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20 October 2017

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Per E-mail: rmakgotlho@icasa.org.za

Dear Mr Makgotlho

**RE: TELKOM'S WRITTEN SUBMISSION ON THE SECOND DRAFT RADIO FREQUENCY
SPECTRUM ASSIGNMENT PLAN FOR THE FREQUENCY BAND 825 TO 830 MHz AND 870
TO 875 MHz**

Telkom SA SOC LTD ("**Telkom**") welcomes the opportunity to provide written comments to the Authority pertaining to the second draft Radio Frequency Spectrum Assignment Plan for the frequency band 825-830 MHz and 870-875 MHz ("**draft RFSAP**").

Please find herewith Telkom's written comments.

Yours Sincerely



Siyabonga Mahlangu
Group Executive: Regulatory Affairs and Government Relations

Submission to the Independent Communications Authority of South Africa

Second Draft Radio Frequency Spectrum Assignment Plan for the bands 825-830 MHz and 870-875 MHz

Government Gazette No. 41082 (Notice 648 of 2017) dated 1 September 2017

Telkom SA SOC Ltd

Submission date: 20 October 2017

1 Introduction

The Independent Communication Authority of South Africa (“**Authority**” or “**ICASA**”) published the Second Draft Radio Frequency Spectrum Assignment Plan for the bands 825-830 MHz and 870-875 MHz in Government Gazette No. 41082 (Notice 648 of 2017) dated 1 September 2017 (“**IMT850 draft RFSAP**”) and invited written representations from interested persons.

On 14 November 2014, the Authority published the draft Radio Frequency Spectrum Assignment Plan (“**RFSAP**”) for the 850 MHz band, amongst others, for public consultation. This is almost three years ago. The Authority prescribed several RFSAPs on 4 May 2015. The IMT850 RFSAP was not concluded at the time and deferred until further notice.

The Authority should note that the use of the frequency bands potentially affected by the draft RFSAP has changed since the previous consultation almost three years ago. Telkom respectfully requests the Authority to consider all matters, including those in this submission, applicable to the current use of the 700 MHz/800 MHz/900 MHz frequency range before a final decision is made on the use of IMT850. In this submission, Telkom also reiterates its views as expressed in our previous submission to the Authority in 2015. Telkom also requests the Authority to consider the 2015 submission in finalising the IMT850 RFSAP.

General matters are addressed in section 3 whereas specific comments are raised in section 4.

2 Executive Summary

Telkom is of the view that it is premature to publish the IMT850 RFSAP in so far as it relates to the creation of a 2x5 MHz band for IMT. The main arguments are listed below and discussed in detail in section 3:

- Not only is there no reference to the use of the bands 825 – 830 MHz paired with the 870 – 875 MHz for IMT in the South African National Radio Frequency Plan (NRFP), specific reference to IMT850 has been deleted by the Authority from the draft updated National Radio Frequency Plan published in December 2016 for consultation.

- The previous consultation was almost three years ago and substantial changes in the use of the applicable frequency bands have occurred since then, which must be considered.
- It is clear from the draft RFSAP that additional compatibility studies must be done before IMT will be able to use this band.
- It is not clear if 2x3 MHz or 2x5 MHz will be made available for IMT.
- Sharing studies between IMT850 and other licensed systems and services are outstanding and must be addressed to ensure protection of these.
- Impact on licence exempted services must be further considered.
- IMT850 is more compatible to Region 3 countries compared to Region 1 countries (including South Africa) in terms of the use of IMT within the range 694-960 MHz band.
- SADC and South Africa concurred that the use of 850 MHz in the region is not appropriate.

The migration of Neotel's CDMA-2000 systems from the band is supported. This migration should however not give Neotel (Liquid Telecom) access to the IMT850 band for use of IMT service. If IMT850 is created, access to this band will be done through an ITA as indicated in the draft RFSAP.

