

ANTENNA ALIGNMENT TOOL OPERATIONS MANUAL

Purpose of this document is to assist with RF design validation during integration and optimization

Rev03222022
(Preliminary)

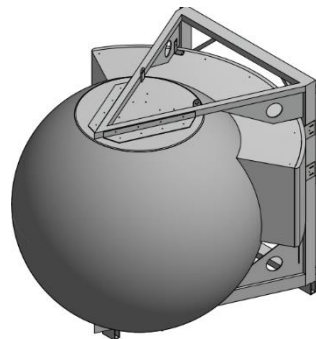
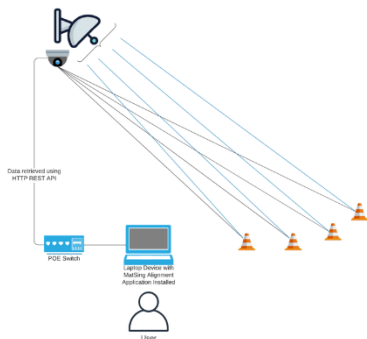


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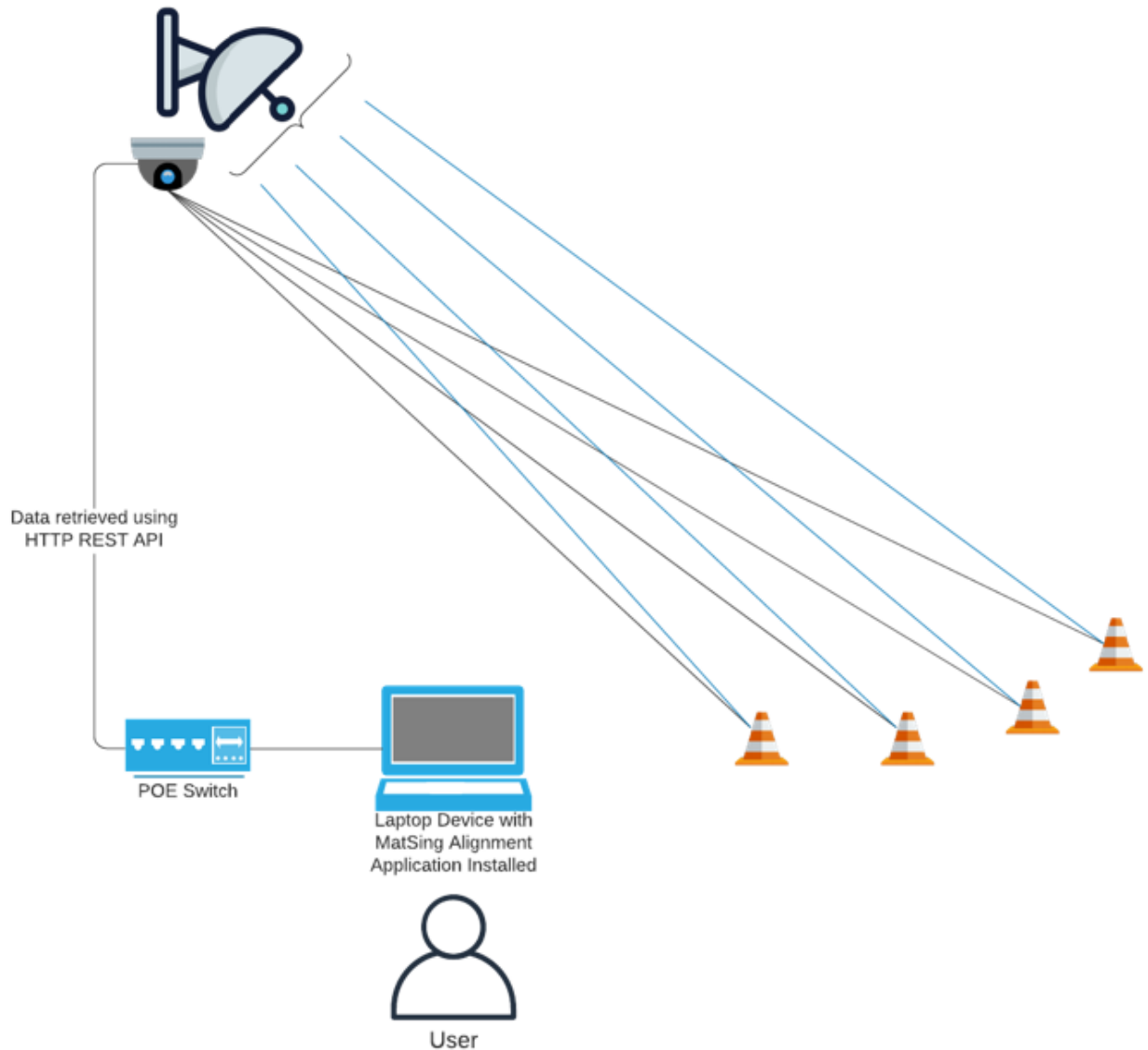
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1.0 HARDWARE COMPONENTS

