New

Glowlink® VXCS™

VSAT X-Pol Alignment and Commissioning System

VXCS™ gives installers direct feedback via portable handheld units

Product Overview

Glowlink's VSAT X-Pol Alignment and Commissioning System (VXCS™) is a revolutionary product for commissioning VSAT terminals. It automates the most labor-intensive, time-consuming tasks involved in commissioning VSAT terminals, resulting in fast, accurate terminal set up without requiring participation or support from the satellite Network Operations Center (NOC) or VSAT service provider.

VXCS™ is easy to learn and use, thus simplifying training and the skill level required for terminal alignment and commissioning. Three key tasks dramatically simplified by VXCS™ are:

- Antenna Pointing/Peaking
- Polarization Alignment
- Uplink Power Adjustment

With VXCS™, the installer has direct, real-time feedback via graphical and spectrum displays during installation via a portable handheld unit (PHU). As a result, the installer is able to efficiently commission a VSAT terminal, saving time and cost and reducing the workload for all parties normally involved in the process: the installer, satellite NOC, and VSAT service provider. Furthermore, by precisely aligning the antenna and its polarization, and properly setting uplink power, satellite interference problems are significantly reduced, minimizing the need to resolve inadvertent interference or revisit a site to correct these problems.

VXCS™ incorporates innovative technologies that, among other things, allow cross-polarization isolation to be performed using a modulated carrier. With this Glowlink patent-pending feature, terminals no longer need to be taken out of service for routine maintenance and verification of cross-polarization isolation. This can further reduce system downtime, maintenance cost, and the incidence of satellite interference.

VXCS™ is designed with an open, flexible architecture and can be integrated with the VSAT hub equipment for a variety of centralized network functions such as verification of proper terminal installation and authorization of traffic activation.

Product Highlights

- Automates the most labor-intensive tasks for commissioning VSAT terminals, saving time and money
- Provides direct visual and graphical feedback to installers without involving NOC or Hub personnel
- Simplifies installation reducing installer training, required skill levels, and expensive site re-visits
- Enables precision terminal installations and minimizes the occurrence of satellite interferences
- Incorporates unique feature allowing terminals to remain in service during polarization alignment check
- Allows concurrent terminal installations for faster VSAT network deployment
- Open architecture enables integration with other Hub components

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VXCS™ Elements

VXCS™ is comprised of three main elements: A Hub-based Spectrum Measurement System (SMS), a Hub-based VXCS™ Server, and a Portable Handheld Unit (PHU) that the installer carries. Figure 1 illustrates how these three elements typically fit into a VSAT network.

