Notice Regarding The Inquiry, The Authority's Position And The Draft Implementation Of The Radio Frequency Migration Plan And The International Mobile Telecommunications Roadmap

11 February 2022

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1. Introduction

SENTECH thanks the Independent Communications Authority of South Africa ("Authority") for the opportunity to make a submission on the *Notice Regarding The Findings Of Its Inquiry (Government Gazette no. 45247 of 30 september 2021), The Authority's Position And The Draft Implementation Of The Radio Frequency Migration Plan And The International Mobile Telecommunications Roadmap ("Draft Plan and Roadmap")*. SENTECH will be making a presentation during the oral hearings.

2. Draft Implementation Plan

The Authority has indicated that the Draft Implementation Plan is to implement decisions indicated in the Radio Frequency Migration Plan 2013 and 2019, and for the International Mobile Telecommunication Roadmap 2014 and 2019. In terms of the Radio Frequency Migration Plan 2019 ("RFMP 2019") Government Gazette No. 42337, the RFMP 2013 and 2019 can not both be valid at the same time. In the RFMP 2019, the Authority indicated that the "Frequency Migration Plan 2019 was compiled from unresolved issues from the Migration Frequency Plan 2013". In terms of *Figure 1* as illustrated in the RFMP 2019, "radio Frequency Migration Plan reflects all relevant activities to date and comments on potential long-term migration issues". In the Final International Mobile Telecommunications (IMT) Roadmap 2019 ("IMT 2019") Government Gazette No. 42829, the Authority indicated that "IMT Roadmap 2019 substitutes the IMT Roadmap 2014 published in Government Gazette No. 38213 (Notice 1009 of 2014 dated 14 November 2014)".

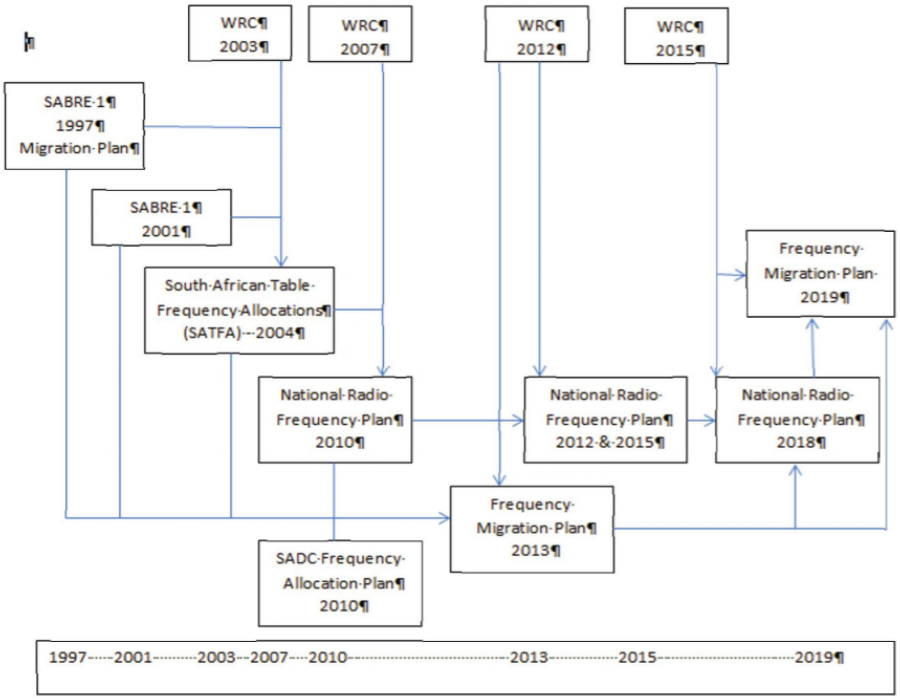


Figure 1: Time Frame Migration Plan and events informing Frequency Migration Plan (Source: ICASA)

3. Procedural Fairness

SENTECH has noted with great concern the speed at which the Authority deliberated on the submissions on the *Notice Regarding the Inquiry for The Implementation of The Radio Frequency Migration Plan and The IMT Road Map ("Inquiry") as published in Government Gazette No. 45247 on 30 September 2021*. Between 03 December 2021 (submission date) and 24 December 2021 (date of gazette), the Authority managed to deliberate on 24 submissions (13 documented and 11 oral, via interviews); compose the Draft Plan and Roadmap; follow internal procedures for Council Approval of the recommendations and Draft Plan and Roadmap; and then submit the Draft Plan and Roadmap to Government Printers in time for the 24 December 2021 publication.

