

USTDA South Africa Connectivity Workshop

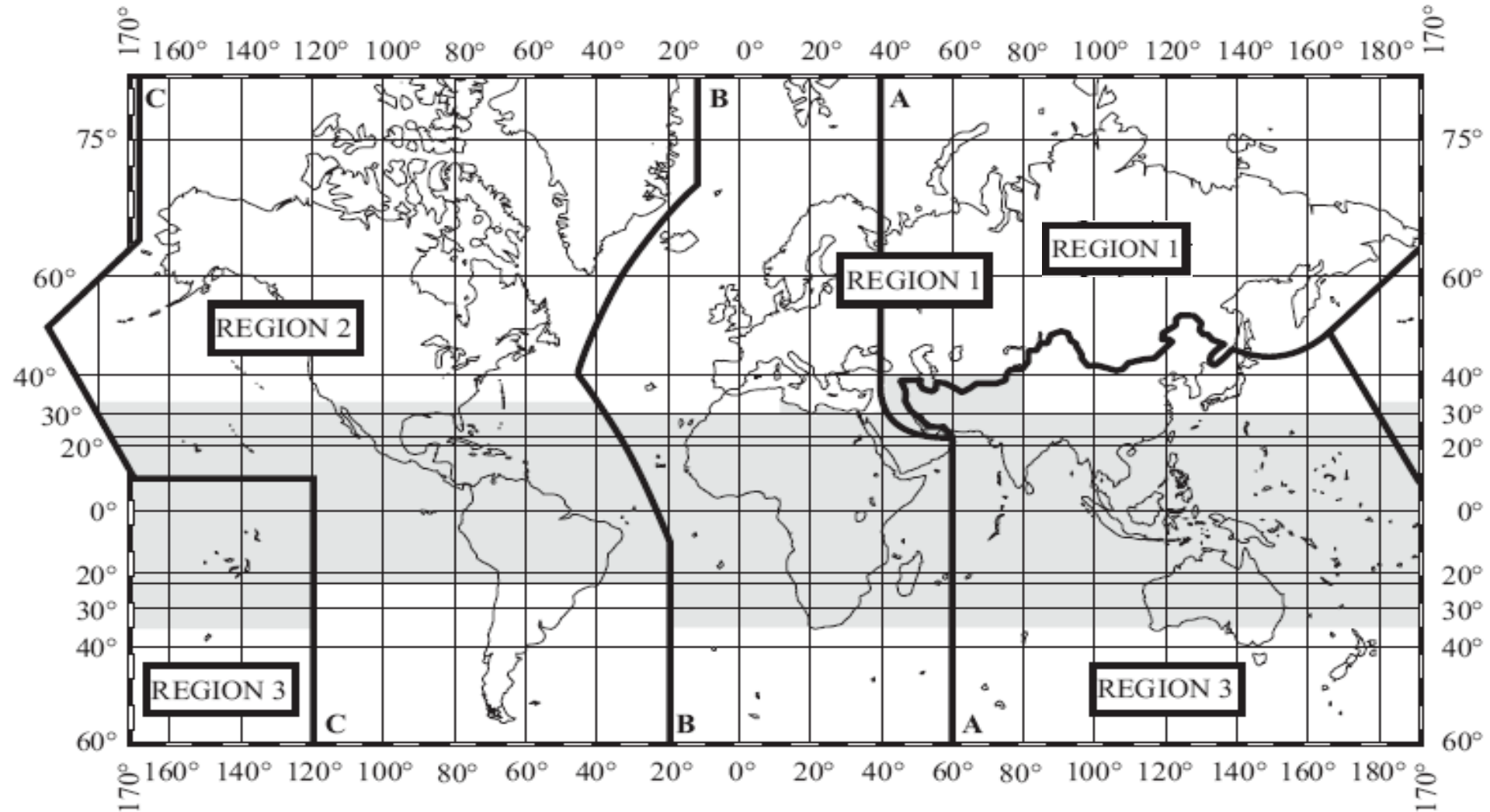
Panel 1 - Wireless Broadband Technologies

Johan Smit
Executive: Regulatory Affairs
Telkom SA SOC Ltd.

