INRADIOS
integrated radio solutions GmbH

Communication System Monitoring

Remote Signal Analysis Software
CSM Server | CSM Desktop

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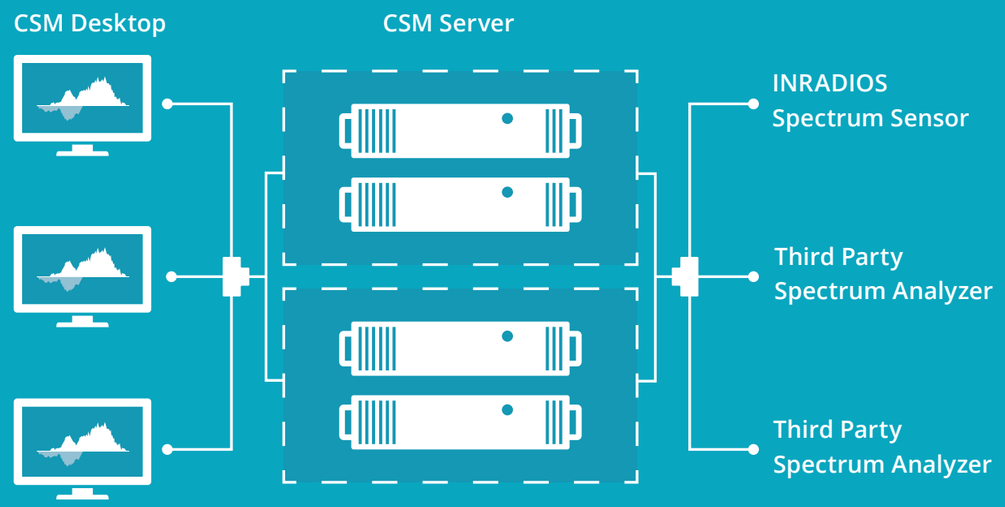
Remote Spectrum Analyzer Topology

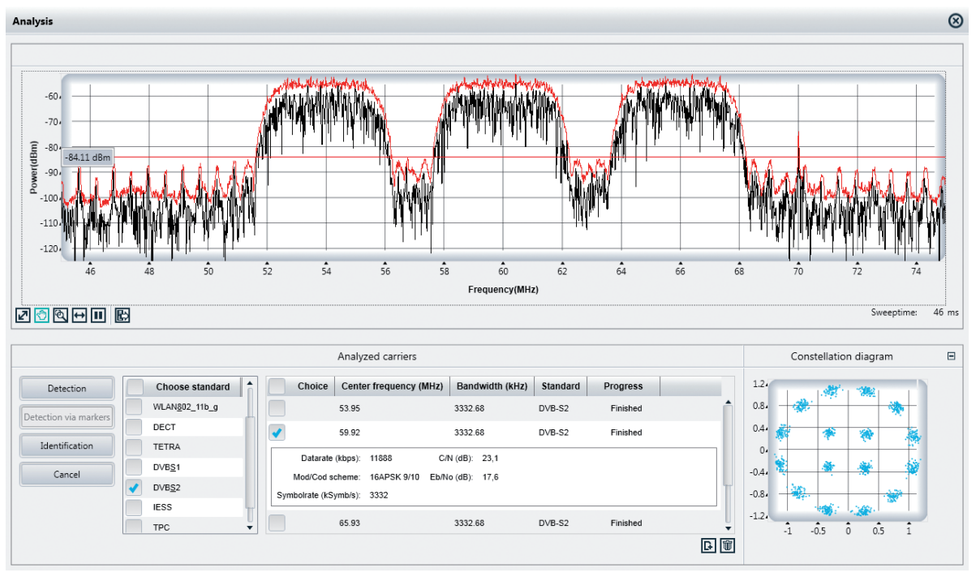


INRADIOS CSM remote spectrum analyzer topology

- TCP/IP software interface for remote spectrum analyzer access
- Spectrum Monitoring up to 6 GHz
- Multi-Channel power measurement and history logging
- Classical software-based spectrum analyzer functions
- Adaptive graphical user interface & tailored special purpose solutions
- Advanced signal detection & identification functions optional
- Both USB and TCP/IP connections allowed
- Simultaneous operation of multiple INRADIOS remote spectrum analyzer devices
- support of third party spectrum analyzers