SENTECH is concerned that procedural fairness was overtaken by the need to publish the Draft Plan and Roadmap as soon as possible. The company's concerns regarding procedural fairness is more concerned with the processes followed by the Authority to come to the conclusions that precipitated the Draft Plan and Roadmap in such a short period.

4. Issues relating to World Radiocommunications Conference 2023 Agenda Items

Relating to issues of procedural fairness and National Executive Constitutional obligation to negotiate and sign all international agreements, SENTECH is concerned at the insistence of the Authority to continue to included radio frequency bands that are currently under consideration in compliance with the outcomes of World Radiocommunications Conference 2019 (WRC-19) on Agenda Items for WRC-23. It is also important to note the Republic of South Africa's policy position on the radio frequency band 3800 – 4200 MHz at the WRC-15. The country's policy position did not support the allocation of mobile service on a primary basis and identification of additional frequency bands for International Mobile Telecommunications (IMT) in the radio frequency band 3700 – 3800 MHz. With respect to WRC-23 Agenda Items, the country will only consider policy position on the radio frequency band 3600 – 3800 MHz in terms of Agenda Items 1.2 and 1.3.

The Authority is quite aware that the following radio frequeny bands 470 – 960 MHz (Agenda Item 1.5) / 3600 – 3800 MHz (Agenda Items 1.2 and 1.2) / 4800 – 4990 MHz (Agenda Item 1.1) / 6425 – 7125 MHz (Agenda Item 1.2) are currently under discussion as part of World Radiocommunication Conference 2023 (WRC-23). The general understanding is that all country positions for WRC-23 are subject to Cabinet approval post Conference Preparatory Meeting 2, 2023 (CPM2-23) and before official submission to WRC-23 for consideration. Taking into consideration that the ITU Task Group 6/1 is yet to agree and let alone undertake compitability studies for Agenda Item 1.5, it is not clear on what basis the Authority is considering the bands for IMT.

In terms of section 34(1) of the EC Act, the Minister of Communications and Digital Technologies is the country's representative on WRC matters as the conference reviews and revises international treaty governing the global use of the radio-frequency spectrum. The inclusion of bands currently under discussion at the ITU WRC-23 in the Inquiry is beyond the scope of the Authority. The Authority has no legislative mandate to determine country policy on behalf of Parliament. The Authority must refer to section 231 of the Constitution of the Republic of South Africa, *International agreements*, read together with sections 30(2)(a) and sections 34(1), (2) and (3) of the EC Act.

5. Section 34 of EC Act: Radio Frequency Plan

The *Inquiry* by the Authority and the *Draft Plan and Roadmap* seem to be prioritising IMT services at the expense of existing services. At no point in either document has the

Authority discussed the ecosystem of other existing services. For example, the Authority has failed to determine the existence of a band that can offer the same advantages and economies of scale for satellite services operating in the c-band. Yet, the Authority is already proposing the development of RFSAP for the c-band. The Authority has failed to comply with section 34(5) of the EC Act, namely (with own emphasis):

> *The national radio frequency plan must be updated and amended when necessary in order to keep the plan current. When updating and amending this plan* ***due regard must ge given*** *to the* ***current*** *and* ***future usage*** *of the radio frequency spectrum*.

Majority of c-band communication is within the radio frequency band 3.7 – 4.2 Ghz paired with 5.925 – 6.425 GHz. Taking into consideration that part of the crucial infrastructure is in space and regulated by the ITU, it is not clear how the Authority will find 500MHz paired for satellite services to provide similar quality of experience and service. The Authority seems to ignore the fact that the ITU coordination process for satellite networks includes and requires approval from multiple administrations, and it takes years to achieve consensus taking into consideration the limited orbital spaces. At the request of administrations from developing countries such as the Republic of South Africa, the ITU has been striving to find techniques to prioritise those administrations seeking access to existing limited orbital spots.

