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13 June 2025

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Per email: chairperson@icasa.org.za
CC: PNtshalintshali@icasa.org.za
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Dear Chairperson

RE: TELKOM SUBMISSION ON THE DRAFT REGULATIONS ON DYNAMIC SPECTRUM ACCESS AND OPPORTUNISTIC SPECTRUM MANAGEMENT IN THE INNOVATION SPECTRUM 3800-4200 MHz AND 5925-6425 MHz

Telkom SA SOC Ltd ("**Telkom**") thanks the Independent Communications Authority of South Africa ("**ICASA**" or "**the Authority**") for the opportunity to provide comments on the draft Regulations on Dynamic Spectrum Access and Opportunistic Spectrum Management in the innovation spectrum 3800-4200 MHz and 5925-6425 MHz ("**draft DSA Regulations**") as published on 28 March 2025 in Government Gazette 52415, under Notice No. 6066 of 2025.

Interested persons were initially invited to submit written representations on the draft DSA Regulations. The initial deadline of 30 May 2025 was extended to 16h00 on Friday 13 June 2025 through Government Gazette 52811, under Notice No. 6280 of 2025.

Telkom requests an opportunity to make oral representations should the Authority elect to hold public hearings.

This submission replaces the draft submission submitted to the Authority on 30 May 2025.

Yours Sincerely

Nozipho Mngomezulu
Group Executive: Regulatory and Legal Affairs

Telkom Submission:

Draft Dynamic Spectrum Access and Opportunistic Spectrum Management Regulations

Telkom SA SOC Ltd
Submission date: 13 June 2025

1 CONTENTS

2 INTRODUCTION

1. Telkom welcomes the opportunity to provide written comments on the draft Regulations on Dynamic Spectrum Access and Opportunistic Spectrum Management in the innovation spectrum 3800-4200 MHz and 5925-6425 MHz ("**draft DSA Regulations**") as published on 28 March 2025 in Government Gazette 52415, under Notice No. 6066 of 2025.

2. The draft DSA Regulations are well formulated and provide a huge step forward in the process of making spectrum available on a secondary basis using innovative dynamic spectrum access methods. Telkom also welcomes the key objective of protecting primary users in the two frequency bands 3800-4200 MHz ("**4 GHz**") and 5925-6425 MHz ("**L6 GHz**").

3. In section 3 of this submission, Telkom raises matters of a general nature pertaining to the draft DSA Regulations.

4. In section 4, comments are provided on specific aspects of the draft DSA Regulations.

3 GENERAL COMMENTS

3.1 System diagram

5. The draft DSA Regulations, especially the interfaces between the various components or building blocks, are complex to construe. Telkom recommends that the Authority adds a schematic diagram to visually indicate the various building blocks or components of the DSA system, including the interfaces between these. This should be done for both the 4 GHz and L6 GHz frequency band systems. This will go a long way in helping interested parties understand the system and its various components and interfaces.

3.2 Protection of systems deployed nationally and in neighbouring countries

6. In both the 4 GHz and L6 GHz bands, Innovation Spectrum Devices ("**ISDs**") must protect incumbent users operating nationally on a primary basis both nationally as well as across adjacent geographic borders. This is mainly Fixed Service ("**FS")** links operating in both bands, and Fixed Satellite Service ("**FSS**") earth station receivers operating in the 4 GHz band in South Africa.

7. An issue to be considered and addressed in the DSA Regulations is the protection of FS links and FSS earth stations located in neighbouring countries. These links and systems are not registered for purposes of the DSA Regulations and will therefore not be included in the interference assessments by the Unified Spectrum Switch ("**USS**").

8. The Authority mentions the consideration of cross-border systems in the attachment to the draft DSA Regulations (Annex A). For protection of satellite earth stations operating in the 4 GHz band in neighbouring countries, the Authority could consider enforcing suitable Power Flux Density ("**pfd**") limits akin to those prescribed in the International Telecommunications Union ("**ITU**") footnote 5.430A for International Mobile Telecommunications ("**IMT**") systems operating in the 3.4-3.6 GHz band, as a basis for consideration. For FS links, a suitable coordination area along the border of South Africa could be established, absent detailed coordination procedures.