Satellite Transponder Monitoring

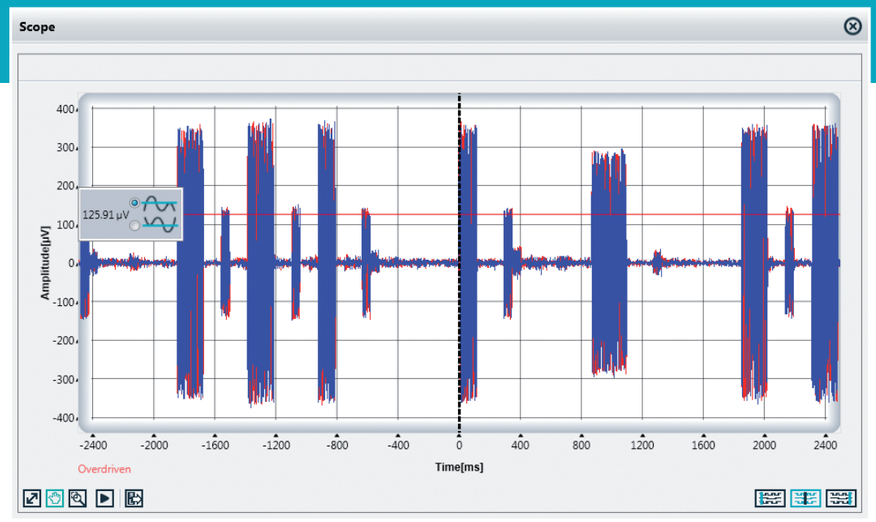
- Autonomous spectrum scanning and carrier identification (DVB-S2, DVB-S, IESS, DVB-RCS etc.)
- Satellite identification through beacon database and beacon detection
- Detection of ASI (adjacent satellite interference)
- Visualization of constellation diagrams per carrier
- Measuring C/N, identification of narrow band jammers (also terrestrial e.g. GSM, DECT)
- Signal detection and identification of proprietary modulation schemes possible on demand



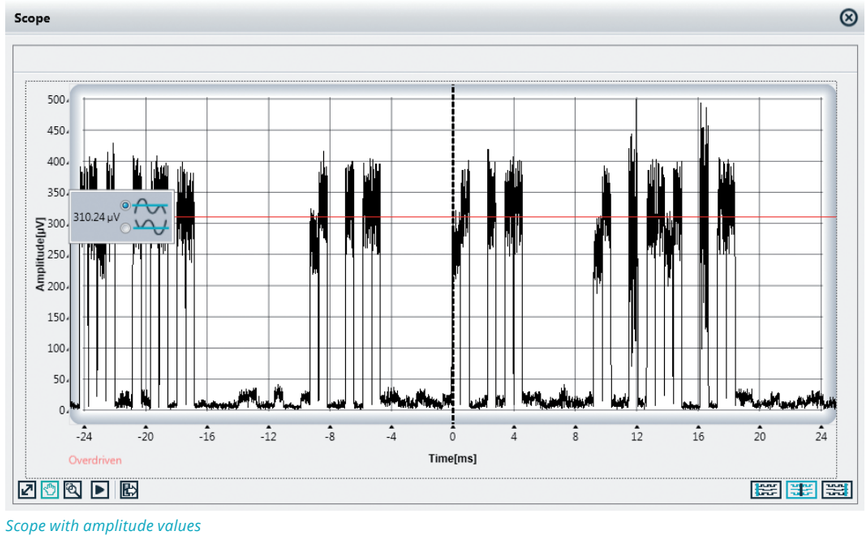
Satellite transponder monitoring

Time Domain Signal Analysis

- User-defined signal analysis via time domain visualization (I/Q, amplitude, log-scale)
- Monitoring via edge-based triggering of a signal amplitude
- Detection of TDMA bursts
- Data snapshot as picture, CSV and XML files
- Signal analysis via proprietary triggers and visualization schemes possible on demand