5.1. 2025 – 2110 paired with 2200 – 2285 MHz

SENTECH has noted with great concern the Authority's reference to Government Gazette Number 41164, Notice 782 of 2017: Radio Frequency Spectrum Assignment Plan (Rules for Services operating in the Frequency Band 2025 to 2110 MHz paired with 2200 to 2285 MHz). The document clearly indicated that the gazette is a "*Draft Radio Frequency Spectrum Assignment Plan for the frequency band 2025 to 2110 MHz paired with 2200 to 2285 MHz for consultation in terms of sections 2 (d), (e) and 4, read with sections 30, 31(4), and 33 of the Electronic Communications Act (Act No. 36 of 2005) and read with Regulation 3 of the Radio Frequency Spectrum Regulations 2015 and read with the Frequency Migration Plan 2013*[1]". Kindly refer to *figure 1*, below. Contrary to the Authority's ascertion in the the Draft Plan and Roadmap, Government Gazette Number 41164, Notice 782 of 2017 is not a Regulation in terms of the EC Act.

[1] Electronic Communications Act: Radio frequency spectrum assignment plan for frequency band 2200 to 2285 MHz: Comments invited (www.gov.za)

INDEPENDENT COMMUNICATIONS AUTHORITY OF SOUTH AFRICA

NOTICE 782 OF 2017

PURSUANT TO SECTION 4 (1) OF THE ELECTRONIC COMMUNICATIONS ACT 2005, (ACT NO. 36 OF 2005)

HEREBY ISSUES A NOTICE REGARDING THE DRAFT RADIO FREQUENCY SPECTRUM ASSIGNMENT PLAN FOR THE FREQUENCY BAND 2025 TO 2110 MHZ PAIRED WITH 2200 TO 2285 MHZ FOR CONSULTATION.

1. The Independent Communications Authority of South Africa ("the Authority"), hereby publishes **Draft Radio Frequency Spectrum Assignment Plan for the frequency band 2025 to 2110 MHz paired with 2200 to 2285 MHz for consultation** in terms of sections 2 (d), (e) and 4, read with sections 30, 31(4), and 33 of the Electronic Communications Act (Act No. 36 of 2005) and read with Regulation 3 of the Radio Frequency Spectrum Regulations 2015 and read with the Frequency Migration Plan 2013.

2. This Radio Frequency Spectrum Assignment Plan supersedes any previous spectrum assignment arrangements for the same spectrum location.

3. Interested persons are hereby invited to submit written representations, including an electronic version of the representation in Microsoft Word, of their views on the **Draft Radio Frequency Spectrum Assignment Plan for the frequency band 2025 to 2110 MHz paired with 2200 to 2285 MHz** by no by later than 16h00 on Friday 01 December 2017. Written representations or enquiries may be directed to:

Figure 1: Radio Frequency Spectrum Assignment Plan (Rules for Services operating in the Frequency Band 2025 to 2110 MHz paired with 2200 to 2285 MHz

It is also important to note that in February 2019, the Authority published a *Notice Regarding The Radio Frequency Spectrum Assignment Plan for the Frequency Band 2025 to 2110 MHz Paired with 2200 To 2285 MHz For Consultation*, in Government Gazette Number 42230 Notice 75 of 2019. It is on this basis that SENTECH argues the Authorty's reference to Government Gazette Number 41164, Notice 782 of 2017 was in error. SENTECH admits that, though Government Gazette Number 42230 Notice 75 of 2019 refers to a consultation process, the company's investment and schedule for the execution of the migration of STLs is based on equipment operating within the channeling plan outlined in the Government Gazette Number 42230 Notice 75 of 2019. It is therefore unclear why the Authority's has concluded that there is a need for an RFSAP to be developed for the frequency band 2025 - 2110 MHz paired with 2200 - 2285 MHz.

