EASA
European Union Aviation Safety Agency

5G update

4 January 2024

Your safety is our mission.

An Agency of the European Union

Reported Occurrences

- There have been no reports of occurrences of confirmed 5G interference of radio altimeters reported to EASA.
- No evidence of 5G interference found.
- The most likely cause of issues with the radio altimeters are still equipment failures and issues with the installation of coax cables and antennas on the aircraft.

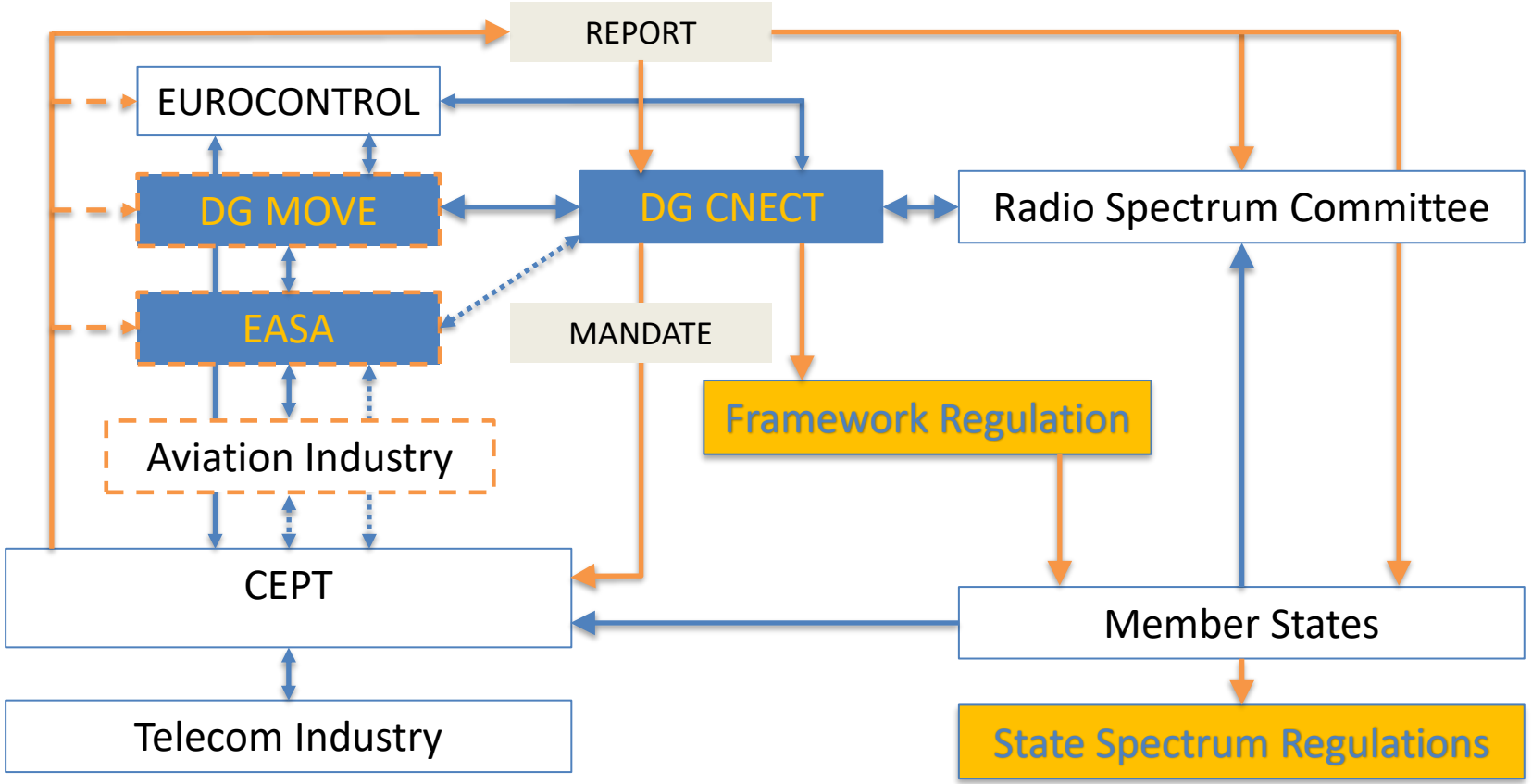
Worldwide Mandates

- The FAA introduced mandates in 2022 in incremental steps. The last step was in July 2023.
- Canada is likely to issue an AD in February/March 2024.
- Brazil is also looking at imposing a retrofit mandate soon.
- EASA has requested technical coordination under the CMT.
- Other states considering retrofit mandates are India and Saudi Arabia.
- All mandates are based on Power Spectral Density (PSD) curves.