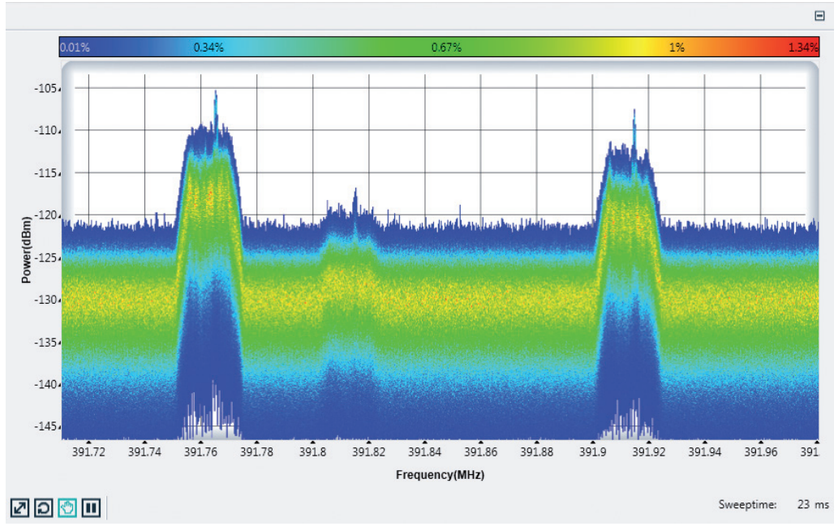
Scope with I/Q values



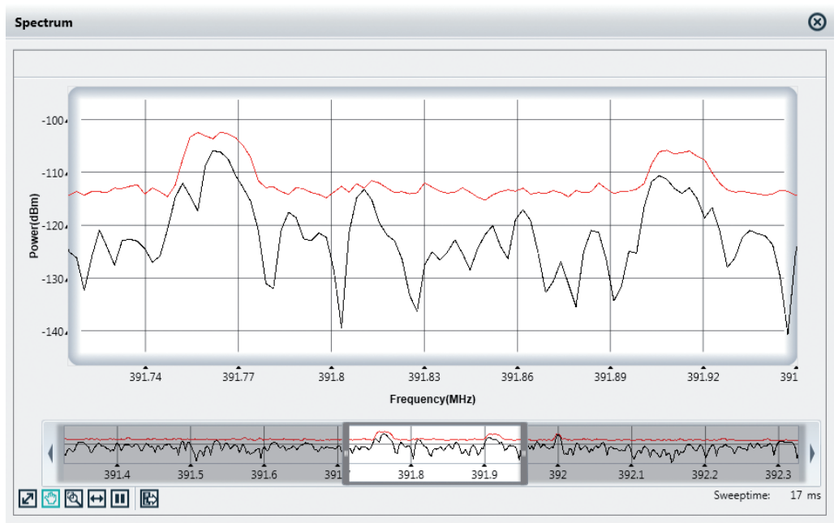
Scope with amplitude values

Spectrum Monitoring and Signal Analysis

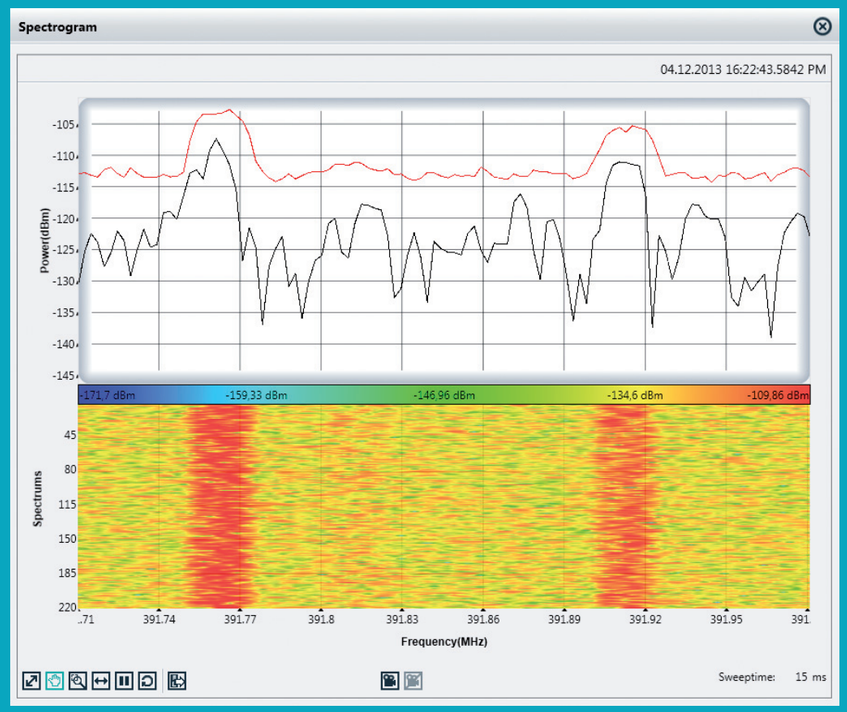
- User-defined signal analysis via frequency domain visualization
- Detection of signals, e.g., signal carriers
- Detection of sporadic spectrum events, e.g., TDMA bursts, frequency hopping, etc.
- Identification of sources of interference
- Data snapshot as picture, CSV and XML files
- Signal analysis via proprietary visualization schemes possible on demand



