



**ESOA Response to the
Public Consultation published by ICASA on the Draft Frequency Migration
Regulation and Frequency Migration Plan
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To the attention of:
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INTRODUCTION

ESOA appreciates the opportunity to comment on the consultation published by the Independent Communications Authority of South Africa (ICASA) regarding the Draft Frequency Migration Regulation and Frequency Migration Plan (hereinafter, the “consultation”).¹

While ESOA applauds ICASA’s efforts to improve the efficient use of spectrum in South Africa, ESOA is very concerned that the proposal to extend and prioritize the allocation of broadband fixed wireless access (BFWA) in the C-band will have a significant negative impact on Fixed-Satellite Services (FSS). As a result, many satellite services that consumers and companies depend on, such as contribution links to wireless systems, internet backbone, newsgathering and point-to-point communications will be compromised. Furthermore, the proposal to migrate VSAT satellite operations from the 3600-3800 MHz band to the Ku-band will risk reducing the availability of satellite communications services to rural areas and impose untenable financial costs on VSAT operators in South Africa.

ESOA is also seriously concerned by the ICASA proposals to introduce new fixed link or BFWA applications into some of the bands used by the mobile satellite service (MSS). These proposals seem to overlook the high risk of interference to MSS systems that would result and is contrary to the trend in most countries which facilitate MSS operations by phasing out any FS applications in the MSS bands.

¹ Government Gazette Vol. 566, ref. No. 35598, 17 August 2012 (Notice 606 of ICASA)



ESOA is a non-profit European organisation established with the objective of serving and promoting the common interests of European satellite operators. The Association is the reference point for the European satellite operators industry, today representing the interests of 11 satellite operators who deliver information communication services across the globe. Several of these satellite operators provide FSS service to customers in South Africa; therefore, ESOA is submitting the below comments on ICASA's proposal.

BACKGROUND

In the consultation, ICASA has proposed several changes to its National Radio Frequency Plan to reflect (1) previously approved allocations, (2) proposals identified in the South Africa Development Community (SADC) Frequency Radio Allocation Plan 2010, (3) resolutions adopted within the International Telecommunication Union's World Radiocommunication Conferences (WRC), and, finally, (4) frequency allocations specifically for South Africa.

1. COMMENTS ON THE C BAND PROPOSALS

ICASA has proposed to adopt SADC's proposal to allocate the 3400-3800 MHz band to fixed and / or mobile BWA. ICASA has made an additional proposal to move VSAT operations completely out of the 3600-3800 MHz band and into the Ku-band.

1.1. FSS USAGE OF THE C-BAND

For over 40 years, the satellite sector has used the entire 3400-4200 MHz frequency band (C-band) for FSS to provide global communications across continents, including between Africa and other regions, as well as inter-continental communications. The C-band remains critical to satellite communications everywhere in the world because it allows operators to cover large geographic areas with fewer transponders, which in turn allows operators to provide economically viable satellite coverage to smaller markets and low density regions. The C-band also offers high availability rates for satellite service relative to other frequency bands because it is less susceptible to the effects of rain. Governments, non-governmental organisations (NGOs), intergovernmental organisations (IGOs), businesses and individual consumers all depend on and benefit from the crucial services that are provided by FSS in the C-band.

Today, there are approximately 160 geostationary satellites operating in the C-band providing essential services to consumers around the world, more than 40 of which provide coverage of all or part of South Africa. Additional 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 that are distributed globally. These developments represent significant investments in both space and ground infrastructure to support C-band satellite operations both now and well into the future.

1.2. FIXED BWA COEXISTENCE WITH FSS REQUIRES VERY STRICT CONDITIONS

In line with SADC,² ICASA has proposed to open the C-band 3600-3800 MHz to BFWA operations. ESOA notes that today satellite operators are operating 41 satellites and constructing 6 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 the satellite sector. (See the Annex – as a separate document).

The whole 3600-4200 MHz band (600 MHz) is currently allocated within South Africa to FSS and Fixed Services on a co-primary basis,³ which requires 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)⁴ 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 3400-3600 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 kilometres and potentially hundreds of kilometres relative to the FSS receive earth station.

1.3. 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

² After Footnote 5.430A of Article ITU-RR 5

³ National Radio Frequency Plan, Government Gazette Vol. 541, ref. No. 33409, 30 July 2012 (Notice 727 of ICASA)

⁴ 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. More details about the range of critical services provided by the satellite industry and the problems of satellite and terrestrial compatibility as sustained by ITU studies can be found at www.fss-toolkit.com

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 kilometres (with no guard band).⁵ 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.⁶

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.

1.4. 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. These operators have made big investments to build out their networks. Similarly, satellite operators have 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. 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.

