

# Response to ICASA's

## Draft Regulations on Dynamic Spectrum Access and Opportunistic Spectrum Management in the Innovation Spectrum 3800–4200 MHz and 5925–6425 MHz

*A submission to the Independent Communications Authority of South Africa submitted by:  
(alphabetic)*

- **Association of Progressive Communications**
- **iNethi NPC**
- **Internet Society**
- **University of the Western Cape**
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# Introduction

We appreciate the opportunity to respond to the Draft Regulations on Dynamic Spectrum Access and Opportunistic Spectrum Management (“the Draft Regulations”) published by the Independent Communications Authority of South Africa (ICASA) in Government Gazette No. 52415 on 28 March 2025.

This submission is made with a focus on the poorest of the poor in South Africa. It builds on previous submissions to ICASA on IMT Licensing<sup>1</sup>, to the national government on a “Next generation radio frequency spectrum policy for economic development<sup>2</sup>”, as well as to the Discussion Document on Dynamic Spectrum Access and Opportunistic Spectrum Management by this group of organisations. It is made based on the experience we have both in South Africa and internationally with models of Community Networks which are largely driven on a not-for-profit motive, with a focus on delivering quality and affordable telecommunications to those in the citizenry who would otherwise not have access to it.

In this regard, we strongly welcome the inclusion of the following Objectives of the regulations:

- 2(b) reduce barriers to entry and promoting equitable access to spectrum, while encouraging broader participation from non-dominant players, small micro and medium enterprises and communities consistent with the Next-Generation Ration Frequency Spectrum for Economic Development Policy;
- 2(g) establish non-market-based, non-competitive pricing frameworks to reduce barriers to entry and encourage participation by non-dominant players, SMMEs, and community network operators. The proposed framework represents an important milestone in promoting more efficient, equitable, and innovative use of spectrum resources.

We recognize the Authority’s efforts in expanding access and fostering inclusive digital participation by adding licensed spectrum suited for Fixed Wireless Access to options available to community network operators. Still, as per the Frequency Ecosystem for Community Network Operators presented in Appendix A, additional spectrum should be considered in future consultations so users from these operators can benefit from mobile broadband in bands that are better suited for this service, and where more affordable devices are available for low-income South Africans.

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<sup>1</sup> [ICASA Initiates the Second Phase of the IMT Spectrum Licensing Process](https://policy.communitynetworks.group/_media/public-consultation/icasa_second_phase_licensing_sept2022-comments-apc-mozilla-uwc-zenzeleni.pdf) - August 2022. Submission downloadable at [https://policy.communitynetworks.group/\\_media/public-consultation/icasa\\_second\\_phase\\_licensing\\_sept2022-comments-apc-mozilla-uwc-zenzeleni.pdf](https://policy.communitynetworks.group/_media/public-consultation/icasa_second_phase_licensing_sept2022-comments-apc-mozilla-uwc-zenzeleni.pdf)

<sup>2</sup> [Communications and Digital Technologies: Next generation radio frequency spectrum policy for economic development: Written submissions invited](https://policy.communitynetworks.group/_media/public-consultation/submission_south_africa_next_generation_spectrum_policy.pdf) - October 2022 Submission downloadable at [https://policy.communitynetworks.group/\\_media/public-consultation/submission\\_south\\_africa\\_next\\_generation\\_spectrum\\_policy.pdf](https://policy.communitynetworks.group/_media/public-consultation/submission_south_africa_next_generation_spectrum_policy.pdf)

# Questions, Comments, and Recommendations

## 1. What is the rationale for a common framework for ISFR1 and ISFR2?

ISFR1 (3.8-4.2GHz Band 77) and ISFR2 (5.9-6.4GHz Unlicensed 6GHz) have very different pedigrees in terms of their use. ISFR1 belongs to Band 77 of the 3GPP 5G family of frequency allocations, while the roots of ISFR2 belong in the expansion of 5GHz unlicensed spectrum regime. Creating a common geolocation database authentication system or Unified Spectrum Switch (USS) to manage both ISFR1 and ISFR2 appears to be at odds with emerging good practice for these frequency bands.

