DRAFT NATIONAL RADIO FREQUENCY PLAN 2017

(NRFP-17)

8.3 kHz – 3000 GHz

INDEPENDENT COMMUNICATIONS AUTHORITY OF SOUTH AFRICA

2016

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SENTECH
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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 *Draft National Radio Frequency Plan 2017* ("NRFP-17") Government Gazette No. 40480, Notice No. 861 as published on 9 December 2016. SENTECH would like to indicate its intention to make a presentation on the date scheduled by the Authority.

SENTECH supports the National Development Plan's (NDP) objective of encouraging the use of infrastructure to address the country's socioeconomic concerns. Consequently, the company supports the use of digital dividend I and II (790 – 862 MHz and 694 – 790 MHz) for infrastructure deployment. SENTECH would like to make some proposals on the methodologies deployed by the Authority in striving to make the digital dividend available.

2. Salient Issues

SENTECH's main concern is that the proposed changes in the NRFP-17 contradict existing regulations such as the Digital Migration Regulations and the Terrestrial Broadcasting Plan (analogue and DTT services). In addition, the proposed introduction of fixed broadband wireless access (FBWA) services in the 3600 - 4200 MHz frequency band will likely affect SENTECH's ability to offer signal distribution services in compliance with service level agreement as per contractual agreements. SENTECH makes use of the C-band for signal distribution of television content to remote. Additional interference will affect quality of the content distributed.

2.1. Likely implications of the of the proposed changes in the NRFP-17

In the unlikely event that the proposed changes affecting broadcasting are implemented as they are, SENTECH's sustainability will be affected. The table 1 and 2 below illustrates the population coverage for DTT assignments in the frequency bands 694 – 790 and 790 – 862MHz and population coverage for sound broadcasters making use of STLs.

DEMOGRAPHICS FOR DIGITAL DIVIDEND						
BAND	**SERVICE**	**ASSIGNMENTS**	**Gross Population**	**%**	**Area covered km²**	**%**
700MHz	DTT1	30	16 887 946	34	317 421	26
700MHz	DTT2	36	24 918 846	50	243 866	20
800MHz	DTT1	9	1 245 061	2	61 620	5,1
800MHz	DTT2	10	2 043 597	4	108 302	8,9

Table 1: Population coverage for DTT assignments in the frequency bands 694 – 790 and 790 – 862MHz

Province	Class of Broadcaster	791 - 821 MHz	825 - 830 MHz	832 - 862 MHz
Kwa-Zulu Natal	Commercial FM	7 837 826	7 837 826	7 840 514
	Community FM	1 252 735	-	4 260 617
	Public FM	-	8 624 840	8 624 840
Eastern Cape	Commercial FM	-	-	391 795
	Community FM	1 101 395	828 866	956 251
	Public FM	-	-	-
Mpumalanga	Commercial FM	-	-	11 417 740
	Community FM	-	-	1 050 909
	Public FM	-	3 738 039	-
Northern Cape	Commercial FM	-	-	-
	Community FM	53 487	-	-
	Public FM	-	-	-
Gauteng	Commercial FM	6 095 786	-	12 244 613
	Community FM	1 198 985	122 316	7 623 746
	Public FM	-	-	-
Free State	Commercial FM	-	-	1 458 425
	Community FM	258 112	-	1 310 226
	Public FM	-	-	1 701 231
North West	Commercial FM	-	-	1 745 454
	Community FM	200 151	-	376 889
	Public FM	-	-	431 598
Limpopo	Commercial FM	-	-	1 240 175
	Community FM	2 352 172	-	-
	Public FM	871 584	-	428 549
Western Cape	Commercial FM	-	-	3 592 652
	Community FM	-	3 988	3 158 133
	Public FM	-	-	-

Table 2: Population coverage for sound broadcasters making use of STLs

The proposed removal of the allocation for broadcasting services in the frequency bands 694 – 790 MHz and 790 – 862 MHz will not only affect SENTECH's ability to meet service level agreements, but the company will not be able to receive revenue from transmitters deployed in the frequency bands 694 – 790 MHz and 790 – 862 MHz. The other challenge facing the broadcasting industry is the absence of a policy and regulations on digital-to-digital migration. Consequently, it is not know who will be responsible for the cost of the digital-to-digital

migration. Furthermore, it is not clear how the Authority will address the restacking process, in compliance with annex J of the Terrestrial Broadcasting Frequency Plan.