3 General comments

3.1 Use of 850 MHz band for IMT in South Africa

As per section 2.1 of the draft RFSAP, “A *Radio Frequency Spectrum Assignment Plan (RFSAP)* provides information on the requirements attached to the use of a frequency band in line with the allocation and other information in the National Radio Frequency Plan (NRFP).” (Own emphasis)

The bands 825-830 MHz paired with 870-875 MHz, or IMT850, is not identified as an IMT band in either the current NRFP, or the draft updated NRFP (published in Government Gazette 40480, dated 9 December 2016). Within the frequency range 694 MHz to 960 MHz, only IMT700, IMT800 and IMT900 are identified in the table of frequency allocations as IMT frequency bands used or to be used in South Africa. Further, whereas NF9 (“IMT Frequency Bands – terrestrial”) in the current NRFP (2103 plan) does list IMT850, this entry was specifically removed by the Authority from the draft updated Radio Frequency Plan. It can therefore be deduced that the Authority decided, as part of updating the NRFP, that the IMT850 band will, at least for the time being, not be considered for South Africa. The decision not to adopt IMT850 in South Africa is also in line with recent discussions in SADC where it was indicated that the IMT850 band should not be used within SADC because of the conflict with IMT800 and IMT900, and that the CDMA-2000 systems should be migrated out of the 850 MHz band. South Africa was aligned to this at the previous SADC meeting held in Livingston, Zambia (3-7 July 2017). Considering the above, it is therefore alarming that the Authority now publishes a second draft IMT850 RFSAP, specifically as it relates to the use of IMT850. The migration of Neotel’s CDMA-2000 systems from the 850 MHz band is however supported in principle and discussed later in this submission.

It is clear from the draft IMT850 RFSAP that additional work is required before IMT could be introduced in the 850 MHz band in South Africa. This is addressed in section 10.3 of the draft IMT850 and captured in Considerations 2b and 3b in Figure 1. There is no indication when Neotel will cease deploying CDMA-2000 systems in the 850 MHz band and when GSM-R will migrate to LTE-R, which will impact the availability of IMT850.

Considerations 2b and 3b indicate a “long-term” solution, which can only be implemented once the further coexistence studies with GSM-R have been done by the Authority. The use of either 2x3 MHz or 2x5 MHz will be determined through these additional coexistence studies. It is therefore premature to indicate that 2x5 MHz will be available and as such the IMT850 band cannot be adopted in South Africa.

It should also be noted that the 850 MHz band plan is more suitable for ITU Region 3 countries. In Region 3, 2x45 MHz in 700 MHz and 2x25 MHz in 850 MHz have been adopted. These two bands partially overlap IMT700, IMT800 and IMT900 adopted in Region 1 countries (including South Africa), which makes them incompatible with these key Region 1 IMT frequency bands. The Authority has not proven that the proposed guard bands, which are necessary to protect the systems operating in adjacent bands such as IMT800 and GSM-R or LTE-R, are sufficient to protect these services. In fact, as highlighted above, the Authority indicated in section 10.3 of the draft RFSAP that additional coexistence studies are required.

The use of the frequency range 863-870 MHz for licence exempted services, must also be considered by the Authority. This is addressed in paragraph 3.2 below.

Telkom also wishes to bring to the attention of the Authority the fact that Telkom has been assigned (licensed) spectrum in the 864.1-868.1 MHz band. Based on the draft RFSAP, the Authority ostensibly did not consider Telkom’s assignment in this band. If the deployment of IMT850 systems and networks in South Africa causes harmful interference to Telkom’s current and planned systems and services, Telkom will be prejudiced. This is addressed further in paragraph 3.3 below.

Based on the above, Telkom is of the view that it is premature to identify IMT850 in South Africa. Telkom nevertheless supports the proposal to migrate Neotel’s CDMA-2000 assignment within the 850 MHz band, as an interim solution, to avoid harmful interference with PRASA’s GSM-R systems. This is addressed further in paragraph 3.4 below.

Telkom therefore does not support the creation of IMT850 as a band for the deployment of IMT services in South Africa at this stage, at least until all the issues raised above have been addressed satisfactorily.

3.2 Impact of IMT850 on licence exempt services in the adjacent band

It is common cause that the frequency band 863-870 MHz is used for various licence exempt type services, also referred to as SRDs (Short Range Devices). These include wireless microphones, RFIDs and non-specific SRDs. The use of these bands by licence exempted devices (or apparatus) is prescribed in Annexure B to the Radio Frequency Spectrum Regulations, as amended. (Government Gazette No. 38641 dated 30 March 2015).