ISFR1 spectrum has been made available for local licensing in both the United Kingdom (Shared Access License) and in Canada (Non-competitive Local Licensing). In both cases, the regulator has elected NOT to use a geo-location database to assign spectrum licenses. Given that the design, implementation and operationalisation (not to mention the economics) of a geo-location database for TVWS spectrum proved to be a major stumbling block to its adoption, we would like to know why ICASA is electing to implement a seemingly needlessly complex solution for assigning spectrum in ISFR1.

With regard to ISFR2, a geolocation database or Automated Frequency Coordination (AFC) systems to manage access to the 6 GHz band by license-exempt devices has been part of the design of the implementation of 6GHz spectrum for outdoor use from the very beginning. Recognising the latent demand for AFC systems by regulators around the world, the Telecom Infra Project launched the Open AFC project, an Open Source AFC for 6GHz<sup>3</sup>. Is there a reason why ICASA would choose to go it alone with a proprietary AFC for 6GHz rather than join forces with other regulators and operators to implement Open AFC?

In summary, ISFR1 and ISFR2 have different pedigrees which suggest different approaches.

## 2. Lessons learned from other countries implementing regulatory frameworks for ISFR1

Rather than relying exclusively on a USS-driven model for ISFR1, ICASA should consider **an alternative or complementary framework**. Examples of these include:

Country	Description	Frequency
United Kingdom	<a href="#">Shared access licences - Ofcom</a>	<ul style="list-style-type: none"><li>• 1.8 GHz</li><li>• 2.3 GHz</li><li>• 3.8-4.2 GHz</li><li>• 24.25-27.5 GHz</li></ul>

<sup>3</sup> [Open AFC - Telecom Infra Project](#)

Canada	<a href="#">Decision on a Non-Competitive Local Licensing Framework, Including Spectrum in the 3900-3980 MHz Band and Portions of the 26, 28 and 38 GHz Bands</a>	<ul style="list-style-type: none"> <li>• 3.9-3.98 GHz</li> <li>• 26 GHz,</li> <li>• 28 GHz</li> <li>• 38 GHz</li> </ul>
Poland	<a href="#">Poland releases 3.8-4.2 GHz band for local private (and public) 5G deployments</a>	<ul style="list-style-type: none"> <li>• 3.8-4.2 GHz</li> </ul>
France	<a href="#">Arcep extends 5G trial window for professional applications</a>	<ul style="list-style-type: none"> <li>• 3.8-4.0 GHz</li> </ul>
Norway	<a href="#">Norway opens 3.8-4.2 GHz band for private 5G (SA-NPN only; PNI-NPN not permitted)</a>	<ul style="list-style-type: none"> <li>• 3.8-4.2GHz</li> </ul>
Belgium	<a href="#">Norway opens 3.8-4.2 GHz band for private 5G (SA-NPN only; PNI-NPN not permitted)</a>	<ul style="list-style-type: none"> <li>• 3.8-4.2 GHz</li> </ul>
Australia	<a href="#">Area-wide licence allocation in the 3.8 GHz band   ACMA</a>	<ul style="list-style-type: none"> <li>• 3.8-4.0 GHz</li> </ul>

Common to all of the above frameworks is that none of them implement fully-automated spectrum assignment via a geo-location database or USS. Ofcom's shared access license has been particularly successful and so far approximately 1,500 licenses have been awarded.

### **Recommendation:**

Introduce a local license option for 3800–4200 MHz spectrum:

- Applicants would define a specific geographic area (e.g. a suburb or village)
- Submit an application without requiring USS interaction
- Receive coordinated assignments subject to coexistence rules

This would reduce dependence on USS complexity for low-interference, isolated deployments—especially relevant where incumbent presence is minimal. This approach does not preclude the use of spectrum databases to validate applications that are submitted to the regulator but does not rely on an entirely automated approach which may take some time to validate and operationalise. An annual license renewal can be used to ensure that critical use of the spectrum by other incumbents can be protected. However, at least a year should be provided for the shared access licensee to find another alternative frequency band to use.