2.2. World radiocommunication Conference of 2015 (WRC 15)

SENTECH is of the view that the Authority made a mistake by implying that WRC 07, 12 and 15, in approving the allocation for MOBILE except aeronautical mobile services and also the identification for IMT application, decided in the removal of allocation for existing services in the band 790 – 862 MHz and 694 – 790 MHz. Footnotes 5.317A in reference to the MOBILE allocations states that the "identification does not preclude the use of these frequency bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations".

In referencing Resolution 224 (WRC-15) with the MOBILE allocation, footnotes 5.312A and 5.317A request the protection, from MOBILE services, of existing and future services in the frequency band 694 – 862 MHz. Also, in referencing Resolution 760 (WRC-15) with the MOBILE allocation, footnotes 5.312A and 5.317A requests MOBILE applications to make use of parameters stated in the GE06 Regional Agreement when determining protection limits for terrestrial broadcasting services.

SENTECH recognises that Resolution 749 and 760 have also resolved that issues of adjacent channel interference within national boundaries should be dealt within the country's jurisdiction. It is on this basis that SENTECH requests the Authority to consider existing regulatory framework provisions in the *Electronic Communications Act, Terrestrial Broadcasting Frequency Plan 2013 and Digital Migration Regulations 2012*. The Act states that spectrum assignment must be in compliance with the NRFP. The current SENTECH analogue and digital television terrestrial networks are in compliance with the assignments in the Terrestrial Broadcasting Frequency Plan 2013, which has assignments in the 694 – 862 MHz band. The Terrestrial Broadcasting Frequency Plan 2013 complies with the current NRFP. Digital Migration Regulations of 2012 requires the SENTECH's digital television terrestrial network to comply with the Terrestrial Broadcasting Frequency Plan 2013.

2.3. Electronic Communications Act (as amended in May 2014)

Section 34(5) Electronic Communications Act (as amended in May 2014) ("ECA") requires that "[w]hen updating and amending this plan due regard must be given to the current and future usage of the radio frequency spectrum". By proposing the removal of terrestrial broadcasting allocation in the bands 694 – 790 and 790 – 862 MHz from the South African *Table of frequency allocations*, does not illustrate how the Authority complied with this section of the ECA, especially when there is no reference to the Digital Migration Regulation 2012

and no clear reference to Annex G of the Final Terrestrial Broadcasting Frequency Plan 2013. We therefore propose the co-primary allocation for broadcasting services not be removed in compliance with the ITU Radio Regulations of 2016.

Separate to the approval process of the NRFP as outlined in the ECA, particularly section 4(5) and 34(2), SENTECH expects the Authority to initiate another process post finalisation of the NRFP in compliance with section 34(16) of the ECA. Section 34(16) includes an additional requirement with regards to the migration of existing users in the event the affected entities are either "governmental entities or organisations". That is the Authority "must refer the matter to the Minister [of Communications]" and "may migrate the users after consultation with the Minister [of Communications]". Section 34(16) limits the Authorities discretionary scope to non-governmental entities, in as far as migration of users.

2.4. Final Terrestrial Broadcasting Frequency Plan 2013

The draft National Radio Frequency Plan 2017 (NFRP-17) proposes the removal of terrestrial broadcasting allocation in the bands 694 – 790 and 790 – 862 MHz from the South African *Table of frequency allocations*, most likely effective from the date of the gazetting of the final NRFP-17, consequently implying that all broadcasting services in the bands highlighted will not be licenced in compliance with the final NRFP-17, thereby will be operational unlawfully.

The failure to include a footnote in the relevant section of the South African *Table of frequency allocations*, referencing the Digital Migration Regulations 2012 (GG No. 36000, GN. 1070, and published in 14 December 2012) and Final Terrestrial Broadcasting Frequency Plan 2013 (GG No. 36321, and published in 2 April 2013) will create a challenging regulatory environment for the affected parties in the broadcasting industry. The proposed changes in the NRFP-17 will create an incongruous regulatory environment that will lead to confusion regarding the implementation and compliance of regulations. The allocation for broadcasting services should remain and a new footnote included referencing Digital Migration Regulations and published in 14 December 2012) and Terrestrial Broadcasting Frequency Plan.

