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29 June 2026

Mr Mandla Mchunu
Independent Communications Authority of South Africa
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CENTURION

Per email: chairperson@icasa.org.za
mmchunu@icasa.org.za
CC: RRamendments@icasa.org.za

Dear Mr Mchunu

RE: TELKOM SUBMISSION ON THE AMENDMENTS TO THE RADIO FREQUENCY SPECTRUM REGULATIONS, 2015 AND THE RADIO FREQUENCY SPECTRUM FEES REGULATIONS, 2010 FOLLOWING THE AUTHORITY'S INQUIRY INTO THE REGULATORY FRAMEWORK FOR THE LICENSING OF SATELLITE SERVICES

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 amendments to the Radio Frequency Spectrum Regulations, 2015 ("**draft Spectrum Regulations**") and the Radio Frequency Spectrum Fees Regulations, 2010 ("**draft Spectrum Fees Regulations**"), which were both published on 15 May 2025 in Government Gazette 54677, under Notices No. 3926 and No. 3927 of 2026 respectively (collectively, "**draft Satellite Regulations**").

Interested persons are invited to submit written representations on the draft Satellite Regulations by no later than 16h00 on 29 June 2026.

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

Yours Sincerely



Nozipho Mngomezulu
Group Executive: Regulatory and Legal Services

Telkom Submission:

Draft amendments to the Radio Frequency Spectrum
Regulations, 2015 and the Radio Frequency Spectrum Fees
Regulations, 2010

A. CONTENTS

A. CONTENTS	1
B. INTRODUCTION.....	2
C. EXECUTIVE SUMMARY	2
D. SPECIFIC COMMENTS	4
D.1 DRAFT SPECTRUM FEES REGULATIONS	4
D.2 DRAFT SPECTRUM REGULATIONS.....	8

B. INTRODUCTION

1. Telkom welcomes the opportunity to provide comments on the draft amendments to the Radio Frequency Spectrum Regulations, 2015 (“**draft Spectrum Regulations**”) and the Radio Frequency Spectrum Fees Regulations, 2010 (“**draft Spectrum Fees Regulations**”), which were both published on 15 May 2025 in Government Gazette 54677, under Notices No. 3926 and No. 3927 of 2026 respectively (collectively, “**draft Satellite Regulations**”).
2. Telkom trusts that its comments on the draft Satellite Regulations will assist the Independent Communications Authority of South Africa (“**the Authority**” or “**ICASA**”) in its enhancement of the regulatory framework for the licensing of the spectrum required in respect of the provision of satellite services.

C. EXECUTIVE SUMMARY

3. Telkom raises the following key issues in its submission:
 - a. Spectrum fees for satellite terminals
 - i. Telkom welcomes and supports the inclusion of the “FREQ” (frequency) factor in the formula applicable to the calculation of the satellite hub ground station spectrum fees. That being said, Telkom is concerned that the same factor has not been included in respect of the satellite terminal fee calculations.
 - ii. While the Authority has adopted the blanket licensing principle for satellite terminals, which means that all terminals will be covered in one fee, we are concerned that the fees payable for satellite broadband services could end up being quite significant. This is due to the fact that the new generation satellite networks that are deployed in respect of the provision of broadband services need access to a large spectrum bandwidth assignments (although each terminal uses only a fraction of the available bandwidth), which may result in high spectrum fee prices, especially in circumstances where a small number of terminals are deployed. Not including, as a minimum, the FREQ factor in the formula for satellite terminals, also does not promote the use of higher frequency bands, which is a critical element of administrative incentive pricing (“AIP”) (used for calculating spectrum fees).
 - iii. Telkom recommends that, as a minimum, the FREQ factor also be included in the formula used for determining satellite terminal fees. This will reduce the spectrum fees payable for satellite terminals, especially where high frequency bands are used. Applying the FREQ factor will also incentivise the use of higher frequency bands, which will lead to more efficient spectrum use.

