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DSRC/ GNSS module

Guidelines

VDO
Smart on the Road

Legal notice

Described product

- DSRC/ GNSS module

Manufacturer

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Guidelines

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DSRC-/ GNSS-Modul – Guideline – TD001005 – Version 01 – 2023-03 – English

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DSRC and GNSS

Introduction

Dedicated Short Range Communication (DSRC)

DSRC is a technology for radio-based and safety-relevant services which are performed by mobile stations in the automotive technology. DSRC is based on the IEEE standards 802.11p and 1609 Wireless Access for Vehicular Environments (WAVE).

The Federal Communications Commission (FCC) had previously specified the frequency band of 902 MHz to 928 for the DSRC services, subsequently, the 5 GHz frequency range between 5.850 GHz and 5.925 GHz was used. The frequency range is divided into seven 10 MHz channels, one of which is characterised by a high availability and low latency, while others are used for security services and control functions. Owing to the higher channel bandwidths, the data rates of 500 Kbit/s specified in the UHF range could be increased to 6 Mbit/s to 27 Mbit/s, and this at a distance of 1,000 m. Transmission occurs in half-duplex, either Send or Receive.

The wireless Car-to-Car-Communication (C2C), Car-to-Roadside-Communication (C2R), Car-to-Infrastructure-Communication (C2I) will be included in the corresponding telematic standards. In addition, the DSRC technology may be used in existing entertainment electronics technologies and in billing systems for road tolls or service checks for the vehicles.

Dedicated Short Range Communication (DSRC) functionally maps the two lowest layers of the OSI reference model: the physical layer and the link layer. The functions of the higher layers are realised through Wireless Access for Vehicular Environment (WAVE), standardised by IEEE 1609. Americans, Europeans and Japanese apply different DSRC standardisation approaches, which is why the International Telecommunications Union (ITU) is working on the development of a globally uniform standard with the standardisation project Communication Access for Land Mobiles (CALM).

GNSS - Global Navigation Satellite Systems

Satellite-supported navigation systems are used for positioning with varying accuracy. The goal is usually to determine one's individual position on a virtual map. For example, on the smartphone or navigation devices in vehicles.

Difference between tracking and positioning

The terms "tracking" and "positioning" are not synonymous.

Tracking describes determining the location of a person or an object. This requires the person or object being equipped with a receiver and a transmitter. The receiver determines its location and the transmitter transmits this position to the seeker. In doing so, a feedback channel from the search object or person must be present. Only then can tracking occur.

Positioning is independent of tracking. Mere positioning is not tracking because there is no feedback channel.

GPS, Galileo and GLONASS are therefore no tracking but only positioning systems. Only when the position can be transmitted via mobile radio, for example, is tracking possible.

Overview of the satellite-supported positioning systems

GPS

GPS (Global Positioning System) is a satellite-supported navigation system. The operator of GPS is the U.S. Department of Defense, DoD. It is intended predominantly for military purposes.

GPS was officially put into operation on 17th July 1995. On 1st May 2000, artificial inaccuracy was switched off for all satellites. For the first time, the received signal allowed to determine a more precise location. This resulted in an increase in navigation systems for vehicles.

Galileo

Galileo is a European satellite-supported navigation system. Galileo is supposed to be more reliable and several times more accurate than GPS (USA) or GLONASS (Russia). For security reasons, civilian use of GPS and GLONASS may be disabled at any time. In case of Galileo, private use is expressly possible without restriction. Positioning devices will have integrated both GPS and Galileo. This improves the accuracy of the position.

GLONASS

Russia maintains its own satellite navigation system, GLONASS (GLObalnaya NAvigatsionnaya Sputnikovaya Sistema), which not only serves military, but also civil purposes. The Russian space agency Roscosmos is responsible for GLONASS.

28 satellites cover the entire surface of the earth with receivable signals. A combination of GPS and GLONASS is supposed to enable an accuracy of up to one centimetre.

BeiDou

BeiDou is a Chinese satellite navigation system which has existed since 2004. The system was officially put into operation at the end of December 2011. However, its use is restricted to large parts of Asia and the Pacific region. The global system is still under development.

By April 2012, a total of 13 satellites had been launched into space. Until 2020, the number of satellites for the Chinese navigation system is supposed to increase to 35.

BeiDou is supposed to reduce the dependence on the U.S. GPS.

Legal basis

Regulation (EU) No. 165/2014 specified the additional functions of the intelligent tachograph. These include:

- **GNSS connection** to record the vehicle's position at certain points during the driver's working time.
- **DSRC function** for remote reading of data by control bodies.

Annex IC was published combined with the Implementing Regulation (EU) 2016/799, as amended by Regulation (EU) 2018/502 dated 28 February 2018.

Annex IC specifies the following points of the intelligent tachograph and has applied since 15th June 2019:

- Design
- Test
- installation
- Inspection

From 21st August 2023, all newly registered vehicles destined for passenger and goods road transport which are subject to Regulation (EC) No. 561/2006, must be equipped with an intelligent tachograph pursuant to the extension of Annex IC.

Description of functions

IMPORTANT	The use of DSRC and GNSS is only possible with second generation tachographs.

GNSS function

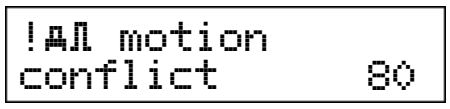
The DTCO has an integrated GNSS module with an integrated GNSS antenna from release 4.0. Depending on the device version, an external GNSS antenna can also be installed in the vehicle.

By using GNSS, position data are recorded and stored at specific points in the mass memory and the respective inserted driver and workshop cards:

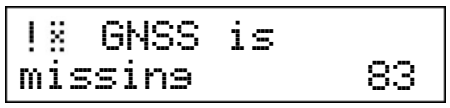
- At the start of the daily working time: when entering "Start country".
- After three hours' cumulated driving time of the vehicle, irrespective of the currently inserted cards.
- At the end of the daily working time: when entering "End country".

IMPORTANT	For the DTCO from release 4.0, the GNSS signal is used and evaluated as second independent motion signal. This cannot be switched off. The IMS identification as with the first generation devices is omitted.

- If during continuous driving of more than 5 minutes, a deviation in speed between the KITAS speed and the calculated speed of the GNSS signal of more than 10km/h is detected, the motion conflict is stored.



- If the GNSS signal is not available, e.g. when driving through a tunnel, the event "GNSS missing" is stored after 12 hours cumulated driving time without continuous GNSS reception.



The UTC time in the DTCO is automatically adjusted by means of the GNSS time. Manual adjustment of the UTC time is normally no longer required.

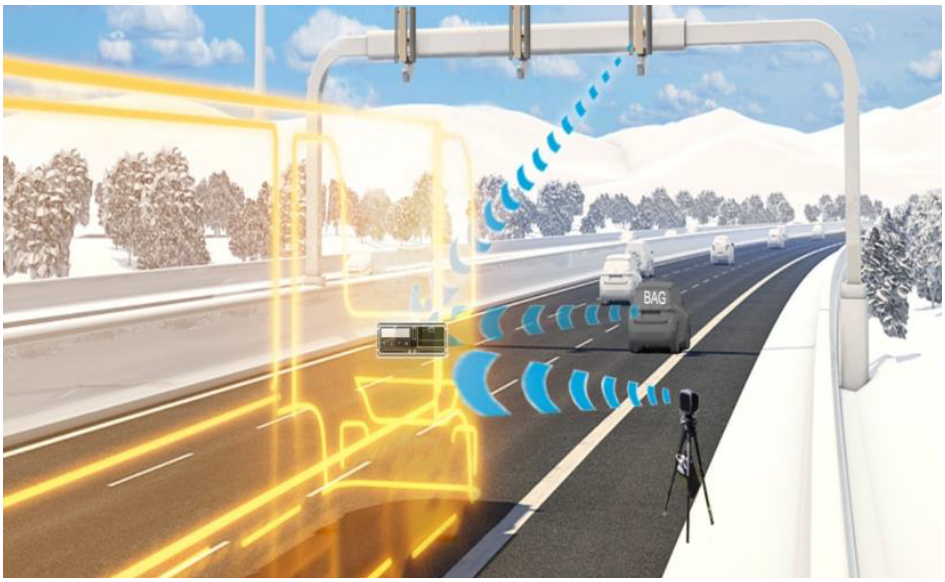
DSRC function

The DSRC communication between DTCO according to Annex IC and a DSRC receiver allows control bodies to read certain information from the DTCO when driving in order to make vehicle inspections more efficient (early detection of suspected manipulations). This type of inspection is not recorded in the tachograph and must not result in automatic fines.

