INDEPENDENT COMMUNICATIONS AUTHORITY OF SOUTH AFRICA

NOTICE 311 OF 2020

FRAMEWORK TO QUALIFY TO OPERATE A SECONDARY GEO-LOCATION SPECTRUM DATABASE

The Independent Communications Authority of South Africa ("the Authority"), in terms of sections 4, read with sections 32 (1), and 33 of the Electronic Communications Act (Act No. 36 of 2005), and regulation 16 (1) (e) of the Regulations On the Use of Television White Spaces 2018, hereby prescribes the Framework to qualify to operate the Secondary Geo-Location Spectrum Database.

_____

DR. KEABETSWE MODIMOENG

ACTING CHAIRPERSON

22/05/2020

Page **1** of **12**

SCHEDULE

Table of Contents

1. Definitions

In this Qualification Framework, unless the context otherwise indicates, a word or expression to which meaning has been assigned in the Electronic Communications Act, 2005 (Act No.36 of 2005), has the meaning so assigned:

"**Qualification assessment"** means the technical examination the Applicants will undergo with the Authority to qualify them as the S-GLSD service provider);

"**Qualification material"** means the necessary materials and information for completing the qualification assessment provided by the Authority to the candidate S-GLSD service provider after the successful completion of the self-declaration phase;

"**Qualification period"** means the period prescribed by the Authority under this Qualification Framework of which the respective candidate S-GLSD service provider is required to complete the qualification assessment;

"**Reference Geo-Location Spectrum Database** (**R-GLSD)"** means a spectrum database operated by the Authority, that performs baseline calculations for the countrywide TVWS availability maps and generates operational parameters for WSDs, for setting regulatory limits;

"**Secondary Geo-Location Spectrum Database (S-GLSD)"** means a spectrum database operated by qualified service provider designated by the Authority to provide GLSD services to end users;

"**S-GLSD service provider"** means a qualified or designated third-party organisation that provides S-GLSD services;

"**S-GLSD services**" means the provision of Operational Parameters in response to requests from the WSDs;

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

"**Regulations"** means the Regulations on the Use of Television White Spaces, 2018 published in Government Gazette No. 41512 (Notice No. 147) of 23 March 2018.

"TVWS Algorithm" means the technical methodology, rules and procedure prescribed by the Authority to be implemented by candidate S-GLSD service providers in their calculation engines to be used in availing TVWS while protecting incumbents;

"Applicant" means an entity that has applied to be a S-GLSD service provider.

2. Purpose

The purpose of the Regulations is to provide for a qualification framework for interested entities to can operate as S-GLSD service providers.

3. Qualification Materials

(1)   The Authority will furnish Applicants with the required material to support their implementation of the Regulations. The said material shall include but not limited to the following:

(a)   documents describing the communication protocol between the R- GLSD and the S-GLSD, including the URL of the R-GLSD;

(b)   documents describing the PAWS RFC 7545[1] Rule set for ICASA;

(c)   documents describing the TVWS Algorithm;

(d)   dummy datasets containing technical information of incumbent analogue and digital television transmitters;

(e)   information about the polygons under the Karoo Central Astronomy Advantage Areas;

(f)   dummy datasets containing technical information of Type Approved White Space Devices;

(g)   information about digital terrain datasets and clutter; and

(h)   information about the bordering countries.

(2)   The qualification material will be made available only to Applicants

---

[1] open standard defined by the Internet Engineering Task force (IETF) to be used by WSDs to access the secondary GLSDs in the Request for Comments (RFC) 7545

who have passed the due diligence phase. This will be done twenty days (20) before the commencement of the database development phase as outlined in regulation 5, Figure 1.

4. Aspects of the Qualification Framework

The Authority will conduct the qualification assessment in a phased approach as outlined below:

4.1 Self-declaration-

(1)   The Applicant must comply with section 5 (8) (b) of the Act, that is, the Applicant will be registered under the laws of the Republic and has or will have its principal place of business located within the Republic.

(2)   The following documentary evidence must be provided by the entity in compliance to paragraph (a) above:

    (i)   A copy of the Company's registration certificate; and
    (ii)   the names and addresses of directors.

(3)   The Applicant must demonstrate their ability to establish, operate and maintain the S-GLSD system, including stating whether the S-GLSD will be hosted locally or abroad (e.g. company website, documentary proof of involvement in the field of ICT);

(4)   The Applicant must provide a Business plan, outlining the following:

    (i)   Fundamental assumptions for the business plan with financial forecasts for a minimum period of three years;
    (ii)   A market analysis of the services contemplated to be offered through the S-GLSD applied for, including forecast demand;
    (iii) Description of products and services to be offered through the S-GLSD applied for; and
    (iv)   Description of pricing strategy for products and services to be offered through the S-GLSD license applied for.

