5G ECOSYSTEM - UPDATE

COAI / GSA Workshop, New Delhi, 22nd Jan 2020

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5G VISION

GOAL

large contiguous amounts of harmonized spectrum, with suitable regulatory conditions. 700 MHz & 3.3-3.6 GHz licensed in 2020, 24.25-29.5 GHz licensed in 2021, to the benefit of India and its citizens

HOW

2

spectrum from the low-band, mid-band and high-band frequency ranges helps realise the Vision



wirelessly connect almost all 7 billion people globally to new and exciting services through 100 billion devices and things, by 2030

5G USE CASES



Industrial –IoT with URRLC

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VIDEO IS THE MAIN DRIVER FOR MOBILE DATA



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Source: Ericsson Mobility Report 2019



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201 5G DEVICES ANNOUNCED

32% phones – smartphones: 78 5G device vendors across the world.



5G CHIPSETS AND DEVICES – EXAMPLES FROM GAMBoD



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5G SPECTRUM





High band Extreme capacity e.g. 24.25-29.5, 37-43.5 GHz etc 800-1000 MHz per MNO/Network contiguous 2020 onwards



Mid bande.g. 2.3, 2.6, 3.3–4.2, 4.4-5 GHz etcBoth coverage & capacityAt least 80-100 MHz per MNO contiguous 2020 onwards

Wide area coverage, deep indoor (mMTC, eMBB, URLLC) Low band Extended coverage e.g. 600, 700 MHz etc Up to 20 MHz channel bandwidth 2020 onwards

Various applications and services require access to spectrum from low, mid and high bands

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5G DEVICES COVERING ALL 5G BANDS



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SIXTY-ONE COMMERCIAL 5G NETWORKS IN 34 COUNTRIES

Nearly 10% of all LTE operators have now deployed 5G; nearly 8% have launched 5G

- By the end of 2019 348 operators in 119 countries had announced they were investing in 5G.
- 77 operators had announced that they had deployed 3GPP compliant 5G technology in their networks.
- A total of 61 operators in 34 countries had launched one or more 3GPP-compliant 5G services:
 - Of those...
 - 49 operators had launched 3GPPcompliant 5G mobile services (46 full launches, 3 limited availability launches).
 - 34 operators had launched 3GPPcompliant 5G FWA or home broadband services (27 full launches, 7 limited availability launches).



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5G LICENSING MID BAND "C-BAND" ASIA-PACIFIC



"C-BAND" CEPT, MIDDLE EAST & AFRICA, AMERICA'S



C Band licensing and deployments well underway around the world



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LICENSING HIGH BAND 26 GHZ AND 28 GHZ BANDS – ASIA-PACIFIC



26 GHZ AND 28 GHZ BANDS - AMERICA'S, CEPT



Large number of licenses to be issued within 24.25-29.5 GHz range in 2020-2021 time



SUMMARY



- The 5G ecosystem is in place and expanding
- Standards are complete and are being enhanced
- Infrastructure and devices available and market growing
- Spectrum from low, mid and high bands enable the full 5G vision to be realised
- Commercial deployments & licensing underway