Introducing a complementary local license option will also make it possible for a much wider ecosystem of hardware to be used in the 3800–4200 MHz band without a costly development cycle being introduced that many vendors may not implement given the the size of the market opportunity in South Africa and the lack of a global standard being used.

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### 3. Indoor Coverage in Urban Areas: Power Limitations and Channel Widths Are Too Restrictive

While we welcome the 47dBm EIRP per carrier in rural outdoor deployments, we note that the maximum permitted transmit power for ISDs operating in urban outdoor deployments in the 3800–4200 MHz band (ISFR1) is capped at **27 dBm EIRP per carrier** (Reg. 10(2)).

This power limit is too low to ensure reliable **indoor coverage**, especially in urban environments where wall attenuation and building penetration losses significantly degrade signal performance. Even with the 14 dB in-building penetration assumption (Reg. 10(5)), this remains insufficient.

We also note that the USS may assign a single Master device operating in ISFR 1 up to two (2) contiguous 10 MHz channels in urban license areas, and up to four (4) contiguous 10 MHz channels in rural license areas, in accordance with Regulation 9(3).

The 20 MHz channel width allowed in urban areas is too restrictive to meet the capacity demands of dense environments. Urban deployments typically serve significantly more users than rural areas in the 3800–4200 MHz band, necessitating access to wider spectrum to ensure adequate performance.

- **Recommendation:**  
Increase the maximum EIRP for deployments in urban areas to **47 dBm per carrier**, aligning with international norms for similar mid-band deployments (e.g. CBRS<sup>4</sup> in the U.S. and OFCOM's Shared Access License in the UK<sup>5</sup>). This will ensure practical usability and incentivize adoption.
- Increase the permitted channel width in urban areas to 40 MHz, aligning it with the allowance in rural areas to ensure consistent capacity and performance across deployment scenarios

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### 4. On the sustainability and affordability of a USS

While the future of spectrum assignment points to more and more automated spectrum assignment mechanisms, the lack of an established USS should be a concern for ICASA. Lessons learned from the process of enacting Television White Space (TVWS) regulation with a geo-location spectrum authorisation database highlight many unresolved issues related this approach, including lack of clarity regarding:

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<sup>4</sup> CBRS allows for 47 dBm / 10MHz in both urban and rural deployments.

<sup>5</sup> OFCOM's Shared Access License in the UK allows for 42 dBm / carrier for carriers ≤ 20 MHz for medium power installations.

- How a USS would be funded and sustained overtime;
- How backup USS systems would be implemented;
- What kinds of requirements will be made of manufacturers to adapt to South Africa's USS and use of the new CPAUSS protocol in terms of type approval, and conformance testing; and,
- Fee structure by region or device.

While we support the adoption of automated spectrum assignment over time, we believe it is a mistake to make this a requirement for the release of spectrum in ISFR1. Rather include USS development in a longer-term blueprint for spectrum access but focus on lowering the financial and administrative bar to spectrum access in the short-term.

## 5. Regarding spectrum license fees

While the draft emphasizes affordability and non-market barriers (Reg. 2(g)), it provides no concrete guidance on the **USS access fee per radio**, nor on whether **spectrum access fees** for ISFR1 will be tiered or waived for small operators.

