Active Cruise Control (ACC) - Static Calibration

Background:

It is necessary to perform Active Cruise Control (ACC) Static calibration procedure when any of the below conditions are met:

- The Radar is removed or installed.
- The Radar position is changed during maintenance (e.g., removal of bumper)
- The VDS diagnostic report shows a fault of "Radar angle deviation too large"

Necessary equipment:

- VDS
- ACC/MPC static calibration tool. (PN:13132573-00)

1. Calibration process of ACC

### 1.1 Preparation for calibration:

- The calibration site for placing equipment and vehicles must be flat.
- The lighting of the alignment plate must be uniform during calibration.
- The vehicle is stationary and powered up
- The wheel alignment is within the specification.
- The tire pressure is set to the correct pressure.
- Vehicle has no load.
- The headlights of the vehicle must be off.
- There is no obstruction between the alignment plate and the camera.

1.2 Calibration setup

1) Centre the crossbar on the <u>static calibration tool</u> and lock it in position as per the images below
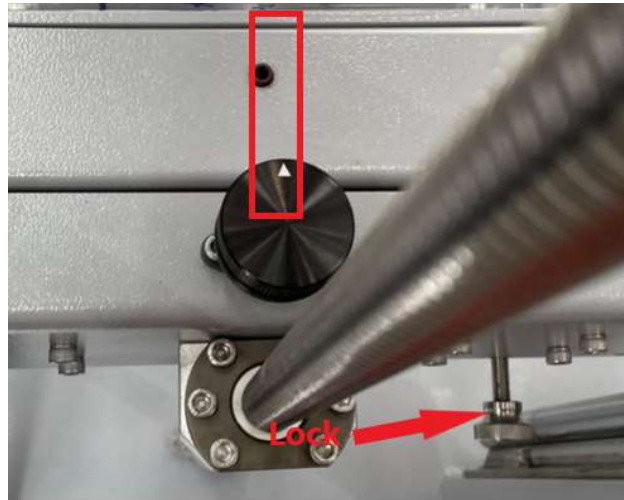
2) Adjusted the Crossbar gap indicated by the red arrows in the images below until the gap is equal on both sides
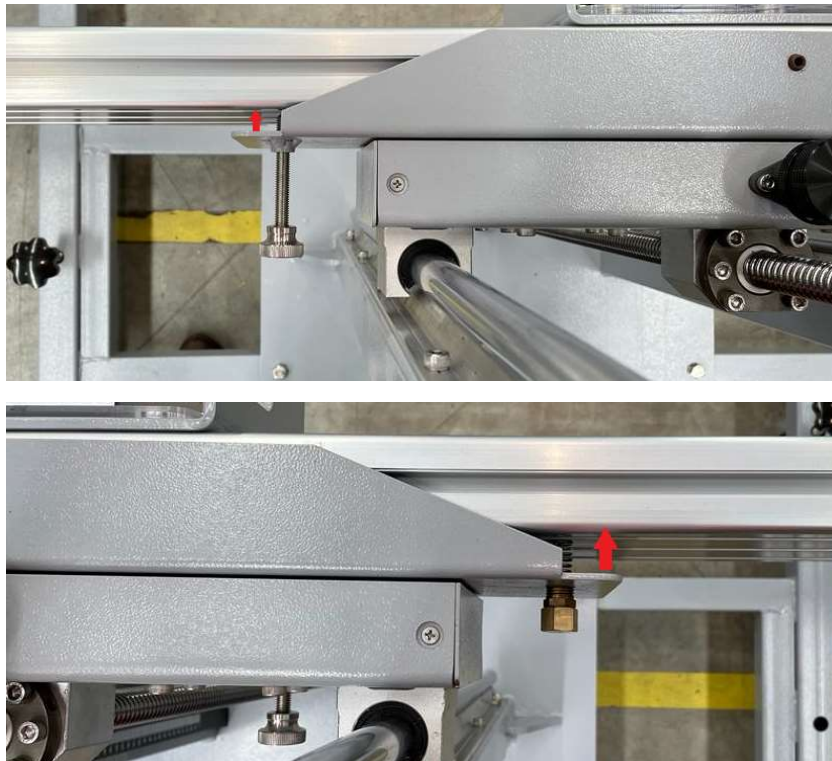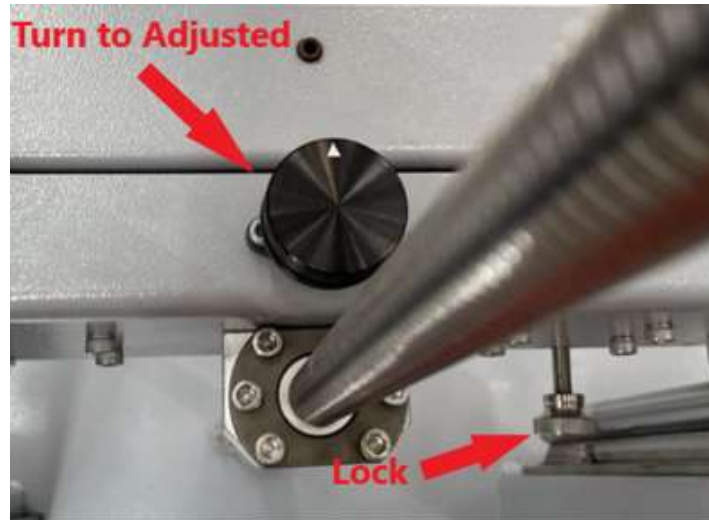
3) Centre the <u>static calibration tool</u> in front of the vehicle, then position it **2042mm** away from the <u>front wheel centre</u> to the <u>crossbar outer edges</u>
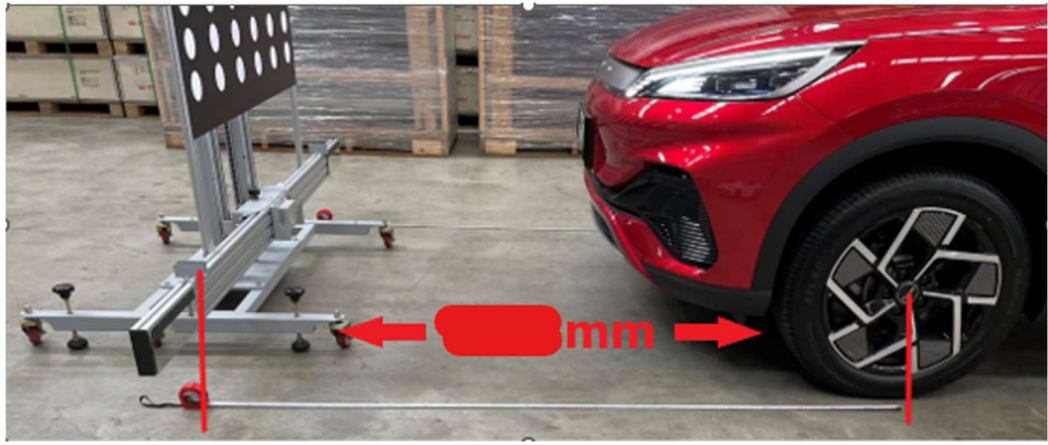

4) Remove the <u>ACC radar calibration mirror</u> and fit the <u>laser pointer</u> to the <u>static calibration tool</u>,

5) Unlock the crossbar on the <u>static calibration tool</u> and use the black knob to centre the laser pointer into the middle of the vehicle, and then lock the crossbar in place

