PDF, CSV, or Google Earth) from the handheld controller device or alignment tool. See **Generating reports from the AAT** below.
- Charge the AAT and Wi-Fi device prior to long term storage.

General Information About Reports

- All stored capture data remains in the AAT's memory on the internal SD card, even after reports are generated.
- Reports may be generated repeatedly and downloaded on multiple Wi-Fi devices, if desired.
- Capture information is only deleted if the user deletes an individual profile or selects the **Erase** function located at the bottom of the AAT's **File Management** internal web page.
- As the AAT creates a backup database file every time a modification is made (profile added, capture performed, etc.), it is recommended that the internal SD card be erased periodically.
- Adding photographs to the reports will increase the amount of space used on the internal SD card and will necessitate more frequent SD card erasure.

Generating Reports from the AAT

** Note: Job Site Reports may be generated and emailed directly from the job site. Network access required to email reports. **

- Power on the AAT and handheld controller.
- Connect the handheld controller to the AAT using the Android app or via web browser.
- Click or tap **Menu**, then select **Profiles/Capture/Report**.
- Locate the site name for the report to be generated.
- Set Report Options if required. Report options determine what data fields will be shown in the report. Individual options may be enabled or disabled by clicking the checkbox next to the option. WGS84 is the standard Latitude/Longitude format. If the unit is equipped with optional grids (British National Grid, French Lambert II, etc.), one additional grid may be selected for inclusion in the site report.

The user may choose from three report formats:

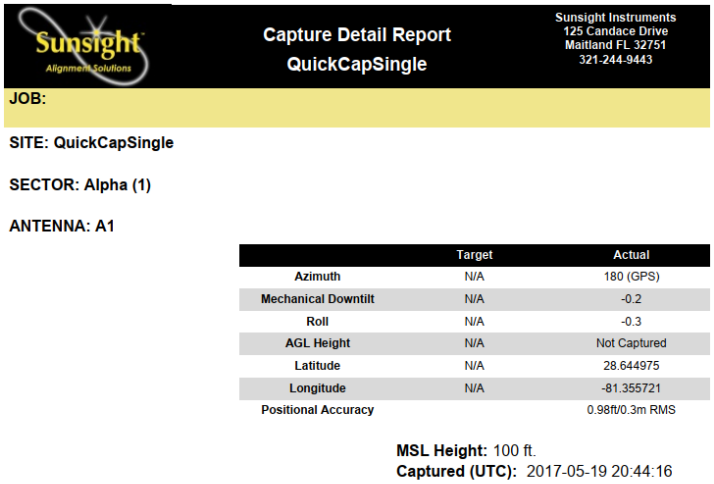
- **PDF measurement reports -** Separate reports are available for single antenna, or multiple antennas in one site report. If photos were captured, the photos will be added to the report. All photos contain embedded measurement data.
- **Bulk CSV measurement files** (both import and export) - Allows user to import and create Profiles from Excel data or other spreadsheet programs. Also allows export of alignment results for consumption by Excel or other spreadsheet programs
- **Google Earth Files -** Google Earth files can be used to determine potential RF obstructions directly in Google Earth. The History feature can be used to determine if new obstacles have recently arisen using the **Virtual Reality Interference**

Reporting (VRIR) feature (patent pending).

Follow this link to learn more about the VRIR feature - https://www.youtube.com/watch?time_continue=7&v=gbR0NaZ5N6g

- **PDF** is the most common report type. Click the PDF button and note where you save the file for easy access later. Any photos associated with the capture data will be included in the report. The Google Earth file is automatically attached to all PDF reports generated. You can choose **Email PDF** to launch your email program with the PDF report already attached.
- The **CSV** button saves the report in **C**omma **S**eparated **V**alues format – to export captured information to a spreadsheet, such as Microsoft Excel. No pictures are exported in this process.
- The **Google Earth** file separately will allow download of only the Google Earth file that can be launched into the Google Earth app. This file is used for the VRIR feature (patent pending) and contains alignment data as well as other data that can be used to identify field problems with installations.

