

**VIA E-MAIL**

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The Independent Communications Authority of South Africa  
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Attention  
Mr. Manyapelo Richard Makgotlho

**Ref.: Draft Frequency Migration Regulation and Frequency Migration Plan**

Intelsat would like to thank the Independent Communications Authority of South Africa ("ICASA") for the opportunity to comment on ICASA's Draft Frequency Migration Regulation and the Frequency Migration Plan.

By way of background, Intelsat is the world's leading commercial satellite communications service provider with more than 50 satellites in operation. Intelsat delivers advanced transmission access for information and entertainment to some of the world's leading media and network companies, multinational corporations, Internet service providers, and international humanitarian and government organizations. Every year we help millions of people stay connected to the things they care about. Intelsat is committed to providing vital services to the population of South Africa; 21 of Intelsat's satellites provide capacity for South Africa in the C-band alone.

While Intelsat supports ICASA's efforts to improve the efficient use of radio frequency spectrum in South Africa, Intelsat would like to express its grave concern with two suggestions made in the Draft Radio Frequency Migration Plan:

- a) The proposal to extend and prioritize the allocation of broadband fixed wireless access ("BFWA") in the 3600-3800 MHz band;

- b) The proposal to “Migrate VSAT to Ku band, and use 3600-3800 for BFWA as per SADC FAP proposed common sub-allocation/utilization” (see Table 3 of Proposed Migration Plan for 3600-4200 MHz)

Traditionally, the C-band (3400 – 4200 MHz, space-to-Earth) has been allocated to fixed satellite services (“FSS”) on co-primary basis on a global basis. However, South Africa has allocated the 3400 – 3600 MHz band for Fixed and Mobile services, making these 200 MHz no longer accessible to FSS services. Intelsat’s customers depend on C-band capacity in order to provide connectivity to consumers as well as to large corporations. Some of the services currently in use are cellular backhaul connectivity, backhaul for existing wireless terrestrial networks, Internet backbone connectivity, satellite TV service contribution and distribution links, satellite news gathering (“SNG”) services, corporate networks and point-to-point communication services.

For many of these services the C-band is the ideal frequency band. C-band is extremely reliable, even in heavy rain and is very suitable and cost efficient for reaching more remote and sparsely populated areas. Furthermore, the wide coverage area of C-band beams allows for communication with other continents such as the Americas, Europe or parts of Asia. Governments, non-governmental organizations (NGOs), intergovernmental organizations (IGOs), businesses and individual consumers all depend on and benefit from the crucial services that are provided by FSS in the C-band.

Furthermore, as South Africa is rolling out Digital Terrestrial Television (“DTT”), to replace the entire TV distribution for the whole population, which is currently done in analogue, satellite plays a crucial role. The distribution of the primary TV signal to each re-transmitting site is done via satellite using C-band. This would be severely impacted if ICASA moves forward with migrating fixed satellite services (“FSS”) out of the C-band.

While the intention to harmonize spectrum is a good one, it is important to recognize that frequencies, especially satellite frequencies should be harmonized on a global level. C-band frequencies including the 3600-3800 MHz band are extensively used by fixed satellite services to provide global or regional communications networks for entities around the globe.

## **FSS USAGE OF THE C-BAND IN SOUTH AFRICA**

Today, there are more than 40 geostationary satellites operating in the C-band which provide coverage of all or part of South Africa and deliver essential services. Additionally, more satellites using the C-band are under construction. New C-band earth stations are also being deployed around the world on a regular basis, not to mention the countless number of Receive Only Earth Station (ROES) antennas used for TV reception. These developments represent significant investments in both space and ground infrastructure to support C-band satellite operations both now and well into the future.



However, the launch of new satellites requires very large financial investments. Companies only make these investments after thorough research and advance planning. It takes about 3 years to design, build in launch a satellite. Once in orbit, satellites usually have a life-time of 15-18 years and the frequency capacity cannot be modified once in orbit. Therefore, a stable regulatory framework and radio frequency allocation made in terms with the ITU allocation table are needed before companies take the financial risk for additional investments.

## **FIXED BWA COEXISTENCE WITH FSS REQUIRES VERY STRICT CONDITIONS**

In line with SADC,<sup>1</sup> ICASA has proposed to open the C-band 3600-3800 MHz to BFWA operations. Today satellite operators are operating more than 40 satellites and constructing several new satellites over SADC countries with C-band payloads, most of which include all or part of the 3600-3800 MHz band, demonstrating that this portion of the FSS C-Band is and will remain critical for satellite communications.

