INDEPENDENT COMMUNICATIONS AUTHORITY OF SOUTH AFRICA

NO. 7501 **22 May 2026**

REGULATIONS ON DYNAMIC SPECTRUM ACCESS AND OPPORTUNISTIC SPECTRUM MANAGEMENT IN THE INNOVATION SPECTRUM 3800 - 4200 MHz AND 5925 – 6425 MHz

1. The Independent Communications Authority of South Africa ("the Authority"), pursuant to section 4 read with section 31 (6) (a) and (b), section 32 (1) and 33 of the Electronic Communications Act, 2005 (Act No. 36 of 2005) and section 4(3)(j) of the Independent Communications Authority of South Africa Act, 2000 (“Act No. 13 of 2000”) hereby publishes the Regulations on the Dynamic Spectrum Access and Opportunistic Spectrum Management in the Innovation Spectrum Frequency Ranges 3800 - 4200 MHz and 5925 – 6425 MHz.

Mothibi Ramusi
Chairperson

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The Authority has, under section 4(3)(j) of the ICASA Act, 2000 (Act No. 13 of 2000), read with sections 4, 32(1) and 33 of the Electronic Communications Act, 2005 (Act No. 36 of 2005), made the regulations in the Schedule.

SCHEDULE

1. DEFINITIONS

In these Regulations, unless the context otherwise indicates, a word or expression to which meaning has been assigned in the Act, the meaning is so assigned:

"Act" means the Electronic Communications Act, 2005 (Act No. 36 of 2005), as amended.

"Altitude" means the vertical distance above mean sea level (AMSL) defined by WGS84.

"Antenna height" means the vertical distance above ground level (AGL) to the radiation centre of an antenna.

"Assignment" means the authorisation given by the Authority to use a radio frequency or radio frequency channel under specified conditions.

"Authentication" means the ability to verify that the claimed sender truly sent the message.

"Authority" means the Independent Communications Authority of South Africa (ICASA).

"C Band" means a segment of the radiofrequency (RF) spectrum within the range of 4000 MHz to 8000 MHz.

"**Client device**" means an ISD certified by the Authority to operate without an exclusive license in ISFR1 and ISFR2. It is not authorized to communicate with the USS to request operational parameters for itself but may receive such parameters from an associated Master device.

"Communication Protocol to Access Unified Spectrum Switch (CPAUSS)" means a secure machine-to-machine communication standard defined by the Council for Scientific and Industrial Research (CSIR), designed for ISDs to access USS services automatically.

"Contiguous channels" means a minimum of two (2) non-interleaved channels that the USS can assign to a certified Master device in the same location within the ISFR1 and ISFR2.

"Contiguous License Area (ConLA)" means a combined geographical area formed by a minimum of two (2) and a maximum of three (3) overlapping Minimum License Areas (MinLAs) of which a single network operator may be authorized by the Authority to provide network coverage within the ISFR1.

"Database Proxy (DbP)" means an entity engaging in communications with the Unified Spectrum Switch (USS) as an intermediary on behalf of a single or multiple ISDs or networks of ISDs. The Database Proxy can also provide a translational capability to interface legacy radio equipment in the Innovation Spectrum Frequency Ranges 1 and 2 (ISFR 1&2) with a USS to ensure compliance with these regulations.

"dBm" means a power value in decibels referenced to one milliwatt.

"Dedicated antenna" means a removable antenna that has been designed for use and supplied with the device.

"Dynamic Spectrum Assignment (DSA)" means a mechanism used to assign the unused spectrum within a frequency band of interest to secondary users. Secondary spectrum assignment is done in such a way that it does not cause harmful interference with the primary user or licensee.

"End User Equipment (EUE)" means a fixed, nomadic, or mobile wireless device certified by the Authority to operate without an exclusive license within ISFR 1 & 2, with the capability of communicating with an associated Master device.

"Equivalent Isotropic Radiated Power (EIRP)" means the product of the ISD transmit power in dBm supplied to an antenna and the absolute or isotropic antenna gain in a given direction relative to an isotropic antenna.

"EIRP Spectral density" means the EIRP in dBm over a desired frequency bandwidth.

"ETSI" is an acronym for the European Telecommunications Standards Institute.

"External geo-location source" means any device that is Type Approved by the Authority with the capability to determine its own geo-location coordinates and location uncertainty, as well as to remotely determine geo-location coordinates and location uncertainty of one or more devices externally connected to it.

"Fixed device" means an ISD that has an integral antenna, a dedicated antenna, or an external antenna and is intended to operate in a fixed location only.

"Function Virtualized Device (FVD)" means an ISD where key functions like signal processing and network management are implemented through software, allowing them to run on standard computing hardware instead of dedicated, specialized hardware.