Single Antenna Sample Report (captured with Quick Capture):



Capture Detail Report
QuickCapSingle

Sunsight Instruments
125 Candace Drive
Maitland FL 32751
321-244-9443

JOB:

SITE: QuickCapSingle

SECTOR: Alpha (1)

ANTENNA: A1

	Target	Actual
Azimuth	N/A	180 (GPS)
Mechanical Downtilt	N/A	-0.2
Roll	N/A	-0.3
AGL Height	N/A	Not Captured
Latitude	N/A	28.644975
Longitude	N/A	-81.355721
Positional Accuracy		0.98ft/0.3m RMS

MSL Height: 100 ft.
Captured (UTC): 2017-05-19 20:44:16


Capture Timestamp: 2017-05-19 20:44:16 (UTC)
Site: QuickCapSingle
Sector: Alpha (1)
Ant. Pos.: A1
Azimuth: 180 (GPS)
Downtilt: -0.2
Roll: -0.3
Latitude: 28.644975
Longitude: -81.355721
AGL Height: Not Captured
MSL Height: 100.3 ft

Site/Multiple Antenna Sample Report (captured with Profile Mode):

Sunsight Alignment Solutions

Site Alignment Results
Mills Nebraska ParGarag

Sunsight Instruments
125 Candace Dr
Maitland FL 32751
321-244-9443

JOB: **AT&T**
AAT S/N: 9011323
SITE: Mills Nebraska ParGarag Park top

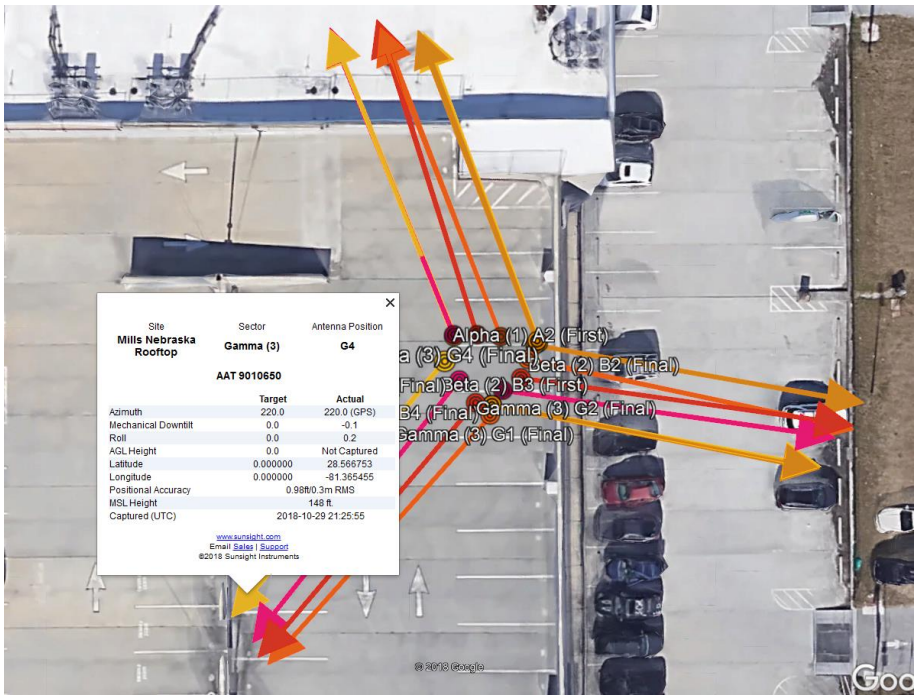
Final Latitude: 28.566808
MSL: 149ft **Final Longitude:** -81.365400 CFL

Antenna Position	Azimuth Target	Azimuth First	Azimuth Final	Mech D-tilt Target	Mech D-tilt First	Mech D-tilt Final	Roll Target	Roll First	Roll Final	AGL Height (ft) Target	AGL Height (ft) First	AGL Height (ft) Final	MSL Height (ft) Final	Capture Timestamp (UTC) First	Capture Timestamp (UTC) Final
Alpha (1) A1	120		**120**	0.0		**-0.9**	0.0		**-0.9**	0.0		**N/C**	149		2018-09-10 15:21:59

Final Lat	Final Long	Elec D-tilt 1	Elec D-tilt 2	AAT Cal	Company	Frequency	User
28.566808	-81.365400[2]	N/A	N/A	2018-08-27			

Antenna	TMA/RRU/MHA	Notes
Andrew RF 65-4 A49VR226	none none none	

Google Earth Sample Report:

