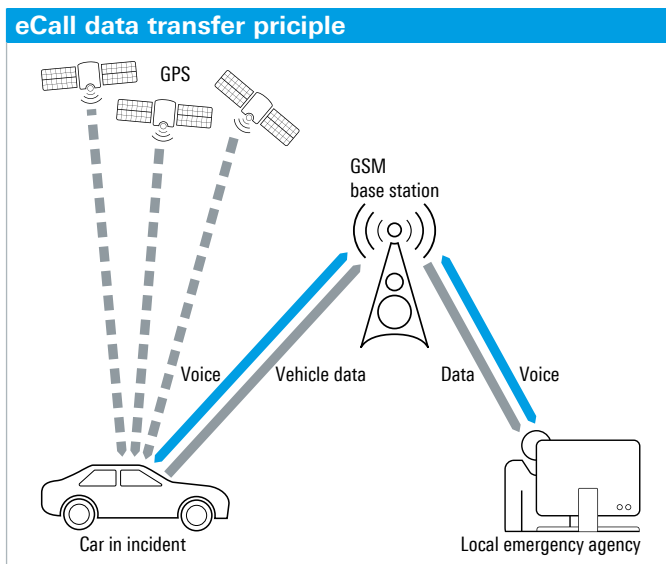


Test your eCall system's GSM and GPS modules with a single device

The R&S®SMBV100A vector signal generator is a one-box solution for efficient, highly flexible testing of your eCall system's GPS and GSM receivers.



Your task

The European Union aims to introduce intelligent telematics-based vehicle safety systems to decrease the number of traffic deaths and severe injuries.

eCall (emergency call) is an electronic safety system for cars that automatically calls emergency medical services in the event of a road accident. The aim is to improve accident notification and to provide fast emergency assistance.

When an accident occurs, the eCall system transfers a standardized set of data via the mobile communications network to the local emergency agency. The data set contains information such as the time and the GPS coordinates of the accident. Additionally, voice communications are established as the car occupant might be able to speak.

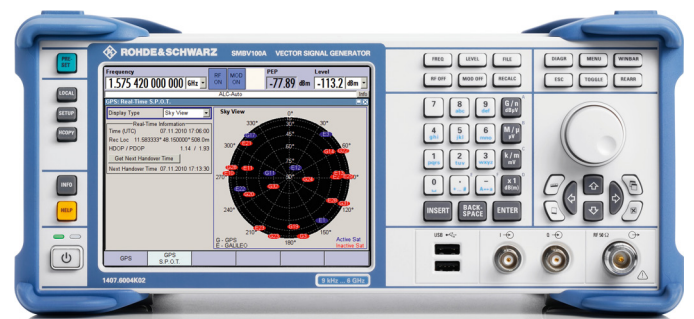
The eCall system in a car consists of several components including a telematics unit with implemented eCall functionality (control unit), a dedicated GSM module with antenna for sending the emergency call, a GPS receiver for determining the accident location, crash sensors for detecting the accident, a microphone and loudspeaker for voice communications, an emergency power supply, and a pushbutton for manual activation of eCall.

As a safety system, eCall demands high reliability. During design and production, the system components must be tested to ensure proper operation. Normally, two separate instruments are needed for testing the GPS and GSM receivers of the eCall system: a GPS satellite simulator and a GSM signal generator.

T & M solution

The R&S®SMBV100A vector signal generator enables both GPS and GSM signal generation in one box and is therefore ideally suited for testing key eCall components.

The R&S®SMBV100A vector signal generator.



Test & Measurement
Application Card | 01.00

Test your eCall system's GSM and GPS modules with a single device

The R&S®SMBV100A is a versatile, cost-efficient vector signal generator with outstanding RF performance. It can generate GSM signals in realtime or from the arbitrary waveform generator memory (ARB) for testing wireless voice and data transceivers.

The R&S®SMBV100A is not only capable of generating signals for all main communications standards, it is also a full-fledged satellite simulator for global navigation satellite systems (GNSS) such as GPS or Galileo. The R&S®SMBV100A can simulate a wide variety of scenarios, from simple setups with individual, static satellites all the way to flexible scenarios generated in realtime with up to 12 dynamic satellites. Only a few keystrokes are needed to generate even complex scenarios, unlimited in time with on-the-fly exchange of satellites, including hybrid GPS and Galileo constellations.

