

SATCOM 2.0

NAVIGATING THE NTN LANDSCAPE

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ROHDE & SCHWARZ

Make ideas real



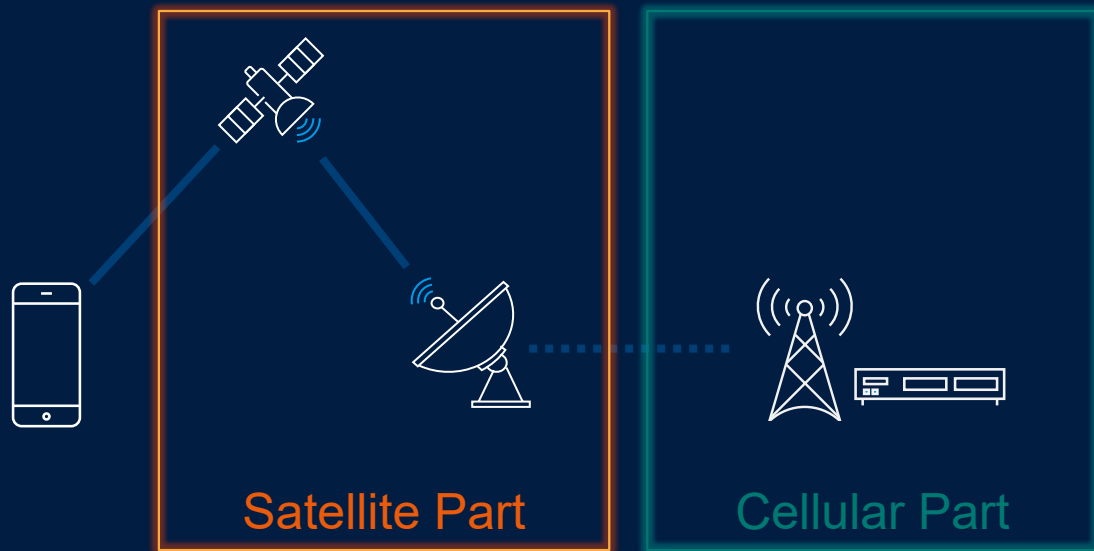
Enabling the future of connectivity

CMX500 for Non Terrestrial Networks

R&S Signaling Solutions



Non-Terrestrial Networks = Combining Satellite & Cellular Networks



Types of NTN Implementation

Proprietary

Different use cases,
mostly low data rate

NB-NTN

3GPP NTN

Low power, low
bandwidth for IoT
applications

NR-NTN

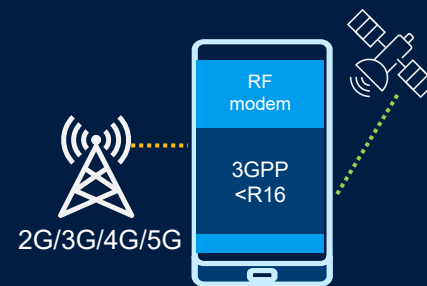
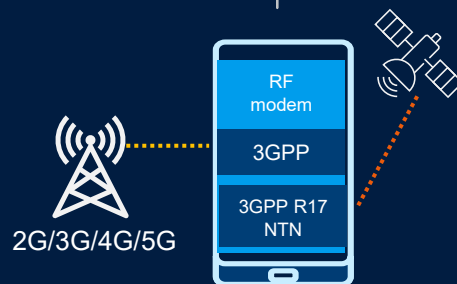
3GPP NTN

High datarates for
advanced users

Direct-to-Cell

Known as:
DTC, D2C, SCS (Supplementary
Coverage from Space)

