GSOA Response to ICASA Draft Regulations on Dynamic Spectrum Access and Opportunistic Spectrum Management

1 Introduction

GSOA is the global, CEO driven, industry association representing 70 members of the satellite industry.

GSOA provides a platform for collaboration globally and a unified voice for the sector. Our vision is to help policymakers improve the state of the world by continuously bridging digital, education, health, social, gender and economic divides across diverse geographies and across mature and developing economies.

GSOA is recognized as the representative body for satellite operators by international, regional, and national bodies including regulators, policymakers, standards-setting organizations such as 3GPP, and international organizations such as the International Telecommunication Union (ITU) and the World Economic Forum (WEF).

GSOA welcomes the opportunity to provide input on ICASA's draft Dynamic Spectrum Access (DSA) Regulations for the 3800–4200 MHz and 5925–6425 MHz bands. We appreciate ICASA's transparent consultation process and its objective of ensuring coexistence between innovative private networks and incumbent services, including Fixed Satellite Services (FSS).

GSOA is committed to supporting ICASA and South African stakeholders through the provision of technical coexistence modeling expertise (including simulation assistance, e.g., based on CEPT ECC Report 358), and is willing to hold dedicated workshops or roundtables to evaluate coexistence case studies and support for earth station registration outreach to ensure comprehensive database population and this data base should not be closed but rather open to future FSS earth stations to enable them to be registered as well.

We therefore recommend that ICASA consider our response below with the context of doing more regulatory sandbox or trial phase with defined geographic limits before full DSA rollout, since other regions like Europe spend 4-5 years before allowing DSA rollout.

This will also ensure transparency and stakeholder input into the selection of the Unified Spectrum Switch (USS) database operator.

2 General concerns

The draft Regulations state that the objective of the Regulations is to, inter alia, "expand broadband access to the rural, underserved and remote communities". GSOA does not believe that the frequency bands proposed are the most suitable frequency bands to achieve this

objective and suggests that lower frequency bands would be more suitable to achieve this objective.

GSOA further submits that the DSA regulatory regime should not be implemented before the conclusion of the ICASA inquiry into the satellite licensing framework, as the outcome of that inquiry could have an impact on the DSA framework.

GSOA supports the ICASA stated objective that the purpose of the Regulations is to mitigate against harmful interference between the incumbents and the secondary user in the innovation spectrum. However, based on previous experience of interference to FSS services from FWA services in the C-Band, we have concerns whether ICASA is capable of ensuring the protection of incumbent FSS primary services in practice.

Section 11 of the draft Regulations state that any incumbent user operating in the 3800 MHz to 4200 MHz, and 5925 MHz to 6425 MHz, seeking protection from harmful interference must register with the Authority. GSOA supports this approach. However, it is not clear how new primary FSS services, when introduced, will thereafter be protected from interference by secondary services. ICASA is requested to clarify this issue. It is possible that the approach proposed in the draft Regulations could constrain the expansion of primary FSS services in the future.

3 Protection of FSS Earth Stations (C-band: 3800–4200 MHz)

We support ICASA's recognition that the C-band is allocated on a primary basis to FSS and the intent to protect incumbent services through a geo-location database and dynamic assignment protocols. However, we request additional technical clarity on the following:

- Earth station protection criteria: What interference thresholds (e.g., I/N, C/I) will be used to protect FSS receivers? Will ICASA adopt or reference ITU-R Recommendations dealing with the coexistence of FSS with terrestrial systems?

- Geolocation database functionality: Will the proposed Unified Spectrum Switch (USS) database integrate FSS receiver characteristics (location, antenna gain, bandwidth, etc.) in protection calculations? What is the registration process for incumbent and future earth stations? Will ICASA mandate registration as a licensing condition?

- Exclusion/coordination zones: Will automated exclusion zones be generated around registered FSS earth stations based on power flux density calculations? Will there be a case-by-case coordination required for deployments near FSS receivers with highly directional antennas and low elevation angles?

4 Technical Parameters for Private Network Deployment

We value the tiered power limits for private networks but believe urban deployments pose a higher risk to FSS than rural ones due to aggregate interference. Hence we would like clarification on the following:

- Power limits and antenna assumptions: What maximum EIRP and PSD values will apply to innovation spectrum devices (ISDs), especially outdoors? Will ICASA enforce antenna elevation restrictions or masks to limit low-angle radiation towards satellites?

- Aggregate interference management: How will ICASA model and manage aggregate interference from multiple co-channel ISDs to a single FSS earth station? Will operators have access to interference simulation tools to assess feasibility before deployment?

To assess the potential risk posed by DSA devices to FSS earth stations operating in the 3800-4200 MHz band, we respectfully recommend that ICASA undertake detailed technical studies to validate the suitability of the proposed power limits and separation distances intended to protect FSS earth stations. The draft framework introduces EIRP limits for Low Power (LP) and Medium Power (MP) base stations, along with corresponding coordination distances ranging from approximately 5 km to 70 km. Given the critical role of C-band satellite services in South Africa, particularly in areas with limited terrestrial infrastructure, it is important that these parameters be rigorously validated using conservative assumptions and realistic deployment scenarios.

To ensure that the proposed coordination zones are adequate, we suggest that ICASA:

1. Conduct interference studies based on worst-case free-space and line-of-sight propagation conditions;
2. Incorporate terrain-based modeling, aggregate interference effects, and FSS antenna characteristics (including low elevation angle sensitivity);
3. Consider variations in local geography, service distribution, and network density that may influence required protection distances.

We believe such validation is critical to ensure robust protection of incumbent satellite services while enabling effective and interference-free deployment of DSA-based private networks.

5 Response Time and Enforcement

We welcome ICASA's commitment that interference sources must cease transmission within 60 seconds of detection. For effective enforcement, will ICASA or the USS operator conduct real-time monitoring of the spectrum?

What are the provisions for escalating enforcement actions in case of repeated or harmful interference events?

6 Conclusion

We commend ICASA's initiative in enabling spectrum innovation while recognizing the need to safeguard essential satellite services. However, GSOA urges ICASA to adopt a technically robust to dynamic spectrum access in the C-band and lower 6 GHz bands to ensure protection of incumbent FSS users today and into the future.

Furthermore, we recommend that ICASA reassess the power limits (especially for ISFR 2) and separation distances based on more conservative interference criteria and incorporate worst-case modeling, including low antenna elevation angles, aggregate interference effects, and region-specific reliance on FSS services. Further, ICASA should consider restricting

transmissions above 4200 MHz entirely or mandating stricter power control in those edge-adjacent channels to minimize leakage into critical Radio altimeter bands.

We welcome continued dialogue and are ready to collaborate further to ensure the success of this initiative.