The DSRC transmission < 120 byte occurs with a range of milliseconds.

The DTCO offers two options of a short-range communication for remote control for control bodies via DSRC:

- Communication via an antenna connected to the DTCO, usually installed on the windscreen.
- Communication via an external DSRC CAN module.



IMPORTANT

Checks from a bridge would technically be possible, but are not provided for in Annex IC.

The following information can be transmitted in the communication via DSRC:

- Registration of the vehicle
- Speeding (yes/ no)
- Driving without appropriate card (yes/ no)
- Valid driver card (yes/ no)
- Insertion of the card while driving (yes/ no)
- Transaction data error (yes/ no)
- Data conflict vehicle movement (yes/ no)
- Second driver card (yes/ no)
- Current activity (driving/ not driving)
- Last procedure completed (yes/ no)
- Interruption of power supply (yes/ no)
- Sensor fault (KITAS or GNSS) (yes/ no)
- Time setting (Time of the last time adjustment)
- Time of last security breach
- Last calibration (Time of the last calibration)
- Previous calibration (Time of the penultimate calibration)
- Installation date of the tachograph (Time of initial calibration)
- Current speed (last speed value)
- Time stamp of the data
- Time of the last authenticate position
- Continuous driving time of the driver
- Longest daily driving time of the current/previous RTM shift

- Longest daily driving time of the current week
- Weekly driving time
- Fortnightly driving time

New pictograms

	GNSS		GNSS missing
	DSRC		DSRC communication fault
	End of normal operation in XX (security certificate expires)		Time conflict
	Internal GNSS malfunction		Sensor malfunction
	Internal DSRC malfunction		Motion conflict
	GNSS anomaly		

Installation of the DSRC antenna

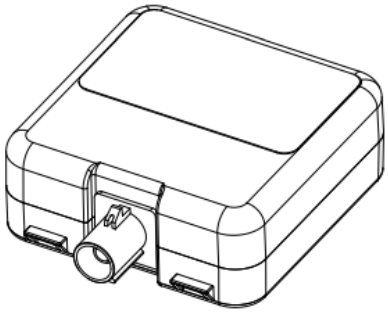
DANGER

Danger of fire due to short circuit

Damaged cables can cause short circuits, undesired interferences, or disturbances.

Please observe the following:

- Always replace damaged cables immediately!
- Always observe the information provided by the vehicle manufacturer.
- Lay the lines in such a way that they are not subjected to tensile or shearing force or pressure. Avoid bend radii of less than 25 mm.
- Properly fit the cables into place using tape or cable binders.
- Do not route the cable around moving parts.
- Use rubber sleeves as protection when feeding a cable through metal or plastic parts.
- Select the correct cable length. If the cable is too long, it may be only be laid in a large curve. The cable must not be laid parallel to other cables.
- Observe a minimum distance of at least 30 cm to other HF sources (mobile phone antenna etc.).



Basic instructions for installing the DSRC antenna

- The DSRC antenna has to be installed in a way that there is an optimal receipt between the control station on the street and the DSRC antenna. Therefore, the control station has to be installed at a 15m distance from the vehicle and in a 2m height. The currently applicable Implementing Regulation (EU) 2016/799, Annex IC requires that in the area between 2 m and 10 m in front of the vehicle, 99% of 1000 connections must be successful.
- The DSRC antenna mus be installed in the centre of the upper or lower area of the windscreen. The antenna must not limit the sight of the driver.
- The DSRC antenna must be attached in such a way that a minimum distance of 30 cm is kept to active devices, antennas or cables using the GNSS/ DSRC/ GSM frequencies.
- There must not be any fixed metallic objects in the communication field of the antenna (± 45° forwards) which may interfere with the antenna transmission.

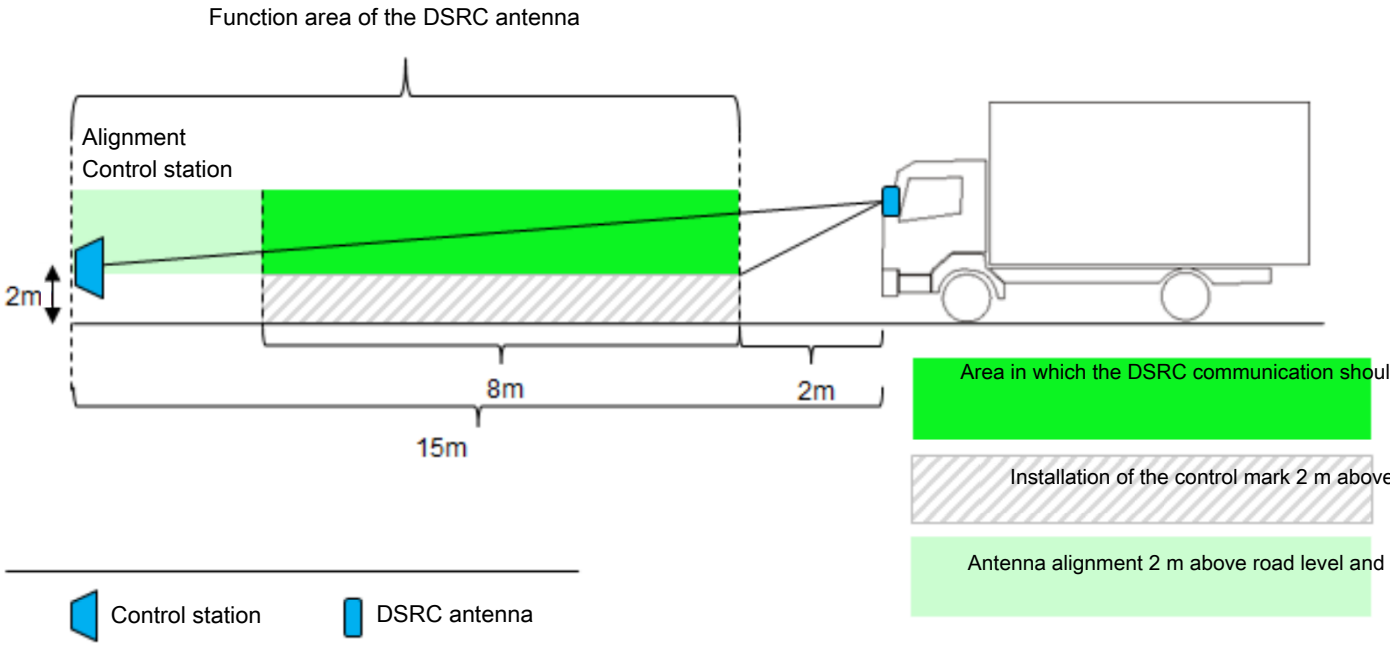


Fig. 1: Function area of the DSRC antenna

Establishing installation location

The installation location of the DSRC antenna must meet the requirements described below.