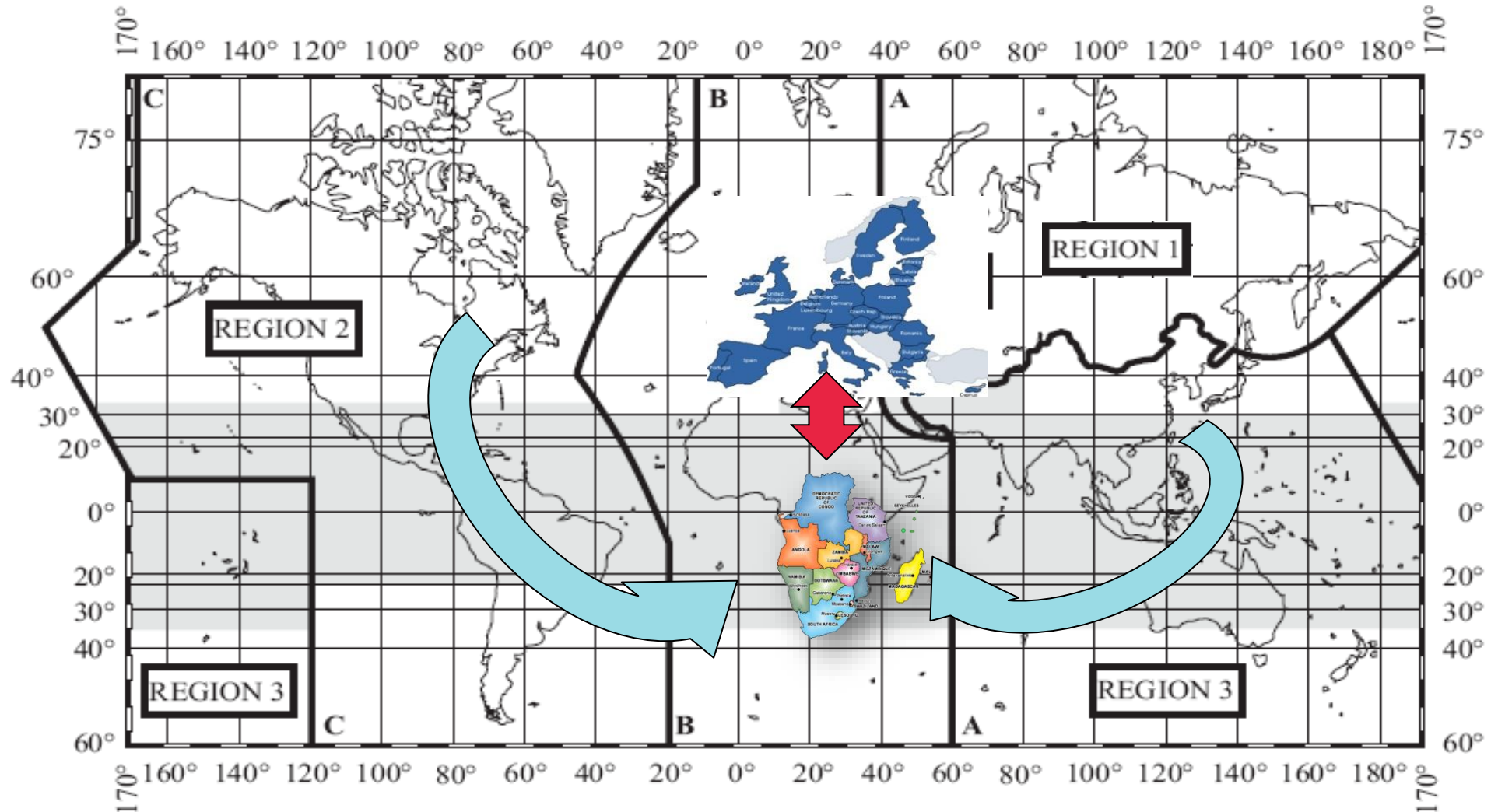
8 October 2019

Telkom

Spectrum harmonization and regional influences



Spectrum harmonization and regional influences



SADC harmonisation takes place within the context of international harmonisation, emphasis on Europe as the biggest regional economy, influences from other regions

Harmonisation of spectrum required on various levels

A. ITU allocation of frequencies to services

- Technical, regulatory and operational rules
- Sharing and compatibility between services (fixed, mobile, sat, etc.)
- Identification to applications (e.g. IMT, HAPS, HDFSS, WAS/RLAN)
- Flexibility in spectrum use; but no global harmonisation

