

# LP TECHNOLOGIES ASM



*Spectrum Monitoring  
Made Easy*





### Who we are

LP Technologies (LPT) is an American company based in Wichita, Kansas, close to the geographical center of the United States. We are the industry leader in affordable spectrum analyzers and effective carrier monitoring - interference detection systems. Since the beginning, LP Technologies has been a pioneer of multi-port remote-controlled spectrum analyzers, and we are proud to set the pace of innovation for satellite communication. We combine the latest signal processing technology, our customers' input, common sense, and our two decade industry experience to make revolutionary products. We are innovators; we understand the market, our customers, and their respective applications, and we make complicated things easy.

For over 20 years radio, television, wireless, manufactures, and satellite companies have relied on LP Technologies' spectrum analyzers to never miss a trace. All our customers agree that LPT offers the best products for the right price, and that our customer support is second to none. We create long-term partnerships, instead of customers. So as our partners' applications become more complex so become our solutions.

### LP Technologies innovates

Not long ago a spectrum analyzer was the RF/Satellite engineer's most valued possession. Spectrum analyzers were big, complex, expensive machines, yet they were Majestic; an almost mythical instrument that only a small number of companies could procure and an even smaller number of engineers had access to. In 1997 LP Technologies introduced the LPT-1750; the first COMPACT, LOW COST, REMOTE-CAPABLE spectrum analyzer that was available to all. Since the LPT-1250 we have introduced several ground breaking spectrum analyzers: LPT-2250, LPT-3000, LPT-6000, LPT-3000R Remote with 4 ports, and most recently the LPT-3000R Remote with 16 ports. The rack-mounted 2 RU 9 KHz – 3 GHz LPT-3000R-16 is an All-in-one spectrum analyzer:



Micky Mukalay  
Sr. Director of Business Development

### Spotlight on LPT-3000R-16

- High Quality Rack Mounted Spectrum Analyzer;
- 16 Ports RF Switch;
- Real-time Trouble Shooting Tool; and
- Live Polling Spectrum Monitoring System.

To Integrate the LPT-3000R-16 into your operations all you need is power, an IP address, a computing device, and software!

For more information about LPT-3000R-16 or any of our other spectrum analyzers visit [www.lptech.com](http://www.lptech.com)

### LP Technologies makes spectrum monitoring easy

In the past we de-mystified spectrum analyzers and now we are re-inventing spectrum monitoring.

In 2015 LP Technologies' Automatic Spectrum Monitoring System (ASM) helped resolve a cross-polarization interference mitigation issue that had been going on for a number of years between two satellite industry leaders. As a direct result of ASM's interference detection capabilities and massive database, our customer was able to provide solid data to prove the issue was the responsibility of the service provider. Subsequently, the offending customer was notified, the issue addressed, and our customer was relocated to a different transponder. What is ironic about the situation is that for many years both the companies were using one of the most popular SMS on the market but couldn't resolve the interference issue; once LPT-ASM was brought in the issue was resolved within weeks.

LPT-ASM is a Cost-effective, Scalable, User-Friendly, OS agnostic interference detection and signal monitoring tool that is quickly becoming the spectrum monitoring system of choice for the satellite industry. When paired with the LPT-3000R-16 remote analyzer the LPT-ASM becomes the ultimate spectrum monitoring solution capable of monitoring over 600 carriers on one screen!