5.2. 3600 – 3800 and 3800 – 4200 MHz

The Final Radio Frequency Migration Plan ("RFMP"), Government Gazette Number 42337 Notice 166 of 2019, clearly indicate that the Authority must create RFSAP and "may migrate users of the radio frequency spectrum under the National Radio Frequency Plan of South Africa". The RFMP outline the following principles, *inter alia*:

- *Radio frequency spectrum migration **must be consistent** with the **National Radio Frequency Plan**.*
- *The National Radio Frequency Plan itself must be consistent with the International Telecommunications Union (ITU) Radio-regulations as updated by WRC, and with the SADC FAP, to the extent possible.*

SENTECH therefore argues that it is too soon for the Authority to contemplate the development of the RFSAP for the radio frequency band 3600 – 3800 and 3800 – 4200 MHz. Any RFSAP developed prior to the outcome of WRC-23 and the approval of the National Radio Frequency Plan by the Minister is not compliant with the constitution of the Republic, procedural fairness nor with the EC Act. The National Radio Frequency Plan has not changed the allocation for the frequency band 3800 – 4200 MHz, it is therefore not clear how the RFMP 2019 is relevant to the frequency band.

5.2.1. 3600 – 3800 MHz

SENTECH is of the view that the Authority's reference to page 58 of the RFMP in the *Draft Plan and Roadmap* was done in error. Page 58 of the RFMP has no relevance to the radio frequency band 3600 – 3800 MHz, rather confers on matters relating to the following bands: 1668.4 – 1670 MHz; 1670 – 1675 MHz; 1880 – 1990 Mhz; and 1980-2010/2170-2200 MHz. With respect to the Authority developing an RFSAP for the radio frequency band 3600 – 3800 MHz, SENTECH's views have already been outlined above. It is also important to note that the Authority has indicated that BFWA can only be deployed where it is feasible. What the Authority fails to acknowledge is that in terms of the National Radio Frequency Plan, BFWA has a secondary allocation and therefore cannot claim nor cause interference to services with primary allocation. It is therefore SENTECH views that the Authority has no justifiable reasons nor can it be seen a procedural fair to move primary services to accommodate secondary services.

SENTECH is concerned that the Authority is proposing the development of an RFSAP while not acknowledging inputs made on the c-band challenges during the public consultation process linked to the *Notice Regarding the Draft National Radio Frequency*

Plan 2021 for Public Consultation ("DNRFP 2021") as published in Government Gazette No. 44803 on 9 July 2021. SENTECH seeks to bring to the attention of the Authority the company's proposal on coordination process relating to c-band issues, as outlined in Annexure 1.

5.2.2. 3800 – 4200 MHz

Taking into consideration the existential impact of the likely proposal to introduce IMT services in the 3800 – 4200 MHz in the near future, SENTECH had a reasonable expectation to expect the Authority to have had one-on-one consulation with the company. SENTECH distribution, refer to *Figure 2*, network is primarily dependent on the C-band for the delivery of content to national transmitter sites. The SENTECH transmitter network was built on the following principles:

- High transmitter sites;
- High altitude sites;
- High power transmitters; and
- Few sites;

