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13th June 2025

The Chairperson
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Submitted Electronically: dmoshweunyane@icasa.org.za, rmakgotlho@icasa.org.za

Dear Mr. Moshweunyane & Mr. Makgotlho,

SAMSA Submission on the Draft National Radio Frequency Plan (NRFP) 2025

On behalf of the South African Maritime Safety Authority (SAMSA), I am pleased to submit our formal comments in response to the Independent Communications Authority of South Africa's (ICASA) Draft National Radio Frequency Plan (NRFP) 2025.

As the statutory body mandated to promote maritime safety, protect the marine environment, and ensure compliance with South Africa's international obligations under the International Maritime Organization (IMO), SAMSA is deeply invested in the outcome of this consultation process. Our submission focuses in particular on the proposed expansion of International Mobile Telecommunications (IMT) services into the 1492–1518 MHz frequency band and the associated risks this poses to the integrity of maritime satellite services operating in the adjacent 1518–1559 MHz band.

The 1518–1559 MHz band is critical to the functioning of the Global Maritime Distress and Safety System (GMDSS), Search and Rescue (SAR) coordination, and other essential maritime communication services used across South Africa's territorial waters and the broader Search and Rescue Region (SRR). The comments provided in the attached submission reflect SAMSA's technical assessment and our commitment to safeguarding the communications infrastructure that underpins national maritime safety and international compliance.

We trust that our input will support ICASA's ongoing efforts to ensure a well-balanced and forward-looking spectrum management framework.

Please do not hesitate to contact SAMSA should you require any further information or engagement.

Kind regards,

Thomas Solomon
Senior Radio Surveyor and Examiner

SOUTH AFRICAN MARITIME SAFETY AUTHORITY
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SAMSA Submission on the Draft National Radio Frequency Plan 2025

Submitted by: South African Maritime Safety Authority
Subject: Protection of the Mobile-Satellite Service and associated Distress & Safety Services and the need to maintain the 1492 MHz International Mobile Telecommunications cap.
Date: 13th June 2025

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1. Introduction

The South African Maritime Safety Authority (SAMSA) welcomes the opportunity to submit its views on the Draft National Radio Frequency Plan (NRFP) 2025, published by the Independent Communications Authority of South Africa (ICASA) for public consultation. As South Africa's statutory authority responsible for the promotion of maritime safety, the protection of the marine environment, and compliance with global maritime conventions, SAMSA is mandated to uphold national and international standards in maritime communications, navigation, and operational integrity. Consequently, SAMSA has a direct and vested interest in spectrum assignment policies that influence maritime safety, resilience, and regulatory compliance.

The NRFP is an essential framework for managing South Africa's radio frequency spectrum—a limited national resource fundamental to ensuring that critical services across all sectors, including maritime transport and safety, operate effectively and without harmful interference. The revision of the NRFP in alignment with the decisions of the World Radiocommunication Conference 2023 (WRC-23) and the 2024 edition of the ITU Radio Regulations is both timely and necessary. It presents an opportunity to ensure that South Africa's spectrum policy framework continues to support the safe operation of vessels, efficient port access, secure international trade, and compliance with International Maritime Organization (IMO) obligations.

On review of the latest draft NRFP and after consultation with various industry experts, SAMSA has serious concerns regarding the proposed expansion of IMT services into the 1492–1518 MHz frequency band. This spectrum lies directly adjacent to the 1518–1559 MHz Mobile Satellite Services (MSS) band, which underpins critical maritime safety systems including the Global Maritime Distress and Safety System (GMDSS), Search and Rescue (SAR), Maritime Safety Information (MSI), and the Long-Range Identification and Tracking (LRIT) of vessels. These systems are globally recognised, IMO- and ICAO- endorsed safety services that require uninterrupted satellite connectivity.

