



Written comments on the discussion paper on the framework for dynamic and opportunistic spectrum management

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SENTECH SOC Ltd Reg no: 1990/001791/30

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1. Introduction

- 1.1 SENTECH thanks the Independent Communications Authority of South Africa (“Regulator”) for the opportunity to make written comments on the Discussion paper on the framework for dynamic and opportunistic spectrum management (“Discussion paper”) as published in government gazette no. 39302 on 19 October 2015.
- 1.2 SENTECH trusts that the Regulator will fairly consider the inputs made.

2. Discussion paper

- 2.1 SENTECH in principle supports the need for universal access to broadband services.
- 2.2 SENTECH is concerned about the methods used by the Regulator in striving to enable universal access to broadband services.
- 2.3 It is impossible to answer most of the questions, as there are issues and concepts that must first be addressed before dealing with aspects that can be included in the regulatory framework.
- 2.4 The discussion document is confusing as the Regulator addresses to many issues at the same time. For example;
 - 2.4.1 The Regulator wants to understand the current status quo in the 470 – 694 MHz band and at the same time address authentication/licensing/database methodologies for TVWS, whilst seeking views on whether TVWS must be authenticated/licensed.
 - 2.4.2 The Regulator discuss spectrum efficiency under the incorrect assumption that in South Africa there is a generally accepted definition of this concept.
 - 2.4.3 The Regulator further makes the error of addressing spectrum efficiency between different services, ignoring the fact that technology is developed per specific service.
 - 2.4.4 *recommends 4* of the document ITU-R SM.1046-2 correctly states “that any comparison of spectrum efficiencies should be performed only between similar types of radio systems providing identical radiocommunication services”.
- 2.5 SENTECH is of the view that the document ITU-R SM.1046-2 provides the proper guideline for determining spectrum efficiency.
- 2.6 The discussion document should be limited to discussing the following:
 - 2.6.1 Status quo of the 470 – 694 MHz band;
 - 2.6.2 Future requirements of the 470 – 694 MHz band for terrestrial broadcasting, both primary and secondary allocations;
 - 2.6.3 The possibility of introducing TVWS; and
 - 2.6.4 Defining spectrum efficiency;
- 2.7 SENTECH is concerned that the discussion paper gives the perception that the Regulator is rushing to finalise the process.

2.8 SENTECH is of the view that any process initiated by the Regulator must be grounded on the principle of regulatory parity.

3. 470 – 694 MHz: SAB/SAP applications

3.1 In proposing the identification of the band 470 – 694 MHz on a secondary basis for TVWS by only acknowledging the transmitter network, the Regulator will fail services ancillary to broadcasting (SAB) and services ancillary to programme-making (SAP) currently having secondary allocation in the band, by not conceding their existence and importance.

3.2 Whilst the Regulator concentrated on the terrestrial television transmitter network, there is an oversight regarding the importance of SAB/SAP to the final product consumed by either viewers and/or listeners.

3.3 In compliance with *s2 (t) of the EC Act (as amended)*, the Regulator is obliged to ensure that both primary and secondary spectrum usage for broadcasting is protected from interference.

3.4 The interference of SAB/SAP will negatively affect the final product for both radio and television, regardless of the platform on which the services are distributed. The report ITU-R BT.2338-0 (03/2015) provides the following definitions for SAB/SAP:

- SAB: Services ancillary to broadcasting support the activities of broadcasting industry carried out in the production of their program material.
- SAP: Services ancillary to programme making support the activities carried out in the making of “programmes”, such as film making, advertisements, corporate videos, concerts, theatre and similar activities not initially meant for broadcasting to general public.

