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07 October 2014

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Dear Mr Makgotlho,

SABC'S SUBMISSION ON THE DRAFT IMT (INFORMATION MOBILE TELEPHONY) ROADMAP FOR CONSULTATION

Attached hereto for your attention, please find the SABC's submission on the Draft IMT Roadmap for consultation.

Yours sincerely

Mr Philly Moilwa
Acting Head of Strategy

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SABC SUBMISSION TO THE INDEPENDENT COMMUNICATIONS AUTHORITY OF SOUTH AFRICA ON THE DRAFT INTERNATIONAL MOBILE TELECOMMUNICATIONS (IMT) ROADMAP FOR CONSULATION

7 October 2014

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1 Introduction

The SABC would like to thank the Independent Communications Authority of South Africa (the 'Authority') for the opportunity to make a written submission on the Draft IMT Road Map for Consultation document of Government Gazette No.37948 of 27 August 2014. The SABC supports the Chairperson's intention to manage the nation's scarce natural resource (the radio frequency spectrum) to aid in the economic development of the nation. The SABC welcomes and appreciates the Chairperson's invitation to participate in public discussion and contribute to the intended radio frequency spectrum amendments.

The SABC will largely confine its submission to areas which are of concern to the business of the public broadcaster. Furthermore the SABC would like to request that it be given the opportunity to make oral representation to further substantiate its submission.

2 General Comments

2.1 The 700 MHz and 800 MHz bands

The Authority has provided three (3) options on pg. 73/233 for IMT configuration in the bands 700 MHz and 800 MHz and for the sake of this analysis the Authority has considered these two (2) bands together. The Authority has argued that these options have international presence and well-established ecosystem. The SABC would like to draw the attention of the Authority to the following items:

The Authority has indicated on pg. 24/233 that "*the band 694-862 MHz will be used exclusively for IMT (mobile services), subject to the outcome of WRC-15 and planning for this use of the band will be a concurrent process to the planning of the migration of the broadcast services*". It is important to note that it is only the 790 – 862 MHz band (digital dividend 1) that has been allocated to the IMT services on a primary basis. The 694 – 790 MHz band is allocated to mobile services on a co-primary basis as per Resolution 232. The allocation of the 694 - 790 MHz band to IMT services on a primary basis is not an agenda item for WRC-15.

The relevant WRC-15 agenda item, item 1.2, requires the Conference "*to examine the results of ITU-R studies, in accordance with Resolution 232 (WRC-12), on the use of the frequency band 694-790 MHz by the mobile, except aeronautical mobile service in Region 1 and to take the appropriate measures*". The agenda requires the technical and regulatory conditions applicable to the mobile service to be determined at the WRC-15 after considering the ITU-R studies on the impact on the impact of broadcasting services currently operating in the band. WRC-12 also resolved "*that the lower edge of the allocation is subject to refinement at WRC-15, taking into account the ITU-R studies ...*" The other dimension of this WRC-15 agenda is the refinement of the lower edge of the band i.e 694 MHz. The African groups' submission to the WRC-15 following a study, proposes a 9 MHz guard band after 694 MHz i.e. the IMT services channelling arrangement will begin at 703 MHz.

The SABC supports efficient spectrum utilization. However, the allocation of the 700 MHz band on a primary basis to the mobile services will have to follow a policy decision process. Among other things the process should include a study on not only the economic value of the band, but also its social value and the cost of migrating the current users of the band. This study should have proper and widespread consultations in order to arrive at a comprehensive outcome. The Deloitte study on this band falls short of this extensive consultation and the cost of migrating the incumbent from the band. The 800 MHz band (790 – 862) MHz band or the digital dividend I band has already been allocated to IMT on Primary basis. The allocation will be effective when broadcasting services have migrated to digital services and analogue broadcasting has been switched off.

2.2 The cost of migrating to the 7 Mux plan

There have been little discussions on the cost of migration of the broadcasting services from the 700 MHz and the 800 MHz bands. In order to aid the release of these two bands for IMT services, the Authority has proposed and coordinated a seven (7) Mux plan for South Africa with the ITU. The basis of the plan is to implement very large single frequency networks (SFNs) below 694 MHz. These large SFNs have the increased potential of self-interference.

