

# Evaluation of RDE test drives INCA-RDE



## Recording, calculating and displaying RDE data in ETAS INCA

ETAS supports and facilitates the development of software-defined vehicle (SDV). INCA-RDE comes with the following features:

### Areas of application

- In-vehicle RDE measurements within the standard ETAS tool chain
- Monitoring compliance with statutory limits
- Compatible with portable emission measurement systems (PEMS) from a variety of vendors
- Can be used for various drive configurations and fuel types

### Functions

- Calculation of RDE data from PEMS raw signals in real-time
- Includes legislative packages covering the regulations of various countries
- Time synchronous acquisition of RDE data and ECU signals
- Estimates whether RDE requirements can be maintained during the ongoing vehicle test
- Ability to apply user-defined driver guidance information and optional start criteria

### Benefits

- Quick overview of all the measurement data in a single measurement file
- Does not require any expert knowledge of RDE legislation
- Ability to monitor limits during RDE test drive
- Saves time by detecting invalid RDE test drives early on
- Seamless processing of measurement signals
- Easy to connect to PEMS hardware

# System set-up for INCA-RDE



## How INCA-RDE works

INCA-RDE is an INCA add-on for in-vehicle RDE measurements.

Using a universal interface module, INCA-RDE can be connected to a portable emissions measurement system (PEMS) and the ECU via CAN. This allows RDE driving tests to be executed in a controlled and reproducible manner. Real driving emissions are tracked efficiently and correlated with signals from the ECU.

RDE configuration is performed directly in INCA. The measured emission values and data on driving dynamics (e.g.  $v \cdot a$ ) are calculated by INCA-RDE online. It is also possible to calculate simulations in INCA based on existing measurement data.

Analysis results are displayed on RDE-specific instruments within the INCA experiment. Calibration and diagnosis of the ECU parameters can also be performed directly within the same INCA experiment.

### The RDE-specific INCA instruments allow users to display ...

- route and time sections traveled on urban and rural roads and on motorways
- moving average emission values
- environmental and engine conditions
- raw signals from emission sensors
- start of emission measurement, GPS data and PEMS status

The many different options for visualizing data provide users with a quick overview and ensure an optimal and efficient evaluation of RDE measurements recorded during test drives.