### **Recommendation:**

Publish clear pricing guidelines or a proposed fee schedule under Reg. 20–21. These fees should:

- Be affordable, especially for small operators. For example OFCOM charge 80 GBP/10 MHz per annum for a shared access license<sup>6</sup>
- Include exemptions for non-profit, community-owned, and rural deployments
- Spectrum licenses should be indefinite as long as fees are paid and the terms of the license are obeyed, as implemented in OFCOM's Shared Access License<sup>7</sup>

## 6. On spectrum availability

We encourage ICASA to publish spectrum availability maps for ISFR1, similar to the online spectrum mapping tool developed by OFCOM.<sup>8</sup>

For the local licensing framework established for ISFR1, we encourage ICASA to plan for the inclusion of other radio frequencies into this framework as deemed appropriate by ICASA over time, including those that enable Community Network Operators to offer mobile broadband services (see Appendix A). A generic local-licensing framework addressing a basket of

<sup>6</sup> [Shared access licences - Ofcom](#)

<sup>7</sup> See clause 5.9 "The Shared Access licence is indefinite; as long as you pay your licence fees each year and don't break any of the licence terms and conditions, you can keep it for as long as you like." [Shared Access Licence: Guidance document | Ofcom](#)

<sup>8</sup> <https://www.ofcom.org.uk/spectrum/frequencies/online-mapping-tool>

frequencies, as implemented in OFCOM's Shared Access License would allow maximum flexibility over time and reduce the administrative overhead for both regulator and spectrum users.

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## 7. Clarification on Conditions for Exemption

Regulation 6(5)(b) allows a spectrum fee exemption for ISFR2 deployments, but **conditions for exemption** from spectrum license fees in ISFR1 remain ambiguous. This ambiguity is further included in Regulation 20(1), where it is noted that "A Network Operator must pay the license fees to the Authority for access the IS, if applicable"

### **Recommendation:**

Provide detailed criteria and process for applying for exemption under Reg. 6(5)(a), particularly for:

- Community Network Operators
- License-exempt ECNS providers
- C-ECNS licensees operating in rural service areas

These conditions should be clearly defined in a supplementary schedule or ICASA notice, and would be consistent with the Objectives of the regulation as specified in Regulation 2(g) to establish non-market-based, non-competitive pricing frameworks to reduce barriers to entry and encourage the participation of these players.

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## Appendix A: Potential Frequency Ecosystem for Community

Criteria	Existing Band 71 (600–700 MHz, TDD/FDD)	Proposed ISFR1 Band 77 (3800–4200 MHz, TDD)	Potential Band 41 (2500 - 2530 MHz, FDD) not auctioned
<b>Penetration</b>	Excellent – penetrates walls, buildings, trees	Poor – high frequency, limited penetration	Moderate – good indoor and urban performance
<b>Capacity</b>	Low – mostly only 2x5 MHz pairs available	High – large contiguous bandwidth of up to 40MHz	Medium – 20 MHz total potential
<b>License Cost (Current)</b>	Free (TVWS Database)	Future unknown .. possible low-cost per-site license or license-waiver for community-centered networks	TBD .. propose a OFCOM-like model with a per site shared access license
<b>Phone Support (2023–2025)</b>	Low – 104 / 1255 phones	Moderate – 543 / 1255 phones	High – 966 / 1255 phones
<b>Regulatory Readiness</b>	TVWS DB available	CSIR trial and test database already running, new final rules to be published March 2026 with possible commercial operation in 2026. OFCOM-like shared access license is also an early use option.	ICASA test license pending, for project trial
<b>Equipment Availability</b>	WiFrost custom TDD-only for FWA available; Ukama developing FDD equipment that will support phones	Equipment will need to implement CPAUSS protocol and get type approved	Many vendors available including low cost equipment from Ukama and Baicells

## Network Operators



<b>Coverage Potential</b>	High – great rural and indoor reach	Low – suited to dense urban, LOS	Balanced – urban/suburban with good device compatibility
<b>Project Maturity / Readiness</b>	Mid-stage; some deployments but hasn't reached scale	Early-stage: software developed required by vendors	Production-ready: trial license pending, vendor equipment ready
<b>Special Considerations</b>	Requires additional work for FDD to work with TVWS PAWS protocol	Current proposal for spectrum to be managed dynamically similarly to TVWS but OFCOM-like shared access license also possible	Possible ISM leakage in the lower part of band due to use of WiFi Channel 14; may make large incumbents less interested in bottom 20 MHz