



30 May 2025

Ms Pumla Ntshalintshali

The Independent Communications Authority of South Africa,

Dr Ivy Matsepe-Casaburri Building,

350 Witch-Hazel Avenue, Eco Point Office Park

Per mail: PNtshalintshali@icasa.org.za

Cc: rmakgotlho@icasa.org.za

Dear Ms Ntshalintshali

RE: DRAFT REGULATIONS ON DYNAMIC SPECTRUM ACCESS AND OPPORTUNISTIC SPECTRUM MANAGEMENT IN THE INNOVATION SPECTRUM 3800 – 4200MHz AND 5925 – 6425MHz.

Mobile Telephone Networks (Pty) Ltd ("MTN") wishes to thank the Independent Communications Authority of South Africa ("Authority") for the opportunity to comment on the Draft Regulations in Dynamic Spectrum Access and Opportunistic Spectrum Management in the Innovation Spectrum 3800 – 4200MHz and 5925 – 6425MHz as published in Government Gazette 52415 on 28 March 2025.

Please find herewith our submission on the Draft Regulations in Dynamic Spectrum Access.

MOBILE TELEPHONE NETWORKS PROPRIETARY LIMITED (Registration number: 1993/ 001436/07)

216 14th Avenue, Fairland, 2195

Private Bag 9955, Cresta, 2118, South Africa

Tel +2711 912 3000 Fax +2711 912 4670 Website www.mtn.com

Directors: MJ Harper (Chairman), CS Molapisi¹ (Chief Executive Officer), D Molefe¹ (Chief Financial Officer), J Boggenpoel, MJ Bosman, N Khan, N Medupe, TBL Molefe, FJ Moolman, RT Mupita², PD Norman, R Ramashia, J Schulte-Bockum³, and SA Zinn Executive¹ Zimbabwean² German³

Company Secretary MMF Rantofi

VAT No. 4630140434



Yours sincerely,

A handwritten signature in black ink, appearing to read "Geoff Blake", enclosed within a light gray rectangular box.

.....

Geoff Blake

Senior Manager: Technical Regulations and Mandated Provisioning
Mobile Telephone Networks (Pty) Ltd

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Executive¹ Zimbabwean² German³

Company Secretary MMF Rantofi

VAT No. 4630140434



**MTN'S COMMENTS ON THE DRAFT
REGULATIONS ON DYNAMIC SPECTRUM
ACCESS AND OPPORTUNISTIC
SPECTRUM MANAGEMENT IN THE
INNOVATION SPECTRUM 3800-4200MHz
AND 5925-6425MHz, GAZETTE 52415
DATED 28 March 2025**

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VAT No. 4630140434



1. INTRODUCTION

On 28 March 2025 the Independent Communications Authority of South Africa ("Authority") published the Draft Regulations in Dynamic Spectrum Access and Opportunistic Spectrum Management in the Innovation Spectrum 3800 – 4200MHz and 5925 – 6425MHz, Gazette No. 52415 (Notice No. 6066), in terms of section 4 read with section 32(1) and 33 of the Electronic Communications Act, 2005 (Act No. 36 of 2005).

MTN welcomes the Authority's initiatives and consultation with the telecommunications industry towards the development of the Regulations on Dynamic Spectrum Access and Opportunistic Spectrum Management. The development of the Dynamic Spectrum Access is very important as effort to improve spectrum efficiency, creating certainty about the future availability of the radio frequency spectrum and the future of telecommunications technology in the country.

MTN's submission in respect of the Draft Regulations in Dynamic Spectrum Access and Opportunistic Spectrum Management in the Innovation Spectrum 3800 – 4200MHz and 5925 – 6425MHz is structured as follows:

- This Introduction
- Comments on the DSA approach in the regulations
- Comments on the Licensing approach in the regulations
- Comments on the specific regulations
- Comments on the frequency bands of the Draft DSA Regulations

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VAT No. 4630140434



- Conclusion

2. COMMENTS ON THE DSA APPROACH IN THE REGULATIONS

2.1. Tiered DSA

MTN understands that the Authority decided to adopt a “tiered” Dynamic Spectrum Approach, as mentioned in their findings document and position paper on the enquiry into the implementation of Dynamic Spectrum Access and Opportunistic Spectrum management, published in Gazette no. 50376, notice no.4471 on 26 March 2024.