The Final Terrestrial Broadcasting Frequency Plan 2013 (FTBFP-13) states that Annex G of the plan is the sub-regulation applicable to the dual illumination period. It is also important to note that Annex G has frequency assignments in the bands 694 – 790 and 790 – 862 MHz. All amendments made to the FTBFP since 2008, consistently made no changes to the frequency assignments in the stated bands bar corrections, antenna patterns and changes in transmitter power. All reports on DTT submitted to the Authority, via JSAG and the Portfolio Committee of Communications were based on the FTBFP and the Digital Migration Regulations 2012 (DMR-12).

2.5. Digital Migration Regulations 2012

In the position paper on DMR-12 the Authority states the adoption of the DMR-12 and the regulations will

> *deal primarily with the manner in which the digital migration in existing analogue terrestrial television services presently being broadcast in South Africa will be migrated to a digital platform and radio frequency spectrum will be utilised for this purpose. As such, the Digital migration Regulations are specifically aimed at providing a framework that will ensure the smooth migration of existing analogue terrestrial television services with the required time periods*[1]

As previously stated, the proposed changes in the NRFP-17 will create an incongruous regulatory environment that will lead to confusion regarding the implementation and compliance of regulations. For example the NRFP-17 states that *"[m]igration from analogue to digital [will be] in accordance with SADC time lines*", whilst the DMR-12 sub-regulation 3(1) states that "*the date for the commencement of the dual illumination period as well as the date for the final switch-off of the analogue signal will be published by the Minister in the Gazette*". It is important to note that the Authority has not provided the referenced SADC timelines nor has the Authority stated why these timelines supersede the country's own regulations. Another challenge is the compliance requests in DMR-12 sub-regulation 9(3)a & b, regarding coverage target requirements and "a technical plan consistent with the broadcasting frequency plan".

It is therefore important that the NRFP-17 is consistent with existing regulations, especially those regulating affected services.

2.6. C-band: 3600 – 4200 MHz

The proposal for the inclusion of broadband fixed wireless access (BFWA) in the band is of crucial concern to SENTECH. The SENTECH distribution 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;

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

[1] Position paper on Digital Migration Regulations, 2012 page 4

power to strive and maximise coverage. Therefore the introduction of additional events of interference, BFWA, will affect the sustainability of SENTECH.

SENTECH on occasion has to deal with events of interference from licensed and unlicensed services in the band frequency bands 3400 – 3600 MHz and 3600 – 4200 MHz. Some of the interference events, particular in the frequency band 3550 – 3600 MHz, have been so consistently detrimental to the C-band services of SENTECH that costly measures had to be taken to ensure that the company complied with service level agreements. A case in point is the satellite site in Bloemfontein:

Unfortunately the screening walls was not sufficient to deal with events of interference, therefore, additionally SENTECH made changes to the receiver filters to strive to minimise the magnitude of receiver overload as a result of the high RF power levels of WiMAX systems deployed. “Mitigation techniques may be employed to reduce the likelihood of LNB saturation, e.g. installation of a bandpass filter at the front end of the FSS earth station and/or reduction of the BWA power. It has been verified that when a BWA system operates in a band immediately next to the band in which the FSS earth station operates, the effectiveness of the bandpass filter is very limited”. [2]The satellite receiver filter range is 3.65 – 4 GHz and the interfering source was at 3.55 GHz. The interference events were successfully addressed when the WiMAX system transmitted at a lower frequency in the extended C-band.

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”[3].

We therefore recommend that BFWA services be excluded and not licenced in the C-band (3600 – 4200 MHz) as this poses extreme interference on SENTECH’s satellite distribution links. The allocation for FIXED services should exclude BFWA or any similar service.

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

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

3. Medium Wave (MW) Broadcasting: 526.5 – 1606.5 kHz

3.1. Inductive Loop Systems (740 – 8800 kHz)

SENTECH is struggling to provide relevant input on the proposed allocation to Inductive Loop Systems (740 – 8800 kHz). The Authority has not indicated the service to which Inductive Loop Systems (ILS) belongs to and whether the allocation is on a primary or secondary basis. Since there is a frequency overlap (740 – 1605.5 kHz) between the two "services", an allocation on a primary basis to ILS may also require national footnote (NF) regarding regulatory considerations for the co-existence of both "services". Since the proposed allocation is not in compliance to the ITU RR2016 (in all regions), it is important that the Authority provide context for this proposal.