(5)   The Applicant has less than 30% (thirty percent) equity ownership by

Historically Disadvantaged Persons (HDP) or is below a level 4 contributor (B-BBEE status) in terms of the Codes of Good Practice published in terms of section 9(1) of the B-BBEE Act;

(6) The Applicant must indicate their approach in ensuring acceptable level of service availability (i.e. at least a 99.5% of uptime at the end of each calendar month) and reliability (i.e. a plan for a failover solution) including plan(s) for data backup, calculated as follows:

(i) The uptime service availability level shall be the total actual uptime minutes divided by total possible uptime minutes in the month, as calculated at the end of each calendar month x 100. So that (Actual Uptime/Total Uptime) x 100 = Uptime Service Availability percentage; and

(ii) Scheduled maintenance which has been notified to the Authority in advance shall not be counted as downtime, but any maintenance which has not been notified to the Authority in advance shall be counted as downtime.

4.2 Simulated Tests-

The Authority will repetitively perform simulated tests, remotely over the Internet Protocol, using the R-GLSD interfaces, to ascertain if components of the respective S-GLSD comply with the Regulations covering the following major aspects:

4.2.1 Implementation of the Communication Protocols, Interfaces and Storage

Protocol to Access White-Space (PAWS) databases, RFC 7545:

(1) The Authority shall furnish Applicants with a list of test scenarios and a document describing specific variations in the sections of the baseline PAWS RFC 7545 required to be implemented to comply with the regulation 10 of the Regulations. This protocol enables a bidirectional exchange of data between S-GLSDs and WSDs. The Applicants are expected to implement this communication protocol and satisfactorily

Page **6** of **12**

demonstrate to the Authority the following:

(b) correctly acknowledging, or rejecting of the initialisation requests from WSDs;

(c) correctly allowing, or rejecting of the registration requests from WSDs;

(d) correctly providing, or denying of the provision of Operational Parameters (OPs) requests from WSDs; and

(e) correctly acknowledging or rejecting of the notification's requests with respect to the spectrum usage from WSDs.

Communication Protocol between R-GLSD and S-GLSDs:

(1) The Authority shall furnish candidate S-GLSD providers with a list of test scenarios and a document describing the structure of the Application Programming Interface (API) for the communication protocol that enables a bidirectional exchange of data between the R-GLSD and the S-GLSDs. Candidate S-GLSD providers are expected to implement the PAWS communication protocol as stated in the regulations and satisfactorily demonstrate to the Authority the following:

(a) correct fetching of the protected incumbent datasets from the R-GLSD in each interval or upon receiving a notification request thereof;

(b) correct fetching of the White Space Device (WSD) Type Approval datasets from the R-GLSD in each interval or upon receiving a notification request thereof;

(c) to correctly, provide TVWS availability information in each point/ or multiple points of interest upon receiving an instruction request from the R-GLSD;

(d) blocking the usage of specific TVWS channels in each area of interest upon receiving an instruction request from the R-GLSD;

(e) to provide the information about WSDs in their respective S-GLSDS upon receiving request from the R-GLSD; and

(f) to act and respond in a timely manner when instructed by the

Authority to remove certain information from their S-GLSDs or to update the Algorithm.

Storage:

(2) The candidate S-GLSD service provider is expected to provide enough storage (minimum of 2 Terabytes) to maintain up-to-date technical information and all incumbent datasets in the 470 MHz to 694 MHz band to allow post calculation auditing by the Authority. Post calculation data must be stored by the candidate S-GLSD provider for a maximum of six (6) months after qualification period outlined in section (5) has elapsed.

4.2.2 Implementation of the TVWS Algorithm and Calculation Engine

(3) The Authority shall furnish candidate S-GLSD providers with a list of test scenarios and a document describing the TVWS Algorithm and details of protected incumbents. The candidate S-GLSD providers are expected to implement the Algorithm in their calculation engines and satisfactorily demonstrate to the Authority the following:

(a) correctly and consistently, identification and protection of incumbent analogue and TV broadcasting services;

(b) correctly and consistently, identification and protection of the Radio Astronomy services;

(c) correctly and consistently, identification and protection of the polygons under the Karoo Central Astronomy Advantage Areas;

(d) correctly and consistently, identification and protection of areas along the bordering countries; and

(e) correctly and consistently, provisioning of TVWS availability results at any point/or multiple points of interests in the republic within the accuracy as determined by thresholds given by the Authority.