3.3 Protection of primary services

9. Telkom welcomes the key objective of protection the primary services operating in the 4 GHz and L6 GHz bands. Network operators such as Telkom/Openserve have made large investments into wireless systems over many decades into the two bands addressed herein. These networks provide critical services in Local Transport Network Layer.

10. Careful consideration needs to be given to the introduction of database tools (such as USS) and the associated coordination calculation methodologies, to ensure that the incumbent licenced services are protected. The use of these bands by ISDs introduce uncertainty in the long-term availability of spectrum, raising the risk of stalling or possibly end investment in network deployments.

11. The draft DSA Regulations, when implemented, must be amended, if needed, if it becomes evident that incumbent services are not adequately protected. This also applies where the 4 GHz and L6 GHz bands are used for new primary services in the future.

4 SPECIFIC COMMENTS

4.1 Requirement to define "master device"

12. A definition for "master device" has not been provided in the draft DSA Regulations. Telkom recommends that a definition be added noting the extent of the use of this term and the importance of the master device in the overall DSA system.

4.2 Definition of "Client device"

13. A client device means an ISD certified by the Authority is allowed to operate without an exclusive license in Innovation Spectrum Frequency Range 1 ("**ISFR 1**") and Innovation Spectrum Frequency Range 2 ("**ISFR 2**"). It is assumed that different client devices will operate either in the 4 GHz or in the L6 GHz bands. Therefore, Telkom recommends that the definition be changed to "…operate without an exclusive license in ISFR 1 ~~and~~ or ISFR 2".

14. This principle (i.e. changing "and" to "or" when referring to ISFR 1 and ISFR 2) should also be verified and corrected where needed, in several other definitions in the draft DSA Regulations.

4.3 Definition of "Innovation Spectrum Customer's Premises Equipment Category 2 ("IS-CPE Cat 2")"

15. According to the definition of the IS-CPE Cat 2, the device can obtain Operational Parameters ("**OPs**") from the USS and communicate with an associated Master device. Furthermore, according to the definition the IS-CPE Cat 2 is classified as a "Client device".

16. However, according to the definition of "Client device", a client device cannot obtain OPs directly from the USS. There seems therefore to be a discrepancy, between the two definitions, which must be verified and corrected.

4.4 Definition of Innovation Spectrum Base Transceiver Station ("IS-BTS")

17. The term IS-BTS is used in the definition of the Minimum Licence Area ("MinLA") and can operate in ISFR 1 (4 GHz band). The term "BTS", although it could be assumed to mean "Base Transceiver Station", which is generally used in the context of Third Generation Partnership Project ("**3GPP**") mobile networks and services, has not been defined. Telkom recommends defining this acronym and explaining its meaning in the context of the DSA Regulations.

18. It is assumed that the BTS is classified as a "Master device". However, this should be confirmed and included in the definition of the IS-BTS if it is indeed the case. It is also not clear whether the Master device and BTS are two distinct devices since it is said that the Master device will be used to communicate with the USS and provide the parameters to the BTS. Further clarification is needed to ensure that there is no misunderstanding as to the application of these components in the DSA network.

19. These clarifications are needed considering the importance of the term BTS which is, amongst others, linked to the definition of MinLA. A single BTS will be licensed within a MinLA, which in turn defines the maximum licensing area of a network operator in the 4 GHz band. The use of the term BTS may also impact the technology that may be allowed within the context of Innovation Spectrum ("**IS**") use in the 4 GHz band.

4.5 Definition of Dynamic Spectrum Access ("DSA")

20. DSA provides a mechanism to allow secondary users into the ISFR 1 and ISFR 2 while protecting the primary users in the 4 GHz and L6 GHz bands. In effect, a two-tier system is created in the 4 GHz band (primary incumbents and secondary ISDs) and a 3-tier system in the L6 GHz band (primary incumbents, secondary ISDs (controlled through the USS at transmit power higher that existing secondary users, but still secondary to the primary services) and the other secondary users such as WAS/RLAN (very low power (indoor) and low power outdoor on a licence exempt basis and secondary).