Frequency - Agile Device" means a radio equipment capable of being tuned across the entire width of the ISFR1 or ISFR2 sub-bands.

"Geo-location capability" means the capability of an ISD to determine and report the latitude, longitude, and altitude coordinates of its antenna and its geo-location uncertainty.

"Geo-location uncertainty" means the potential positioning error in latitude and longitude defined by the maximum difference (in meters) between the point reported by the ISDs to the USS and the actual position of the ISD antenna.

"ICASA-ID" means a unique identifier assigned by the Authority to a specific ISD model upon receiving Type Approval certification in accordance with the Type Approval Regulations of 2013. This identifier must appear in the Authority's Equipment Authorisation Register (EAR).

"Innovation Spectrum (IS)" means the unused radiofrequencies (RF) within the 3800 MHz to 4200 MHz, and 5925 MHz to 6425 MHz sub-bands.

"Innovation Spectrum Customer's Premises Equipment Category 1 (IS-CPE Cat 1)" means a client device equipped with geo-location capability, permanently affixed to a structure certified by the Authority, and authorized to operate without an exclusive license in ISFR 1. This device is capable of communicating with an associated Master device.

"Innovation Spectrum Customer's Premises Equipment Category 2 (IS-CPE Cat 2)" means a client device equipped with geo-location capability, permanently affixed to a structure certified by

the Authority, and authorized to operate without an exclusive license in ISFR 2. This device is capable of obtaining Operational Parameters (OPs) from the Unified Spectrum Switch (USS) and communicating with an associated Master device.

"Innovation Spectrum Device (ISD)" means a wireless device authorized to operate within the ISFR 1 & 2 without an exclusive license.

"Innovation Spectrum Frequency Range 1 (ISFR 1)" means the unused radiofrequencies (RF) within the 3800 MHz to 4200 MHz sub-band.

"Innovation Spectrum Frequency Range 2 (ISFR 2)" means the unused radiofrequencies (RF) within the 5925 MHz to 6425 MHz sub-band.

"Integral antenna" means the antenna designed as a fixed part of the equipment, without the use of an external connector, which cannot be disconnected from the equipment by a user with the intent to connect another antenna. An integral antenna may be fitted internally or externally. In the case where the antenna is external, a non-detachable cable shall be used.

"Interference" means the undesired impact of energy from the summation of emissions, radiation, or induction generated by a radiocommunication system, causing degradation, misinterpretation, or loss of information in the reception of another system that would not occur without such energy;

"Licence" means a radio frequency spectrum licence.

"Licensee" means a person to whom a radio frequency spectrum licence has been issued, in terms of the Act;

"MaxEIRP" means the base station's maximum mean EIRP per carrier.

"Maximum Contiguous License Area (MaxConLA)" refers to a combination of three (3) contiguous Minimum License Areas (MinLAs). It represents the maximum geographical area within the ISFR1 for which a single network operator is authorized by the Authority to provide network coverage.

"MHz" means a radiofrequency value designated in megahertz;

"Minimum License Area (MinLA)" means a geographical area under network coverage by a single authorized ISD within the ISFR 1.

"Mobile device" means an ISD that has an integral antenna, or a dedicated antenna intended to operate continuously with full mobility within a coverage area.

"National Radio Frequency Plan" means a plan that allocates the radiofrequency (RF) spectrum to wireless services in the frequency bands between 8.3 kHz and 3000 GHz, contemplated in section 34 of the Act;

"Network initiation" means a process by which a Master device sends control signals to one or more Client devices and allows them to begin communications.

"Network Operator" means a person issued with an Electronic Communications Network Service licence in terms of section 5 of the Act or is licence exempt in terms of section 6 of the Act.

"Nomadic equipment" means an ISD that has an integral antenna or a dedicated antenna intended to operate continuously from a fixed location and can rapidly be relocated to another location within a limited coverage area.

"Operational Parameters (OP)" means the technical parameters generated by a USS in response to a request made by the Master device as set-forth in regulation 8.

"Out-of-band emissions" means the unwanted emissions that fall outside the ISFR 1 & 2.

“Out-of-block emissions” means emissions that occur outside the assigned frequency block or channel bandwidth allocated to a device or system but still within the broader frequency band.

“Primary basis” means a primary service has priority over all other users of a spectrum band of interest in the National Radio Frequency Plan (NRFP) and is entitled to protection from harmful interference by other services.