3.5 The report further states that SAB/SAP applications include both ENG/OB and SNG/OB applications and also the communication links that may be used in the production of programmes, such as talk-back or personal monitoring of sound-track, telecommand, telecontrol and similar applications:

- Electronic news gathering (ENG) is the collection of video and/or sound material by means of small, often hand-held wireless cameras and/or microphones with radio links to the news room and/or to the portable tape or other recorders.
- Outside broadcasting (OB) is the temporary provision of programme making facilities at the location of ongoing news, sport or other events, lasting from a few hours to several weeks. Mobile and/or portable radio links are required for wireless cameras or microphones at the OB location. Additionally, radio links may

be required for temporary point to point connections between the OB vehicle, additional locations around it, and the studio.

- Satellite news gathering (SNG) refers to similar applications to ENG but over the satellite radio communication channels

3.6 It is therefore important for the Regulator to acknowledge that interference on SAB/SAP applications will have a negative impact on the coverage for the following, inter alia;

- Sports;
- Concerts;
- Film/advert production;
- Special event broadcast;
- News gathering for TV/radio;
- Sound broadcast;
- Events of national importance;
- Disasters; etc.

3.7 For live events, especially in high-definition format, low latency and high quality of service (QoS) are of paramount importance. High reliability is also required during disasters, events of national importance, etc. It is also imperative for the Regulator to acknowledge that SAB/SAP have technical and operational characteristics under both mobile and fixed deployment scenarios. Due to the type of live events generally covered for both television and radio, timing and location is mostly impossible to predetermine. For example, the coverage of Comrades marathon in 2016 will be between Pietermaritzburg and Durban, with feeds at the start (Pietermaritzburg) and mainly at the end of point of the race (Durban). The coverage between Pietermaritzburg and Durban will be done via strategically positioned stationary cameras along the route, vehicles, motor cycles, helicopter, etc.

3.8 At the end of WRC-15, the allocation and identification of the band 694 – 790 MHz for IMT mobile services became effective. This allocation implies that after the migration of terrestrial television services to below 694 MHz, SAB/SAP will no longer be capable of operating in the band 694 – 852 MHz. The unregulated or unauthorized introduction of broadband and machine-to-machine services in the 470 – 694 MHz will result in the displacement of SAB/SAP and negatively impact of the final broadcast product, contrary to what the Regulator believes.

4. Q1. Do you agree that ICASA has the appropriate legislative mandate to address the issues of dynamic and opportunistic spectrum management and TV White Spaces and to build a suitable framework? If the answer is no, please elaborate.

4.1 SENTECH is in agreement with ICASA that the Regulator has “the appropriate legislative mandate to address the issues of dynamic and opportunistic spectrum management and TV White Spaces and to build a suitable framework”.

4.2 What SENTECH is not in agreement with is that only section 2(e) of chapter 2 of the EC Act is the only aspect relevant for discussion. As this matter is about spectrum allocated and assigned to terrestrial broadcasting services, the aspects stated below from chapter 2 of the EC Act must also be considered and deliberated on by the Regulator especially the likely impact to SAB/SAP applications.

(2) Objects of Act

- (r) promote the development of public, commercial and community broadcasting services which are responsive to the needs of the public;*
- (s) ensure that broadcasting services, viewed collectively—*
 - (i) promote the provision and development of a diverse range of sound and television broadcasting services on a national, regional and local level, that cater for all language and cultural groups and provide entertainment, education and information;*
 - (ii) provide for regular—*
 - (aa) news services;*
 - (bb) actuality programmes on matters of public interest;*
 - (cc) programmes on political issues of public interest; and*
 - (dd) programmes on matters of international, national, regional and local significance;*
 - (iii) cater for a broad range of services and specifically for the programming needs of children, women, the youth and the disabled;*
- (t) protect the integrity and viability of public broadcasting services;*

4.3 SAP/SAB have a secondary allocation in the frequency band 470 – 694 MHz and it is on this basis that it is imperative for the Regulator to consider section 2 (r), (s) and (t) of the EC Act. The Regulator has erroneously limited the discussions to the existing terrestrial television transmitter network.