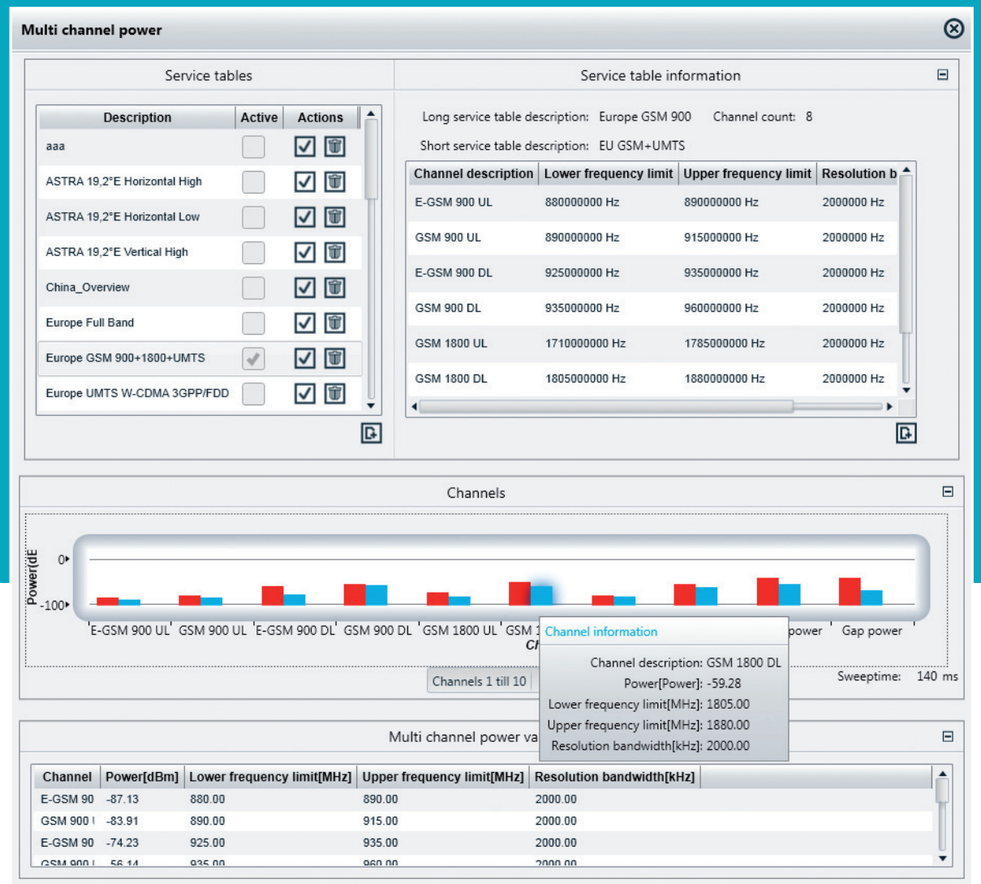
Spectrum density



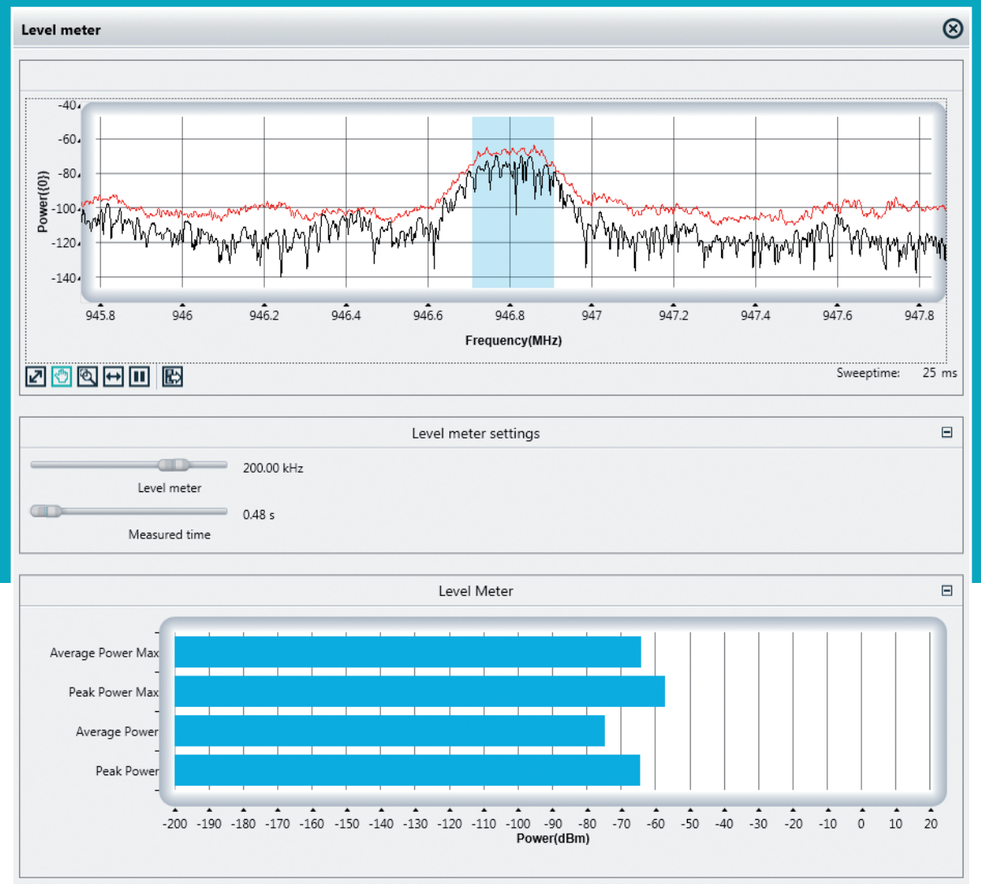
Spectrum zoom



Spectrogram



Power measurement in multiple, user-defined frequency channels



Level meter measurement

Autonomous Multi-Channel Power Measurement

- Channel power measurements based on pre-defined service tables
- Adding and removing of service tables possible
- Channel power visualization via bar chart
- Tool tip shows measurement details of a channel in the bar chart