21. An issue that must be addressed is the status of the ISDs operating on a secondary basis versus other spectrum users that are also operating on a secondary basis in the L6 GHz band. In the L6 GHz band, Wireless Access Systems ("**WAS")** / Wireless Local Area Networks ("**WLANs**") can already operate on a secondary basis with specified operational restrictions such as indoor only (in some cases) and specified power limits. These limits (i.e. Low Power Indoor (LPI) and Very low Power (VLP) have been specified in the Radio Frequency Spectrum Regulations and are designed to protect the fixed service and FSS space stations operating on a primary basis in this band.

22. It is assumed that ISDs and WAS/RLAN will operate on an equal rights basis (i.e. both are secondary services). This means that these systems will have to accept interference from one another. However, noting the much higher power levels to be allowed for ISDs, and the fact that secondary users such as WAS/RLAN operating in the L6 GHz band will not be considered in the coordination processes for ISDs, harmful interference may be caused to WAS/RLAN. This must be addressed, noting the importance of WAS/RLAN in the 5925-6425 MHz band. Telkom recommends that this be

clarified to avoid future disputes between secondary users operating in the L6 GHz band on an equal rights basis.

23. Telkom also recommends stating in the DSA Regulations that the protection of primary users applies to uses in the same or adjacent frequency bands. ISDs must ensure protection of primary services in the adjacent bands, for example, radio altimeters operating in the 4200-4400 MHz band.

4.6 Definition of End-user-equipment ("EUE")

24. The terms "EUE" and "Client Device" have very different definitions in the draft DSA Regulations. However, the difference between the use and application of these terms in a DSA system is not obvious and needs further clarification. Furthermore, the term EUE is used only once in the draft DSA Regulations namely in section 14, while the term "Client Device" is used multiple times.

25. Both the EUE and Client Device can communicate with the Master device. In addition, the term Customer's Premises Equipment ("CPE") is also used throughout the draft DSA Regulations in the terms "Innovation Spectrum Customer's Premises Equipment Category 1" and "Innovation Spectrum Customer's Premises Equipment Category 2". The three terms ("EUE", "Client Devices" and "CPE") seem to refer to the ISD deployed at the customer site for accessing the network. This needs clarification.

26. To avoid regulatory uncertainty Telkom recommends that these three terms be clearly defined where these terms have a different application. If possible, only a single term should be used to refer to the equipment used by the customer.

4.7 Definition of Geo-location uncertainty

27. Telkom agrees that a geo-location uncertainty limit must be applied to all ISDs. This uncertainty factor has however not been specified in the draft DSA Regulations. Telkom recommends that this be set to no more than 50m.

4.8 Definition of IS

28. IS refers to radio frequencies that are "unused" in the 4 GHz and L6 GHz bands. However, those frequencies are only "unused" in some geographic areas, which may also change over time. The primary use of these two bands may also change over time, based on changes introduced internationally through the ITU World Radiocommunication Conference ("**WRC**") process.

29. Considering the above, Telkom recommends that the definition be amended as follows: "…means the unused radio frequencies (RF) in certain geographic areas, although such use may change from time-to-time within the 4 GHz and 6 GHz L6 GHz bands ...".

4.9 Definitions of IS-CPE Cat 1 and IS-CPE Cat 2

30. In both these definitions, reference is made to the phrase "permanently affixed to a structure certified by the Authority". The underlined part of this phrase is not clear and needs further

clarification. This is because the Authority doesn't certify "structures" per se, which seems to refer to, for example poles, tower, etc. where the CPE equipment seems to be affixed. Telkom requests that this be clarified and the necessary amendments to both definitions be made.

4.10 Definitions of Interference

31. The definition of interference in the draft DSA Regulations is very similar to the definition contained in the ITU Radio Regulations (Article 1) and the National Radio Frequency Plan 2021 ("Frequency Plan").

32. To avoid any uncertainty in interpreting this very critical definition used in the context of ensuring protection of primary services, Telkom recommends that the Authority aligns the definition in the DSA Regulations with that contained in the ITU Radio Regulations and the Frequency Plan.