Users can load an almanac or RINEX file to get the up-to-date satellite orbits. Both stationary geographic positions and moving scenarios that simulate the movement of the receiver, i.e. a car, along any user-defined route are possible. In addition, the R&S®SMBV100A is also able to simulate realistic transmission conditions through the use of multipath signal generation and modeling of atmospheric effects. Simulation of different geographic positions and real environmental conditions is important in order to test if the receiver will be able to determine the correct GPS coordinates with the required accuracy in the field. Furthermore, the signal strength of individual satellites can be controlled in realtime to simulate conditions of restricted satellite visibility as can occur in (urban) canyons or forests where accidents are likely to happen.

The GPS and GSM options of the R&S®SMBV100A make it possible for manufacturers of eCall systems to separately test both the functionality of their GPS receivers as well as the functionality of their GSM modules with a single instrument.

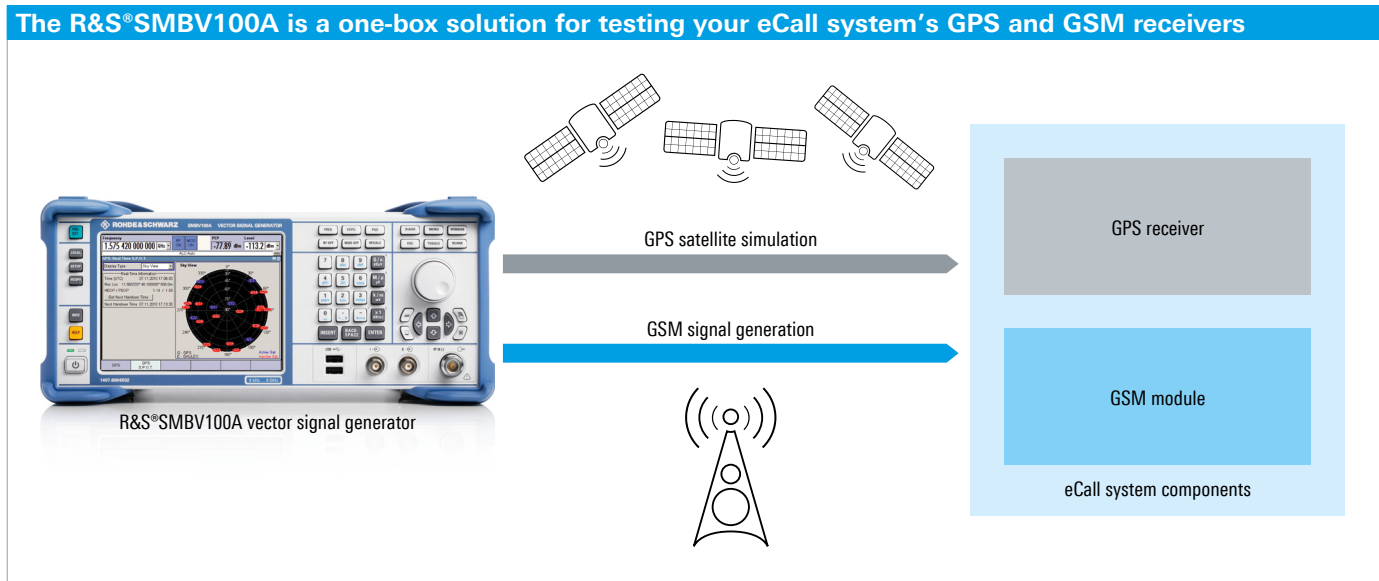
According to the road safety program of the European Commission, all new cars registered in the European Union should be fitted with eCall as standard beginning in 2013. Once eCall is in active service, numerous other vehicle telematic applications are expected to rapidly follow. Many system components required for eCall, e.g. the telematics unit, can also be used for other telematic services such as vehicle and trailer tracking, wireless vehicle communications, commercial route advisories and traffic information, etc. These services may involve other technologies, e.g. WLAN.

Whatever applications arise, the R&S®SMBV100A is a future-ready investment because in addition to GSM signals, the instrument can generate standard-compliant signals for other digital communications standards such as WCDMA, HSPA+, LTE, WLAN and WiMAX™ as well as for radio standards such as FM stereo, XM Radio™, Sirius, HD Radio™, and DAB.

See also:

- www.rohde-schwarz.com/product/SMBV100A
- www.rohde-schwarz.com/technology/GPS
- www.rohde-schwarz.com/technology/GSM

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