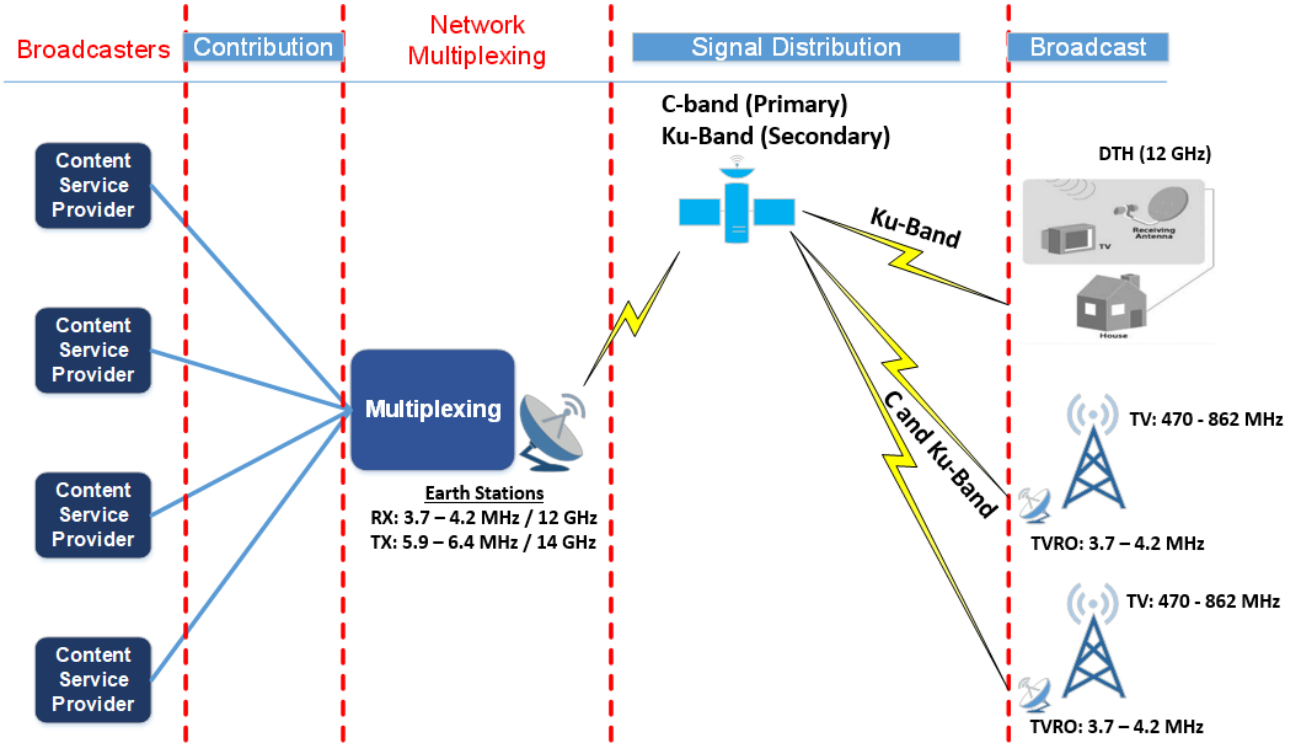


Figure 2: Terrestrial Broadcasting Value Chain

Since the initial investment for the network came from the state's fiscus the *modus operandi* was therefore financial prudence. It is on this basis that the SENTECH network is based on limiting the number of transmitter sites by deploying high transmitter and altitude

sites at high power to strive and maximise coverage. Therefore the introduction of additional events of interference is affecting the sustainability of SENTECH.

Annexure 1

6. C-band: coordination framework

SENTECH is concerned that the Authority choses to allow licensees to discuss issue of C-band interference , BFWA interferencing with incumbents, in the absence of a framework. The *Radio Frequency Spectrum Regulations* (2015) as published in Government Gazette No. 38641 on 30 March 2015 (including the November 2016 amendments in Government Gazette No. 40436) has proven insufficient.

The note that the "sub-band 3600 -3800 MHz could be used fro BFWA where frequency sharing with FS PTP and/or FF is feasible", is very concerning. The current *modus operandi* is that of trial and error, at the expense of satellite services. Operators providing BFWA on a *Secondary* basis do not undertake any studies, prior to deployment, to determine feasibility of the co-existence of services. SENTECH argues that the Authority has been remiss by not putting in place a framework for the deployment of BFWA (operating on a secondary basis) to ensure the protection of incumbent PRIMARY services.

SENTECH argues for the Authority to urgently initiate the process of discussing and agreeing on the sharing framework between PRIMARY incumbents and BFWA Secondary services. There are a number of documents, processes and lessons that can be considered as part of the development of the sharing technical framework, namely:

- Austarlian Communicatiosn and Media Authority (ACSA): Planning options for the 3700 – 4200 MHz band (consultation 22/2020) https://www.acma.gov.au/consultations/2020-07/planning-options-3700-4200-mhz-band-consultation-222020;
- Federal Communications Commission (FCC): Expanding flexible use of the 3.7 to 4.2 GHz Band https://docs.fcc.gov/public/attachments/fcc-20-22a1.pdf;
- European Conference of Postal and Telecommunications Authorities (CEPT): Electronic Communications Committee (ECC) Report 254 (Operational guidelines for spectrum sharing to support the implementation of the current ECC framework in the 3600-3800 MHz range) https://docdb.cept.org/download/0202d6d9-23b1/ECCRep254.pdf;
- Report ITU-R S.2199 (11/2010): Studies on compatibility of broadband wireless access systems and fixed-satellite service networks in the 3 400-4 200 MHz band;
- REPORT ITU-R M.2109 (2007): Sharing studies between IMT-Advanced systems and geostationary satellite networks in the fixed-satellite service in the 3 400-4 200 and 4 500-4 800 MHz frequency bands; and