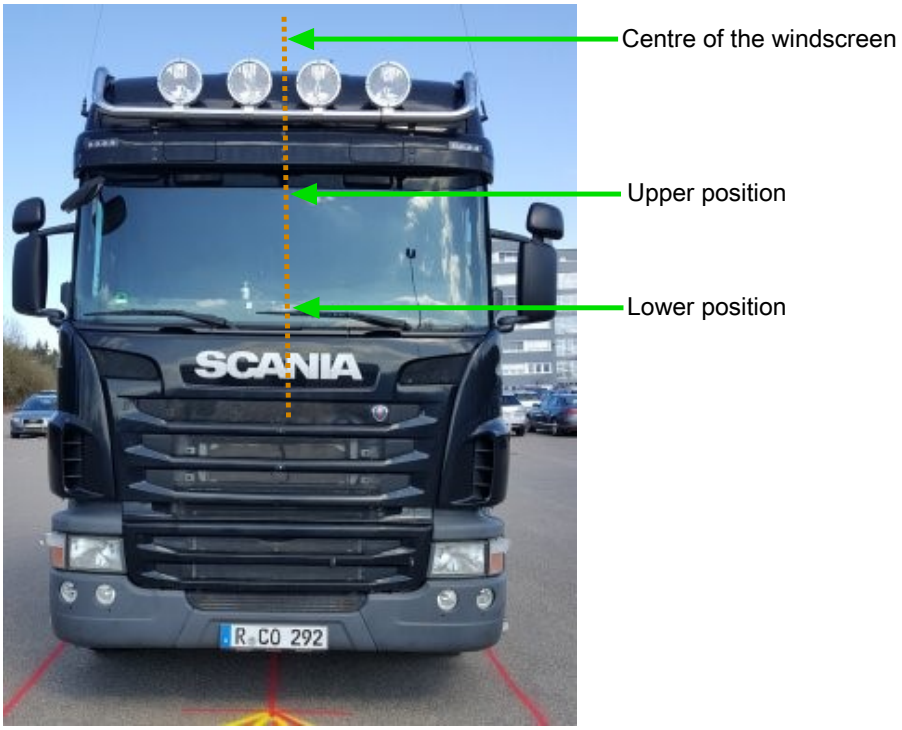


Fig. 2: Possible installation locations of the DSRC antenna

- The DSRC antenna must be installed according to the legal regulations near the centre of the windscreen.
- In heavy vehicles, it is recommended to mount the device in the bottom part of the windscreen.

- In light vehicles, it is recommended to mount the device in the lower part of the windscreen.
- The (serial) place of installation planned from the vehicle manufacturer may vary by vehicle type and version.
- Depending on the slope of the windscreen, the installation angle (based on the street) may require a compensation.

Temporary installation and echo measurement

Temporary installation

1. Temporarily attach the DSRC antenna at the temporary installation location using adhesive tape.

IMPORTANT	Tip: Do not yet pull off the foil of the original adhesive ad.

Fig. 3: Temporary installation using adhesive tape

Echo measurement

1. For the echo measurement, attach the DSRC meter onto a tripod of 2 m, for example.
2. Set up the tripod with the DSRC meter in the direction of travel (0°) at a distance of 4 m.

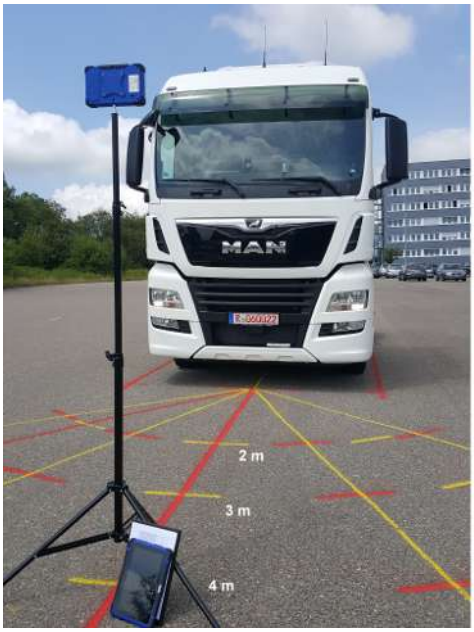
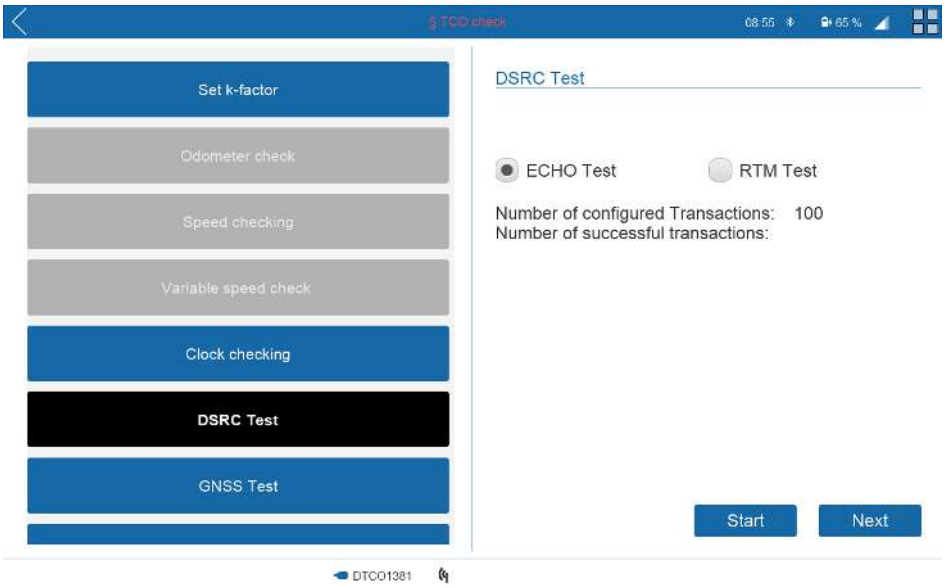


Fig. 4: Echo measurement using a tripod

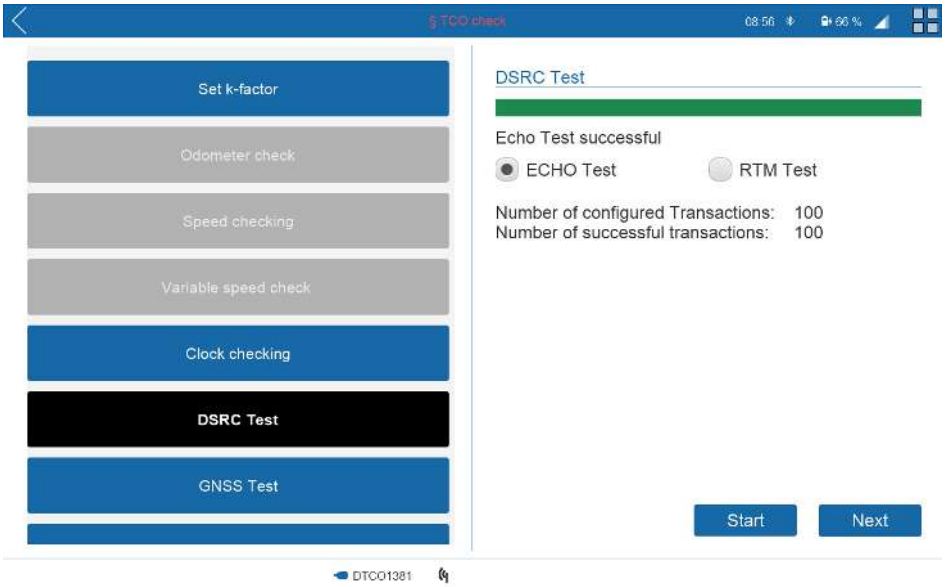
IMPORTANT	The DSRC meter must be aligned in parallel to the front of the vehicle.