- b. Coordination with the Management Authority (“MA”)
 - i. Telkom fully supports South Africa’s astronomy endeavours, including the protection of the Square Kilometre Array (“SKA”) in the Northern Cape. Nevertheless, Telkom submits that these endeavours must strike a balance between the protection of the SKA and allowing the use of new generation satellite systems, including mega-constellation low earth orbit (“LEO”) satellite systems.
 - ii. Telkom notes that, following the registration of a satellite space segment operator, coordination with the MA is required. Telkom is concerned about the lack of information relating to how this coordination will be undertaken. According to the draft Spectrum Regulations, the MA will be a gatekeeper for all new satellite system operations in South Africa. This concern is compounded by the fact that mega-constellation satellite systems cannot meet the stringent protection criteria for the Square Kilometre Array (“SKA”) established in the Northern Cape.
 - iii. What is lacking from the draft Satellite Regulations is the process, conditions, and criteria that will be applied by the MA in undertaking its coordination responsibilities. It is not clear what will and will not constitute successful coordination. Although the Authority refers to the processes and criteria published under the Astronomy Geographic Advantage Act of 2007 (“AGA”), these have been developed for protecting the SKA from terrestrial interference and doesn’t directly apply to the coordination or protection of mega-constellation satellite networks.
 - iv. Therefore, only referring to these processes and criteria in the draft Satellite Regulations, especially the Astronomy Protection Regulations (R.90 of 2012) which may not apply, does not clarify how this coordination will be performed and how the outcome will be addressed. As a minimum, the Authority needs to provide more information on this coordination, including information on, *inter alia*, what will happen if coordination is unsuccessful, timelines for coordination, and how the MA coordination outcome will feed back into the Satellite Regulations and made known to the Authority and industry, who depends on these satellite systems for providing broadband and other satellite services.
- c. Incorporation of provisions from international provisions into these regulations (Annexure K)
 - i. Telkom is concerned that several European provisions (mainly Decisions) have been incorporated by reference into the draft Satellite Regulations. This is of particular concern as certain elements of these European Decisions are not applicable or relevant to South Africa. This may of course lead to regulatory uncertainty.
 - ii. While some provisions contained within the European Decisions are relevant to South Africa in terms of the deployment, use and management of ESIMs,

several parts are not relevant. Rather than simply incorporating by reference the entire European Decision, the specific relevant parts thereof must be drafted directly into the Satellite Regulations to ensure certainty in implementing the specific relevant elements of the European Decisions.

- iii. Telkom is also of the view that the frequency bands, international provisions, ETSI standards, etc. listed in the table in Annexure K is incomplete. Telkom therefore requests the Authority to review Annexure K to ensure that all ESIM frequency bands and associated provisions are listed. Telkom's comments above regarding the applicability of international provisions in South Africa still apply when updating Annexure K.
- d. Imposing fines on satellite space segment providers and the implication on licensees
 - i. The Authority proposes to impose a fine on satellite space segment providers that breach certain provisions of the draft Satellite Regulations. The satellite space segment providers are however not licensees and are only required to register their satellites for use by licensees in South Africa.
 - ii. If it is correct that the registration process is sufficient to allow the Authority to issue fines to satellite space segment providers (which must be verified), the concern is what will happen if a space segment provider does not pay this fine. Considering that non-compliance relates to, amongst others, the coordination and ongoing protection of the SKA, it is likely that interference could be caused to the SKA during the lifespan of the satellite system. If such is reported to the Authority by the MA, it could set in motion a chain of events such as the issuing of a fine and the revocation of the registration process, which could mean that licensees may have to terminate its services to customers.
 - iii. Telkom requests the Authority to address these issues in the Satellite Regulations to ensure regulatory certainty to all stakeholders.
- 4. These issues are further elaborated in the next section.

D. SPECIFIC COMMENTS

D.1 Draft Spectrum Fees Regulations

- 5. The Authority proposes only two formulae in the draft Spectrum Fees Regulations, which will have to cater for all satellite spectrum fee calculations. The two formulae apply to: (i) the Hub Ground station fee, and (ii) the Satellite terminal network fee. For the latter, the Authority proposes to apply the blanket licence methodology in calculating spectrum fees. Telkom is of the view that these two options may not be sufficient to cover all eventualities for satellite earth station spectrum fee calculations, as elaborated below:

- a. The terms “Hub ground station” or “principal hub station” have not been defined in the draft Spectrum Fees Regulations. The term “hub ground station” has a specific connotation in the satellite industry and is generally associated with a satellite gateway earth station, which are usually large antenna. Other earth stations, for example, an earth station used for a point-to-link (that may or may not be connected to the hub earth station), ESVs, SNGs, etc. are generally not classified as hub earth stations. To address this shortcoming, the Authority should either define the term “hub earth station” to also include other earth stations or add additional category/categories to Regulation 9 in the Spectrum Fees Regulations (Reference Table for Calculating Radio Frequency Spectrum Licence Fees). SNGs have already been included in Regulation 9 stating that the Ground hub station formulae will apply for SNGs. Other satellite applications (e.g. point-to-point links) should also be added to Regulation 9, or a blanket provision should be added to the Satellite Fees Regulations, to ensure that all types of satellite earth stations are covered.
- b. Telkom supports the adoption of a “blanket licence” principle for the calculation of spectrum fees for satellite terminals, which will ease the calculation of spectrum fees for satellite terminals, especially where large numbers of terminals are deployed. Telkom is however of the view that not all satellite earth station terminals will necessarily fall under the blanket licence methodology. Whereas the blanket licensing principle could be appropriate for a large quantity of terminals, it will not necessarily be appropriate for single or a few terminals. This must be addressed in the Spectrum Fees Regulations.

