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European Commission
Radio Spectrum Policy Group – Secretariat
DG CNECT B4: Spectrum – Office: BU33 7/065

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Subject: EUMETSAT Response to the European Commission's RSPG Consultation on "Strategic Spectrum Roadmap Towards 5G for Europe: DRAFT RSPG Second Opinion on 5G networks" (RSPG17-034)

The European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT) welcomes the opportunity to respond to the European Commission's Radio Spectrum Policy Group (RSPG) consultation on the "Strategic Spectrum Roadmap towards 5G for Europe: Draft RSPG Second Opinion on 5G networks", published on 21st November 2017.

EUMETSAT actively participates in the CEPT and ITU-R study groups dealing with the preparation of the WRC-19 agenda item 1.13 on the identification of bands for future developments of the terrestrial component of IMT-2020 (5G) systems.

In this context it is of fundamental importance to ensure that any identification of frequency bands for IMT-2020 at WRC-19 will not adversely impact operations of EUMETSAT systems operating under the incumbent radiocommunication services in these bands, i.e. the Earth Exploration Satellite Service (EESS) and the EESS (passive).

EUMETSAT is particularly concerned with the identification of the frequency range 24.25-27.5 GHz for harmonised IMT-2020 usage in Europe even ahead of any WRC-19 decision on the subject and before the compatibility with the incumbent services is ensured through the establishment of adequate regulatory and technical conditions on the IMT-2020 equipment and deployment.

EUMETSAT follows this process in CEPT and the EC carefully and provided (and will continue to do so) its comments, results of compatibility assessments and any required information on its usages and developments in the considered frequency bands at all possible occasions in this process, highlighting the potential impact on EESS Earth stations and in particular on passive sensors operating in bands adjacent to the IMT-2020 bands under study.

Therefore, EUMETSAT is extremely surprised and disappointed by the fact that the protection of EESS (passive) systems operating in the band 23.6-24.0 GHz is not explicitly addressed in this second Opinion despite all studies performed since May 2017 within CEPT and ITU-R undoubtedly show a significant deficit in the rejection of unwanted emissions of IMT-2020 from the band 24.25-27.5 GHz into the above mentioned passive band. This conclusion and the consequential need for improvement in this aspect is acknowledged by all parties involved, i.e. administrations and IMT-2020 industry stakeholders (operators and manufacturers).

EUMETSAT operates a number of passive microwave sensors in adjacent or nearby bands (mostly covered by the RR footnote 5.340) considered under Agenda Item 1.13 (see table below) which would suffer from harmful interference caused by unwanted emissions of IMT-2020 deployments if no measures are taken to drastically reduce the unwanted emissions of IMT-2020.

Instrument	Satellite	EESS (passive) band	IMT-2020 (5G) band
AMSU	Metop	23.6-24 GHz	24.25-27.5 GHz
MWS	Metop-SG		
MWI	Metop-SG		
AMR	Jason-2/3		
MWR	Sentinel-3		
AMR-C	Jason-CS/Sentinel-6		
AMSU	Metop	31.3-31.8 GHz	31.8-33.4 GHz
MWS, MWI	Metop-SG		
MWR	Sentinel-3	36-37 GHz	37-43.5 GHz
AMSU	Metop	50.2-50.4 GHz	47.2-50.2 GHz & 50.4-52.6 GHz
MWS, MWI	Metop-SG		
AMSU	Metop	52.6-54.25 GHz	50.4-52.6 GHz
MWS, MWI	Metop-SG		
AMSU	Metop	86-92 GHz	81-86 GHz
MHS	Metop		
MWS, MWI	Metop-SG		

Six microwave sensors on different (operational or currently under development) EUMETSAT or Copernicus (Sentinel-3 and Sentinel-6) satellites observe in the band 23.6-24 GHz.

These passive microwave sensors are indispensable for observations of weather and climate from space, requiring access to uncontaminated frequency bands that each provides essential information on specific phenomenology. This is because passive microwave sensors use specific frequencies that uniquely correspond to resonances of important atmospheric molecules and cannot be changed, as they are fixed by nature. These frequency bands need to be free of radio interference to ensure the usefulness and correctness of the measurements which is acknowledged through RR FN 5.340 (quote: “All emissions are prohibited...”).

Thus, it is of outmost importance to limit IMT-2020 systems unwanted emissions into the passive sensing frequency bands (namely 23.6-24 GHz, 31.3-31.8 GHz, 36-37 GHz, 50.2-50.4 GHz, 52.6-54.25 GHz and 86-92 GHz bands) to the extent required to protect these measurements.

In this context, EUMETSAT would like to note that regarding the band 31.8-33.4 GHz for consideration under WRC-19 Agenda Item 1.13 and for which this Opinion seeks views from stakeholders in Section A.4 on page 20, CEPT has already concluded that this band is no longer in the priority list for IMT-2020. EUMETSAT supports this conclusion as this would eliminate the potential impact on its passive sensors in the neighbouring passive band 31.3-31.8 GHz for which also the compatibility assessments concluded the need for a significant reduction of the unwanted emissions of IMT-2020 into this passive band.

Furthermore, meteorological and Earth exploration satellite systems currently in operation or under development have to rely on the availability of the EESS frequency allocation in the band 25.5-27 GHz (26 GHz band) for ensuring that dedicated Earth stations are able to acquire the measurement data. This is also the case for the next generation geostationary and non-geostationary MetSat systems of EUMETSAT, namely MTG and EPS-SG (with its Metop-SG satellites), downlinking also the data of the Sentinel-4 and Sentinel-5 instruments embarked on these MetSat satellites.

To ensure that Earth stations are able to be deployed and protected in the presence of potential IMT-2020 networks in this frequency band, appropriate regulatory conditions need to be agreed at WRC-19, and further-on established in national/regional authorisation processes for IMT-2020 networks.

Thus, the possibility for administrations to decide for licence regimes other than individual authorisations (i.e. general authorisation) for IMT-2020 base stations in the 26 GHz range as outlined in this second Opinion would not allow for the protection of existing Earth stations and the deployment of future Earth stations in the EESS. The consequential lack of knowledge of the location of the IMT-2020 base stations would not allow administration to ensure a necessary exclusion zone around an Earth station and therefore general authorisation of IMT-2020 deployment should be disregarded as a possible licensing regime for the 26 GHz band.

Considering the above, EUMETSAT encourages the EC and its Member States to be diligent in their efforts to ensure the necessary protection of the frequency bands used by space-borne passive microwave sensors (in conjunction with the 26 GHz band for IMT-2020 in particular the passive band 23.6-24 GHz) as well as the availability of the 26 GHz EESS band for the downlink of the acquired measurement data to dedicated existing and future Earth stations.

It is vital for the protection of life and property and for our weather sensitive economy to keep the spectrum resources for these operations within the framework of the MetSat and EESS services globally available and effectively protected in the long term.

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