Introduction

1. The SACF is an industry association that represents a broad group of members in the ICT ecosystem and our primary purpose is contributing to creating an inclusive, competitive sector that can attract and sustain investment.

2. Our submission is based on areas of consensus among our members. In stances where we have been unable to reach consensus, those areas are not included in our submissions and will be covered in individual member submissions.

3. The SACF welcomes the opportunity to submit comments on the draft national frequency plan (the draft plan). The SACF would like to participate in any further processes towards the finalisation of the National Frequency Plan, including public hearings.

General Comments

4. This is essential in an environment where communications infrastructure has become some of the most critical national infrastructure that underpins and supports all other sectors of the economy. If there was ever any doubt of this, COVID 19 demonstrated how countries across the globe came to a near standstill, the decline of which was only halted by access to communications infrastructure where work, learning, social interaction, commerce, medical access, and most other aspects of life switched to a virtual environment.

5. This is the backdrop against which we submit our comments, in an environment has fast forwarded the reality into a space that WRC-19 had only envisaged in the distant future. As a result, it is imperative that South Africa adopts a forward-looking approach and adopts a bold approach to enable access to communications in ways that will stimulate economic activity and spur on the economic recovery while the country to embrace the 4IR and to not be left behind.

6. Therefore, access to critical frequency spectrum is critical. As technologies evolve and develop and the use cases and applications grow so too does the demand for spectrum and WRC 19 identified a broad spectrum of bands to contribute to the growing number of use cases.

7. "International coordination supported by the International Telecommunication Union (ITU) at WRCs is essential to achieving widespread spectrum harmonisation for mobile services." ("GSMA: WRC-19 opens door to exciting new 5G ... - GSMA Europe")

8. The global identification of mmWave frequencies will help unlock economies of scale needed to accelerate the delivery of innovative and affordable 5G services around the world. A wide range of industries – including manufacturing, transport, healthcare, and education – are set to benefit.

9. "Countries struck the right balance in opening up ground-breaking possibilities for 5G while protecting existing radio services worldwide. WRC-19 delivered on this goal and secured a pathway to 5G's future success in the agenda for WRC-23." ("GSMA welcomes WRC spectrum treaty")

10. As mobile continues to evolve, so do the spectrum requirements. "WRC-19 recognised this by setting an agenda for the next WRC in 2023 that will consider identification of additional mid- and low-frequency bands." ("GSMA: WRC-19 Opens Door to Exciting New 5G Services")

11. Mid-frequency spectrum in the 3 GHz range (from 3.3-4.2 GHz) is already being used for commercial 5G services, providing a good balance of coverage and capacity. "Increasing the amount of globally harmonised spectrum in this frequency range at WRC-23 would boost 5G network performance, bring down deployment costs and drive significant economic benefits." ("WRC 19 Wrap-up: Additional spectrum allocations agreed for ...")

Forward looking approach

12. Spectrum is a critical resource for the ICT sector and the economy and economic recovery. Therefore, we are of the view that it is imperative that ICASA adopt a forward-looking approach to the licensing of spectrum. The following bands identified for IMT and 5G: 24.25-27.5 GHz (Res. 242), 37-43.5 GHz (Res. 243), 45.5-47 GHz (Res. 244), 47.2-48.2 GHz (Res. 243) and 66-71 GHz

(Res 241) for the deployment of 5G networks in terms of the relevant WRC resolutions.

13. While several bands have been identified for use at WRC 15 and WRC 19, The SACF acknowledges that not all bands can be prioritized for licensing at the same time for a variety of reasons which includes, the maturity of the ecosystem, channeling plans, availability of investments etc.

14. The SACF is of the view that much of the underlying work ought to begin which may include research, migration plans etc. The SACF and its members would be interested in participating.

Context and Location of the SACF's commentary

15. We understand that the purpose of submission on the Draft National Frequency Plan is to invite commentary from interested stakeholders on the draft National Frequency Plan, our comments are broad ranging and speaks that among others speaks to the footnotes in the draft plan.

16. We find the notes to be inconsistent in that the intention of the band and plans are included for some bands and not others. We would urge the Authority to be consistent and detailed in its approach as that would provide much needed comfort and detail to interested parties.

Transparency

17. The SACF notes with concern that historically some bands that were earmarked for IMT have been licensed through opaque processes. which favoured some licensees over others. In instances where the licensing processes have been opaque and took stakeholders by surprise, our information requests have largely gone unanswered.

