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Mr. Manyaapelo Richard Makgotlho
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South Africa

Per mail: rmakgotlho@icasa.org.za
cc : jdikgale@icasa.org.za

Dear Mr Makgotlho

RE: Draft implementation of the Radio Frequency Migration Plan and of the International Mobile Telecommunications (IMT) Roadmap

Mobile Telephone Networks (Pty) Ltd ("MTN") wishes to thank the Independent Communications Authority of South Africa ("Authority") for the opportunity to comment on the Findings on Inquiry and Draft implementation of the Radio Frequency Migration Plan and the IMT roadmap as published in Government Gazette 45690 on 24 December 2021. MTN has noted, with concern, that the Authority has decided to ignore our comments on the Inquiry document published in September 2021 even though we submitted the response document at 16:00pm on 03 December 2021.

Please find herewith our submission on the Findings on Inquiry and Draft implementation of the Radio Frequency Migration Plan and the IMT roadmap.

Yours sincerely,

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Geoff Blake
Senior Manager: Technical Regulations and Mandated Provisioning
Mobile Telephone Networks (Pty) Ltd

MTN'S COMMENTS ON THE NOTICE REGARDING THE FINDINGS ON THE INQUIRY AND THE DRAFT IMPLEMENTATION OF THE RADIO FREQUENCY MIGRATION PLAN AND THE IMT ROAD MAP GOVERNMENT GAZETTE 45690 DATED 24 DECEMBER 2021

1. INTRODUCTION

On 24 December 2021 the Independent Communications Authority of South Africa ("Authority") published Findings on the Inquiry and Draft Implementation of the Radio Frequency Migration plan and the International Mobile Telecommunications (IMT) Roadmap in Government Gazette No. 45690 (Notice No. 739 of 2021), in terms of section 4, read with sections 31(4), 34(7)(c)(iii), 34(8) and 34(16) of the Electronic Communications Act (ECA) (Act No. 36 of 2005).

MTN welcomes the Authority's initiatives and consultation with the telecommunications industry towards the implementation of the Radio Frequency Migration plan and the IMT Roadmap. The implementation of the Radio Frequency Migration Plan and the IMT Roadmap is very important as it create certainty about the future availability of the radio frequency spectrum and the future of telecommunications technology in the country.

MTN's submission in respect of the Findings on the Inquiry and the Draft Implementation of the Radio Frequency Migration Plan and IMT Roadmap is structured as follows:

- This Introduction
- General comments
- Comments on the Inquiry findings and the Draft Implementation of the migration plan and IMT Roadmap
- Impact of the draft Implementation of the Migration Plan on MTN
- General request for the RFSAP updates

2. GENERAL COMMENTS

MTN welcomes the Authority's initiatives in terms of moving ahead with a draft implementation of the Radio Frequency Migration plan and the IMT Roadmap. Opening up the radio spectrum and licensing it to suitable stakeholders will go a long way to drive down the cost of communication and contributes to the overall economy of the country as more and more technologies will be introduced faster as spectrum becomes available. However, MTN is still concerned that the Authority fails provide conclusive deadlines on the implementation of the Radio Frequency Migration plan and the IMT Roadmap.

MTN, as one of the major players in the telecommunications industry in South Africa notes with serious concern that the Authority has decided to ignore our inputs and contribution to the Inquiry document published in September 2021[1] ("the Inquiry") and consequently our inputs are ignored by the Authority in this

[1] General Notice 580 in Government Gazette No. 45247 (30 September 2021)

Findings document and Draft of the Radio Frequency Migration Plan and IMT Roadmap.
MTN has also noted that the Authority has omitted some radio frequency bands of interest to telecommunications industry players which were part of the Inquiry document published in September 2021 (e.g. 4800 - 4990 MHz, 3600- 3 800 MHz, 3800 - 4200 MHz, 4800 - 4990 MHz, 24.25 - 27.5 GHz, 27.5-29.5 GHz, 37-43.5 GHz), without giving reasons for omitting these. Stakeholders were also asked to suggest other radio frequency spectrum bands that need to be considered but the Authority fails to provide reasons on why insights into these frequency bands from the industry stakeholder were omitted in this Draft Implementation of the Radio Migration Plan and IMT Roadmap document.