6. Definition of “Blanket Licence”

- a. As indicated above, Telkom supports the principle of “blanket licence”. However, Telkom is of the view that the proposed definition is not comprehensive and may thus create regulatory uncertainty.
 - i. Although the definition is provided in the draft Spectrum Fees Regulations and is used only in the calculation of the satellite terminal spectrum fees, the proposed definition may create the impression that the Spectrum Fees Regulations deals with licensing of satellite terminals, which is not the case. The Spectrum Fees Regulations relate only to the calculation of the satellite terminal spectrum fees payable, after the Authority licensed the use of the satellite terminals (and issued a spectrum licence for said satellite terminals). The use of the term “authorisation” in the definition “Blanket Licence” further compounds the problem.
 - ii. Licensing matters should be addressed in the Spectrum Regulations and not in the Spectrum Fees Regulations. To allow for a blanket licence to be issued for the deployment of satellite terminals, depends on several issues such as the frequency band of operation, the requirement for coordination with other services, etc. The concept “blanket licence” must therefore also be included in the draft Spectrum Regulations where the licencing of satellite terminals must be addressed.

- iii. Telkom is also of the view that the principle of blanket licensing will not apply in all cases. For example, in frequency bands where frequency coordination with other services is required, each satellite terminal may have to be coordinated and licensed individually. An individual terminal spectrum fee may be more appropriate in such cases and should be addressed in the Spectrum Fees Regulation.
- b. Noting the above, Telkom recommends that the definition of the term “blanket licence” be changed to “Blanket Terminal Spectrum Fee” with the below proposed definition:

“Blanket Terminal Spectrum Fee” means the fixed annual radio frequency spectrum fee levied on a spectrum license provider for the aggregate use of spectrum by an unlimited number of satellite terminals with similar technical and operational characteristics operating within a specified frequency assignment.”

7. Hub Ground Station formula

- a. Telkom welcomes the proposed addition of the FREQ (frequency) factor in the Hub Ground Formula as also proposed by Telkom during the inquiry process. This additional factor in the formula will make the spectrum fees for hub earth stations more reasonable.
- b. The inclusion of the minimum fee in the formula is also justified since the Hub earth station requires frequency coordination with other terrestrial services, which creates an additional administrative burden on the Authority. Nevertheless, the application of the minimum fee may result in excessive fees in some cases, for example for single earth stations such as those used for point-to-point links.
- c. Although Telkom’s request to include other factors in the formula, Telkom again recommends that the Authority also consider the inclusion of the “GEO” (geographic) factor in the Hub earth station formula. This will incentivise licensees to deploy hub earth stations in rural and remote areas outside the big metropolitan areas, which will allow the use of the applicable frequency bands in the urban areas for others terrestrial services such as fixed and mobile. This will lead to more efficient use of spectrum. Other factors may also be considered and included in the formula for Hub gateway stations.

8. Satellite Terminal Network formula

- a. Telkom is concerned that the proposed satellite terminal network formula, as proposed in the draft Spectrum Fees Regulation, may lead to excessive spectrum fee payments, especial for new broadband satellite deployments requiring access to large spectrum bandwidth assignments. This will have a negative impact on rural broadband deployment.
- b. The satellite terminal network fee has been adopted from the current “VSAT” (very small aperture terminal) fee with the addition of the “SEC” (security) factor. The

latter benefits only the security services, as defined in the Electronic Communications Act (“**the ECA**”). The Authority opted not to include the **FREQ** factor in this formula, which is very unfortunate as this will not address the pricing issue for broadband satellite services and will not promote the use of higher frequency bands.