- Table with all channel power statistics

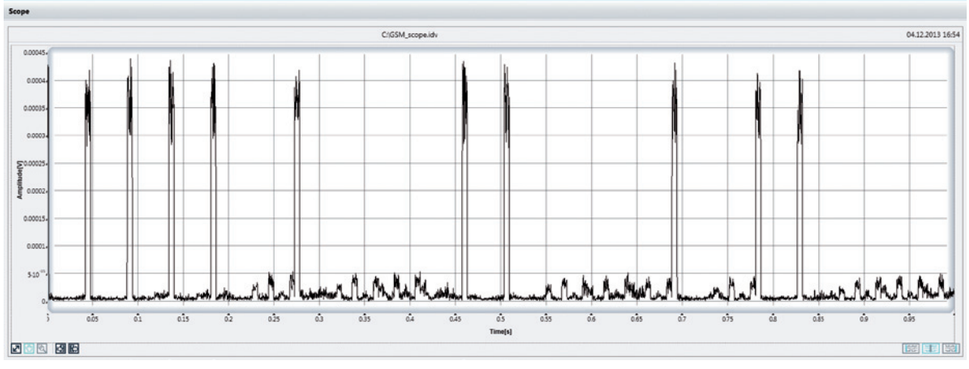
Level Meter Measurement

- Average, peak and max power measurements
- Level meter range from 100 Hz to 2 MHz
- Measurement time from 480 ms to 30 s
- Measurement range highlighted in spectrum
- Instantaneous spectrum visualization

Signal Snapshots for Spectrum and Scope

- record and playback your spectrum and scope measurements of a certain time instant
- Shows the applied measurement settings
- Tabbed view for multiple snapshots

