



13 January 2022

Mr Makgotlho  
Independent Communications Authority of South Africa  
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Dear Mr Makgotlho,

**RE: INMARSAT'S RESPONSE ON THE DRAFT RADIO FREQUENCY SPECTRUM ASSIGNMENT PLAN FOR THE FREQUENCY BAND 1518 MHz - 1525 MHz**

Inmarsat welcomes the opportunity to submit a written representation on the draft Radio Frequency Spectrum Assignment Plan for the Frequency Band 1518-15125 MHz, published in terms of regulation 3 of the Radio Frequency Spectrum Regulations 2015 and the Radio Frequency Migration Plan of 2013 and 2019.

Please find herewith Inmarsat's written submission.

Inmarsat is available to make an oral presentation should you require further information or clarification on this submission.

Yours Sincerely

A handwritten signature in blue ink, appearing to read "Donna Murphy", positioned above a horizontal line.

Donna Murphy  
Senior VP: Regulatory

A handwritten signature in blue ink, appearing to read "Dr Nigel Naidoo", positioned above a horizontal line.

Dr Nigel Naidoo  
Director: Market Access and Regulatory, Africa

## 1. Introduction

Inmarsat would like to congratulate the Authority on its decision to secure the XL band<sup>1</sup> for mobile satellite services (MSS) and for striving to ensure that these satellite services are not subjected to harmful interference. The XL and L<sup>2</sup> frequency bands are globally harmonised for the mobile satellite service and are widely used to fulfil a range of essential and critical communication requirements.

Inmarsat's Alphasat satellite currently utilises the 1518-1559 MHz (space-to-earth) and 1626.5-1660.5 MHz, and 1668-1675 MHz (earth-to-space) frequency bands and has been in operation for a considerable amount of time. Alphasat delivers full geographic coverage over South Africa and provides several services such as Global Maritime Distress and Safety System (GMDSS), including maritime safety Information (MSI), Public Protection and Disaster Relief (PPDR), Aeronautical Mobile Satellite (Route) Service (AMS(R)S) and secure military communications. Moreover, Inmarsat has recently deployed "Inmarsat-6 F1" (I6 F1), our next-generation dual payload satellite, which is set to come into service during the first quarter of 2023. I6 F1 will also utilise the L band to deliver additional satellite bandwidth to complement the essential and critical communication services offered by Alphasat.

Inmarsat and our local partners are actively pursuing opportunities in strategic markets, including South Africa, to unlock the social and economic benefits of mobile satellite technology within Southern Africa and Africa as a whole. However, this technology's effective and sustainable use requires an interference-free operational environment. This written submission provides practical recommendations to mitigate adjacent channel and co-channel interference to MSS operating in the XL and L frequency bands and highlights South Africa's international commitments toward securing the L/XL band.

## 2. Mitigating Adjacent Channel interference: Mobile Satellite Services and International Mobile Telecommunications

Based on our analysis of a recent regulatory consultation<sup>3</sup>, we understand that the Authority has earmarked the band 1427-1492 MHz for future International Mobile Telecommunications (IMT) services and not the frequency range 1492-1518 MHz. With this understanding, the Authority may wish to review the draft assignment plan, to remove some references to terrestrial IMT that appear to be misplaced, such as IMT in channels #1 and #2 of Table 1 and IMT in the adjacent band 1492-1518 MHz in Figure 1. The references to some CEPT documents in section 7.2.1 of the document (including ECC Report 263 and CEPT Report 269), which are related to IMT/MSS compatibility, also appear to be inappropriate since these are relevant only to the handful of countries that plan for terrestrial IMT operations in the band 1492-1518 MHz.

Inmarsat would be very concerned if the Authority considered deviating from its previously understood position by earmarking the frequency range 1492-1518 MHz for IMT. Inmarsat would like

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<sup>1</sup> Space to Earth segment spanning 1518-1525 MHz

<sup>2</sup> 1525-1559 MHz (downlink) and 1626.5-1660.5 MHz (uplink)

<sup>3</sup> Findings Document on the Implementation of the Radio Frequency Migration Plan and IMT Roadmap (Notice 79 of 2021),

to highlight that this poses a significant risk of harmful interference toward MSS operations above 1518 MHz. This interference will be due to out-of-band emissions from new IMT base stations and overloading the MSS terminal's receiver. Furthermore, if TDD IMT systems were to be considered, this would further impact adjacent band compatibility issues between IMT terminals and MSS terminals.

The Authority has referenced several CEPT, EU and ITU documents: CEPT ECC Report 263, CEPT Report 269, CEPT Report 65, Decision (EU) 2018/661 8, Decision (EU) 2018/661 16, ECC/DEC/(17)06, ECC Report 299, and Recommendation ITU-R M.1036. . However, Inmarsat is of the view that certain technical and operational conditions stipulated in some of these reports would need to be modified to afford adequate protection to MSS from IMT systems in the band 1492-1518 MHz. Specifically, additional measures are required to protect land mobile earth stations, which cannot operate in the vicinity of IMT base stations, blocking high-profile users such as border patrols, rangers, military, drone operators, etc.

The Authority made a wise choice in limiting IMT use to the band 1427-1492 MHz in South Africa – a plan that several other administrations have already adopted. If the band 1492-1518 MHz were to be considered for IMT use, that would require complex compatibility measures to be adopted, likely constraining both IMT and MSS operations, which should be avoided.

### **3. Mitigating co-channel interference: Mobile Satellite Service and Fixed Service**

A core objective of the draft radio frequency spectrum assignment plan is to enable the assignment of single frequency links (Fixed links) while ensuring no harmful interference to satellite services. In Inmarsat's experience, there is very little use of this band in other countries by fixed service (FS) systems. However, FS systems present a risk of interference with MSS terminals. Inmarsat has not identified any CEPT or ITU Reports or Recommendations that address such compatibility. Therefore, the Authority should study this matter further before deciding where these fixed links should be migrated. As already indicated, Inmarsat offers essential and critical services in the 1518-1559 MHz band and will be launching next-generation satellites, facilitating cutting-edge services

As such, one suggestion is to study deployment scenarios that minimise the impact of interference to MSS, such as migrating the FS systems into the frequency range 1492-1518 MHz. Furthermore, FS channels at the *lowest* end of the band (1492 MHz) could be prioritised for use, thereby minimising any possible adjacent channel interference impact to MSS operations above 1518 MHz. It would be helpful if detailed information on licensed fixed links could be provided for further study.

### **4. Criticality of the L- band services in support of Search and Rescue Operations by South Africa**

Given the criticality of South Africa's geographical location covering a very large NAVAREA with both the Indian and Atlantic oceans and all the way to Antarctica, the South African Government has given an international commitment to the provisioning of International Maritime Rescue Coordination services (as an RCC operator) in serving this NAVAREA for search and rescue (SAR) operations. It would be prudent for South Africa to maintain its international responsibility as part of the IMO SOLAS (Safety of Life) convention, to which South Africa is a signatory, and continue to provide XL/L-band

critical safety-related services covering the whole band 1518 MHz to 1559 MHz without causing any undue interference to the frequency band.

----- *End of Submission* -----