Provides immediate
connectivity options





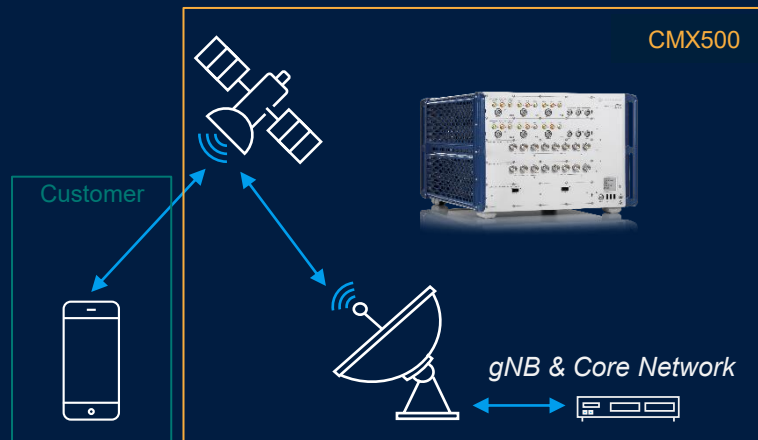
CMX500

NTN Device Testing Solutions

Emulation Side – Two Use Cases

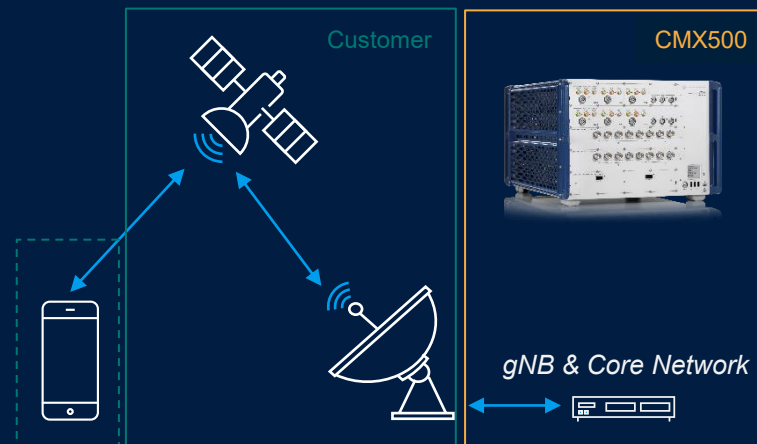
Satellite Access Network

Connect your UE to the CMX500.
Service Link is provided by CMX500.



