



## Huawei Technologies South Africa (Pty) Ltd

Huawei Office Park, Building 17, 124 Western Services Road,  
Woodmead EXT.20, Johannesburg, 2191  
South Africa

Private Bag 89  
Benmore 2010  
Johannesburg  
Tel: +27 (0) 11 -517 9800  
Fax: +27 (0) 11 -517 9801

[www.huawei.com/za](http://www.huawei.com/za)

### The Independent Communications Authority of South Africa (ICASA)

350 Witch-Hazel Avenue, Eco Point Office Park  
Eco Park, Centurion  
South Africa

**Attention:**

Mr Manyapelolo Richard Makgotlho

Email: [rmakgotlho@icasa.org.za](mailto:rmakgotlho@icasa.org.za)

20 May 2022

#### **Re: Response to ICASA's Draft Radio Frequency Spectrum Assignment Plans**

Dear Mr. Makgotlho,

Huawei would like to thank ICASA for the opportunity provided to the company to comment on the Draft Radio Frequency Spectrum Assignment Plans, published in the Government Gazette Number 46160 dated 31/03/2022.

Huawei is the leading supplier of infrastructure equipment for the telecommunications industry globally and in South Africa and is a major manufacturer of mobile handsets and other electronic consumer goods.

Huawei welcomes the opportunity to submit the following comments for your consideration and requests the opportunity to make an oral presentation. Please feel free to contact us if you have any questions or require any further clarification.

Yours sincerely,

Mr. Musa Ngobeni

Date

Solution Manager

Mobile: +27834830955

Email: [musa.ngobeni1@huawei.com](mailto:musa.ngobeni1@huawei.com)



Huawei fully supports ICASA efforts in the regulatory process of developing an update of the Radio Frequency Spectrum Assignment Plans. Huawei welcomes the opportunity to provide comments for the Authority's consideration as follows:

**1. Network Synchronization for all TDD mid-bands: 2300 - 2400 MHz (IMT2300), 2500 - 2690 MHz (IMT2600)<sup>1</sup>, 3300 - 3400 MHz (IMT3300), 3400 - 3600 MHz (IMT3500)**

In order to avoid interference between TDD networks operating in adjacent frequency carriers, the radio transmissions of adjacent TDD networks should be synchronized with the uplink and downlink frames aligned in time.

Such synchronization of TDD networks is very important because it is the best way to avoid interference between networks and ensures efficient use of spectrum resources by avoiding inter-operator guard bands and additional base station filtering. Otherwise, the uplink and downlink interference cannot be eliminated or avoided in terms of technical measures.

We recommend that the Authority aligns with the operators to define a unified national uplink and downlink frame in the final RFSAP.

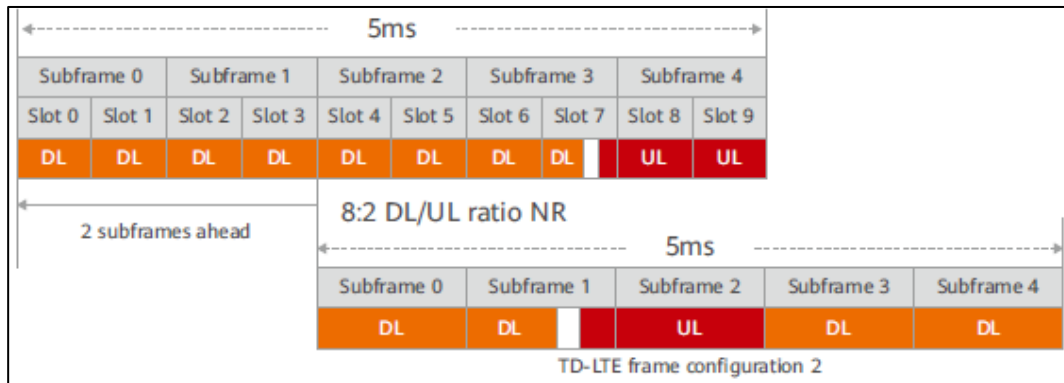
For 5G deployment, NR 8:2 DL/UL ratio single-period is recommended for the reasons provided below.

1. NR 8:2 DL/UL ratio single-period is the best approach to support 5G and LTE co-band deployment as below:

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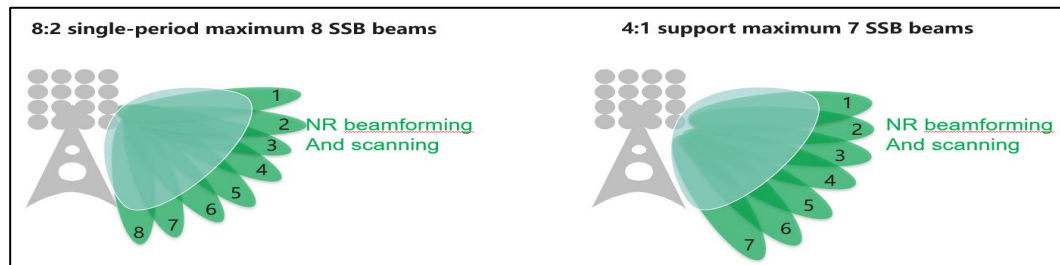
<sup>1</sup> Currently the IMT2600 band is not within this consultation, but we suggest it should be consulted and updated together with IMT2300, IMT3300 and IMT3500 bands.

