



Technical Service Bulletin

GROUP	NUMBER
BODY ELECTRICAL	19-BE-011H-1
DATE	MODEL(S)
NOVEMBER, 2019	ALL

SUBJECT: BLIND SPOT DETECTION (BSD) OR
BLIND-SPOT COLLISION WARNING (BCW)

This TSB supersedes 19-BE-011H to include the notice of down level parts availability and BSD/BCW radar angle measurement tool mounting methodology.

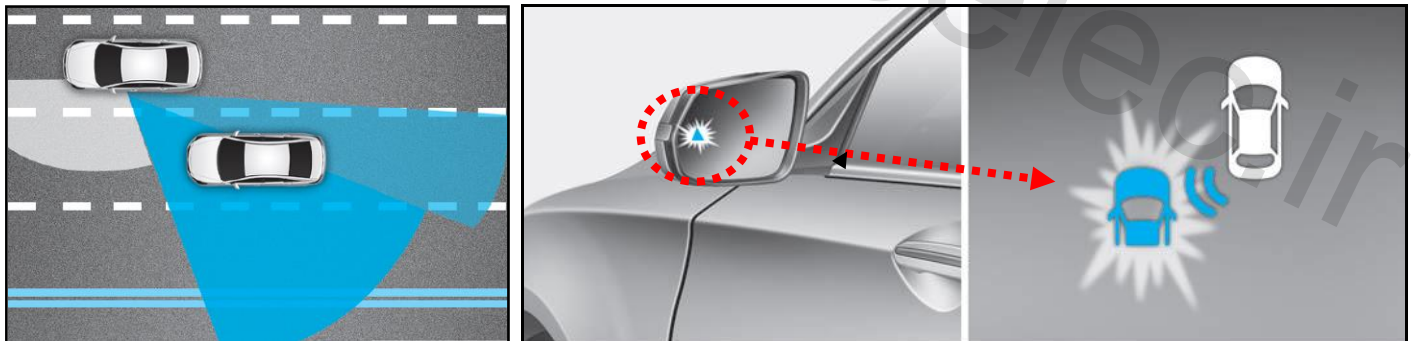
Description: The Blind Spot Detection (BSD) or Blind-Spot Collision Warning (BCW) is a system that measures the speed of and distance from the following vehicles by using two magnetic wave radar sensors attached in the rear bumper. The BSD/BCW detects vehicles within the blind spot zone and gives off an alarm (visual and audible). The two magnetic radar sensors provide these functions for BSD/BCW:

- Senses other vehicles in the BSD/BCW zone and turns on the BSD/BCW warning lamp for the driver. The warning lamp starts blinking, along with an audible sound, when the driver turns on the turn signal lamp to enter the lane where another vehicle is driving.

This bulletin describes the general operation of the BSD/BCW, provides a radar sensor troubleshooting guide, and outlines the usage of the BSD/BCW system angle measurement tool.

NOTICE

In cases of DTC C2702/C2703 and the bracket(s) is confirmed damaged, then only replace the bracket(s). See TSB 18-BE-005-1 for available down level BSD/BCW replacement parts.



Applicable Vehicles: All Vehicles Equipped with BSD/BCW


Warranty Information:
Normal Warranty Applies.

NOTICE

In cases of DTC C2702/C2703, if the BSD/BCW sensor(s) is confirmed to be damaged by external impact or collision accident, BSD/BCW sensor(s) replacement will not be covered under warranty.

Circulate To: General Manager, Service Manager, Parts Manager, Warranty Manager, Service Advisors, Technicians, Body Shop Manager, Fleet Repair

Tools Required for BSD/BCW Radar Sensor Angle Measurement:

TOOL NAME	IMAGE
BCW UNIT CORRECTION TOOL SET	 <p style="text-align: center;">09958-3T500 (Call Bosch at 1-866-539-4248 to order extra kits or parts from the kit listed below)</p>

Components in Detail:

NO.	PART NUMBER	PART NAME	QTY.	IMAGE
1	099583T500	BCW Unit Correction Tool Set	1 SET	
2	099583T010	Vertical Plumb	1EA	
3	099583T070	Horizontal Measuring Device	1EA	
4	099583T080	BCW Unit Fixing Adaptor	1EA	
5	099583T090	Digital Protractor	1EA	
6	099583T100	Digital Inclinometer	1EA	
7	099583T120	Case, Manual, String, and Rubber Ring	1EA	

BSD/BCW GENERAL INFORMATION

ENVIRONMENTAL FACTORS THAT MAY CAUSE THE BSD/BCW SYSTEM TO MALFUNCTION

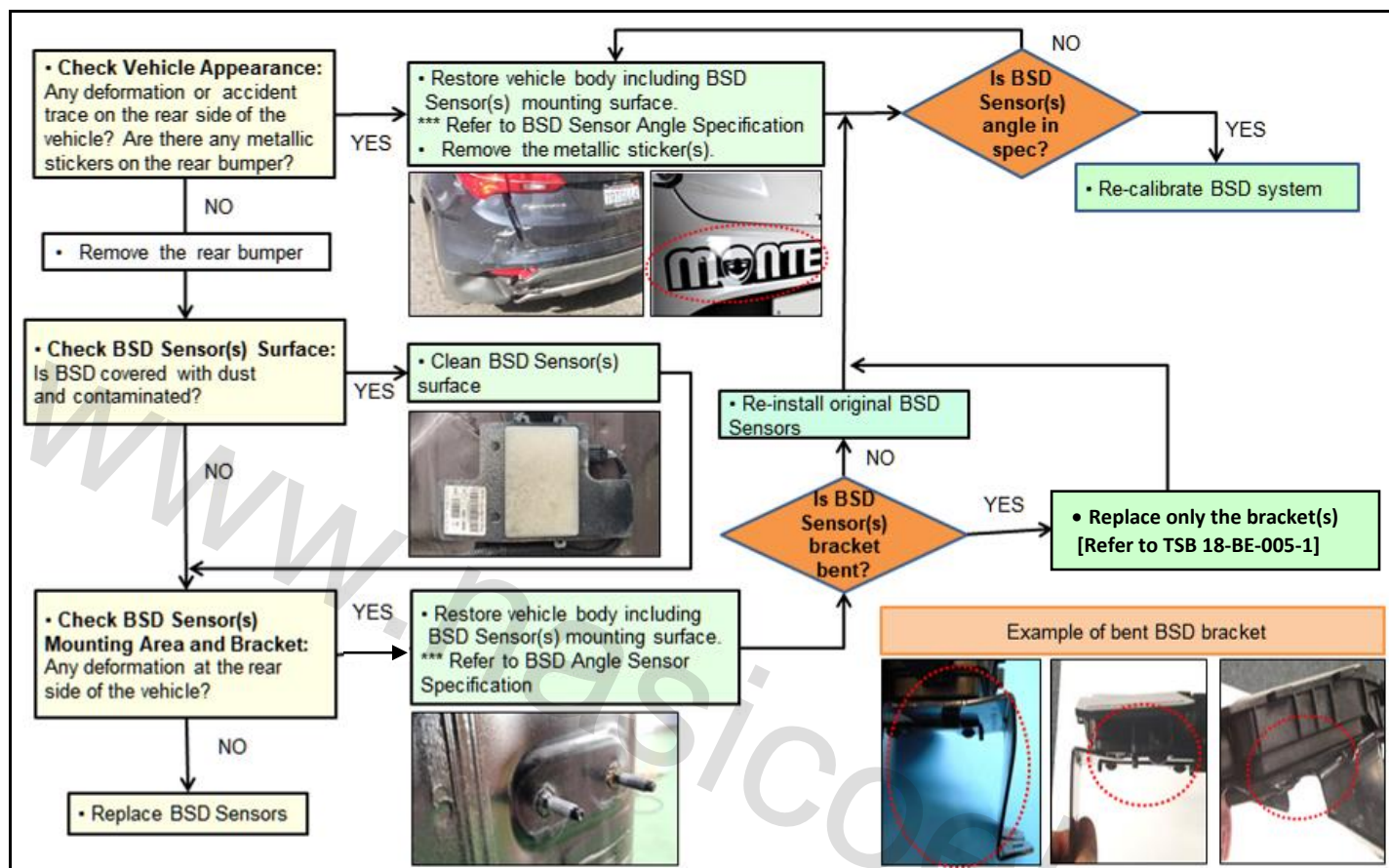
Ⓐ BSD cancellation by itself, Ⓑ wrong target detection(false alarm) and Ⓒ missing calibration, etc