gNB & Core Network

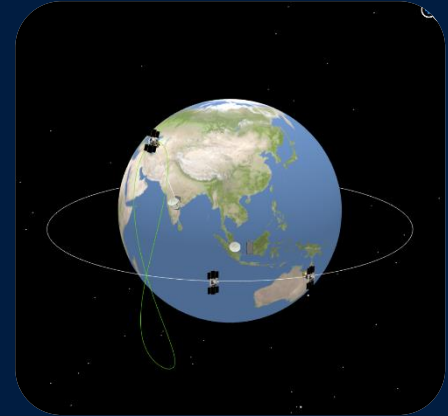
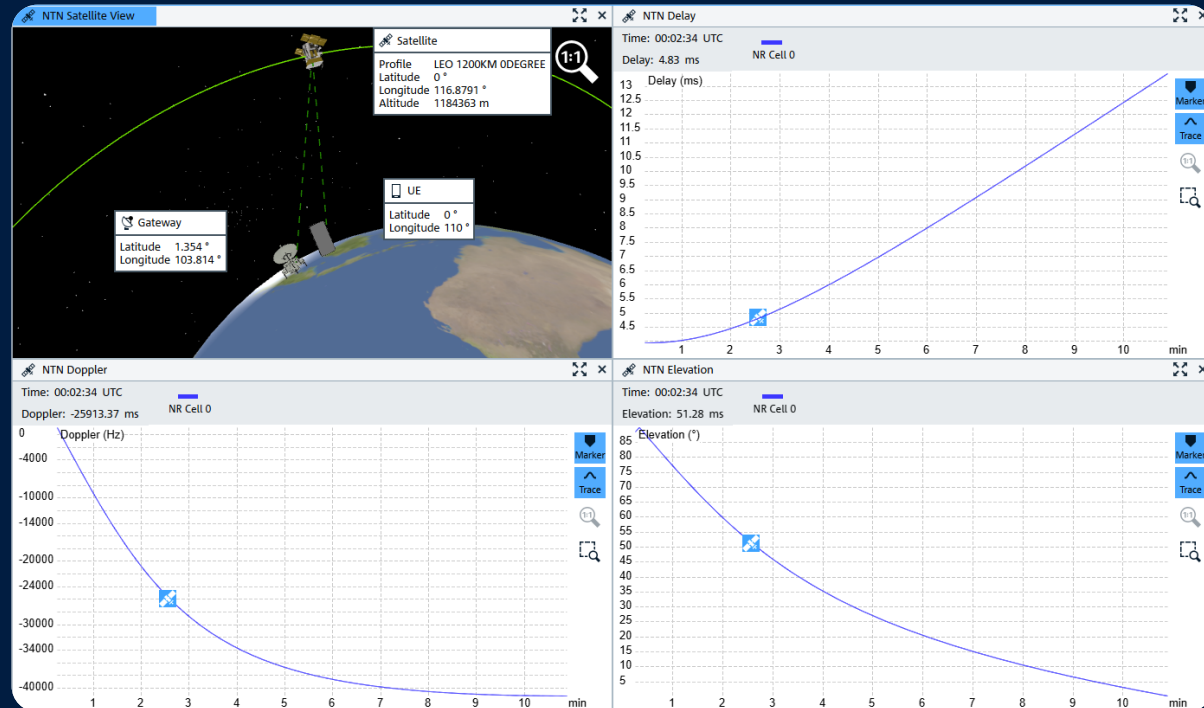
Connect CMX500 to real satellite network gateway.
Service Link is provided by satellite network.