The introduction of terrestrial IMT services into the 1492–1518 MHz range risks generating adjacent-band interference that could impair the functioning of these safety systems. Maritime satellite transceivers, particularly those used aboard vessels traversing international and remote waters, are highly sensitive and operate at extremely low signal thresholds. Any

degradation in signal quality caused by adjacent-band interference—whether through out-of-band emissions, signal blocking, or receiver desensitisation—could compromise distress alerting, delay SAR coordination, or prevent the receipt of MSI during hazardous marine conditions.

As the authority responsible for ensuring the implementation of GMDSS in the South African Search and Rescue Region (SRR), SAMSA is obligated to uphold the safety provisions of the SOLAS Convention and associated IMO regulations. Any changes to the NRFP that could impair maritime satellite communications would not only undermine SAMSA's ability to discharge these obligations but could also compromise regional interoperability within the Southern African Development Community (SADC) maritime safety framework.

In this context, SAMSA respectfully urges ICASA to maintain the current cap on IMT assignment at 1492 MHz. Doing so will preserve the integrity of the MSS, ensure compliance with international safety frameworks, and protect the lives of seafarers operating in and around South African waters.

2. Background and SAMSA's Operational Responsibilities

SAMSA plays a central role in safeguarding South Africa's maritime domain through the regulation, coordination, and enforcement of maritime safety, marine environment protection, and emergency preparedness. Established under the South African Maritime Safety Authority Act (No. 5 of 1998), SAMSA is the designated authority for implementing international maritime safety standards, including the International Convention for the Safety of Life at Sea (SOLAS), the International Convention on Maritime Search and Rescue (SAR), and other related IMO instruments.

A critical aspect of SAMSA's operational mandate is the oversight and management of the Global Maritime Distress and Safety System (GMDSS) within South Africa's expansive Search and Rescue Region (SRR). This region encompasses vast oceanic areas of the Atlantic and Indian Oceans, serving as a key safety corridor for both domestic and international maritime traffic, including vessels traversing major east–west and north–south global shipping lanes.

All types of South African registered vessels rely heavily on satellite-based services within the 1518–1559 MHz Mobile Satellite Services (MSS) band. These services are used for:

- **Distress alerting:** Ensuring ships can reliably transmit emergency signals from anywhere within South Africa's SRR.
- **Search and Rescue coordination:** Facilitating real-time communication between distressed vessels, Rescue Coordination Centres (RCCs), and rescue units.
- **Maritime Safety Information (MSI):** Broadcasting vital safety updates, navigational warnings, and weather alerts to vessels at sea.
- **Long-Range Identification and Tracking (LRIT):** Monitoring and tracking vessel movements as part of global security and compliance protocols.
- **Emergency and operational communications:** Enabling voice and data links that support safe voyage execution in regions not covered by terrestrial networks.

The L-band satellite spectrum—particularly the 1518–1559 MHz band—is essential for the above functions due to its reliable signal propagation over vast marine environments, high resistance to weather-related attenuation, and its global harmonisation under the ITU and IMO frameworks.

Importantly, South Africa's maritime safety network does not operate in isolation. It is deeply integrated into regional and global systems for vessel tracking, distress coordination, and maritime domain awareness. These systems depend on seamless, interference-free communication channels to function effectively. Any degradation in signal quality or availability as a result of spectrum interference from adjacent IMT services could lead to significant service disruptions, delayed rescue response, and—in worst-case scenarios—loss of life at sea.

In this operational context, the protection of the MSS L-band is not just a matter of technical spectrum planning, but a core enabler of South Africa's maritime safety, environmental protection, and international legal obligations. SAMSA's ability to discharge its statutory mandate hinges on maintaining the operational integrity of these bands. The introduction of high-power, terrestrial IMT systems into the adjacent 1492–1518 MHz band therefore raises legitimate and urgent concerns about signal interference, service continuity, and regulatory alignment.

South Africa's unique geographic position—straddling the confluence of global shipping routes and encompassing a complex maritime environment—places additional pressure on SAMSA to ensure that the maritime communication infrastructure remains world-class, resilient, and fully compliant with the IMO's evolving GMDSS modernisation agenda. This is only possible if the MSS spectrum is protected from harmful adjacent-band activity.