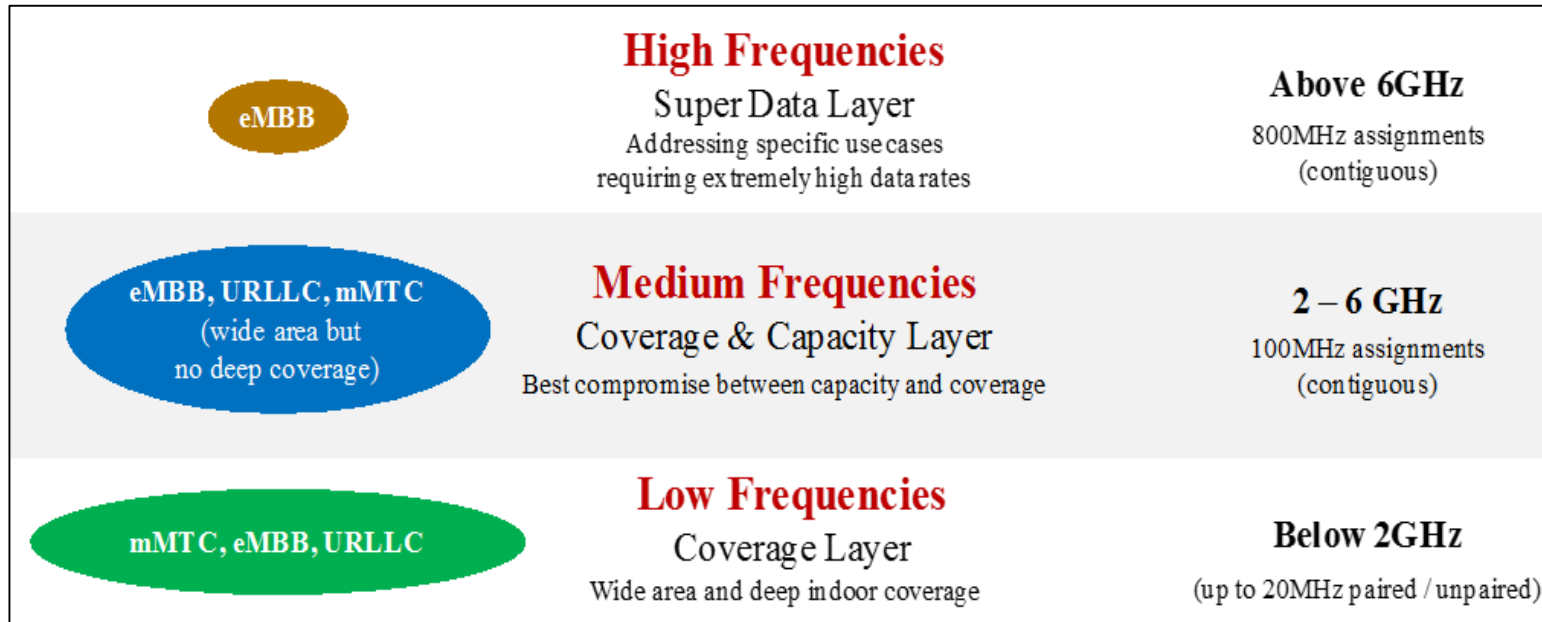
B. Frequency channelling plans

- FDD/TDD/SDL configurations (Rec. M.1036)
- PTP/PTMP systems for fixed links
- Various band limits and configurations (uplink/downlink)
- Regional differences in use of frequency bands

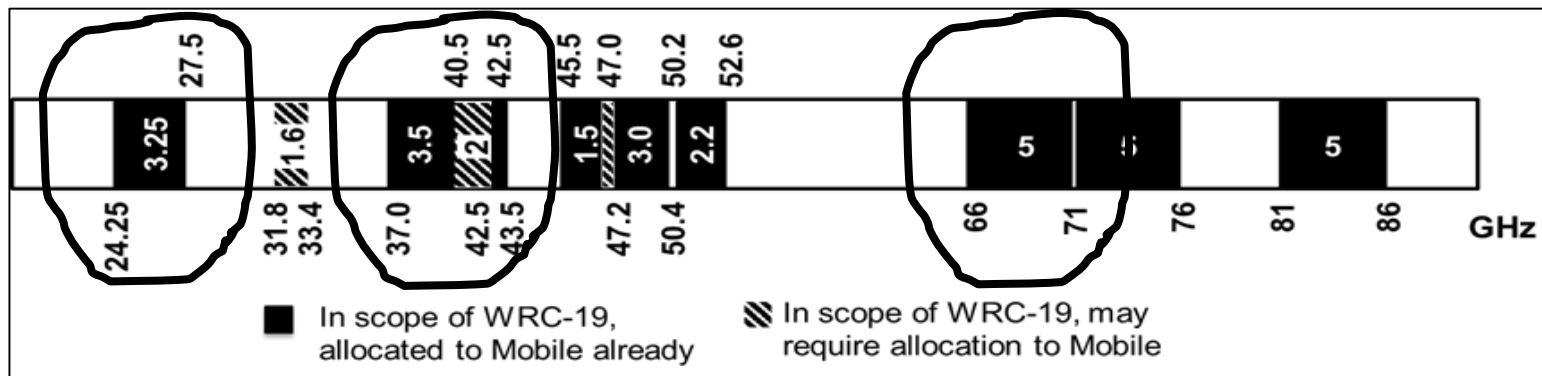
C. Spectrum assignment (Licensing)