3. Carry out the first echo measurement at a distance of 4 m.

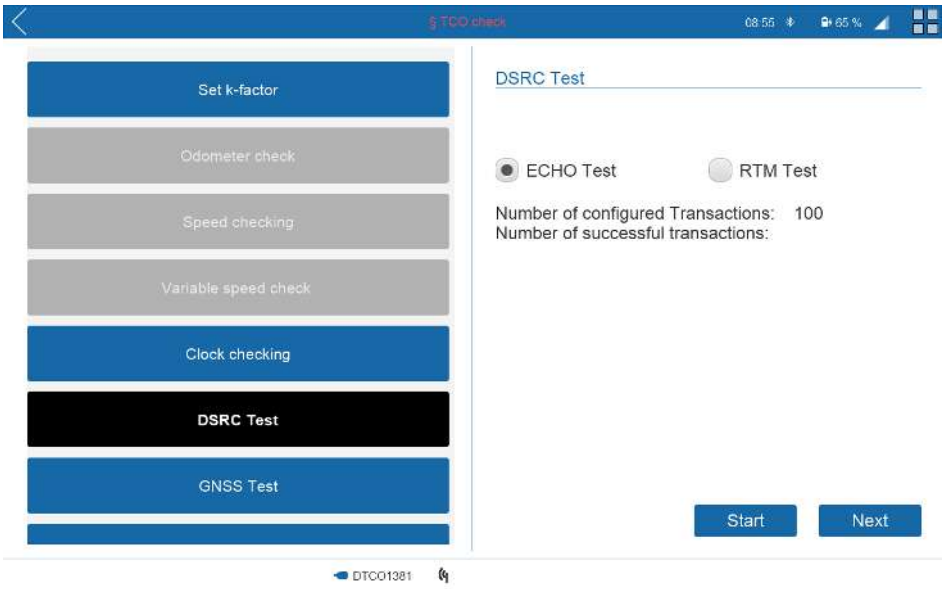


⇨ The test was successful if more than 90 transactions were reached.

⇨ If required, change the antenna position ("bottom" to "top") if the test was unsuccessful.



4. Next, increase the distance in the direction of travel (0°) (space requirement approx. 10 m - 15 m) and repeat the echo test.

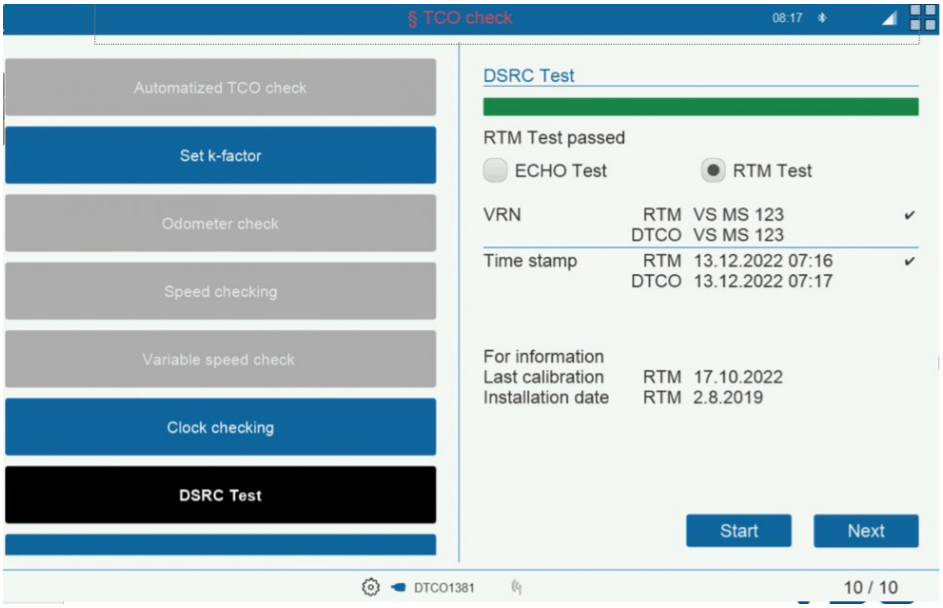


⇨ The test was successful if more than 90 transactions were reached.

5. Clean the surface onto which the DSRC antenna is to be permanently attached.
6. Permanently mount the DSRC antenna (adhere).
7. Lay and fasten the connection cable in a way that it cannot be manipulated.

RTM test

1. Carry out the RTM test.



Special cases during installation

Heatable windscreens do not usually have any/little impact on the DSRC antenna.

Metallised screens are not suitable, unless areas in the centre have been specially omitted during metallisation. These are often used in buses.

Strongly inclined windscreens may require a compensation. This improves the effective and communicative area.

Installation examples

The following figures show possible installation locations of the DSRC antenna in various vehicle types.

Fig. 5: Installation examples Mercedes-Benz Actros

Fig. 6: Installation examples Mercedes-Benz Atego Isuzu MidiEurope F14

Fig. 7: Installation examples Mercedes-Benz Vito and Mercedes-Benz Sprinter

Connecting the CAN module

The CAN module is usually connected via plug A (CAN1, A4 and A8) or plug C (CAN2, C5 and C7).

GNSS and DSRC test

A suitable testing device is used for the functional test of GNSS and DSRC, for example a WorkshopTab.

Fig. 8: WorkshopTab

IMPORTANT

Detailed information on the WorkshopTab and the DSRC meter is available from your VDO service partner.

When a workshop card is inserted, GNSS position data and the GNSS status can be displayed in the "TCO info" menu.

Further tests are possible with the WorkshopTab.

The DSRC communication can be tested in connection with the WorkshopTab and the DSRC meter.

When the workshop card is inserted in the WorkshopTab, the communication can be displayed decrypted (4/19 information).

Device inspection

Requirements for the inspection of the DTCO from Release 4.0

To facilitate the inspection of the DTCO and the new functions (DSRC/GNSS), the following is required in addition to the equipment already present:

- Test device to calibrate the DTCO
- Receiver for the DSRC functional test
- Documentation programme
- Workshop card of the second generation

These requirements are met with the WorkshopTab and the 4.0 licence as well as the DSRC.

The competent specialist should have completed a DTCO 4.0 introduction training and must have a second generation workshop card.

Inspection of the DSRC function (RTM test)

New vehicles are partially supplied by the manufacturers in different variants:

- The tachograph according to Annex I C is not yet activated
- The tachograph is activated (01)
- The tachograph is activated and initially calibrated (01, 02, 03)

What should be observed in this connection with regards to the RTM test?

The RTM test, i.e. reading the RTM data, only works with already activated devices. Therefore, the tachograph must first be activated to enable an RTM test to be carried out.

Depending on the device variant, either only the actual activation (01) or also the initial installation or initial calibration (02, 03) is generated upon first insertion of the workshop card into the DTCO 4.0.

When you have created the calibration reasons (01), (02) and (03) and removed your workshop card, the calibrations are generated in the DTCO 4.0.

Now, insert your workshop card into the WorkshopTab and carry out the RTM test now. Once this has been successfully carried out, create the inspection certificate in Reporting.

IMPORTANT	The last RTM test before the report creation is used for the report (inspection certificate). Thus, the RTM text also be repeated after one calibration in order to obtain the positive RTM test in the inspection certificate.

If the device has already been activated and initially-calibrated, you can work through the RTM test according to the Wizard.

Serial number of the external DSRC module

Various vehicle manufacturers have opted for an external DSRC module of a different provider in their vehicles. This applies to DAF, MAN and Scania, for example.

These external DSRC modules are partly located in a special plastic housing on the windscreen or under the dashboard in front of the windscreen.

Whether an external DSRC module is installed in a vehicle can be determined by means of the different serial numbers between the tachograph and the DSRC module or by means of the configuration (TCO parameter, DSRC source: internal / external CAN1 / external CAN2) of the DTCO. Furthermore, an external DSRC module can be assumed if the red FAKRA plug is not present on the back of the DTCO 4.0 installed in the vehicle.

The external DSRC modules are integrated in the vehicle CAN and communication between the external DSRC module and the tachograph is monitored, so that pairing and sealing the external DSRC module is not required.

In the course of the inspection according to § 57b StVZO, the serial number of the external DSRC module must be read and programmed in the DTCO 4.0 and specified on the installation plaque.

To read the serial number of external DSRC modules, the BlueCAN kit (art. no.: 2910002364000) is available which enables easy and direct reading of the serial numbers of external DSRC modules in connection with the VDO WorkshopTab.

IMPORTANT

If the serial number of an external DSRC module has not yet been stored in the DTCO 4.0, it can be recorded by means of the WorkshopTab (from SW status 4.2.5).