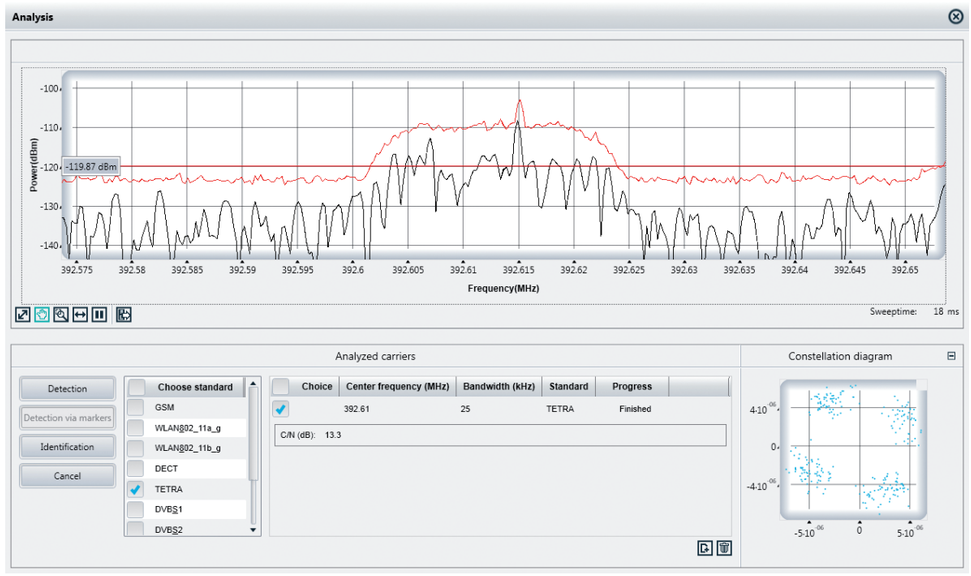
Spectrum snapshot



Scope snapshot

Signal Detection and Analysis

- Automatic detection of signal carriers
- Automatic identification of various satellite, WiFi and cellular standards
- Signal statistics and constellation diagram (see table below)
- Autonomous satellite transponder scanning



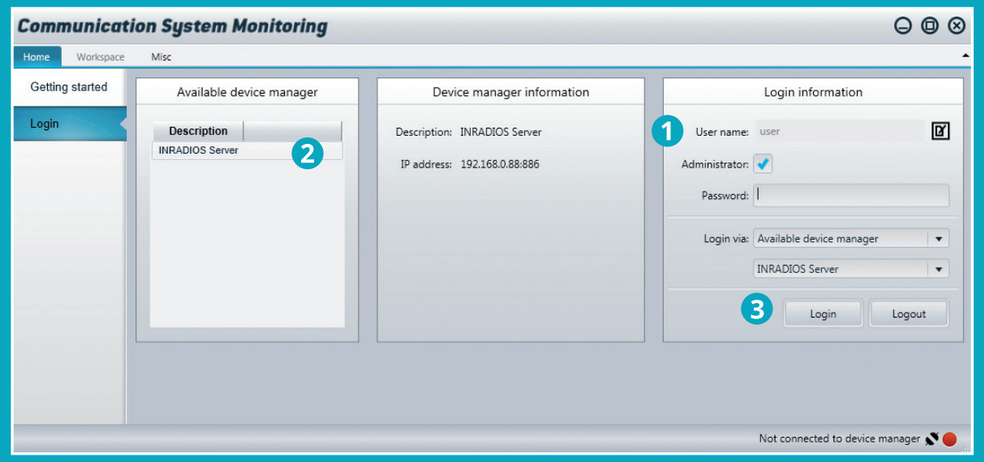
Signal analysis

Standard	Detection	Identification	Signal Bandwith Detection	C/N, Statistics	Constellation Diagramm	Phy-parameters
GSM	●	●	●	●	N/A	●
DECT	●	●	●	●	N/A	●
WLAN 802.11a/g	●	●	●	●	●	●
WLAN 802.11b/g	●	●	●	●	●	●
TETRA	●	●	●	●	●	●
DVB-S1	●	●	●	●	●	●
DVB-S2	●	●	●	●	●	●
IESS	●	●	●	●	●	●
SATCOM TPC	●	●	●	●	●	●

