

T&M equipment for OneWeb components

OneWeb wants to use its satellites to make Internet access available in the remotest corners of the world. Rohde & Schwarz provides the necessary test and measurement equipment.



OneWeb is a US company whose mission is to provide fast Internet access to the world's remotest areas via a comprehensive satellite network. The infrastructure is currently being developed. The first of a planned 900 satellites are scheduled to be placed in low-Earth orbit during the course of this year. Renowned companies, including Qualcomm as the chipset supplier, Airbus Defence and Space for satellite development and production, and Hughes Network Systems for the ground stations, are partners in the project. Rohde & Schwarz is the sole T&M manufacturer to provide a package solution for testing the RF components.

OneWeb users will use standard wireless devices that transfer data via terrestrial mobile communications access

points known as OneWeb user terminals. These terminals are linked to the satellites that communicate with the Internet via ground station gateways. It is therefore necessary to simulate and test two paths in two directions: user terminal — satellite, and ground station — satellite.

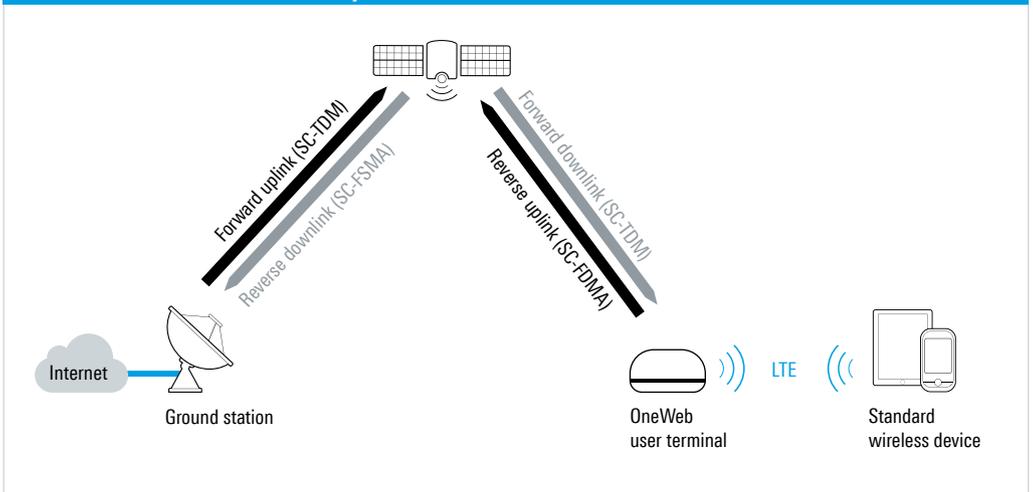
The test signals are generated by the R&S®SMW200A vector signal generator. Two software options support different requirements. The R&S®SMW-K355 option (OneWeb reference signals) contains precalculated, ready-to-use waveforms for physical layer tests on RF components. The R&S®SMW-K130 option (OneWeb user-defined signal generation) provides access to all relevant parameters of the forward and reverse links, e.g. number of subframes, resource block configuration, cell ID and modulation format. All changes to generator settings are immediately applied to the RF output.

Analysis of OneWeb signals is handled by the R&S®FSW signal and spectrum analyzer. Different software options are used depending on whether a forward link or a reverse link is being tested. The reverse link signals are based on a proprietary OneWeb SC-FDMA standard. The R&S®FSW-K201 option can demodulate these signals and analyze all relevant physical layer parameters. The R&S®FSW-K70 vector signal analysis option is sufficient for testing the forward links of both paths. Additional options are available for other measurements, such as R&S®FSW-K18 for characterization of amplifiers, frequency converters and the satellite payload, or R&S®FSW-K17 for group delay measurements.

The OneWeb consortium partners use both instruments with the OneWeb options and recommend them for RF measurements.

Volker Bach

Structure of the OneWeb system



The goal is for OneWeb satellites to provide Internet access even to remote regions.