“Primary service” means the service to which a specific band in the NRFP is licensed;

“**Professional Installer**” means any competent person or entity registered with the professional body or have a relevant technical qualification from an accredited technical education institution to install and commission radio equipment;

“Radio Frequency Spectrum Planning” means the plan developed in accordance with regulation 3 of the Radio Frequency Spectrum Regulations, Government Gazette 38641 (Notice 279 of 2015);

“Registered Incumbents” means Fixed Satellite Services (FSS) and Fixed Service (FS) operators within the 3800–4200 MHz and 5925–6425 MHz sub-bands whose technical details are registered with the Authority to ensure protection from potential harmful interference caused by secondary users.

“Rural” means any area that is not classified as urban. Rural areas may comprise one or more of the following: tribal areas, commercial farms, and informal settlements.

“S Band” means a segment of the radio frequency (RF) spectrum within the range of 2000 MHz to 4000 MHz.

“Secondary user” means a secondary radiocommunications service allocated for use in a specific band in the NRFP that is assigned to a primary radiocommunications service with a condition that the secondary user shall operate without causing harmful interference to the primary radiocommunications service and that the secondary user shall not be entitled to protection from harmful interference by other users, including but not limited to the primary user.

“Sleep mode” means a mode in which the device is inactive but is not powered down.

“Spectral density” means power versus frequency and, when integrated across a given bandwidth, the function represents the mean power in such a bandwidth.

“Innovation Spectrum Access Point (IS-AP)” means a Master device with geo-location capability that operates without an exclusive license in the ISFR 2 by obtaining operational parameters from the USS.

"Standard-Power Devices (SPDs)" means an umbrella term that collectively describes ISDs, which are authorized to operate with increased power levels outdoors and indoors within the ISFR 2.

"Time validity" means the time period during which Operational Parameters (OPs) provided by the USS to a Master ISD are in force.

"Total Radiated Power (TRP)" means the total radiated power measured in all directions of the transmitting antenna.

"Transmitter power" means the power produced by an ISD, measured at the output of the transmitter to which the antenna is normally connected.

"Type Approval dataset" means a dataset containing unique Type Approval identifiers (ICASA-IDs) of specific ISD models as listed in the Authority's EAR. This dataset is under the sole custodianship of the Authority and is used by the USS to calculate ISD operational parameters.

"Unified Spectrum Switch (USS)" means a database system operated by an entity that has been authorized by the Authority to calculate and generate Operational Parameters for ISDs and to provide spectrum switch services to network operators within the ISFR 1 & 2.

"Unified Spectrum Switch Provider (USSP)" means an entity delegated or designated by the Authority to provide USS services.

"Urban" means a continuously built-up area with characteristics such as the type of economic activity and land use. Cities, towns, townships, suburbs, etc., are typical urban areas. An urban area is one which was proclaimed as such (i.e., in an urban municipality under the old demarcation) or classified as such during census demarcation by the Geography department of Stats SA, based on their observation of aerial photographs or other information.

"USS services" include the registration of primary users, IS network operators, the registration of ISDs, and the provision of operational parameters in response to spectrum requests from ISDs.

"Whitespaces" unused or underutilised spectrum.

2. Objective

The objective of the regulations is to:

(a) expand broadband access to the rural, underserved, remote communities;

(b) reduce barriers to entry and promote equitable access to spectrum, while encouraging broader participation from non-dominant players, small micro and medium enterprises and communities consistent with the Next-Generation Radio Frequency Spectrum for Economic Development policy[1];

(c) foster innovation in network deployment use cases, applications, and services;

(d) promote socio-economic development;

[1] https://www.gov.za/sites/default/files/gcis_document/202407/50725proc166.pdf

(e) establish a technology-agnostic regulatory framework through which the Authority may authorise the implementation of DSA approach for the use of the innovation spectrum on a geographical basis;

(f) encourage spectrum sharing in a dynamic and opportunistic manner; and

(g) establish a non-market-based, non-competitive Innovation Spectrum Authorisation framework to reduce barriers to entry and encourage participation by non-dominant players, SMMEs, and community network operators.

3. Purpose

The purpose of the regulations is to:

(a) facilitate the use of innovation spectrum by a secondary user; and

(b) mitigate against harmful interference between the registered incumbents and the secondary user in the innovation spectrum.

4. Access to IS Requirements

(1) The applicable radio frequency channel widths under these regulations are as follows:

(a) Innovation Spectrum Frequency Range 1 (ISFR 1): 10 MHz, 20 MHz, 30 MHz, and 40 MHz; and

(b) ISFR 2: 20 MHz, 40 MHz, 80 MHz, and 160 MHz.

(2) Network operators seeking to utilise the Innovation Spectrum must obtain the necessary licensing/or exemptions from the Authority.

(3) An ISD intended for use in the Innovation Spectrum must be type approved/authorised by the Authority.

(4) Electronic communications equipment deployed by the Network Operator must operate in the IS on a secondary basis and must not cause harmful interference to registered incumbent users.