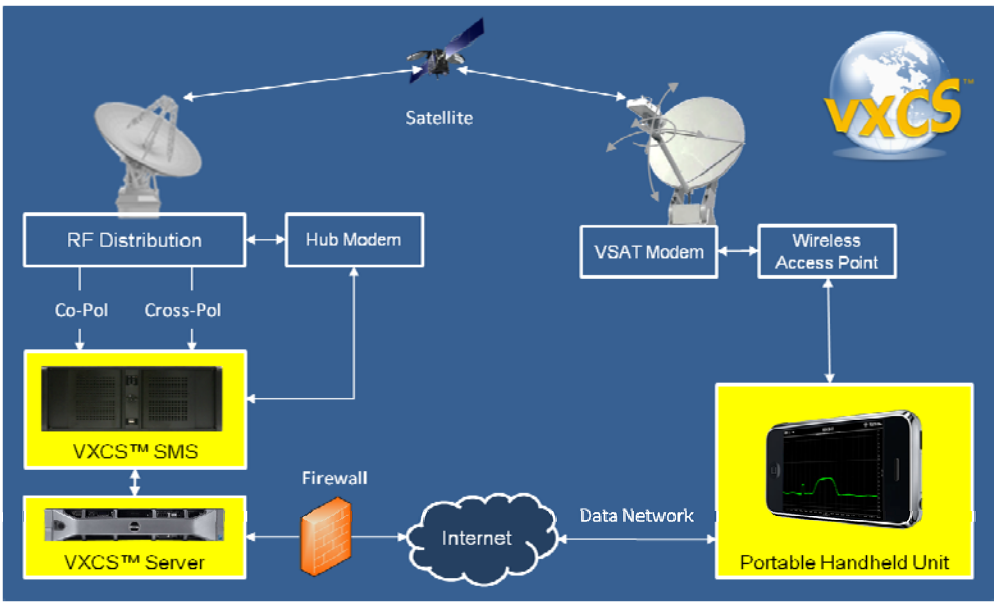

Figure 1 How VXCS™ Fits Into a VSAT Network

VXCS™ SMS

The VXCS™ SMS is a powerful spectrum measurement system based on Glowlink's patented DSP technologies. It performs all spectral measurements and number crunching in support of automating the three most labor-intensive, time-consuming tasks involved in VSAT terminal commissioning: antenna pointing/peaking; polarization alignment, and uplink power adjustment. In addition, the VXCS™ SMS includes spectrum analyzer functions that installers can remotely access during installation.

VCXS™ Server

The VXCS™ Server manages remote access and control of the SMS functions. It also stores VSAT terminal commissioning results and data to support Hub-related activities such as verification of proper terminal installation and authorization of traffic activation.

Portable Handheld Unit

The PHU, carried by the installer, can be either a laptop PC or a smart phone (e.g., an iPhone). The PHU directly accesses the Hub-located VXCS™ equipment, guiding the installer via visual, easy-to-understand graphical display of the measurements – without requiring the involvement of NOC or Hub personnel. The PHU connects to the Hub-located VXCS™ equipment via standard networking infrastructure such as the Internet, Wi-Fi, Cellular Data Network, or over the satellite via the VSAT terminal/hub link—a crucial alternative especially in remote areas where terrestrial communications infrastructure may be unavailable and where satellite-phones can be costly.

VXCS™ Functions and Displays

Antenna Pointing/Peaking (APP)

The APP function incorporates an intuitive power bar display for antenna pointing and peaking. The power bar display, shown in Figure 2, includes an easy-to-read maximum hold indicator to indicate the desired antenna pointing/peaking level.

Figure 2 APP Function For Power Measurements

The antenna pointing/peaking function operates equally well with either a traditional CW or a modulated signal, providing additional flexibility for making refined, precision antenna pointing and peaking adjustments. The green power bar displayed on the PHU indicates accurately the antenna power as measured at the SMS. The power rises and falls as the installer adjusts the antenna in AZ or EL, until the maximum level (indicated by an amber-colored line) is reached within an acceptable margin.

Polarization Alignment (PAL)

The PAL function provides a simple, accurate way to perform cross-polarization isolation.

With this function, cross-polarization isolation is measured by the Hub-based SMS and relayed automatically to the installer through a column bar display (amber color) on the PHU. A target isolation mark (indicated by a blue color line in Figure 3) sets the required isolation level for the installer to obtain. When the required isolation is achieved, the entire column bar turns blue.

Figure 3 PAL Function for Cross-Pol Isolation

The PAL function works with either CW or modulated carriers, allowing the antenna's polarization alignment to be performed without interrupting normal traffic—a tremendous benefit in reducing VSAT network maintenance cost and system downtime.

VXCS™ Functions and Displays

Uplink Power Adjustment (UPA)

The UPA function automates the measurement and verification of proper uplink power adjustment and eliminates the usual coordination required between the installer and NOC /Hub personnel. With the UPA function, power output levels are measured by the Hub SMS and directly relayed to the installer via the PHU, as shown in Figure 4.

