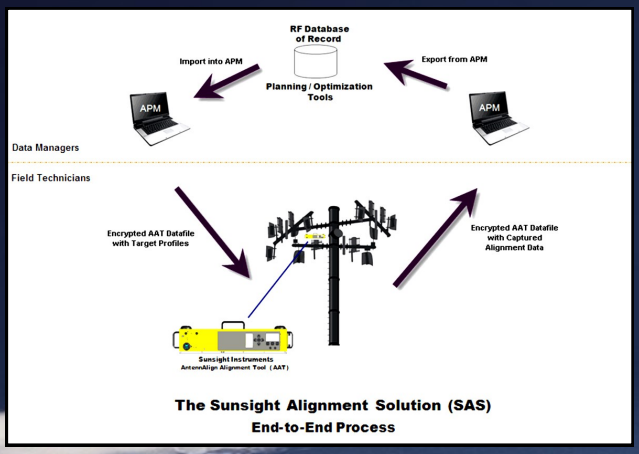
Sunsight Instruments - Engineering the World's Finest Alignment Tools

The **AntennAlign Alignment Tool (AAT)** is a highly accurate alignment system used during antenna installation and maintenance. It measures alignment in azimuth, tilt, roll, and (optionally) AGL height. Installer friendly, it is simple to operate in awkward locations. A single person can measure and capture the results for a given antenna, instantly creating a permanent record of its alignment for accountability and traceability. After mounting the AAT, the installer adjusts the antenna until all position indicators align, tightens the mounting brackets, and presses the "capture" button. This records the final alignment specification along with latitude, longitude, installer, current date/time, and much more.

With Sunsight's **AntennAlign Profile Manager (APM)** software, data integrity is assured. APM enables an end-to-end process which drives alignment parameters directly from the carrier's RF planning and optimization tools to the installer in the field, eliminating error prone hand-keying of RF datasheet values. Captured results from the AAT are then returned in encrypted format and used to update the RF database of record.

Sunsight Instruments—Ensuring the network you designed is the network you deployed!



The Sunsight Alignment Solution (SAS)
End-to-End Process

AntennAlign Alignment Tool (AAT)

AntennAlign Product Highlights

- Accurate and simple antenna alignment
- Reduces time required for microwave dish pathing
- Hardened for use on live antennas
- Multiple mounting options (stealth friendly)
- Gyroscope option when GPS satellites are obscured
- Front panel or web browser configuration and reporting of alignment data and captured results
- Long range Wi-Fi remote configuration and control
- LASER Rangefinder for measuring height
- Removable SD Flash memory card
- Standard rechargeable batteries / Alkaline backup

Quality Assurance Benefits

- APM data management processes ensure data integrity
- Accountability and traceability of alignment results
- Seamless integration with planning and optimization tools
- Realtime GPS Azimuth Quality Indicator (AQI)
- Reliable antenna certification audits
- Helps carriers meet performance requirements for location-based services, such as E-911 and value added customer features

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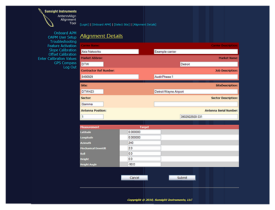
P/N SS-T-OAPM-1 Onboard AntennAlign Profile Manager (OAPM)

OAPM is a web application hosted on the AAT's internal web server. Alignment profiles are accessed by connecting via Ethernet cable or Wi-Fi (see SS-T-Wireless-1) and by browsing the onboard website through any standard web browser (Internet Explorer, Firefox, Safari, etc.). OAPM allows entry of target profiles and review of captured measurements, which are stored on the SD memory card in the AAT. Data can be printed directly from the AAT to a printer connected to the laptop or saved as a PDF report (requires PDF software on the laptop – not included in OAPM). This feature is best used by tower crews in the field to enter data, capture measurement results, and to generate a standardized report.

Onboard APM



P/N SS-T-Wireless-1 Wireless Communication with Remote Control software

This feature allows a user to access OAPM (see SS-T-OAPM-1) via the Wi-Fi adapter (802.11B/G) in their laptop or PDA. Functionally, it takes the place of the Ethernet cable interface to the AAT and adds the ability for a crew supervisor to monitor realtime alignment measurements, trigger a capture, and review the captured results from the ground in OAPM. Reports may then be generated by OAPM, even before the climber has descended from the tower. A high-power, directional, USB Wi-Fi adapter is provided for use if the laptop's internal Wi-Fi adapter proves insufficient.

Wi-Fi Remote Control

P/N SS-T-LsrRf-Kit-1 Laser Rangefinder with cable

The LASER Rangefinder kit includes the necessary software and hardware to enable the AAT to capture Above Ground Level (AGL) height. Captured height values are transferred to the AAT over an included data cable and become part of the data capture record. The LASER Rangefinder has an internal inclinometer which measures wrist angle. This allows the climber to aim the rangefinder at an alternative target (with an equivalent elevation as the base of the tower) up to 45 degrees outward from the site. The AAT will perform the necessary trigonometry to calculate the AGL height from the position on the antenna at which the rangefinder is held. This highly accurate LASER measurement may be used in lieu of a traditional tape drop.

LASER Rangefinder

P/N SS-T-AzmScope-Kit-1 Azimuth Scope Kit

The Azimuth Scope kit allows an AAT user to measure the azimuth of an antenna from the ground to within +/- 3 degrees. This is especially useful for towers with T-booms or Osprey nests where climbing and installation of the AAT on the panel antenna is not permitted. For quick alignment audits, the azimuth scope kit saves the expense of renting a bucket truck, which may be required to access difficult to reach antennas, such as power tower installations. By using the spotting scope at a distance to align the position of the AAT with the front or side of the antenna, the true-north based azimuth may be measured using the AAT's GPS subsystem. Also, the AGL height may be measured from the ground (using the SS-T-LsrRf-Kit-1 option).

Azimuth Scope

P/N SS-T-Side-Mount-Ext-1 AAT Side Mount Extension (a.k.a. Front Mount)

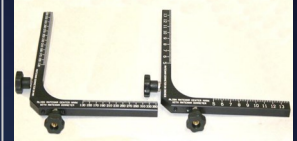
The AAT Side Mount Extension allows the AAT to be used on the front of panel antennas. This is especially useful on flagpole towers or any site where access to the side or back of the antenna is limited. This mount holds the AAT in front of the antenna with the AAT displays and controls facing forward or backward for ease of access. When using this mount, the AAT can be used to measure azimuth, tilt, roll, and AGL height (using the SS-T-LsrRf-Kit-1 option).

Front Mount

P/N SS-T-Round-Adapter-1 AAT Round Antenna Adapter

The AAT Round Antenna Adapter allows the AAT to be used on a wide range of round (column shaped) antennas (5" to 14" in diameter). The AAT is strapped directly to the round portion of the antenna, registration marks are aligned, and then the AAT can be used to measure azimuth, tilt, roll, and AGL height (using the SS-T-LsrRf-Kit-1 option).

Round Antenna Adapter



AntennAlign Specifications:

Azimuth Accuracy	+/- .3 degrees RMS, +/- 1.0 R99 when AQI > 90
Tilt Accuracy	+/- 0.25 degrees
Roll (Plumb) Accuracy	+/- 0.25 degrees
Height Accuracy	+/- 0.30 meters to 1000 meters
Weight	8 pounds w/batteries
Power	LiFePO4 rechargeable batteries 12-20 hours depending on Wi-Fi use