3. COMMENTS ON THE ENQUIRY FINDINGS AND DRAFT IMPLEMENTATION OF THE MIGRATION PLAN AND IMT ROADMAP

3.1. Lack of Transparency and regulatory uncertainty

The points below indicate there is lack of transparency in the Findings and Draft Implementation of the Radio Frequency Migration Plan and IMT Roadmap document ("the Draft Migration plan").

- There is uncertainty around the occupancy of the 2300-2450MHz spectrum by some other regional operators as stated in Annex 4. Even though the Authority acknowledges this band as IMT, there are no conclusive deadlines about migration out of this band. At this stage, the Authority should be providing information about occupancy in the bands published in the Inquiry document of September 2021 and clarity on whether the incumbents with be migrated out of the bands, giving deadlines, or whether the incumbents will retain the spectrum in the bands.
- It is suggested that the Authority provides on a regular basis the progress on the DTT migrations, especially the GPS coordinates of those analogue transmitters switched off as of end Jan'22 which can assist operators to utilise 700/800MHz frequencies allocated as part of provisional licenses awarded by ICASA during National State of Disaster period.
- In some frequency bands that were published in the Inquiry document in September 2021, the Authority merely state that the Authority will conduct feasibility studies and update the RFSAP without giving much information about the stakeholder's responses on the published frequency bands. Whereas in some frequency bands (e.g. 1452-1492 MHz) the Authority clearly states that there is no interest from the

stakeholders in this band, yet the Authority is forging ahead in opening up this band.

- The Authority has simply decided to omit other frequency bands of interest (e.g. 4800 - 4990 MHz, 3 600- 3 800 MHz, 3800 - 4200 MHz, 4800 - 4990 MHz, 24.25 - 27.5 GHz, 27.5-29.5 GHz, 37-43.5 GHz) that were published in the Inquiry document[1]. The Authority does not provide clarity on why these frequency bands are now not included in this Draft Migration Plan.
  The regulator should also provide reasons as to why certain critical bands like n258 (26Ghz) already earmarked for IMT use in Region 1 at WRC-19[2] was not included in this ICASA findings document. This is a critical band for 5G. MTN already has microwave spectrum on 26GHz band and harmonisation process could enable MTN to deploy 5G in the future.

- Additionally, the regulations on the protection of the Karoo Central Astronomy Advantage Areas (KCAAAs) published on 15 December 2017, Notice 1411 of Government Gazette No. 41321 have direct impact on the Radio Frequency Spectrum Migrations Plans and IMT Roadmap that the Authority wishes to implement in the near future, but the Authority fails to mention this in the document. A clear view of how much spectrum is available in bands affected by the KCAAAs regulation of 2017 will ensure that stakeholders make informed investment decisions on their frequency bands of interest.

3.2. Frequency bands

In this section, MTN provides comments on the published frequency bands of interest including the bands that the Authority has decided to omit in this Draft Migration Plan and IMT Roadmap and how we believe the Authority should proceed toward the development of an implementable migration plan and IMT Roadmap.

3.2.1. 5925 - 6425 MHz

This band has been omitted in the findings document and the Authority has not provided reasons for doing so. MTN suggests that the Authority opens up this band for deployment of Wifi 6E[3] to enhance Wifi experience as part of 4IR. Both 5G and Wi-Fi (on 6Ghz or 60Ghz) are complementary technologies

[2] Resolution 242 (WRC-19)
[3] https://www.wi-fi.org/countries-enabling-wi-fi-6e

achieving gigabit speeds, lower latencies, and increased capacity over their predecessors. 5G and Wi-Fi 6 will provide an advancement in performance for new and existing networks for the next generation of advanced applications.