33. Furthermore, the ITU Radio Regulations and Frequency Plan also contain definitions of the term's "emissions" and "radiations", which are used in the definition of interference. These terms also apply in South Africa and to the DSA Regulations even though they are not included in the list of definitions. Telkom recommends that these also be included.

4.11 Definitions of Maximum mean Equivalent Isotropic Power ("MaxEIRP")

34. The definition of MaxEIRP refers to the maximum EIRP of a base station. It is not clear if this refers to a BTS as discussed above.

35. It is also not clear why the definition of MaxEIRP is restricted to a "base station" since this term applies to ISDs in general. ISDs refer to any wireless device authorised to operate in the 4 GHz and L6 GHz bands. ISDs are not limited to base stations but also includes CPEs, user equipment, etc.

36. Telkom recommends that this definition be amended to clarify its application and use in the DSA Regulations.

4.12 Definitions of Operational Parameters ("OP")

37. According to the definition of OP, technical parameters are generated by the USS in response to a request made by the Mater Device. However, the IS-CPE Cat 2 can also obtain OPs from the USS.

38. Based on the above, it seems that OPs can therefore also be obtained from the USS in response to a request made by the IS-CPE Cat 2 ISD. This is also confirmed in section 5(2)(b)(ii) of the draft DSA Regulations.

39. In addition, the Database Proxy ("DbP") can also request OPs from the USS as an intermediary on behalf of a single or multiple ISDs or networks of ISDs. This is not captured in the definition of OP in the draft DSA Regulations.

40. Telkom recommends that the above matters be verified and corrected as required.

4.13 Definitions of "Primary basis"

41. Telkom agrees, in principle, with the definition of "primary basis" in terms of a primary services being entitled to protection from harmful interference from other services. However, Telkom suggests that this definition be improved by stating that this protection, in the context of the DSA Regulations, is protection from secondary users.

42. The relationship and protection of primary users operating in the same or adjacent frequency bands is more complex, as addressed in the ITU Radio Regulations. The sharing and coordination between primary users operating in the 4 GHz and L6 GHz bands falls outside the scope of the DSA Regulations. Telkom recommends that this be clarified in the DSA Regulations.

43. The alternative is to refer to section 5.23 of the ITU Radio Regulations where the relationship between primary and secondary services is described in detailed. The same relationship applies to ISDs operating on a secondary basis in the 4 GHz and L6 GHz bands as described in the draft DSA Regulations. See also comments above regarding the relationship between secondary services operating in the same band.

4.14 Definitions of "Primary service"

44. The definition of "primary service" as provided in the draft DSA Regulations is not correct in the sense that the Frequency Plan doesn't reflect services which are "licensed", but rather services which are "allocated" to radiocommunication services. Also, Telkom suggest that the word "primary" be added in this definition as follows:

> "**Primary service**" means the service to which a specific band in the NRFP is ~~licensed~~ allocated on a primary basis".

4.15 Definitions of "Professional Installer"

45. The definition of Professional Installer contains several terms which are undefined, and which could lead to difference in interpretation. Telkom recommends that these terms be further clarified to avoid uncertainty and possible disputes when the regulations are implemented.

46. For example, the term "the professional body" seems to refer to a specific body, although this has not been defined. It may be possible that the Authority intended to refer to "a professional body", although this then creates uncertainty as to which professional bodies will qualify to apply in this context.

47. The term "relevant qualification" is vague and could lead to difference of opinions and disputes in terms of what is considered as a relevant qualification in the context of implementation of the DSA Regulations.

48. To ensure regulatory certainty, Telkom recommends that these issues be addressed in the DSA Regulations.

4.16 Definitions of "Radio Frequency Spectrum Planning"

49. This definition refers to Radio Frequency Spectrum Assignment Plans ("**RFSAPs**"), which are develop and prescribed in terms of section 3 of the Radio Frequency Spectrum Regulations.

50. No RFSAP has however been prescribed for either the 4 GHz or L6 GHz frequency bands. RFSAPs that have been prescribed for the C-band are for the bands 3.3-3.4 GHz and 3.4-3.6 GHz and don't relate to the 4 GHz and L6 GHz bands as used in the draft DSA Regulations. It is also noted that there is no reference to a RFSAP or the concept "Radio Frequency Spectrum Planning" in the draft DSA Regulations. This definition may therefore need to be deleted.