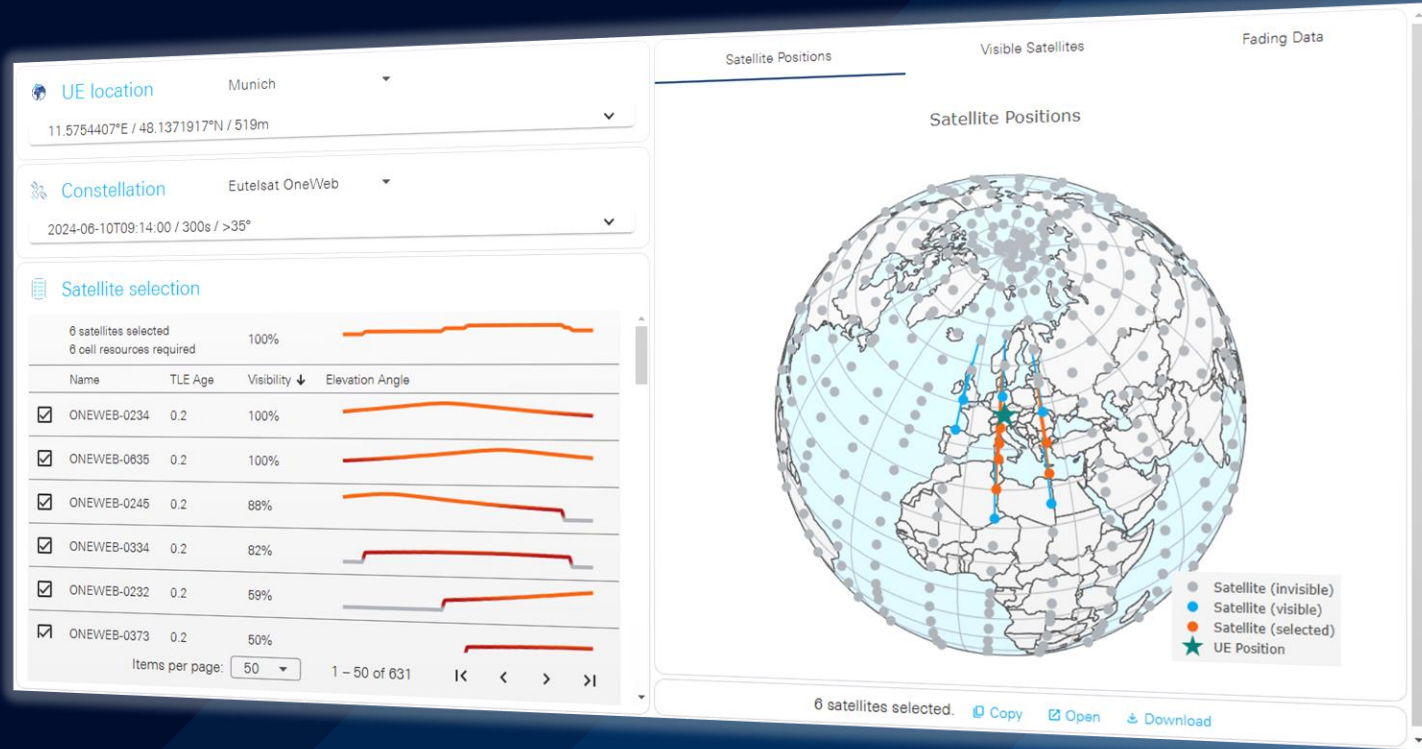


Core Features

- ▶ Support for NR-NTN, NB-NTN & LTE-DTC
- ▶ Multiorbit: LEO, MEO, GEO & GSO
- ▶ Multiband: L-Band, S-Band, Ku-Band & Ka-Band
- ▶ Internal fading & channel emulation
- ▶ Callbox with NTN Workspace (Satellite View, Doppler, Elevation, etc.)
- ▶ Auto-deployment & Auto-handover for long-term Test Scenarios
- ▶ Constellation Insight Tool & integrated TLE Editor
- ▶ Strong Application Testing feature set