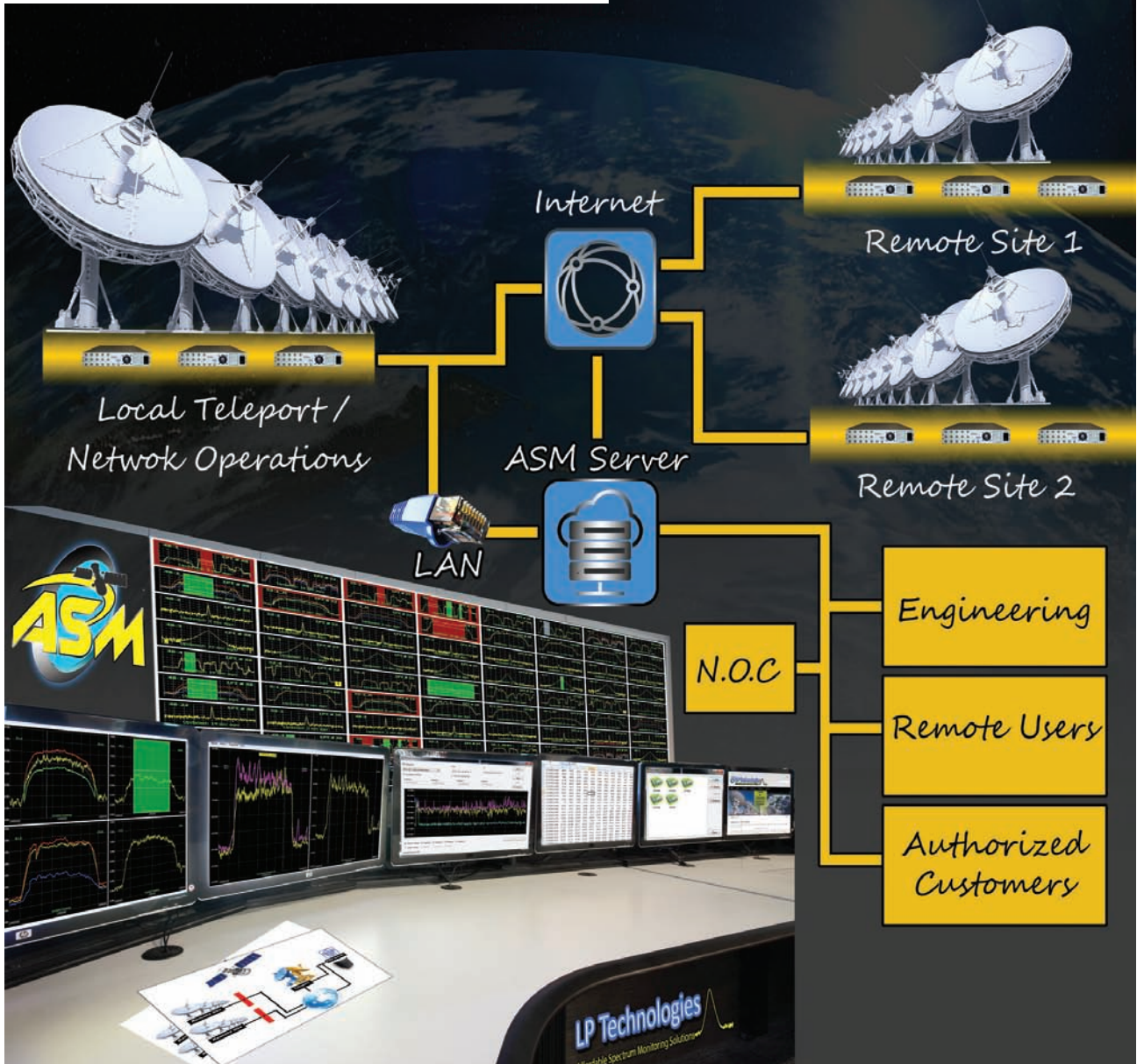


LPT-ASM Structure ●●●



LPT-ASM Specifications

- OS Agnostic
- Open Source MYSQL
- 20+ simultaneous users
- Minimal bandwidth requirement
- Unlimited data archiving
- Monitor 600+ traces at once
- Fastest refresh rate
- Multiple monitor types
- Sends emails/SNMP traps when alarms trigger



## Satellite Spectrum Monitoring using the LPT-ASM: a case study

### Summary

The LPT Automatic Spectrum Monitoring system (LPT-ASM) was recently deployed to monitor and record satellite communications for a US Government customer. Remote spectrum analyzers were deployed at several US military bases and commercial teleports, overseas and in the United States. These communicate to a server at the customer's Network Operations Center (NOC). The LPT ASM displays real time plots of satellite spectral plots— power versus frequency, and records these plots on a 30 second interval. Alarm masks were created that produce an aural, visual, and email alarm when power limits are exceeded or dropped below allowed levels. The system greatly enhanced the customer's situational awareness and its deployment is part of a long term plan to consolidate NOC operations in a central point.