51. If the Authority intends to prescribe a RFSAP for either or both the 4 GHz and L6 GHz bands, Telkom recommends that this be indicated in the DSA Regulations. A similar note should also be made to the relevant frequency bands in the draft NRFP which is currently being reviewed in parallel to this process.

4.17 Definitions of "Registered Incumbents" and "Secondary user"

52. Telkom accepts the additional registration process to address the protection of the primary services from ISDs operating on a secondary basis in the 4 GHz and L6 GHz bands. This is critical as licensees may be licensed to use spectrum for primary services in a specific area on an exclusive basis. Systems deployed within these exclusive areas and their associated technical parameters are usually communicated to the Authority quarterly. Nevertheless, in the context of the DSA Regulations, which is very dynamic, this is not sufficient as interference may be caused in the periods between notifications. Having an online registration platform for primary services will overcome the timing issue and provide further certainty for primary users of the spectrum.

53. Telkom recommends that the Authority changes the reference to "secondary users" at the end of the definition to "ISDs operating on as secondary basis". If this definition is not limited to ISDs, other secondary users operating in these bands may be included in the definition of "secondary user", which should not be the intention. The DSA Regulations must be restricted to the protection of incumbents operating on a primary basis from interference caused by ISDs, which operate on a secondary basis within the 4 GHz and L6 GHz bands.

54. The above concern is expressed noting that the definition of "secondary user" defines any secondary user and is not limited to a secondary ISD user. The protection of primary users from secondary users other than ISDs, for example WAS/RLAN, must be excluded from the DSA Regulations.

55. In the same vein, Telkom recommends that the definition of "secondary user" be amended to reflect the secondary use of ISDs in the context of the DSA Regulations. Secondary users other than ISDs should not be included in this process.

4.18 Definitions of "S band"

56. The term "S Band" has been defined in the draft DSA Regulations without it ever being used in the regulations. According to the definition, S band is limited to the frequency range 2000 – 4000 MHz, which falls outside the 4 GHz band (i.e. 3800-4200 MHz).

57. Telkom therefore recommends that the definition "S band" be deleted from the DSA Regulations as it doesn't add any value.

4.19 Definitions of Standard Power Devices ("SPD")

58. The term SPD has been defined as: "…means an umbrella term that collectively describes ISDs which are authorized to operate with an increased power level outdoors and indoors within the ISFR 2". This definition is not clear and needs clarification.

59. Reference to "increased power" is not clear since the definition is attempting to define "standard power". Whereas it could be that this definition is refereeing the secondary uses of WAS/RLAN versus ISDs in the L6 GHz band, it is not clear what is meant by "increased power" or "standard power".

60. The term SPD is also not used in the draft DSA Regulations. It is therefore not clear in what context this term will be applied. If not used in the DSA Regulations, then Telkom recommends that the term be deleted.

4.20 Definitions of "USS Services"

61. Typical functions provided by the USS are listed and this includes "IS network operators", but the functions associated with "IS network operators" are not described.

62. Telkom recommends that the functions or services provided by the USS to IS network operators be defined.

4.21 Ad section 2 (Objectives)

63. The first objective states that the regulations intend to: "expand broadband access to rural, underserved, remote communities". Whereas this may be true, a reference to "urban" must also be included as this has been defined under the definitions section in the draft DSA Regulations. This statement may create the impression that providing broadband in urban areas is excluded in the context of the DSA and this is not the case. An alternative is to state that the intention is to expand broadband nationally, especially in rural, underserved, and remote communities.

4.22 Ad section 4 (Access to IS Requirements)

64. In terms of sub-regulation 4(3), the use of an ISD in the IS must be type approved or authorised by the Authority. This principle is supported. However, it is not clear what technical standard/s will be used for purposes of type approval for ISDs such as Master and Client devices. Whereas UEs or CPEs

may conform to standard equipment (such as those described by 3GPP, ETSI or Institute of Electrical and Electronic Engineers ("**IEEE**")), ISDs may also use proprietary protocols, interfaces and parameters designed by the Council for Scientific Industrial Research ("**CSIR**"), which may not be based on current standard equipment available in the marketplace.