- Laptop (with USB Type C or Ethernet port)
- USB Type C to Ethernet adapter
- Ethernet Cable (5' – 6')
- Ethernet Cable (250')
- Axis - T8154 POE adapter
- Axis-6135-LE Camera
- Camera Mount
- Antenna Mount (Antenna Model Specific)
- Safety Harness

2.0 ESTABLISHING HARDWARE CONNECTIONS

- Connect 250' ethernet cable to the camera
- Connect Camera to the antenna mount
- Tower crew to mount the antenna mount to the antenna
- Install antenna mount to the antenna via two crews, angle brackets and safety harness
- Connect the ethernet cable to the power adapter (T8154) via "DATA PWR OUT" port
- Connect your local PC to the power adapter (T8154) via "DATA IN" port on T8154 POE adapter
- Plug power adapter (T8154) and look for a green light on the adapter



3.0 SETTING UP CAMERA CREDENTIALS

- Turn off Wi-Fi on your PC
- Type in 192.168.0.90 IP Address in the address bar of the web browser
- Set username as “root”
- Set password as “pass”

Note:

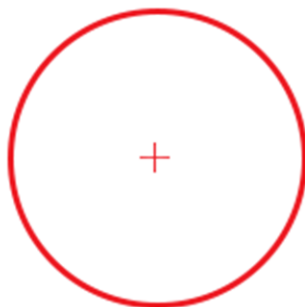
- This step is required for the Camera to be integrated with the “MATSING Antenna Alignment Tool-1.0.0”.
- If this step is missed, camera will not be discovered in the MATSING Antenna Alignment Tool as the tool uses the username “root” and password “pass” to log into the camera system.
- If you have received a plug and play MATSING Camera Alignment Kit then you can skip this step as this step is completed before Camera Alignment Kit is shipped out to our customers.

4.0 INSTALLING CROSSHAIR ON A NEW CAMERA

- Don't exit out the camera settings in Step 3.0 (setting up camera credentials)
- Go to settings > Overlay > Image List
- Locate the jpg file named “Matsing-Overlay-Crosshair”
- Choose a File > Open > Done

Note:

- This step is required for the crosshair to show up in MATSING Antenna Alignment Tool-1.0.0.
- If you have received a plug and play MATSING Camera Alignment Kit then you can skip this step as this step is completed before Camera Alignment Kit is shipped out to our customers.