3. The Case for Maintaining the 1492 MHz IMT Cap

The proposed expansion of IMT services into the 1492–1518 MHz frequency band poses a significant and unacceptable threat to the performance of maritime satellite communication systems operating in the adjacent 1518–1559 MHz band. These systems are integral to safety-of-life services, especially those under the Global Maritime Distress and Safety System (GMDSS), and are fundamental to South Africa's maritime Search and Rescue (SAR) obligations. For SAMSA, the consequences of introducing high-power terrestrial IMT operations in such close proximity to mission-critical Mobile Satellite Services (MSS) are both technically unacceptable and operationally indefensible.

3.1 Risk of Harmful Interference to MSS Maritime Terminals

MSS terminals aboard vessels and in shore-based RCC facilities are designed to receive signals from geostationary satellites operating at extremely low power levels. These systems are finely tuned for high sensitivity to maintain continuous communications even under adverse environmental conditions or in deep-sea operating environments. The proximity of terrestrial IMT operations to these frequencies introduces three principal mechanisms of interference:

- **Blocking interference**: IMT base stations operating at much higher power levels than MSS satellites can overwhelm MSS receivers, effectively preventing them from detecting legitimate satellite signals.
- **Out-of-band emissions (OOBE)**: Even when IMT systems operate within their assigned bands, spurious emissions inevitably spill into neighbouring frequencies, creating a higher noise floor and reducing the effective signal-to-noise ratio required by maritime safety terminals.
- **Receiver desensitisation**: The cumulative interference from a dense network of terrestrial IMT transmitters can reduce the dynamic range of MSS receivers, thereby degrading their performance in receiving weak satellite transmissions.

These types of interference are particularly dangerous in real-world maritime operational contexts. Vessels may experience a complete loss of connectivity with RCCs during emergencies, MSI messages may be delayed or corrupted, and SAR coordination could be disrupted at the exact moment when response time is most critical. The interference risk is magnified in areas near coastlines or port approaches, where maritime terminals operate in closer proximity to land-based IMT networks.

3.2 Non-Compliance with International Safety Standards

Permitting IMT assignment into the 1492–1518 MHz band would place South Africa at odds with the technical recommendations and safety requirements of the International Maritime Organization (IMO), which considers the continuous, interference-free operation of satellite communications essential for compliance with SOLAS Chapter IV and associated GMDSS performance standards.

Under IMO Resolution A.1001(25) and Circular MSC.1/Circ.1460/Rev.3, the performance of GMDSS systems must meet reliability and availability thresholds that cannot be assured in the presence of adjacent-band interference. Moreover, IMO guidance documents specify that satellite communication systems supporting SAR, MSI, and LRIT functions must operate with protection from harmful interference, in accordance with ITU Radio Regulations.

South Africa's RCCs rely on uninterrupted satellite connectivity to coordinate international SAR operations and comply with the requirements of the Joint IMO/ICAO SAR Plan. Any spectrum policy that allows for adjacent-band terrestrial operations to compromise these capabilities could undermine South Africa's treaty obligations and place seafarers at elevated risk.

3.3 Operational Implications for South Africa's Maritime Safety Regime

The impact of MSS interference would extend beyond individual distress cases. A compromised satellite communications framework would hinder SAMSA's ability to:

- Maintain real-time situational awareness of vessels operating within its SRR;
- Deliver timely and accurate navigational and meteorological updates;
- Monitor compliance with international vessel tracking requirements;
- Coordinate joint response operations with other regional maritime agencies;

- Support digitalisation of maritime services, including e-navigation initiatives and smart port systems.

Furthermore, interference risks may lead to secondary effects such as increased costs to vessel operators for satellite redundancy, reputational risks to South Africa's maritime infrastructure, and potential legal exposure in the event of incidents involving compromised communications.

