



# VSAT Field Engineering Training Course

*A theoretical and practical skills transfer event  
for field engineers, support engineers and operational managers as applicable  
to DVB/TDMA VSAT networks, organized by Africa eDevelopment Research Centre in association  
with Comsatpro of South Africa*

**Jacaranda Hotel, Nairobi, Kenya. 6-8 February 2008**

## COURSE OUTLINE

### **Theory & Background**

#### **Network Architecture**

- Architecture defined
- Star networks
- Mesh networks
- Application references

#### **Network Concepts**

- Bandwidth:
  - MHz vs. Mbps.
  - Speed vs. throughput
- Links budget basics:
  - What?
  - Why?

#### **Equipment terminology**

- Remote site components:
  - Antenna, dish?
  - BUC, block-up convertor
  - LNB, Radio, Modem
- Operating Frequencies
  - Ku-band
  - C-band
  - Ka-band

#### **Signal Transmission**

- DVB
- TDMA

### **Implementation**

#### **Site Survey**

- Location & look angles
- Infrastructure

#### **Site Build**

- Minimum antenna mount
- Requirements Lightning protection
- Cable routing
- Peak & poll: Why? What? How?

#### **Test Equipment**

- Theory & hands-on:
- The field strength meter
  - The GPS
  - the compass
  - what do we measure?
  - how do we measure?

#### **Service Commissioning**

- what does it mean?
- why is it needed?
- how do we do it?
- what can go wrong?

#### **Client Communication**

- Client communication
- Site hand-over

### **Practical Training**

#### **Complete Installations**

- All participants will complete one complete installation
- Installations will be done on an active & operational network
- All will provide ● sufficient time for hands-on experience

#### **Test Equipment**

- Inclinator
  - Compass
  - GPS
  - Field strength meter
- Selection and training with respect to PAS1R, PAS10, NSS 7 satellites

#### **Installation**

- Physical site installation
- Antenna built (1.2m)
- Peak & poll
- Signal strength monitoring
- Site commissioning with an operational NOC group
- Commissioning & hand-over

# Precision Instruments for accomplished Engineers

Quality of workmanship, field engineering and system performance are determined by the skills and expertise of the engineer but no engineer can perform precision works without precision instruments. The course will also cover the following instruments:

## UnaOhm SBM105C Satellite Analog Digital Signal Analyser

The SBM105 analyses the quality of satellite receive signals and offers all measurements required by digital communication channels. It also offers level measurement of analog signals as well as spectral analysis of the band.

## SMARTTool

Precision level meter for setting and alignment of antenna to ensure optimum signal strength and maximum system reliability.

## SUUNTO Bearing Compass & Clinometer

The Suunto Tandem is a liquid-filled precision compass and clinometer in one compact aluminum housing that is easy to use and rugged enough to protect against impact, corrosion and water.

## GARMIN's eTrex Personal Navigator

This compact, easy-to-operate GPS is perfect for measuring and recording of location coordinates with the accuracy required for VSAT network control systems.

## Handheld Tools

The perfect set of handheld tools to ensure that you have the correct tool for every need while at the same time being lightweight and convenient to carry under all circumstances. All of which are supplied in an easy and convenient canvas bag.

## Past VSAT Training Sessions hosted by AeRC



## Course Designer

Stadler Brits is a Global VSAT Forum (GVF) qualified instructor/ trainer. He also the Managing Director of Comsatpro.

Stadler has had over 17 years experience in Radio Frequency (RF) with a career that commenced in the South Africa Air Force. He has been in the African Market for almost 5 years and worked in numerous countries in Africa doing sales, installation and now engineering design makes me an experienced satellite communications engineer. He has attended most satellite equipment vendor courses and most of the satellite engineering courses available in the industry. This includes:

Radyne Comstream  
Paradise Datacom  
Gilat – Skystar  
HNS – GW series  
ViaSat – Linkstar  
iDirect  
Satellite communication engineering course –  
University of Surrey  
Link Budget Engineering - Panamsat

During this period he also developed a VSAT course for the company which he also presented throughout Africa.



More than 1000 students have attended these courses.

### COMSATPRO (Pty) Ltd

Comsatpro is a South Africa based company with a regional office in Nigeria that specialises in the supply of Internet, Data and VoIP services through the selling, installation and maintenance of satellite bandwidth and equipment.

Moreover, through its excellent contact network, the Organisation is in a unique position to supply equipment “on the ground” anywhere in Africa as well as to provide the required service back-up for such equipment. The main aim of the Organisation is to be a global player through service excellence and state of the art technology.

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