To maximise spectrum efficiency, MTN recommends that the Authority also considers amending regulations to cater for a 3-tiered-DSA regime in the licence-exempt Innovation Spectrum band (ISFR2) as follows:

- Tier 1- The highest tier reserved for incumbents. Only Opportunistic Spectrum Access in spectrum gaps is allowed.
- Tier 2- The middle tier allows users to purchase priority access to the spectrum, (the DSA licenses), giving them preferential access when the incumbents in tier 1 are not utilizing the spectrum in a particular geographic area.
- Tier 3- The lowest tier where unlicensed/ licence-exempt users can access available spectrum based on location and real-time availability.

2.2. Geo-location-based DSA

MTN supports the Authority's initiatives to develop regulations for a geo-location-based Dynamic Spectrum Access approach as opposed a cognitive-radio-based

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Company Secretary MMF Rantofi
VAT No. 4630140434



approach where the user device is required to detect intelligently communication channels that are in use and those which are not in use. This ensures that chances of mis-detection of spectrum opportunities can be significantly reduced when user devices are required to search the database instead of sensing and identifying spectrum opportunities by themselves.

Whilst the regulations provide details on the USS access requirement for ISD's, it is crucial that the Authority provides more information related to the process allocation of channels to the ISD, interference monitoring mechanism by the USS in the ISFR channel. Such information is important for interested parties to understand how the USS operates.

2.2. Spectrum Efficiency

Whilst the channel assignment in the draft regulations focuses only on known spectrum gaps in the innovation spectrum bands, it misses the overall benefit of increased spectrum efficiency of the Dynamic Spectrum Access technology. Regulations 11(17), (18) and Regulation 15 stipulate long-term, fixed spectrum assignments that do not maximise spectrum usage. The proposed times of allocation of channels mean that even if the device is not transmitting and the ISFR channel is idle, the channel cannot be allocated to another secondary user ISD wanting to transmit in the IS spectrum.

One of the key characteristics of Dynamic Spectrum Access is increased spectrum efficiency via the real-time establishment, monitoring and adjustment of radio

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Company Secretary MMF Rantofi

VAT No. 4630140434



resource (spectrum). Spectrum can be allocated on a per-use basis, considering factors like time, location, and user needs.

To maximise spectrum efficiency, MTN recommends that the USS performs real-time monitoring of spectrum occupancy, immediate establishment of radio resources (spectrum channel connection) and real-time termination of channel allocations to free – up spectrum and mitigation of potential interference.

2.3. Innovation Spectrum occupancy

Opportunistic Spectrum Management is a specific type of Dynamic Spectrum Access that focuses on utilizing spectrum gaps that are not being utilized by primary users. MTN urges the Authority to provides regular updates on the National Radio Frequency Plan, related to occupancy by primary users in the ISFR bands, for interested industry players to make informed investment decisions on DSA-related service provisioning.

2.3. Regulatory Sandbox

In the Authority's findings document and position paper on the inquiry into the implementation of Dynamic Spectrum Access and Opportunistic Spectrum Management published on Gazette 50376 on 26 March 2024, it is stated that .." the Authority is to formulate a draft Regulatory Sandbox for public consultation to facilitate the Implementation of DSA in the 3.8GHz – 4.2GHz sub-band...". Whilst the draft regulations provide some evidence of the trials and desktop simulations conducted by the Authority, there were no public consultations held to engage the

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industry players on matter related to the Authority's Regulatory Sandbox trials and findings.