65. It is also not clear what process will be followed to develop, adopt, and publish the ISD related standards. Since these will be mandatory for ISDs in the 4 GHz and L6 GHz bands, it is assumed that these will be processed via the South African Bureau of Standards ("**SABS**") TC74 SC05 for adoption as national standards, and thereafter be incorporated in the Authority's Official List of Regulated Standards. Telkom requests that this be clarified and be included in the DSA Regulations.

66. Telkom recommends that the Authority further elaborates on this.

4.23 Ad section 6 (Registration of Network Operator and Spectrum Acquisition)

67. In sub-regulation 6(3)(i), reference is made the Radio Access Technology ("**RAT**"). This term is well known and used in the context of IMT network systems and relates to Universal Mobile Telecommunication Service ("**UMTS**"), Long Term Evolution ("**LTE**"), 5G New Radio ("**NR**"), etc. It seems therefore appropriate to use this term in the 4 GHz band. Since section 6(3) deals with the registration of a Network Operator, which can operate in either the 4 GHz or L6 GHz bands, the term RAT also applies to equipment used in the L6 GHz band. It seems therefore inappropriate to link the term RAT to equipment to be deployed in the L6GHz as the band is licenced for non-IMT, such as WAS/RLAN. Telkom recommends that a definition for the term RAT be added in Section 1 including a description of use of the term in the context of the DSA Regulations, including whether this term applies to both bands or also in the 4 GHz band.

68. As part of the application stage, as indicated in sub-regulation 6(3)(j), the Network Operator must submit on the online form of the Unified Spectrum Switch Provider ("**USSP**") portal, amongst others, the geographical areas with location coordinates indicating where the IS-BTS shall be deployed. Telkom wishes to make the following comments in this regard:

    a. There is no detail as how the geographical areas will be defined. Should an area be specified through, for example, a polygon with several vertices or should only the IS-BTS deployment location be specified with an automatic calculation by the USS of the operational area, based on the frequency, propagation data, clutter loss, technical parameters, etc? Telkom assumes that the BTS deployment point and its associated parameters will be used to calculate the operations area, else an unrealistic area may be requested by the applicant. Telkom recommends that this be further clarified in the DSA Regulations.

    b. Reference is made to "IS-BTS" as indicated above, this term should also be defined. A suitable description should also be added to clarify its use in the context of the draft DSA Regulations.

69. A USS access fee is payable in terms of sub-regulation 6(3)(k). Telkom recommends that the Authority specify where (and when) this access fee will be prescribed and the process that will be followed for prescribing this fee. It is also not clear if the access fee will be fixed or based on an automatic annual increase based on Consumer Price Index ("**CPI**"), as with other administrative fees

prescribed by the Authority. It is Telkom's view that a consultation process will have to be followed to prescribe this fee. Telkom believes that the access fee cannot be left to the discretion of the USSP as stipulated in Regulation 21 as this may lead to high prices being imposed prospective DSA users.

70. In terms of section 6(4(c)), the spectrum availability certificate will be valid for 7 days. Telkom recommends that the DSA Regulations also specify what will happen, and the process to be followed, if the certificate has expired before the spectrum payment has been made. This is important noting that the spectrum may become unavailable in the selected area while the applicant is making payment for use of that spectrum in that area.

71. Sub-regulation 6(5) states that the spectrum fees will be published in a government gazette.

    a. It is not clear how this fee will be calculated and if the fee will be fixed or based on an annual CPI increase, as with other spectrum fees. It is Telkom's view that a consultation process must be followed to prescribe this fee.

    b. Sub-regulation 6(5)(a) states that, in ISFR 1 (i.e. 4 GHz band), the applicant must provide proof of payment or exemption of the spectrum licence fee. It is not clear when the use of the 4 GHz band will be exempt and when a spectrum fee will be payable. Telkom's understanding is that the ISFR 2 is exempt whereas ISFR 1 will be licensed (and therefore a fee will apply). This needs to be clarified.