3.2.2. 66 - 71 GHz

This band was also included in the Inquiry document in September 2021. This band can be used for 60GHz WiGig[4] deployments, enabling multi-gigabit, low latency connectivity.

3.2.3. 617 – 652 MHz paired with 663 - 698 MHz

MTN recommends that this band be included in the IMT roadmap. With ongoing digital TV migration in South Africa, the 617-698MHz will become critical for future mobile broadband services, especially for rural coverage. MTN suggests it is reasonable that this band could be used for mobile services on the same principles of TV white spaces (subject to Non-Interference Non-Protection basis to users under a primary allocation).

3.2.4. 694-790 MHz

MTN requests that the Authority make available regular updates, monthly or quarterly would be preferable, on the status and associated timelines in relation to the analogue TV shutdown and digital TV restacking in order to ensure a coordinated transition of the band to IMT in South Africa. This progress report should include the current channels being broadcast from each TV broadcast tower so that the MNOs can enable IMT services in areas without interference. In terms of implementing the radio frequency migration, MTN requests the authority to outline how it will handle removing the interference caused by undocumented "self-help" TV signal repeaters that are expected to be a significant cause of interference where the spectrum is supposed to be cleared for IMT, as recently experienced by one operator[5].

MTN also urges the Authority to immediately share GPS coordinates of those analogue transmitters switched off as of end Jan'22 which can assist operators to utilise 700/800MHz frequencies allocated as part of provisional licenses awarded by ICASA during National State of Disaster period.

3.2.5. 790-862 MHz

MTN requests that the Authority make available regular updates, monthly or quarterly would be preferable on the status and associated timelines in

[4] https://www.wi-fi.org/discover-wi-fi/wi-fi-certified-wigig

[5] Spectrum chaos in South Africa (mybroadband.co.za)

relation to the analogue TV shutdown and digital TV restacking in order to ensure a coordinated transition of the band to IMT in South Africa. This progress report should include the current channels being broadcast from each TV broadcast tower so that the MNOs can enable IMT services in areas. MTN also urges the Authority to immediately share GPS coordinates of those analogue transmitters switched off as of end January 2022 which can assist operators to utilise 700/800MHz frequencies allocated as part of provisional licenses awarded by ICASA during National State of Disaster period.

3.2.6. 880-960 MHz band

With regards to the 900MHz band the Authority focuses on the benefits of having contiguous spectrum without paying due consideration to the impact of the spectrum reduction from 2x11MHz to 2x10MHz allocations as part of the IMT900 harmonisation. Within MTN's network 2G, 3G & 4G technologies are all currently prevalent in the market and all three have been deployed within MTN's 2x11MHz assignment such that this spectrum is still highly utilised at this time. The loss of the 2x1MHz would currently result in significant degradation to the customer experience on at least one of these technologies. It would be a travesty if this spectrum was forced to be returned at the expense of existing customer experience only to sit unused for an extended period.

MTN contends that this harmonisation should not be considered as frequency migration and should not be presented as an impediment to the Implementation of the migration plan because MTN will simply forfeit the spectrum and will not be migrated to a new frequency band by the Authority.

It should also be noted that the IMT900 harmonisation plan was devised in the 2014/2015 period, a time when it was expected the IMT700/IMT800 would be licensed within the 2016/2017 time period, which is indeed what the Authority attempted to do. However, this never materialised affecting the envisaged feasibility to implement the IMT900 harmonisation within the expected timelines.

MTN proposes that the date of the 900MHz harmonisation completion should be no sooner than the successful licensing of new IMT700 & IMT800 spectrum and linked to the time period for the coverage rollout obligations of this spectrum. This proposal is also supported in Annex 2 summary on Page76 in the findings document:

"While the incumbent operators will incur some costs to implement the migration, and consumers may be harmed in the short-term due to network disruption, the latter will be mitigated through additional spectrum being made available via the upcoming auction".

