

January 22<sup>nd</sup>, 2021

Beijing

Qualcomm

# US Spectrum Update

FuTURE Spectrum WG 2021 #1 meeting

# Outline

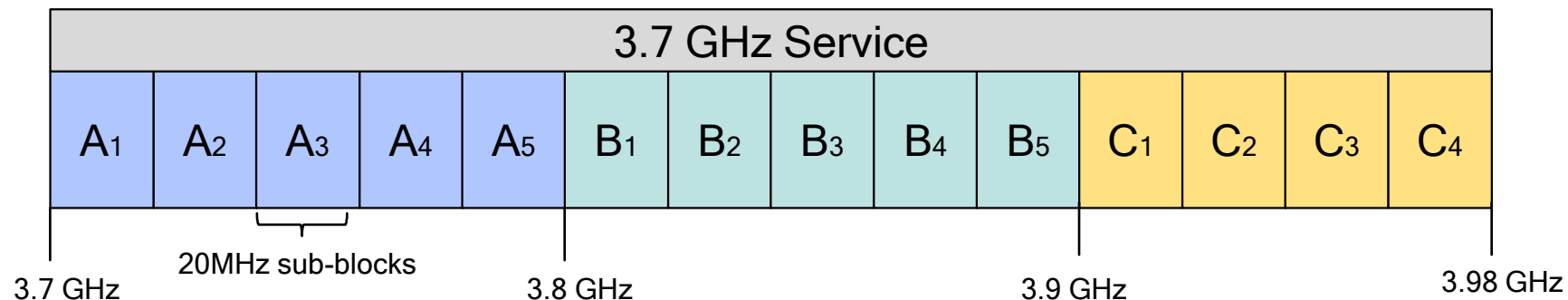
- FCC ruling on 5.9 GHz C-V2X (November 2020)
- 3.7-4.2 GHz auction (ongoing)
- 3.4-3.55 GHz (September 2020)
- 4.94-4.99 GHz (October 2020)
- 12.2-12.7 GHz NPRM (January 2021)

# FCC ruling on 5.9 GHz for C-V2X

- FCC reassigned 30 MHz at 59 GHz (5895-5925 MHz) for C-V2X in Nov. of 2020.
  - In rules adopted in 1999, FCC had allocated this spectrum for DSRC; now reassigned to C-V2X.
  - Both C-V2X OBU and RSU are allowed.
  - FCC adopted streamlined process to enable immediate use of this spectrum for C-V2X.
- FCC reassigned 5850 - 5895 MHz for unlicensed uses (such as Wi-Fi & 5G NR-U).
  - Allowed immediate full power indoor unlicensed operations.
  - Having more contiguous spectrum from 5725-5895 MHz creates wider channels
  - Any DSRC operations (of which there are very few) must vacate spectrum in one year.
- FNPRM
  - Address transitioning all ITS operations in the revised ITS band at 5.895-5.925 GHz to C-V2X-based technology
    - including the appropriate timeline for the implementation and codification of [C-V2X technical parameters](#) for operation in the 5.895-5.925 GHz band.
  - Technical conditions for outdoor operation below 5895 MHz. Outdoor unlicensed is allowed once ITS operations have exited this portion of the band
  - [Additional spectrum for future ITS](#) (such as for 5G C-V2X) under consideration in other bands.

# 3.7 - 4.2 GHz (C-Band) Auction 107

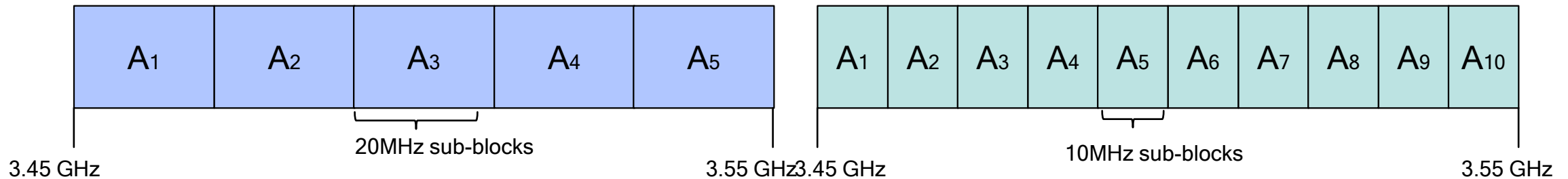
- In August 2020, FCC established bidding procedures for December 8th, 2020 C-Band Auction.
  - Auction 107 is the Commission's second scheduled auction of mid-band spectrum for 5G, the Internet of Things (IoT), and other advanced spectrum based services across the country.
- A licensee in the 3.7-3.98 GHz band may provide any services permitted under terrestrial **fixed or mobile** allocations with 15 years license term.
  - Auction 107 is for **new flexible-use overlay licenses** in the **3.7-3.98** GHz band (the "3.7 GHz Service").
- A deadline for clearing the entire band by 2025, while offering incumbent space station operators the option to receive payments to accelerate the clearing process to Dec 2021 for the lower 120 MHz (including 20 MHz guardband) in 46 of the top 50 regions and Dec 2023 for the upper 180 MHz across the entire US (& the lower 120 MHz where it wasn't cleared in 2021).
- On January 15<sup>th</sup> of 2021, the clock round of bidding ended, with the total at \$80.9168 billion.
  - The clock round determined who won how many generic spectrum blocks in each geographic area.
  - The assignment round will determine exactly which blocks each bidder will get.