The proposed arrangement will require that broadcasting services will encounter two types of migration – firstly, analogue to digital and then digital to digital migration. This will necessitate that radio frequency (RF) equipment (transmitters and combiners) have to be retuned at various transmission sites. This is a highly specialised area and there are not many experts in the country who can implement this. The alternative is to purchase new RF equipment which is already tuned to replace the old at each transmission site. This can be done with minimum disruptions to broadcasting as the old can be replaced with the new within a short time period. Retuning the RF equipment can take a couple of days per site which will result in major disruptions to viewers. A combination of the two scenarios where by new RF equipment are purchased for high impact sites and retuning are done at smaller sites, one at a time, is most probably the optimised solution. Surely the move from the current two (2) Mux plan to the proposed seven (7) mux plan will take a lot more effort and cost and might take a longer period of time than expected.

As there is particularly no international experience in the implementation and operations of very large SFNs for DVB-T2, it is important for a trial to be conducted in the country. This will among others increase the implementation and operational experience which is essential for long-term operation. It is the submission of the SABC that the Authority takes decisive steps to facilitate this trial in order to aid the implementation of the large SFNs which will in turn fast track the migration of broadcasting services from both analogue to digital and digital to digital and the release of the 700MHz and 800 MHz or the digital dividend bands for IMT services.

2.3 The Migration of SAB and STL Services

There are other services which are operating in the 700 MHz and the 800 MHz bands which need to be noted in considering migrating broadcasting services from these bands. The services ancillary to broadcasting (SAB) services includes wireless microphones, wireless audio systems, studio to transmitter links (STL) services etc.

There are currently about 20 STL links that are operating in the 694 – 862 MHz frequency range. These links support SABC's 19 radio broadcast networks. There are also a good number of wireless microphones which are operating in the 734 to 776 MHz frequency range currently in use at SABC's studios. Even though ICASA has proposed frequency bands for migration of STL links (1.6 GHz) and wireless microphones (470 – 694MHz) bands, It is important to note that these migrations will have financial implications.

2.4 450 to 470 MHz

The SABC uses these frequencies all over the country depending upon production requirements. This is a critical part of our operation. Most of these are at short notice for a short period and solving interference problems would likely take longer than what the event lasts. The use of exiting IMT networks using VOIP for this purpose has proved not to be reliable enough as the networks fail due to the exceptionally large number of users that attend a major event.

The Tuning range of the current Equipment is 440 Mhz to 470 Mhz. The SABC needs both Paired and unpaired frequencies. The SABC could move to the 440 to 450 Mhz band at relatively low cost. Moving to other frequencies would take a time frame of 5 to 10 Years to allow for the normal depreciation of assets

2.5 2400 to 2500 MHz

Broadcasters currently use this band for their MOBILE Airborne outside broadcasting links and Mobile RF cameras. The small size, portability and available power make the migration to bands above 3000 MHz impractical as the equipment would not function efficiently at these frequencies. The SABC has migrated its static OB contribution links to 7GHz to reduce congestion in this band.

SABC recently replaced all the analogue links in keeping with analogue to digital migration national priority. This has reduced the bandwidth requirement to 8MHz per channel. During this project SABC made several requests to ICASA to get assurance that the band will still be allocated to broadcasters in future to ensure that the investment is protected and the Authority did not object or provide clear guidance.

The IMT Roadmap time frame (pg118/233) 9.5 gives a migration time frame of 9-10 years without giving specifics on the migration of OB links time lines. The SABC would recommend that OB links remain in this band for the next five to ten years in order to realize a return on investment on the newly acquired digital infrastructure.

The SABC requests that a feasibility study needs to be done on the migration of OB Links as proposed by ICASA in Terms of the Radio Frequency Migration Regulations and Radio Frequency Migration Plan (3 April 2013). Moving to the band between 1500MHz to below 3 GHz could be done in a shorter time. Moving above the 3GHz band would require 5 to 10 years

2.6 Time lines for migration

The migration of Broadcasters from the 800 MHz band or the analogue to digital migration was initially planned to be completed by the mid June 2015. The Authority also asserts on pg 15/233 that *"...the conversion to digital terrestrial broadcasting (DTT) and the switch-off of analogue broadcasts should be completed in mid-2015"*. Noting that the BDM policy has not yet been updated and that it might actually take a while before set top boxes are available in the market to support the migration, it can be said that realistically speaking, the migration will not be completed by the mid June 2015 planned date. The SABC submits that the Authority should take all reasonable steps to protect broadcasting and its ancillary services operating in this band until analogue switch-off which is likely to take a considerable number of years including delaying any allocation of the band to IMT services. The migration from the 700 MHz or the digital to digital migration will take place after policy decision has been finalised and analogue services have been switched off.

