

Radio Spectrum Policy Group – Secretariat
DG CNECT B4: Spectrum – Office: BU33 7/065
European Commission
B-1049 Bruxelles
Belgium

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Subject : RSPG Consultation on “Strategic Spectrum Roadmap Towards 5G for Europe: DRAFT RSPG Second Opinion on 5G networks” – Response from EUMETNET

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1 Introduction

EUMETNET would like to thank the Radio Spectrum Policy Group (RSPG) for the opportunity to comment on the preparation of the second RSPG opinion on 5G networks.

This document provides relevant comments to this public consultation in relation with EUMETNET activities.

2 Comments

EUMETNET is of course not opposed to innovation, being in number of spectrum fields either benefiting of or pushing for innovative technologies.

However, facilitating innovation should only be considered in full respect of the protection of incumbent services and hence requires, a minima, adequate coexistence analysis of potential interference as well as conditions under which innovative applications can be put on the market and, even more important, can be withdrawn from the market in case of negative impact on existing radio services.

As a general statement, EUMETNET would kindly remind the findings and statements of the RSPG Report and Opinion on a “**a Coordinated EU Spectrum Approach for Scientific Use of radio Spectrum**”, stressing in particular the importance of radio spectrum used by scientific services in general and meteorological services in particular, having a considerable societal value, *“incommensurable in financial terms, as they relate to preventing large losses of lives or threats to socio-political stability and security”*.

With regards to the second RSPG opinion on 5G networks, **EUMETNET is first concerned** about the total absence in this opinion and its annex of any mention of the necessary protection of EESS (passive) sensing, despite the fact that it is now shown as being the biggest challenge to be solved before introduction of 5G networks in bands above 24 GHz.

Indeed, if active antenna systems (AAS) technology permits the improved performance for 5G networks, their main drawback relates to the difficulty of efficiently filtering their unwanted emissions, that currently show a significant rejection deficit with regards to the protection of EESS (passive) sensors.

The solving of this issue can certainly not be taken as granted and requires specific consideration from RSPG with an explicit mention in the second RSPG opinion, in particular in the light of the fact that, as shown in the table below, most IMT 5G targeted bands are adjacent or closeby an EESS (passive) bands.

IMT 5G targeted bands	Adjacent EESS (passive) bands
24.25-27.5 GHz	23.6-24 GHz
31.8-33.4 GHz	31.3-31.8 GHz
37-43.5 GHz	36-37 GHz
47.2-50.2 GHz	50.2-50.4 GHz
50.4-52.6 GHz	50.2-50.4 GHz and 52.6-54.25 GHz
81-86 GHz	86-92 GHz

Space-borne sensing of the Earth's surface and atmosphere has an essential and increasing importance in operational and research meteorology, in particular for mitigating the impact of weather and climate-related disasters, and in the scientific understanding, monitoring and prediction of climate change and its impacts.

The impressive progress made in the recent years in weather and climate analysis and forecasts, including warnings for dangerous weather phenomena (heavy rain, storms, cyclones) that affect all populations and economies, is to a great extent attributable to the assimilation in numerical models of space-borne observations (on board EUMETSAT and ESA satellites as well as satellites operated by other worldwide meteorological agencies that are shared under the auspices of the WMO).

Passive sensing requires the measurement of naturally-occurring radiations, usually of very low power levels, which contain essential information on the physical process under investigation. The relevant frequency bands are determined by fixed physical properties (molecular resonance) that cannot hence be changed or ignored, nor are these physical properties able to be duplicated in other bands. Therefore, these frequency bands are an important natural resource. Even low levels of interference received by a passive sensor may degrade its data. In

addition, in most cases these sensors are not able to discriminate between natural and man-made radiations.

Several geophysical parameters contribute, at varying levels, to natural emissions, which can be observed at a given frequency which presents unique properties. Therefore, measurements at several frequencies in the microwave spectrum must be made simultaneously in order to isolate and to retrieve each individual contribution, and to extract the parameters of interest from the given set of measurements.

As a consequence, interference that could impact a given “passive” frequency band could thus have an impact on the overall measurement of a given atmospheric component.

Each passive frequency band cannot hence be considered on its own but should be seen as a complementary component of a complete space-borne passive sensing system. Current scientific and meteorological-satellite payloads are not dedicated to one given band but include many different instruments performing measurements in the entire set of passive bands.

These satellites and measurements applications are recognised as a key European Policy (in particular through the Copernicus programme) and EUMETNET would be seriously concerned if the deployment of 5G networks was made to the expense of putting them at any risk.

EUMETNET therefore kindly request RSPG that its second opinion on 5G networks explicitly mention that the unconditional protection of EESS (passive) sensors is a prerequisite to any 5G deployment in the bands listed in the above table.

EUMETNET is also extremely concerned by the possibility to see the band 24.25-27.5 GHz also considered under general authorisation mentioned in articles 1 and 9 of the RSPG Opinion.

Such possibility would totally jeopardise the current effort made to define protection conditions of existing and future EESS Earth Stations. Indeed, on the one hand, the current conditions envisaged for 5G networks in this bands have been explicitly developed in ECC on the basis that the authorisation regime is expected to be on an individual authorisation basis and, on the other hand, no solution has been determined to allow for protecting EESS earth stations from 5G stations deployed under a general authorization regime.

In addition, a general authorisation in this band would open the door to a large variety of unforeseeable equipment and applications with potential characteristics different from those used in current sharing studies. It could also end-up with an uncontrolled situation of non-compliant and illegal equipment, rendering protection of earth stations as well as EESS (passive) sensors inefficient, similarly to the current situation in the 5600-5650 MHz band with RLAN 5 GHz interfering meteorological radars (see EUMETNET letter dated 9 January 2017, copied to RSPG).

Until a moment when relevant actions from European radio authorities (including EC RSCOM and TCAM that currently have not initiated any action) have resolved the problem of interference to meteorological radars in the 5600-5650 MHz, EUMETNET is not ready to accept



seeing reiterated the negative experience of a deployment of unlicensed mass-market applications in another band used for key meteorological applications.

It is also worth noting that the official position of DIGITAL Europe representing the telecommunications industry is that the 26 GHz 5G IMT band should only be considered on an individual licensing regime basis.

EUMETNET therefore kindly request RSPG that its second opinion on 5G networks do not make any reference to a possible general authorisation regime for 5G deployment in the 24.25-27.5 GHz band.