The Authority resolved to avoid a direct overlap between IMT850 and licence exempted services, by starting IMT850 at 870 MHz instead of 869 MHz, as proposed in the IMT Road map. Although this move will reduce interference with licence exempt services, it may not be sufficient to eliminate all harmful interference. This is confirmed by the Authority in section 9.5 of the draft IMT850 RFSAP, where the authority states as follow:

“The Authority recognises that there may be issues with respect to interference that may be experienced by typical applications using apparatus in the 863-870MHz band which may operate on an licence exempt basis (in line with Radio Frequency Spectrum Regulations Government Gazette 38754 (Notice 386 of 2015) and Spectrum Reallocation for RFID GG 31127), adjacent to the Mobile services.” (own emphasis)

Telkom agrees with the general principle that licence exempted services operate on a “No interference and No Protection” (“**NINP**”) basis. However, the Authority should acknowledge that several networks and services have been, and continue to be deployed, in the 863-870 MHz frequency range. Amongst these are Low Power Wide Area Networks (“**LPWAN**”) providing, amongst others, IoT (Internet of Things) services. These networks and services are deployed by several operators in South Africa as well as in Europe and elsewhere. Investments have been made and services are being provided to the public including businesses.

LPWAN is a new category of network that has arisen, and is seeing global adoption, since the previous consultation on IMT850 three years ago. Telkom and others are operating LPWAN's within the currently available license-exempt bands – and these networks are

at risk from harmful interference from the proposed IMT850 services, as confirmed by the Authority. An example implementation of LPWAN is LORA™ WAN.

The use of the frequency range 862-870 MHz for SRDs, including LORA™ WAN, is addressed in ECC Report 261 (*“Short Range Devices in the frequency range 862-870 MHz”*). This report was recently approved on 27 January 2017. Telkom wishes to bring this report to the attention of the Authority as it provides valuable insights into this matter. This report should be used to further the discussion on the adoption of IMT850 in South Africa. Telkom wishes to highlight one paragraph from this document, which is specifically relevant to this matter:

“All CEPT Administrations should be also alerted to the emergence and wide spreading of the unlicensed use of LPWAN systems mostly in the band 865-868 MHz, such as the example of LORA™ WAN. Administrations wishing to protect LP WAN systems considered in this report should implement conclusions as given in the section on WAN (section 6.2.4). Other Administrations need not follow this restriction. With regard to the studied LP WAN case it should be noted that only network access point as a victim has been considered. The need for further studies may be considered once the ETSI system reference document on LP WAN is available.”

Section 5.1 of ECC Report 261 provides valuable information with respect to the issue of coexistence between IMT operating in the IMT850 band and SRDs. Although the ECC Report addresses the compatibility between IMT operating in the 800 MHz band and SRDs, it could be used as a basis for further assessing the sharing between IMT in IMT850 and SRDs. Telkom recommends that this be further assessed.

Telkom also wishes to highlight the fact that the identification of bands for SRDs is a very complex technical task. Following very detailed spectrum sharing and compatibility analysis, certain frequency bands are identified for use by SRDs. These analyses will consider, amongst others, the potential for interference between all services within the same and adjacent bands. These studies are done considering the specific radio frequency environment in the frequency range under discussion. For the use of the band 862-870 MHz, as also indicated in ECC Report 261, the radio environment considered

by Europe in their assessment of using this band for SRDs, did not include the use of band A1 (850 MHz) from ITU-R Recommendation M.1036-5. Only the 800 MHz band was considered in the assessments as 850 MHz is not used in Europe (see also section 3.1 above on use of 850 MHz in Region 1). The use of this band for licence exempted services in South Africa is reflected in Annexure B of the Radio Frequency Spectrum Regulations, 2013, which is based on ERC Recommendation 70-03 (*“Relating to the use of Short Range Devices (SRD)”*).

The Authority therefore has an added responsibility, to licensees, users of spectrum and consumers, to ensure that the introduction of IMT in the 850 MHz band in South Africa does not adversely affect the radio environment and use of licence exempted services in the 862-870 MHz band. This is in line with section 30(3) of the Electronic Communication Act (Act No. 36 of 2005), quoted below for convenience:

“The Authority must, in performing its functions in terms of subsection (1), ensure that in the use of the radio frequency spectrum harmful interference to authorised or licensed users of the radio frequency spectrum is eliminated or reduced to the extent reasonably possible.” (Own emphasis)

Telkom therefore requests the Authority to seriously consider the developments in the use of the band 863-870 MHz to ensure that the impact on these new networks and systems are protected to the extent possible.