While we have indicated the return of the 2 x 1MHz by incumbent operators happen after the assignment of additional spectrum via the upcoming auction, in order to allow for a smooth transition and coordination between operators and the Authority, MTN proposes that a period be granted to all operators to ensure that the expected high Quality of Service thresholds are maintained. As it is beneficial to no one for the carved-out spectrum to be returned only to lie fallow for an extended period of time MTN proposes that as the Authority has indicated that they will make available through a future ITA assignment process the envisioned new block of 2 x 5MHz in the 900MHz band, that the time period for the migration be aligned with this future ITA assignment process e.g. the migration to be completed 3 months prior to the envisioned auction.

MTN further proposes that an alternative approach could be to allocate the new 2x5MHz IMT900 block to a new national GSM network to be co-built and shared by the current mobile operators such that these operators can migrate their existing GSM customers onto this network in order to make the spectrum reduction from 2x11MHz to 2x10MHz feasible. This approach would require relaxation of some of the competition laws and regulations related to ICT infrastructure sharing and sharing of information amongst competitors in the industry. This approach would ensure equitable distribution of the 900MHz spectrum in the South African ICT sector.

Annex 2 states that:
"Currently, some operators are switching off 2G technology and refarming the band to deploy 4G/5G technologies".
To MTN's knowledge, only CellC has embarked on 2G shutdown within the IMT900 band whereas MTN & Vodacom are currently unable to shutdown 2G in this band due to continued significant usage and prevalence of 2G only devices in the market. MTN foresees that it is more likely to be able to shutdown 3G before 2G because of a 'long tail' of low cost 2G devices, and 2G-only M2M devices with a long lifetime in the network.

MTN strongly believes that the Authority needs to play a more active role in the planning, coordination and monitoring all operators' activities during the implementation of IMT900 harmonisation in the country to minimise disputes

amongst competitors that may further delay the implementation of the IMT900 harmonisation. The usage of the 900MHz band is of great interest in the South African telecommunications industry, whether GSM voice services must be fully decommissioned in this band and the role of ICASA on the harmonisation should be the key consideration when compiling the Implementation of Radio Frequency Migration Plan document. These important issues have been omitted from this document.

3.2.7. 1452-1492 MHz

Stakeholders have not shown interest in this band, which means that the South African ecosystem is not ready for services in this band and hence there is no economic value for licensing this band now. Yet the Authority still proposes to push ahead with allocation in this band. This recommendation by the Authority will result in inefficient usage of spectrum in this band as some investors may simply hoard this spectrum to increase barriers of access in future when there is a market for services in this spectrum band.

3.2.8. 2300-2450MHz

Even though it is well known that 2300MHz may go straight to 5G[6] but the Draft Implementation of the Radio Frequency Migration Plan and IMT Roadmap proposed simply highlights that "*Band used for P2P links. Existing migration plan talks to migration of the P2P links so band available for IMT. Need to update Migration Plan ahead of then refreshing the AP),* without stating the timelines as mandated by section 5(2)(b) of the Radio Frequency Migration Plan 2013[7]. MTN contends that the Authority erred in allowing Telkom to repurpose their 2300MHz spectrum which was allocated for fixed links. When this spectrum was identified for IMT use at WRC-07, and enacted in South Africa in 2010, the Authority in MTN's view should have initiated a migration of the incumbent out of the band to enable the licencing of IMT services within this band through a competitive process, especially in light of the fact that the Authority considers this band high demand spectrum as clearly explained in Annex 4. By contrast, in other cases, such as for the Digital TV migration, the Authority has required incumbents to migrate when the spectrum has been repurposed for IMT. Hence, the Authority has been inconsistent in the approach taken. Regulatory certainty is required concerning the principles the Authority will apply going forward when allocated spectrum's primary use is changed.