 ● Iron wall at the construction site	 ● Steel floor (subway construction site)	 ● Concrete barrier	 ● Bridge	 ● tunnel
 ● Highway exit (IC)	 ● Mountainous area (one side is a cliff)	 ● Rainy/Snowy day	 ● Blocked sensor (bicycle holder)	 ● Broken/Deformed bumper (external damage)
 ● Driving near large size vehicles	 ● Vehicle driving closely (at the rear)			

BSD/BCW RADAR SENSOR TROUBLESHOOTING GUIDE

If a vehicle has any of the active codes from below, follow the diagram below for troubleshooting assistance:

- C270254 - Control Module Missing Calibration
- C270354 - Control Module Slave Calibration



*****BSD/BCW Sensor Angle Specification:**

Model	BSD/BCW Sensor Manufacturer	Horizontal Angle ($\phi 1, \phi 2$)	Vertical Angle
Azera (HG) 2015-2017 MY	Mando	65 +/- 3 degrees	87.25 +/- 1 degrees
Elantra (AD) 2017-2018 MY	Mando	54 +/- 3 degrees	86.75 +/- 1 degrees
Elantra GT (PD) 2018 MY	Mando	54 +/- 3 degrees	86.25 +/- 1 degrees
Equus (VI) 2014-2016 MY	Mando	68 +/- 3 degrees	87.25 +/- 1 degrees
Genesis Sedan (DH) 2015-2016 MY	Mando	68 +/- 3 degrees	87.25 +/- 1 degrees
Ioniq (AE, AE EV) 2017-2018 MY	Mobis	37 +/- 2 degrees	90 +/- 1 degrees
Santa Fe Sport (AN) 2014-2018 MY	Mobis	38 +/- 2 degrees	90 +/- 1 degrees
Santa Fe (NC) 2014-2018 MY	Mobis	37 +/- 2 degrees	90 +/- 1 degrees
Sonata (LF) 2015-2018 MY	Mobis	38 +/- 2 degrees	90 +/- 1 degrees
Sonata Hybrid (LF HEV, PHEV) 2016-2018 MY	Mobis	37 +/- 2 degrees	90 +/- 1 degrees

Model	BSD/BCW Sensor Manufacturer	Horizontal Angle ($\phi 1, \phi 2$)	Vertical Angle
Tucson (TL) 2016-2018 MY	Mobis	37 +- 2 degrees	90 +- 1 degrees
Kona (OS) 2018 MY	Mando	55 +- 3 degrees	87.25 +- 1 degrees