Serial number of the Stoneridge module

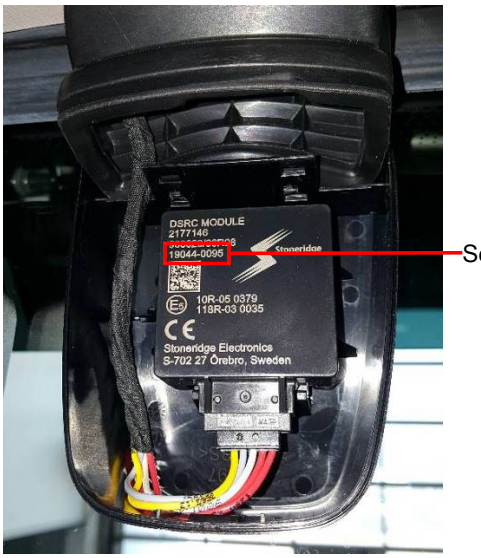


Fig. 9: Stoneridge DSRC module

Serial number of the example: 19044-0095

The numbers in front of the dash contain production date information: "19" for 2019, "04" for calendar week 4 and "4" for the fourth day of the week (Thursday).

IMPORTANT

The dash in the serial number must not be entered, but the numbers directly after each other: 190440095.

Additional work in the course of the regular inspection

1. Check or set the relevant parameters in the DTCO 4.0 in the course of the § 57b inspection:
   - TCO parameters =>> DSRC source
   - § Legal parameters =>> DSRC serial number
- Active testing and inspecting the DSRC functionality (DFV (EU) No. 2016/799, No. 6.4)
- GNSS test: Validity of the positioning must be verified
- Inspection of the validity of the existing seal

- The serial number of the attached seals must be noted together with the seals on the installation plaque and in the tachograph.
- The sealing of the KITAS must be renewed with each calibration.

Use of the DSRC meter in the workshop

IMPORTANT	It is recommended to permanently install the DSRC meter to keep the work required in the course of the inspection to a minimum.

The distance of the DSRC antenna (in the windscreen) to the DSRC meter should be 2 to 4 metres. If required, a spot on the hall floor or on the wall may be marked to facilitate the approach by this distance (DSRC antenna to DSRC meter).

The DSRC meter must be attached at a height of 2 metres and be positioned in direct view of the DSRC antenna.

However, first experience has shown that for vehicles in which an external DSRC module is installed in the dashboard (no DSRC antenna visible on the windscreen), the results of the RTM test may not always be satisfactory under the aforementioned conditions.

Observe the following procedure for these vehicles:

1. Position the DSRC meter to the legally permitted minimum distance of 2 metres in front of the centre of the windscreen,
2. Vary the height of the DSRC meter in such a way that the vertical and horizontal centre of the screen is targeted (e.g. 2.3 m). With regards to the RTM test in the course of the workshop inspection, no explicit specifications are made by the above-mentioned Regulation in respect of the height of the inspection reading device. Therefore, the recommended height of 2 meters may vary in such cases during the RTM test in the workshop.

Fig. 10: Use of the DSRC meter in the workshop

Permanent installation or mobile use of the DSRC meter

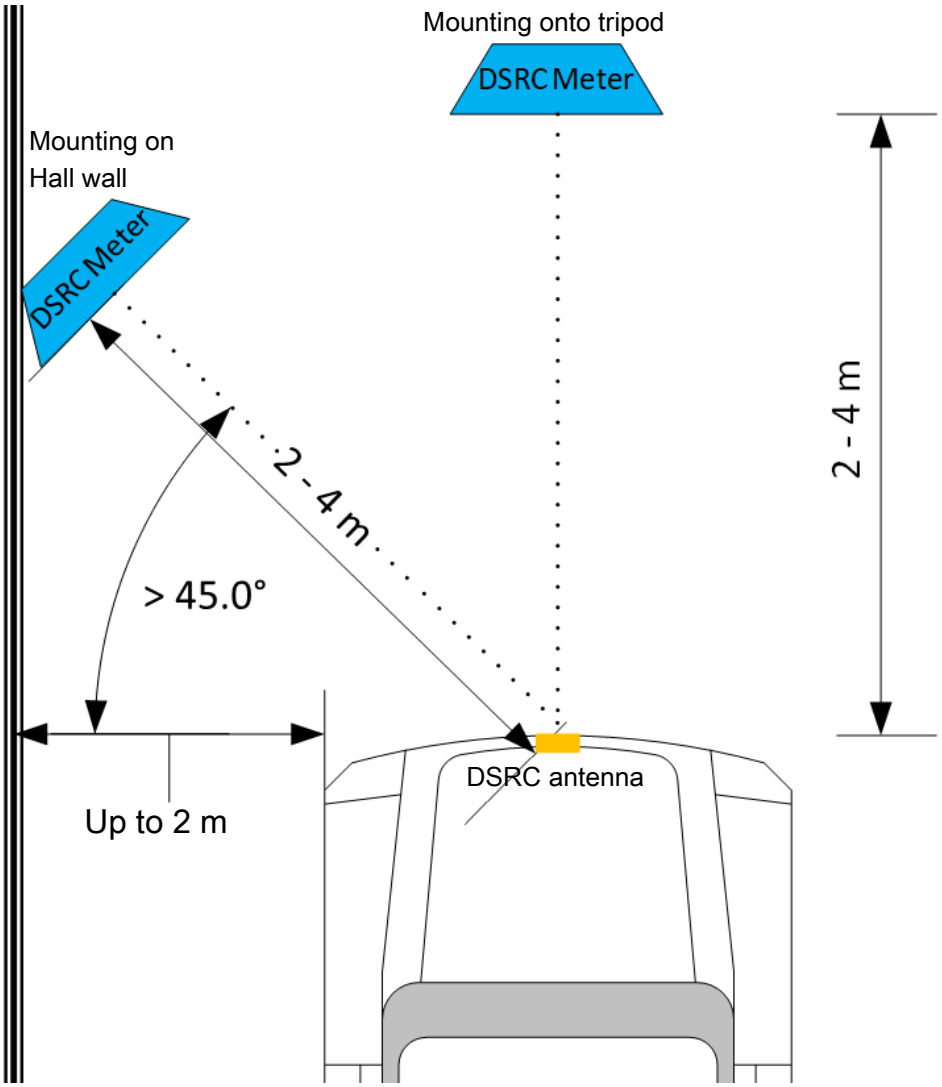


Fig. 11: Permanent installation or mobile use of the DSRC meter

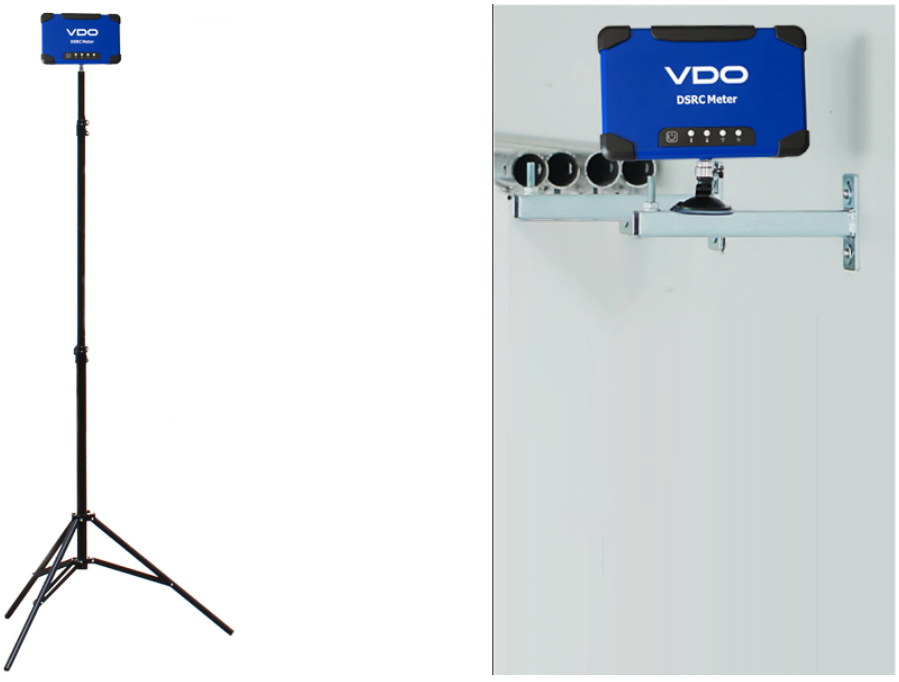


Fig. 12: DSRC meter on tripod and on wall bracket

If the DSRC meter is installed on the side hall wall, make sure that the specified angle of at least 60° is observed.

