

Airbus Defence and Space

Additional comments:

Airbus Defence and Space supports and fully share the comments jointly submitted to this consultation by ESOA and the GVF.

Airbus DS is a major industry stakeholder in COPERNICUS , the world's largest civil Earth Observation program.

COPERNICUS is an environment and security surveillance programme based mainly on satellite observation but also in-situ observation (land, buoys, planes, etc).

The main characteristics of the COPERNICUS programme are that it covers a very broad scope of application and that it is created from a number of existing infrastructures, in the field of both observation and services.

The programme includes a space component, known as the Sentinels, along with a component for developing services in different fields: land, air, marine, emergency management, climate change and security.

The programme is the result of a European Space Agency (ESA) initiative laying the ground for the practical application of a number of European and national Earth-observation programmes that have reached maturity, such as ERS, SPOT and ENVISAT.

The space segment is coordinated by ESA and includes the Sentinel-1,-2,-3,-4,-5 and Jason-CS systems. The Sentinel-1 and Sentinel-3 mission satellites (four satellites in each system) are equipped with payloads operating in the 5250-5570 MHz band. Sentinel-1 is the key mission of the COPERNICUS programme and its satellites each operate a synthetic aperture radar (SAR) in the 5350-5470 MHz band (in the allocation to the Earth-exploration satellite service).

It should be pointed out that the Canadian Space Agency (CSA) has made the same choice for the Radarsat constellation.

There are already hundreds of SAR instrument applications, with new ones being discovered all the time: soil erosion, coastal erosion, urban planning, forest management, monitoring of dams, management of agricultural resources, monitoring of flooding, sea pollution (waste oil dumping), detection and tracking of ships, security and defence.

Question 1:Do you agree with our proposal to prioritise consideration of the 5725-5850 MHz frequencies for Wi-Fi, subject to appropriate protections to other users, in particular satellite services? :

Airbus DS wish first of all to remind Ofcom of the sharing study results as described in ECC Report 244 and CEPT Report 64.

On the basis of the above, first of all RLAN deployment shall be in any event considered for in door use only. Therefore a regulatory regime to this end should be implemented. Moreover the international dimension of satellite services, Fixed Satellite Services (FSS) - and Earth Exploration Satellite Services - shall be accounted and the operation of existing and planned networks in the band shall be protected.

Question 2:Do you agree with our proposal to re-examine the requirement for DFS across the 5 GHz band, subject to appropriate protections to other users? :

No we do not agree. We remain convinced that the implementation of DFS is not enough in itself to resolve the significant technical incompatibility between RLAN and COPERNICUS 5-GHz space services.

Question 3: Do you think we should pursue the other options we have identified: opening up 5850-5925 MHz, outdoor Wi-Fi use at 5150-5350 MHz, and opening up the 'centre gap' at 5350-5470?:

No, we do not agree with the approach outlined. Sharing studies conducted by CEPT have produced results which show that satellite services , in particular EESS SAR images will be degraded.

Question 4:What are your views on the future growth in demand for Wi-Fi? In which use scenarios do you expect to see the greatest pressure for delivery of high quality Wi-Fi access? What evidence do you have to support your views? :

No views. However we would like to point Ofcom's attention to the recent developments of WiGig e.g. in the 60 GHz band, including the FCC announcement for the 64 - 71 GHz unlicensed band, which seem to make need for WiFi at 5GHz to expand into further spectrum at 5GHz less critical.

Question 5:Do you think technology improvements and densification of access points will be sufficient to meet demand or will there also be a need for more spectrum beyond that which we propose to make available? What evidence do you have to link between demand for data and demand for additional spectrum? :

No views.

Question 6:What real life speed and quality of experience can consumers expect in practice from devices using the 5GHz spectrum as authorised in the UK now? What changes can we expect as the number of devices increases and technology improves? What difference in speeds and quality of experience would additional spectrum make?:

No views .

Question 7:How important is contiguous spectrum? How wide should channels be to support future demand? :

LAA - LTE & RLAN industry to justify this.

Question 8:Do you believe we have correctly identified the incumbent services in 5150-5925 MHz which need to be taken into account in considering opening up more 5 GHz spectrum for Wi-Fi? Are there any other services which will need to be taken into account in future studies?:

Yes for FSS and EESS.

The satellite Copernicus/ Sentinel 1 B was successfully launched on April 26th 2016. to operate jointly with its twin, Sentinel-1A (launched in April 2014) and form the Sentinel-1 polar orbiting constellation. Working together, the Sentinel-1 satellites will image the entire planet every six days. Sentinel-1 satellites communicate with Earth through a ground segment designed and built by Airbus Defence and Space. Via a network of receiving stations across Europe, the ground

segment enables Sentinel satellites programming and data reception, as well as image processing, archiving and calibration as well as delivery of images to end-users. Sentinel-1's systematic observations are used to track changes in the way the land is used and to monitor ground movement with exceptional accuracy to aid fast response during emergencies and disasters such as flooding and earthquakes.

The C - SAR instrument on board of Sentinel satellites use the frequency band 5350 - 5470 MHz.

Two other identical satellites Sentinel 1C and Sentinel 1 D will be deployed between 2021 - 23.

Question 9:What coexistence studies, measurement campaigns and mitigation techniques do you believe would be most effective for demonstrating coexistence between Wi Fi and incumbent users? :

We remain attached to the conclusions of CEPT Report 64.

Question 10:Do you intend to participate and provide technical material into the ITU and CEPT work? In what way? :

Yes we do, contributing to WRC 19 AI 1.16 study cycle