3.3 Impact of IMT850 on Telkom’s licensed services

Telkom is concerned that our existing and planned future systems operating in the licenced band 864.1-868.1 MHz have ostensibly not been considered by the Authority in developing the IMT850 band plan. In Figure 1, the Authority refers to the use of the band 862-870 MHz for Alarms and RFIDs; however, no mention is made of Telkom’s assignment in this band. The use of the band 864.1-868.1 MHz by Telkom is reflected in the NRFP (FWA). Telkom has been licenced in this band for many years and recently renewed this licence considering planned future use of the band.

In the footnote at the bottom of page 12 of the draft RFSAP (page 519 of the Gazette), the Authority refers to the extensive consultation with affected parties to resolve the

overlap between IMT850 and GSM-R. The Authority therefore resolved to shift the CDMA850 allocation down to provide a suitable guard band with GSM-R services. The Authority then mentions that unlicensed devices operate on a non-interference and non-protected basis; this however does not apply to Telkom's use of the band as we have been licensed and operate on a primary basis.

What is concerning for Telkom is that the Authority acknowledges that harmful interference to typical systems operating in the range 863-870 MHz may be experienced. Telkom operates within this range although on a licensed basis. The proposed IMT850 band will result in only 1.9 MHz guard band between the proposed IMT850 systems and Telkom's systems; it has not been proven that this guard band will be sufficient to protect Telkom's licenced services. This must be further investigated.

In conclusion, Telkom requests the Authority that the use of IMT850 in South Africa be postponed until these potential compatibility issues have been adequately addressed. In any event, this will give the Authority time to also consider other issues stipulated in the draft IMT850 RFSAP, which must be addressed as discussed above.

3.4 Use of IMT850 by Neotel (or Liquid Telecom)

Telkom is concerned that there are possible inconsistencies between section 9 and section 10 dealing with migration. It is paramount that these inconsistencies be removed to ensure that there is no doubt as to the implementation of the IMT850 RFSAP.

In short, these two sections seemingly deal with the following main issues namely:

1. the interim migration (or shift) of Neotel's CDMA systems downwards to fall within the bands 825-830 MHz and 870-875 MHz to avoid interference with PRASA's GSM-R (and sharing with broadcasting systems and typical applications operating on a licence exempt basis); and
2. the creation of the IMT850 band for future use.

It is important that these two independent issues are not converged into one where Neotel's CDMA assignment in CDMA850 is changed (converted) into an IMT850

assignment or licence. Telkom requests that these issues be clarified in the RFSAP to ensure that there is no doubt. In this regard, Telkom is concerned that section 9.4 could be misinterpreted with regards to the meaning of “migration of CDMA-2000 systems” to the “designation band”. Telkom could support the move of the CDMA850 assignments downwards, as an interim measure, to fall within the 825-830 MHz and 870-875 MHz frequency bands. However, this does not mean that Liquid Telecoms CDMA850 assignment (individual 1.23 MHz CDMA-2000 channels) will be “converted” to an IMT850 assignment (i.e. 2x5 MHz). The migration of the CDMA-2000 assignments into the bands 825-830 MHz and 870-875 MHz should under no circumstances give Liquid telecom (Neotel) any right of access to the IMT850 band, if this band is created in future. As indicated in section 8.1, an Invitation to Apply (ITA) should be published for assignments in the IMT850 band.

Nevertheless, as indicated above, Telkom does not support the creation of IMT850 until the Authority can guarantee that all issues of harmful interference with other services, including Telkom’s current and planned systems, have been adequately addressed.

See also Telkom’s comments on migration in section 4.7.

4 Specific comments

4.1 Section 3.8: References to ITU Reports and Recommendations

4.1.1 Recommendation ITU-R M.2012-1

Recommendation ITU-R M.2012-1 was replaced by Recommendation ITU-R M.2012-2; the Authority must therefore refer to the latest version.

4.1.2 Report ITU-R 2241-0

The reference to Report ITU-R 2241-0 is incomplete. A complete and accurate reference will be Report ITU-R M.2241-0 (“M” should be added).

4.1.3 Recommendation ITU-R M.1036-4

This recommendation was replaced by Recommendation ITU-R M.1036-5; the Authority must therefore refer to the latest version.