4.24 Ad section 7 (USS access Requirements for Innovation Spectrum Devices)

72. In terms of sub-regulation 7(1), communication between the USS and the listed devices must be in accordance with the latest version of the Communication Protocol to Access Unified Spectrum Switch ("**CPAUSS**"). The draft DSA Regulations are however silent on who, how and when this protocol will be developed, published and maintained. Telkom recommends that this be clarified in the DSA Regulations.

73. The Master device must, when registering with the USS, provide its antenna azimuth, amongst other parameters (sub-regulation (7)(4)(g)). Telkom recommends that the Authority further defines the antenna azimuth to avoid uncertainty. Generally, antenna azimuth is specified in degrees from true north in units of degrees. Telkom recommends that this be clarified and included in the DSA Regulations.

74. The reference to "antenna directivity" (sub-regulation (7)(4)(h)) is not clear and needs further clarification. Antenna directivity refers to an antenna's ability to concentrate its radiated power in a particular direction, measured as the ratio of maximum power density in that direction to the average power density over all directions, and is normally specified in dB. The potential use of Active Antenna Systems ("AAS"), especially in the 4 GHz band, must also be considered and included in the DSA Regulations.

75. In terms of sub-regulation 7(6), the USS must action the information received in terms of sub-regulation 7(5). Telkom is of the view that the USS action is needed in reaction to this information received in terms of either sub-regulation 7(4) or 7(5) (i.e. the information is received directly from the master device or received via the Database Proxy ("**DbP**") respectively).

76. In terms of sub-regulation 7(14), a master device must communicate an instruction to all client devices when to stop transmissions. The master device will then stop transmitting. Telkom recommends that a confirmation message first be sent from the client device to the master device to confirm that it received the message, and only then the master device must cease transmission.

77. The difference between sub-regulations 7(7) ("The Master device IS-CPE Cat 2 or DbP in requesting for the OPs from the USS, must provide" and sub-regulation 7(15) ("In requesting OPs, the Client devices must communicate the following information to the USS through the Master device or DbP" is not obvious noting that the requested parameters are the same. This needs some further clarification. It seems that "client device" in sub-regulation 7(15) relates to ISDs which will operate in the L6 GHz, but this should be confirmed to avoid confusion.

4.25 Ad section 10 (Maximum Permitted Transmit Power Levels of ISDs)

78. In terms of regulation 10, several factors will be considered for determining the ISD power levels. Telkom wishes to comment on some of these as follows:

    a. Reference to frequency offset is not clear; is this the offset with incumbent assignments in the area? This needs to be clarified.

    b. The ISD antenna elevation is considered although it is not clear where this will be obtained unless the network operator supplies this or if the USS calculates this based on the master and client device parameters (coordinates, antenna height, etc.).

    c. Reference to ISD deployment "situation" is not clear. It could be assumed to refer to outdoor, indoor, etc. but this needs to be clarified.

79. With regards to the maximum EIRP levels for ISDs in the ISFR 2, the bandwidth has not been specified. Since these channels could be 20 MHz, 40 MHz, 80 MHz, or 160 MHz, an EIRP density should also be supplied. The power is also stated as "Max Permitted Transmit Power" and provided in dBm; it is however not clear if this is EIRP or transmit power (without antenna gain). These matters must be addressed.

80. In terms of ISFR 2 in the L6 GHz band, the maximum permitted power level is specified for ISDs. Since these systems can operate in bandwidths of 20 MHz, 40 MHz, 80 MHz, or 160 MHz, it is recommended that the maximum allowable power density also be specified.

4.26 Ad section 11 (Measures to prevent harmful interference)

81. With regards to reference to "azimuth" and "directivity", see Telkom's comments above.

82. Reference to "antenna sensitivity" in sub-regulation 11(2)(s) is not clear and needs further clarification. Perhaps this should refer to "receiver sensitivity" to be provided in dBm? Or perhaps this refers to the antenna pattern which is required to determine the off axis gain of the antenna. Clarification of this is required.

83. Whereas the Authority requests the transmit and receive frequencies to be specified, which could include bandwidth, this must be specified (either start and stop frequencies or centre frequency and bandwidth).