The whole 3600-4200 MHz band (600 MHz) is currently allocated within South Africa to FSS and Fixed Services on a co-primary basis,<sup>2</sup> which require strict coordination to ensure neither service experiences interference. Under the existing ITU Radio Regulations, a new fixed wireless access entrant can operate in the 3600-3800 MHz frequency band only if the operator mitigates any harmful interference it would otherwise cause to existing services, such as FSS. Several studies conducted in preparation for the WRC 2007 (WRC-07) demonstrated, however, that extreme difficulties would result from introducing broadband wireless access (BWA)<sup>3</sup> services into C-band. Similarly, the most recent Report ITU-R S.2199 on the “Studies on compatibility of BWA systems and FSS networks in the 3400-4200 MHz band”, approved jointly by ITU-R Study Groups 4 and 5, has again re-confirmed the lack of compatibility between BWA and FSS. Any increased sharing in this band would have substantial disadvantages for satellite operations, increasing the risk of interference and effectively preventing the deployment of new earth stations.

If ICASA proceeds to introduce BFWA (which we understand as fixed BWA or FWA) operations into the 3600-3800 MHz band, as well as the 3800-4200 MHz band, strict coordination criteria must be established and enforced to ensure that BFWA deployments protect existing C-band installations. For example, the ITU has concluded that in order to provide an FSS receive earth station with protection from interference in both long-term and short-term propagation conditions, a co-frequency terrestrial base station must maintain a minimum distance separation of at least several tens of kilometers and potentially hundreds of kilometers relative to the FSS receive earth station.

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<sup>1</sup> After Footnote 5.430A of Article ITU-RR 5

<sup>2</sup> National Radio Frequency Plan, Government Gazette Vol. 541, ref. No. 33409, 30 July 2012 (Notice 727 of ICASA)

<sup>3</sup> The ITU defines broadband wireless access services as Mobile Wireless Access (MWA), Nomadic Wireless Access (NWA), and Fixed Wireless Access (FWA). See ITU-R Report M.2109 plus ITU Recommendations ITU-R S.1432 and SF.1006. This evidence led the WRC to reject any global allocation for IMT in the band 3400-4200 MHz and to ensure that satellites in this band continue to provide critical services.

## **BFWA OPERATIONS WILL ALSO INCREASE OUT-OF-BAND INTERFERENCE**

In addition to the interference BFWA operations will cause to other services in the 3600-3800 MHz band, BFWA operations also may cause harmful interference to services operating in the adjacent bands, specifically satellite services above 3800 MHz.

The impact of out-of-band interference into an FSS receive earth station was investigated by the ITU, which found that the minimum required separation distances to avoid such out-of-band interference are also up to tens of kilometers (with no guard band).<sup>4</sup> The studies showed that guard bands may reduce the separation distance, but will not eliminate the risk of interference. Furthermore, as described in the ECC Report 100 of the Conférence Européenne des Postes & Télécommunications (CEPT), national regulators should ensure adequate protection zones around FSS earth stations to ensure BWA operations do not create harmful interference.<sup>5</sup> In the same vein, when new FSS earth stations are licensed in the 3600-3800 MHz band in the future, subsequent licensees for BFWA operations should be required to protect licensed FSS earth stations.

## **VSAT MIGRATION WOULD HARM LOCAL OPERATORS AND CONSUMERS**

While ICASA's proposal recognizes the difficulty in coordinating some FSS operations with the proposed BFWA operations in the C-band, migrating VSAT operations to the Ku-band is not the appropriate solution. VSAT operators in South Africa provide critical services to enterprises and consumers across the country. Intelsat, along with other satellite operators has invested hundreds of millions of dollars to launch the current C-band satellites providing service in Africa as well as construct future satellites to continue providing service. Similarly, Intelsat's customers in South Africa along with other local operators have made big investments to build out their networks. If VSAT operations are migrated to Ku-band, the underlying infrastructure will have to be overhauled imposing significant cost to the whole value chain. Additionally satellite operators may be forced to move C-band satellites to other countries or regions if they are unable to sell their C-band capacity, resulting in a loss of capacity available for communications services in South Africa.

While Intelsat recognizes that broadband services are important to South Africa, ICASA should not allocate additional spectrum to BFWA at the cost of communications services and providers who today provide crucial communications services to consumers across South Africa. Additionally, satellite communications in many cases provide the backhaul to help terrestrial wireless broadband services reach remote and scarcely populated areas. Intelsat strongly encourages ICASA to reconsider its plans to allocate the 3600-3800 MHz band to BFWA operations.

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<sup>4</sup> See ITU-R Report M.2109.

<sup>5</sup> COMPATIBILITY STUDIES IN THE BAND 3400- 3800 MHz BETWEEN BROADBAND WIRELESS ACCESS (BWA) SYSTEMS AND OTHER SERVICES, Feb 2007

Intelsat thanks ICASA again for the opportunity to provide comments and would also be interested to provide further comments and information during the public hearings which are planned for October 31 to November 2, 2012.

Sincerely,

A handwritten signature in dark ink, appearing to read 'Annette M. Purves', with a long horizontal flourish extending to the right.

Annette M. Purves  
Principal Regulatory Affairs Specialist  
Intelsat