SENTECH would also like to point out to the Authority that the reference to *Radio Frequency Spectrum Regulations (Annex B) (GG. No.38641, 30 March 2015)*, is incorrect because the Authority published amendments to the regulations on 22 November 2016. The reference should either be *Radio Frequency Spectrum Regulations (Annex B) (GG. No. 40436, 22 November 2016)* or *Radio Frequency Spectrum Regulations (Annex B) of the latest regulations*. SENTECH's preference is towards to the latter.

It is also important to note that Annex B of the Radio Frequency Spectrum Regulations refers to the range 7400 – 8800 kHz. It is therefore important for the Authority to provide clarity on this matter.

3.2. MW Broadcasting

With respect to the MW band, SENTECH proposes that a new NF be included for broadcasting services. The new NF should state the following:

> *NF X: implementation of broadcasting services in the band 535.5 – 1606.5 kHz is applicable to both analogue and digital services, compliant with the latest relevant annex of the Terrestrial Broadcasting Frequency Plan.*

The justification is that some digital sound broadcasting system are designed to be replacement or to be co-existing with existing analogue radio broadcast systems in the AM frequency band (long wave, medium wave and short wave). The implication is that analogue and digital services can operate in simulcast mode which allows the transmission of both digital and analogue services from the same transmitter on the same frequency channel with no interference between the two services. The added advantage is that no additional regulatory intervention is required as digital services operate within the same regulatory environment as analogue services.

SENTECH's interest in digital sound broadcasting (DRM30, DRM+ and DAB+, etc.) is that it provides the next generation broadcast services through: i) efficiency is spectrum utilisation; ii) additional services per channel; iii) value added services; and iv) operation within the current spectrum allocation and/or channel plan for broadcasting services.

4. Frequency Modulation (FM) Broadcasting: 87.5 – 108 MHz

SENTECH proposes that under Typical Applications the note should refer to sound broadcasting (87.5 – 108 MHz) and not FM sound broadcasting. The reason being that digital sound broadcasting is also possible in this band within the same channel bandwidth.

5. Digital Broadcasting: 174 – 240 MHz

SENTECH proposes that the entire band should be shared between digital sound and television broadcasting. Implementation of both services can be successfully co-ordinated.

ITU Region 1 allocations and footnotes	**South African allocations and footnotes**	**Typical Applications**	**Notes and Comments**
174-223 MHz BROADCASTING 5.235 5.237 5.243	174-223 MHz BROADCASTING NF5	Digital sound and television broadcasting	Terrestrial analogue broadcasting allotments in accordance with GE89 Plan in the process of conversion to GE06 and conversion from analogue to digital. The Terrestrial Broadcasting Frequency Plan as amended (GG no.36321) 02 April 2013. Digital sound broadcasting is can be implemented post ASO.
223-230 MHz BROADCASTING 5.235 5.237 5.243	223-230 MHz BROADCASTING	Digital sound and television broadcasting	Terrestrial analogue broadcasting allotments in accordance with GE89 Plan in the process of conversion to GE06 and conversion from analogue to digital.

			The Terrestrial Broadcasting Frequency Plan as amended (GG no.36321) 02 April 2013. Digital sound broadcasting is can be implemented post ASO.
230-235 MHz FIXED MOBILE 5.247 5.251 5.252	**230-240 MHz** BROADCASTING 5.252 5.254	Digital sound and television broadcasting	Terrestrial analogue broadcasting allotments in accordance with GE89 Plan in the process of conversion to GE06 and conversion from analogue to digital. The Terrestrial Broadcasting Frequency Plan as amended (GG no.36321) 02 April 2013. The channel 239.2 MHz is available for the immediate implementation of digital sound broadcasting.

6. Frequency Band 246 – 254 MHz

SENTECH proposes that the broadcasting band be extended by 2 MHz from 238 to 240 MHz to enable the immediate implementation of digital sound broadcasting. In exchange, SENTECH recommends the band 246 – 254 MHz be made available for PMR and/or PAMR in place of the band 238 – 242.95 MHz. The current DAB+ trials are done on the channel 13F (239.2 MHz).