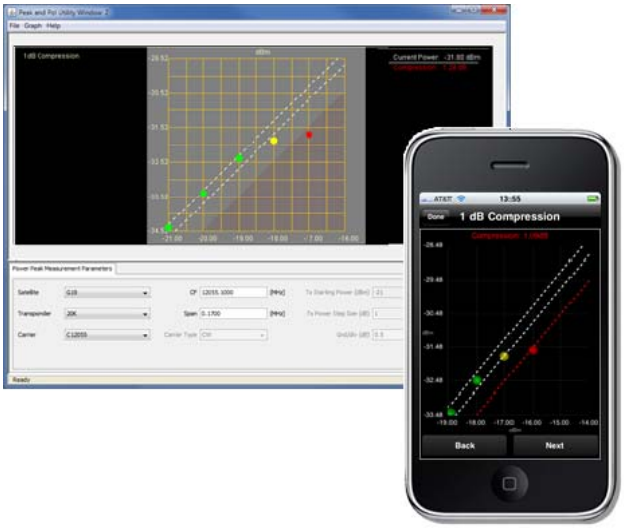

Figure 4 Charting UPA Power Adjustments

Once the installer changes the modem level, the corresponding power received at the Hub is recorded. The PHU graph first turns yellow (as an alert) when the power output starts to get compressed, and then automatically turns red once the 1-dB compression is reached. At this point, the installer knows the proper modem level output has been achieved. With the UPA, understanding of non-linear amplifier operations is not required, and the tedious coordination between NOC and installer can be completely eliminated.

Spectrum Analyzer Function

VXCS™ includes a spectrum analyzer capability that can be remotely accessed for initial antenna alignment and during the entire VSAT commissioning process. Figure 5 shows spectrum analyzer functions available through the VXCS™ PHU, including trace display, min/max hold, clear write and marker-related functions.

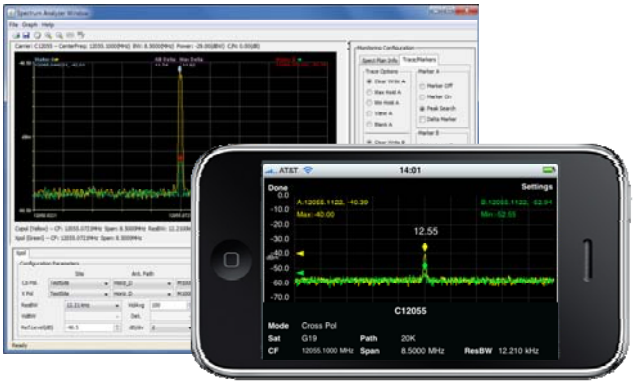

Figure 5 Spectrum Analyzer

VXCS™ Technical Specifications

VXCS SMS

Measurement Accuracy	
Carrier Power:	+/- 0.2 dB
Cross-Pol Isolation:	+/- 0.2 dB
Front End Characteristics	
Input Frequency	70 MHz standard. Optional RF front-ends L-band through Ka-band.
Instantaneous BW	36 MHz
Resolution Bandwidth	763 Hz to 97.66kHz (as low as 12 Hz Optional)
Full Bandwidth Input Power	-40 to +15 dBm
Max Input Level	+30 dBm
Dynamic range	115 dB nominal
Connector Type	50 ohm, BNC
Control Interface	
Network	Ethernet (RJ-45)
Downconverter or switch	RS232 (RS422, IEEE-488 Optional)
Physical	
19-Inch Rack mount	EIA RS-310C Standard, 4U Height (2U optional)
Power	110/220VAC ± 10%, 47-63 Hz
Weight	50 lbs

VXCS Server

Operating System	Windows 2005 Server
System memory (RAM)	1 GByte+
Control Interface	
Network	Ethernet (RJ-45)
Physical	
19-Inch Rack mount	EIA RS-310C Standard, 1U Height
Power	110/220VAC ± 10%, 47-63 Hz
Weight	35 lbs

Portable Handheld Unit (PHU) Choices

PC Laptop	Windows™ 2000/XP
iPhone	3G/3GS/4, O/S Version 3.1 and above
Android Smartphone	Droid 2/Droid X, O/S Version 2.1 and above (first quarter, 2011)

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Glowlink Related Patents

With respect to the Glowlink product(s) described in this document, the following patents may apply:
United States Patent No(s): 8,004,459; 7,667,640; 7,663,547; 7,639,761; 7,466,767; 7,120,392; 6,549,755; New Zealand Patent No(s): 529266; 533787, Singapore Patent No(s): 100422; 105251, Australia Patent No(s): 2002340512; 2003213579, Europe Patent No(s): 1393472, Canada Patent No(s): 2446301, China Patent No(s): ZL02812548.7, Hong Kong Patent No(s): 1066941.

Other U.S. and International Patents Pending