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Reference: Qualcomm Response to ICASA Notice Inviting Comments Regarding the Draft Frequency Migration Regulation and Radio Frequency Migration Plan (Gazette No. 35598 of 17 August 2012)

Dear Sir:

Qualcomm Incorporated ("Qualcomm") welcomes the opportunity to respond to the Independent Communications Authority of South Africa ("ICASA") Notice Inviting Comments Regarding the Draft Frequency Migration Regulation and Radio Frequency Migration Plan ("Draft Frequency Migration Regulation and Plan"). Qualcomm is a leader in developing and delivering innovative technologies used for advanced wireless services in metropolitan, regional and rural environments, with a well-established presence throughout Africa. Qualcomm is redefining the experience of wireless mobility by applying our unmatched legacy of wireless innovation to enable new generations of increasingly powerful cell phones, smartphones, computers and consumer electronics devices. Our technologies are driving the mobile revolution, and we continue to play a key role in the provision of advanced wireless services to the citizens of South Africa and worldwide.

The growth of the mobile industry in Africa has exploded over the last decade. According to the GSM Association ("GSMA"), the number of mobile subscriptions increased an average of 30 percent per year between 2001 and 2011 with the total number of connected mobile devices expected to reach 735 million throughout the region by the end of 2012. The International Telecommunication Union ("ITU") reported recently that the mobile penetration rate in South Africa exceeded 126 percent in 2011, up from 82 percent in 2006. This explosion in demand has translated into real economic benefits for the region and South Africa in particular. The mobile industry contributes an estimated USD 56 billion to Africa's economy as a whole, with mobile network operators contributing 3.5 percent to South Africa's Gross Domestic Product ("GDP") in 2010 alone. According to the ITU, with 20 active mobile broadband subscriptions per 100 inhabitants by the end of 2011, South Africa boasts the highest mobile broadband penetration rate in Southern Africa and the third-highest in all of Africa. The growth of mobile services and their impact on South Africa's economy is due in large part to the great strides made in the licensing and deployment of 3G services.

For the mobile industry to continue to serve as a catalyst for growth, mobile operators will require access to sufficient, technology-neutral spectrum resources, particularly as more consumers switch to



smartphones and begin demanding increasingly bandwidth-hungry applications and services. Based on these considerations, Qualcomm finds that the Draft Frequency Migration Regulation and Plan represent an important and positive step towards freeing up additional and much-needed spectrum for advanced wireless services in South Africa. As addressed below, Qualcomm applauds ICASA's efforts in making international and regional harmonization the center point for changes to the National Radio Frequency Plan and, subsequently, to any spectrum migration plans. In particular, Qualcomm supports the inclusion of provisions to release not just the 800 MHz band ("Digital Dividend"), but to also reallocate the 700 MHz band ("Digital Dividend 2") from broadcasting to mobile use in order to create a large, contiguous swath of digital dividend spectrum from 694-862 MHz. Qualcomm also supports ICASA's proposals to reallocate the 450-470 MHz from Trunked Mobile to Mobile (IMT); add a new allocation to the 1452-1492 MHz band ("L Band") for mobile services; and allocate the 2.6 GHz and 3.4 GHz bands for mobile use on a primary basis, in line with regional and international harmonization efforts.

Qualcomm is further encouraged by ICASA's consideration of spectrum refarming, particularly in the heavily used GSM bands, but notes that spectrum licenses are currently technology-neutral and allow operators to deploy their choice of technologies. In this regard, policies related to spectrum refarming in these bands may not be necessary to address in the Draft Frequency Migration Regulation and Plan, particularly since certain operators are already migrating from 2G to more advanced technologies based on technology-neutral licenses.

1. International and Regional Spectrum Harmonization

Qualcomm supports ICASA's proposals to ensure that the International Telecommunication Union ("ITU") Radio Regulations ("RRs") are key inputs to the Draft Frequency Migration Regulation and Plan, and would be integrated into all future frequency allocation plans and migration strategies. In particular, Qualcomm supports Section 3 of the Draft Frequency Migration Regulation requiring South Africa's National Radio Frequency Plan (upon which any spectrum migration plan would be based) to be consistent with the ITU RRs, as updated by the most recent World Radiocommunication Conference ("WRC"), as well as with the regional plans established by the Southern African Development Community Frequency Allocation Plan ("SADC FAP"). Qualcomm further supports the international harmonization aspects of Section 4 of the Draft Frequency Migration Regulation, which would require ICASA to initiate a spectrum migration proceeding in certain instances, including where a change in the use of a radio frequency band is required to bring the National Radio Frequency Plan into compliance with ITU RRs or the Final Acts of the latest WRC.

2. Reallocation and Release of the 800 MHz Band ("Digital Dividend") and 700 MHz Band ("Digital Dividend 2")

Qualcomm supports ICASA's proposed migration strategy for the 790-862 MHz band ("800 MHz band" or "Digital Dividend"), finding that the strategy is appropriately aligned with the paired frequency arrangements for the 698-960 MHz band set out in ITU Recommendation M.1036-4, as well as with Qualcomm's overall goals of maximizing the amount of spectrum available for mobile services in these bands. Qualcomm also supports the proposals in the Draft Frequency Migration Plan regarding the 694-790 MHz band ("700 MHz band" or "Digital Dividend 2") and ICASA's intention to define and implement a migration plan for the 700 MHz band concurrently with the 800 MHz band migration. Generally, ICASA's proposal for the Digital Dividend 2 would largely align with most ITU Region 2 countries and



Region 3 countries that have reallocated the 698-806 MHz band from terrestrial broadcasting to mobile services, thus facilitating benefits from spectrum harmonization, including economies of scale and international roaming.