- c. In the current VSAT formula, the “min fee” applies per terminal, which is currently set at R202.00 per VSAT terminal per year. Applying the new formula to existing VSAT networks, which generally consumes small bandwidths of spectrum, leads to a small decrease. However, when new LEO broadband satellite services are deployed, where access to large bandwidth assignments are required, the spectrum fee for satellite terminal deployments may be substantial and will negatively impact the deployment of these services. Although the overall price per terminal will come down as the quantity of terminals deployed increases due to the blanket licensing fee structure, the overall impact will remain high especially during initial deployments. For example, in Ka-band (i.e. 27.5-30 GHz or 2500 MHz), if access to the entire uplink frequency range is required this will mean an annual payment of around R8.4mil, regardless of the number of satellite terminals deployed. With low volumes deployed, the spectrum fee per terminal is therefore clearly very high.
- d. Although the satellite terminals may dynamically require access to this broad-spectrum block (e.g. 27.5-30 GHz) and will require regulatory approval or licensing for use of the entire spectrum block, an individual customer terminal will only occupy a fraction of the assigned spectrum based on real-time data needs. Bandwidth required will depend on the data application, e.g. browsing text, checking IoT devices, or uploading large files. Typically, a terminal may use between 10 MHz and 200 MHz. This will also depend on the specific satellite network operator.
- e. The application of the proposed terminal fee formula on systems such as ESIMs may also be high, depending on the configuration and use of spectrum by these systems. As with broadband systems explained above, an aircraft may typically utilise between 25 MHz and 100 MHz of the total 2,500 MHz available in the 27.5–30.0 GHz uplink block at a time. While the 27.5–30.0 GHz range represents a huge macro-allocation of spectrum, an aircraft terminal does not consume the whole band at once. It works dynamically via carefully structured carrier channels. This must be considered in the calculation of fees for terminals, especially for national ESIMs that will have to be licensed.
- f. In order to address the above, Telkom recommends that the **FREQ** factor also be included in the formula for satellite terminals. This will provide flexibility to the licensee to use a broad dynamic frequency range for flexible spectrum use and to promote the use of higher frequency bands.

D.2 Draft Spectrum Regulations

9. Definition of Earth Station in Motion (“ESIM”):

- a. Telkom recommends a small addition to the proposed definition of ESIM to further clarify the term “*platforms*” by adding the words “such as an aircraft, ship, or land vehicle” after the word platform.

10. Definition of Network control and monitoring centre (“NCMC”):

- a. Telkom recommends the addition of a reference to “terrestrial” services in the proposed definition of NCMC as follows: “...ensuring that ESIMs do not cause harmful interference to other satellite or terrestrial services...”.
- b. The frequency bands used for ESIMs are generally shared with terrestrial services, which need to be protected and may therefore require an ESIM transmission to be terminated when requested by a licensee operating a terrestrial service.

11. Definition of “Space Segment”:

- a. The proposed definition includes the term “space”, which creates a circular definition that must be avoided. Telkom recommends borrowing from the ITU definition for “Space station” by using the words “beyond the major portion of the Earth’s atmosphere”. Telkom also recommends the deletion of the word “network” as this includes ground stations, which is not part of the space segment, and which is included at the end of the definition.
- b. Telkom therefore proposes the following definition:

“Space Segment” means a satellite or satellite constellation ~~network~~ operating ~~in space~~ beyond the major portion of the Earth’s atmosphere with its associated ~~Ground Station/s~~.

12. Regulation 28A (Earth Stations in Motion):

- a. Sub-regulation (1):
 - i. The phrase “transmissions to ESIMs” refers to the downlink only (satellite to ESIM) and therefore doesn’t include the uplink (transmissions from ESIMs to satellite). Also, the term “satellite services” is very broad and may create uncertainty; we should therefore refer only to ESIMs.
 - ii. According to sub-regulation (6), ESIMs that comply to the stipulated provisions, and which are in South Africa for less than 90-calendar days, are license exempted. This must be taken into consideration in the drafting of sub-regulation (1).
 - iii. Telkom also suggests that the word “authorised” be changed to “licensed” to avoid doubt.

- iv. Based on the above, Telkom recommends the following amendments to sub-regulation (1):

“A satellite operator must ensure that the operation of ~~satellite services and transmission to~~ ESIMs within the territory of South Africa, are carried out only if ~~authorised~~ licensed by the Authority, or if exempted in terms of sub-regulation (3).”
 - v. Notwithstanding the above, it is not clear how the satellite operator will know or confirm whether an ESIM has been licensed or exempted for purposes of implementing sub-regulation (1). This may have to be addressed in the Satellite Regulations.
- b. Sub-regulation (3):
- i. It is not clear why this provision refers only to the transmission of the equipment (therefore excluding receiving direction). Also, the term “equipment” is very broad and must be limited to ESIM equipment. Telkom therefore recommends that the proposed provision be changed to the following:

“The ESIM equipment ~~used for transmission~~ must comply with the relevant technical specifications and meet applicable type approval requirements for installation and operation in the Republic of South Africa.”
- c. Sub-regulation (5):
- i. The conditions pertaining to the use of ESIMs are contained in Annexure K. This include the applicable frequency bands that can be used for ESIMs.
 - ii. The purpose and need for the second sentence in sub-regulation (5) i.e. “*Operators of ESIM may consult Annexure K for guidance on available frequency ranges that are routinely available for ESIM's*” in the context of a regulation is not clear and needs to be clarified. It is not clear why “guidance” is needed for ESIM operators, since these are proposed regulations. Also, the use of the word “routinely” is not clear.
 - iii. Telkom recommends that the last sentence in this sub-regulation be deleted or clarified noting that Annexure K contains regulatory provisions.
- d. Sub-regulation (6):
- i. Telkom supports the principle of allowing foreign ESIMs to operate on a licence exempted basis for a limited period.
 - ii. The stipulated period of 90-days however needs to be addressed further, as follows:

- Firstly, it is not clear if this refers to consecutive days or cumulative days per year, for example.
 - Secondly, the period of 90-days may be excessive in case of consecutive days, if this applies each time a specific ESIM enters the country. With aircraft for example, who may enter the country every few days when flying on the same route, this may imply an almost permanent exemption.
- iii. In accordance with sub-regulation (6), only those ESIMs that comply with the listed provisions could be licence exempted if less than 90 days in country. Almost all Resolutions, Reports as well as the single ETSI Standard, which are listed, apply to the Ka-band (17.3-20.2 GHz and 27.5-30 GHz). Resolution 121 applies to the frequency band 12.75-13.25 GHz. Several other frequency bands listed in Annexure K is therefore not covered by the listed provisions, which seems to imply that foreign ESIMS could operate on a licence exempt basis only if it operates in the Ka-band (and the one Ku-band).
- iv. It is also important to note that Resolution 121, which is referenced in sub-regulation (6), relates only to the frequency band 12.75-13.25 GHz. Other Ku-bands listed in Annexure K (e.g. 14.0-14.5 GHz) are therefore doesn't qualify for licence exempted use.
- v. In addition to the above, there is only one European Technical Standards Institute ("ETSI") standard listed namely EN 303 978, which applies to ESIMs in the Ka-band. It is not clear why the standard for the band 12.75-13.25 GHz (i.e. EN 302 186) have not been included in sub-regulation (6) noting that Resolution 121 have been included. Furthermore, the ETSI standards for the rest of the Ku-band is also not included. Telkom recommends that these be added.
- vi. Telkom recommends that the specific frequency bands and ESIM uses that could be considered for licence exempt use by foreign ESIMs be specified specifically in the regulations. In addition to this, all applicable Resolutions, Reports, or ETSI standards for each band should be listed. Alternatively, reference could be made to Annexure K or the specific listed Categories. It should also be noted that ESVs doesn't qualify for licence exempted use within the territorial waters of South Africa, as discussed below.
- vii. Lastly, whereas compliance with the stipulated ITU Resolutions and ETSI standards are mandatory, compliance with ITU-R Reports, which are generally not mandatory, should be carefully considered and only included if it is fully mandatory.
- e. Sub-regulation (7):
- i. The phrase "must require no licensing" is not clear and must be amended. Telkom proposes the following amendments to sub-regulation (7):

“Foreign ESIMs on board an aircraft, ship, or land mobile vehicle duly authorised/registered in its country of origin ~~must~~ does not require ~~no~~ licensing where the ESIM is within the territory of South Africa for a period not exceeding 90 calendar days consecutively and licence details are included in the ship, mobile vehicle or aircraft’s licence issued by the competent authority in compliance with Articles 18.5 to 18.6 of the ITU Radio Regulations.”

- ii. According to the draft Satellite Regulations, ESVs are included in the definition of ESIMs. ESVs “within the territory of South Africa” in the main refers to ships within the South African coastal waters (noting that South Africa doesn’t have large waterways where foreign ships could enter the country). According to sub-regulation (7), the intention is therefore to allow foreign ships to operate on a license exempted basis if within South Africa’s coastal waters. However, according to ITU Resolution 902, ESVs can operate without the prior agreement of any administration if they are beyond 300 km from the low-water mark in the frequency band 5925-6425 MHz and 125 km in the frequency band 14-14.5 GHz (and considering the technical limitations in Annex 2 of the same Resolution). Therefore, any transmissions from ESVs within the stipulated minimum distances shall therefore be subject to the prior agreement of the concerned administration(s). These two provisions are therefore in regulatory conflict and must be clarified.

f. Sub-regulation (8):

- i. Telkom recommends that the Authority confirms the reference to ESIMs in the first sentence in this sub-regulation to refer to all ESIMs, i.e. both national and foreign ESIMs must be subject to permanent monitoring and control by a NCMC.
- ii. With the above clarified, the second sentence may be confusing or superfluous, specifically in the use of the term “authorise”. The below proposed changes make it clear that it refers to national licencing and not to the foreign licence exempted ESIM use. Telkom therefore recommends the following edits to this sentence:

“Only ESIM’s operating under the control of ~~the~~ a network control and monitoring station ~~function~~ will be ~~authorised~~ licensed for use in South Africa.”

g. Sub-regulation (9):

- i. The reference to both the National Radio Frequency Plan (“NRFP”) and the National table of frequency allocations may create regulatory uncertainty and must be addressed.
- ii. There is no operational difference between the "National Table of Frequency Allocations" and the National Radio Frequency Plan; one is simply a component inside the other. The NRFP serves as the macro, statutory

document, while the Table of Frequency Allocations serves as the actual technical data matrix inside it. Perhaps the intention was to refer to regulations other than the NRFP, which must be confirmed.