4.2.3 Implementation of the S-GLSD security

(4) The Authority expects that candidate S-GLSD service providers will implement robust and secure end-to-end communication in their respective systems and be able to demonstrate the following to the

Page **8** of **12**

satisfaction of the Authority:

  (a)   a secure data exchange in the communication protocol between R-GLSD and S-GLSDs;

  (b)   a secure data exchange in the communication protocol between S-GLSDs and WSDs; and

  (c)   provisioning of OPs only to the Type Approved and authorised WSDs.

5. Qualification Period

(1) Upon a successful completion of the self-declaration phase by the Applicant; the Authority will grant the respective Applicants a maximum period of ninety (90) calendar days to complete the subsequent phases of the qualification assessment. During this period, the Authority will provide clarification on aspects of the qualification to the Applicants.

(2) The Applicant is expected to complete the qualification process within the above stipulated timeframe, failing to do so will result in getting disqualified. It is within the Authority's discretion to evaluate requests to provide a qualification time extension on a case by case basis. Such time extension can only be granted once for each Applicant and shall not exceed forty-five (45) calendar days.

(3) Figures 1 and 2, describe the qualification schedule and details involved in different phases of the qualification assessment of S-GLSD service providers.

Phases	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13
Due-diligence Confirmed	█												
ICASA to provide Qualification material	█												
Database Development		█	█	█	█	█							
Simulated Tests													
Implementation of the communication protocols, interfaces and storage							█	█					
Calculation engine implementation of TVWS algorithm									█	█			
Implementation of the S-GLSD security											█	█	
Qualification Decision												█	█

Figure 1. Qualification timeline

Due diligence

Applicant S-GLSD providers must declare compliance with relevant regulations and applicable standards. Applicant S-GLSD providers are expected to provide information to support their application, subject to review by the Authority.

Qualification Material

Candidate S-GLSD providers shall be furnished with the required materials necessary to support their implementation of the TVWS regulatory framework.

Simulated Tests

The Authority shall perform live tests on the interfaces and protocols of S-GLSDs and review results.

Qualification Decision

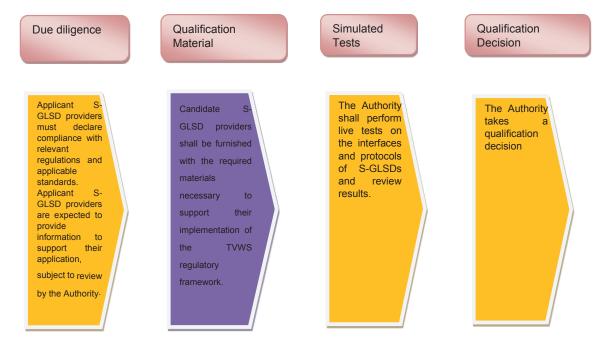The Authority takes a qualification decision

Figure 2: Overview of S-GLSD qualification process

(4) All phases of the qualification involve a continuous interaction between the Authority and the candidate S-GLSD service provider. The Applicant will be supplied with relevant requests for information by the Authority, to which it will provide feedback or results after processing, thereafter. The Authority will review the results provided by the Applicant and decide whether the Applicant qualifies to move to the next phase. Each phase involves a decision which will either

qualify or disqualify the respective provider.

(5) At the end of this qualification period, the Authority will furnish the Applicant that have successfully qualified to move on to the next phase of the assessment with the real TV band incumbents and Type Approval datasets required for live operation.

6. White Label[2] Provision of S-GLSD Services

(1) The Authority will allow third-party organisations that are interested becoming S-GLSD service providers through white label reseller service agreements with qualified S-GLSD service provider organisations. The candidate third-party S-GLSD service providers are expected to provide the following information to the satisfaction of the Authority:

   (a)   all the information required under regulation 4 (self-declaration); and

   (b)   supporting reseller contractual document/or letter of offer provided by a qualified S-GLSD service provider.

7. Qualification Decision

(1) Upon successful completion of all the qualification assessments, successful Applicants will be issued with a qualification letter by the Authority confirming their status.

(2) The webservices URL of the respective qualified S-GLSD provider will be listed under the Authority's R-GLSD web portal so that it can be publicly discovered by Type Approved authorized WSDs.

---

[2] means a concept that involves the production of goods or services by one company and the use, or reselling of these goods and services by another company under its own brand.

8. Disqualification of S-GLSD Providers

The Authority will disqualify any S-GLSD service provider that has repeatedly failed to demonstrate compliance to the Regulations on the use TVWS.

9. Communication

All persons interested in becoming candidate S-GLSD service providers are required to provide the Authority with   a point of contact during the qualification period, this information shall be shared with the Authority at the due diligence phase. All communication with the Authority shall be via the following email address:

Email: sglsd@icasa.org.za
https://tvwhitespaces.icasa.org.za

10.   Short Title and Commencement

These Regulations are called the Framework to Qualify to Operate a Secondary Geo-Location Spectrum Database, 2020.