MTN recommends that the regulatory sandbox be implemented in the 5925 – 6425MHz band as well, to allow the regulator and operators to gather more evidence about the impact of the DSA approach and to make more informed decisions about regulatory adjustments in this band if needed.

3. COMMENTS ON THE LICENSING APPROACH IN THE DRAFT REGULATIONS

MTN supports the draft regulations on validity and renewal timeframes of the IS spectrum licences.

Whilst MTN fully supports the geographic area-based licensing approach for DSA Implementation, it is recommended that the Authority also considers a national “first-come-first-served” DSA licensing approach to ensure maximum spectrum usage and that the lowest tier secondary users (in the 3-tier DSA approach proposed in section 2.1 above) can access the spectrum as and when desired when there primary and secondary priority (middle tier) users are not utilizing the spectrum in ISFR2, ensuring spectrum efficiency.

4. COMMENTS ON THE SPECIFIC REGULATIONS

4.1. Regulation 4: Access to IS Requirements

MTN is satisfied that access to Innovation Spectrum block is managed through the Unified Spectrum Switch (USS). MTN urges the Authority to ensure that the USSP ensures the accuracy of the information put into the system as central databases are

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both an advantage for coherent geographical and frequency allocation as it could also be single point of inconsistency/incongruity which inadvertently leads to interference amongst network operators and consequently leads to the degradation of service for secondary users.

4.2. Regulation 5: Innovation Spectrum Devices

MTN is satisfied with the requirements set by the Authority for both the client ISDs and the Master ISDs. MTN suggests that the Authority should make it clear that backhaul access type selected (towards the Database Proxy and ISPs) is at the discretion of the secondary user. MTN believes there is an opportunity to support the initiative by leveraging on existing coverage of the mobile network operator for example, making use of the 5G network.

4.3. Regulation 6: Registration of Network Operator and Spectrum Authorisation

MTN is satisfied with the process and requirements set out by the regulator for the registration network operators and the associated spectrum authorisations. It is acknowledged that the recommendation is to charge operator fees when IS to be deployed on ISFR1 only.

4.4. Regulation 7: USS Access Requirements for Innovation Spectrum Devices

MTN is satisfied with the requirements set out by the regulator for the operations and management of Innovation Spectrum devices.

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4.5. Regulation 8. Innovation Spectrum Operational Parameters

MTN is satisfied with the list of operational parameters.

4.6. Regulation 9: Channel Assignment per License Area

MTN urges the Authority to provide more clarity on the rationale behind restricting ISFR 1 to a maximum of two contiguous 10 MHz channels in urban areas and a maximum of four contiguous 10 MHz channels in rural areas.

In 5G NR, the maximum bandwidth supported is 100 MHz in Frequency Range 1 (410 MHz – 7125 MHz). Therefore, limiting channel bandwidth to only 20 MHz in urban areas and 40 MHz in rural areas may lead to a range of negative outcomes, including lower link speeds, reduced capacity and underutilization of the Innovation Spectrum.

MTN recommends that the Authority reviews the channel bandwidth restrictions to ensure that they are harmonized with other shared spectrum regulatory frameworks in similar bands, for example;

- CEPT ECC Decision (24) 1 on Harmonised technical conditions for the shared use of the 3800-4200 MHz frequency band by low/medium power terrestrial wireless broadband systems (WBB LMP) providing local-area network connectivity. This shared regulatory framework does not propose a channel bandwidth limitation.
- Ofcom's Shared Access regulatory framework setting a 100 MHz limit to the amount of spectrum a licensee can transmit at Medium Power in urban areas.

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- The FCC in the US established the regulatory framework for the CBRS shared spectrum band between 3.55 GHz and 3.7 GHz, which does not impose channel bandwidth limitations.

Most equipment likely to be deployed in either ISFR1 (e.g. 3GPP 5G-NR base-stations) or in the ISFR 2 (e.g. WiFi6E access points) can operate across multiple non-contiguous carriers, and supports carrier aggregation. In order to take advantage of these capabilities, we would recommend that multi-carrier operation in both these bands is allowed, and that the EIRP limits in both of these bands apply per carrier (not per device).

