COMMSCOPE®

Unmanned Aircraft Systems Use of the 5 GHz Band

December 2, 2021

Basics

- FCC issued PN: Wireless Telecommunications Bureau Seeks to Refresh the Record on Unmanned Aircraft Systems Use Of The 5 GHz Band (Aug. 20, 2021; DA 21-1025; RM-11798)
  - Comments Due: Sep. 20, 2021 (13 days)
  - Replies Due: Oct. 18, 2021 (41 days)
- Realizing the full potential benefits of UAS and safely integrating these growing UAS operations into the nation's airspace will require access to licensed spectrum and appropriate service rules.
- Initial rulemaking request filed by Aerospace Industries Association (AIA), Feb. 2018
  - Allocation was made for terrestrial line-of-sight command and control of unmanned aviation systems in 2012.
  - FCC adopted an allocation for UAS command and control links in the 5030-5091 MHz band in March 2017.
  - Rulemaking is needed to address rule changes to Pt. 87 to develop technical and operational rules for the 5030-5091 MHz band to enable secure Control and Non-Payload Communications (CNPC) links.

Table of Allocations

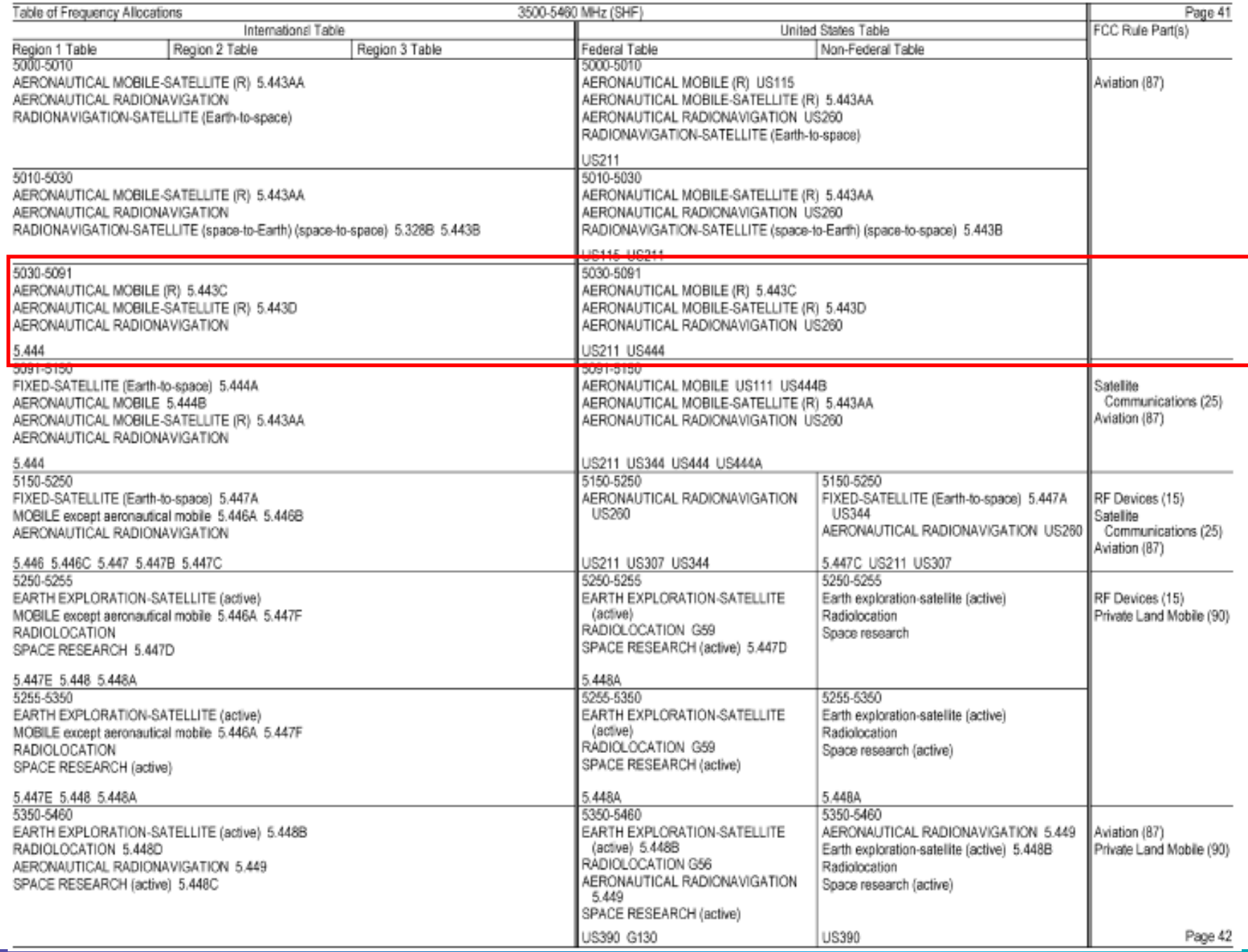
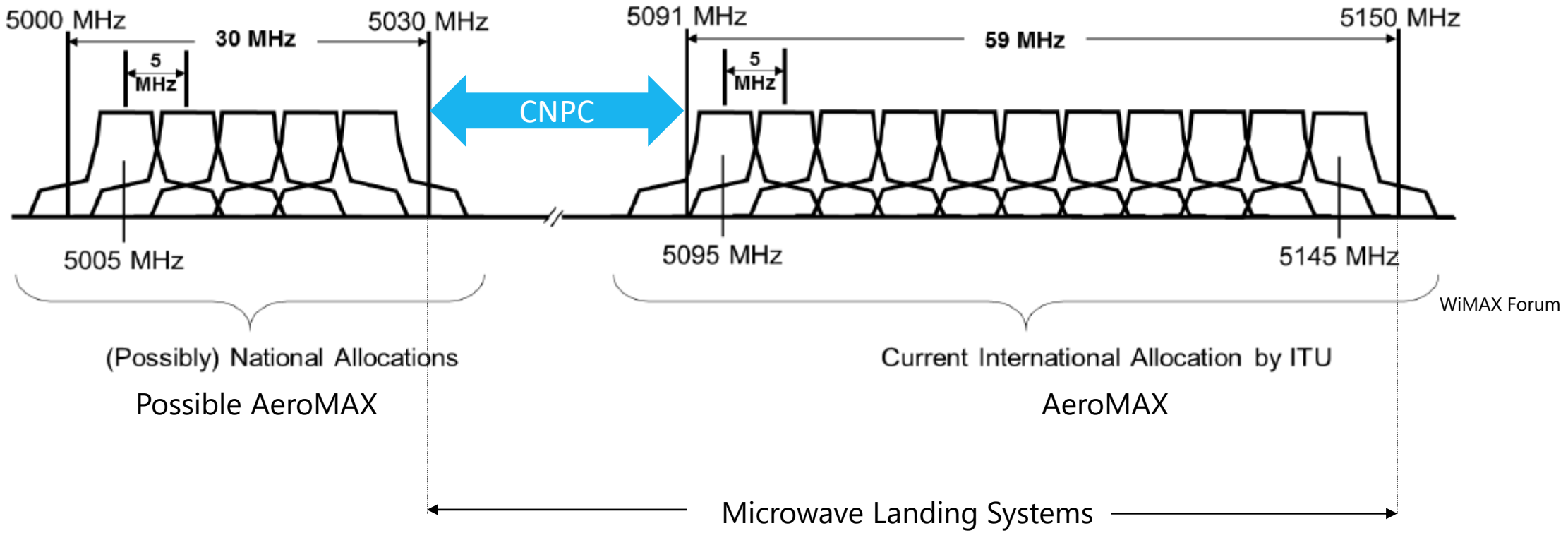