5. Q2. Are there any existing licensing models overlooked here?

5.1 The Regulator failed to acknowledge the existence of studio-transmitter-links (STLs) currently being mainly operated in the 790 – 854 MHz band. The operations of STLs are “grandfathered” in terms of section 3.9.2 of the Telecommunications Act as repealed, read together with section 92 (5) of the EC Act (as amended):

S3.9.2 790 - 854 MHz (sharing of broadcast channels with WLL and links)

The broadcast channels at the upper end of the UHF broadcasting range (790- 854 MHz) are primarily used for TV broadcasting at present (they also contain some studio transmitter links).

S92(5) *Any person, who immediately before the commencement of this Act, lawfully provided any service or used the radio frequency spectrum in terms of the Telecommunications Act, Broadcasting Act or IBA Act without a licence is considered to have permission to continue to provide such a service on the same conditions and terms, or use the frequency spectrum on the same conditions and terms without a licence until such time as the Authority has granted or refused a licence application.*

5.2 STLs are PtP links with an allocation in the band 790 – 864 MHz currently excluded from paying spectrum fees.

6. Q7. Do we have enough data about the TV broadcast transmitters to be able to model their propagation accurately?

6.1 This is difficult question to answer, especially when it is not clear what the Regulator means by accurately or do what degree of accuracy is being referred to.

6.2 Simulated propagation is mainly affected by the following, inter alia:

6.2.1 Direct line of site;

6.2.2 Refraction;

6.2.3 Reflection;

6.2.4 Level of detail of DSM (digital surface model) used;

6.2.5 Propagation model used;

6.2.6 Brand of modelling software used;

6.2.7 Type of planning tool used; etc.

6.3 What cannot be simulated is the following:

6.3.1 Indoor coverage, due to the high cost of obtaining sufficient data for such modelling;

6.3.2 Impact of ducting;

6.3.3 Impact of rain dispersion;

6.3.4 Daily changes of water vapor in the troposphere and ionization in the upper atmosphere; etc.

6.4 With coverage at the edge at times changing based on the time of day and also taking into consideration the limitations of planning software and tools, it cannot be stated confidently that there will ever be sufficiently data to “accurately” simulate real receivable coverage levels.

6.5 Planning tools are constantly under development with improvements in technology;

6.6 Planning software algorithms are also constantly under development with the sole purpose of striving to improve the simulation results.

7. Q13. Do you foresee any risks?

7.1 As stated earlier, without taking into consideration the operational requirements for SAB/SAP applications broadcasting services are at risk.

7.2 Sentech requests the Regulator to take into consideration the report ITU-R BT.2338-0 (03/2015) when deliberating on this matter.

7.3 The Regulator has failed to acknowledge SAB/SAP services.

7.4 The Regulator has erroneously limited the co-ordination of TVWS spectrum to terrestrial television and any technology capable of using white space within the border of the Republic.

7.5 The Regulator has failed to acknowledge that spectrum usage by terrestrial broadcasting is also governed by GE06 to ensure limited cross-border interference.

7.6 Therefore spectrum usage by terrestrial television is limited within the rules of GE06.

7.7 By not consideration all relevant and affected services and rules, the Regulator is at risk of making a decision not fully informed.

8. Q17. Do you believe white spaces should be utilised without authorisation or licensing?

8.1 The usage of TVWS must be authorised or licensed.

8.2 TVWS has the potential to disrupt both primary and secondary usage for broadcasters, especially since SAB/SAP applications are both mobile and fixed services.

8.3 Authorisation of services within TVWS can be under the following criteria, *inter alia*:

8.3.1 Registration with the Regulator;

8.3.2 Compliance with spectrum management regulations established by the regulator, especially the establishment of technical parameters and protocols dealing with the protection of existing services with primary and/or secondary allocation.

8.4 In order to provide protection to existing services, the Regulator is also obliged to ensure that the number of entities seeking to make use of technologies operating within the TVWS is limited.