NTN Workspace





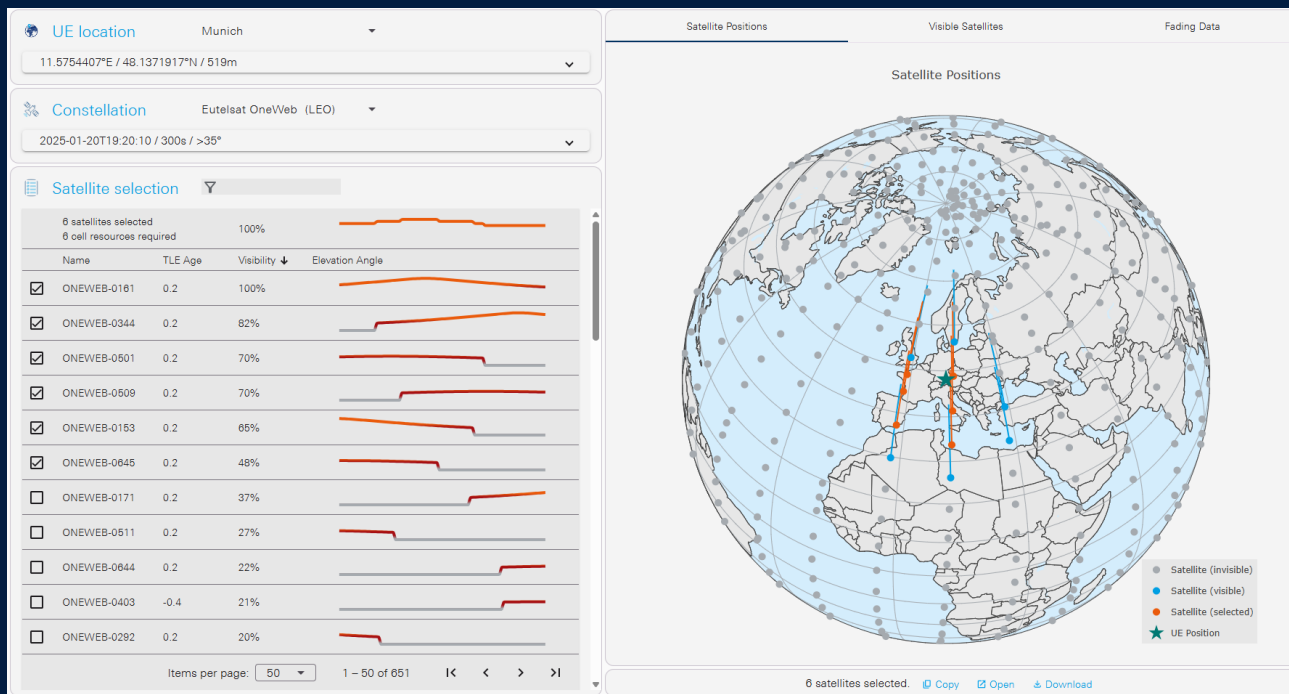
NTN

Constellation Insight Tool

General Overview

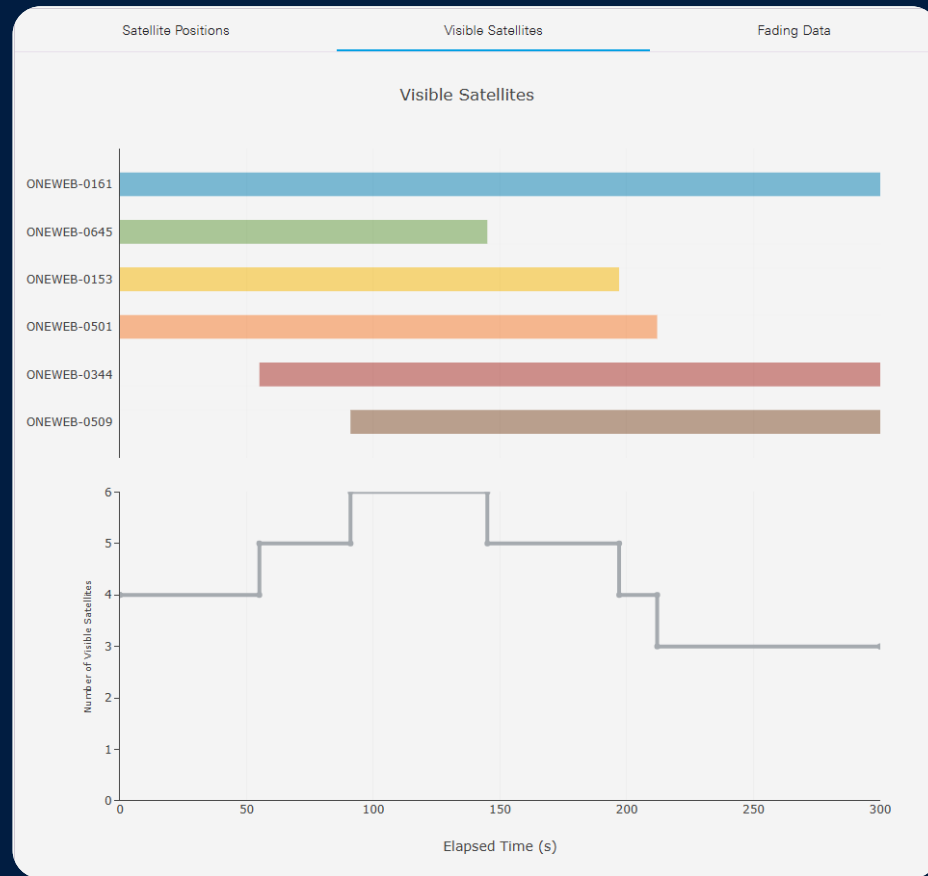
Configuration

Visualization



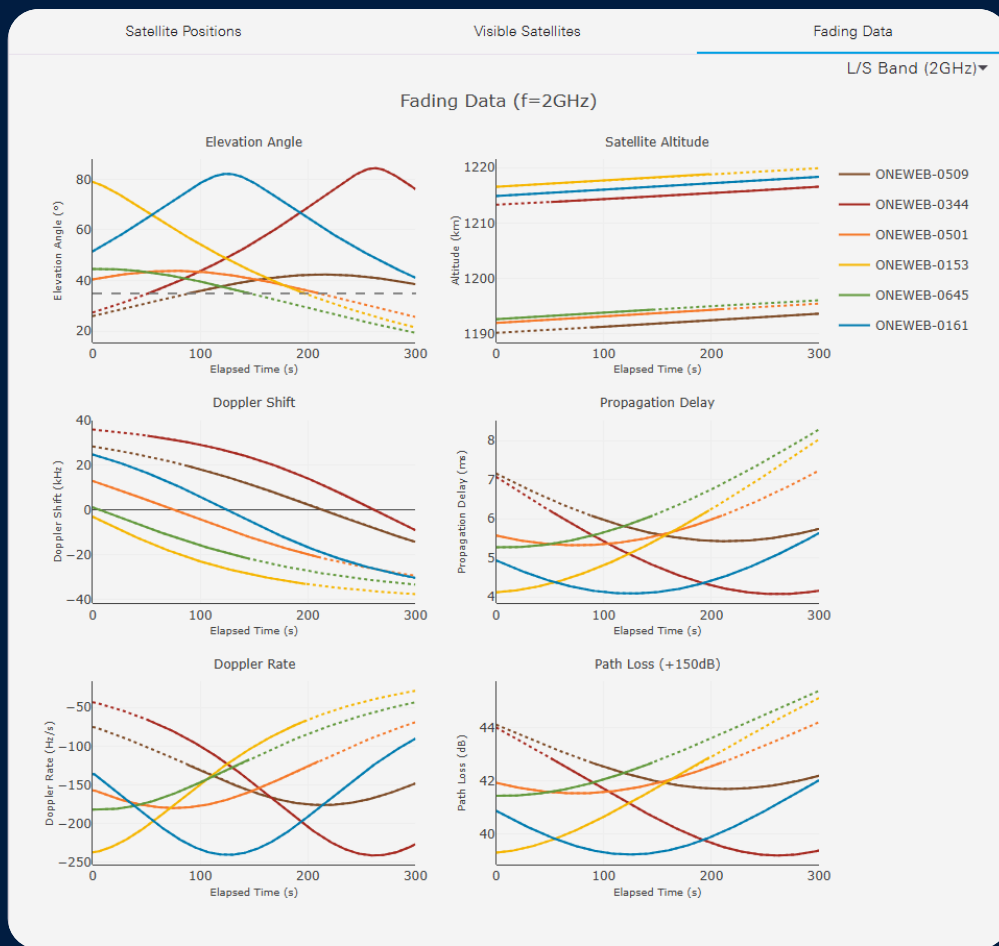
Visible Satellites

Visualizes the visibility of the selected satellites over the defined duration

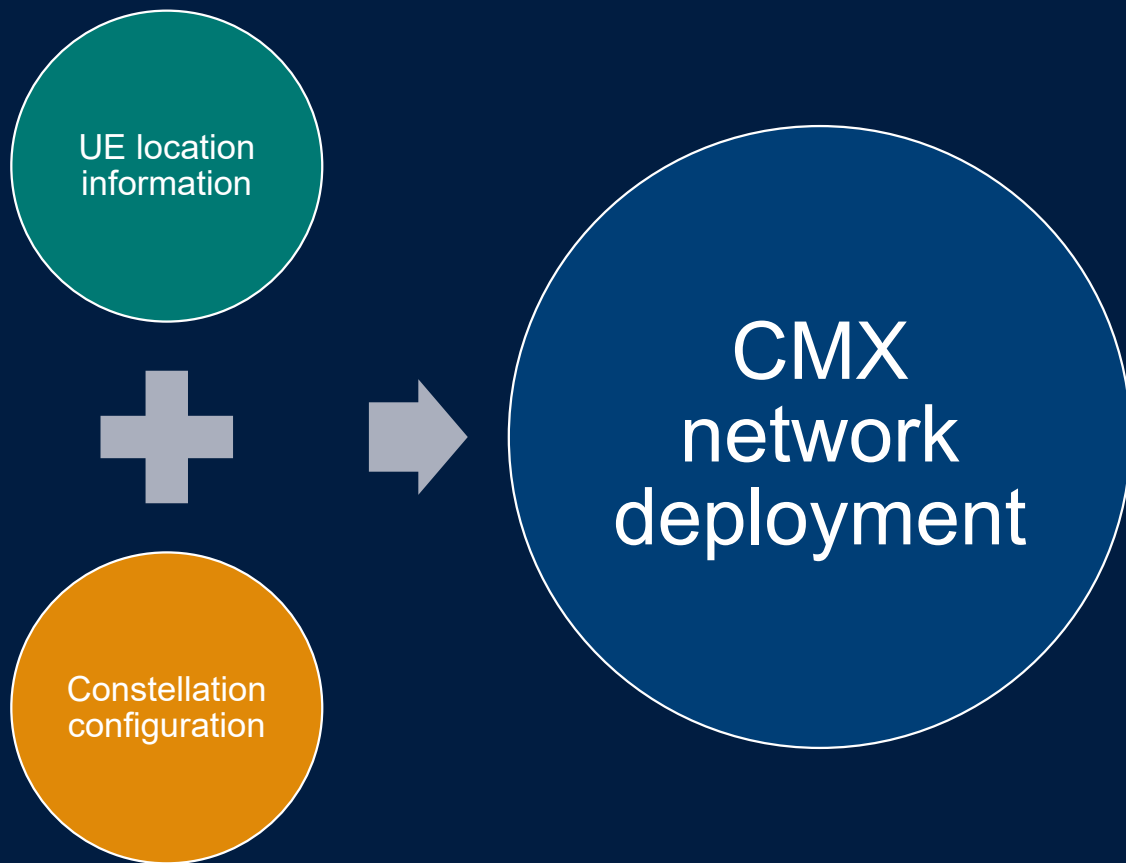


Fading Data

Visualizes the fading data of all selected satellites



Summary



Long-term Test Scenarios: **Auto-deployment & Auto-handover**

Problem

Manually deploying and handing over connections for a large, transient NGSO fleet is inefficient and infeasible for continuous, long-duration testing.

Solution

Auto-deployment & Auto-handover feature of the CMX500 automates bringing satellite cells online and seamlessly transferring connections as satellites move in and out of visibility.

Test Case Packages for Automation

Protocol R&D

(CMX-KF651X)

- BLER measurement
- Cell Handover
- Timing advance measurements
- Emergency Call establishment
- Time-based cell reselection
- ...

LTE-DTC Starlink

(CMX-KF655X)

- LTE attach time and success rate
- Event A3 Handover
- Cell reselection (intra-frequency)
- Frequency tracking error meas
- Recovery after RLF
- ...

Pre-Conformance

(CMX-KC665B)

- UE maximum output power
- Additional Maximum Power Reduction
- Frequency error
- Carrier leakage
- Reference sensitivity
- ...

CMX500 – The Future of NTN Testing



TEST ♦ MEASURE ♦ INNOVATE

 **MOBILE TEST
SUMMIT 2025**
Virtual conference connecting the World

**THANK YOU
VERY MUCH**

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