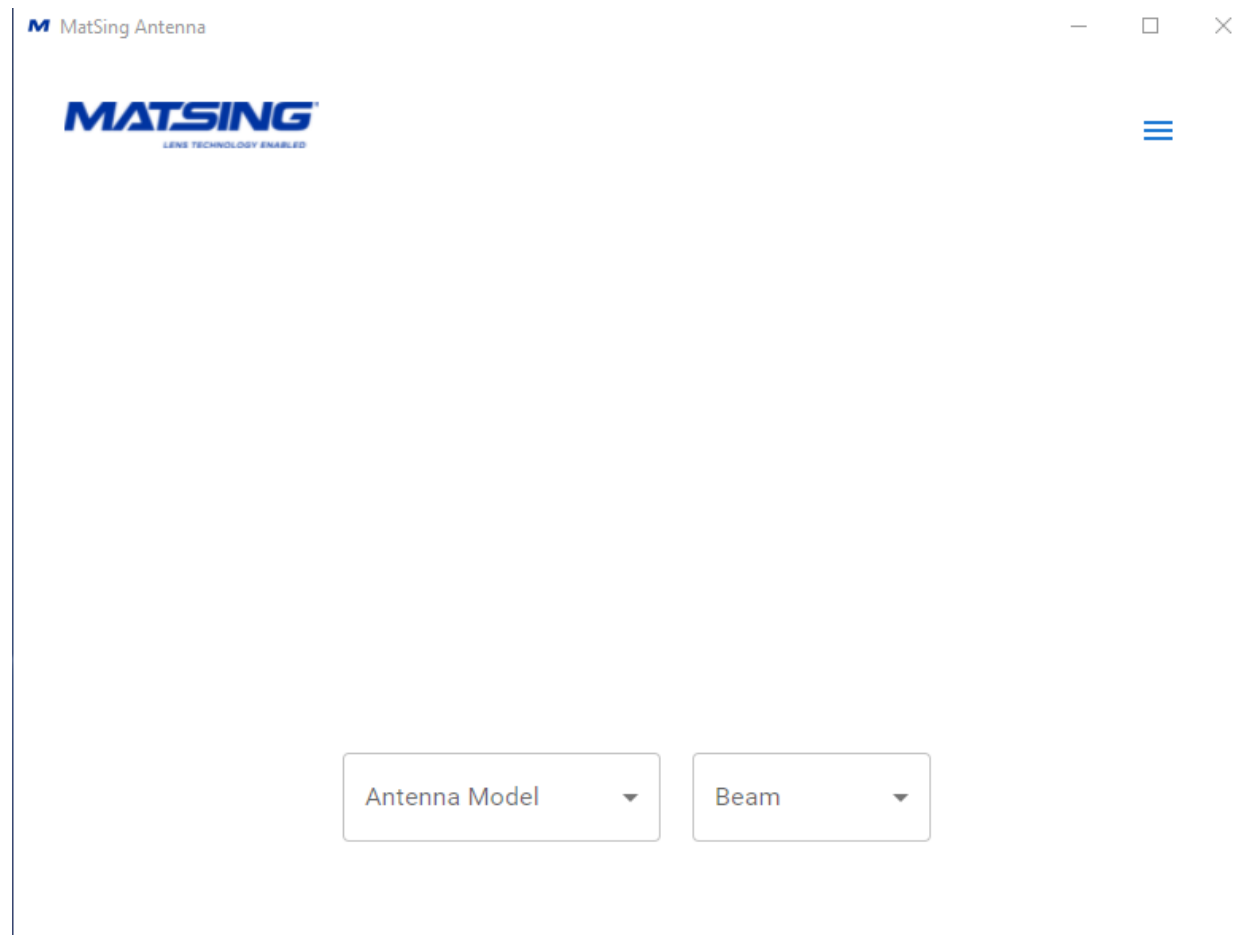


5.0 INSTALLING CAMERA ALIGNMENT TOOL

- Download “MatSing Antenna Alignment Tool-1.0.0 Setup”
- Run the above application on your local PC
- No installation window will show up while the application is being installed
- Application shortcut will be placed on the desktop
- Camera will show live feed if all connections are setup properly

6.0 CAMERA OPERATION & ANTENNA OPTIMIZATION

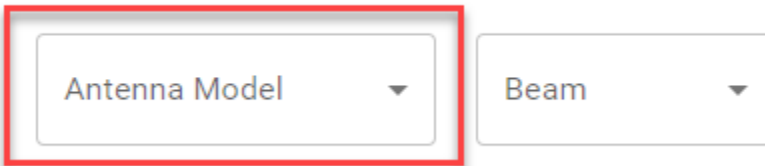
- Below window will show up once camera alignment tool application and hardware are successfully synchronized as mentioned in steps 1.0 through 5.0