BSD/BCW RADAR SENSOR HORIZONTAL ANGLE MEASUREMENT METHODOLOGY

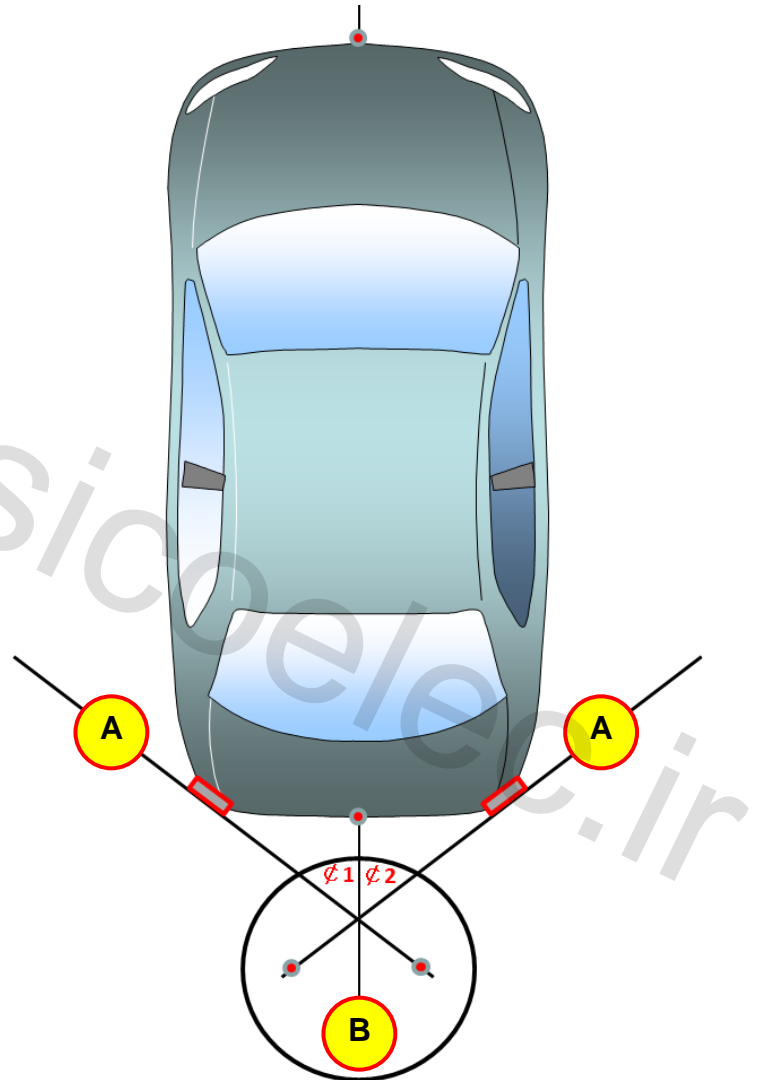
ILLUSTRATION OF THE RADAR SENSORS HORIZONTAL ANGLE MEASUREMENT METHOD

A
 Projection line parallel to the radar sensor surface position.

B
 Line is centered using the middle of the front and rear emblem.

$\phi 1$ (Left Side) $\phi 2$ (Right Side)
 Horizontal Angle measurement between the radar sensors projection and the center line.

 Left Side Radar Sensor
 Right Side Radar Sensor



BSD/BCW RADAR VERTICAL AND HORIZONTAL ANGLE MEASUREMENT PROCEDURE

1. Ensure the vehicle is on a flat even surface.

NOTICE

This procedure is best performed in an indoor environment for ease of viewing the laser light.

2. Follow the shop manual to remove the rear bumper.
3. Use the digital inclinometer to measure the vertical angle from each radar sensor and confirm if it is within specification.

If the vertical angle from both radar sensors are within specification then proceed to the next step to measure the horizontal angle.



NOTICE

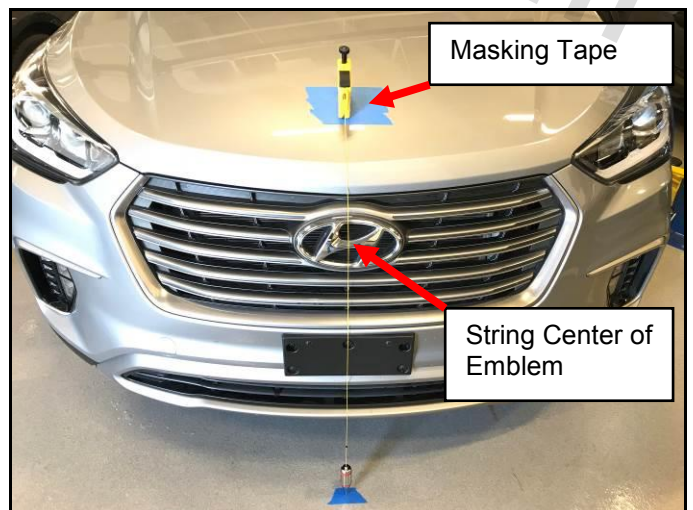
If the vertical angle(s) is not within specification, then address it first before continuing with measuring the horizontal angles.

