VIA E-MAIL
fmoloja@icasa.org.za

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Fikile Moloja – RF Specialist
Independent Communications Authority of South Africa
Block A, ICASA, Pin Mill Farm
164 Katherine Street
Private Bag X 10002
Sandton 2146
South Africa

Ref.: Draft South African Table of Frequency Allocations
Government Gazette, Vol. 517, No. 31264, 22 July 2008

Dear Sirs,

The Global VSAT Forum ("GVF") would like to thank the Independent Communications Authority of South Africa ("ICASA") for the opportunity to participate in this public consultation on the recently released draft South African Table of Frequency Allocations ("SATFA"). GVF applauds ICASA on establishing and publishing the draft SATFA, and thus promoting regulatory transparency and ensuring public input on important spectrum management issues. The focus of GVF's contribution is the 3400-4200 MHz frequency band, taking into account GVF's concerns with the use of these frequencies by terrestrial systems.

GVF is a non-profit association that comprises more than 200 companies from 100 countries in every major region of the world and from all sectors of the satellite industry, including satellite operators, earth station and sub-system manufacturers, integrators, teleport operators, network operators and carriers, as well as consultants, law firms and other organizations involved in the satellite industry. GVF provides global representation to the world leading companies in the satellite industry.[1]

As ICASA is aware, satellite solutions are used to deliver advanced transmission access for information and entertainment to some of the world's leading media and network companies, multinational corporations, Internet service providers, and government organizations around the world. Every year GVF members help millions of people stay connected to the things they care about. Satellites allow our members to offer seamless service for voice, data and video transmissions around the world.

[1] For more information regarding GVF, please visit the association's web site (http://www.gvf.org).

The bands 3400-4200 MHz (downlink) and 5850-6725 MHz (uplink) are allocated to the fixed-satellite service on a primary basis, worldwide and are commonly referred to as C-band. These frequencies have been assigned for satellite services since the industry was inaugurated more than 40 years ago. Today, there are approximately 160 satellites operating and providing essential and critical services to consumers using these C-band frequencies, and many more such satellites are under construction.

Use of C-band frequencies for satellite communications is widespread throughout the world. In fact, C-band use is particularly vital for many developing countries, particularly in equatorial Africa, South and Central America, and southern Asia because of its resilience in the presence of heavy rain. C-band earth stations are used extensively in many developed countries, and the use of C-band frequencies also includes land earth stations used for mobile satellite systems, such as Inmarsat.

Services using C-band frequencies cover large areas. These frequencies facilitate intercontinental and global communications, and are used to provide a wide range of services, including critical applications such as distance learning, telemedicine, universal access, and television transmissions.

Satellite solutions using C-band frequencies provide an excellent vehicle for government and emergency services. In times when disaster recovery is needed, satellites are often the only possibility to establish communication links. For example, C-band frequencies were used to provide emergency communication services in Perú following the earthquake of 2007; similarly, satellites were used in Taiwan to restore critical connectivity after earthquakes severed submarine cable connections in 2006, and in Thailand after the devastating tsunami of 2004.

Satellite receive earth stations operating in the C-band constitute the primary means for distribution of television programming, data transmission services, and telephone and Internet connectivity services for millions of users throughout the world. Many South African entities, including the South African government, as well as international or multinational organizations such as the World Bank, depend on and benefit from the various advantages of satellite communications that use the C-band.

With the advent of FIFA's World Cup in 2010, South Africa will have a unique opportunity to host the world's largest and most important sports event, watched live by hundreds of millions of people around the planet. It is estimated that a total of 4 GHz of satellite capacity will be used to cover this event, and that 80 percent of this usage will happen in the C-band. Starting as early as August 2009, a significant uptake in C-band capacity is expected in order to broadcast the activities around FIFA's Confederations Cup, a prelude to the World Cup, which will also take place in South Africa. During this time, the attention of the world will be on the events unfolding in South Africa. Given the significance of these events, harmful interference to the broadcast signals in C-band should be avoided.