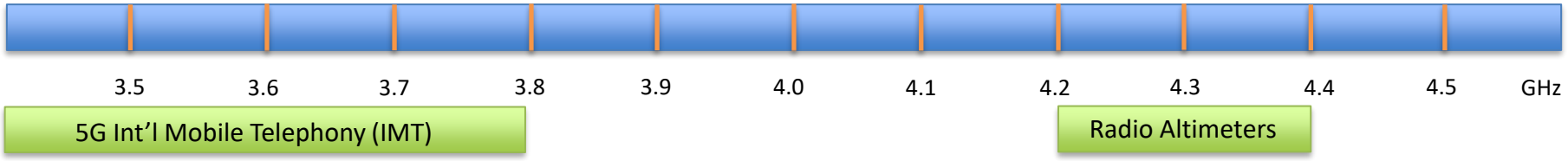
European Landscape and Stakeholders

- The European Spectrum Regulatory landscape is complex.
  - Governance of spectrum is a responsibility of the States.
  - The framework is set in Commission Regulations issued by DG-CNECT.
  - These Regulations are based on studies conducted by the Conference of European Postal and Telecommunication Administrations (CEPT).
  - In addition, consensus standards (ETSI, 3GPP) are applicable.

European Landscape and Stakeholders



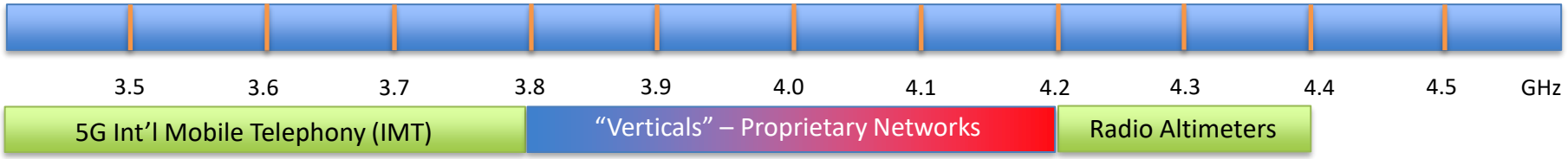
Spectrum use Europe - Current



Currently, a 400 MHz 'guard band' separates radio altimeters from IMT.

No anticipated need for a (generic) retrofit.

Spectrum use Europe - Future (anticipated)



DG-CNECT wants to allow the use of low- to medium power proprietary 5G networks in the 3.8-4.2 GHz band.
This will be done in steps.

A retrofit is likely going to be required.

EC Roadmap & Workshops

- The Commission (DG-MOVE and DG-CNECT) intend to put together a roadmap towards future safe coexistence of 5G and Radio Altimeters.
- The aim is to have a coordinated introduction of 5G in the 3.8 – 4.2 GHz band and not impose limitations in the 3.4 – 3.8 band for 5G, whilst ensuring aviation safety.
- MOVE/EASA and CNECT will coordinate efforts, whereby CNECT will develop a framework regulation for Spectrum, and EASA an opinion and associated guidance for aviation (retrofit - if required).
- MOVE & CNECT organised a ‘Regulator Workshop’ with members of Radio Spectrum Committee and EASA Committee (26 Oct, Brussels).

EC Roadmap & Workshops

- EASA has been asked to develop the aviation roadmap, including timelines for development of the MOPS, development and certification of new equipment including installation, as well as retrofit.
- EASA has also been asked to provide timelines for development of an Opinion (update to Part AUR), and associated AMC/GM, as well as an update to CS-ETSO and other relevant CSs (if applicable).
- The decision on whether or not to retrofit will be based on the outcome of the CEPT study.
- If a decision for a retrofit is made, it will be based on the new EUROCAE/RTCA MOPS.
- EASA organized a Technical Workshop with telecom and aviation experts.

EC Roadmap & Workshops [Notional]

Technical workshop - EASA

Regulator workshop (Spectrum & Aviation) – DG CNECT & DG MOVE

CEPT Study "3.6 GHz" + Verticals

EUROCAE / RTCA MOPS Radio Altimeters

DG CNECT RMT "Verticals" (Estimated/Anticipated)

EASA Activities– Roadmap, EPAS, Opinion Part-AUR, AMC/GM/CS-ETSO…

Retrofit mandate

Aeronautical use of 5G

- → On the 22nd of November 2023, the Commission published COMMISSION IMPLEMENTING DECISION (EU) 2022/2324.
- → This decision removes limitations on the aeronautical use of certain frequency bands, including bands that are used for 5G mobile telephony.
- → The band that is causing concerns related to potential interference on radio altimeters; 3400 – 3800 MHz, is excluded from this decision:

  Aeronautical use of the 3400-3800 MHz band is not allowed.

Aeronautical use of 5G

- Limitations on the aeronautical use of frequency bands used for mobile telephony have historically been implemented.
  - This was not for aviation safety,
  - But to prevent disruptions of the performance of the ground based networks, due to the high rate of handovers from one cell tower to another.
- Modern communication and handover protocols have overcome this problem.
- No longer a need to continue to maintain the limitations.
- Decision offers new opportunities to aviation.

Aeronautical use of 5G

- How does this affect operators?
  - The conditions of AMC1 CAT.GEN.MPA.140, Portable Electronic Devices, continue to apply:
    - Operators need to ensure that the aircraft on which they allow the use of ‘transmitting PEDs (T-PEDs)’ are PED-tolerant.
    - If operators allow the use of 5G phones on board of their aircraft, they need to assure themselves that the aircraft is tolerant to 5G emissions in the bands where this is allowed for aeronautical use.
    - For most of the 5G bands this is not a concern, but the use of the 3400-3800 MHz band must be prevented through the use of an on-board Network Controller Unit (NCU).
  - EASA agreed to inform operators through an SIB (publication imminent).