4. Find the center point of the front of the vehicle as illustrated in the picture.

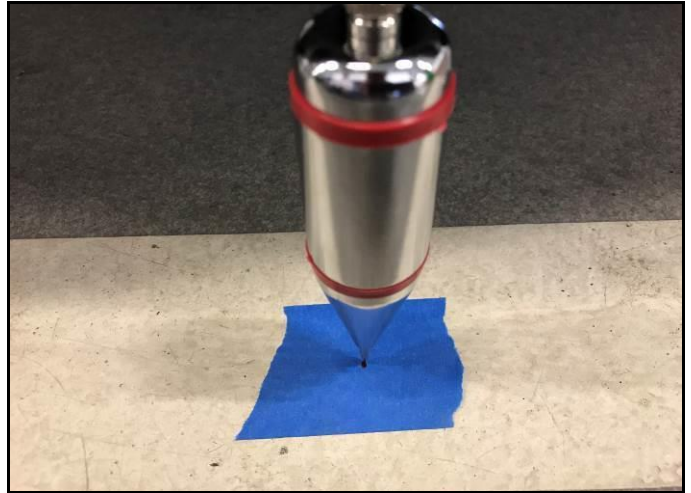
Use the center point of the front Hyundai emblem.

NOTICE

Place masking tape underneath the yellow vertical plumb to prevent scratching the paint when removing the tool from the vehicle body.



5. Once the plumb and string are centered with the front Hyundai emblem, place a piece of tape under the plumb bob, then use a permanent marker and mark the center point as illustrated in the picture.

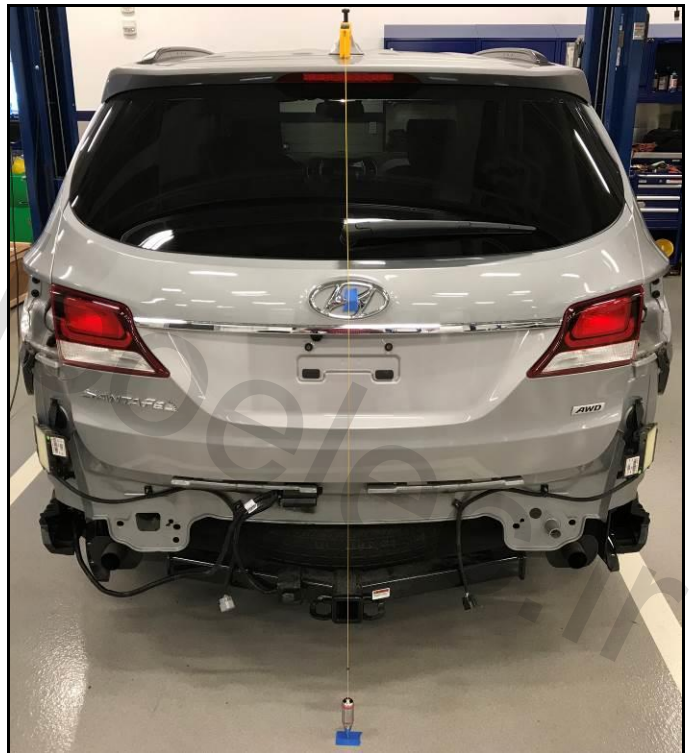


6. Remove the vertical plumb from the front of vehicle.
7. Find the center point of the rear of the vehicle as illustrated in the picture.

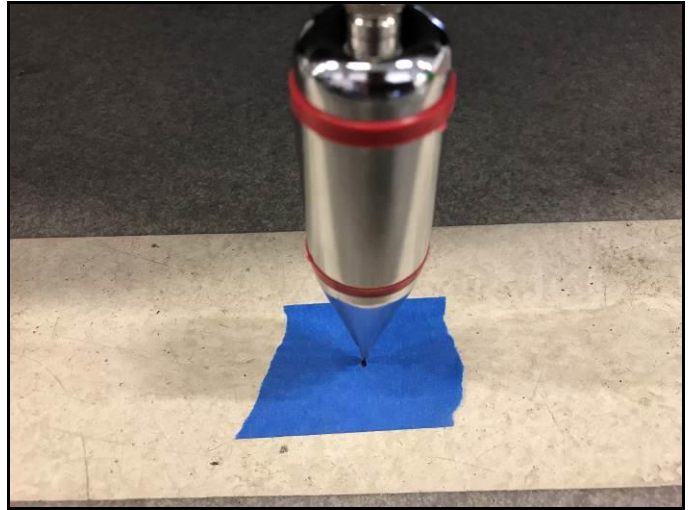
Use the center point of the rear Hyundai emblem.