[6] The Benefits of Technology Neutral Spectrum Licences June 2019, GSMA
[7] Government Gazette Number 36334 (Notice 352 and 353 of 2013)

3.2.9. 3 300-3 400 MHz

MTN welcome the Authority's proposal to proceed with a RFSAP for IMT in this band.

3.2.10. 3400-3600 MHz

MTN notes that the Authority has indicated "Base Station transmissions should not exceed 61dBm/5MHz EIRP" in many RFSAP's for IMT bands since 2015. MTN would like to draw the Authority's attention to an that this limit is very restrictive for active antenna systems (AAS) that are now commonly used for 5G deployments in bands such as IMT3500 & IMT2600. This is because for active antenna systems (Massive MIMO systems) that do dynamic beamforming where the amplitude and / or phase between antenna elements is continually adjusted to alter the antenna pattern in response to changes in the radio environment, the EIRP in a dynamic beam can be significantly higher than for non-AAS deployments where the antenna pattern (and antenna gain) is fixed. Based on vendor investigations, the power transmission restrictions are too much restricted especially compared to other countries like Canada. Emission restrictions should be based on TRP limit not EIRP limit.
OFCOM document extract[8]:
"We believe that the in-block power limit of 44 dBm/(5 MHz) TRP per cell will not be a material constraint on the ability of operators to deploy 5G. This is based on our review of the market which found that most 3.4 to 3.8 GHz AAS currently in development have a target power of 200 W".

3.2.11. 3600-3800 MHz

MTN is aware of the recent assignments of spectrum within the sub-band 3600-3 800 MHz for BFWA on a secondary basis where frequency sharing with FS PTP and/or FSS is feasible, and that these assignments for BFWA to different parties overlap with each other. Hence coordination is required not only between BFWA, FS PTP and FSS services, but also between BWFA service providers with overlapping allocations. MTN is aware that there have been instances of BFWA systems interfering with satellite ground stations and would urge the authority to make available a central database of FSS ground station locations in order that the BFWA licensees of this spectrum are able to design their networks to avoid interference with the FSS ground stations. It would be expected that the entities/organisations with FSS ground stations

[8] OFCOM: Variation of Spectrum Access licences in the 3400 to 3680 MHz band, 18 April 2019

that wish to be protected from the BFWA systems would be willing to provide such information in order to protect their satellite systems from interference.

MTN also notes that the Authority acknowledges that many countries have assigned this band for IMT. MTN welcomes the inclusion of this frequency range in the inquiry for implementation of the radio frequency spectrum migration and IMT Roadmap. The Authority must ensure that there is regulatory certainty as to the process the Authority will follow. Will the incumbents allocated spectrum for FWA as secondary use (with FSS as primary use) be allowed to retain their allocations, or will they be required to migrate in order for the spectrum to be auctioned for IMT use?

3.2.12. 3800 - 4200 MHz

MTN welcomes the inclusion of the 3800-4200MHz band in the migration plan IMT roadmap. For South Africa, this band represents a large span of contiguous spectrum which has the ability to support 5G high-capacity mobile services. MTN strongly recommends the Authority ensures that at least 80 - 100 MHz of contiguous bandwidth from this band be allocated to each 5G network operator when planning channel arrangements in the 3300-4200MHz, to ensure a fair competitive landscape.

3.2.13. 4800 - 4990 MHz

MTN notes that the Authority has decided to omit this frequency band in this "Draft Migration Plan" document even though it was included in the Inquiry in September 2021, without giving reasons to omit this band for consideration in the IMT Roadmap. The 4800-4990 MHz frequency range is identified for IMT in South Africa (as per WRC-19 5.441B), and that ITU-R M.1036-6 has a frequency arrangement for this frequency range. Although the IMT market is at an early stage for this spectrum, an increasing number of countries are considering this spectrum for IMT. At WRC-19 over 40 countries identified some or all of the spectrum in this range for IMT, and a few countries (such as China and Hong Kong) have assigned spectrum in this range already. MTN recommends that this particular radio frequency spectrum band be included implementation of the radio frequency spectrum migration plan and IMT Roadmap.

