PASSENGER RAIL AGENCY OF SOUTH AFRICA

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The Independent Communications Authority of South Africa (ICASA)

350 Witch-Hazel Avenue, Eco Point Office Park

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South Africa

Attention: Mr Manyaapelo Richard Makgotlho / Mr Davis Kgosimolao Moshweunyane

Email: rmakgotlho@icasa.org.za / dmoshweunyane@icasa.org.za

27 May 2025

Re: INPUT FOR ICASA MIGRATION PLAN TO CONSIDER THE 1895 – 1915 MHZ FREQUENCY RANGE FOR PASSENGER RAILWAY COMMUNICATION IN SOUTH AFRICA

Dear Messrs. Makgotlho & Moshweunyane

The Passenger Rail Agency of South Africa (PRASA) would like to extend its sincere gratitude for the opportunity to provide inputs and comments regarding the Draft Radio Frequency Migration Plan ("the Migration Plan").

PRASA mandate is established by the Legal Succession to the South African Transport Services Act of 1989, commonly known as the "Legal Succession Act." Our operations involve the acquisition of a safety permit overseen by the Railway Safety Regulator (the "Regulator") under the National Railway Safety Regulator Act, 16 of 2002 (the "RSR Act"). The Regulator is responsible for overseeing safe operations, including secure communication within our operational jurisdiction, and ensuring safe practices among operators. Furthermore, we are legally required to uphold safety standards as outlined in the Occupational Health and Safety Act, 85 of 1993, to ensure the safe operation of our services.

PRASA remains committed to engaging constructively and offering meaningful contributions to the development and implementation of policies that impact the industry.

27/05/2025

Athanacious Makgamatha
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1. The Importance of the 1895 – 1915 MHz Band for PRASA's Passenger Railway Communication

The Department of Communications and Digital Technologies (DCDT) has extended the deadline for phasing out the 2G and 3G networks from 1 June 2025 to 31 December 2027, from the original sets date of 30 June 2024 for 2G and 3G by the end of March 2025. Despite the extension, plans for the eventual shutdown of these networks remain in place.

At Present, PRASA relies on two technologies for its rail operations: the outdated UHF MPT1327 owned by Transnet Freight Rail (TFR) and PRASA-owned GSM-R, a 2G-based technology and the Railway Safety Regulator (RSR) SANS 3000 Standards of Interoperability mandates the use of both these technologies by Freight and Commuter Operators to manage train traffic effectively within operational boundaries.

However, the Future Railway Mobile Communication System (FRMCS) based on the 4G transiting to 5G technologies, has been identified as the telecommunication system globally designed to succeed GSM-R. It serves as a crucial element of the European Railway Traffic Management System (ERTMS) and addresses the need for broadband mobile communication systems in digitizing rail operations, enhancing safety, operational efficiency, capacity, mission-critical communications, and fostering service innovation.

The European Union[1] have designated the 1.9 GHz band as the target spectrum band for FRMCS, since 2019, various countries in the European region, including Germany, Switzerland, Turkey, and others, have completed pilot proof of concept (POC) trials on 1.9 GHz LTE-FRMCS, following the European Union's lead, several countries such as Singapore, Malaysia, Nigeria, United Kingdom (“UK”) and Angola have officially allocated this spectrum band to the railway industry, to benefit from reusing the established ITU/3GPP telecoms mature B39 (1880-1920 MHz) ecosystem, securing the 1895-1915 MHz spectrum band in South Africa is of utmost importance for PRASA's rail communication.

For example, in the UK, the 1900-1920 MHz band is considered for use by the rail network and emergency services, including the Future Railway Mobile Communication System (“FRMCS”). Ofcom is consulting on the optimal use of this spectrum, potentially reallocating some portions currently used by the Emergency Services Network Gateway (ESNG).

[1] https://op.europa.eu/en/publication-detail/-/publication/aa8ab02f-2187-11ec-bd8e-01aa75ed71a1/language-en

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2. Effective Utilization of the 1895 – 1915 MHz Band

According to the IMT Roadmap 2019 (GOVERNMENT GAZETTE No.42829, 8 NOVEMBER 2019) and IMT Roadmap 2025 (GOVERNMENT GAZETTE No. 52449, 04 April 2025) the TDD band from 1880-1900 MHz is license-exempt and is currently used for DECT cordless telephones and DECT WLL. The band from 1900 to 1920 MHz is exclusively used by Telkom for MGW and eMGW FWA systems.

Based on our industry knowledge, MGW and eMGW FWA systems were designed and deployed around two decades ago during the 2G & 3G era, with the rapid evolution of telecommunication technologies and the onset of the 5G era, these systems are approaching obsolescence despite this, Telkom retain licenses for critical spectrum, urgently required for the advancement of FRMCS systems.

3. Consideration for Relicensing of the 1895 – 1915 MHz Band

Section 2 of the Electronic Communications Act, 2005 (Act no. 36 of 2005) ("ECA")[2] stipulates that the primary object of the Act is to regulate electronic communications in the Republic in the public interest and to ensure the efficient use of the radio frequency spectrum.

Further, Section 30(2) ECA states that “in controlling, planning, administering, managing and licensing the use of the radio frequency spectrum, the Authority must— (b) take into account modes of transmission and efficient utilization of the radio frequency spectrum, including allowing shared use of radio frequency spectrum when interference can be eliminated or reduced to acceptable levels as determined by the Authority”.