NOTICE

Place masking tape underneath the yellow vertical plumb to prevent scratching the paint when removing the tool from the vehicle body.



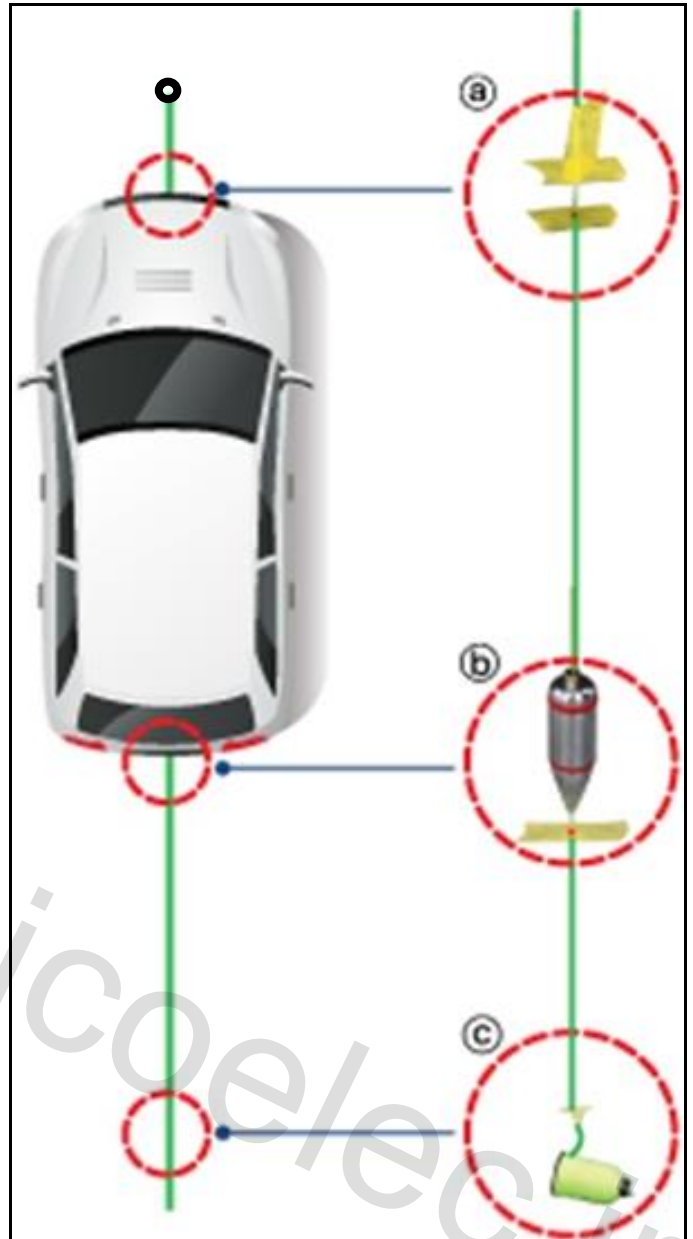
8. Once the plumb and string are centered with the rear Hyundai emblem, place a piece of tape under the plumb bob, then use a permanent marker and mark the center point as illustrated in the picture.



9. Tie the green string to the black rubber ring.



- Carefully throw the black rubber ring attached to the green string from under the rear of vehicle to the front. Align the green string to the front center point (a) and the rear center point (b) and tape down the string at about 6 ft. away from the rear of the vehicle (c) as illustrated in the picture.



- Attach the fixing adapter to the radar sensor.

To attach the tool, align it vertically to the radar sensor and hand tighten the two handles by turning them clockwise.