A tripod allows a mobile use of the DSRC meter. For this purpose, the above-mentioned requirements must be observed.

Requirements for the GNSS position verification

The GNSS test of the DTCO does not require any additional equipment. Testing whether a vehicle position is valid or not can also occur directly at the DTCO using the service menu.

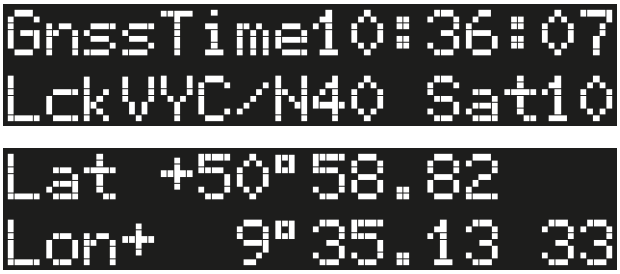


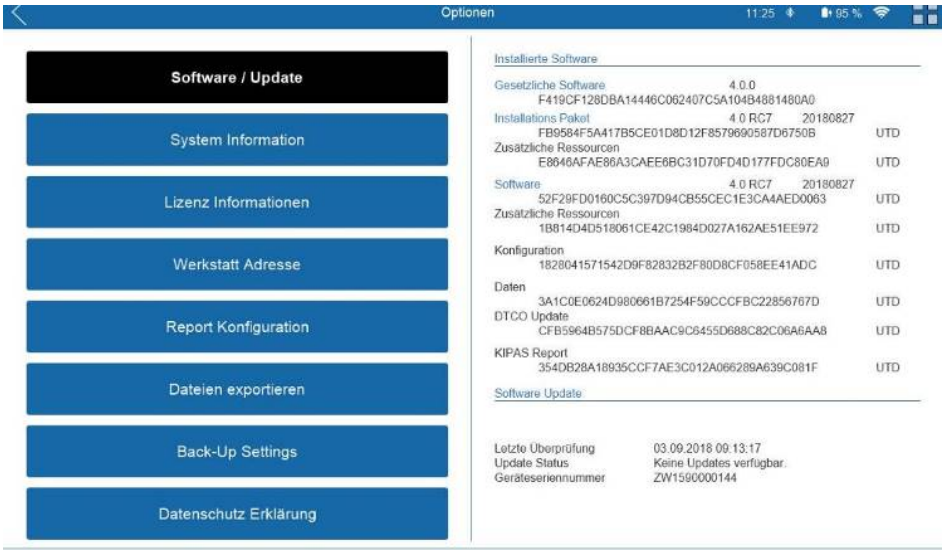
Fig. 13: GNSS test on the DTCO

Using the WorkshopTab, this test can be performed easily and with the corresponding documentation in the test record.

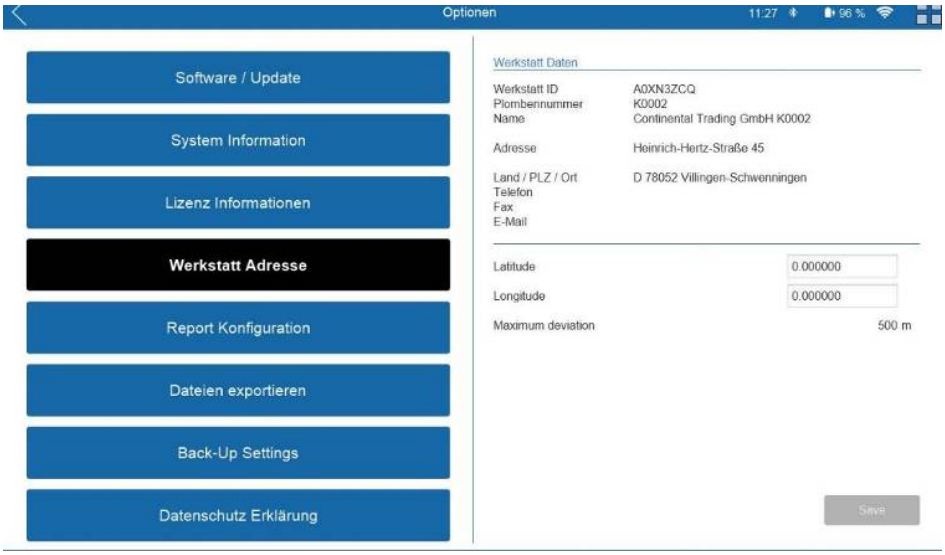
If the GNSS test is to be carried out in the workshop hall and the GNSS reception is not possible owing to design, a GNSS repeater may optionally be used. However, it should be noted that this requires the application of a licence from the Federal Network Agency by the workshop.

In order to determine the validity of a GNSS position recorded by the DTCO using the WorkshopTab, the workshop coordinates must first be entered once into the WorkshopTab.

1. Go to the options.



⇨ Your workshop is displayed.

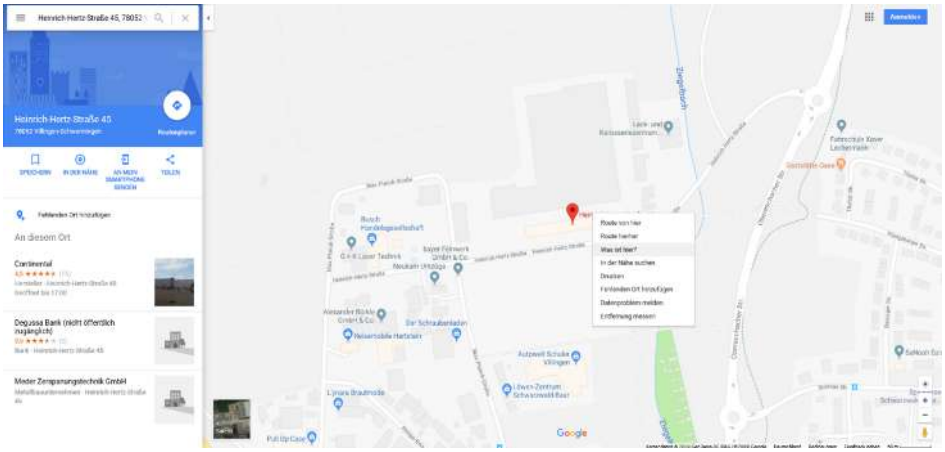


⇨ The coordinates of your workshop have not yet been entered.

2. Enter the coordinates of your workshop and then click on **Save**.

Determining the workshop coordinates

The coordinates of your workshop can be found via Google Maps, for example, by right-clicking onto the position and selecting **What is here**.



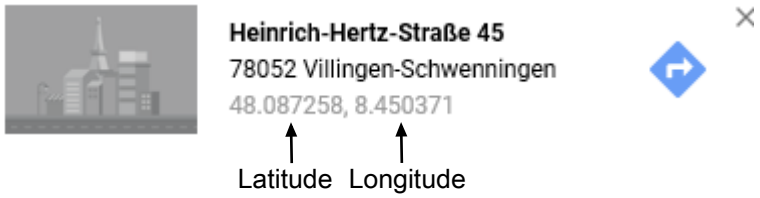


Fig. 14: Source: Google Maps

With the entered coordinates of your workshop, in the WorkshopTab, you can quickly and simply verify the validity of the GNSS position recorded by the second generation tachographs.