The threat of harmful interference to satellite systems by mobile and fixed wireless access terrestrial systems that plan to deploy in a subset of the C-band is quite considerable, quite damaging to satellite services provided to customers and end users, and constitutes a very serious obstacle for the continued effective provision of established satellite services using C-band frequencies.

It is crucial that satellite systems and the users of such systems continue to be able to use C-band frequencies without harmful interference from terrestrial wireless access systems and other wireless systems that plan to deploy in the C-band, such as IMT systems. As has been well documented by the international community, the harmful interference caused by terrestrial broadband wireless access and IMT systems on satellite systems in C-band frequencies deprives consumers of access to critical satellite services.

The concerns regarding this matter were reflected in the actions of the World Radiocommunications Conference ("WRC 07"). Agenda Item 1.4 for WRC 07 addressed whether the 3400-4200 MHz band should be identified for IMT on a co-primary basis with the longstanding primary allocation for the fixed-satellite service. WRC 07 decided expressly NOT to adopt a global identification of radio spectrum for IMT services in any part of the 3400-4200 MHz band. As a result, WRC 07 explicitly adopted provisions to ensure the protection of fixed-satellite services that operate in these frequency bands in the two regions of the world where IMT was identified, through footnotes only, in the 3400-3600 MHz band in certain countries.[2]

GVF wishes to express its concerns to ICASA with the fact that in the draft SATFA, it is suggested that the band 3400-3600 MHz is allocated only to the fixed service, even though this band is allocated on a global level at the ITU to both the fixed service and the fixed-satellite service on a co-primary basis. GVF wishes to remind ICASA that the 3400-3600

[2] Consequently, certain footnotes were included in the ITU Table of Frequency Allocations to cover various frequency bands within the 3400-3600 MHz range. These footnotes allow the operation of IMT mobile services in a co-primary mode, but ***only*** in those countries which have opted-in to the footnote in the corresponding region, and ***only*** if the diverse mobile service restrictions that protect satellite services in affected Administrations are taken into account. South Africa was among those countries in Region 1 that opted-in to a footnote covering the 3400-3600 MHz band. Effective ***November 17, 2010***, the 3400-3600 MHz band in Region 1 will be allocated to mobile services (including IMT) on a primary basis, subject to power flux-density ("pfd") limits at the border and coordination with affected administrations pursuant to Article 9 of the ITU Radio Regulations.

An IMT operator wishing to operate in the 3400-3600 MHz band in Region 1 is constrained by the following requirements with respect to operations near the border:

- Pfd limits: the mobile operator must ensure that the pfd produced at 3 meters above ground does not exceed -154 dBW ($m^2 \cdot 4$ kHz) for more than 20 percent of the time at the border of the territory of any other administration.
    - The pfd limit calculation and verification is enforced by mutual agreement of both Administrations.
    - If mutual agreement is not reached, the Bureau will make a determination.
- Coordination requirement: the IMT operator's Administration must request coordination by sending a request to the Bureau with all applicable information required pursuant to Appendix 4 to the Radio Regulations. Coordination is necessary with respect to all services pursuant to Article 9.21 and with satellite earth stations pursuant to Articles 9.17 and 9.18.
    - The Bureau will then identify all Administrations with which the requesting administration must coordinate, and publish the coordination information in the International Frequency Information Circular ("BR IFC").
    - All Administrations receiving a request for coordination must respond within 4 months of the publication, otherwise the coordination obligation is waived.

If coordination is unsuccessful and an agreement is not reached, IMT services must operate on a secondary basis. Such IMT operators must shut down any operations that cause interference to primary services.

MHz is an integral part of the C-band, and these frequencies are used to support myriad applications throughout the world.

The concerns with the use of C-band by stand-alone terrestrial mobile or fixed wireless systems derive from the harmful interference that would be caused to the numerous, established satellite systems operating in these or in adjacent bands. In footnote NF31 of the draft SATFA, it is indicated that ICASA undertook an enquiry to determine criteria to access this band for IMT services. GVF wishes to underline the fact that the interference problem generated by terrestrial mobile or fixed broadband wireless access systems, including IMT, is **not limited to co-frequency band operations** with the fixed-satellite service, but also relates to the harmful effects from deployment of new terrestrial systems **in adjacent bands** to the fixed-satellite service-- for example, a terrestrial system operating in the 3500-3600 MHz band interfering with satellite receive earth stations operating in bands above 3600 MHz. We note as well that the deployment of wireless access systems in or adjacent to C-band frequencies used by the fixed-satellite service would not only constrain established satellite systems operating in these or in adjacent bands, but also would constrain the ability of satellite operators to deploy new earth stations in the future.