The receiver used during the trial have a tuning range extending to 240 MHz and the single frequency (239.2 MHz centre frequency with bandwidth of 1.536 MHz) will allow SFNs to be implemented in all metro areas immediately, with the total population coverage of greater than 50%.

In order to ensure that terrestrial analogue television services are not affected, the allocation for PMR and/or PAMR should be effective post ASO.

ITU Region 1 allocations and footnotes	South African allocations and footnotes	Typical Applications	Notes and Comments
235 - 267 MHz FIXED MOBILE 5.111 5.252 5.254 5.256 5.256A	246 - 254 MHz MOBILE 5.254 5.256	PMR and/or PAMR	

7. Terrestrial Television Broadcasting: 470 – 862 MHz

7.1. SAP/SAB applications: 470 – 694 MHz

Though SENTECH is not opposed to the introduction of "White Spaces" services in the band 470 – 694 MHz, existing secondary services must also be acknowledged. Therefore SAP/SAB applications must be protected in line with the ITU footnote **5.31**

> ***5.31*** *3) Stations of a secondary service:*
>
> *c) can claim protection, however, from harmful interference from stations of the same or other secondary service(s) to which frequencies may be assigned at a later date.*

The footnote 5.31 should be included in the table of allocations as illustrated below:

South African allocations and footnotes
470-694 BROADCASTING 5.31 5.149 5.291A 5.294 5.296 5.300 5.304 5.306 5.311A 5.312

The Authority has specified power rating for "White Spaces" services in the band 470 – 694 MHz, it is not stated anywhere in the document what advised these ratings. As stated in the *Discussion Paper on the Draft Framework for Dynamic and Opportunistic Spectrum Management 2015* (GG. No. 39302, Notice No. 1001 of 19 October 2015), an allocation must

first be made for “White Spaces” services before regulatory limits are introduced. The inclusion of notes on “White Spaces” in the Table of Frequency Allocations is not compliant with the *Findings Document on the Framework or Dynamic and Opportunistic Spectrum Management* (GG. No. 40078, Notice No. 350 of 17 June 2016).

In the findings document, the Authority clearly states that *“[i]n parallel to developing the required positions, the Authority will support further studies on these topics identified in the discussion document as well as the additional topics proposed by the respondents*”. In the absence of outcomes of the activities as stated, it is not appropriate to include power ratings for “White Spaces” services in the Table of Frequency Allocations.

It is therefore proposed that only the following wording be introduced under *Notes and Comments*:

> *“White Spaces” in this band is currently under consideration, refer to the Findings Document on the Framework or Dynamic and Opportunistic Spectrum Management (GG. No. 40078, Notice No. 350 of 17 June 2016).*

7.2. Terrestrial television broadcasting services: 694 – 862 MHz

7.2.1. Table of Frequency Allocations: 694 – 862 MHz

The Authority has erroneously stated that the ITU Region 1 allocations excludes terrestrial broadcasting services in the band 694 – 862 MHz. The table below correctly illustrates the Table of Frequency Allocations as recorded in the document page 93 of the *ITU Radio Regulations: Articles (Edition of 2016)*. The Authority is request to remove the erroneous portion of table and replace it with the correct one.

South African allocations and footnotes
694-790 MOBILE except aeronautical mobile 5.312A 5.317A BROADCASTING 5.300 5.311A 5.312
790-862 FIXED MOBILE except aeronautical mobile 5.316B 5.317A BROADCASTING 5.312 5.319

7.2.2. Studio-transmitter-links (STLs): 790 – 862 MHz

Comments in the NRFP 2013 under the frequency band 790 – 862 MHz states that "fixed links will be migrated along with the broadcasting service in line with Radio Frequency Migration Plan". With regards to fixed links, the Authority is yet to initiate the Radio Frequency Spectrum Assignment Plan (RFSAP) in compliance with the Frequency Migration Regulations ("FMR") and Radio Frequency Migration Plan ("RFMP"), (GG No. 36334 and published on 3 April 2013). Therefore the reference to fixed links in the NRFP-17, particularly studio-transmitter-links (STLs), should include the entire 790 – 862 MHz band. This reference is correctly stated in the section 3.1.14 of the RFMP, i.e. in the Table of Frequency Allocations under Typical Applications, the following should be stated regarding FIXED services;

Fixed links (790 – 862 MHz)

STLs are overwhelmingly used for Community and Commercial Radio Broadcasting Services. STLs historically have been "grandfathered" and exposed to a soft-touch regulatory framework by the Regulator. Consequently STLs were previously not subjected to regulatory frequency assignment processes and spectrum fees regulations. Only the equipment specifications were regulated through the ICASA type approval processes.