84. In sub-regulation 11(4), the draft DSA Regulations refer to "low probability" of harmful interference. This needs further clarification as to what "low" means. Reference to applicable ITU recommendations also needs further elaboration; recommendations to be used in this process must be specified to ensure regulatory certainty.

85. Reference to Regulation 15 in sub-regulation 11(5)(a) should be changed to Regulation 14.

86. In sub-regulation 11(5)(d), the word "recovers" should be changed to "receivers".

87. In sub-regulation 11(5)(e), reference to "2.5 times the bandwidth" should indicate 2.5 times the bandwidth of the FSS" to avoid uncertainty.

88. In sub-regulation 11(5)(g), reference is made to "long-term protection of FS receivers" and "not to be exceeded for 20% of the time". However, what is missing in this statement is the Interference-to-Noise ("**I/N**") protection criteria of = -10 dB, which should be added.

89. In sub-regulation 11(5)(h), there seems to be a footnote reference '3' associated with the word "threshold", although the footnote was not provided. This should be verified and corrected.

90. It is not clear what size the predetermined coordination area referenced in sub-regulation 11(5)(i) is. Telkom recommends that this be specified.

91. The Authority refers to CEPT Report 08 in terms of out-of-block power spectral density values. However, the Report is titled "The Harmonised uses for the frequency bands 1670-1675 MHz and 1800-1805 MHz (the "TFTS bands")" and doesn't relate to the issue at hand. The relevant report is CEPT Report 088. This should be verified and corrected.

92. In sub-regulation 5(11)(m), the long-term protection criteria for FS receivers in the L6 GHz band is given as: "not be exceeded for 20% of the time". The long-term I/N criteria is however not given. This should be stipulated as I/N = -10dB. In addition, it is also required to consider the aggregate interference from multiple ISDs. Combined, all ISDs must not exceed the -10 dB protection criteria. The interference modelling must ensure that the aggregate interference doesn't exceed the -10 dB limit for any FS receiver.

93. In sub-regulation 5(11)(n), the long-term protection criteria is given as -6 dB; this is incorrect as -6 dB is the short-term protection criteria and doesn't apply for 20% of the time. Telkom recommends that sub-regulation 5(11)(n) be deleted whereas 5(11)(m) must be retained (with the addition of -10 dB not to be exceeded for 20% of the time).

94. Change the word "recovers" in sub-regulation 5(11)(o) to "receivers". The pre-determined coordination distance must also be specified.

95. In sub-sections (p) to (r), reference is made to “FSS”; Telkom understand that these sections will be linked to the FS protection in the L6 GHz band and therefore FSS should be changed to FS (in all three sub-sections).

96. The Authority specifies out-of-block emission limits in sub-regulation 11(6). In the table, there are footnotes (“4” and “5”) which have not been specified in the draft DSA Regulations. , Telkom recommends that the abbreviations used in the table be specified (i.e. “df_L” and “df_U”).

4.27 Ad section 14 (Default values and Technical Parameters)

97. In this section, reference is made to “CPE” and EUE” where different default antenna heights are provided. It therefore seems that CPE and EUE are distinctly different components. See Telkom’s comments above regarding the need to further clarify this matter.

4.28 Ad section 16 (ISD labelling Requirements)

98. In regulation 16, reference is made to the Equipment Authorization Regulations, 2022. As mentioned above, these Regulations are not in force yet whereas the Type Approval and Labelling Regulations are. In several other sections in the draft DSA Regulations the Authority refers to Type Approval. Reference to the Equipment Authorisation Regulations, 2022 can be made only after these come into force.

99. What remains unclear for Telkom is the specific standards that will be used for purposes of Type Approval or Equipment Authorisation. While local markets and development should be promoted, there is always a concern that the adoption of proprietary technologies and standards may lead to limited or unavailable equipment for the South African Market. These issues must be addressed by the Authority.

4.29 Ad section A (Summary Results of Simulations and Trials)

100. In section A1.2, the Authority provides the formulae used for calculating I/N. The term PLdf is given as: “Radio propagation and feeder losses between the secondary system transmitter and secondary system receiver”. In terms of calculating the interference level at the primary system receiver, the path loss should accordingly be calculated between the secondary system transmitter and the primary system receiver. The must be corrected.