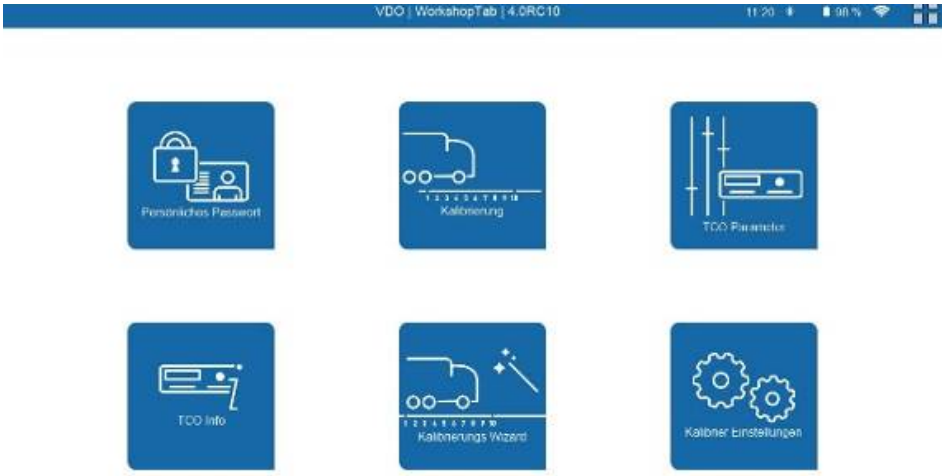
Carrying out an inspection of the DTCO from Release 4.0

We generally recommend performing the regular inspections using the calibration wizard of the WorkshopTab. This ensures that no inspection steps are omitted as you are guided through the inspection.

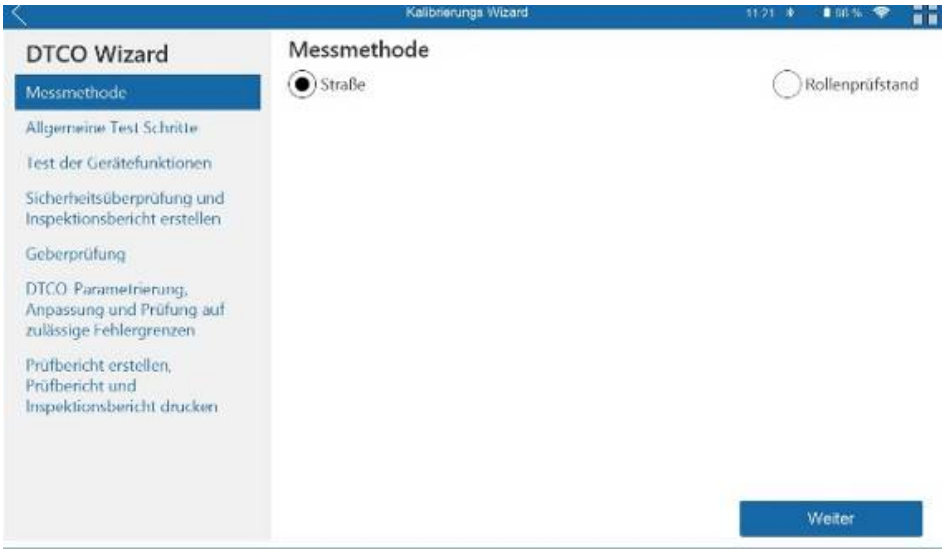
The following description of an inspection of a DTCO is derived from the calibration wizard of the WorkshopTab.

Only the newly added inspection steps and features are described in detail.

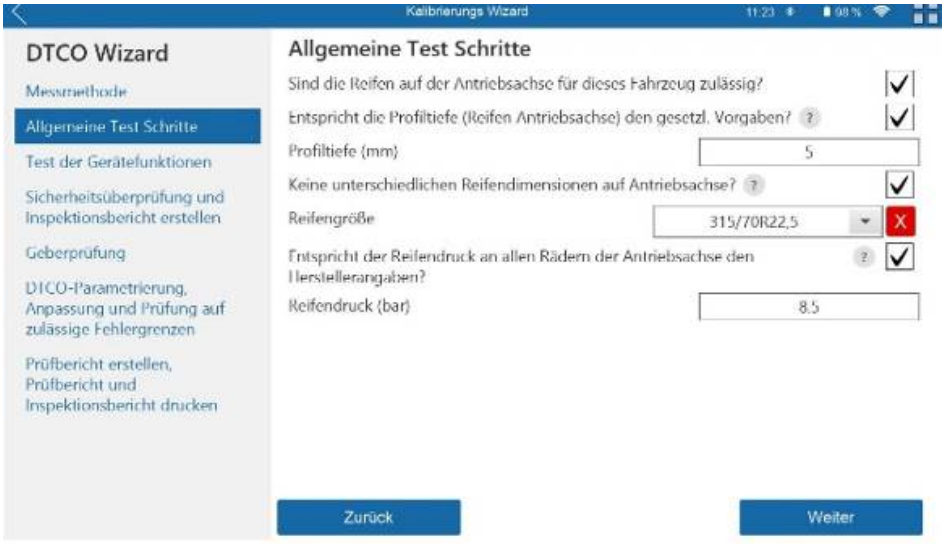
1. Select the calibration wizard.



2. Select the measuring method, road measuring on 20 metre measuring track with light barrier or on a chassis dynamometer.



3. Perform the general inspection steps using the wizard.



⇨ The **?** symbol will provided additional information on the respective inspection points.

⇨ The GNSS test and the DSRC test are carried out before the workshop card is inserted into the DTCO.

GNSS test

Once the workshop coordinates have been entered into the WorkshopTab, it allows a simple and comfortable performance of the GNSS test (comparison of the received position by the DTCO with the workshop's position).

However, as a prerequisite, a GNSS signal must be available.

IMPORTANT

If the GNSS signal available in the workshop hall is insufficient, a GNSS repeater can be used. However, this requires the application of a licence from the Federal Network Agency by the workshop.

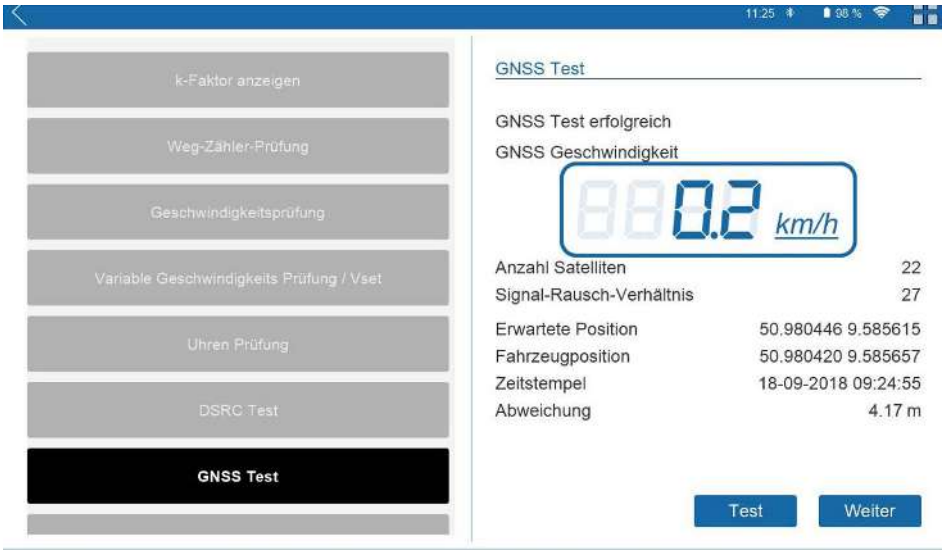
1. Turn on the vehicle's ignition.
2. Click on **GNSS Test**.

⇨ The following display will show you this information:

- GNSS speed (speed calculated by the internal GNSS module; this may vary slightly).
- Number of captured satellites (at least 4, the more the better).
- Signal-to-noise ratio (quality of the signal, the higher the better).
- Expected position (workshop coordinates).

1. Start the GNSS test using the **Test** interface.

⇨ The GNSS test was successful, the deviation in this example is 4.17 m.



⇨ The test result is stored in the WorkshopTab.

⇨ Should the GNSS test be unsuccessful, you will need to check the reception conditions.

IMPORTANT

No maximum permitted deviation has been specified in the legal regulations. The manufacturer's specification provides for a maximum deviation of 500m. Should the deviation exceed this limit, the value is displayed in red.

DSRC test

The DSRC test must be carried out in order to test the signal of the DSRC antenna which is connected to the WorkshopTab.

