

## Satellite Communications Monitoring

Komcept Solutions is able to supply off-air monitoring systems for the most popular active networks: Thuraya, Iridium, Isatphone and Inmarsat enabling Law Enforcement Agencies to identify users of the system and their precise locations. Supplied solutions can be either tactical or strategic for the most effective and timely intelligence.



Recent years have seen a surge in hand held satellite telecommunications systems largely due to the development of technology both in the handsets and also on the satellite. Because they are easy to use, portable and can be used almost anywhere, they are the communications tool of choice for many criminals and terrorists.

### Thuraya Monitoring:

The Thuraya satellite network currently covers from Scandinavia, the UK and Spain in the West to the Far East and Australasia in the East using two geostationary satellites. The network will provide voice, SMS, fax and data over an L-band radio path. The antenna on each Thuraya satellite forms an array of spot-beams. These are similar to the cellular coverage of a GSM network, providing the antenna gain necessary for a hand-held communications system using a geostationary satellite.

### Iridium Monitoring:

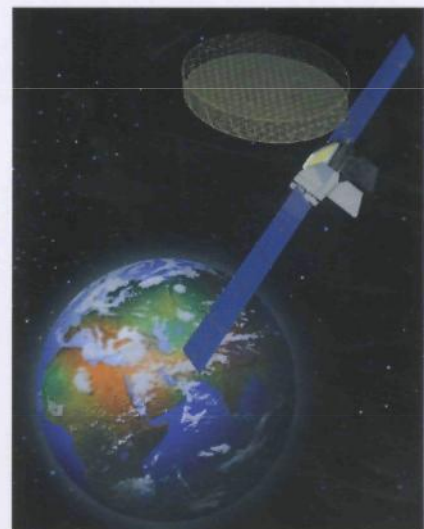
Iridium uses a network of 66 low earth orbit satellites to provide full global coverage including all sea masses and the North and South Poles. It is the world's largest commercial satellite network. The system uses 11 low-earth orbit satellites in each of the 6 orbital planes and each satellite communicates with its 4 nearest neighbours. Use of spot beams requires significant switching and control of calls. A single call may be switched between several satellites in its duration.

### Inmarsat Monitoring:

Inmarsat were the first to provide satellite based communications networks and their Inmarsat M and mini-M terminals are still very widely used. The newer systems based on their Global Area Network (GAN), concept provide facilities for faster data communications.

Recently, collaboration with ACeS has given Inmarsat a hand-held voice terminal, IsatPhone, to allow it to compete with Thuraya and Iridium. Coverage of IsatPhone is currently Africa and a large part of Asia, with little or no coverage of Europe at the present time.

Like Thuraya, IsatPhone coverage of the Americas is planned for the near future.



### Product range:

- Thuraya Tactical Monitoring System
- Thuraya Strategic Monitoring System
- Iridium Monitoring System
- IsatPhone Tactical Monitoring System
- IsatPhone Strategic Monitoring System
- Inmarsat 3 Strategic Monitoring System
- Inmarsat 4 Monitoring System



## Thuraya

The Thuraya Tactical Monitoring System (TTMS) is a transportable receiver mounted into a rugged peli-case which receives the L-band transmissions from both the satellite and handset. Designed as a portable system it is ideal for vehicle based monitoring in the field. Two antennas capture transmissions from the satellite and handset which are converted to an intermediate frequency before processing in the digital signal processing engine.

The Thuraya Strategic Monitoring System (TSMS) uses a large dish antenna to intercept the C-band downlink signals from the satellite to the Thuraya ground station and a smaller antenna to intercept the L-band downlink signals from the satellite to the handset. All communication in both directions between handset and satellite is received by the system, including locations of all handsets. Using additional L-band receivers, coverage can be extended to cover the whole C-band footprint.



*TTMS - Thuraya Tactical Monitoring System*



*Inmarsat*

## Inmarsat

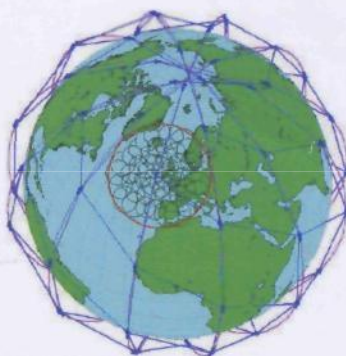
Inmarsat M and mini-M terminals use the Inmarsat 3 family of satellites and, as with Thuraya, both tactical and strategic monitoring solutions can be provided.

Inmarsat IsatPhone terminals use the new Inmarsat 4 satellites and transponders for IsatPhone are currently installed on the EMEA and Asia pacific satellites.

Inmarsat BGAN is the new high speed data service which uses the Inmarsat 4 family of satellites. Komcept Solutions and its partners are currently working on a solution for monitoring this service.

## Iridium

Due to the design of the network and the number of satellites, only tactical interception of Iridium is possible. Communication between satellite and handset is on L-band and the Iridium monitoring system uses a two channel down-converter and digital signal processing engine to monitor separately the up-link and down-link channels. The signal processing unit carries out registration of the Iridium signals, identifying the satellite, spot-beam, sub-band, time-slot and frequency of each signal. All captured data can be presented to the operator for examination.



*Iridium*



Photo : Daniel Deak

*Iridium*

## VSAT

Komcept Solutions is able to monitor some of the various VSAT systems currently in use - contact Komcept to discuss your requirements.