(5) A Secondary User is permitted to operate in the Innovation Spectrum exclusively through the USS.

5. Innovation Spectrum Devices

(1) An ISD must be:

(a) A Frequency agile device capable to transmit or receive in the ISFR1 or ISFR 2;

(b) fixed device, nomadic device, mobile device, or function virtualized device (FVD); and

(c) master or client device.

(2) The Categories of ISDs:

(a) A Master ISD must be:

(i) a fixed device or FVD with a dedicated, integral or external antenna and internal Geo-Location capability and Internet access;

(ii) able to directly or through a database proxy (DbP) communicate with the USS) to request OPs for itself and on behalf of its associated client devices; and

(iii) able to transmit and receive within the ISFR1 and ISFR 2 under specific OP limitations.

(b) Types of Client ISD are:

(i) a fixed device, nomadic device, mobile device, or FVD with a dedicated, integral, or external antenna and with or without geo-location capability that does not have direct access to the USS; or

(ii) an innovation spectrum customer's premises equipment category 2 (IS-CPE Cat 2) with geo-location capability and can directly or through a DbP communicate with the USS.

(c) The Client ISD must be:

(i) able to obtain OPs from an associated Master device or through a DbP for use by one (or all) Client device(s) within an IS network served by that Master device; and

(ii) able to transmit and receive only when under the direction of a Master device, and only within the ISFR1 and ISFR 2 under specific OP limitations.

6. Registration of Network Operator and Spectrum Authorisation

(1) A Network Operator seeking to roll-out a network utilizing IS must submit an application to be registered with the USSP.

(2) The USSP shall provide a secure online form on the portal to facilitate registration of new applicants.

(3) During the application stage, a network Operator must submit on the online form of the USSP portal the:

(a) name of the company/operator;
(b) physical address of the operator's offices;
(c) name of the operator's contact person;
(d) email address of the contact person;
(e) landline telephone and cell phone numbers of the contact person;
(f) copy of ECNS and ECS licenses/or license exemption issued by the Authority;
(g) copy of the company registration certificate;
(h) type approval details of the specific ISD model to be used for network deployment;
(i) radio access technology (RAT) of the ISD to be deployed;
(j) geographical areas with location coordinates indicating where the ISD shall be deployed;
(k) proof of payment of the USS access fees to the USSP; and
(l) any other information that may be requested by the Authority.

(4) Upon receipt of the application in terms of sub-regulation (3) the USSP shall:

(a) authenticate model of the ISDs by confirming that the provided information about the Type Approval and owner contact matches details in the Authority's equipment authorisation register (EAR).
(b) verify the information submitted by the applicant, register the applicant, notify the applicant of the application outcome via email, and create an account for the applicant on the USSP portal.
(c) inform the applicant of the preliminary availability of the requested spectrum in the specified geographical area(s) of interest prior to network roll-out by issuing a digital spectrum availability certificate, valid for seven (7) working days.

(5) Upon receipt of information in sub-regulation 4(c), the Network Operator must submit the preliminary spectrum availability digital certificate obtained from the USSP and pay the required Innovation Spectrum fees, as published in a government gazette, to the Authority or obtain an exemption within 7 working days:

(a) for ISFR1, the applicant shall provide the USS provider with proof of payment or exemption of the spectrum license fees to be obtained from the Authority; and
(b) for ISFR2, the applicant is not required to pay spectrum license fees. consistent with the applicable radio regulations developed by the Authority.

(6) Upon receipt of information in terms of sub-regulation (5), the USSP shall activate the applicant's account on the USS platform enabling:

(a) registration of operator ISDs,
(b) commencement of network roll-out; and
(c) ISDs to access the USS to request for Operational Parameters (OPs).

7. USS Access Requirements for Innovation Spectrum Devices

(1) All communications between the USS and the following devices must comply with the latest version of the communication protocol for accessing the USS (CPAUSS):

(a) The Master device,
(b) IS-CPE Category 2 (IS-CPE Cat 2), and
(c) Database Proxy (DbP).

(2) The Master device, IS-CPE Cat 2 and DbP must send registration request to the USS.

(3) Upon receipt of the registration request in terms of sub-regulation (2), the USS shall acknowledge the registration request from the Master device, IS-CPE Cat 2 and DbP.

(4) The Master device, IS-CPE Cat 2 or DbP in registering with USS must provide:

(a) information specifying that it is a Master device or IS-CPE Cat 2;
(b) its manufacturer's serial number;
(c) its ICASA-ID;
(d) its antenna height above ground level (AGL) in metres, if applicable;
(e) its antenna azimuth;
(f) its antenna directivity;
(g) the geo-location of its antenna expressed in latitude and longitude coordinates;
(h) the geo-location uncertainty if applicable, (in metres) of its antenna corresponding to ninety five percent (95%) confidence level report to the USS; and
(i) adequate storage to maintain geo-location information, antenna specifications, and OPs received from the USS.