- Spectrum licences generally technology and service neutral
- South Africa within Region 1 and generally follows Europe regarding spectrum and standards
- Adoption of technologies from all regions; creates spectrum issues

WRC-19 key considerations – IMT-2020/5G (WRC-19, 1.13)



- 5G deployment will require both dedicated and unlicensed spectrum;
- Possibility for global harmonisation on 26 GHz and 40 GHz; regulatory conditions are contentious;
- 66-71 GHz shared 5G and unlicensed use – agreement (?)
- 3.5 GHz is key for 5G deployment but limited (100 MHz / MNO required); may lead to WRC-23 agenda item;
- Consideration of bands 6-18 GHz at WRC-23 proposed;
- 6 GHz proposed - unlicensed / IMT
- Consideration of 600 MHz on WRC-23 agenda but unsure;
- 700/800 MHz in SA pending DTT migration.



WRC-19 key considerations – WAS/RLAN (WRC-19, 1.16)

- RLANs, especially Wi-Fi devices, essential to provide affordable and ubiquitous broadband wireless access to the Internet; initially in the 2.4 GHz band and subsequently expanded into the 5 GHz range.
- Under WRC-19 agenda item 1.16, five frequency bands were studied; only two frequency bands will probably be considered at the conference:

Band A 5 150-5 250 MHz

Band B 5 250-5 350 MHz (NOC) – sharing with radiodetermination and EESS (active)

Band C 5 350-5 470 MHz (NOC) – EESS (active) and radar sharing

Band D 5 725-5 850 MHz – sharing with radars and satellite services

Band E 5 850-5 925 MHz (NOC)

Band A: 5 150-5 250 MHz

- Six proposed methods including NOC
- This is an existing WAS/RLAN band – relaxation of existing restrictions are considered but no agreement between regional groups
- Some support for outdoor/limits; some groups support no change (NOC)
- ATU did not reach agreement; SADC proposed relaxed limits

Band D: 5 725-5 850 MHz

- Three proposed methods including NOC
- Band used for WAS/RLAN/BFWA in some countries
- No mobile allocation; ~40 countries in footnote
- All Regional Groups except APT support NOC
- SADC supported WAS/RLAN in the band:
 - 200mW e.i.r.p. and restricted to indoor only
 - mitigation techniques (e.g. TPC/M.1652)
- In SA band used for BFWA as per FCC Part 15 limits

WRC-19 key considerations – HAPS (WRC-19, 1.14)

- Development of High Altitude Platform Stations (HAPS) are supported due to its potential to deliver access to rural areas in the future (agenda item 1.14).
- Stations operating in the stratosphere (>20km above ground) are high enough to provide services to a large area but with reduced latency compared to GSO satellites.
- HAPS, operating within the identified FS bands, must share with, for example PTP links.

Bands	Methods and options		
	Method A	Method B	Method C
6 440-6 520 MHz	√	B1	√
6 560-6 640 MHz	√	Not proposed	√
21.4-22 GHz (R2 only)	√	B2	N/A
24.25-25.25 GHz (R2 only)	√	B3	N/A
25.25-27.5 GHz (R2 only)	√	B2	N/A
27.9-28.2 GHz	√	B1	√
31-31.3 GHz	√	B1	√
38-39.5 GHz	√	B2	N/A
47.2-47.5 GHz / 47.9-48.2 GHz	√	B1	√

Comments

- Identification of band for HAPS required for deployment (RR No. 4.23).
- ATU and CEPT support 6 GHz, 28 GHz, 31 GHz, 38 GHz and 48 GHz.
- ASMG NOC to all bands / others TBC
- All identified bands, except 31 GHz, are used extensively for other services (FS and satellite) in SA and sharing will be required.
- No sharing studies conducted for the band 6560-6640 MHz.