- Report ITU-R S.2368-0 (06/2015): Sharing studies between International Mobile Telecommunication-Advanced systems and geostationary satellite networks in the fixed-satellite service in the 3 400-4 200 MHz and 4 500-4 800 MHz frequency bands in the WRC study cycle leading to WRC-15.

6.1. Possible interference protection approaches

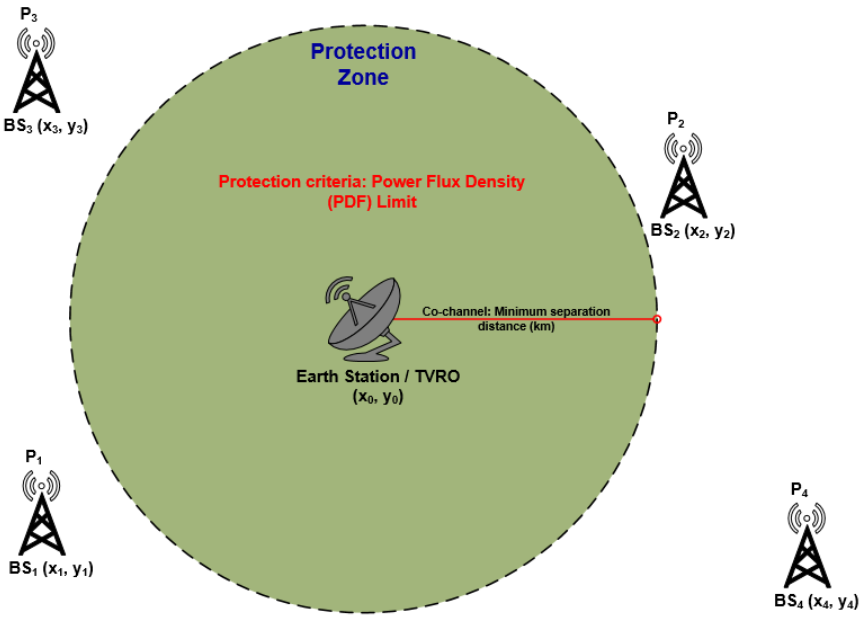
The Report ITU-R S.2199 (11/2010) clearly provides recommendations for the management of interference events between fixed satellite services (FSS) space to Earth and terrestrial broadband services in the adjacent channel configuration within the same geographic areas. The ITU report concluded that “co-frequency operation of BWA systems and FSS receive earth stations in the same geographic area is not feasible”. “In addition, when a BWA system is deployed, this creates an exclusion zone within which future deployments of FSS earth stations would not be possible”[2].

SENTECH is of the view that there are two (2) approaches available to the Authority for the protection of FSS from interference, adjacent and co-channel, introduced by BFWA services.