3 Answers to specific questions

3.1 IMT 700 and IMT 800

Question 2.2.1 and 2.4.1 - The Authority invites industry views on Option 1 (ITU Region 3)

This option proposes to use a combination of spectrum, one of which is the frequency range 703 to 803 MHz as shown in Figure 1 below.

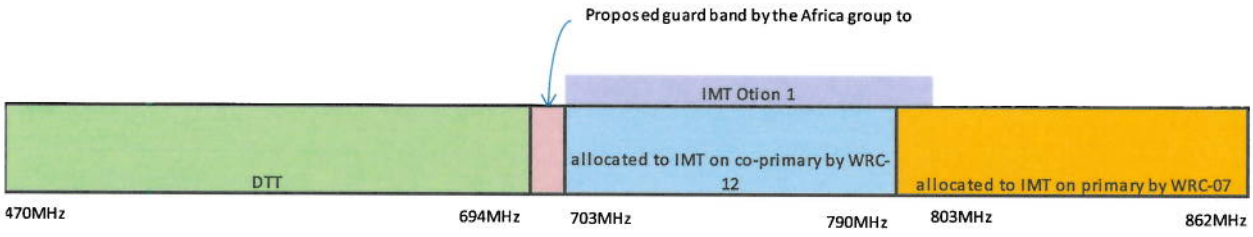

Figure 1: UHF Spectrum

Part of the spectrum to be used in this option spans across the entire 700 MHz band which has been allocated to IMT on co-primary basis. SABC submits that the allocation of the 700 MHz to IMT on primary basis has to follow a national policy decision process whereby the cost of the migration, including the analogue to digital migration and the digital to digital migration of the incumbents are taken into account. These two different migrations which have to be implemented over a short sequence of time has the potential to disrupt broadcasting business processes and might lead to viewers moving to different broadcasting platforms resulting ultimately in loss of revenue. The study

preceding this decision should also look into giving incentives to broadcasters in order to be compensated for this double migration over a short time period.

The following analysis is made with the following assumptions:

- There may be no developments on the efficiency of DVB-T2
- In doing the following analysis, consideration was also given to various configurations of the DVB-T2 technical parameters.
- The 9MHz Guard band that is proposed by the SADC is highly supported.

Spectrum Analysis (UHF 470 MHz to 862 MHz)

	Channels	Range	Dividend (MHz)	Dividend % of UHF	Range	Remaining BS Spectrum (MHz)	Remaining BS % of UHF
Dividend 1	9	790 to 862	72	18	470 to 790	328	82
Dividend 2	12	694 to 790	96	24	470	304	76
ASO	-	470 to 694	-	-		232	58

Service Analysis (UHF 470 to 694 MHz)

	Channel	Channels per mux	7 Mux Capacity	DVB-T2 Evolution Roadmap	Year	Remarks
Standard Definition	2	16	112	No developments	2010	
High Definition	4	8	56	No developments	2014	
Ultra high Definition	8	4	28	No developments	2016/ASO	

3.2 Dual illumination Market

Each multiplex has capacity of+ 28 Mb/s which translate into 22 SD channel and 6 HD channels. There are few additional channels possible, only HD capability and other digital broadcasting value added functions are possible. The WRC decisions to reduce the UFH spectrum has exerted pressure on the terrestrial spectrum of broadcasting industry, considering that DVB compression developments are not moving fast enough to the compensate for lost spectrum.

3.3 ASO Broadcasting Terrestrial Market

The 7 Multiplex will only provide 28 channels on Ultra HD at analogue switch off. The DVB-T2 evolution roadmap does not provide projections on the compression efficiency developments. The above analysis is therefore based on assumption that the DV-T2 will still be at same efficiency level. What this means is that one multiplex will provide one channel of ultra HD.

3.2 IMT3500 unpaired TDD spectrum

Question 2.10.1 The Authority invites industry views on migration out of 3400-3600 MHz from FDD usage to TDD.

