Benefits

- **Multi-site** and **multi-satellite** system based on state of the art SW technology

- **Less investment** through optimal use of resources and existing infrastructure

- **Highly configurable** - will grow with your business expansion

- **Modular design** to meet future requirements

- **Long term operational live** (10 years minimum)
Key Features

- Fast and accurate measurements of
  - Digital Carriers (IDR, DVB-S\(_2\), VSAT...)
  - Analogue FM-TV Carriers
  - TDMA, CW, CW-EDF

- Ka-band monitoring – measurement of transponder signals with up to 250MHz

- Demodulation and decoding of all carriers

- Blind scan through automatic carrier detection

- Hidden carrier detection (interference)

- Cross-polar isolation measurements without interruption of operational services

- Transponder performance measurements (transponder gain transfer curve and operating point)

- Fully integrated geolocation system

- Antenna Pattern Verification

- Automatic path calibration
Multi site architecture

- Central Site MSE
- Enhanced Applications
- SIECAMS Base
- Multi Site Interface

- LAN
- WAN

- Monitoring Site 1
  - Front End Controller
  - Measurement Device
  - Monitoring Site 1 RF

- Monitoring Site 2
  - Front End Controller
  - Measurement Device
  - Monitoring Site 2 RF

- Monitoring Site n
  - Front End Controller
  - Measurement Device
  - Monitoring Site n RF

- Client application

independent measurement at any site in a multi site architecture
The SIECAMS BOX combines the entire SIECAMS monitoring software with a powerful DSP monitoring device on one single rack mount server.
The main status window provides access to the configuration explorer, the different measurement modes as well as to the reports. It also gives an overview of the alarms and the status of all measurement sites.
Basically, the real time carrier mode permits to define the most important settings of a monitoring device, visualize the spectrum of the signal received by that device and store/retrieve the displayed spectra.
This mode is specifically designed to assist the operator during line-up activities. It provides continuous scanning of the portion of a transponder that hosts the carrier to be up-linked (lined up). It provides visualization of the co- and cross-polar spectra and measurement of the associated polarization isolation.
The Selected Carrier Mode, can be used to continuously monitor a user defined group of carriers/beacons. The selected carriers/beacons are measured in a round robin cycle according to configurable scheduling options. After the operator has activated the measurement cycle, a list showing the measurement results in real time will be displayed.
In contrast to the Selected Carrier Mode functionality, the selected carriers are automatically demodulated and decoded. Furthermore, this measurement mode provides accurate isolation measurements between co- and cross-polarization signal.
In this mode, the system executes a one-shot scanning of a transponder / transponder portion selected by the user including spurious signal detection.
Hidden Carrier Detection

- Three graphs showing the frequency spectra and carrier detection
- Each graph displays the frequency range from 1115 to 1162 MHz
- The graphs illustrate the detection of hidden carriers with peaks at various frequencies
SIECAMS is the only system able to perform demodulation measurements of transponder signals with an instantaneous bandwidth of up to 250MHz.

The **Key Benefits** of the Wideband DSP System for the customer are:

- **250MHz** instantaneous bandwidth means monitoring of ka-band transponders in one snapshot. No need to concatenate several measurements.
- Detection and classification of carriers with an occupied bandwidth of up to 250MHz
- All the SIECAMS DSP functionalities like blind scanning or hidden carrier analysis can be applied.
- Highly scalable and flexible – measurement devices can be easily added to increase the performance of the system -> reduces round robin measurement time of satellite traffic
- Cost effective – compared to DSP devices from R&S or Agilent, the SIECAMS BOX provides a fully integrated cost effective monitoring solution.
SIECAMS

Transponder Performance Measurement

- Passive gain transfer curve measurement (no interruption of operational services, non intrusive)
- Provides AM/AM and AM/PM curve
- Displays operating and saturation point
- IBO / OBO measurement
- 1 dB compression point measurement
SIECAMS – the Siemens Carrier Monitoring System has a built-in geo-location system ILS - Interference Localization System

Benefits
- Start localization of a detected interferer by simply clicking the „ILS“ button
- Automatic transfer of all relevant data from CMS to ILS -> Simplifies significantly the ILS configuration
- Automatic selection of the best suitable adjacent satellite
- Automatic selection of the best suitable reference carriers
- Automatic selection of the best measurement settings for interferers and reference carriers
- Correcting position error introduced by wrong ephemeris data
Interference localization system

ILS Functional Block Diagram

Main Satellite experiencing Interference

Second (Adjacent) Satellite

Unknown Transmitter station

Receiving Antennas

Signal Acquisition units

DSP

Signal processing

Siecams CMS

Geolocation processing

Siecams ILS

Flight Dynamics

Common database for CMS and ILS
Interference localization system ILS
Map display

- FDOA line
- TDOA line
- Error ellipse
- Uplink stations stored in the CMS database
- Calculated position of interferers transmit station

SIECAMS
Antenna verification provides for a range of tests of any antenna to ensure its conformance with specified antenna standards.
SIECAMS is already installed at some major satellite operators, like Eutelsat and Intelsat. But SIECAMS is not only for interest for large satellite operators but due to its scalability also for small satellite and telecom operators.