### Highlights of the system include:

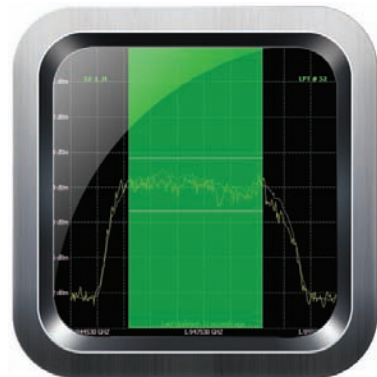
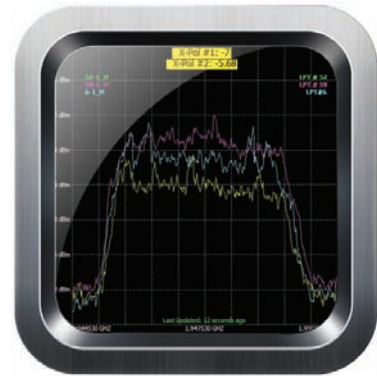
- **Recording:** The LPT ASM records a spectral plot (power versus frequency) in a MYSQL database and these images can be retrieved and displayed easily using a calendar based lookup. This is quite useful for forensics and providing SLA compliance, and for cases where RF interference has occurred
- **Alarms:** Audible, visual, email, and SNMP trap alarms are generated on an alarm condition.
- **Display:** The system allows each client to create its own displays. For example the NOC has a 10x10 matrix of all carriers monitored and system managers can have their own tailored displays of just the satellites in which they are interested.
- **Small footprint:** Each remote spectrum analyzer has an embedded 4 or 16 port switch and is 2 RU high, with an integral Ethernet port. The server and clients run on any Windows operating system. Deployment is fast and easy.
- **Simplicity of Use:** Creating traces is as simple as specifying the center frequency and bandwidth. Creating alarms involves drawing a "square" of high/low alarm set point and low/high frequency. One can set up a complete monitoring regime including recording and alarms for a large network in short time.
- **Cross -pole display:** traces of co-pole and cross-pole can be overlaid with each other. In addition to using this display to assist with satellite access, the display can be recorded and displayed continuously on the NOC's situational awareness screen.

### Enhancements to workflow and cost reduction

The customer's principal reason for deploying this system was to enhance situational awareness and thereby consolidate operations at a single site. This allows significant cost reduction. Previously, spectrum analyzers had to be viewed and controlled locally at teleports in the US and overseas. With the LPT ASM, all elements of the organization have complete and ubiquitous access to real-time and archived RF data.

### Conclusion

The LPT ASM is easy to deploy, easy to operate, and can be used as a tool to reduce costs by consolidating operations. It can be used to provide a record of satellite transmissions for forensics and SLA compliance, and to provide difference levels of situational awareness to operators, managers, and customers. It is a cost effective tool to any user or operator of satellite transmission systems.





### What our customers had to say

“My company is building a global satellite network and I was tasked with building a system to monitor our satellite carriers. After evaluating several systems we chose the LP Technologies LPT-3000R Remote Spectrum Analyzer because it is reasonably priced, easy to configure, and exceeded our specification requirements. We also selected the LPT-ASM monitoring software because of its ease of use and configurability. LP Technologies has been very proactive in addressing our issues and implementing new features and the customer service is top notch.”  
**Scott, Satellite Systems Engineer, USA**



“.. now and I can really start doing some good analysis. Before this, it was just seeing if the signal was still up, now I can actually analyze quality and troubleshoot interesting problems. For example: we were trying to see how well our tracking antenna does in Bermuda. We know signal fluctuates but want to know why. I can also go back and see why that one section dropped to 0dB, it looks like Bermuda had very heavy rain that day. But since I can pull the data out in excel format we can have some fun with it. When you look at the data by hour of day you can see the fluctuation is most likely daily temperature cycles. Once I get spacecraft positioning data I can also compare the signal to that, then we can really say how much variation is from temperature and how much is from good/bad tracking. The way I’m using it as an engineering monitoring and troubleshooting tool makes a lot of this analysis much faster and easier. It’s also incredible being able to set it up in five minutes with one person.”  
**Steve, Systems Engineer, USA**



“Our use of the LPT3000 is primary to confirm status of carriers during adhoc traffic uplinks. These can be of short or long duration but the sample and logging facility of the system allows us to maintain a record of signal condition and set alarm generation points to enable “hands-free” monitoring. In a busy TOC this facility is very valuable as it does not require an operator to be dedicated to observing carrier levels and the data logging allows levels to be checked at much later dates if needed. Being able to display four carriers on the same screen is another useful feature and precludes the need to switch back and forth between screens for real time observations. There is a full range of controls and settings comparable to most other high end analyzers and the quality of the resultant trace display is more than adequate for our needs.”  
**Brad, Engineering Manager, USA**



