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TABLE OF CONTENTS

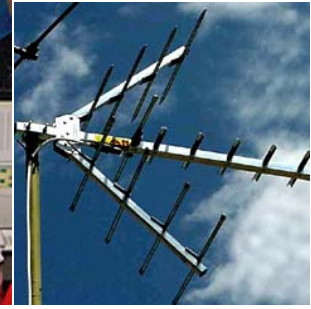
Vol. 2 No. 7, November 2004

Click on the title to go directly to the story

COVER STORY

FEATURES

VIEWPOINT



18 / What is a VSAT?

By Bruce Elbert

VSATs can better address vertical markets in such areas as rural communications to developing regions, disaster recovery, temporary services and others. There are bottlenecks that impede greater reliance on VSATs, but there are also solutions.

23 / VSATs Installation Tools for Cost-Effective Deployment in a Consumer Market

By Juan M. Martinez

Integrasys' Satmotion Pocket simplifies and dramatically reduces cost of consumer VSAT installation and commissioning.

27 /Doomsday "Liquidation" for Voom?

By Chris Forrester

The satellite industry needs more HD, not less, and Voom seems to be sound value for money.

30 / Satellites Help Forecast Major Earthquakes

By Tom Bleir

QuakeFinder develops a satellite and ground-based detection method that, when completed and tested, would allow for warning of an earthquake one week in advance.

REGIONAL UPDATE

EXECUTIVE SPOTLIGHT

REGULAR DEPARTMENTS

33 /Middle East Satellite Turmoil

By Chris Forrester

ArabSat, Nilesat and NoorSat compete for viewer loyalty in the Kingdom of Saudi Arabia. But there is also optimism for co-operation amongst the various pay-TV platforms.

33 /Interview with Gilat Chairman and CEO Shlomo Rodav

VSAT market leader Gilat CEO Shlomo Rodav speaks to SatMagazine on a wide range of issues.

3 / Note from the Editor

4 / Calendar of Events

5-8 / Featured Event: ISCe 2005

9-11 / Industry News

12-14 / Executives Moves

15-17 / New Products

38 / Market Intelligence: Three A's for VSAT-presented by the Global VSAT Forum

40 / Stock Monitor / Advertiser's Index

FEATURES

VSATs Installation Tools for Cost Effective Deployment in a Consumer Market

By **Juan M. Martinez**
Integrasys, SA

The VSAT market has turned and focused into the consumer market, due to the large volumes of installations world-wide, opening a new world of possibilities and business opportunities.

By its design, VSATs are conceived as Rx/Tx equipment. By its functionality, they are used for data, voice and video communications. By its dimensions they are very appropriate both for civil (corporate networks, emergencies, etc) and military applications (support and strategy). And, finally, its capacity to offer broadband with competitive costs against terrestrial networks, makes them the future of the satellite industry.

Recent market analysis and forecasts indicate that there is actually room for satellite broadband technology in the convulsed scenario of telecommunications world, envisioning a steadily increasing penetration of this technology in the coming years. This trend is backed by the inherent advantages of satellite communication systems, such as rapid deployment and low initial investment to reach wide coverage areas; synergy with successful broadcast video services; reduced number of operations centres and direct provisioning.

There are very important technologies involved in new VSAT markets, such as the communication protocols (IP,ATM,MPEG) or the network topologies that have been well developed to provide an excellent service; however, the busi-



ness issues currently rely on: low cost, high bandwidth, and easy integration with other networks and applications .

There has been a great effort done by industry in reducing the cost of VSAT equipment, to be able to compete with terrestrial networks in an open consumer market, but there are other costs involved, such as installation and commissioning, that still need to be addressed.

The VSAT world has had traditionally a high degree of professionalism and costly personnel involved in installation and commissioning. The elements that compose a simple installation (dish, horn, waveguides, transmitter, LNB, receiver) are easy to assembly, but their functionality and the operations

FEATURES



Integrasys' SATMOTION POCKET (US patent pending 10/408710) is a simple and low-cost tool for VSAT installers.

to be performed to make them operational (downlink alignment, configuration, line-up, fine adjustment and final commissioning) are quite complex and require time, skilled personnel and co-ordination with the NOC.

This is a real and hidden fact, which makes VSAT installation expensive and do not allow to take full advantage of the technological developments towards cost improvement such as standardisation efforts like DVB-RCS, antenna and ODU pre-assembly, IDU pre-configuration...

operators offer to potential customers is to be able to cover areas where no other communications are available. These areas represent the real satellite business opportunity, but increases very much installation difficulties and costs, as no communications are easily available in the field for NOC co-ordination.