2. COMMENTS ON THE L-BAND PROPOSALS

In paragraph 4.11.21, ICASA has proposed to introduce new fixed systems in the band 1518 - 1525 MHz and in paragraph 4.11.22, ICASA proposes to introduce new fixed systems in the band 1525-1530 MHz. The former band is planned to be brought into use by new MSS systems in 2013, with the launch of the Alphasat satellite by Inmarsat. The latter band has been used by Inmarsat and other GSO MSS operators throughout the world for many years. While there is an allocation to the FS in the ITU Radio Regulations in both of these bands, use of the FS is generally not compatible with MSS operations. Mobile earth stations can operate at any locations (on land, sea, and in the air) and hence coordination to prevent interference from terrestrial systems is not feasible. The existence of these allocations is from historical reasons, and should not be used as an opportunity to introduce new FS systems.

Most countries are able to accommodate their needs for spectrum for fixed applications in L-band in other frequency bands. ESOA proposes that the bands 1518-1525 MHz and 1525-1530 MHz should not be opened to new FS applications, and MSS should remain as the primary users of these bands.

⁵ See ITU-R Report M.2109.

⁶ Compatibility studies in the band 3400- 3800 MHz between BWA systems and other services, Feb 2007

In section 4.11.23, ICASA proposes to modify the national table of frequency allocations to mirror the allocations in Region 1 in the Radio Regulations. ICASA explains that “This change in allocation, in line with ITU region 1 would open up the possibilities of introducing Fixed links (PTP, PMP) into this band”.

Like the corresponding downlink band (1518-1525 MHz), the band 1668-1675 MHz will be brought into use in 2013 with the launch of the Alphasat satellite by Inmarsat. The use of this band by FS systems is not compatible with use by the MSS. As the band 1668-1675 MHz is an MSS uplink band, it is likely that harmful interference would be caused to satellite receiver. Interference into the satellite uplink frequencies would cause interference not only to users in South Africa but also to users located anywhere in the same satellite beam, i.e. in the surrounding countries and seas. For this reason WRC-07 introduced Resolution 744 (Rev.WRC-07). While this Resolution is focused on transportable radio-relay systems, the power limits contained in Resolves 3, which are necessary to protect MSS satellites, would apply equally to any fixed or mobile applications. Furthermore, as this band will be used by transmitting mobile earth stations, there is a risk of interference being caused to any terrestrial systems.

ESOA proposes that the band 1668-1675 MHz should be allocated to the MSS (Earth-to-space) in the national table of frequency allocations and should not be allocated to the fixed and mobile services.

3. COMMENTS ON THE S-BAND PROPOSALS

In section 4.11.25, ICASA proposes to allocate the band 1980-2010 MHz and 2170-2200 MHz for new fixed links and for BFWA systems, depending upon availability of equipment. These bands are allocated to the MSS and are planned to be used by the MSS in Europe, where two operators (Solaris and Inmarsat) have been selected as the two operators. MSS systems serving South Africa might also be introduced in the near future, but fixed and BFWA systems are generally not compatible with MSS operations. While these bands are allocated to the fixed and mobile services in the Radio Regulations, Resolution 716 (Rev.WRC-2000) urges administrations to transition FS systems *out* of these frequency bands.

ESOA is concerned that the planned introduction of fixed or wireless access systems will effectively prevent these bands from being used for MSS systems not only inside but also outside of South Africa. ESOA requests that South Africa should not be used by terrestrial systems so that the bands may be used by international MSS systems in the future.

CONCLUSIONS

ESOA recognizes that broadband services, like many communications services, are an important use of radio frequency spectrum; however, the allocation of additional spectrum to broadband services should not come at the cost of communications services that are currently provided to consumers across South Africa, particularly those in rural areas. ESOA therefore urges ICASA to



reconsider its plans to allocate the 3600-3800 MHz band to BFWA operations and to migrate VSAT operations to the Ku-band.

The L-band and S-band MSS allocations are also currently well used or expected to be used in the near future. The proposed introduction of new fixed or BFWA applications in some of the MSS bands would almost certainly lead to harmful interference to MSS systems and would exclude the possibility of South Africa to benefit from the offered MSS services. ESOA therefore urges ICASA to reconsider its proposals related to the bands 1518-1530 MHz, 1668-1675 MHz, 1980-2010 MHz and 2170-2200 MHz.

ESOA remains available to provide further comment or to respond to any questions if required by the ICASA, and its members would be grateful to meet with the ICASA during the public hearings to be held at the end of October.

Yours sincerely,

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Annex:

The Importance of Satellite Access to C Band Spectrum In Africa