MTN also recommends that sub-regulation 9(5) should define how big an area should be when ISFR1 deployed by an operator, i.e. in the form on geographic area within urban and rural environment.

4.7. Regulation 10: Maximum Permitted Transmit Power Levels of ISDs

MTN recommends that the transmit power level limits in urban environments for both ISFR 1 (27 dBm/20 MHz EIRP per carrier) and ISFR 2 (30 dBm) are reconsidered.

Assuming that the USS will be coordinating spectrum access and mitigating interference to incumbents (as described in the section above), we advocate for a more flexible approach of limiting EIRPs for new radio installations only when it is determined by the USS that they have the potential to cause interference to incumbents. This would allow the use of higher EIRP limits in ISFR 1 and ISFR 2, which would allow operators to improve coverage and network performance in urban areas without compromising spectrum efficiency.

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The current proposal limits antenna heights to 20 meters in urban areas and 30 meters in rural areas for both ISFR 1 and ISFR 2 bands. These restrictions could impede the deployment of Fixed Wireless Access (FWA) solutions, particularly in rural and underserved areas where taller installations are often necessary to overcome terrain challenges and provide reliable coverage. We recommend that ICASA remove the height restriction in rural areas and instead allow the USS to manage antenna heights and/or radio EIRP based on dynamic interference assessments.

4.8. Regulation 11: Measures to Prevent Harmful Interference

MTN is satisfied with the approach recommended by the Authority. MTN further recommends that the USS be able to immediately terminate transmission in the ISFR spectrum if certain operation thresholds are exceeded, to prevent harmful interference to primary users.

4.9. Regulation 12: Interference Mitigation Protocol

MTN is satisfied with the approach recommended by the Authority. However, it is recommended that the USSP only suspends operations on the affected ISFR channel, and not on all operations of a particular operator. Further to MTN's recommendation above in relation to regulation 11, sub-regulation 12 (3) should explicitly state that the USS will immediately terminate operations causing harmful interference.

MTN also recommends that the Authority, in collaboration with the USSP, also be responsible for investigating and resolving interference cases in the ISFR bands. This

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will ensure that the regulator gather more evidence about the impact of the implemented DSA approach and makes informed decisions about regulatory adjustments in future.

4.10. Regulation 13: Responsibilities of the Designated Unified Spectrum Switch Provider

MTN is satisfied with the approach recommended by the Authority. To fully realize the benefits of dynamic spectrum access, MTN further recommends that the Authority considers the following responsibilities for the USSP;

- USS must be able to detect potential interference, in real-time, based on the operational parameter requirements in a particular ISFR channels in particular area.
- USS must be able to terminate ISD channel assignments and connection immediately if certain protection thresholds are exceeded in a particular ISFR channel, to mitigate interference.
- To ensure dynamic and efficient usage of spectrum, the USS must monitor real-time operations in the ISFR bands and identify idle channels when ISD terminate transmissions, to make these channel available to any other registered secondary user device (ISD) wanting to utilize the ISFR channel.
- USSP must be able to make dynamic assignments of ISFR channels to registered secondary user ISDs, depending on channel availability.
- The USSP must retain all detailed logs for a duration of at least 30 calendar days after an ISD / Master device/ IS-CPE's last contact with its

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USS and shall make all such information available to the Authority upon request, for purposes of interference investigations and mitigation in the IS bands.

4.11. Section 14 Default Values and Technical Parameters

To ensure protection of primary users in the ISFR bands, the USS must decline connection/channel assignment request if there are no Technical operating parameters provided by the ISD/Master device to the USS as required in Regulations 7, 8 and 10. Allowing ISDs/ Master devices to utilise ISFR spectrum without providing the true operating parameters may introduces harmful interference to incumbents.