Source: <https://www.fcc.gov/auction/107>

# 3.45-3.55 GHz FNPRM

- In FNPRM, FCC proposed allocating the 3.45-3.55 GHz band for flexible use service for **5G deployment** across the contiguous United States in September of 2020.
- FCC proposed to add **a co-primary, non-federal fixed and mobile** (except aeronautical mobile) allocation to the band;
- FCC sought comment on an appropriate regime to coordinate non-federal and federal use and proposed a **band plan**, as well as **technical**, **licensing**, and **competitive bidding rules** for the band.



- FCC sought comment on details regarding the processes for relocating non-federal radiolocation operators to the 2.9-3.0 GHz band and sunseting amateur use in the 3.3-3.5 GHz band.
- Seek comment on the process for sunseting amateur use in the 3.3-3.5 GHz band.

# 4.9 GHz Report and Order and FNPRM




- In October of 2020, FCC adopted new rules to increase use of 4.9 GHz (4940-4990 MHz) spectrum band. This band has been allocated for local public safety uses for many years, but has been underused.
  - It the 18 years since the FCC designated the 4.9 GHz band for public safety use, only about 3.5% of all potential licensees have taken advantage of this spectrum opportunity.
- Established a new framework to provide the eligible states the opportunity to lease 4.9 GHz band spectrum to commercial entities, critical infrastructure industry, including electric utilities, and other stakeholders.
- These new rules eliminate the requirement that leased spectrum must be used to support public safety but would require lessees to adhere to the informal coordination requirements applicable to the band.
- The FNPRM proposed a new state-based licensing regime for public safety operations in the band, which would complement the new leasing regime.
- FCC sought comment on the creation of a voluntary state band manager to coordinate operations in the band.
- FCC sought comment on additional ways to implement and facilitate robust use of the band, including steps to address expanded access in states that divert 911 fees, the use of dynamic spectrum sharing, and ways to encourage collaboration across jurisdictions.

# 12.2-12.7GHz NPRM

- FCC released an NPRM to seek comment on whether to allow terrestrial flexible use (including mobile services) in the 12.2-12.7 GHz band on January 15<sup>th</sup>, 2021.
- In the United States, the 12 GHz band is allocated on a primary basis for non-Federal use for Direct Broadcast Satellite (DBS), Fixed Satellite Service (space-to-Earth) limited to NGSO orbit systems (NGSO FSS), and Fixed Service (specifically, the Multichannel Video Distribution and Data Service or MVDDS). While these three services are co-primary, NGSO FSS and MVDDS are allocated on a non-interference basis with respect to DBS.
- The NPRM sought comments on
  - Whether FCC can increase opportunities **for shared use** of the band while protecting incumbents from harmful interference.
  - Whether adding a mobile allocation to the 12 GHz band to allow flexible, terrestrial use
  - Technical parameters that would allow for additional terrestrial shared use of the band without causing harmful interference to incumbent operators.
  - Possible methods for assigning flexible-use rights in the band, including:
    - Modifying the licenses of existing MVDDS licensees to grant them flexible-use rights,
    - **Auctioning overlay licenses** in the band, or
    - **Authorizing underlay use** of the band.
  - **Potential sharing mechanisms** for the band, if coexistence among the co-primary services (i.e., DBS, NGSO FSS, MVDSS incumbents) and proposed flexible-use service is technically feasible.
  - The costs and the benefits of the new services and various sharing mechanisms.
  - Whether maintaining the current framework



# Thank you

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