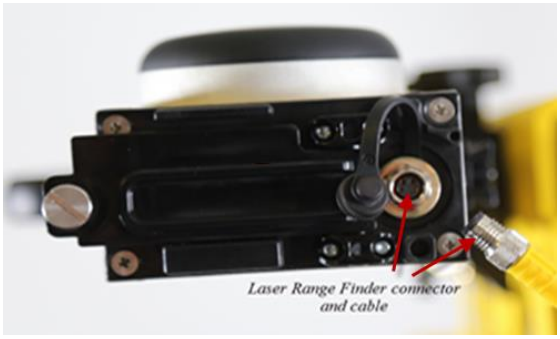


LASER Tape Drop Feature (optional) to capture Above Ground Level (AGL) height

The LASER Tape Drop feature uses a LASER rangefinder (LRF) with the AAT to capture AGL (Above Ground Level) height to a very accurate degree. This is an optional feature. The feature is described in this video.

** Use the LASER Tape Drop to capture the AGL height as part of a standard alignment capture session. Refer to the capture section of this document for more details.

- Connect LRF cable to LRF and AAT (cable connector is on end of AAT under round plastic cap). Note that the pins are small, so use care not to damage the cable.



- Once the cable is connected, look through the eyepiece and point the LRF down and at the target (solid object at ground-level). Press "Fire" to power on the LRF, values should appear in viewfinder. Verify the LRF is in VD (Vertical Distance) mode. Press the Mode button until VD is displayed if not in VD mode.

- Position the LASER rangefinder at the antenna radiation center and pointed towards the ground. Press and hold the "Fire" button on top of the LRF until the height is displayed. Verify the height result is displayed on the Measure page.

  ** Note that the height is only saved for the current measurement session. Restarting an alignment session will delete the AGL height. **

- Remove cable/LRF and stow in a safe place

- Return to **Capturing Alignment Data** to continue RF Panel Alignment.

Checking Tilt and Roll Calibration

Sunsight strongly recommends that users periodically check the tilt and roll calibration of the AAT's internal sensors. The frequency with which these checks should be performed will depend on how often the AAT is used and how it is cared for. Calibration checks should be performed monthly, at a minimum. ***The AAT does not require return to Sunsight for calibration***.

- To check calibration, place the AAT on a **flat** surface.
- Power on and log in to the AAT. The Measure Only/Quick Capture page will be displayed.
- Set the Orientation to "Back" and click or tap "Apply"
- Note the tilt and roll measurements displayed - it may help to write them down.
- Turn the AAT to face the opposite direction (180 degrees) and note the tilt and roll measurements displayed.
- Compare the two sets of values – the numbers should be the same, but with opposite signs – I.E. if tilt displays 0.2°, it should display -0.2° when facing the opposite direction.
- If the measurements are as described above, within +/- 0.1°, the AAT is calibrated
- If measurements are not as described above, within +/- 0.1°, calibrate the AAT's tilt and roll sensors by navigating to the AAT's Menu and choose the option for **Tilt/Roll Calibration**. Follow the prompts on the Tilt/Roll Calibration pages to complete the calibration process.

Troubleshooting

Checking current firmware version

- Log in to the AAT. Scroll to the bottom of any AAT webpage, where the user can find the AAT serial number and firmware version currently installed. Verify this version to the latest one at –

  https://www.sunsight.com/support/aat-xx-support/

- Update as necessary.

The AAT will not power on

- Ensure that the onboard LiFePO4 battery is charged using only the approved charger. Use of any other charger or power supply may cause insufficient charge, overcharge, or electrical damage to the unit.

Webpages not available

- Ensure your Handheld Controller is connected to Wi-Fi hotspot **AAT 901xxxx**, where the x's represent the serial number of the AAT. Serial number decals are located on the back of the unit, next to the mounting rail.
- With the Handheld Controller connected to the AAT's Wi-Fi hotspot, open a web browser and navigate to **192.168.0.50**

The AAT will not display azimuth

- GPS is line-of-sight technology and, as such, both GPS antennas at the top of the AAT must have as clear a view of the sky as possible.
- The AAT should always be mounted as high on the antenna to be measured as possible.
- Use the indicators on the AAT's **Diagnostic** page to help determine optimal placement.