It is noted that the default clutter dataset is SANLC, but it is recommended that the exact version be mentioned in sub-regulation 14.6 to ensure that the latest clutter data used by operators for predictions - https://gee-community-catalog.org/projects/sa_nlc/.

4.12. Regulation 15: ISD Operational Continuity Requirements

MTN is satisfied with the recommendations made for the ISD operational continuity requirements by the Authority. In addition to the time-based national licensing approach for ISFR2 recommended by MTN in section 3 of this document, it is recommended the Authority considers the following operational continuity requirements:

- ISFR spectrum channel assignment are valid until the ISD, Master devices / IS-CPEs cease transmission on that particular

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channel, provided it does not exceed the interference thresholds in that band, or the USS terminates ISD connection to avoid harmful interference.

- When the ISD, Master devices / IS-CPEs cease transmission on a particular channel in the ISFR spectrum band, that idle channel must be made available by the USS for another secondary user's device (ISD) requesting to utilize the ISFR spectrum.

4.13. Regulation 16: ISD Labelling Requirements

MTN is satisfied with the recommendations made for ISD labelling requirements by the Authority.

4.14. Regulation 17: Display of Available Channels

MTN is satisfied with the recommendations by the Authority made for the display of available channels.

4.15. Regulation 18: Innovation Spectrum License Validity and Renewal

MTN is satisfied with the recommendations by the Authority made for the validity and renewal of Innovation Spectrum Licenses.

4.16. Regulation 19: Commence of operations

MTN takes note of the mandate set out by the Authority for the commence of operations.

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4.17. Regulation 20: Innovation Spectrum License Fees and Pricing Principles

MTN does not dispute the mandate set out by the Authority for the pricing principles around Innovation Spectrum Licenses.

4.18. Regulation 21 USS Access Fees

MTN does not dispute the recommendation set out by the Authority for the imposing of fees by selected USSPs for the use of USS services.

4.19. Regulation 22 Revocation of Innovation Spectrum License

MTN does not dispute the mandate set out by the Authority for the revocation of innovation spectrum licenses.

4.20. Regulation 23: Offences and Penalties

MTN takes note of the statement on offences and penalties.

4.21. Regulation 24: Short Title and Commencement

MTN takes note of the statement on the commencement of the regulation.

5. COMMENTS ON THE FREQUENCY BANDS ON THE DRAFT DSA REGULATIONS

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MTN supports the implementation of Dynamic Spectrum access in spectrum bands (ISFR1 and ISFR2) chosen by the Authority. To enable stakeholders and industry players to make informed decisions, MTN recommends that the Authority provides updated information on the occupancy in the Innovation Spectrum bands in the National Radio Frequency Plan.

6. CONCLUSIONS

MTN commends the Authority on the development of draft regulations on DSA implementation, ensuring that spectrum is efficiently utilized. Although MTN currently has no direct strategic or commercial interest in Innovation Spectrum, MTN remains keenly interested in the implementation as well as the possible impacts it may have on other direct to consumer radio transmission schemes, specifically Wi-Fi 6E and 5G NR-U.

MTN supports the initiatives by the Authority towards successful implementation of Dynamic Spectrum Access in South Africa. However, focusing only on regulating for access to known spectrum gaps in the Innovation Spectrum miss the key benefits of DSA, i.e. dynamic allocation of spectrum for efficient spectrum utilization. MTN recommends that the Authority also considers a DSA approach where the USS will be able to identify and allocate idle channels to secondary users who request to use channels at a particular time and also be able to terminate assignments immediately when the ISD stops transmitting, to free-up that channel for the next secondary user.

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MTN also recommends that the Authority expands the Dynamic Spectrum Access regulations to consider the 3 tier DSA approach proposed in section 2.1 of this submission document.

MTN also recommends that the Authority prioritizes consultation with industry stakeholders prior finalizing regulations and full-scale implementation of Dynamic Spectrum Access in South Africa.

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