6) Remove the <u>laser pointer</u> and fit the <u>ACC calibration mirror</u> and set the angle of the board to 0, at this time the radar to mirror surface should be about **1200mm+/- 20mm**
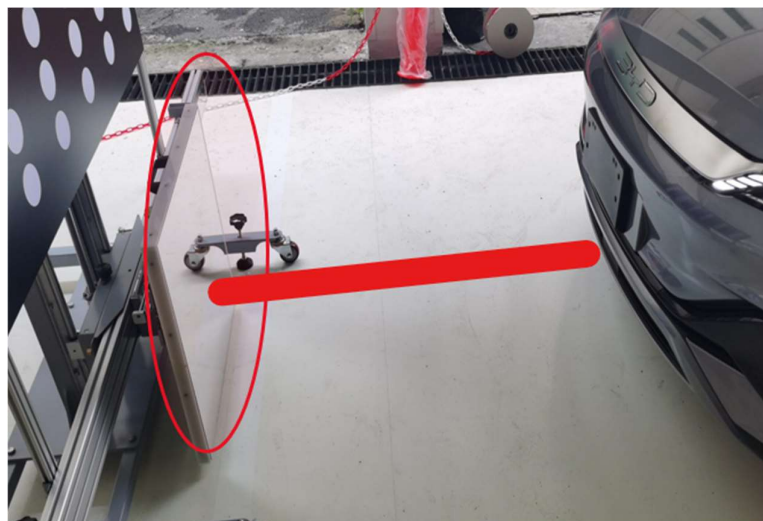
7) Adjust the 3 base stands of the <u>static calibration tool</u> so that it is level, use the spirit level to confirm this. After adjustments have been made, make sure all 3 base stands are in contact with the ground to stop the <u>static calibration tool</u> from moving
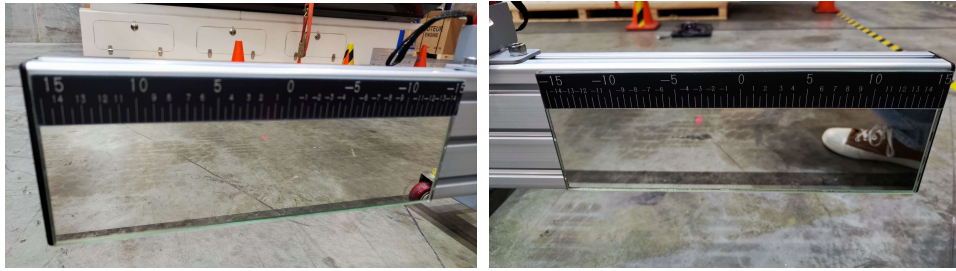