In summary, allowing terrestrial IMT assignment into the 1492–1518 MHz band undermines the foundation of South Africa's maritime communications ecosystem. It is inconsistent with international best practices, operational safety requirements, and the government's commitment to protecting lives at sea.

4. International Precedent and Regulatory Alignment

The importance of preserving the 1518–1559 MHz MSS band for maritime safety has been echoed globally through measured regulatory restraint, harmonised spectrum frameworks, and clear guidance from international standard-setting bodies. South Africa's spectrum management strategy must reflect and reinforce this international consensus to preserve national safety, legal compliance, and technical interoperability.

4.1 Global Regulatory Precedent

Across a wide range of jurisdictions, regulators have carefully considered and rejected the introduction of IMT operations into the 1492–1518 MHz band, due to the proximity of this band to satellite services essential to aviation and maritime safety. Countries including Germany, the Netherlands, Italy, and the United Kingdom have adopted a firm upper limit for IMT assignment at 1492 MHz. Their decisions were based on clear technical evidence that harmful interference to MSS receivers is likely, and that mitigation through power control, guard bands, or spatial separation is either impractical or insufficient.

These regulators have prioritised:

- The preservation of life-critical services such as GMDSS, SAR, and MSI;
- Regulatory certainty for satellite communication providers and maritime agencies;
- The avoidance of costly and ineffective post-deployment mitigation obligations;
- Continued alignment with IMO and ICAO requirements for protected, global satellite communication links.

Such an approach ensures long-term planning certainty and reflects a risk-averse, safety-first regulatory philosophy that aligns with global maritime responsibilities.

4.2 ITU and IMO Guidance

The International Telecommunication Union (ITU) classifies the 1518–1559 MHz band as a primary Mobile Satellite Service allocation, and its protection is enshrined in numerous provisions within the Radio Regulations, including Footnote 5.357A. This footnote mandates that administrations give priority to safety-related communications in AMS(R)S and maritime

MSS systems, and that these services must be protected from harmful interference caused by other systems operating in adjacent or overlapping frequency ranges.

Likewise, the International Maritime Organization (IMO) has consistently highlighted the need for robust, globally harmonised spectrum frameworks to support GMDSS modernisation, LRIT, and enhanced safety-at-sea protocols. IMO Resolution A.1001(25) and Circular MSC.1/Circ.1460/Rev.3 reaffirm the essential role of satellite communications in delivering uninterrupted and effective maritime safety operations.

By complying with these ITU and IMO principles, South Africa ensures that it remains a responsible participant in the global maritime safety system, contributing to the credibility, availability, and interoperability of communication links required for safe maritime navigation.

4.3 Regional Harmonisation within ATU and SADC

At continental level, the African Telecommunications Union (ATU) and the Southern African Development Community (SADC) have to date not proposed any assignments of the 1492–1518 MHz band for IMT use. The African Common Proposals to WRC-23 did not seek to expand IMT into this segment, acknowledging both the international sensitivity of the band and the need for harmonised regional frameworks.

This harmonisation is critical to South Africa's coordination with neighbouring coastal states, particularly in areas of joint SAR responsibility, regional MSI broadcast sharing, and cross-border port-state control cooperation. Divergence from this alignment would:

- Complicate spectrum management along maritime boundaries;
- Lead to technical coordination disputes with neighbouring administrations;
- Undermine collaborative safety and environmental protection missions.

By retaining the IMT cap at 1492 MHz and upholding harmonised use of the MSS band, South Africa will continue to foster regional regulatory stability and mutual recognition of safety-critical maritime services.

5. Recommendations

In consideration of the operational, technical, legal, and strategic imperatives presented above, the South African Maritime Safety Authority (SAMSA) respectfully submits the following recommendations for ICASA's consideration in finalising the National Radio Frequency Plan 2025:

5.1 Maintain the IMT Assignment Cap at 1492 MHz

SAMSA strongly urges ICASA to retain the current upper boundary of IMT assignment at 1492 MHz and refrain from allocating the 1492–1518 MHz band to terrestrial mobile services. This position is consistent with global regulatory precedent, technical findings from the ITU-R, and the internationally endorsed need to protect life-critical satellite communications services.