Table of Frequency Allocations	3500-5460 MHz (SHF)		Page 41
International Table	United States Table		FCC Rule Part(s)
Region 1 Table / Region 2 Table / Region 3 Table	Federal Table	Non-Federal Table	
5000-5010 AERONAUTICAL MOBILE-SATELLITE (R) 5.443AA AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (Earth-to-space)	5000-5010 AERONAUTICAL MOBILE (R) US115 AERONAUTICAL MOBILE-SATELLITE (R) 5.443AA AERONAUTICAL RADIONAVIGATION US260 RADIONAVIGATION-SATELLITE (Earth-to-space) US211		Aviation (87)
5010-5030 AERONAUTICAL MOBILE-SATELLITE (R) 5.443AA AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.328B 5.443B	5010-5030 AERONAUTICAL MOBILE-SATELLITE (R) 5.443AA AERONAUTICAL RADIONAVIGATION US260 RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) 5.443B US115 US211		
5030-5091 AERONAUTICAL MOBILE (R) 5.443C AERONAUTICAL MOBILE-SATELLITE (R) 5.443D AERONAUTICAL RADIONAVIGATION 5.444	5030-5091 AERONAUTICAL MOBILE (R) 5.443C AERONAUTICAL MOBILE-SATELLITE (R) 5.443D AERONAUTICAL RADIONAVIGATION US260 US211 US444		
5091-5150 FIXED-SATELLITE (Earth-to-space) 5.444A AERONAUTICAL MOBILE 5.444B AERONAUTICAL MOBILE-SATELLITE (R) 5.443AA AERONAUTICAL RADIONAVIGATION 5.444	5091-5150 AERONAUTICAL MOBILE US111 US444B AERONAUTICAL MOBILE-SATELLITE (R) 5.443AA AERONAUTICAL RADIONAVIGATION US260 US211 US344 US444 US444A		Satellite Communications (25) Aviation (87)
5150-5250 FIXED-SATELLITE (Earth-to-space) 5.447A MOBILE except aeronautical mobile 5.446A 5.446B AERONAUTICAL RADIONAVIGATION 5.446 5.446C 5.447 5.447B 5.447C	5150-5250 AERONAUTICAL RADIONAVIGATION US260 US211 US307 US344	5150-5250 FIXED-SATELLITE (Earth-to-space) 5.447A US344 AERONAUTICAL RADIONAVIGATION US260 5.447C US211 US307	RF Devices (15) Satellite Communications (25) Aviation (87)
5250-5255 EARTH EXPLORATION-SATELLITE (active) MOBILE except aeronautical mobile 5.446A 5.447F RADIOLOCATION SPACE RESEARCH 5.447D 5.447E 5.448 5.448A	5250-5255 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION G59 SPACE RESEARCH (active) 5.447D 5.448A	5250-5255 Earth exploration-satellite (active) Radiolocation Space research	RF Devices (15) Private Land Mobile (90)
5255-5350 EARTH EXPLORATION-SATELLITE (active) MOBILE except aeronautical mobile 5.446A 5.447F RADIOLOCATION SPACE RESEARCH (active) 5.447E 5.448 5.448A	5255-5350 EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION G59 SPACE RESEARCH (active) 5.448A	5255-5350 Earth exploration-satellite (active) Radiolocation Space research (active) 5.448A	
5350-5460 EARTH EXPLORATION-SATELLITE (active) 5.448B RADIOLOCATION 5.448D AERONAUTICAL RADIONAVIGATION 5.449 SPACE RESEARCH (active) 5.448C	5350-5460 EARTH EXPLORATION-SATELLITE (active) 5.448B RADIOLOCATION G56 AERONAUTICAL RADIONAVIGATION 5.449 SPACE RESEARCH (active) US390 G130	5350-5460 AERONAUTICAL RADIONAVIGATION 5.449 Earth exploration-satellite (active) 5.448B Radiolocation Space research (active) US390	Aviation (87) Private Land Mobile (90) Page 42