“We began to use the LPT-ASM around October of 2015. The server and client are very easy to use and the menus are fantastic. We currently have several L-bands that we are monitoring on a daily bases. Having the remote analyzer gives us the ability to monitor any changes to the carrier and provides us with critical data when a signal breaks the thresholds that we set, without having to sit in front of a spectrum analyzer. We also like the ability to see when a carrier comes up and the alarms trigger, this means we are able to work on other projects while knowing that we have good access on the satellite. This a great product I highly recommend, we will be purchasing more of them in the near future.”  
**Bill, Engineering Manager, USA**



“Our company selected the LPT-ASM spectral monitoring solution after researching several spectral monitor products. LPT-ASM was chosen based on its ease of configuration and use, flexible modular design, clean application layout, and superior customer support. In combination with the 16-input LPT-3000R hardware, the system speeds through several carriers spanning multiple satellite feeds.”  
**James, SATCOM Engineer, USA**



## LP Technologies shakes up spectrum monitoring market

LP Technologies has done it again! Not only did we re-invent spectrum monitoring but we also re-invented the way people pay for it! LP Technologies ASM licenses are tied to the individual spectrum analyzer and nothing else. That means you can install LPT-ASM on multiple machines, grant access to dozen of simultaneous users, remote into different sites, and even control your spectrum analyzer from several locations at no extra cost!

## What next for LP Technologies in 2016?



- LP Technologies, your source for affordable high tech spectrum analyzers, announces the launch of the next generation of smart remote control spectrum analyzers we call the LPT X Series. The LPT X Series will come in 1RU, have between 1 to 16 RF input ports. Engineered to bring you the fastest signal analysis, the LPT X Series will be capable of processing two or more signals simultaneously via our next generation technology. The X Series will also integrate with your existing fleet of LPT-3000Rs and LPT-ASM flawlessly. The LPT X Series spectrum analyzers will be available in March 2016. Visit [LPTech.com](http://LPTech.com) and see spectrum monitoring redefined.
- Constellations of satellites are revolutionizing how we communicate and collect data. Whether the application is Gathering Scientific Data, Remote Sensing, Telecommunication or Earth Observation, a low-orbit constellation allows faster download and upload speeds, and easier imaging, and better communication than traditional geosynchronous satellites. The emergence and continued growth of commercial players in this industry, makes LEO one of the fastest growing sectors in the satellite industry. From providing affordable internet access to the most remote places, to allowing highly secure Point-to-Point/Point-to-multi-Point satellite networking, among many other applications, LEO satellites are already changing the world in several ways. However, since LEO satellites rotate so much faster than traditional GEO satellites, the current spectrum monitoring industry has failed to accommodate Low Earth Orbit applications.

LP Technologies is pleased to announce that we are in the final stage of testing our revolutionary spectrum monitoring platform dedicated to address the needs of the Low Earth Orbit satellite industry. We called it LPT-LEO, and it is coming soon!



## WebNMS and LP Technologies partner to extend unified network management over satellite networks

WebNMS, the leading provider of multi-vendor network management, service orchestration and IoT solutions, and LP Technologies have announced a partnership to develop a complete end-to-end satellite network management solution. The combined solution allows satellite network operators to unify their network operations, lowering operational costs and simplifying service automation, enabling dynamic, high quality networking services.

The new Symphony Satellite Manager consolidates cross-functional operations which includes service inventory, provisioning, activation and assurance, including fault management, performance management, configuration management, discovery and topology. The solution combines LP Technologies' spectrum management capabilities with satellite access and transmission equipment control, monitoring and visualization. This new satellite capability for the Symphony Orchestration Platform leverages 20 years of WebNMS experience in managing scalable, multi-vendor, multi-technology networks and extends Symphony's Carrier Ethernet, MPLS and Broadband solutions into satellite networks. It also leverages the satellite and spectrum management expertise of LP





Technologies. Seamless integration with their LPT-ASM Automated Spectrum Manager and LP Technologies' newest Remote Spectrum Analyzers, LPT-X Series, accelerates the deployment of reliable, efficient satellite systems. The LPT-ASM software monitors and analyzes linked spectrum data collected from LP Technologies' spectrum analyzer systems deployed at each ground station. Through this partnership, the intuitive visualization of this data and control of the spectrum is unified alongside complete network management capabilities within the Symphony application.