- iii. To avoid doubt, Telkom recommends that the Authority simply refers to the NRFP, which will include the table of frequency allocations as well as other provisions contained in the NRFP (such as national footnotes). Based on the above Telkom recommends that following change:

“...terrestrial services operating ~~according to the national table of frequency allocation and/or~~ in accordance with the National Radio Frequency Plan.”

h. Annexure K:

i. Incorporation by reference

- Telkom is concerned that the table in Annexure K simply refers to “applicable provisions”, in many cases to European provisions (in particularly European Decisions and Reports), that are seemingly incorporated by reference into the draft Satellite Regulations. Whereas these provisions could be very valuable in ensuring the coordination and operation of ESIMs in South Africa, it has been prepared for Europe and therefore includes many provisions and requirements that are not relevant to South Africa. Having such provisions incorporated into our regulations will create many uncertainties. Examples are as follows:
 - a. ECC/DEC/(05)10 - provide guidance on coordination within the coastal areas of European countries, which doesn’t apply to South Africa.
 - b. ECC/DEC/(05)11 - lists all radio astronomy sites in Europe to be protected, which doesn’t apply to South Africa (our astronomy sites and conditions should be listed).
 - c. ECC/DEC(19)04 - requires operators to submit certain information to the “Office”, which refers to the CEPT Office and therefore not relevant to South Africa. It is not clear if operators in our case will have to submit this information to the Authority?
- The appropriate and suggested way forward is for the Authority to identify the relevant criteria/conditions in these provisions and capture same in the Satellite Regulations. An example of this is what was done for the many frequency bands through the Radio Frequency Spectrum Assignment Plans (“**RFSAPs**”). The regulations to be developed should then also include other provisions, for example frequency coordination requirements and procedures, were relevant. For example, the procedures relevant to ESVs if within the regulated

distances specified in the ITU Resolutions for purposes of national coordination.

- Relevant European Decisions and Reports could be included in the developed regulations but should however be listed in a separate column and clearly marked as “Notes” or “Additional information”.

ii. Definitions/acronyms:

- There are acronyms in the table, which must be defined, for example, AES (Aircraft Earth Station).

iii. Frequency bands:

- Not all applicable frequency bands have been listed. Telkom recommends that all applicable frequency bands be listed.
- In addition, Telkom recommends that the direction of operation of all satellite services be reflected in the table (i.e. Earth-to-space or space-to-Earth).

iv. Listed provisions:

- Telkom is of the view that not applicable provisions have been listed.
- Not all relevant ETSI standards have been listed. These could be aligned with the standards published by SABS TC74 SC05.

v. References to ITU Resolutions:

- Telkom recommends that the relevant World Radiocommunication conference (“WRC”) year be added to the Resolution number. For example, Resolution 902 should be Res.902 (Rev. WRC-23).

vi. Specific proposed changes:

- In addition to the above, Telkom recommends the following changes/additions to be added to the table:

Category A:

- Also add a reference to ITU Recommendation 37 (Rev. WRC-23) (“Operational procedures for earth stations on board vessels (ESVs) use”). This recommendation was adopted at the same time as Res.902.
- Also add reference to ETSI EN 301 447 V2.1.1 (2016-05) as the harmonised standard for ESVs in this band.

Category B:

- Also add a reference to ITU Recommendation 37 (Rev. WRC-23) (“Operational procedures for earth stations on board vessels (ESVs) use”). This recommendation was adopted with Res.902.
- Also add a reference to ETSI EN 302 340 V2.1.1 (2016-05).

Category C:

- Add reference to ETSI EN 302 186 V2.2.1 (2021-05)

Category D:

- ETSI EN 302 448 applies to earth stations on trains. This standard should be considered to see if it has application in South Africa, today or in the future.
- ETSI EN 302 977 applies to vehicle mounted Earth stations (VMES). Applicability and relevance for South Africa must be explored.
- ETSI EN 303 980 relates to Fixed and in-motion Earth Stations communicating with non-geostationary satellite systems in the 11 GHz to 14 GHz frequency bands.

Category E:

- Add reference to ETSI EN 303 978 for GSO ESOMPs (ECC/DEC(13)01). Also, ETSI EN 303979 for NGSO ESOMPs (ECC/DEC/15(04))

Category F:

- Add reference to ESTI EN 303 978 for GSO ESOMPs (ECC/DEC/(13)01.