6.1 SELECT AN ANTENNA MODEL TO OPTIMIZE

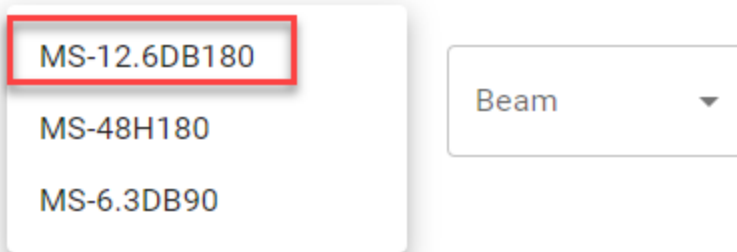
- Select the desired Antenna Model from the dropdown list as shown in Figure-6.1 & Figure-6.1.1
- Connection to camera mounted to antenna should be automatically detected and established

Figure-6.1



A screenshot of a web interface showing two dropdown menus. The first dropdown menu is labeled "Antenna Model" and is highlighted with a red rectangular border. The second dropdown menu is labeled "Beam". Both menus have a downward-pointing arrow on the right side.

Figure-6.1.1



A screenshot of the "Antenna Model" dropdown menu from Figure-6.1.1. The menu is open, showing three options: "MS-12.6DB180", "MS-48H180", and "MS-6.3DB90". The "MS-12.6DB180" option is highlighted with a red rectangular border. To the right of the dropdown menu is a "Beam" dropdown menu with a downward-pointing arrow.

6.2 START ZERO

- Click on the drop-down arrow to select an option

Antenna Model
MS-12.6DB180

Beam

- Select “Start Zero”
- Camera position will change to a predefined PTZ preset i.e. pan and tilt = 0 degree



Loading...

Antenna Model
MS-12.6DB180

Start Zero

Beam1LOW

Beam2LOW

Beam3LOW

Beam4LOW

Beam5LOW

Beam6LOW

Beam1HIGH

Beam2HIGH

Beam3HIGH

Beam4HIGH

Beam5HIGH

Beam6HIGH

Beam7HIGH

Beam8HIGH

6.3 PLACE TRAFFIC CONES IN THE FIELD TO DEFINE SECTOR BOUNDARIES

- Based on your design, place traffic cones to identify beam/sector boundaries
- For a venue/stadium it might be quite easy to put traffic cones as sector boundaries
- For a macro site, please pick an alternative instead of traffic cones to label sector boundaries, i.e., highways, local roads, or a particular building
- Matsing recommends identifying these boundaries at the time of design using planning tools i.e., atoll, ibwave etc
- Figure-6.3 shows an example.

Figure-6.3



6.4 LOCATE TARGET CONES IN THE FILED USING THE CAMERA & CAPTURE SCREENSHOTS OF EACH LOCATION

- Continue step 6.2 after “start zero” to locate each target cone for each sector carrier (High & Low Bands in case of MS-12.6DB180 antenna)
- Ensure to capture screenshots of each location & save them using a unique sector & carrier identifier as you would need this information to determine the new azimuth and tilt values
- Low-Band has 6 beams for this antenna
- High-Band has 12 beams for this antenna
- An example of how low-band boundaries would look like can be seen in Figure-6.3

6.5 DETERMINE THE NEW AZIMUTH AND TILT VALUES

- Determine new azimuth based on the camera validation in step 6.4
- Determine new tilts based on the camera validation in step 6.4

6.6 CHANGE ANTENNA AZIMUTH

Example.

Existing Azimuth (degrees)	New Azimuth (degrees)
90	100

6.7 CHANGE ANTENNA TILT

Example.

Band / Beam #	Existing Down Tilt (degrees)	New Down Tilt (degrees)
Low / 1	5	10
Low / 2	6	11
High / 1	6	10
High / 2	7	11
High / 3	8	9

Revision History:

Date	Editor	Details
3/22/2022	Yasir	Preliminary Version Issued