

RESOLUTION 239 (WRC-15)

Studies concerning Wireless Access Systems including radio local area networks in the frequency bands between 5 150 MHz and 5 925 MHz

The World Radiocommunication Conference (Geneva, 2015),

considering

- a)* that there has been considerable growth in the demand for Wireless Access Systems including radio local area networks (WAS/RLAN) applications with multimedia capabilities;
- b)* that WAS/RLAN applications contribute to global economic and social development by providing a wide range of multimedia applications;
- c)* that there is a need to continually take advantage of technological developments in order to increase the efficient use of spectrum and facilitate spectrum access;
- d)* that as technology evolves to meet increasing performance demands and traffic on broadband WAS increases, the use of wider bandwidth channels in order to support high data rates creates a need for additional spectrum;
- e)* that the frequency band 5 350-5 460 MHz is allocated worldwide on a primary basis to the aeronautical radionavigation service (No. **5.449**);
- f)* that the frequency band 5 460-5 470 MHz is allocated worldwide on a primary basis to the radionavigation service (No. **5.449**);
- g)* that the frequency band 5 350 to 5 470 MHz is allocated worldwide on a co-primary basis to the Earth exploration-satellite service (active) (No. **5.448B**), the space research service (active) (No. **5.448C**) and the radiolocation service (No. **5.448D**);
- h)* that the frequency bands between 5 725 and 5 850 MHz are allocated worldwide on a primary basis to the radiolocation service and, in Region 1, to the fixed-satellite service;
- i)* that the frequency band 5 850-5 925 MHz is allocated worldwide on a primary basis to the mobile service, the fixed service and the fixed-satellite service;
- j)* that there is a need to protect the incumbent primary services including their current and planned use;
- k)* that there may be a need to specify potential technical and operational restrictions for WAS/RLAN operating in the mobile service within the 5 GHz frequency range to facilitate sharing with systems of incumbent services,

considering further

- a) that adequate and timely availability of spectrum and supporting regulatory provisions are essential to support future growth of WAS/RLAN applications;
- b) that harmonized worldwide bands that support future growth of WAS/RLAN applications are highly desirable in order to achieve the benefits of economies of scale,

noting

- a) that the frequency bands 5 150- 5 250 MHz, 5 250- 5 350 MHz and 5 470- 5 725 MHz are allocated to the mobile service on a primary basis for the implementation of WAS/RLAN applications in accordance with Resolution **229 (Rev.WRC-12)**;
- b) that the frequency band 5 250-5 850 MHz is allocated worldwide on a primary basis to the radiolocation service;
- c) that in the frequency bands 5 350 -5 470 MHz there are no primary mobile allocations;
- d) that in the frequency band 5 725-5 850 MHz there is no primary mobile allocation, however, the band is allocated by footnote to the fixed and mobile service in some countries, and additionally WAS/RLAN use is already authorized in some countries situated in each of the ITU-R regions;
- e) that the Earth exploration-satellite service (active) allocations in the frequency bands 5 350-5 460 MHz and 5 460-5 470 MHz are essential for Earth-observation programmes such as Copernicus (Sentinel-1 and Sentinel-3), Jason, Sentinel-6 and RADARSAT (RADARSAT-2 and RADARSAT-3) and that the data these provide is vital for reliable and up-to-date information on how our planet and its climate are changing;
- ebis*) that future Earth exploration-satellite service (active) systems are being planned to utilize up to 300 MHz of bandwidth within the 5 GHz EESS allocated frequency band to improve image resolution and provide improved applications to users;
- f) that the frequency band 5 150-5 250 MHz is also allocated worldwide on a primary basis to the aeronautical radionavigation service and to the fixed-satellite service (No. **5.447A**);
- g) that the frequency bands between 5 250 and 5 350 MHz are also allocated worldwide on a primary basis to the Earth exploration-satellite service (active), the space research service and the space research (active) service;
- h) that protection and performance criteria for systems of incumbent services are available in ITU-R,