(5) When registering with the USS, in terms of sub-regulation (4), through the DbP, the DbP must provide the information in sub-regulation (4)(a) to (k) on behalf of its associated ISDs.

(6) Upon receipt of information in terms of sub-regulation (5), the USS shall:

(a) validate the accuracy and authenticity of the information; and
(b) decide on the registration of the Master device and IS-CPE Cat 2.

(7) The Master device, IS-CPE Cat 2 or DbP in requesting for the Ops from the USS, must provide:
(a) information specifying that it is a Master device or IS-CPE Cat 2;
(b) its manufacturer's serial number;
(c) its ICASA-ID;
(d) its antenna height AGL (in metres), if applicable;
(e) its antenna azimuth;
(f) its antenna directivity;
(g) the geo-location of its antenna expressed in latitude and longitude coordinates;
(h) the geo-location uncertainty (in metres) of its antenna corresponding to a ninety five percent (95%) confidence level report to the USS; and
(i) adequate storage to maintain geo-location information, antenna specifications, and OPs received from the USS.

(8) If the request in terms of sub-regulation (7) is through DbP, the DbP must provide the required information in sub-regulation (7)(a) to (i) on behalf of its associated ISDs.

(9) If requirements in sub-regulation (7)(d) are not communicated to the USS by the Master device, IS-CPE Cat 2 or DbP, the USS shall use the default technical parameter values set-forth in regulation 14.

(10) The USS, upon receipt of the request from the Master device, IS-CPE Cat 2, or DbP may provide OPs if requirements set forth in sub-regulations (1) to (9) have been met.

(11) Upon receipt of the OPs the Master device, IS-CPE Cat 2 or DbP must:

(a) communicate periodically with USS, its usage of IS channel(s);
(b) communicate periodically with USS, the usage of IS channel(s) on behalf of each of its associated clients; and
(c) communicate periodically with the USS to confirm the validity of the OPs.

(12) Upon receipt of OPs from the USS, through the DbP, the DbP must provide the required information in sub-regulations (11)(a) to (c) on behalf of its associated ISDs.

(13) When OPs are no longer valid:

(a) a master device must communicate an instruction to all its associated client devices to stop transmission immediately;

(b) a master device must cease transmission immediately;

(c) an IS-CPE Cat 2 must cease transmission immediately; and

(d) if DbP, it must inform all its associated ISDs to cease transmission immediately.

(e) a Master device must perform network initialisation with its associated Client devices using the IS channels obtained from the USS.

(14) In requesting OPs, the Client devices must communicate the following information to the USS through the Master device, DbP, or on its own, provided that a radiofrequency with its associated Master device has already been established:

(a) information specifying that it is a client device;

(b) manufacturer's serial number of its associated Master device;

(c) its manufacturer's serial number;

(d) its antenna height AGL (in metres), if applicable;

(e) the geo-location of its antenna expressed in latitude and longitude coordinates, if applicable; and

(f) the geo-location uncertainty, if applicable (in metres) of its antenna corresponding to ninety five percent (95%) confidence level, if applicable.

(15) If requirements in sub-regulation (15)(5) are not communicated, the USS shall use the default technical parameter values found in regulation 14.

(16) When OPs are no longer valid all ISDs must cease transmission immediately.

(17) The geo-location coordinates, and location uncertainty, if applicable, of the Master device must be communicated to the USS on behalf of its associated Client device that has no internal geo-location capability.

8. Innovation Spectrum Operational Parameters

IS operational parameters (OPs) shall include:

(a) The lower and upper boundaries of each channel within the ISFR 1 and 2 within which an ISD may transmit and receive;

(b) The maximum permitted EIRP (MaxEIRP) for each corresponding channel within which a ISD may transmit;

(c) The time period during which the OPs are valid if less than that set-forth under regulation 15;

(d) The geographic area within which the OPs are valid; and

(e) The duration (in seconds) within which a Master device and IS-CPE Cat 2 must regularly check with a USS that the OPs received are still valid.

9. Channel Assignment per License Area

(1) The minimum license area (MinLA) for which the USS may assign available channels in ISFR 1 shall consist of a single Master device.

(2) A single Master device operating in ISFR 1 shall be assigned a minimum of one 10 MHz channel per license area.

(3) The USS may assign to a single Master device operating in ISFR 1 a maximum of two (2) contiguous 10 MHz channels in urban license areas and maximum of four (4) contiguous 10 MHz channels in rural license areas.

(4) The USS shall assign the same channels in ISFR 1 to different Master devices belonging to the same network operator, provided that the operator has a contiguous license area (ConLA).