Maintaining this cap ensures that:

- Maritime satellite terminals continue to receive interference-free signals;
- South Africa remains compliant with IMO and ITU spectrum protection requirements;
- National Search and Rescue (SAR), GMDSS, and MSI systems can operate reliably and continuously.

5.2 Preserve the 1518–1559 MHz Band Exclusively for MSS

ICASA should reinforce the primary allocation of the 1518–1559 MHz band to Mobile Satellite Services, including those delivering maritime safety communications under the GMDSS. This includes all associated applications such as LRIT, distress alerting, and MSI broadcasts.

Any weakening of protection for this band would introduce unacceptable operational risks and may also erode confidence in South Africa's regulatory reliability as a maritime safety partner.

5.3 Establish a Maritime Spectrum Coordination Mechanism

To ensure future spectrum decisions are inclusive and evidence-based, ICASA should establish a structured coordination mechanism with SAMSA, the Department of Transport, and other relevant stakeholders in the maritime sector. This mechanism should:

- Facilitate early consultation on frequency bands relevant to maritime communications;
- Enable joint technical review of potential coexistence risks;
- Promote interdepartmental alignment with national safety and transport policy objectives.

5.4 Align National Technical Standards with International Best Practice

South Africa's national regulations should be updated to incorporate technical protection criteria and spectrum management tools from the ITU-R and IMO. This includes:

- Out-of-band emission limits and power flux density (PFD) thresholds;
- Equipment certification guidelines for maritime terminals;
- Geographic protections near ports and coastlines against terrestrial interference.

Embedding these standards will enhance compliance, reduce enforcement burdens, and provide clarity to both mobile operators and maritime service providers.

5.5 Prioritise IMT Expansion in Alternative Spectrum Bands

SAMSA supports the national goal of extending mobile broadband access. However, such expansion should be pursued within spectrum bands where coexistence with safety-of-life services is feasible, such as:

- The 2300–2400 MHz (2.3 GHz) band;
- The 3300–3800 MHz (3.5 GHz) band;

- Other harmonised IMT bands that do not risk adjacent-band interference.

By doing so, South Africa can achieve digital growth objectives while upholding its maritime safety responsibilities.

6. Conclusion

The safe and secure operation of South Africa's maritime sector hinges on the availability of reliable, interference-free satellite communications systems. These systems underpin the delivery of critical safety services across our extensive Search and Rescue Region (SRR), facilitate compliance with the Global Maritime Distress and Safety System (GMDSS), and support the broader maritime domain awareness architecture.

The proposed expansion of International Mobile Telecommunications (IMT) services into the 1492–1518 MHz frequency band threatens to undermine this capability. The proximity of this band to the 1518–1559 MHz Mobile Satellite Service (MSS) band creates a high potential for harmful interference to maritime satellite terminals—compromising distress communications, emergency response coordination, and the integrity of safety broadcasts.

SAMSA therefore strongly urges ICASA to adopt a precautionary and globally harmonised position by:

- Maintaining the current IMT cap at 1492 MHz;
- Preserving the MSS allocation between 1518–1559 MHz exclusively for satellite-based safety communications;
- Aligning national regulations with ITU and IMO protections; and
- Ensuring that spectrum decisions involving maritime bands are made in close consultation with maritime safety stakeholders.

These actions will demonstrate South Africa's ongoing leadership in regional maritime safety, uphold international treaty obligations, and ensure that our maritime infrastructure remains resilient and responsive in the face of growing traffic volumes, climate-related risks, and increasing demands on coastal search and rescue operations.

SAMSA remains fully committed to working with ICASA, government departments, and international partners to ensure that the final National Radio Frequency Plan 2025 reflects a balanced, safety-first approach to spectrum management. We welcome continued engagement on this matter and are available to provide further technical input as required.

Thomas Solomon
Senior Radio Surveyor and Examiner