Qualcomm supports ICASA's proposed migration plan for the 700 MHz band, as outlined in Table 3, which would set the planned migration of broadcasters out of this band by 2015 in line with the 800 MHz band. This would enable ICASA to establish technical and service rules simultaneously in the 700 MHz and 800 MHz bands, including harmonized band plans that maximize the amount of spectrum available for mobile broadband, as well as enable assignment of licenses in these bands in a single award process.

3. Reallocation and Release of the 450-470 MHz Band

As ICASA stated, the reallocation of the 450-470 MHz band to mobile services will result in harmonization with several countries adjacent to South Africa, which reduces risk of harmful interference in border areas and facilitates cross-border communications and economies of scale. Qualcomm supports ICASA's proposal, particularly in light of findings that this band is underutilized despite a large number of assignments. Since the propagation characteristics of lower band spectrum are ideal for much-needed mobile broadband deployments in rural areas, Qualcomm agrees that the existing licensees may be migrated out of the 450-470 MHz band into the 3 GHz band. Further, reallocation of the band would be in line with international harmonization efforts, pursuant to Resolution 224 of WRC-07.

4. Reallocation and Release of the 1452-1492 MHz Band ("L Band")

Qualcomm supports ICASA's proposal to allocate mobile on a co-primary basis with fixed, broadcasting and broadcasting satellite services in the L Band. As ICASA noted in the Draft Frequency Migration Plan, this band is currently assigned to Terrestrial Digital Audio Broadcasting ("T-DAB") and Satellite Digital Audio Broadcasting ("S-DAB") systems based on the current South African allocations. However, given ICASA's finding that sufficient spectrum is available for DAB in the 214-230 MHz band, where it is currently allocated, Qualcomm supports ICASA's proposal to modify the allocation in this band and align it with the ITU Region 1 allocation to include mobile services.

Additionally, Qualcomm believes that the 1452-1492 MHz band should be designated specifically for mobile supplemental downlink ("SDL") or unpaired mobile downlink ("UMD") use, which provides a novel and effective approach to meeting future mobile broadband data demands. An SDL uses unpaired spectrum to enhance the downlink capacity of mobile broadband networks through the combining or "bonding" of the usual mobile broadband downlink with a supplemental downlink channel(s) in a different band. This approach enables significantly faster downloads and supports a much greater number of mobile or portable wireless devices. In this context, the 1452-1492 MHz band, when used as an SDL band bonded with existing UMTS/LTE bands, represents a unique opportunity to provide much-needed capacity given the greater downlink requirements of mobile broadband traffic.

5. Reallocation and Release of the 2.6 GHz and 3.4 GHz Bands

Qualcomm supports the proposed allocations for the 2500-2690 MHz ("2.6 GHz") and 3400-3600 MHz ("3.4 GHz") bands in the Draft Frequency Migration Plan. ICASA notes that a total of 80 MHz in the 2.6 GHz band is currently being used by two operators—Sentech (65 MHz) and WBS (15 MHz)—with 125



MHz available for assignment. ICASA proposes to replan the 2.6 GHz band and to establish four blocks of paired spectrum—two blocks of 2x15 MHz each and two blocks of 2x20 MHz each—and two unpaired blocks of 20 MHz and 30 MHz each. For the 3.4 GHz band, ICASA notes that the band is currently assigned to Sentech, Neotel and Telkom on a nationwide basis and to USAL on a regional basis. ICASA proposes to allocate this band on a primary basis for mobile IMT, which would result in a harmonized mobile IMT band across the entire SADC region, and would be consistent with WRC-07 decisions. Qualcomm urges ICASA to move forward as quickly as possible with the planned international and regional harmonization in both the 2.6 GHz and 3.4 GHz bands.

6. Spectrum Refarming Efforts

Qualcomm finds that Section 4.13 of the Draft Frequency Migration Plan appropriately characterizes the need for spectrum refarming in the GSM/mobile bands, particularly the emphasis on access to sub-1 GHz bands due to the good propagation characteristics of these bands. Qualcomm supports ICASA's conclusion in Section 4.13.2 that "in order to be able to better utilize the currently assigned frequencies and maximize the social impact by leveraging economies of scale it may be necessary to consider spectrum re-farming, especially in the heavily used GSM bands." In this regard, Qualcomm notes that the service rules of the existing licenses are already technology-neutral and currently enable operators to deploy LTE systems in the 900 MHz and 1800 MHz bands. Thus, specific regulations regarding refarming may not be necessary, in this case. Qualcomm supports the technology neutral, flexible policies that make this refarming possible.

In conclusion, Qualcomm appreciates the opportunity to convey our views to ICASA on the Draft Frequency Migration Regulation and Plan. We applaud ICASA for its initiatives to establish a clear, effective framework for migrating users of the radio frequency spectrum under the National Radio Frequency Plan of South Africa and encourage ICASA to continue developing policies that allocate scarce spectrum resources to their highest value use, thereby maximizing the economic, social and consumer benefits of mobile broadband. If you have any questions regarding this submission, please do not hesitate to contact me.

Sincerely Yours,

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