4.2 Sections 5.4, 5.7 and 9.5: Harmful Interference

Per section 5.4, harmful interference to “other” radio systems or services may be caused by IMT850 systems. There are however no details as to what “other” systems or services may experience harmful interference and what modifications must be done by which systems to remove harmful interference to “other” systems or services.

Telkom recommends that section 5.4 be further elaborated and clarified. It is vital for both the potential user of IMT850, Neotel as a current licensee and incumbents operating in adjacent frequency bands to understand the details pertaining to possible harmful interference on their operations and what remedial action will be taken and under which circumstances. In all cases, harmful interference to licenced services should be avoided, not remedied. See also Telkom comments on the use of the band 864.1-868.1 MHz above.

The issue of interference is also addressed in section 5.7. Telkom recommends that section 5.7 be deleted as it is a repetition of section 5.4. If it must be retained, “*major*

interference” should be changed to “*harmful interference*”. The two sentences should also be combined as one sentence.

Interference to licence exempted services per section 9.5 of the draft RFSAP has been addressed in section 3.2 above.

4.3 Interference mitigation / coordination

Telkom expressed concerns regarding interference mitigation and coordination in its submission on the previous draft RFSAPs in 2015. These concerns have not been addressed; in fact, this draft RFSAP seems to be an exact copy of the 2014 draft RFSAP. Telkom therefore repeats the essence of its 2015 response below and requests the Authority to consider these before finalising this RFSAP.

Per section 5.8 of the draft RFSAP, “*criteria and guidelines for interference mitigation are described in Appendix D*” of the draft RFSAP. Appendix D contains a proposed “*Interference Resolution Process*”, which has been copied from ECC/REC(11)04 (Annex 4) (or ECC/REC(11)05)). This recommendation is based on the European agreed methodology for frequency planning and coordination of mobile systems, including the resolution of harmful interference between European Member States in the band 790-862 MHz.

Telkom submits that this procedure, even if it is acceptable as a way forward in dealing with harmful interference, has not been agreed within SADC or specifically with our neighbouring countries, to whom it will apply. This procedure therefore cannot be prescribed as regulation before the requisite agreement with neighbouring countries has been obtained. Adding a note to Appendix C stating that: “it is an example and can be adapted for the SADC countries” is not adequate. The question remains as to when these procedures will be discussed and agreed within SADC in general, or with our neighbouring countries specifically, and the RFSAP (including those already prescribed) updated to reflect local agreed procedures.

In the context of cross-border frequency coordination and resolution of interference, it is also important to consider the HCM4A (Harmonised Calculation Method for Africa) draft agreement for Sub-Saharan Africa which was developed as part of the HIPSSA (Harmonisation of ICT Policies in Sub-Saharan Africa) project. This agreement deals specifically with cross-border frequency coordination between fixed and land mobile systems and includes the IMT frequency bands addressed in the draft RFSAPs. Article 5 of the draft agreement deals specifically with the reporting of harmful interference and the resolution thereof. This agreement is important since it was considered by SADC Ministers for adoption within the sub-region, although it is not clear if it has already been adopted. The agreement has also been discussed within CRASA and views were expressed that it could be an appropriate methodology for addressing cross-border frequency coordination in various frequency bands, including the IMT frequency bands. South Africa also formed part of the committee developing the HCM4A draft agreement and therefore this agreement should be considered. Therefore, rather than adopting Appendix D, Telkom recommends that the possible adoption of the HCM4A agreement first be explored as it deals with all frequency bands used for fixed and land mobile services. It is also noted that reference is made in the draft RFSAP to “HCM” in the area calculations in Appendix B, although this has never been clarified. It should be noted that HCM is the European agreement, which was used as basis to develop HCM4A. The RFSAP therefore cannot refer to HCM as South Africa is not party to this agreement; whereas it should refer to HCM4A; this can also not be done since South Africa has not officially adopted this agreement. On the other hand, it may be possible that some of our neighbouring countries have already adopted HCM4A as they were also party to the drafting of the agreement and this should be considered.

Based on the above, Telkom is of the view that it is pre-mature to prescribe the proposed procedure until the HCM4A agreement has been considered and the acceptable procedure discussed with neighbouring countries. The same applies to Appendices B and C.