Category G:

- Add reference to ESTI EN 303 979 for NGSO ESOMPs (ECC/DEC/(15)04.

13. Regulation 28B (Satellite Space Segment)

a. Sub-regulation (1):

- i. Telkom agrees that the registration of a satellite network does not provide any right to the satellite operator to provide electronic communication networks or services within the territory of South Africa, unless such satellite operator is also duly licensed by the Authority in terms of Chapter 3 of the ECA (and Chapter 5 for spectrum). Satellite operators provide satellite capacity to licensees for them to provide satellite services to their customers.

This include hub gateway services, which can be provided only by licensees. To address this, Telkom recommends amendments to the sub-regulation as follows:

“The registration contemplated in sub-regulation (1) is at no fee and does not grant any right to the satellite operator to provide services in the Republic of South Africa, except for making satellite capacity available to licensees.”

- ii. Telkom also requests the Authority to address the registration of existing space segment providers. It is assumed that this is required although this is not stated categorically. The application of sub-regulation (3) for existing space segment providers must also be addressed.
- b. Sub-regulation (3):
- i. Telkom supports the astronomy endeavours of South Africa, not only as a key Strategic Infrastructure Project (“SIP”) but also for the contribution to the global science community and therefore also the protection of the astronomy devices and services, including the SKA established in the Northern Cape. There must however be a balance between the protection of the SKA and allowing the use of new advance satellite services in South Africa, including mega-constellation LEO satellite systems.
 - ii. According to the proposed sub-regulation (3), a satellite space segment operator must coordinate with the MA prior to commencing operations. This requirement creates several questions and concerns for Telkom, as elaborated below:
 - In terms of timing, we understand that the proposed registration process will be done prior to the coordination with the MA; registration is therefore not subject to coordination being concluded. Telkom agrees with this.
 - Frequency coordination is however required prior to commencement of services. Therefore, although the Authority is proposing a “simple” registration process for space segment operators, the MA in effect becomes the gatekeeper for any satellite space segment provider to provide space capacity to South African licensees, who in turn require these to provide various crucial services such as broadband access in rural areas, direct-to-device services, etc.
 - What is lacking from the draft Satellite Regulations is the process, conditions and criteria, which will be used for the coordination with the MA and how the outcome of this process will feed back to the Authority and licensees. It is not clear what will constitute successful coordination and what will happen in case the MA and the satellite space segment provider don’t reach coordination agreement.

- The then Minister of Science and Technology under Section 37 of the Astronomy Geographic Advantage Act (“AGA Act, 2007”) published processes, procedures and rules for the coordination and protection of the SKA from terrestrial services (including earth station transmissions). It is not clear to what extent these will be used in coordination with space segment providers, especially LEO mega-constellations satellite systems.
 - This proposal should also not apply to existing satellite systems already operating in South Africa. Although these systems should still register, there is no need to “coordinate” with the MA. This should be confirmed in the draft Satellite Regulations.
- iii. The above issues must be addressed in the Satellite Regulations to ensure regulatory certainty in the use of existing and future satellite services in South Africa, including from mega-constellation LEO satellite systems. Cooperation between the satellite system providers, the MA and the Authority is essential to ensure a balanced outcome that benefits all parties involved.
- c. Sub-regulation (4):
- i. Telkom agrees with the principle of providing lawful intercept (“LI”) on all services, including satellite services. However, the ultimate responsibility to provide LI in South Africa resides with the licensee. A warrant for LI will therefore be issued to the licensee, who has an agreement with the customer (not the space segment provider).
 - ii. The space segment provider does however have an obligation to facilitate and assist the licensee to ensure that LI can be implemented. The licensee depends on the space segment provider to enable LI. The obligation to provide LI is required regardless of whether a gateway has been established in South Africa or not for the specific space segment provider. If a national gateway is not used, the obligation to bring the LI data back to South Africa should reside with the space segment provider. The space segment operator is also required to decrypt data where required to allow execution of LI.
 - iii. Telkom suggest amendments to sub-regulation (4) to capture the above:

“A Satellite space segment operator providing satellite capacity or services in the Republic must implement and provide and maintain lawful interception capabilities that seamlessly interface with the local licensee’s domestic infrastructure, ensuring that all intercept-related information (metadata) and content of communications originating from or terminating within the Republic can be delivered in real-time to the designated national law enforcement monitoring facility in strict compliance with to facilitate the implementation of the RICA.”

d. Sub-regulation (5):