It is particularly important to emphasize that the earth stations of satellite systems that today use C-band frequencies in the 3400-4200 MHz band do so in reception mode and, therefore, are extremely susceptible to harmful interference and receiver overdrive (*e.g.*, causing total loss of service, blackouts, synchronization loss and signal delays) generated by transmissions in co-frequency or in adjacent bands. Deployment of stand-alone mobile or fixed terrestrial wireless access systems, including IMT, in the same geographic area and in the same or in adjacent C-band frequencies in which satellite systems operate substantially compromises the operation of satellite receive earth stations, rendering them inoperable, and thus depriving consumers of service. ITU technical studies come to this same conclusion,[3] and are made evident by the recent cases around the world in which satellite receive earth stations in the C-band have experienced harmful interference.[4]

It is the hope of GVF that ICASA will adopt policies for the C-band that reflect the results of WRC 07, offer protection for longstanding satellite services in these bands, and do not impose undue constraints on satellite services operation in South Africa and throughout the region. GVF members have identified many cases throughout the world where interference has been caused to fixed-satellite service earth stations by WiMAX or similar terrestrial systems. Some of these cases are identified in **Annex A**, and are provided to ICASA as a reference.

In sum, in developing its spectrum plans for the coming years, GVF respectfully requests that ICASA take into account the importance of C-band frequencies for the satellite industry in

[3] Report ITU-R M.2109 presents the results of the different sharing studies performed between the FSS networks using the geostationary satellite orbit and IMT-Advanced systems. *See* REPORT ITU-R M.2109, *Sharing studies between IMT-Advanced systems and geostationary satellite networks in the fixed-satellite service in the 3 400-4 200 and 4 500-4 800 MHz frequency bands* (2007).

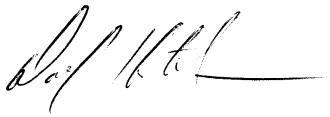
[4] In countries in which the deployment of terrestrial wireless access systems has been allowed in C-band, satellite systems have experienced massive problems and service interruptions. In addition, it is possible that interference will affect radars and microwave links that operate in these bands. Satellite systems in places like Australia, Bolivia, Fiji, Hong Kong, Indonesia, Pakistan and several countries in Africa have been negatively affected by these deployments of terrestrial systems.

South Africa and that, in its desire to accommodate new services and applications in the radio spectrum, the ongoing use of C-band by the satellite industry is not placed at risk.

GVF thanks ICASA for the opportunity to comment on its consultations, and hopes that ICASA will continue to consult satellite operators, service providers and satellite users on a regular basis on any proposed changes to satellite allocations and proposals for sharing spectrum.

We look forward to your feedback on the points raised above.

Respectfully,



David Hartshorn
Secretary General

ANNEX A

In countries in which the deployment of terrestrial wireless access systems has been allowed in C-band frequencies, satellite systems have experienced massive problems and service interruptions – both in-band and adjacent band interference. In addition, it is possible that interference from terrestrial wireless access systems will affect radars and microwave links that operate in these bands. Satellite systems in places such as Australia, Bolivia, Fiji, Hong Kong, Indonesia, Pakistan and several countries in Africa have been negatively affected by the deployments of terrestrial wireless access systems in C-band frequencies. Below are the corresponding reports of interference into fixed-satellite service stations by such systems.

Australia: Australia Interference.pdf

Bolivia: Bolivia Interference.pdf

Fiji: Fiji Interference.pdf

Hong Kong: Hong Kong Interference Study.pdf
Hong Kong decision based on study.pdf

Indonesia: Indonesia Interference.pdf

Pakistan: Pakistan Interference.pdf

Tanzania: Tanzania Interference Report.pdf