UAS CNPC Spectrum Assignment



Basic Proposal for which FCC is Seeking Comments

- Upon request to a frequency coordinator, licensees could obtain operational access to a subset of frequencies in the band for a limited geographic area and duration tailored to a specific flight.
- The 5030-5091 MHz band by UAS for “payload communications or other non-safety or non-route services” would be prohibited.
- License eligibility
  - Should the FCC require that parties seeking a 5030-5091 MHz band spectrum license certify they have the requisite FAA remote pilot certification, or in the case of organizations, certify that they will utilize only individuals with such qualifications for their UAS operations in the band?

Dynamic Frequency Assignment

- A central element of the proposal is a dynamic frequency assignment management system, which would automatically process requests from licensees for temporary assignment of bandwidth in the 5030-5091 MHz band in a specified geographic area or path covering the anticipated flight path, for a specified duration covering the anticipated flight duration.
- Requests would need to be made a short time before the expected flight (AIA suggests no more than 20 minutes), and at the end of the estimated flight duration, or some "reasonable" period after, the assigned frequencies would automatically become available for reassignment
- Would the SAS approach work?
- What would be the process for authorizing the frequency assignment manager?
  - Minimum eligibility requirements or restrictions for applicants
  - Whether FCC should permit more than one manager
- Are there any requirements or standards governing requests for assignment of frequencies and the processing of these requests, and whether the standards and processing procedures for requests should beleft to the discretion of the manager?
- Proposal is that the FCC require licensees to "release" assignments at the end of the flight, and that assignments be automatically "revoked" some period after the estimated duration of the flight if not otherwise released.
- What enforcement mechanism should be imposed on the requirement that assignments be released at the end of the flight?
- What connections or communications between the frequency assignment management system and UAS stations will be needed to implement these processes?
  - Would revocation create potential safety concerns if revocation occurred while a flight was ongoing and how should these conditions be addressed?

Beyond Line of Sight (BLOS)

- Will the proposed spectrum assignment model provide sufficient scope and certainty to incentivize the deployment of network infrastructure that can support both LOS and BLOS flights?
- Are there additional or alternative approaches to licensing the 5030-5091 MHz band that might better support such deployment, or otherwise be more effective in supporting BLOS flights in particular
- Should operators or organizations that employ them to hold a nationwide, non-exclusive license before they can receive spectrum assignments?
- Should FCC adopt relatively larger geographic areas, such as Regional Economic Area Groupings, to better support BLOS operations?
- What should be the spectrum block size that will maximize the utility and benefit of the band, considering factors such as the benefits of competition from multiple providers, the expected spectrum needs and demand level of UAS operations, and the interest in accommodating, as much as is practical, a range of UAS operations that may have significantly varying bandwidth requirements?

Docket Activity So Far

Aerospace Industries Association

AeroVironment, Inc.

Northeast UAS Airspace Integration Research

AURA Network Systems

Aviation Spectrum Resources, Inc.

Integrity Communications Solutions Inc.

Commercial Drone Alliance

CTIA

Dynamic Spectrum Alliance

Edison Electric Institute

Elefante Group

Federated Wireless

Government of Canada

Lockheed Martin Corporation

L3Harris Technologies

NTIA

Qualcomm

Raytheon Company

Rockwell Collins, Inc.

RTCA's Special Committee SC-228, WG2 (MITRE Report)

Small UAV Coalition

The Boeing Company

United Parcel Service, Inc.

uAvionix Corporation

Xcel Energy Services Inc.

Next Steps

- Role for WInnForum?
- Should we reach out to AIA, RTCA others?

COMMSCOPE®

Thanks!