- i. The space segment provider must limit unwanted emissions including the suppression of satellite transmissions in the channel adjacent to 10.7 GHz. The reference to “channel adjacent to 10.7 GHz” is not clear and must be clarified. Not only could “adjacent” mean below and above 10.7 GHz, the concept of “channel” in this context is not meaningful.
- ii. Telkom understands that this sub-regulation refers to the protection of the bands below 10.7 GHz namely 10.6-10.7 GHz used for radioastronomy (and other primary services) or perhaps limited to the band 10.68-10.7 GHz, used exclusively for passive services, including radioastronomy services, also noting ITU footnote 5.340 (all emissions in this band is prohibited). It is also assumed that this clause refers to astronomy stations outside the SKA area, although this needs to be clarified.
- iii. Telkom recommends the following amendment to sub-regulation (5):

“For non-geostationary orbit systems, this will include the suppression of satellite transmissions in the ~~channel adjacent to~~ band 10.6-10.7 GHz”.

e. Sub-regulation (6):

- i. According to sub-regulation (6), the satellite space segment operator “must take all the necessary protection measures” contained in ITU Recommendation ITU-R RA.769-2 and the Radio Astronomy Protection levels prescribed in Regulation R.90 of 2012 (“Astronomy Protection Regulations”). Although Telkom understands the intent of sub-regulation (6), the sentence is not clear and must be amendment. Telkom suggest the following amendment:

“A satellite space segment operator providing services in the Republic must take all the necessary protection measures contained in ITU Recommendation ITU-R RA.769-2 and the Radio Astronomy Protection Levels Regulations (Government Gazette 35007, No.R.90 of 2012) into account to facilitate coordination with astronomy services.”
- ii. The Astronomy Protection Regulations has been developed and is effective in protecting the SKA against ground-based transmissions (including earth stations). These regulations are however not automatically addressing protection from satellite transmissions noting that these satellite systems have been designed to operate globally in accordance with the ITU allocations and regulations for satellite services. It must be acknowledged that the SKA doesn’t operate in accordance with the ITU allocations as it uses all spectrum between 100 MHz and 25.5 GHz for astronomy, including in frequency bands not allocated to the radio astronomy service. Whereas the SKA has been notified for international protection within the

radioastronomy frequency bands, the remaining spectrum is operated mostly under Article 4.4 (no interference and no protection) of the Radio Regulations. The recognition or protection of the SKA (as a Radio Quiet Zone), especially from mega-constellations, is being discussed under WRC-27 agenda item 1.16. The outcome will only be known after the conference scheduled for October/November 2027.

- iii. To protect the SKA receivers, satellite space segment operators will therefore have to actively implement mitigation strategies and specific operational protocols, including dynamic beam steering and transmission muting, amongst others, to be able to coordinate with astronomy services. This is specifically relevant for those mega-constellation LEO systems that will transmit from their space stations to the ground within the SKA frequency range. This will include satellite systems that operate in the Ku-band (11 GHz downlink) and Ka-band (20 GHz downlink).
- iv. Whereas Telkom supports the need for satellite space segment providers to implement mitigation measures to coordinate with the SKA, this must be done in a reasonable and practical manner. Telkom is not convinced that a simple reference to RA.768-2 and the Astronomy Protection Regulations is sufficient. Noting the uniqueness of the situation, the Authority, with the assistance of the MA, need to provide more information as to how this coordination will be done and how the issues will be addressed to ensure that there is certainty for licensees that said space segment providers could be used to provide the relevant services in South Africa, while also protecting the SKA in the Northern Cape.

14. Amendment of regulation 42 of the Regulations

- a. Regulation 42 states that any person who contravenes regulation 23B (3) to (6) is liable to a fine of R5 mil. All these sub-regulations refer to the satellite space segment operator, which is currently all foreign companies.
- b. Since these space segment operators are not licensees, it is not clear to Telkom how and if the Authority can impose a fine on such entities. Since the satellite space operators must register with the Authority, it could perhaps be argued that the Authority may impose a fine on these “registered” entities, although this will have to be confirmed. The concern however is that, if these foreign entities doesn’t pay a fine, such registered entities may lose the right to operate in South Africa. This will result in the Authority revoking the local licensees’ rights to use the applicable spectrum from these space segment providers, which means that licensees and consumers will be impacted, even though the non-payment of a fine by the foreign space segment provider is beyond their control.
- c. Of particular concern for Telkom is the compliance with sub-regulations (3) and (6) dealing with the protection of radio astronomy services. Any breach of the required protection criteria (as defined and determined by the MA) could result in a breach of said regulations, and if reported, could result in the Authority issuing a fine to the space segment provider.

- d. The above issue must be addressed and further elaborated in the Satellite Regulations to ensure regulatory certainty, not only for the space segment providers but also for licensees that will contract with these foreign entities and will provide critical services to South Africa consumers.