recognizing

- a) that the compatibility studies performed by ITU-R in preparation for this conference indicate that when assuming the use of WAS/RLAN mitigation measures limited to the regulatory provisions of Resolution **229 (Rev.WRC-12)**, sharing between WAS/RLAN and the EESS (active) systems in the frequency bands 5 350 to 5 470 MHz would not be feasible, as well as being insufficient to ensure protection of certain radar types in this frequency band; for these cases, sharing may only be feasible if additional WAS/RLAN mitigation measures are implemented, however, no agreement was reached on the applicability of any additional WAS/RLAN mitigation techniques;
- b) that the results of ITU-R studies indicate that the minimum spectrum need for WAS/RLAN in the 5 GHz frequency range in the year 2018 is estimated at 880 MHz; this figure includes 455-580 MHz already utilized by non-IMT mobile broadband applications operating within the 5 GHz range resulting in 300-425 MHz additional spectrum being required;
- c) that WAS/RLAN devices utilize the following frequency bands in the 5 GHz frequency range: 5 150-5 250 MHz, 5 250-5 350 MHz, 5 470-5 725 MHz and, in some countries 5 725-5 850 MHz;
- d) that the frequency band 5 850-5 925 MHz is extensively used in some countries by the fixed-satellite service;
- e) that additional global allocations to the mobile service in the frequency bands 5 350-5 470 MHz and 5 725-5 850 MHz would facilitate contiguous spectrum for WAS/RLAN, thereby enabling the use of wider channel bandwidths to support higher data throughput;
- f) that sharing studies should consider additional mitigation techniques to ensure that WAS/RLAN devices would not result in degradation of the performance for existing systems;
- g) that the application of possible additional WAS/RLAN mitigation measures referred to in *recognizing a)* may also be relevant to enable WAS/RLAN outdoor operation in other frequency bands;
- h) that the frequency band 5 725-5 875 MHz is also designated for industrial, scientific and medical (ISM) applications and that radiocommunication services operating within this frequency band must accept harmful interference which may be caused by these applications in accordance with No. **5.150**,

resolves to invite the 2019 World Radiocommunication Conference

to consider the results of the ITU-R studies and take appropriate actions,

invites ITU-R

to conduct and complete the following in time for WRC-19:

- a) to study WAS/RLAN technical characteristics and operational requirements in the 5 GHz frequency range;
- b) to conduct studies with a view to identify potential WAS/RLAN mitigation techniques to facilitate sharing with incumbent systems in the frequency bands 5 150-5 350 MHz, 5 350-5 470 MHz, 5 725-5 850 MHz and 5 850-5 925 MHz, while ensuring the protection of incumbent services including their current and planned use;
- c) to perform sharing and compatibility studies between WAS/RLAN applications and incumbent services in the frequency band 5 150-5 350 MHz with the possibility of enabling outdoor WAS/RLAN operations including possible associated conditions;
- d) to conduct further sharing and compatibility studies between WAS/RLAN applications and incumbent services addressing:
 - i) whether any additional mitigation techniques in the frequency band 5 350-5 470 MHz beyond those analysed in the studies referred to in *recognizing a*) would provide coexistence between WAS/RLAN systems and EESS (active) and SRS (active) systems;
 - ii) whether any mitigation techniques in the frequency band 5 350-5 470 MHz would provide compatibility between WAS/RLAN systems and radio determination systems;
 - iii) whether the results of studies under points i) and ii) would enable an allocation of the frequency band 5 350-5 470 MHz to the mobile service with a view to accommodating WAS/RLAN use;
- e) to also conduct detailed sharing and compatibility studies, including mitigation techniques, between WAS/RLAN and incumbent services in the frequency band 5 725-5 850 MHz with a view to enabling a mobile service allocation to accommodate WAS/RLAN use;
- f) to also conduct detailed sharing and compatibility studies, including mitigation techniques, between WAS/RLAN and incumbent services in the frequency band 5 850-5 925 MHz with a view to accommodating WAS/RLAN use under the existing primary mobile service allocation while not imposing any additional constraints on the existing services,

invites administrations

to participate in the studies by submitting contributions to ITU-R.