All transmission linking in the Sentech network is highly dependent on 3500 MHz or the C-band satellite for sending signals from Sentech's Transmission Park (STP) to transmitters nationwide.

Without a robust C-band signal to send signals to the transmitters network there will be no broadcasting (both radio and TV) in the country during major rain storms which are very prevalent during the summer season.

Until such time that all these services can be migrated to a fibre network to backhaul the services from STP to the transmitters, the C-band transmissions need to be protected. The SABC will need more than ten years to effectively roll out fibre contribution links to all the transmitter sites.

4 Concluding remarks

The IMT roadmap is dependent on the completion of the Digital migration process by the broadcasters. Considering what has transpired in the broadcasting market over the past five years one would be very cautious to add any new hurdles to the migration process. These processes, including IMT, are dependent on the successful completion of the digital migration process, yet all the required resources for the digital migration process are channelled towards post migration activities/projects.

SABC would like to draw the Authority's attention to the following digital migration enabling processes which should be given priority in order to advance digital broadcasting national agenda and in turn enable all the other post migration processes.

4.1 Necessary Digital Migration enabling Processes

Process	comment
Digital Migration	No BDM policy update, no performance period publication
STB	No decision on control, no manufacturing time lines and availability of prospects
7 Mux plan	Large SFN's have a potential of self-interference and the cost of band migration to the below 694MHz has not been quantified
Awareness campaigns	Proper plan to inform the public about the Digital migration

Call centre preparation	This is partly dependant on the STB control decision which will impact the size and scope of the call centres
Training on the installation of antenna systems and STBs	This is partly dependent on STB control. Scope of training and syllabus will be directly impacted
STB distribution Logistics	Proper project plan for effective distribution is partly dependent on the STB control decision

4.2 Digital Migration Inhibiting - Post Migration Processes

Process	**Comment**
IMT	Allocation of the proposed spectrum diverts attention and resources from the Digital Migration imperatives.
Licencing of new broadcasters	Of the previous licensees only one (TOP TV/ STAR sat) was able to launch. This is an adequate market indicator that the market is close to saturation. (This can be seen as planned broadcasting market failure or regulator capture/collusion)
MUX 3	Mux 3 was intended for mobile Mux and it is coordinated and registered as such on the ITU GE-06 plan. This is hampering an opportunity for broadcasters to diversify their digital broadcasting platform portfolio. The public broadcaster is hereby being side-lined and hampered from competing fairly with other broadcasters.
FTA licencing ITA	As indicated above, the broadcasting market is close to saturation. SABC has previously submitted to the Authority the urgency and the need for a proper market study to be conducted before issuing a new licence especially in the FTA platform given that SABC's financial model is not finalised.
TV White Space	Resources are incorrectly directed towards minor gains.

All of the above points to the fact that planning is possible, but it seems as though the processes and resources are inappropriately channelled in an uncoordinated manner towards fulfilling the agendas of Commercial IMT agendas.

5 Recommendations

The SABC recommends the following:

- Given the above conclusion, SABC submits that the Authority should channel its efforts into ensuring the successful completion of the Digital Migration process bearing in mind that no dividend will be released without finalisation of the Digital Migration Process. It is further recommended that the Authority should defer the IMT process for the next 3 to 5 years and proper sequencing and prioritisation of Digital Migration activities should be the current focus of the Authority. Lastly, the SABC strongly submits that this recommendation will help to eliminate the disjuncture and dichotomy within the broadcasting industry as depicted above.

- **IMT 3500MHz (C-Band)** – C-band transmissions need to be protected until such time that all SABC transmission services can be migrated to a fiber network to backhaul the services from STP to the transmitters. The SABC will need more than ten years to effectively roll out fiber contribution links to all the transmitter sites.

- **450 MHz to 470 MHz:** The Tuning range of the current Equipment is 440 MHz to 470 MHz the SABC needs both Paired and unpaired frequencies. The SABC could move to the 440 to 450 MHz band at relatively low cost. Moving to other frequencies would take a time frame of 5 to 10 Years to allow for the normal depreciation of assets.

- **2400 to 2500 MHz:** The SABC would recommend that OB links remain in this band for the next five to ten years in order to realize a return on investment on the newly acquired digital infrastructure.