STLs are currently mainly operated in the upper UHF band and sharing spectrum with terrestrial broadcasting services on a non-interference basis. Sentech currently operates approximately 188 STLs for Commercial and Community terrestrial radio broadcasting services.

The extent of spectrum usage by other entities for STLs in the UHF must still be determined, as part of the spectrum needs analysis. SENTECH continues to roll-out STLs as ICASA continue to issue more terrestrial broadcasters services licences. SENTECH operates three (3) types of STL, namely;

- Analogue STL, primarily used for audio broadcasts for distance less than 25 km;
- Digital Uncompressed STL, primarily used for audio services of distances more than 25 km; and
- Digital High Capacity (Multiple_E1)-STL, primarily used for multiple audio and video contribution requirements;

It is important to note that SENTECH does not necessarily operate the majority of the STLs that exists in the broadcasting industry. It has been acknowledged that a lot of the STLs are deployed on mobile tower infrastructure and therefore subjected to additional specifications from mobile operators. It is therefore imperative when consideration is made for the re-

allocation of STLs parameters such as wind-loading, propagation characteristics, antenna sizes, transmitter powers, etc. are taken into consideration.

It is on this basis that SENTECH proposes that STLs continue to operate in the following bands during the transitional period in line with the RFSAP 2015 and also as a result of the deferment of IMT850;

- 821 – 832 MHz;

South African allocations and footnotes	Typical Applications	Notes and Comments
790-862 FIXED MOBILE except aeronautical mobile 5.316B 5.317A BROADCASTING 5.312 5.319	Fixed links (821 – 832 MHz) IMT800 BTX (791 – 821 MHz) IMT800 MTX (832 – 862 MHz) Television Broadcasting (470 – 854 MHz)	The Authority will initiate the Radio Frequency Spectrum Assignment Plan (RFSAP) process to migrate STLs (810 – 860 MHz) in compliance with the Frequency Migration Regulations ("FMR") and Radio Frequency Migration Plan ("RFMP"). STLs in the frequency range 821 – 832 MHz will continue to operate on a non-interfering basis and until the introduction of IMT 850.

The transitional period will be determined by the outcome of the process initiated through the RFSAP in compliance with the FMR and RFMP. There is an acknowledgement regarding the importance of determining a permanent band for STLs by taking the following into consideration, inter alia;

- Equipment availability and subsequently economies of scale;
- Challenges of deploying a simplex system into a duplex environment;
- The extend of spectrum usage in the duplex band 2025 – 2110 / 2200 – 2285 MHz;
- Propagation anomalies introduced by migrating into a higher frequency band;
- Impact on link requirements as a result of the propagation anomalies;
- The cost for the migration of STLs will be affected by the following, inter alia;
    - Proposed new frequency band;

- Installation requirements;
- Decommissioning of current STLs;
- Network planning for new STLs;

It is also important to note that though DDI may be available in segments, the impact on existing STLs in the 810 – 854 MHz bands must also be taken into consideration.