Supported standards for signal analysis

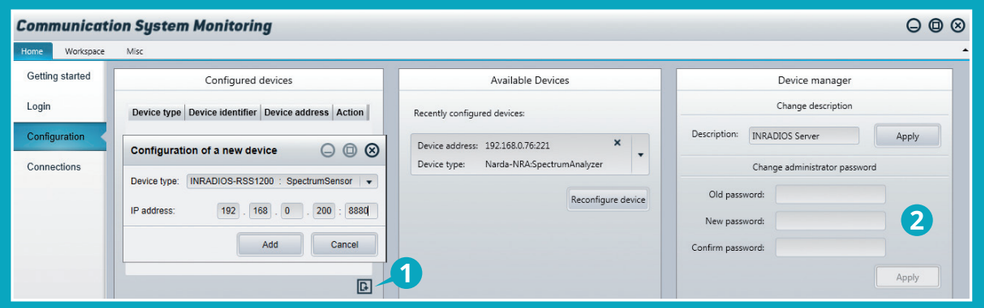
CSM Server Management Interface

A



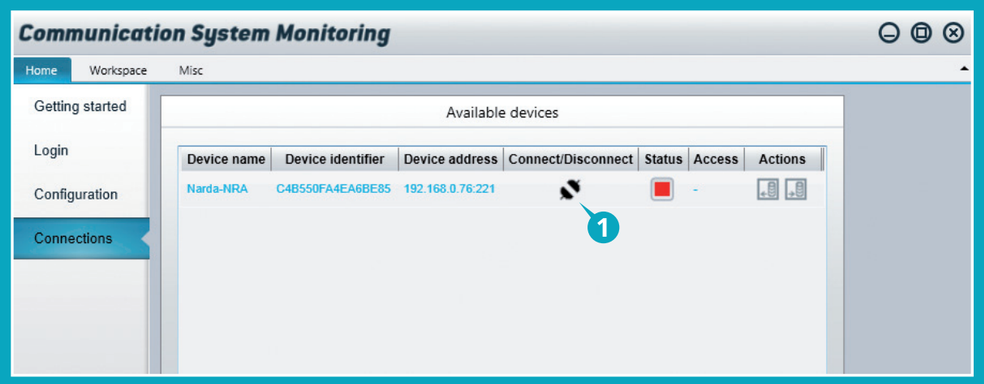
Login to a CSM Server

B



Add a device to the configuration

C



Connect the device

CSM Server Management Interface

A

Start CSM Desktop

1 Select the Administrator field
Insert user name/password

2 Select the CSM Server

3 Login to CSM Server

B

Configure the Device

1 Click on the Add icon
Select the device type
Insert IP address

2 Change Administrator
password (recommended)

C

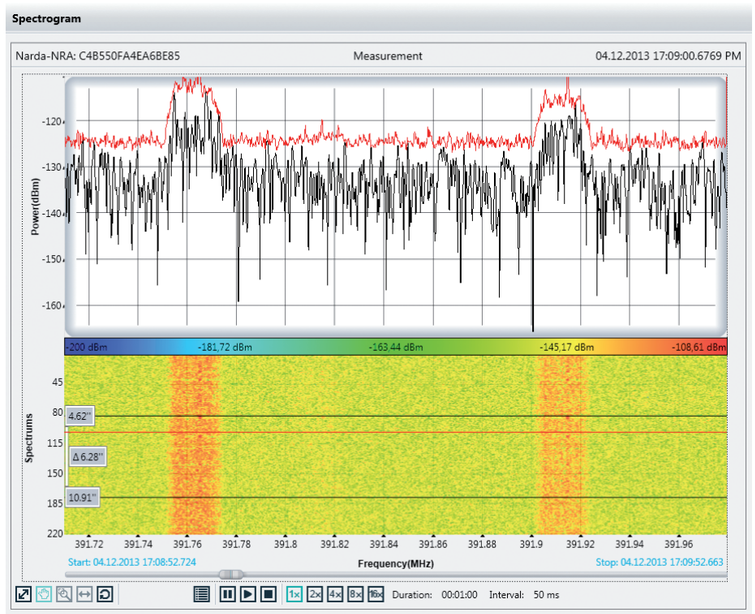
Connection

1 Connect to the Device
Click on the Connect icon

Signal Record and Replay via Spectrogram

- Monitor the power spectral density of continuous spectra over time
- Record a spectrogram measurement
- Measurements database with live-search functionality
- Replay multiple spectrogram measurements

Measurements database



Replay a spectrogram measurement

System Requirements

- PC + Microsoft Windows operating system (Windows 7 or newer)
- Microsoft .Net framework Version 4.5
- 500 MB free disk space
- min. 1 GB RAM, 2 GB RAM recommended
- LAN/WLAN connection
- USB port optional

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