The greatest competitive advantage that two-way satellite internet

In these areas, the installer has only the VSAT and the satellite, and possibly a field strength meter. He has not always remote assistance, sometimes due to technical reasons, other just because there is no other way of communication with the NOC rather than the satellite itself. Measurement instruments are not always available or the measurements are not valid because the measurements required to

successfully complete the installation are not based on the VSAT transmitted signals, but those of the received downlink and, by no means, the transmitted CW line-up carrier measurement information available at the NOC: EIRP level, cross-polarization isolation, interference.

Complex installations... and expensive

Back to basics, the theory is very clear: a misalignment of 1° in the polarization of the reference axis causes small losses in the polar coupling ($20\log(\cos 1^\circ) = -0,001 \text{ dB}$), but increases 35 dB

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the x-polar component (isolation lost= $20\log(\cos 89)$). Obviously, this is an undesirable effect in operation and not only for that particular VSAT, but also for other VSATs within the same network.

If this is a real fact for just one single installation, how could it impact hundreds or thousands of simultaneous installations in an actual consumer market? What can be done by the satellite operator to avoid this situation? Will this business be, as it is desired and expected, a big success or will it be a chimera for all: users, installers and operators ?



“Complex techniques, professional installations”. This was the paradigm of the 20th century. However, already in the 21st, it seems we have a new one: *“Complex techniques, professional installations, low cost”*.

The satellite and the VSAT is everything the installer has when he is on the roof...and all he needs.

Integrasys, the technology-leader in Satellite Carrier Monitoring Systems, has developed SATMOTION POCKET (US patent pending 10/408710), the simplest and lowest cost tool for installers to perform profes-

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sional VSAT installations in the field without the need for special equipment nor additional expensive tools, instruments or knowledge.

The measurement system (spectrum analyzer, switching matrix, server computer and server software) can be hosted at the Hub station, NOC or at any other place under the satellite fingerprint. Just using a satellite downlink and a simple PDA or laptop PC plus software, the installer receives the polar and x-polar information from the measurement system using the receiver portion of the VSAT he is aligning. The communication between the installer PDA and the IDU is wireless, so a small wi-fi access point is connected to the IDU ethernet port allowing more than 50 meters range up to the antenna. The lack of voice communications between the installer and the NOC is no longer a problem applying this solution; all the information regarding the VSAT CW line-up carrier gathered by the NOC carrier monitoring system is made available in real-time to the installer hands.

The PDA user interface is simple, but highly powerful in functionality; it manages both, the VSAT configuration parameters while graphically displaying in real time the CW carrier as it is received by the NOC measurement system. The SATMOTION POCKET system puts on the installer hands a professional tool using a handy PDA or laptop PC which provides the installer with all the monitoring capabilities available at the NOC.

The system handles multiple concurrent line-ups by means of a multi-CW scheme where the measurement system is time-shared by up to 10 concurrent installers per analyzer without performance degradation; configuring additional analyzers into the system, it is possible to support any number of concurrent installations.

SUMMARY

Currently, VSAT consumer business deployment exhibits hidden costs due to the required qualified installation personnel and NOC co-ordination to perform installations at the customer site.

The massive deployment of the two-way market no longer can support this fact in terms of costs, time and quality.

Traditional measurement hardware plus control software modules combined with the Internet technologies and quality measurement procedures are the guidelines that

Integrasys has applied, by means of its SATMOTION POCKET product, to simplify and dramatically reduce costs of consumer VSAT installation and commissioning. **SM**



JUAN M. MARTINEZ,
Product Manager, INTEGRASYS, SA

He holds a MSc in Telecommunications Engineering & MSc in Software Development and a BSEE degree in Electronic equipment. With 10 year experience in telecommunication project management, he has had several key positions in software development, engineering and Sales Divisions in different telecom companies.

He is currently Product Manager for Satellite Carrier Monitoring Product-line at INTEGRASYS, SA. He can be reached at juan.martinez@integrasys-sa.com or www.integrasys-sa.com

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PARADISE DATACOM

AN INTELK PLC COMPANY

Paradise Datacom Ltd.
1 Wheaton Road
Witham, Essex, CM8 3UJ, UK
T: + 44 (0) 1376 515636
F: + 44 (0) 1376 533764
e: sales@paradise.co.uk

Paradise Datacom LLC
1012 East Boal Avenue
Boalsburg, PA 16827, USA
T: +1 814.466.6275
F: +1 814.466.3341
e: sales@paradisedata.com

www.paradisedata.com