18. We are of the view that all licensing must be fair and transparent allowing all eligible interested parties to fairly compete for access available spectrum.

19. The SACF has highlighted several bands identified for IMT use that is yet to be licensed. As we have observed that demand exceeds supply in all IMT bands and therefore may be subjected to competitive licensing processes. This should follow a fair process to ascertain demand for spectrum in the band which will allow the Authority to thereafter conduct a matching exercise of supply and demand for the applicable band. We, therefore, respectfully urge ICASA to apply competitive licensing processes to all IMT spectrum bands as that would be a fair and transparent approach to licensing.

Proposal to amend the maximum radiated power limit to adopt the usage of Active Antenna Systems

20. The Active Antenna Systems (AAS) use new technologies e.g. Beamforming. Therefore, 3GPP Technical Specifications 38.104 proposes that the transmission counters of the new AAS base station are represented by OTA. The measurement conditions are defined as TRPs, not EIRPs. TRP is more appropriate measure in assessing interference between 5G and other mobile systems.

21. Regarding the maximum radiated power of Base Station transmissions, we suggest to change the current 61dBm/5MHz EIRP limit to related TRP limit for the adoption of AAS. This applies to the TDD bands 2500-2690MHz and 3300-3800MHz, so we propose updating the definitions of maximum radiated power limits in the related Radio Frequency Spectrum Assignment Plans (RFSAPs) following the updating of the National Radio Frequency Plan.

694-790MHz (IMT700) & 790-862MHz (IMT800)

22. The SACF welcomes ICASA's intention to remove broadcasting as the primary service in these bands. This is long overdue and will contribute to speeding up exiting broadcasters from these bands and the licensing of these bands for IMT services.

23. We are pleased that the deadline for the conclusion of digital migration is March 2022 and are hopeful that this date will not be extended again. As we understand it, digital migration is a process and not an event, therefore, we

are of the view that regular progress reports will provide the industry with key information.

Recommendation

24. Therefore, the SACF recommends that the Authority publish quarterly reports on the progress of digital migration.

3600-3800MHz

25. It was widely anticipated that WRC 19 would have designated these bands for IMT as the primary use however, this was deferred to WRC 23 instead with a footnote and allocated for IMT on a secondary basis in Region 1.

26. As a result, for now, Satellite remains the primary use in these bands.

27. Europe and the Middle East have been able to fast forward and use these bands for IMT due to the relatively low number of satellite users and consumers in these bands. While we, do appreciate that Africa in general has a considerably higher usage of satellite services. Despite this, South Africa does not have a similarly high usage of satellite services in this band when compared to other African states.

28. The SACF is of the view that the Authority has already acknowledged the licensing albeit on a secondary basis appears to acknowledge this. However, as we understand it these licences were issued for fixed wireless services. This raises several questions for the SACF and our members, which includes:

- Are these temporary licences
- Following WRC 23 when the primary use of the bands is designated for IMT as the primary use. Will these licensees be migrated out of the band?
- Will the Authority then allow the transition of use from fixed use to IMT for licensees currently licensed in these bands?
- Will the Authority take back the spectrum and follow a properly constituted competitive process as we are aware that some of our members applied for spectrum in these bands and were not granted licences nor were they refused licences either?

29. As these bands are clearly to be designated for IMT use going forward, we urge the Authority to at least align with the Region 1 to allocate them on a secondary basis for mobile service now, and try to allocate these bands on a primary basis for mobile service not wait until after WRC 2023. This could be done in a manner to prevent interference, where licensees are required to coordinate access and if limited to indoor use high density inland areas, it is unlikely to cause interference to the current primary users who are satellite operators or to neighbouring countries.

30. Further to this based on current usage their standards that have been established for equipment in these bands as evidenced in Europe and the Middle East. As we understand there are also channeling arrangements that already been designed.

31. Finally, we are of the view that this will contribute to economic activity, particularly as it supports 5G services which are essential for 4 IR economies.

1427-1518MHz (L-band)

32. The L Band is a good coverage band and has better propagation properties than IMT 1800 for example, While, it is a good coverage band, it is a complimentary band used when used in conjunction with other coverage bands.

33. We note the power limits assigned to this band are of the view that these limits should apply to outdoor applications and should be reduced for indoor applications as the probability of interference is limited.