7.2.3. Mobile service: 790 – 862 MHz

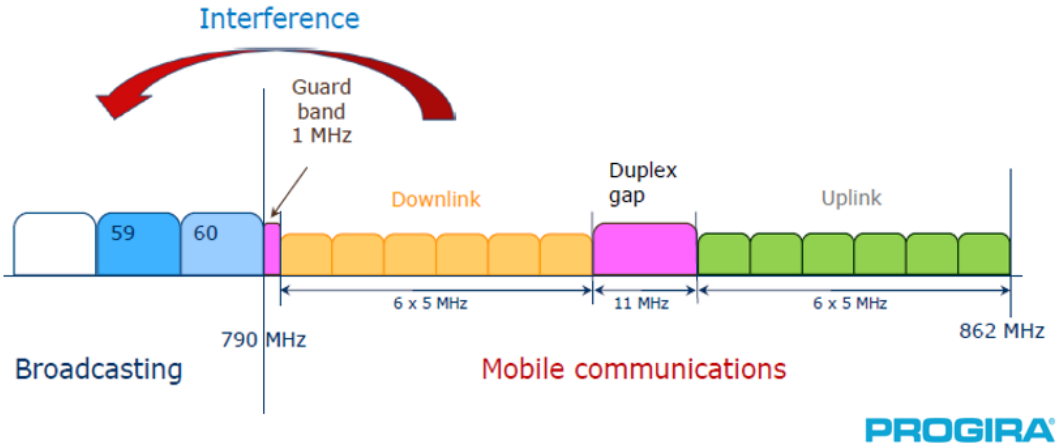
SENTECH acknowledges that post ASO, there are pockets in which terrestrial IMT services can be deployed successfully. The company's initial analysis imply that digital dividend 1 (DDI) may be available in the following areas post ASO:

- Bloemfontein;
- East London;
- Port Elizabeth;
- Gauteng Province;
- Durban;
- Nelspruit;
- Cape Town;

The deployment of IMT services and the adjacent channel co-existence of both services (DTT and IMT) should be in compliance with radio regulation footnote 5.317A:

> ***5.317A*** *The parts of the frequency band 698-960 MHz in Region 2 and the frequency bands 694-790 MHz in Region 1 and 790-960 MHz in Regions 1 and 3 which are allocated to the mobile service on a primary basis are identified for use by administrations wishing to implement International Mobile Telecommunications (IMT) – see Resolutions* ***224 (Rev.WRC-15)****,* ***760 (WRC-15)*** *and* ***749 (Rev.WRC-15)****, where applicable. This identification does not preclude the use of these frequency bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. (WRC-15)*

The diagram below, illustrates the likely interference scenario that must be adequately managed in the event mobile services are deployed adjacent to broadcasting services in the same geographic area.



8. SENTECH's preferred outcome

The co-primary allocation to broadcasting services in the bands 694 – 790 MHz and 790 – 862 MHz should not be removed. The introduction of mobile services can be co-ordinated. The broadcasting industry and mobile industry, under the leadership of the Authority should commence a workshop regarding coordination requirements and protocols with respect to the introduction of mobile services post-ASO.

In order to protect the integrity of terrestrial broadcasting services, BFWA or similar services should be excluded from spectrum assignment in the band 3600 – 4200 MHz. Also, the implementation of broadcasting services in the band 535.5 – 1606.5 kHz it is preferred that it becomes applicable to both analogue and digital services. SENTECH proposes that under Typical Applications in the band 87.5 – 108 MHz, the note should refer to sound broadcasting to ensure the inclusion of both analogue and digital applications.

SENTECH is of the view that in the band 174 – 240 MHz the implementation of DAB and DTT in the entire frequency band can be successfully coordinated. It is on this premises that the company requests that the 174 – 240 MHz frequency band be shared between digital terrestrial sound and digital terrestrial television broadcasting. In addition, SENTECH proposes that the broadcasting band be extended by 2 MHz from 238 to 240 MHz to enable the immediate implementation of digital sound broadcasting. In exchange, SENTECH recommends the band 246 – 254 MHz be made available for PMR and/or PAMR in place of the band 238 – 242.95 MHz.

With regard to STLs, SENTECH recommends that the fixed services be allowed to continue operating in the frequency band 821 – 832 MHz and continue to exist under the current "grandfathered" framework. STLs are predominantly deployed for terrestrial community sound broadcasting purposes. Taking into consideration the framework under which community sound broadcasters operate, SENTECH pleads with the Authority all future frequency

assignments for STLs should not attract spectrum licence fees. That is, the “grandfathered” framework be extended to the new frequency band assigned for STL deployments.

9. Conclusion

SENTECH thanks the Authority again for the opportunity to make a submission on the NRFP-17. Taking into consideration the extent at which the proposed changes in the NRFP-17 will likely affect the sustainability of SENTECH, the company has confidence that the Authority has no intention of negatively affecting the broadcasting industry and that all issues raised will be given due consideration.