



IOT Systems, LLC

Communications Satellite Monitoring (CSM) System

By continuously monitoring satellite spectra—unattended and based on user settable criteria—the IOTS communications satellite monitoring (CSM) system alerts satellite operators of any system degradation. This solution enables satellite operators to maintain a high quality of service by:

- Planning resource allocations
- Identifying frequency plan violations and anomalies
- Detecting interfering signals

Our CSM system accomplishes this by conducting spectrum monitoring and measuring carrier power, frequency and bandwidth. Automated frequency planning and transponder usage analysis are straightforward because the CSM system is compatible with COMPLAN. The CSM generates a frequency plan or mask from either a carrier impairments analysis or from direct measurements of the transponder.



IOTS' configurable CSM system:

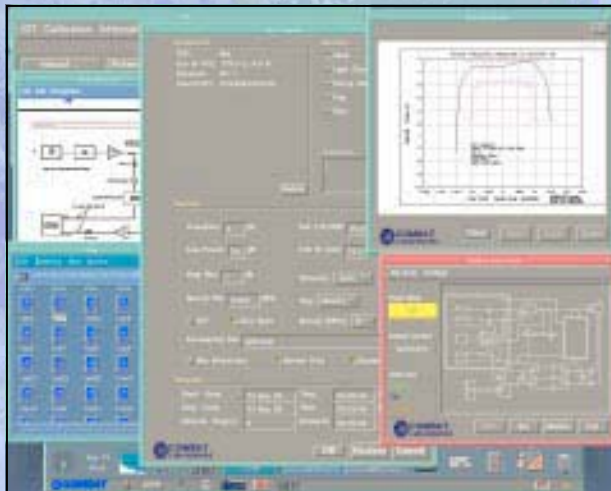
- Operates in a standalone mode
- Integrates as a measurement and processing network node in a larger system
- Expands functionality of the IOTS standard in-orbit test (IOT) system
- In its portable configuration, works as a temporary remote monitoring site installation.

To further enhance operational and budgetary flexibility, IOTS configures the CSM system to perform monitoring measurements using either lower cost analog or higher performance DSP-based spectrum analysis measurement instruments.

Our CSM solution is grounded in our more than 30 years of experience providing automated IOT and CSM equipment to INTELSAT, EUTELSAT, Hughes, Loral, GTE, SBS, and NASA. To perform calibrated measurements, the CSM system employs the same calibration techniques and methods that our IOT system uses to achieve its high-accuracy requirements for in-orbit testing.

With the CSM system's graphical user interface (GUI), users readily:

- Configure a spectrum analyzer to display received satellite signal spectra
- Run measurements in foreground or background mode
- Generate reports
- Produce statistical data
- Set alarm thresholds for each carrier



Satellite Monitoring

Contact Us:
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IOT Systems, LLC is a complete satellite services company continuing the mission begun over 40 years ago with the launch of Early Bird: fostering the growth of the commercial communications satellite industry.



IOT Systems, LLC[®]

Satellite Monitoring

IOTS CUSTOMER SERVICES

- Consulting and technical support
- Customer-specific engineering, development, and training

CSM SYSTEM FUNCTIONS

- Real-time spectrum analysis
- Automated monitoring of signal quality
- Frequency plan compliance
- Anomaly investigation
- User-initiated measurements

CARRIER TYPES SUPPORTED

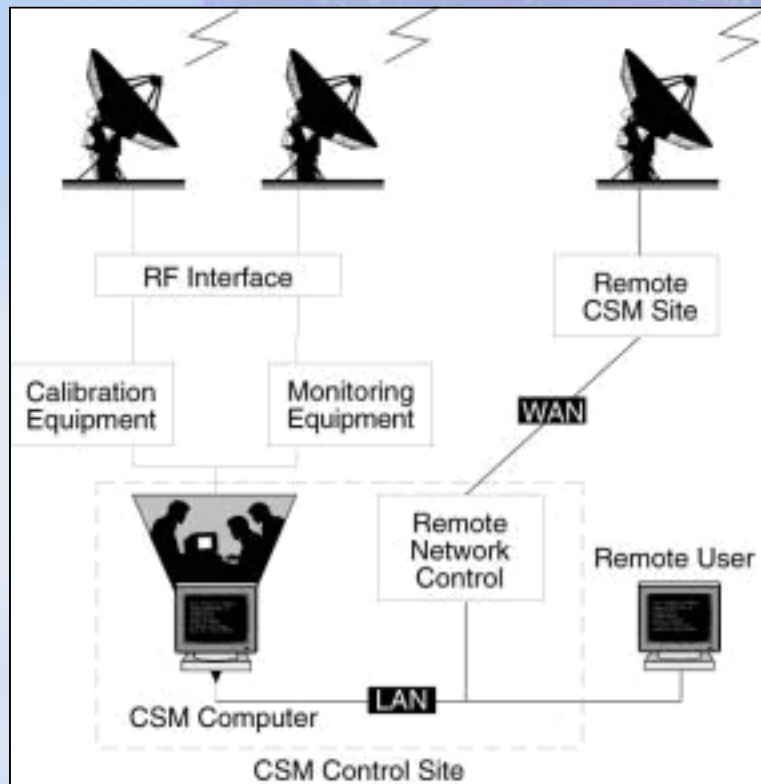
- Continuous
 - Digital data signals
 - Digital TV signals
 - Analog TV signals
- Single-channel-per-carrier (SCPC)
- CW

CSM STANDARD MEASUREMENTS

- Real-time Spectrum Analysis
- EIRP and EIRP stability
- (C+N/N), C/N, C/N₀ ratios
- E_b/N₀ ratio (digital carriers)
- Occupied bandwidth
- Center frequency
- Spurious signals
- Power spectral density (PSD)
- Loading estimate
- Telemetry EIRP and frequency
- Telemetry cross-polarization isolation
- Payload monitoring
- Calibration measurements

IOTS' CSM SYSTEM FEATURES

- Integration with IOTS Standard IOT System enables seamless measurements
- UHF to Ka-band coverage
- Circular and linear polarizations
- Unattended background operation supports cost-effective satellite management
- Relational database
- Transponder use reports provide real-time accuracy
- Interactive data analysis and plotting enables creative data analysis in order to focus on unique requirements
- Graphic mimic panel provides mouse-enabled switch control
- Remote control via LANs and WANs integrates system into networked architecture
- Multiple-site measurements
- Compatible with COMPLAN



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