34. We are of the view that a TDD configuration allows for the smarter and more adaptive and efficient use of the spectrum which allows for adjustments and corrections based on data arising from current use case patterns.
35. "The requirement for standalone operation in the band (both UL and DL transmissions) has emerged in some other regions." ("The Need for Globally Harmonised 5G Spectrum - xgnlab") In the case of standalone 5G systems, a TDD access scheme is a potentially appropriate option, which can

accommodate traffic asymmetry in the UL/DL directions with good potential for economies of scale.

Recommendation

36. Harmonize the band for B75/N75, and get it ready of licensing, while still gathering data and conducting research.

2500-2690MHz (IMT2600)

37. In May 2020, the SACF participated in ICASA's consultative process on the configuration of the IMT 2600 band FDD to TDD. We welcome the Authority's decision to amend the draft plan accordingly, and we are of the view that this will improve the spectrum efficiency in the band.

3300-3400MHz

38. As we understand it the 3300 – 3400 MHz band was identified for IMT at WRC 15 but is yet to be implemented in the South African market. The network ecosystem for this band is still small but growing, supported by recent allocations in South America and South Asia. We are of the view that there are no barriers prohibiting the licensing of these bands. Much of the equipment currently being deployed by MNOs already supports the 3300 – 3400 MHz bands.

39. Therefore, the licensing of these bands sooner rather than later will create certainty and allow operators to rollout more efficiently and have less cause for replacing the equipment over the short to medium term. This in our view will contribute to the national priorities reducing the cost to communicate and extending infrastructure ubiquitously.

40. In this regard, we would urge the Authority to share its plans on preparing the band for licensing. We are of the view that such plans ought to include any plans for migration including the applicable timeframes. In instances where

there will be coordinated usage, we urge the Authority to develop a database of the extent of radar/radiolocation use within the bands.

Recommendation

41. We recommend that the Authority license the 3300 – 3400MHz bands sooner rather than later and create or publish a database of current users together with its plans and associated timeframes for licensing.

4800-4990MHz

42. The SACF understands that these bands have been identified for IMT use as early as WRC 15 together with the frequency arrangement for the band but has not yet been licensed.

43. While, the ecosystem is still at its developmental stages, we have not that the period for developing the ecosystem is continually getting shorter. We anticipate this trend as countries with large markets are beginning to licence this band. For example, China has already licensed this band.

44. Therefore, we are of the view that the Authority ought to begin preparations for this band particularly as this is considered key band going forward.

45. We therefore urge the Authority to identify possible migration in the band and shared assignments. The migration plans together with timelines should be published.

Recommendation

Provide information and transparency on incumbents and begin to prepare the band for licensing as soon as is possible.

24250-27500MHz (26GHz) & 37000-43500MHz (38GHz)

46. We note the allocation of the 24.25-27.5 GHz for mobile in South Africa, and that WRC-19 Resolution 242 and footnote 5.532AB identified this for IMT. This band favors 5G services because of its properties of high bandwidth and low latency.

47. The SACF is of the view that it is important to begin preparing this band for access. While it is important to begin preparing the band for licensing, we do recognize that preparation of this band is likely to be a complex task as result of the number of legacy users in the band. As a result, we are of the view that the band would need harmonization, we therefore urge the Authority to begin the licensing process as soon as it is possible.

48. As a result of the propagation properties of the band being relatively low, this band maybe better suited to densification. Notwithstanding the challenges that exist in the band, we are of the view than there are parts of the band that could be licensed sooner rather than later.

Recommendation

49. We urge the Authority to begin preparing the band for licensing with applicable timelines and the processes to be followed as information for the industry.

6425-7125MHz (6GHz)

50. UHD video and XR services, the data traffic consumption of 5G users is growing at considerable speed with the average monthly DOU of mobile users worldwide anticipated to reach 250 GB by 2030, according to the ITU. In addition, 5G will be widely used in various vertical industry applications.

51. Given the above business requirements, the GSMA forecasts that each country will still need additional 1-2GHz mid-band spectrum by 2030 in addition to the refarming of the existing spectrum.

52. Based on current data the 6GHz band is better at coexistence than other similar mid-band frequencies.

53. ICASA to support the study of 6GHz band in ITU scope and collaborate with industry partners to cultivate the E2E IMT ecosystem of 6GHz band. We also recommend adding a note to all sub-bands between 6425 MHz and 7125 MHz to indicate that this band is under consideration for future IMT use in the block 6425-7125 MHz.

Recommendation

54. ICASA to participate in and support the studies on these bands for future use.