

UNITED STATES OF AMERICA
PRELIMINARY VIEWS FOR WRC-15

Agenda Item 1.5: to consider the use of frequency bands allocated to the fixed-satellite service not subject to Appendices 30, 30A and 30B for the control and non-payload communications of unmanned aircraft systems (UAS) in non-segregated airspaces, in accordance with Resolution **153 (WRC 12)**

BACKGROUND: UAS enable the remote piloting of aircraft both over short range and at significant distances within or beyond line-of-sight of the remote pilot. These flight operations currently take place in airspace segregated from commercial air traffic, to ensure the safety of the unmanned air vehicle and other airspace users. The 2012 World Radiocommunication Conference (WRC-12) allocated the band 5 030 – 5 091 MHz to the aeronautical mobile (R) service for terrestrial line-of-sight UAS control links and enhance the possible use of the existing aeronautical mobile-satellite (R) service (AMS(R)S) allocations in the same band for beyond line-of-sight UAS control links. However, the total bandwidth requirements for UAS exceed the 61 MHz available in this band. WRC-12 did not adopt proposals to address beyond line-of-sight operations within some fixed satellite service (FSS) allocations, but instead established WRC-15 agenda item 1.5 to study the use of FSS for beyond line-of-sight UAS control and non-payload communications (CNPC) links. It should be noted that there are no satellite systems currently operating in the 5030-5091 MHz band to support current/near-term UAS CNPC, and even when such a system becomes available, it is likely that additional spectrum will be required in order to meet availability requirements.

In the future, administrations expect broad deployment of UAS throughout the airspace structure. As UAS deployment increases, it will be impractical for some users to deploy only in segregated airspace; rather some UAS will need to integrate with the current airspace users in a safe and seamless manner. To accomplish integration into non-segregated airspace, UAS will require high integrity CNPC link(s) capable of relaying the necessary air traffic control messages and flight critical aircraft information between the unmanned aircraft and remote control centers. From a technical standpoint, aircraft radio links can be relayed via satellites using an FSS allocation and many aircraft have already been equipped with FSS systems.

Existing ITU-R studies (e.g., Report ITU-R M.2233) show that commercial fixed-satellite service (FSS) systems operating in portions of the frequency ranges 10.95-14.5 GHz and 17.3-30.0 GHz can support UAS beyond line-of-sight control links and meet the desired link availability. Many commercial aircraft are already equipped with systems operating in these bands offering immediate access to spectrum for UAS beyond line-of-sight communications.

The International Civil Aviation Organization (ICAO) will develop technical Standards and Recommended Practices (SARPs) for CNPC to ensure safe operation of UAS. UAS CPNC would operate as an FSS application and the responsibilities and liabilities for meeting domestic and ICAO standards and regulations would be specified in the FSS and UAS operator's contracts or procedures.

U.S. VIEW: The United States supports the addition of technical and regulatory provisions that will enable the use of portions of FSS bands for UAS CNPC links in non-segregated airspace, if studies identified in Resolution **153 (WRC-12)** demonstrate that the requirements of aviation authorities are satisfied. However, the United States does not support the addition of an AMS(R)S allocation to the bands used by the FSS for this purpose.