(5) The maximum contiguous license area (MaxConLA) for which the USS may assign the same channels in ISFR 1 to different Master devices belonging to the same network operator is limited to three (3) areas.

(6) The conditions in sub-regulations (1) to (4) above, do not apply to ISDs operating in ISFR 2, as they are license-exempt.

10. Maximum Permitted Transmit Power Levels of ISDs

(1) The permitted transmit power levels of ISDs per channel may vary depending on location-specific factors including:

(a) terrain and clutter;

(b) frequency offsets;

(c) antenna elevation angles;

(d) ISD deployment situation;

(e) ISD density; and

(f) out-of-band emission limits.

(2) The maximum permitted transmit power levels specified in ISFR 1 are:

Maximum permitted ISD transmit power levels in ISFR 1

ISD Deployment Area	Max Permitted Antenna Height AGL	Max Permitted Transmit Power
Urban outdoor	20 m	27 dBm/20 MHz EIRP per carrier
Rural outdoor	30 m	47 dBm/40 MHz EIRP per carrier
Indoor	10 m	28 dBm TRP

(3) The maximum permitted ISD transmit power levels in ISFR 2 are:

Maximum permitted ISD transmit power level in ISFR 2

ISD Deployment Area	Max Permitted Antenna Height AGL	Max Permitted Transmit Power
Urban outdoor	20 m	30 dBm
Rural outdoor	30 m	36 dBm

(4) An ISD must reduce its transmit power levels per channel below the thresholds specified in sub-regulations (2) and (3), if so, required by the USS, to ensure adherence to the protection thresholds of registered incumbent users.

(5) For ISDs operating indoors, an additional 14 dB in-building penetration loss2 for calculating transmit power levels is applicable.

11. Measures to Prevent Harmful Interference

(1) Any incumbent user operating in the IS seeking protection from harmful interference must register with the Authority.

(2) When registering in terms of sub-regulation (1), the incumbent user must submit accurate and up-to-date technical details of their facility to the Authority's online portal, including the following:

(a) company name;

(b) company physical address;

(c) name of the contact person;

(d) landline telephone/cellphone numbers of the contact person;

(e) site Name/call sign;

[2] https://www.itu.int/dms_pub/itu-r/opb/rep/R-REP-P.2346-3-2019-PDF-E.pdf

(f) service type;
(g) technology;
(h) location coordinates (longitude, latitude) in decimal degrees;
(i) antenna polarization;
(j) antenna elevation angle in degrees;
(k) azimuth;
(l) directivity;
(m) antenna heigh above ground level (AGL) in meters;
(n) transmit and receiving frequencies in MHz;
(o) transmit and receiving antenna gains dBi;
(p) satellite transmit power;
(q) satellite position;
(r) dish size;
(s) antenna sensitivity; and
(t) Any other information requested by the Authority.

(3) An ISD must be installed by a professional installer and must:
(a) not alter or interfere with the ISD's technical or operational settings;
(b) maintain the ISD's original characteristics without modification; and
(c) ensure the ISD aligns with the specifications outlined in its type approval certificate.

(4) The USSP shall calculate and assign OPs to ISDs subject to prior coordination on case-by-case basis, to eliminate or reduce harmful interference to the extent reasonably possible to registered incumbent users in compliance with:
(a) the Astronomy Geographic Advantage (AGA) Act 21 of 2007 as amended;
(b) the National Radio Frequency Plan 2021, as amended;
(c) the applicable International Telecommunication Union (ITU) recommendations; and
(d) applicable intergovernmental bilateral cross-border harmonization agreements.

(5) When calculating OPs, the USS shall:

(a) utilise the radio propagation model, terrain dataset and clutter dataset set-forth under regulation 15;
(b) ensure long-term protection of FSS receivers in ISFR 1;
(c) adhere to the protection criterion of I/N = -10.5 dB, not to be exceeded for 20% of the time, where I is the ISD interference power level and N is the FSS receiver's noise;

(d) include all FSS recievers within a predetermined coordination distance;
(e) only consider the cases where center-to-center frequency offset between the ISD and FSS receiver is less than 2.5 times the bandwidth;
(f) exclude all FSS receivers with larger frequency offsets;
(g) ensure long-term protection of FS receivers in ISFR 1, not to be exceeded for 20% of the time;
(h) adhere to the protection criterion of a ratio between the FS receiver's sensitivity threshold3 to ISD interference power level;
(i) include all FS receivers within a predetermined coordination distance;
(j) only consider the cases where the center-to-center frequency offset between the ISD and FS receiver is less than 2.5 times the bandwidth;
(k) exclude all FS receivers with larger frequency offsets;
(l) ensure the ISD's out-of-block power spectral density does not exceed the specified limits, consistent with CEPT Report 088;
(m) ensure long-term protection of FS receivers in ISFR 2 not to be exceeded for 20% of the time;
(n) adhere to the protection criterion of I/N = -10.5 dB, where I is the ISD interference power level and N is the FS receiver's noise;
(o) include all FS recievers within a predetermined coordination distance;
(p) only consider the cases where center-to-center frequency offset between the ISD and FSS receiver is less than 2.5 times the bandwidth;
(q) exclude all FSS receivers with larger frequency offsets; and
(r) ensure the ISD's out-of-block power spectral density does not exceed the specified limits.