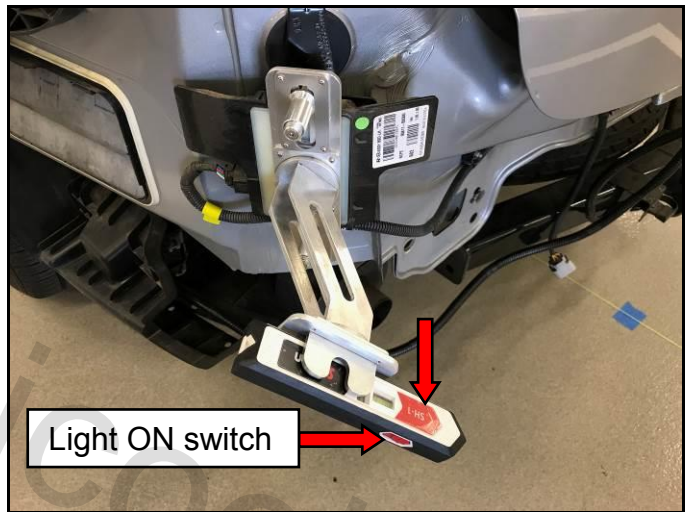
NOTICE

On some vehicles the Blind-Spot radar plastic shield must be removed, otherwise the laser clamp will not be able to clamp onto the radar.

After measuring the mounting angles, ensure the plastic shield is reinstalled back onto the radar module.



12. Insert the horizontal measuring device, turn the laser ON (select the switch which displays a line), and aim the light to cross the string.



Ensure the metal side is placed against the fixing adapter.



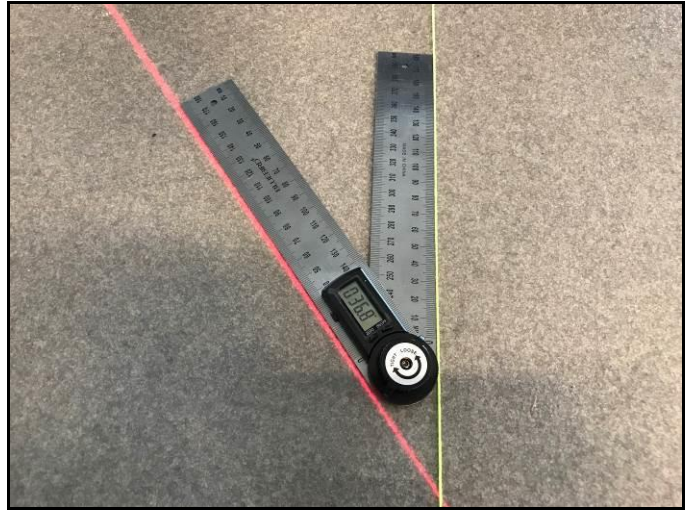
13. Use the digital protractor to measure the projected laser line to the green string to find the horizontal angle as illustrated in the picture.

In the example to the right the angle is 36.8 degrees.

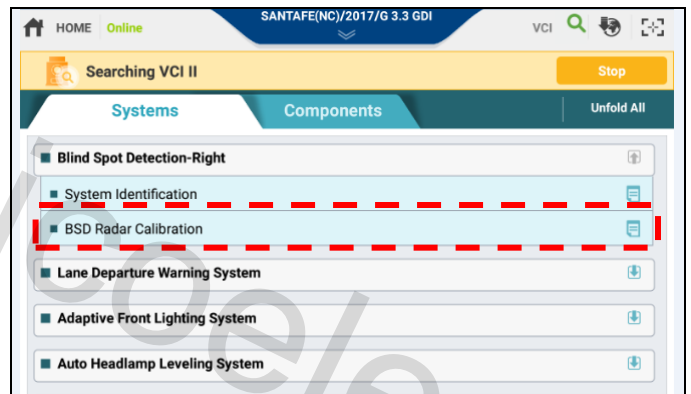
Measure the angle for both right and left sides.

NOTE: Follow the link from below for an example of angle measurement:

<https://www.youtube.com/watch?v=E12RK9qiNXc>



14. Connect the mobile GDS and select “BSD Radar Calibration”. Follow the guided instructions on the mobile GDS for further assistance with validating the BSD/BCW angles.



15. After completing the angle measurement procedure, perform a DTC scan using the GDS to confirm there are no DTC(s). If no DTC(s) were incurred, then confirm BSD/BCW system is functioning normally.

NOTE: Follow the link from below for an example of BSD/BCW operation:

<https://www.youtube.com/watch?v=r7Bpt6WBuwM>