

Earth Station IOT Services

IOT Systems, LLC



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How much consideration have you given to the in-orbit testing of your new satellite? How well did it survive the launch? What is its real in-orbit capacity? IOT Systems can provide the answers cost-effectively with its new state-of-the-art in-orbit test (IOT) system and services.

The IOT Systems' in-orbit test solution relieves the new satellite owner/operator of the specialized need for a large capital expenditure and staff for a once-per-satellite IOT requirement, or the alternative of having to rely on (and pay) the satellite manufacturer for performance verification. The IOT Systems in-orbit test solution utilizes an IOT system recognized as the best and supported by the COMSAT Laboratories team that has been building IOT systems and providing IOT services to certify performance for 40 years.

Here is why satellite owners turn to IOT Systems for in-orbit test systems and services:

Independence

IOT Systems, as an independent organization, can provide requested measurements with the highest accuracy available. In the event of discrepancies in the in-orbit performance of the satellite, the customer and the contractor will have contrasting contractual interests in resolving out-of-specification conditions. IOT Systems can be expected to be completely unbiased in determining the measurements and presentation of the data to the customer.

Cost-Effectiveness

The cost of a full-capability IOT system, and the costs of maintaining it, are difficult to justify unless the user has a large number of satellites. The complete testing of a spacecraft is usually performed only once after launch and before traffic is initiated. Thereafter, only occasional tests are conducted on an as-required basis. An IOT capability typically requires a large capital investment, plus ongoing training of personnel, and upgrades as new measurement techniques and instrumentation are developed. The expense of keeping engineers current in the latest measurement techniques and procedures is not justified for a few tests a year. It is more economical to use a fully functioning state-of-the-art IOT system with IOT system professionals performing tests over a large number of satellites, than to use a single-purpose system that may be obsolete after a few years.

State-of-the-Art Technology

IOT Systems through our COMSAT heritage has been developing IOT systems and conducting research in new measurement techniques since the first commercial communications satellites. This research has provided some of the most efficient and sophisticated measurement techniques in the industry. IOT Systems is continually implementing new, more efficient, and improved measurement techniques, which are available to all of its IOT customers.

Ease of Use and Availability

The continual calibration and maintenance of an IOT facility to make it available for a test at any time is difficult and usually requires a dedicated facility. Single-purpose IOT systems usually rely on antennas that are used for other functions and are difficult to take out of service for extended periods of time. The IOT Systems in-orbit test system is a dedicated system that is in continual calibration. An arrangement can be made with IOT Systems at the time of initial testing for a quick, accurate follow-on measurement of a satellite transponder, should the need arise. It is essential to know that the capability can be immediately available with only a phone call. We will perform complete IOT services or assist customers in performing an IOT with our equipment at either our, or the customer's, earth station.

Quicker Launch-to-Revenue Service

Most organizations starting new satellite systems allow a month or more for IOT before placing the spacecraft in revenue-producing service. The IOT Systems in-orbit test system, personnel, and test plans ensure that tests are performed efficiently so that revenue-producing service can begin sooner.

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.

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Measurements

- Spacecraft (S/C) effective isotropic radiated power (EIRP)
- S/C EIRP stability
- S/C input power flux density (i.p.f.d.)
- S/C i.p.f.d. stability
- TWTA saturation point
- In-band frequency response and stability
- Out-of-band frequency response and stability
- Fast sweep frequency response
- S/C receive antenna patterns
- S/C transmit antenna patterns
- Rx antenna cross-polarization isolation pattern
- Tx antenna cross-polarization isolation pattern
- S/C frequency conversion error
- S/C frequency conversion error stability
- Gain Transfer
- Gain-to-noise temperature ratio (G/T)
- Gain-to-noise temperature stability
- Gain adjustment (S/C attenuators)
- Spurious output
- Beacon EIRP
- Beacon EIRP stability
- Beacon frequency
- Beacon frequency stability
- Beacon cross-polarization isolation
- Spectrum analyzer monitoring
- Group delay and group delay stability
- Doppler shift
- Third-order intermodulation (C/I₃)
- Overall cross-polarization isolation



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