(6) The ISD's must ensure that out-of-block power spectral density does not exceed the following limits:

Out-of-block emission limits

Frequency offset (df)	**Mean EIRP Spectral Density**
-5 to 0 MHz df^4_L, df^5_U 0 to 5 MHz	(MaxEIRP – 42 dBm)/5 MHz
-10 to-5 MHz df_L, df_U 5 to 10 MHz	(MaxEIRP – 45 dBm)/5 MHz
<-10 MHz dfL, df_U 10 MHz	(MaxEIRP – 45 dBm)/5 MHz

(7) The USS shall calculate OPs to coordinate operations among ISD networks to minimize the risk of harmful interference caused by Master devices to IS receivers by:

(a) applying a protection threshold of -88 dBm/20 MHz and;
(b) assuming a receiving antenna height of 1.5 meters.

(8) The USS shall protect services operating above 4200 MHz by:

(a) enforcing a 5 MHz guard band below 4200 MHz; and
(b) ensuring the ISD out-of-band power spectral density does not exceed the limits specified in sub-regulation (10).

(9) The USS shall protect services operating below 3800 MHz by:

(a) enforcing a 5 MHz guard band above 3800 MHz; and
(b) ensuring the ISD out-of-band spectral density does not exceed the limits specified in sub-regulation (10):

(10) The maximum out-of-band density is the following:

Out-of-band emission limits

Lower and Upper Band Edges of the ISFR1	**Mean EIRP Spectral Density**
3795 -3800 MHz	(MaxEIRP – 42 dBm)/5 MHz
4200-4205 MHz	(MaxEIRP – 42 dBm)/5 MHz

(11) The USS shall assign to ISDs only those channels that are adjacent to the frequencies occupied by registered incumbent users operating in the same geographical area.

(12) Geo-location coordinates, and geo-location uncertainty, if applicable, of Master device antenna and IS-CPE Cat 2 antenna must be determined automatically:

(a) using ISD internal geo-location capability prior to its registration with the USS at a given location; and
(b) each time the device is activated from a power-off condition; or
(c) has been relocated by 100 m or more.

(13) If the Master device or IS-CPE Cat 2 is located where its internal geo-location capability does not function, it may obtain its geo-location coordinates from a Type Approved

external geo-location source that must be located within 100 m and securely connected to the Master device.

(14) Only Master device or IS-CPE Cat 2 is permitted to communicate with the USS directly or through a DbP for purposes of:

(a) registration;
(b) in requesting for OPs for itself; and
(c) on behalf of Client devices associated to it.

(15) Client device is permitted to communicate with the USS directly provided that a radiofrequency link with its associated Master device has already been established.

(16) Operations of ISDs are permitted only on channels and at power levels that are determined by USS as being available for each ISD in a particular location.

(17) If the USS indicates that the channel is no longer available at the current operating level:
(a) operation on a channel must cease immediately; or
(b) power must be reduced to a permissible level.

(18) During operation, the Master device or IS-CPE Category 2 (IS-CPE Cat 2) must automatically query the USS and report its spectrum usage at least once every 24 hours.

(19) If the Master device or IS-CPE Cat 2 fails to notify the USS for seven (7) consecutive calendar days:
(a) it must cease operation immediately;
(b) within 60 seconds, it must provide to the USS its location information, ICASA-ID, antenna height and confirm spectrum use;
(c) failure of which, the USS may reassign the spectrum to another operator.

12. Interference Mitigation Protocol

(1) Affected registered incumbent users operating in the IS must report any incident of harmful interference on their network to the Authority for further investigation. Such report must be submitted only after confirming that the conditions outlined under Regulation 11(1) and (2) have been met.

(2) Upon identification or receiving a report of harmful interference, the USSP shall immediately suspend spectrum assignments to all ISDs associated with the secondary user operator found to be causing the interference.

(3) Any ISD identified or reported to be causing harmful interference to registered incumbent users must cease transmission within 60 seconds of receiving an instruction from the USS.

(4) Affected ISDs shall resume operation only after the Authority has completed its investigation and resolved the interference issue.