9. Q18. Should there be rules for such usage?

9.1 Yes, the Regulator is obliged to regulate the usage of TVWS taking into consideration the protection requirements for SAB/SAP.

9.2 The mitigation of interference requires rules/protocols.

9.3 As stated above, the Regulator is also obliged to limit the number of entities seeking to make use of technologies operating within the TVWS.

9.4 The usage of TVWS requires an up to the minute accurate database and the management of such database requires rules/protocols.

10. Q28. Do you see this as possible? Why / why not?

10.1 Under the current deployment scenarios for SAB/SAP applications, automated licensing is not possible nor is it advised.

10.2 As stated earlier, SAB/SAP have technical and operational characteristics under both mobile and fixed deployment scenarios. Due to the type of live events generally covered for both television and radio, bandwidth, timing and location is mostly impossible to predetermine.

10.3 As a result of mobile applications for SAB/SAP, the calculations and authorisation processes run through a database will not be accurate.

11. Q33. Please provide proposals on the regulatory framework (including none at all) for TVWS

11.1 SENTECH is of the view that it is premature for the Regulator to be seeking proposals on regulatory framework for TVWS.

11.2 This discussion paper is seeking comments on the “regulatory perspective and, in particular, on the specific approaches, requirements, challenges and concerns that would have to be addressed in introducing such spectrum regulatory reform”.

11.3 Before “specific approaches, requirements, challenges and concerns” are discussed and concluded on, there is no basis for discussing proposals on the regulatory framework.

- 11.4 The fact that the Regulator is also seeking advice on how TVWS should be defined in South Africa, supports the view that it is too premature for proposals on the regulatory framework.
- 11.5 As previously submitted to the Regulator, analogue to digital migration will not yield any digital dividend, in compliance with the ICASA regulation: Digital Terrestrial Television Frequency Networks 2013 (Annexure G).
- 11.6 Only digital to digital migration will yield digital dividend I (790 – 852 MHz) and II (694 – 790 MHz).
- 11.7 As presented at JSG in compliance with the Digital Migration Regulations of 2012, the broadcasting industry has submitted to the Regulator the need to address the following with respect to ICASA regulation: Digital Terrestrial Television Frequency Networks 2013 (Annexure J: post ASO), *inter alia*:
- 11.7.1 The need to determine restacking protocols;
- 11.7.2 The need to trial and investigate the practicality of province wide SFNs, with the likely possibility of another frequency planning exercise; and
- 11.7.3 Policy requirement for digital to digital migration.
- 11.8 The Regulator is yet to arrange and confirm the workshop where these issues will be addressed, despite making promises to do so.
- 11.9 The Regulator is also seeking to find ways to introduce IMT services in the bands, 694 – 790 MHz and 790 – 852 MHz, prior to ASO.
- 11.10 It is therefore unfair and prejudicial for the Regulator to expect the broadcasting industry to deal with so many proposed regulatory issues affecting their services and at the same deal with matters on ensuring timeous availability of digital dividend I and II.
- 11.11 Unfortunately the Regulator does not seem to understand the difference between a frequency plan and a service plan.
- 11.12 Whilst the country's frequency plan pre-ASO might have been finalised, Digital Terrestrial Television Frequency Networks 2013 (Annexure G), the broadcasting industry must still deal with issues of service planning to ensure that the integrity of terrestrial broadcasting is not negatively impacted by the analogue to digital migration.

12. Conclusion

- 12.1 SENTECH believes that the discussion document should be limited to discussing the following:
- 12.1.1 Status quo of the 470 – 694 MHz band;

12.1.2 Future requirements of the 470 – 694 MHz band for terrestrial broadcasting, both primary and secondary allocations;

12.1.3 The possibility of introducing TVWS; and

12.1.4 Defining spectrum efficiency;

12.2 SENTECH is concerned that the discussion paper gives the perception that the Regulator is rushing to finalise the process.

12.3 SENTECH is of the view that any process initiated by the Regulator must be grounded on the principle of regulatory parity.