Use and care of the Sunsight AAT

The AAT utilizes state-of-the-art GPS/GLONASS technology in order to provide highly accurate azimuth calculations. GPS and GLONASS are line-of-sight technologies. For optimal results, the GPS/GLONASS antennas at the top of the AAT should be offered the best "view" of the sky possible. Physical obstructions over either antenna may result in difficult or no-azimuth conditions. Position the AAT so as to eliminate or minimize physical obstructions.

The AAT and its accessories are weather resistant, not water-proof! Do no immerse or submerge the AAT in liquid of any type. All access doors and caps must be in good working order and secured while the AAT and its accessories are in use, especially in inclement weather.

Do not store the AAT or its accessories in a wet case. Allow the case(s) to air dry prior to storing the AAT and its accessories.

The AAT housing is fabricated of aluminum for durability, but still contains highly sensitive electronic components. Avoid sharp impacts and drops.

The AAT and its accessories contain no user-serviceable components. Do not attempt to disassemble the AAT for any reason. Unauthorized disassembly may result in component damage and warranty termination.

Support

Sunsight strives to provide the best user experience possible with our products. To that end, we continue to develop hardware and software solutions to meet the needs of our customers. Sunsight will periodically issue firmware updates to enhance performance and function of our products. To receive update notifications, please register your AAT:

https://www.sunsight.com/index.php/register-aat.

Your information is never shared or sold and is used only by Sunsight to track user updates.

For questions regarding use or care of the AAT and its accessories, please contact Sunsight Instruments Technical Support. Live technical support is available Monday – Friday from 8:00am to 5:00pm Eastern.

https://www.sunsight.com/support/aat-xx-support/

support@sunsight.com

1-321-244-9443 x2

Glossary

- **AAT** – The Sunsight Instruments **A**ntennAlign **A**lignment **T**ool is a self-contained measuring device that can be used to measure azimuth, tilt, roll, latitude, longitude, and height of the device it is attached to. The primary use of the AAT is to provide and record the necessary measurements to allow a user to align devices (example: cellular panel antennas).
- **Capture** - A capture is the action of recording measurements to the AAT. Typically, the tower technician will adjust the antenna to the required alignment values and capture (record) the results. The captured data is then used to generate reports.
- **Downtilt** – See "Tilt"
- **Embedded Website** - The AAT is accessed through its Embedded (built-in) Website. Connect your Wi-Fi device to the AAT's access point, or "hot spot." Then, using the device's web browser, enter the AAT's web address to access the AAT's website. All input and output to and from the AAT is accessed in this way.
- **GPS and GLONASS** - GPS and GLONASS, also referred to as GNSS, are both satellite-based positioning systems that are used by the AAT to determine exact latitude and longitude of the AAT. Also, and most importantly, the satellites are used to determine the azimuth for the AAT.
- **Handheld Controller** – The AAT can be accessed by most any smartphone, tablet or laptop supporting standard Wi-Fi (802.11b/g/n). No apps or software downloads are required. Connect the Wi-Fi device to the AAT as you would any access point, or "hot spot". Then, using a web browser on the device, type in the AAT's web address to access the AAT's embedded website. All input and output to and from the AAT is accessed in this way.
- **Plumb** – See "Roll"
- **Profile** - A Profile is a set of target alignment data including the site name, sector, and antenna position. Profiles can be input in advance of doing tower work to minimize data entry on the tower. Many optional fields are available such as Azimuth, Tilt, Roll, Height, Lat/Long, Serial Number, Notes, etc. when creating profiles.
- **Report** - Reports are formatted alignment results that can be created in PDF or CSV formats. Reports can be created for one individual set of measurements (ex. one antenna) or can be created for an entire site's worth of data (several antennas on one report).
- **RF Panel Antenna** - An RF panel antenna is an antenna used for broadcasting cellular signals to handsets. They are typically mounted on towers or rooftops in a tri-sector configuration.
- **Roll** – Sometimes referred to as "plumb" and measured in degrees. Refers to antenna alignment in the horizontal plane. A positive or negative roll value indicates the top of the antenna is not level.

- **Tilt** – Measured in degrees and refers to antenna alignment in the vertical plane. A positive tilt value indicates the face of the antenna is pointed toward the ground.
- **Wi-Fi Enabled Device** – See "Handheld Controller"