Section 5.8 states that “*Criteria and guidelines for interference mitigation are described in Appendix D*”. The title of Appendix D is “*Interference Resolution procedure*” (own emphasis). Telkom wishes to point out that in spectrum management there are significant differences between the terms interference “resolution” and “mitigation”, which deals with resolving

interference and preventing interference respectively. Telkom recommends that the Authority verifies the use of these terms and make the necessary amendments as required. Based on the content of Appendix D, it is suggested that the title be changed to “Request for code coordination” or, in line with section 5.8, “Criteria and guidelines for interference mitigation”.

The criteria and guidelines for interference mitigation contained in Appendix D is specific for cross border only; it therefore does not address national coordination between IMT850 and other systems and services (as discussed in the draft IMT850 RFSAP). Telkom recommends that this section be amended as follows:

“Criteria and guidelines for cross-border interference mitigation are described in Appendix D.”

4.4 Section 6.2: Implementation

The intention of section 6.2 is not clear. In the context of the 850 MHz frequency range, there are at least four bands or sub-bands namely:

- IMT850 (825-830 MHz and 870-875 MHz)
- CDMA850 (827.775 – 832.695 MHz paired with 872.775 – 877.695 MHz)
- ITU-R Rec. M.1036 A1 (824-849 MHz paired with 869-894 MHz)
- A1 sub-band potentially available in SA for assignment i.e. that portion of A1 that does not overlap with IMT800 or IMT900 (824-832 MHz paired with 869-877 MHz)

If the Authority therefore states in section 6.2 that “...*no new assignment for IMT850 in the band 824-832 MHz paired with 869-877 MHz shall be approved...*” (own emphasis), it may create confusion as the two underlined frequency bands are not the same, as indicated above. This must be clarified and corrected, as required. Telkom’s understanding is that, in future, only the bands 825-830 MHz paired with 870-875 MHz will be allowed. With the adoption of the IMT850 band, no new frequency assignment will therefore be made anywhere outside the IMT850 frequency band, within the broader A1 frequency range. Also, Neotel’s current CDMA-2000 assignments will be shifted downwards but no new CDMA-2000 assignments will be made.

4.5 Section 8: Assignment

Per section 8.1, “...an ITA shall be published for new assignments in this band...” (own emphasis). “This band” refers to IMT850 as the subject of the draft RFSAP. Therefore, there is currently no assignment in this band. Neotel’s assignments are in the CDMA850 and is not applicable to the newly created IMT850 frequency band, even if these are temporarily operating within the IMT850 band. Telkom recommends that this statement be changed to:

“An Invitation to Apply shall be published for ~~new~~ assignments in ~~this~~ the IMT850 band in line with regulations developed in terms of section 31(3) of the Act.”

4.6 Section 9: Amendment

The title “Amendment” is not sufficient and should be further expounded based on the intent of the section. Is this the amendment of Neotel’s licence, changing CDMA850 to IMT850 RFSAP, or both or something else?

4.6.1 Sections 9.1, 9.4 and 9.5: Transitional arrangement

The time lines for the implementation of the transitional arrangements and eventually the creation of IMT850, is not clear from the draft RFSAP.

The Authority refers to “*transitional arrangements*” in section 9.1, which is then elaborated on in the sections that follow dealing with, amongst others, migration of broadcasting services from the bands above 694 MHz. In this context, the Authority refers to “*performance period*”, which has a specific meaning in relation to the broadcasting migration process. The “*performance period*” is not necessary related to the “transitional arrangement period”, as referred to in section 9.6. The transitional arrangement period has not been defined.

Other sections add to this uncertainty for example, section 10.2 states that, in the “*long run*”, Neotel must cease using this band for CDMA. What is considered “*long run*”? This is also touched on in section 10.3 (and in Figure 1), which provides a “*long-term*” solution when CDMA850 has ceased and IMT850 is deployed. This is also dependent on further co-existence studies although it is not clear when these will be done.

In section 9.4 the Authority indicates that CDMA850 services in the “*affected areas*” must migrate “*systematically*” to the designation band. Again, it is not clear what time frame is considered for the migration of CDMA850 systems. It is assumed that “*affected areas*” relates to the coordination with GSM-R systems but should be specified to ensure certainty.

4.7 Section 10: Radio Frequency Migration

4.7.1 Section 10.1.1

In section 10.1.1 the Authority indicates that, as an immediate measure, the CDMA assignment of Neotel is to be shifted by 2 MHz to fall within the IMT850 band (i.e. 825-830 MHz // 870-875 MHz). It is not clear how the Authority will implement this.