(5) The suspension shall remain in effect until the harmful interference is resolved.

(6) The incumbent user shall bear sole responsibility for resolving interference incidents if the conditions specified under regulation 11(1) and (2) have not been met.

13. Responsibilities of the Designated Unified Spectrum Switch Provider

(1) The Authority shall designate a USSP to provide USS services.

(2) The designated USSP(s) shall:

(a) maintain a secure database containing information about registered incumbent licensees requiring protection;

(b) establish a secure process for registering new IS network operators;

(c) establish a secure process for synchronizing and acquiring necessary technical information from the Authority's systems at least once a week, including updates on newly licensed facilities or changes to existing licensed facilities;

(d) implement propagation algorithms and interference parameters prescribed by the Authority to calculate and provide accurate OPs to ISDs;

(e) establish protocols and procedures to ensure that all communications and interactions between the USS, ISDs, and DbPs are accurate and secure;

(f) ensure that unauthorized parties cannot access or alter the database or the OPs;

(g) respond promptly to verify, correct, or remove incorrect data, and conduct system audits in the event that the Authority or another party raises concerns about inaccuracies in the USS;

(h) include functionality to indicate, upon request from the Authority, that no IS channels are available when queried by ISDs;

(i) refrain from providing service to ISDs until it receives confirmation from the designated contact person verifying their information. if the registration record is modified, the USSP must verify the new information before continuing to provide service to the ISDs;

(j) ensure non-discrimination between ISDs in providing the minimum required information levels; and

(k) have the discretion to provide additional information to specific classes of devices.

14. Default Values and Technical Parameters

(1) The default antenna height for a Master device must be recorded by the USS as 20 meters above ground level (AGL), unless the ISD provides alternative information to the USS.

(2) The default antenna height for an IS-CPE must be recorded by the USS as 10 meters AGL.

(3) The default antenna height for end-user equipment (EUE) must be recorded by the USS as 1.5 meters AGL.

(4) The default radio propagation model for protecting registered incumbent users is ITU-R P.452-18.

(5) The default digital terrain dataset resolution for use with the radio propagation model is 3 arc seconds.

(6) The default clutter dataset for use with the radio propagation model is the South African National Land Cover (SANLC).

15. ISD Operational Continuity Requirements

(1) The Master device and IS-CPE Cat 2 must not operate in excess of one hundred sixty-eight (168) hours after the last access to the USS, after which it must cease operation.

(2) The Master device and IS-CPE Cat 2, after having reached the maximum hours stipulated in sub-regulation (1), must re-establish contact with the USS and verify its OPs, as well as those of its associated client devices.

(3) The associated Client device must cease operation within ten (10) seconds if it fails to receive a contact verification signal from the associated Master device within sixty (60) seconds of the last contact.

(4) If not in sleep mode, the Client device must re-establish contact with the associated Master device within nine hundred (900) seconds of the last contact.

(5) The Client device must then receive the OPs from the associated Master device, as determined by the USS.

16. ISD Labelling Requirements

An ISD must display a label that adheres to the Equipment Authorization Regulations, 2022, as amended.

17. Display of Available Channels

A Master device and IS-CPE Cat 2 must have the capability to store and display a list of available channels provided by the USS, including the channels selected for use.

18. Innovation Spectrum License Validity and Renewal

(1) The IS spectrum license shall be valid for a maximum duration of three (3) years.

(2) The license shall only be valid for use within the locality specified by the applicant during the application process.

(3) The license may be renewed, subject to spectrum availability in the designated geographical location.

19. Commence of operations

The IS licensee must commence operations within thirty (30) calendar days from the date of issue of the license.

20. Innovation Spectrum License Fees and Pricing Principles

(1) A Network Operator must pay the IS license fees to the Authority for access to the IS, if applicable.

(2) The requirement to obtain spectrum licenses applies solely to the operation of ISDs within the ISFR 1 consistent with regulation 6 (5)(a).

(3) Operation of ISDs in the ISFR 2 band is license-exempt, consistent with the applicable radio regulations developed by the Authority.

21. USS Access Fees

The USSP shall impose reasonable and non-discriminatory access fees on network operators for the use of USS services.

22. Revocation of Innovation Spectrum License

Failure to comply with regulation 19 will result in the revocation of the IS licence.

23. Offences and Penalties

Any person that contravenes regulation 4 of these Regulations is guilty of an offence and is liable, on conviction, to a term of imprisonment not exceeding six (6) months and/or a fine not exceeding one million Rands (R 1,000,000.00).

24. Short Title and Commencement

These Regulations are called Regulations on the Use of Innovation Spectrum, 2026 and shall come into effect at a date to be determined by the Authority by notice in a Government Gazette.