Spirit level
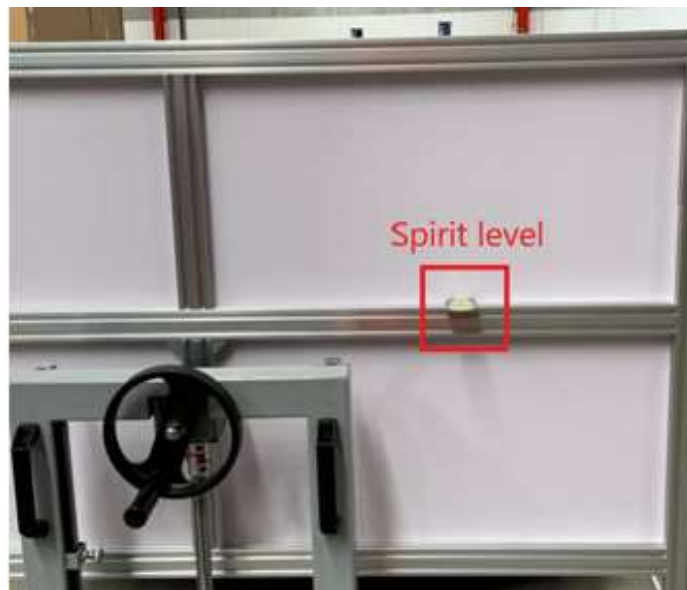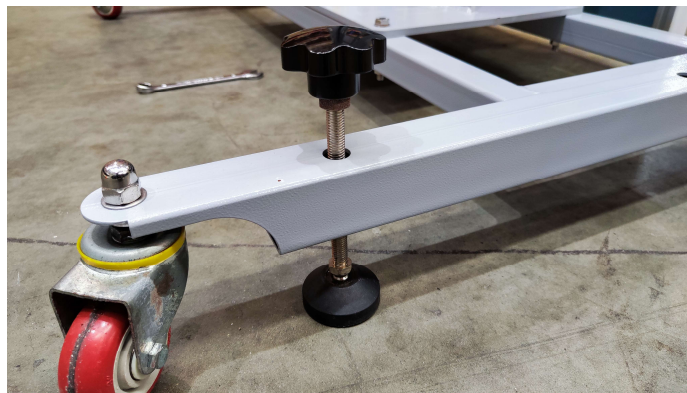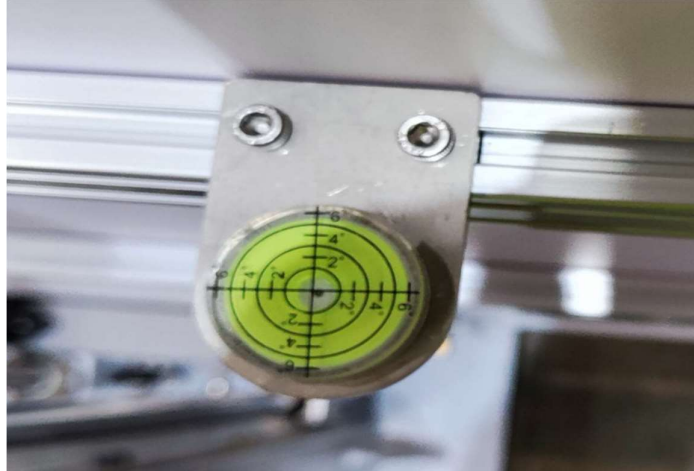
8) Fit the <u>wheel-mounted laser alignment tool</u> to the REAR wheel-mounted.

5) set the height of the <u>static calibration tool</u> so that the lasers on the <u>wheel-mounted laser alignment tool</u> can be pointed at the mirrors mounted on the edge of the crossbar

5) Aim the laser pointers on the <u>wheel mount laser alignment tool</u> on the crossbar so that the laser reflects back onto the grid panel on the <u>rear wheel calibration plates</u>.
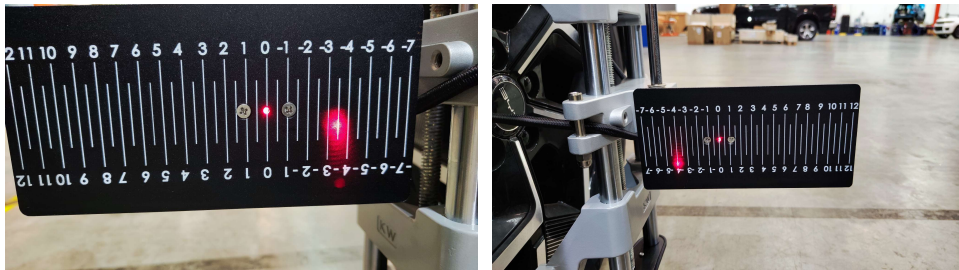
9) Use the adjuster (in the image below) to position the laser point to the same value on both left and right grid panels
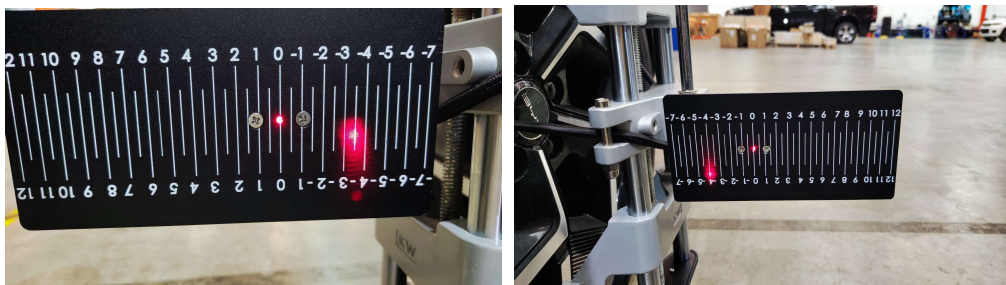
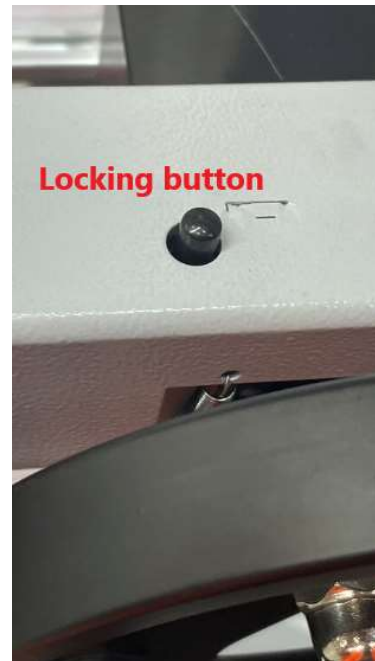4) release the locking screw for the scale on the back of the <u>static calibration tool</u> so that the bottom of the scale touches the ground.