3.2.14. 24.25 - 27.5 GHz

Even though the 26Ghz already earmarked for IMT use in Region 1 at WRC-19[2] and was included in the Inquiry of September 2021, the Authority has omitted this frequency band in this Findings and Draft Migration Plan documents without giving reasons for doing so. MTN indicated that WRC-19 Resolution 242 and footnote 5.532AB identified this for IMT. MTN notes that

various countries in ITU Region 1 have already assigned spectrum for IMT within this range e.g., Denmark, Finland, Greece, Italy & Slovenia. This so called mmWave 5G spectrum is required for new 5G use cases requiring low latency and high bandwidth, hence it is important for South Africa to make this spectrum available as soon as possible in order for the country to keep up with the global pace of the 4th industrial revolution.

While parts of this spectrum range will require harmonization requiring incumbents to migrate existing systems, MTN believes there are portions that may be fast tracked for allocation. MTN currently has licensed spectrum on 26GHz band which is utilized for microwave transmission. The 26.5–27.5 GHz seems to be a popular subrange allocated in many countries, and hence a subrange to focus on in South Africa immediately.

3.2.15. 37-43.5 GHz

MTN notes that the 37-43.5GHz frequency range has been identified for IMT (WRC-19 5.550B) across all ITU regions. While the IMT market is at an early stage for this spectrum, it is being deployed for 5G in some countries already e.g., AT&T is deploying 39GHz spectrum (within the 37-40 GHz frequency range) for 5G in the USA. Hence, MTN recommends that the Authority focus on IMT allocations in this band (in particular the 37-40 GHz sub range) along with the 26GHz band to cater for new 5G use cases requiring low latency and high bandwidth. MTN, therefore recommends the inclusion of this radio frequency spectrum band in the IMT roadmap.

4. IMPACT OF THE PROPOSED DRAFT IMPLEMENTATION OF THE RADIO FREQUENCY MIGRATION ON MTN

4.1. Technical feasibility of migration

The Frequency Migration Regulations of 2013 published in Government Gazette no. 36334 provides a basic framework for best practices that South Africa should follow. However, the Authority must prioritise the current South Africa context and engage the industry players regularly when deriving a new frequency migration plan that is implementable. Coexistence analysis, harmonization and coordination required to execute the proposed frequency migration must be done through consultation with existing users of spectrum and other interested parties to ensure that the final migration is effective and efficient.

The Authority's reliance on their feasibility studies presented in the annexures of this Draft Implementation of the Radio Frequency Migration Plan and IMT Roadmap document is insufficient to ensure that the spectrum is managed efficiently by the Authority as these studies merely state what other countries have done. Through active engagement with the South African stakeholders in telecommunications, more effective and valuable feasibility studies can be developed with insights into the South African ecosystem to ensure that spectrum migrations plans and IMT Roadmap result in improved and efficient national spectrum management.

To fully understand the practicality of the implementation of the radio frequency migration and IMT Roadmap, the Authority should consider the stakeholder's inputs and engage them regularly, this would assist in the perception that the Authority has pre-determined outcomes they wish to achieve regarding spectrum allocations.

4.2. ICASA treatment of 900MHz spectrum band vs 2300Mhz spectrum band

The Authority in Annex 2: 880-960 MHz band: implementation of the IMT Roadmap 2014 and 2019 indicated that they will make available through a future ITA assignment process the envisioned new block of 2 x 5MHz in the 900MHz band. This block would be created from the return of 2 x1MHz by each of the incumbent operators in this band and the elimination of internal and external guard bands. The Authority identified that the band has more than 200 5G devices supporting this band and that given the high auction fees obtained in other jurisdictions, it is probable that there would be considerable demand for spectrum in this band from a fourth operator in South Africa.