**Figure 1: Uplink and downlink frame recommendation**



2. NR 8:2 DL/UL ratio single-period has about 1~2 dB better coverage than 4:1, since NR 8:2 single-period that has a maximum of 8 SSB beams, but 4:1 can only support a maximum of 7 SSB beams.

**Figure 2: Maximum SSB beams for 8:2 and 4.2 DL/UL ratio**



3. NR 8:2 DL/UL ratio single-period can support better protection and more resources for remote interference and atmospheric duct.

Table 1: Subframe configuration and protection distances			
Subframe Configuration	S Slot Structure	Protection Distance	Ratio of Symbols DL: GAP: UL
8:2	6:4:4	42.8 km	74%, 3%, 23%

4:1	8:4:2	42.8 km	71%, 6%, 23%
4:1	10:2:2	21.4 km	74%, 3%, 23%

## 2. Maximum radiated power limit update for related bands: 2300 - 2400 MHz (IMT2300), 2500 - 2690 MHz (IMT2600)<sup>2</sup>, 3300 - 3400 MHz (IMT3300), 3400 - 3600 MHz (IMT3500)

A key element of 5G systems is the use of active antennas. These antennas have electronically steered and formed beams, which vary their pointing and gain very rapidly according to the needs of the service. The regulatory limits for emissions of this type of antennas should be specified in terms of Total Radiated Power (TRP) instead of the traditional Effective Isotropic Radiated Power (EIRP) limits, as EIRP limits are too restrictive and do not account for the fact that, although instantaneous power can be very high, on average the power radiated in any particular direction is low.

From the current ICASA RFSAPs, there is a maximum radiated power limit of 61dBm/5MHz EIRP. However, we see that the regulatory regime in CEPT is as follows:

- CEPT ECC Decision (11) 063 which contains the harmonized technical conditions for use of 3400-3800 MHz, specifies all transmitter requirements for AAS in terms of TRP. In addition, it does not include an in-block power limit.

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<sup>2</sup> Currently the IMT2600 band is not within this consultation, but we suggest it should be consulted and updated together with IMT2300, IMT3300 and IMT3500 bands.

<sup>3</sup> <https://docdb.cept.org/download/1531>

<sup>4</sup> <https://docdb.cept.org/download/3419>

- ECC Report 2814 notes that if administrations wish to introduce an in-block limit, then a value should not exceed 68dBm/5MHz EIRP per antenna for non-AAS and 47dBm/5MHz TRP for AAS may be applied.

As above, we recommend that the Authority considers changing the current maximum radiated power limit from 61dBm/5MHz EIRP to 68dBm/5MHz EIRP per antenna for Non-AAS and 47dBm/(5MHz) TRP per cell for AAS.

### **3. Digital dividend bands prioritised for IMT:703 – 733 // 758-788 MHz (IMT700), 791 - 821 // 832 - 862 MHz (IMT800)**

Huawei fully supports ICASA's intention to remove broadcasting as a primary service from these bands and make them prioritized for IMT. These bands have been mature in 4G usage, and are getting fast growing support for 5G (658 devices in IMT700 and 379 devices in IMT800).

### **4. PPDR service accommodation**

The PPDR mobile broadband spectrum has much more socioeconomic value justified by the following reasons:

- Crime reduction: The severe crime will impact the GDP of the city or the state, considering the expenditure by the government for police, justice, prisons, and the asset damage and personal lost productivity caused by crime.
- Efficiency increase: Mobile broadband service enables full situational awareness for the commander and first responders, to improve the

productivity of police forces, reduce the response time, or avoid human intervention in incidents.

- Saving lives and assets in disasters and accidents

So, a national-wide dedicated PPDR broadband wireless network is a must for state security and for several important government departments. Considerations should be given to the need for timely deployment requirements of broadband PPDR services.

Normally 2x10MHz spectrum is needed for PPDR service. But if there is no adequate dedicated spectrum, a hybrid network is also an option, keeping the essential or top priority service on 2x5MHz dedicated spectrum and network, while some other regular and bandwidth costly services can be carried by the public network as a supplement.

After the successful spectrum auction in March, there are 2x10MHz reserved for WOAN in IMT700, 2x10MHz unsold in IMT800, and 2x5MHz in IMT850 will also be opened up through the migration process. In this case the Authority could consider to explore possible use in some of these bands in order to accommodate PPDR services. Notably the ecosystem for mission critical systems and devices in these bands is already mature, making it ready for PPDR services deployment.

## **5. Comments on other bands**

### **5.1 733 - 758 MHz (IMT750)**



Huawei suggest the Authority to reconsider the priority and the use of this band for IMT, since neither the 4G nor the 5G ecosystem is mature in this band.

## **5.2 1452 - 1492 MHz (IMT1500)**

Huawei noticed this band is within the L-band (1427-1518 MHz). While some regulators in CEPT and CITELE regions have already assigned this band for supplemental downlink (SDL – Band n75), we expect that there may be a future migration for the whole L-band to the more flexible TDD Band n50+n51 arrangement. As such, we would recommend that ICASA to consider a migration plan to the TDD Band n50+n51. This would allow for use of 5G for downlink only, uplink only or uplink/downlink transmissions depending on the needs of the operators.