RTM test

You use the RTM test (RTM = Remote Tachograph Monitoring) to test if the data which the DSRC antenna sends to the DSRC meter, corresponds with the data in the tachograph.

This is the data which the control bodies read (25 RTM data).

Requirements

- Positioning of the DSRC meter as previously described.
- A second generation workshop card is inserted for the RTM test in the WorkshopTab. No workshop card is required for the ECHO test\.
- A WorkshopLink is inserted in the digital tachograph.
- A DSRC meter is connected with the WorkshopTab and switched on.

The DSRC test can occur in two ways:

Option 1 - ECHO test

The ECHO test is a function test of the DSRC module. Here, the DSRC meter sends 100 signals to the DSRC module. The signals returned allow you to evaluate if the installation location of the tachograph is ok.

If the response rate is 95% to 100%, the installation location of the tachograph is the optimum selection. For special, shielded vehicles, a response rate of 75% may be sufficient. If the response rate is under the specified values, please check the installation location of the tachograph for any disturbance sources.

This test is only necessary in case of a new installation of a DSRC antenna.

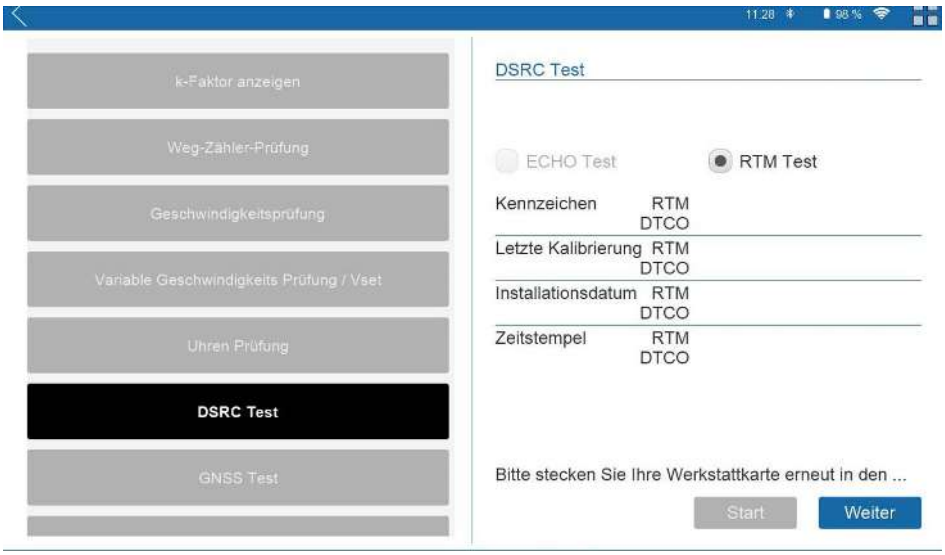
Option 2 - RTM test

The RTM test uses a data telegram from the DTCO to check the overall system (DTCO – DSRC module – DSRC antenna – DSRC meter).

With the RTM test, the following data are read exemplarily by the DSRC module and via the WorkshopLink and compared:

- Registration number
- Last calibration
- Date of installation
- Time stamp

1. Select **DSRC Test**.



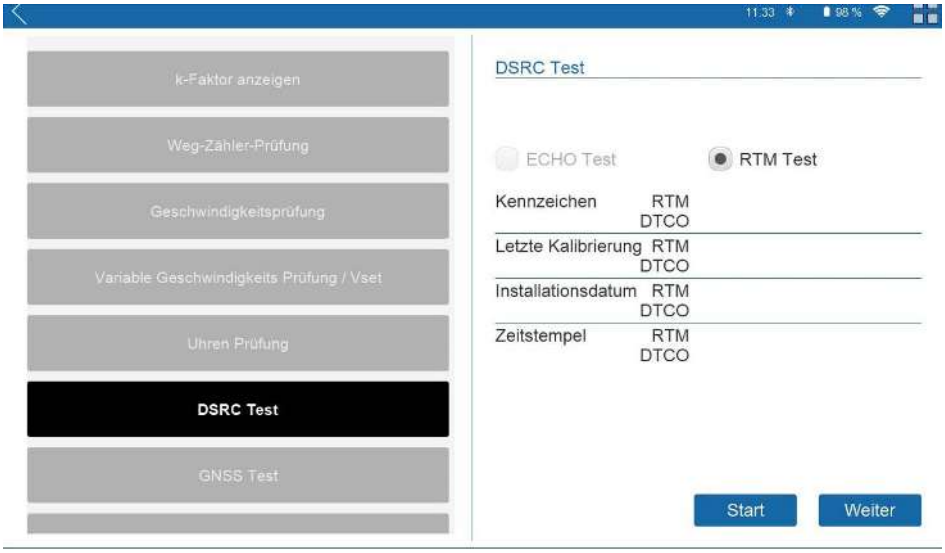
⇨ The **Start** interface is not active as the workshop card is not yet inserted into the WorkshopTab.

2. Insert the workshop card into the WorkshopTab and repeat the step, if necessary.

IMPORTANT

Make sure that the DSRC meter is connected with the WorkshopTab. This can be identified by the symbol in the lower status bar of the WorkshopTab.

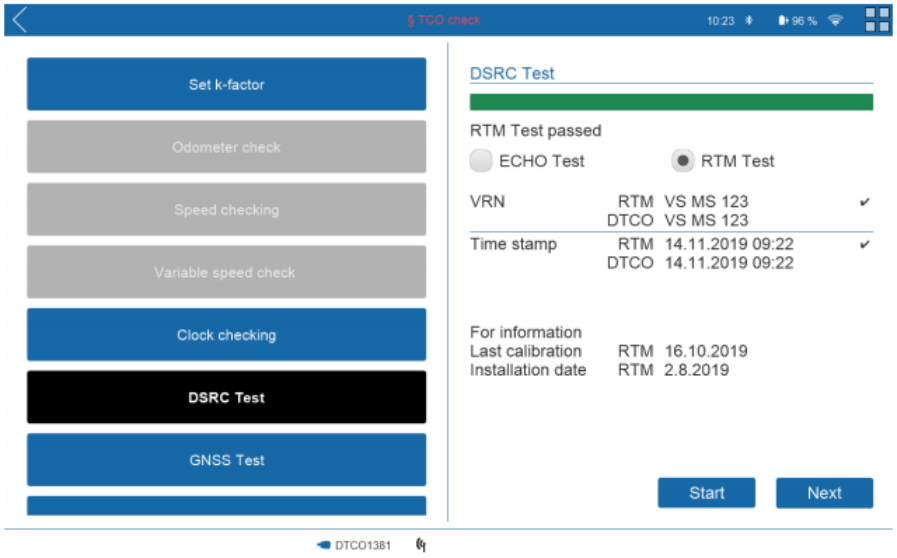
3. Start the RTM test.



IMPORTANT

The ECHO test is not required in the course of the regular check, therefore not possible in the calibration wizard either. This test is required for the positioning of a DSRC antenna, e.g. in case of an upgrade.

⇨ For the RTM test, all 25 RTM values are transferred, however, only 4 are displayed in the WorkshopTab.



⇨ The RTM test was successful and is passed.

⇨ The test result is stored in the WorkshopTab.

For the test result, (passed/not passed), only the registration (VRN) and the time stamp are taken into account. The date of the last calibration and the installation date were displayed below and are only displayed for information purposes. These are no longer taken into account for the test result.

IMPORTANT

Should the installation date differ, it was not entered correctly during the installation of the DTCO. In this case, the RTM test would not be passed and you would first have to set the installation date of the DTCO to the date of the first calibration (calibration reason (03)).

The background for this is that the information is read once via RTM and once via the front interface of the DTCO, but the first calibration date is not issued via the front interface of the DTCO.

After a successful GNSS- and DSRC test, the inspection is continued as usual.

Periodic inspection

Legally stipulated parameters

The legally stipulated calibration parameters must be updated or confirmed (monitored) for each calibration. This includes checking the serial number of the DSRC module and the one of an external GNSS module.

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