Comparatively within Annex 4: 2300 – 2450 MHz: implementation of the IMT roadmap 2014 and 2019 the Authority identified that the 2300 MHz band has a matured ecosystem with the highest number of devices supporting LTE TDD and hence concluded that South Africa could benefit from the economies of scale arising from the large equipment and device ecosystem. Additionally, the Authority highlighted the "very high auction values for the band when used for IMT".

It therefore stands to reason that as the Authority has used similar criteria in the determination of value/importance of the band where both the 900MHz band and the 2300MHz band both of which benefit from characteristics of high device support, mature ecosystem, and the ability to obtain high auction fees should be treated in an identical manner.

As referenced in Annex 2 (900MHz) the Authority highlighted in the finding document on the Mobile Broadband Inquiry the need to promote competition in South Africa as there is inadequate competition in a number of markets where IMT spectrum is used. The perceived lack of competition does not evaporate between spectrum bands and hence if the statement is valid for the referenced 900MHz band which supports three operators it must be true for the 2300MHz band that has a single licensed operator.

As it is incumbent upon ICASA to operate in a fair and transparent manner without fear or favour, it stands to reason that the same principles should be applied when licencing the available spectrum in the 2300MHz spectrum as it is when licencing the available spectrum created in the 900MHz.
Therefore, should the created 2 x 5MHx in the 900MHz spectrum band to facilitate the entry of a fourth operator in that band, then the available spectrum in the IMT2300, facilitate the entry of a second operator in that band.

Consequently, ICASA must stipulate within this document that the IMT2300 will be made available through a future ITA assignment process as opposed to the proposed proceed with a RFSAP for IMT in this band. Additionally, it would be reasonable to expect that any future ITA assignment process be in-line with principles applied in other spectrum bands.

4.3. Impact of the proposed radio frequency spectrum migrations

Even though Section 3(5) of the Radio Frequency Migration Regulations and Migration plans of 2013[3] clearly state that:

"The users to be migrated shall not be entitled to be compensated by the Authority for the cost of the migration".

The Authority should be cognizant of the huge costs on users of spectrum due to the implementation of radio frequency migration plans. Hence MTN emphasizes the importance of ensuring that affected parties' concerns are taken into consideration and agreed before implementation. It is imperative that the Authority is consistent in the application as historically entities have been compensated with additional spectrum for in band migrations and this has the potential to set unnecessary expectations

5. GENERAL REQUEST FOR RFSAP UPDATES

MTN notes that the Authority has indicated "Base Station transmissions should not exceed 61dBm/5MHz EIRP" in most RFSAP's for IMT bands since 2015. MTN would like to request that the Authority revisit this limit when updating RFSAPs as it is very restrictive for active antenna systems (AAS) that are now commonly used for 5G deployments in bands such as IMT3500 & IMT2600. This is because for active antenna systems (AAS) that do dynamic beamforming where the amplitude and / or phase between antenna elements is continually adjusted to alter the antenna pattern in response to changes in the radio environment, the EIRP in a dynamic beam can be significantly higher than for non-AAS deployments where the antenna pattern (and antenna gain) is fixed.

While an EIRP limit is suitable for non-AAS passive antenna systems, MTN's understanding is that globally the industry is moving towards using Total Radiated Power (TRP) as the metric to specify power limitations for AAS deployments. This is because TRP is seen as more accurate in assessing interference between AAS systems and other mobile systems (for network level co-existence interference analysis) and has been adopted by 3GPP to specify radiated conformance requirements for AAS systems.

As a reference, MTN's understanding is that OFCOM[9] has applied a 65dBm/5MHz EIRP limit for non-AAS base stations and a TRP limit of 44dBm/5MHz for AAS base stations in the IMT3500 band. MTN believes this is more appropriate considering currently technology being deployed for bands such as IMT2600 and IMT3500.

[9] https://www.ofcom.org.uk/consultations-and-statements/category-3/proposal-vary-3.4ghz-radio-spectrum-licences