From PRASA's perspective, even if exclusive licensing of the 1.9 GHz spectrum band may not be possible due to previous licensing outcomes, we believe that there may still be an opportunity for shared use of the 1.9 GHz spectrum between ICASA and the incumbent licensee, taking cognizance of the mission-critical communication requirements and safety standards to manage minimum non-interference on train control systems within railway

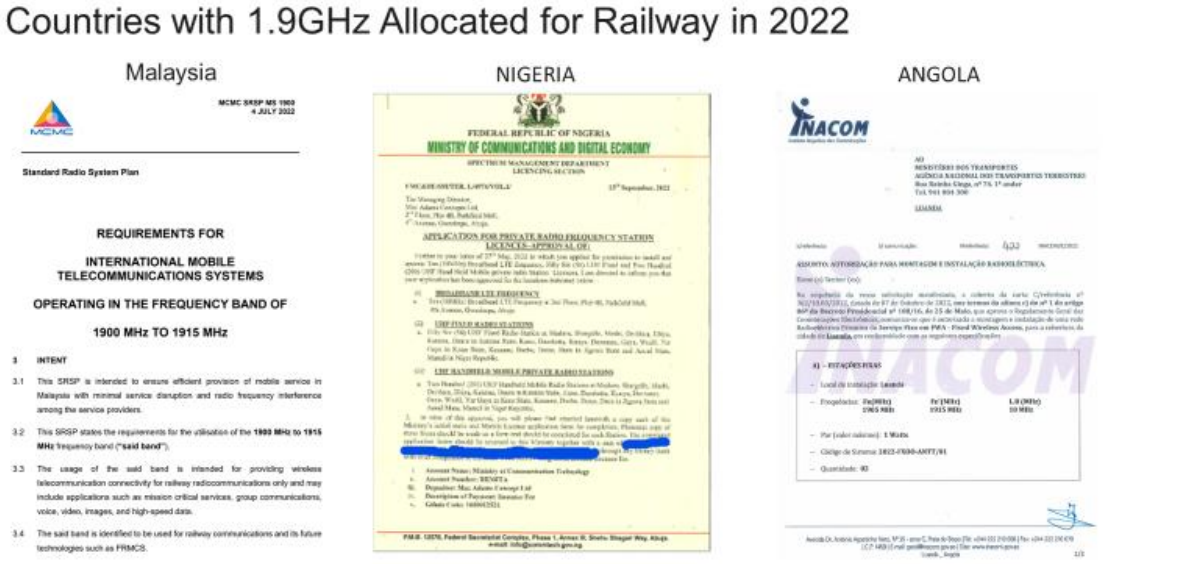
[2] https://www.gov.za/sites/default/files/gcis_document/202312/49831gen2216.pdf

operations. However, the 1.9 GHz spectrum must be considered for solely use for mission critical communication by the Railway Operators nationally.

In conclusion, we request ICASA to consider in this migration plan the utilization of the 1895-1915MHz frequency range for passenger railway communication in South Africa to ensure enhanced efficiency, safety, and digitalization of railway operations.

(Annexure A) for more info on FRMCS and cases globally

(Annexure A)



Many more countries, such as Thailand, are going to formally release the 1.9GHz use for transportation soon, in 2024

1. **Exploring the Objectives and Advantages of the Future Railway Mobile Communication System (FRMCS)**
    - The primary objective of FRMCS[3] is to fully digitalize railway operations and support an increasing level of automatic train operations (ATO).
    - Technology Integration: FRMCS aims to leverage the capabilities of 5G technology without the need for railway-specific cellular network technology.
2. **Understanding the Transition and Implications of GSM-R Technology in Railway Communication Systems to FRMCS Technology.**
    - ETCS Dependence: The European Train Control System (ETCS) currently relies on GSM-R for railway control and traffic management.

[3] https://uic.org/rail-system/telecoms-signalling/frmcs

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- Technological Obsolescence: GSM-R is becoming outdated due to technological advancements in mobile communication systems and the widespread deployment of 5G networks.

3. **Opportunities and Benefits of Implementing 4G/5G Technology for FRMCS.**

- High Capacity and Performance: 4G/5G technology offers high capacity, performance, and reliability suitable for critical rail communications.
- MTC and IoT Support: Enabling ultra-reliable, low-latency mission-critical communications essential for railway safety and efficiency.

4. **The Use Cases and Opportunities for Enhanced Railway Communication Systems:**

- **Onboard Train Use Cases:** Enhanced passenger experience, real-time information, and entertainment services.
- **Railroad Infrastructure Use Cases:** Improved maintenance, monitoring, and safety.
- **Integrated Operations:** Combining train operations, signaling systems, and operational centers for autonomous train operations.
- **Interoperability:** Ensure interoperability with existing and future railway communication systems for seamless integration.
- **Cybersecurity:** Implement robust cybersecurity measures to protect critical railway communication systems from cyber threats.
- **Spectrum Efficiency:** Optimize the use of the 1900-1920MHz frequency range to maximize spectrum efficiency and minimize interference.
- **Training and Education:** Provide training programs for railway staff to effectively utilize and maintain FRMCS technology.

The End