6.1.1. Creation of protection zones

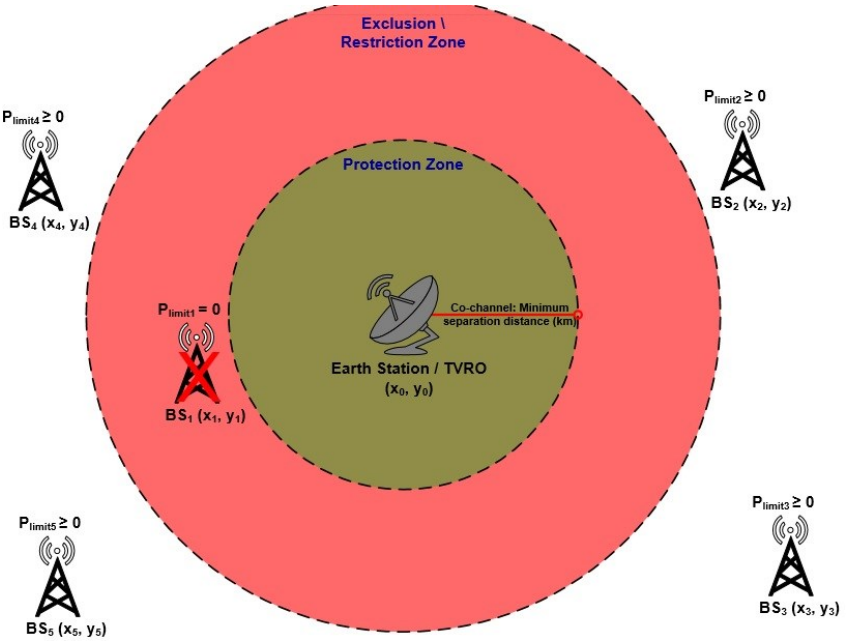
The protection zones consist of an area whose radius is the minimum distance required between BFWA / MFCN base station and an Earth Station / TVRO for co-channel frequencies. For adjacent channel frequencies the protection criteria is the minimum separation distance based power flux density (pfd) limit specified and type of BWFA / MFCN deployment (indoor or outdoor, etc.). The minimum distance, for both adjacent and co-channel, is influenced by the presence or absence of interrence mitigation measures such as the installation of C-Band Band Pass Filters, between the feed and LNB of the satellite antenna.

[2] Report ITU-R S.2199 (11/2010) page 5.



6.1.2. Creation of exclusion zones

The creation of exclusion zones requires the Authority to specify areas in which the deployment of BWFA / MFCN base stations or coverage from base station sectors are prohibited. Taking into consideration the deployment of of Earth Stations \ TVROs in urban areas, SENTECH supports the creation of protection zones.

