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March 06, 2023

Mr. Manyaapelo Richard Makgotlho
Independent Communications Authority of South Africa
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**Via e-mail: rmakgotlho@icasa.org.za**
**cc: jdikgale@icasa.org.za**

**RE: Independent Communications Authority of South Africa ("ICASA")'s Second Draft Radio Frequency Spectrum Assignment Plan for the frequency band 1427 MHz to 1518 MHz for public consultation**

Dear Mr. Makgotlho:

Al Yah Satellite Communications Company ("Yahsat")[1] and Thuraya Telecommunications Company ("Thuraya")[2], jointly ("the Operators"), submit these comments in response to the Independent Communications Authority of South Africa ("ICASA")'s *Second Draft Radio Frequency Spectrum Assignment Plan for the frequency band 1427 MHz to 1518 MHz for public consultation; Rules for Services operating in the Frequency Band 1427 MHz to 1518 MHz (IMT1500).*

[1] Al Yah Satellite Communications Company P.J.S.C. is a public company listed on the Abu Dhabi Securities Exchange and a subsidiary of Mubadala Investment Company, offering multi-mission satellite services in more than 150 countries across Europe, the Middle East, Africa, South America, Asia and Australasia. Yahsat's fleet of five satellites reaches more than 80% of the world's population, enabling critical communications including broadband, video broadcasting, backhauling, and mobile voice and data solutions.

[2] Thuraya, is a mobile satellite services operator and a subsidiary of Al Yah Satellite Communications Company P.J.S.C. (Yahsat). Established in 1997, Thuraya is based in the UAE and offers MSS communication solutions to a variety of sectors including energy, government, broadcast media, maritime, military, aerospace, and humanitarian NGO.

## Background

As satellite operators, providing a wide range of satellite services using L-band for land, maritime, and aero platforms, the Operators would like to convey their viewpoint on the significance of L-band mobile satellite services ("MSS") operations in the band 1518-1559 MHz. To this end, it is imperative to consider issues related to MSS/IMT compatibility, since the IMT is currently being planned by ICASA in the adjacent frequency band i.e., immediately below 1518 MHz. To guarantee efficient and interference free use of spectrum in South Africa, it is essential to ensure the protection of current MSS L-band service and terminal use from future IMT deployments, and the Operators welcomes the opportunity to comment on this matter.

## Importance of MSS

MSS networks fulfil a range of essential and critical communication requirements for land, maritime, and aeronautical applications. In addition, L band MSS networks are catalyzing the digital transformation of various sectors such as agriculture and mining, by enabling the connection of Internet of Things (IoT) assets that are beyond the coverage envelope of terrestrial networks. The Operator's satellites meet the bandwidth needs of the most diverse, demanding applications increasingly being adopted by the public and private sectors. For South Africa, it is essential to count on a reliable and resilient connection for distress communications that can connect the people in a disaster situation and help the authorities and emergency bodies to manage the situation and recovery.

L-band MSS services, using the band 1518-1559 MHz, are on-board South African vessels as well as foreign registered vessels to meet GMDSS requirements, bringing constant all-weather data connectivity across oceans and seas. In addition, L-band satellite terminals operate on-board aircraft, including on South African aircraft, and provide real-time information relating to flight progress, weather, and engine and aircraft performance. It is important to consider that there is a strong and growing demand for MSS in the 1.5 GHz band, in both the 1518-1525 MHz and 1668-1675 MHz band segments (the "extended L-band") and in the 1525-1559 MHz and 1626.5-1660.5 MHz segments (the "standard L-band").

The Operator is launching its next generation satellite Thuraya-4 (T-4) in 2024 to further complement the growing needs for L-band MSS, which will also operate in both extended and standard L-band.

**Proposed TDD channelling arrangement by ICASA**

The Operators note with concern the ICASA proposed assignment of the frequency band 1427-1518 MHz for IMT applications under the channeling arrangement G3 proposed by the ITU-R[3]. Various technical studies conducted demonstrated that the introduction of IMT networks in the frequency range 1492-1518 MHz can cause significant harmful interference to be received by sensitive MSS terminals operating in the adjacent band 1518-1559 MHz. In this regard, the Operators encourage ICASA to review the following documents:

- ITU-R [Preliminary] Draft New Report ITU-R M.[REP.MSS & IMT L-BAND COMPATIBILITY]
- ITU-R [Preliminary] Draft New Recommendation ITU-R M.[Rec.MSS & IMT L-BAND COMPATIBILITY]
- ECC Report 263 - Adjacent band compatibility studies between IMT operating in band 1492-1518 MHz and the MSS operating in the band 1518-1525 MHz

The Operators note that ICASA proposes to open the entire band 1427-1518 MHz (without any guard band) for IMT systems in South Africa which could be detrimental for MSS operations. Of particular concern to the Operators, is the proposal to extend the use of L-band for IMT systems to include the upper part of the "IMT1500" band, specifically the band 1492-1518 MHz. This creates a risk to current and future MSS operations in South Africa. The proposed use by IMT s of both TDD base stations and user terminals acerbates the interference challenge.

[3] See (Annex Section 4 of) ITU-R Recommendation M.1036-6, titled "Frequency arrangements for implementation of the terrestrial component of International Mobile Telecommunications in the bands identified for IMT in the Radio Regulations"

**Mitigation measures necessary to protect MSS operations**

Of note is that over the last 7 years, ITU-R Working Parties 4C and 5D have been jointly developing an ITU recommendation to assist administrations such as South Africa undertake their domestic L-band frequency planning. However, the sharing and compatibility studies have been technically complex, and it is unlikely that this recommendation will be available soon. The recommendation suggests considering the results of these sharing and compatibility studies while implementing any of the G1, G2 or G3 channel arrangements.

In view of the above, ICASA should establish suitable technical and regulatory conditions to guarantee the interference free operations of MSS networks in South Africa. These measures could include the limits on the EIRP of IMT transmissions, limits on IMT out-of-band emissions at the at the 1518 MHz band edge, at a level not to exceed a maximum value of -41dBm/MHz and including a guard band below 1518 MHz. This has also been suggested in the [preliminary] draft new ITU-R Recommendation to implement one or combination of such mitigation techniques to ensure the protection of MSS.

ICASA's approach to use the L-band for TDD based mobile systems, will make it challenging to implement geographical separation between the MSS and IMT terminals, as both services will be ubiquitously deployed in South Africa. It is therefore recommended to only consider the band below 1492 MHz for IMT operations, which would avoid major compatibility issues with the MSS. Introducing 5G into 1492-1518 MHz band could jeopardize the continued reliability of these essential satellite communications systems. This harmful interference could disrupt critical operations in the South African territory.

**Conclusions**

The Operators appreciates the opportunity to contribute to the ICASA public consultation on "Second Draft Radio Frequency Spectrum Assignment Plan for the frequency band 1427 MHz to 1518 MHz for public consultation. Given the importance of MSS for critical safety operations, the Operators respectfully requests that ICASA looks to the protection of L-band MSS in its

national territory. A practical approach to avoiding harmful interference between the two services is to implement appropriate OOB emissions limits on IMT transmission and to limit IMT use to the band below 1492 MHz.

Sincerely,

Steven Doiron
EVP – Spectrum and Regulatory Affairs
Al Yah Satellite Communications Company & Thuraya Telecommunications Company