5) Adjust the height of the board to **1058 mm**. press the locking button and rotate the wheel to adjust the height of the <u>static calibration tool</u>

1.3 Write configuration

1. Use VDS to scan the vehicle. Enter the "Front millimetre wave radar (Veoneer) ">
"Calibration" > "Write SC2EM"
3. "Have read" & hit the "Play" button
Return to the previous screen to continue the next step.

1.4 Action test

Use VDS to scan the vehicle. Select "Front millimeter wave radar (Veoneer) "
Find the Action test and enter the "ground coordinate system information" input a value of 12000, and hit "Play"
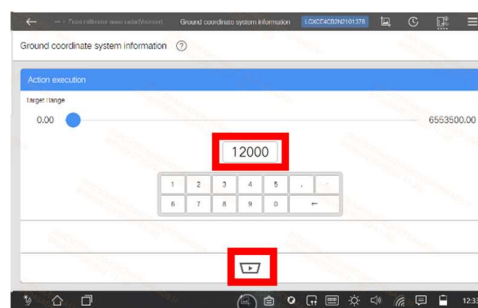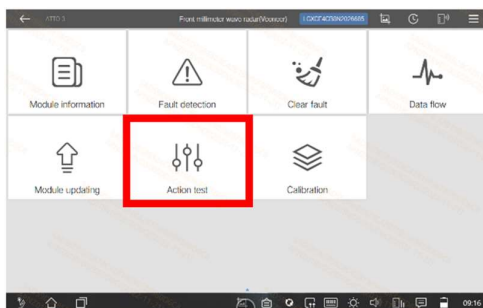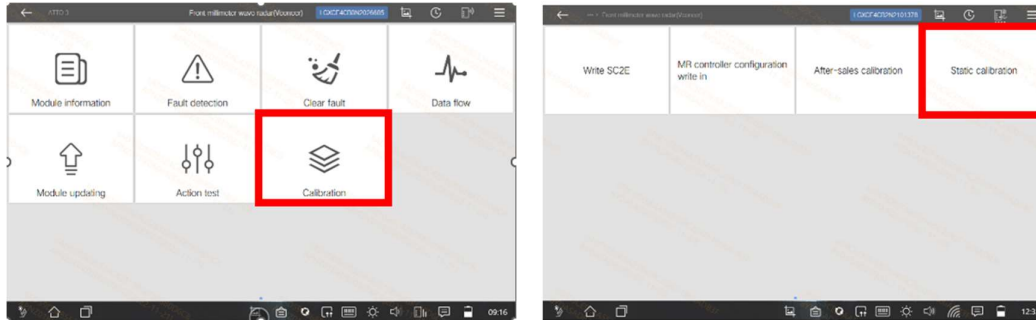
1.5 Static Calibration

Use VDS to scan the vehicle. Select "Front millimeter wave radar" (Veoneer) > Calibration > Static Calibration

Click "Have read" and "Play"

Follow the screen prompt for the calibration result.