As communication service providers race towards dynamic network services with multi-national footprints, satellite networks play an increasingly important role in expanding service coverage. Many new, revenue generating services, such as mobile Enterprise VPN and IoT, are enabled by the global access coverage satellite networks provide. Prior to this joint development, managing satellite networks required costly integration of proprietary satellite network management systems and multiple third party functional applications. The joint solution will simplify and reduce operational costs through unification of disparate management silos.

The solution also leverages the satellite and spectrum management expertise of LP Technologies. Seamless integration with their LPT-ASM Automated Spectrum Manager and LP Technologies' newest Remote Spectrum Analyzers, LPT-X Series, accelerates the deployment of reliable, efficient satellite systems. The LPT-ASM software monitors and analyzes linked

spectrum data collected from LP Technologies' spectrum analyzer systems deployed at each ground station. Through this partnership, the intuitive visualization of this data and control of the spectrum is unified alongside complete network management capabilities within the Symphony application.

"Unification of network management effects significant cost savings for providers and helps them respond more quickly to new revenue opportunities," said Darryl Stork, Regional Director at WebNMS. "Our Symphony Orchestration Platform unifies multi-vendor network management and orchestrates end-to-end services. By integrating with LP Technologies, we can now offer a comprehensive solution for satellite networks, including the requisite spectrum management capabilities.

"Satellite operators look to LP Technologies for cost-effective solutions that reliably manage their spectrum, a critical resource that must be efficiently utilized," said Micky Mukalay, Sr. Director of Business Development at LP Technologies. "Our partnership with WebNMS simplifies the inherent complexity of managing satellite networks, lowering their TCO and increasing network efficiency."

At Satellite2016, WebNMS and LP Technologies will jointly present a demonstration of the integrated Symphony Satellite Manager and LPT-ASM plus LPT-3000R spectrum management solution. The presentation will be held at the Innovation Theater of the conference, scheduled 10:30 am on Wednesday, March 9, 2016. The companies will also exhibit their satellite solutions at the conference, with WebNMS at booth #2115 and LP Technologies at booth #548. The Satellite2016 will be held at the Gaylord National Convention Center, National Harbor, MD on March 7-10, 2016. For more information on Satellite2016, please visit [www.satshow.com](http://www.satshow.com).

**For more information about WebNMS, please visit [www.webnms.com](http://www.webnms.com).**

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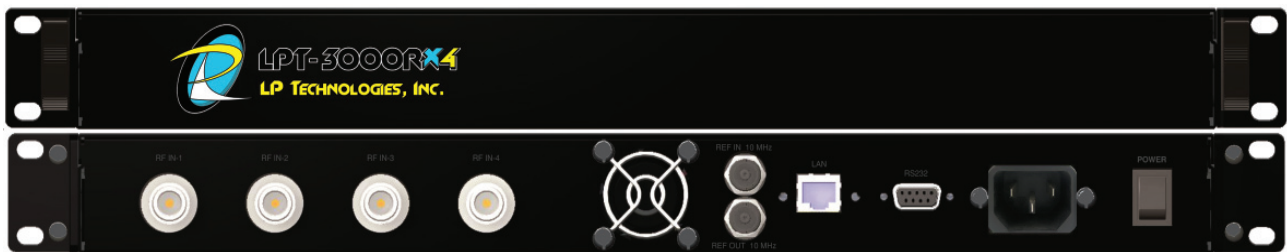
### About WebNMS

WebNMS, the service provider software division of Zoho Corporation, specializes in solutions for multi-vendor network management, service orchestration and IoT/M2M applications. WebNMS markets these solutions as flexible, extensible platforms to network service providers, managed service providers and network equipment vendors. For example, with more than 25,000 deployments across the globe, their flagship WebNMS Framework is the world's first choice for scalable and reliable multi-vendor management. For more information about WebNMS, please visit [www.webnms.com](http://www.webnms.com).



## Introducing our NEXT Generation of remote spectrum analyzers...

**More Power, Faster Sweeps, Higher Precision packed in 1 RU**



**LP Technologies' new X series are coming soon  
to a teleport near you**



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