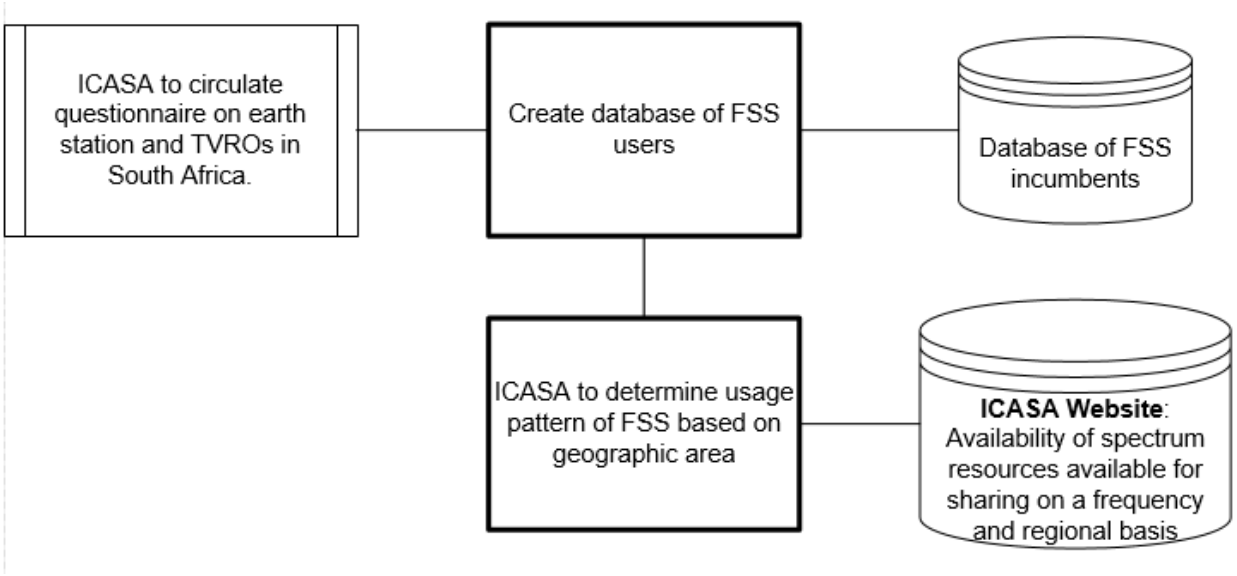


7. Recommendations

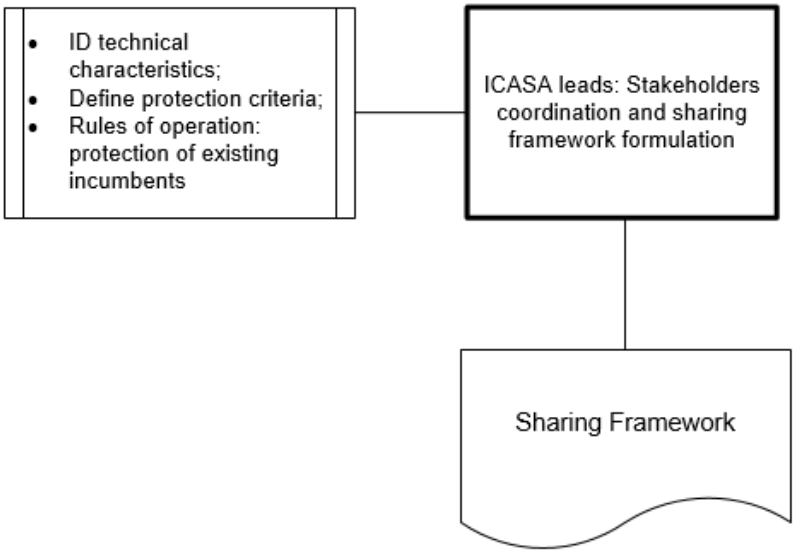
7.1. C-band

SENTECH recommends that the Authority urgently initiate the process of discussing and agreeing on the sharing framework between PRIMARY incumbents and BFWA Secondary services. The Authority has the flexibility of following a three (3) step process, namely: Identification of FSS incumbent usage, Determination of sharing technical framework, and Enforcement (ex-ante and ex-post).

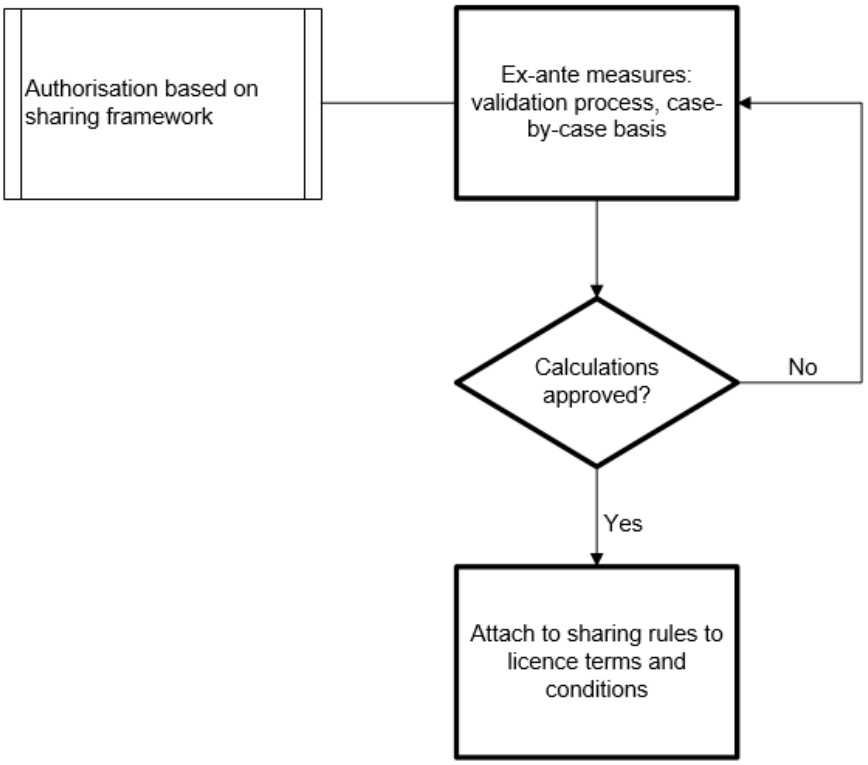
7.1.1. Step 1: Identification of FSS incumbent usage



7.1.2. Step 2: Determination of sharing framework



7.1.3. Step 3a: Ex-ante measures



7.1.4. Step 3b: Ex-post monitoring