R&S®CMU-K90 A-GPS C-Plane inferface option

A-GPS tests for GSM/ WCDMA/CDMA2000® mobile phones

The R&S®CMU-K90 option provides the capability to test A-GPS (Assisted GPS) functionality on GSM/WCDMA/CDMA2000® 1xRTT mobile phones using customer-defined test scenarios or standard-based minimum performance tests.

ROHDE&SCHWARZ

Product Flyer | 01.00

R&S®CMU-K90 A-GPS C-Plane interface option

At a glance

Introduction

The widespread use of GPS-based navigation systems is also having an impact on wireless communications, where position-dependent services are gaining significance. This trend has been reinforced by statutory provisions adopted by national regulatory authorities such as Regulation E911 issued by the US Federal Communications Commission (FCC), which requires the capability to signal the position of a caller who makes an emergency call in a wireless communications network. Position location by GPS receivers has so far relied on navigation data transmitted by GPS satellites. For mobile phones, additional, more precise information (assistance data) is now available via the terrestrial mobile radio network. This information helps mobile phones speed up GPS position location considerably.

Advantage provided by assistance data

Precise GPS navigation data is now available from network operators. This data is acquired by base stations that are constantly monitoring GPS satellites. It can be made available to mobile phones to enable them to locate their position considerably faster. This data helps to significantly reduce the time required for initialization and the time until initial position location by the GPS receiver (time to first fix – TTFF). Position location accuracy is also improved.

Assistance data includes GPS Almanac information, e.g. the current time of day and the satellite constellation. This information enables mobile phones to determine the position even under very poor signal conditions and to return their exact location to the network within seconds. In contrast, mobile phones using unassisted GPS techniques would require up to several minutes to report their location.

Various solutions

Assistance data for enhanced position location can be transmitted from the base station to the mobile phone in two ways: via the signaling protocol (control plane/c-plane transmission) or as a payload via an IP connection (secure user plane/SUPL transmission). According to 3GPP the first method is referred to as assisted GPS (A-GPS), the second one as SUPL. Rohde&Schwarz offers various solutions with multiple test capabilities for both methods.

A-GPS test capability

The R&S®CMU-K90 option is ideal for testing the A-GPS based position location performance of a mobile phone using customer-defined scenarios.

The R&S®CMU-K90 option provides detailed numeric, statistical and graphical analysis of the accuracy of the calculated position, as well as visual representation on a map.

The R&S®CMU-K90 option supports the transmission of assistance data messages for the GSM, WCDMA and CDMA2000® 1xRTT mobile radio standards via the corresponding signaling protocols:

- GSM/GPRS/EGPRS: radio resource location services (LCS) protocol (RRLP) assistance data messages
- WCDMA/HSPA: radio resource control (RRC) assistance data messages
- CDMA2000® 1xRTT: TIA-801 assistance data messages

In addition to customer-defined test scenarios, standard-based minimum performance test cases can be used to determine a mobile phone's position location performance. These test cases mainly serve to verify a mobile phone's capability to locate its position with a defined accuracy within a defined time.

Test setup

The R&S®CMU-K90 option is used in conjunction with the R&S®CMU200 radiocommunications tester (acting as the cellular network emulator) and the R&S®SMU200A vector signal generator (acting as the GPS satellite emulator) to test the A-GPS functionality of GSM, WCDMA and CDMA2000® 1xRTT mobile phones, providing test capabilities that go beyond the scope of the standard-based minimum performance tests.

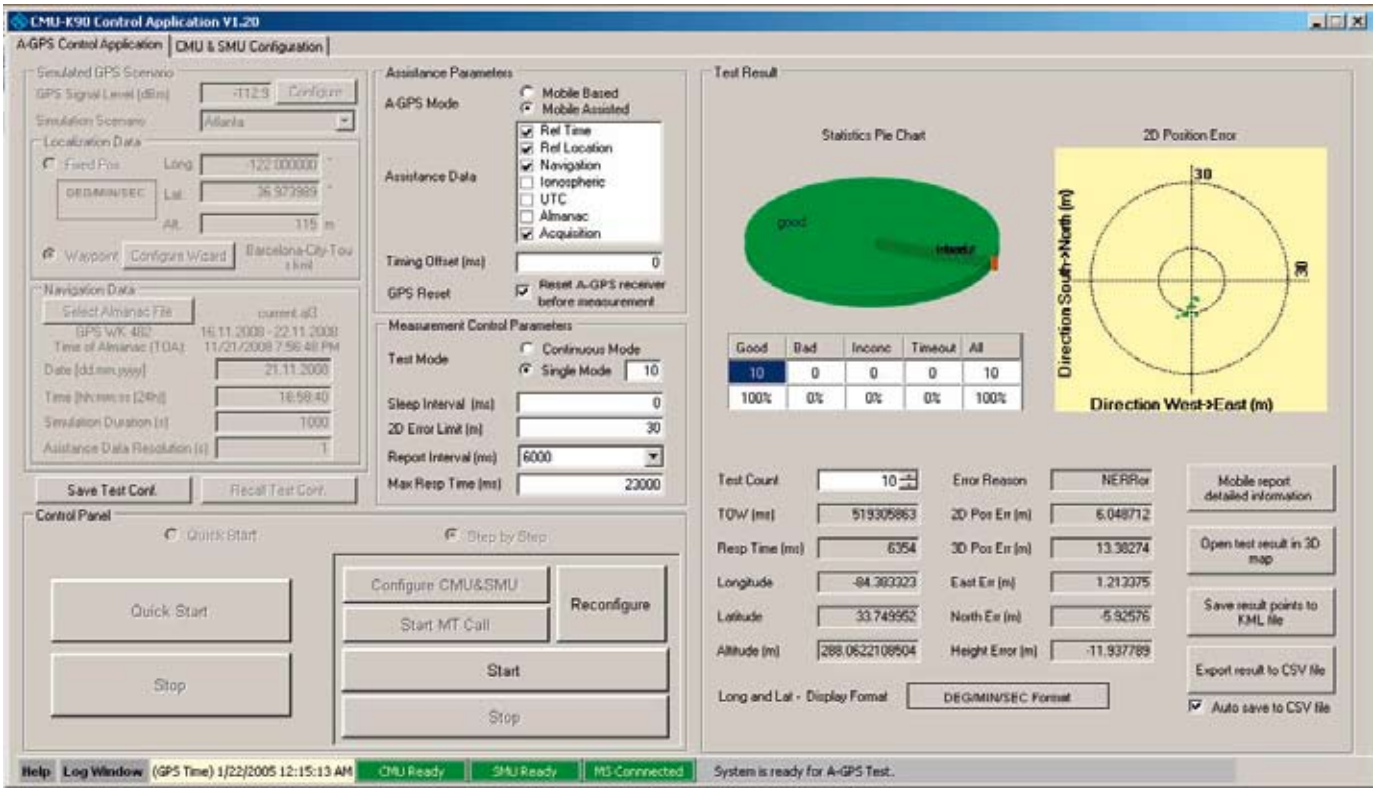
Available assistance data elements:

- Reference time
- Reference location
- Navigation model
- Ionospheric model
- Universal time coordinate
- Almanac
- Acquisition assistance

Analogous to minimum performance test case support

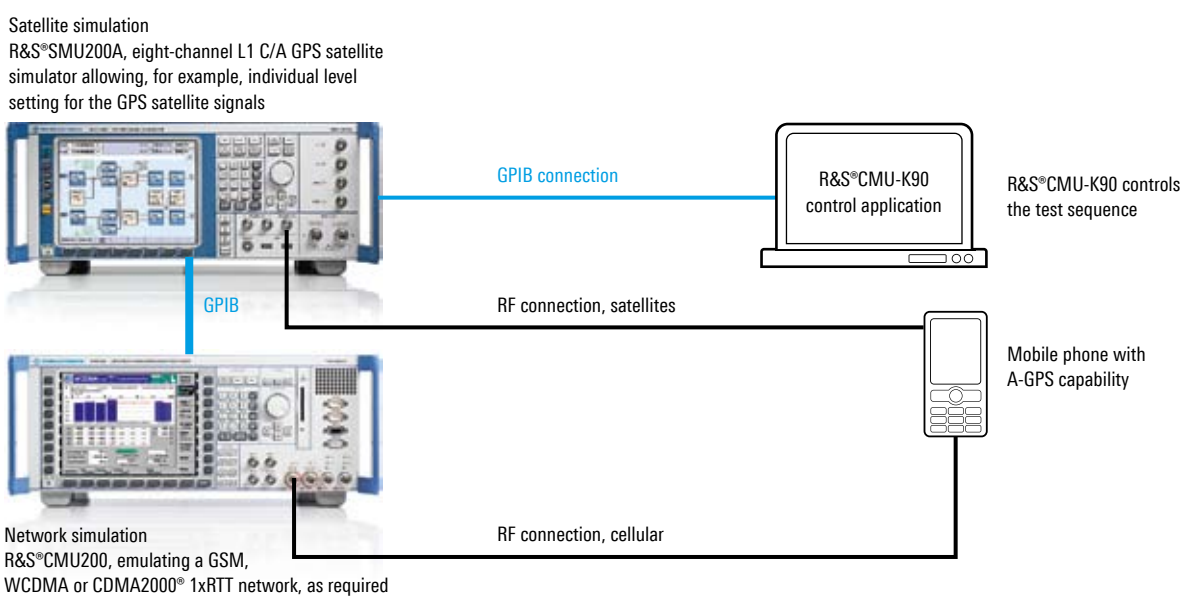
GSM RF minimum performance 3GPP TS 51.010
WCDMA RF minimum performance 3GPP TS 34.171

5.2.1	Sensitivity coarse time assistance
5.3	Nominal accuracy
5.4	Dynamic range
5.5	Multipath performance
5.6	Moving scenario and periodic update performance



The R&S®CMU-K90 control application provides comprehensive functionality for the detailed comparison of GPS position data.

Test system using R&S®CMU-K90



Ordering information

Designation	Type	Order No.
A-GPS C-Plane interface option for 2G/3G/C2k	R&S®CMU-K90	1200.9306.02

Service you can rely on

- Worldwide
- Local and personalized
- Customized and flexible
- Uncompromising quality
- Long-term dependability

About Rohde&Schwarz

Rohde&Schwarz is an independent group of companies specializing in electronics. It is a leading supplier of solutions in the fields of test and measurement, broadcasting, radiomonitoring and radiolocation, as well as secure communications. Established 75 years ago, Rohde&Schwarz has a global presence and a dedicated service network in over 70 countries. Company headquarters are in Munich, Germany.

Environmental commitment

- Energy-efficient products
- Continuous improvement in environmental sustainability
- ISO 14001-certified environmental management system

Certified Quality System
ISO 9001

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