Per information available to Telkom, Neotel has been assigned four CDMA-2000 carriers in each of Johannesburg, Durban, Cape Town and Pretoria. Some of these channels are the same. Based on our assessment of CDMA-2000 frequency channel plans, these non-contiguous channels fall within the frequency range 826.545 – 832.695 MHz // 871.545 – 877.675 MHz (2x6.15 MHz). The corresponding lowest and highest carrier frequencies are 827.16 MHz // 872.16 MHz (channel 72) and 832.08 MHz // 877.06 MHz (channel 236). It is noted that the above ranges do not correspond to that provided by the Authority in section 9.4; Telkom recommends that this information be confirmed and corrected, as required.

By shifting Neotel’s assignment down by only 2 MHz will not bring all their channels exactly within the IMT850 frequency band. Telkom therefore recommends that this section be changed as follows:

“As an immediate measure, the CDMA assignment of Neotel is to be shifted by approximately 2 MHz to fall within the bands 825-830 MHz // 870-875 MHz.”

It is important to note that Neotel has been assigned multiple individual frequencies or channels and each will be shifted down by approximately 2 MHz (i.e. not changed to a 5 MHz IMT channel assignment). Neotel’s assignment is non-contiguous and per specific

area as indicated. It is assumed that the IMT850 band will be a national assignment of 2x5 MHz.

4.7.2 Section 10.1.2

Reference is made to “GSM-R2”. The “2” was maybe referring to a footnote, which does not appear in the draft RFSAP. This must be checked and corrected as required.

The calculation of the GB of ~4.05 MHz (1.25 MHz + 1 MHz + 1.8 MHz) seems incorrect. With CDMA-2000 restricted to three carriers (3*1.25 MHz although this could be 3*1.23 MHz) the total guard band with GSM-R is calculated as follows:

$$5 \text{ MHz} - (3 \times 1.25) + 1 \text{ MHz} + (877.695 \text{ MHz} - 876 \text{ MHz}) = 3.945 \text{ MHz}$$

Also, the GSM-R allocation is 877.695 MHz - 880 MHz, which equals to 2.305 MHz (compared to the indicated 2.2 MHz). This should be verified and corrected.

At the end of section 10.1.2 it is stated that, where there is no interference to GSM-R, Neotel may use its “existing CDMA850 assignment”. Noting that 10.1.1 states that Neotel’s assignment will be shifted by 2 MHz, which is assumed to refer to all its assignments in all areas, it is not clear what is meant by the statement at the end of section 10.1.2. If the intention is that Neotel can continue to use four CDMA channels in areas without interference, this should be reflected as such.

4.7.3 Section 10.3

Telkom supports the consideration of IMT850 only after CDMA850 has been migrated out of the band. Furthermore, as indicated in section 3.1, it is also important to ensure that other existing services operating adjacent to the proposed IMT850 band will be protected from harmful interference. Broadcasting services must also be migrated from this band (band above 694 MHz), which will allow national use of IMT850.

What is not clear from the draft RFSAP is when the outstanding issues raised in section 10.3 will be considered. These are:

- (1) consideration of an intermediate step of 2x3 MHz LTE first to ensure dual illumination and 2x5 MHz LTE in the final step, and

(2) further coexistence with GSM-R with about 4 MHz guard band.

4.8 Appendix A: National Radio Frequency Plan

The Authority only indicated the frequency range 790-862 MHz in Appendix A. For completeness, the Authority should also add the frequency range covering the range 862 MHz to at least 880 MHz. This will provide allocation information relevant to the IMT850 downlink (i.e. 870-875 MHz) as well as GSM-R, amongst others.

4.9 Reference to ECC/REC (11)05

The Authority made reference to ECC/REC (11)05 in the IMT850 draft RFSAP, which is titled “Cross-border Coordination for Mobile/Fixed Communications Networks (MFCN) in the frequency band 2500-2690 MHz”. In section 1 (Glossary) of the draft RFSAP, the Authority made reference only to ECC/REC (11)04, which is titled “Cross-border Coordination for Mobile/Fixed Communications Networks (MFCN) in the frequency band 790-862 MHz”. Although these two documents are similar, Telkom recommends that the above be corrected.