A successful calibration display message: routine completed successfully

(As per box 1 in the image below) and the "radar angle value errors" are within tolerance (As per box 2 in the image below)

The tolerance for the radar angle values is:

- Radar installation horizontal angle error: +/- 3 Degrees
- Radar installation height elevation angle error: +/- 3 Degrees

An unsuccessful calibration display message: Routine completed unsuccessfully.

please check your setup and repeat the calibration, if still unsuccessful, contact technical assistance with a screenshot of this screen.

Static calibration

Execute radar static calibration command : Routine start successfully
Request results of static calibration routine :
    Results of static calibration routine : Routine in progress
Request results of static calibration routine :
    Results of static calibration routine : Routine in progress
Request results of static calibration routine :
    Results of static calibration routine : Routine Completed successfully   (1)
search standardizing outcome :
    search standardizing outcome
Read the radar installation horizontal angle error value :
    Radar installation horizontal angle error value -0.83° (2)
Reading the elevation error value of radar installation height :
    Radar installation height elevation angle error value -0.09° (2)

1.6 Common Errors.

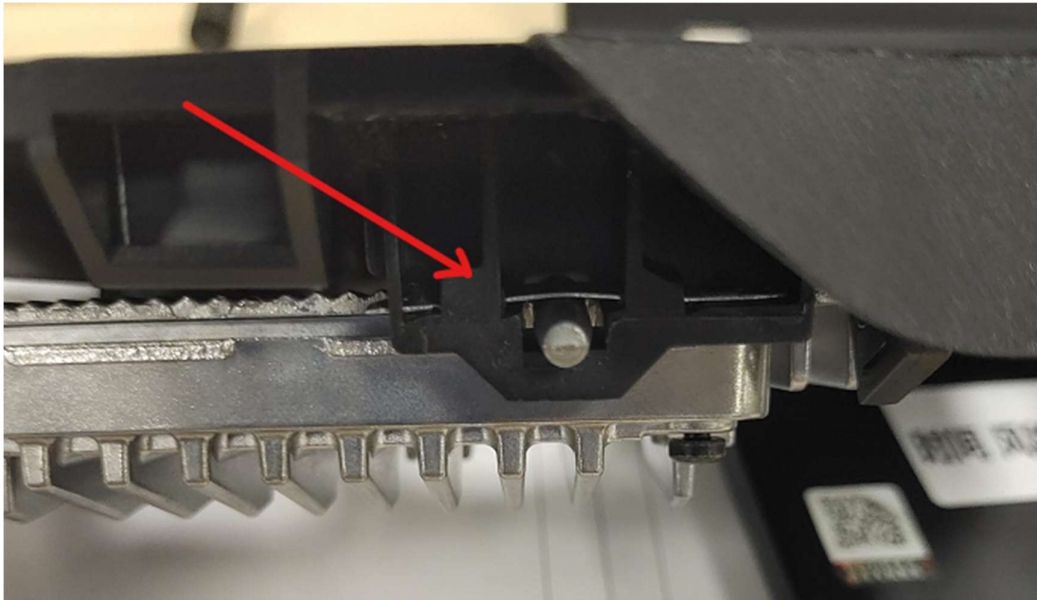Ensure the mounting lug is located under the spring clip, NOT above.

Figure 1: Ensure the mounting lug is located under the spring NOT above.