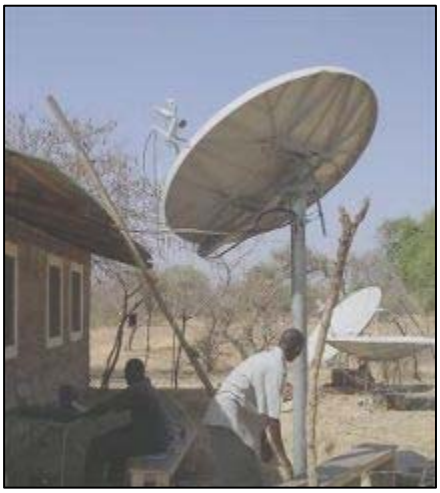
WRC 2007 AGENDA ITEM 1.4

Agenda item 1.4 of the WRC-2007 is "*to consider frequency-related matters for the future development of IMT-2000 and systems beyond IMT-2000 taking into account the results of ITU-R studies in accordance with Resolution 228 (Rev. WRC-03).*"

PRACTICALITIES

This agenda item will consider changing how the band 3.4 – 4.2 GHz, known as the 'C band', is used. This change is proposed by manufacturers of multimedia ("4G") network equipment who seek to increase the spectrum that can be available to support sales of their equipment in future years. While there is already unused spectrum allocated to such services, equipment manufacturers believe it is important to ensure that there is even more spectrum available to support high-bandwidth services in hotspots of high-demand (for example, in major European cities). By asking for additional spectrum, the equipment manufacturers believe the overall cost of the spectrum they use will, conveniently, go down.



Satellite installation near the remote Nuba Mountains region

The manufacturers propose to enable semi-mobile services to be offered from their networks, to compete with data services on IMT-2000 mobile networks.

HOW THE ITU PROCESS ANALYSED ITEM 1.4

This agenda item resulted in a four-year study cycle within the ITU group Working Party 8F (WP8F). In developing recommendations on the use of IMT-2000 and IMT-Advanced mobile systems in this band, WP8F concluded that only a significant separation – for example, of [150km] – could allow these networks to co-exist with satellite networks using the C band. Because the band is *already* heavily used by satellite service providers, delivering critical connectivity via satellite to every African country, such separation distances may be very hard to enforce.

WHAT DID WP 8F CONCLUDE?

It is clear from the work of WP 8F over the past four years that the satellite services in the C band will be severely limited if the band is assigned to IMT-Advanced services in addition to satellite services. Current services will experience synchronization loss, black-out periods, and loss of transmission. The service levels of C-band satellite links are usually very high because of their superior propagation characteristics, and this means that many critical trunk connections are carried in these bands. The impact of IMT-Advanced systems would be very severe, and it would likely become impossible to use C band for safety-critical and high-reliability systems.

CURRENT USES OF 3.4 – 4.2 GHz IN AFRICA

This band is used to the maximum extent in Africa by fixed and broadcast satellite services. The C-band signal is robust enough to withstand Africa's periodic atmospheric interference. Furthermore, C-band satellite coverage is the only connectivity available in many parts of Africa where coverage does not exist in other bands. Specifically, these frequency bands are used to provide:

- public services
- broadband services (including telemedicine and distance learning)
- government and strategic broadband communications services,
- avionics
- maritime services
- mobile backhaul services to remote locations from major urban areas
- rural telephony services
- internet services and
- long-distance fixed (microwave point-to-point) networks that form the vital infrastructure for the many terrestrial networks in Africa.

Additionally, many users of receive-only antennas have no need for licences, and are not registered with the regulator. Therefore, the total negative impact on African consumers of sharing in this band is hard to determine, although it is likely to be much greater than for highly-developed regions. Expansion of existing networks in Africa is likely to place further emphasis on the use of C band for satellite and terrestrial fixed networks.

Installing VSAT equipment

CAN USERS MAKE WAY FOR IMT-2000 AND IMT-ADVANCED NETWORKS?

Moving C-band users, government and commercial, to the Ku-band is not an option. This is because (1) the Ku band is unreliable over Africa due to rain attentuation and other problems (2) only limited Ku-band coverage exists over Africa (3) there is an extremely high cost associated with moving existing networks to the Ku band and even if it were affordable, (4) the available Ku band is already filled with other applications.

FUTURE SATELLITE USES OF C BAND

Satellite providers will be delivering additional broadband services in the C band over the next 3-5 years – a rollout faster than that being proposed for the IMT services. Additionally, C-band spectrum is increasingly being used as the platform for IP-related satellite networks in Africa.

In order to safeguard existing services, and to ensure deployment of broadband, affordable, IP connectivity from any point in Africa to any point on earth, these services must be protected at WRC-2007.