CEPT ECC
Electronic Communications Committee

WRC-23 AERONAUTICAL AND MARITIME ISSUES

MARTIN WEBER
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WRC-23 Agenda items 1.6, 1.7, 1.8, 1.9, 1.10 and 1.11

CEPT Coordinator:
Gerlof OSINGA (HOL)

CEPT ECC
Electronic Communications Committee

WRC-23 Agenda item 1.6

*to consider, in accordance with Resolution **772 (WRC-19)**, regulatory provisions to facilitate radiocommunications for sub-orbital vehicles*

Background

Report ITU-R M.2477 defines an sub-ortbital flight as “to be an intentional flight of a vehicle expected to reach the upper atmosphere with a portion of its flight path that may occur in space without completing a full orbit around the Earth before returning back to the surface of the Earth”

The stations on board sub-orbital vehicles required for

- voice/data communications,
- navigation,
- surveillance,
- telemetry and tracking and command (TT&C).

In addition these aircraft may operate as well in airspace used by conventional aircraft

CEPT Coordinator:
Gerlof OSINGA (HOL)

CEPT ECC
Electronic Communications Committee

WRC-23 Agenda item 1.6

*to consider, in accordance with Resolution **772 (WRC-19)**, regulatory provisions to facilitate radiocommunications for sub-orbital vehicles*

Preliminary CEPT position

CEPT is of the view that the definition of sub-orbital flight in Report ITU-R M.2477 “to be an intentional flight of a vehicle expected to reach the upper atmosphere with a portion of its flight path that may occur in space without completing a full orbit around the Earth before returning back to the surface of the Earth” is sufficient.

CEPT supports the categorization of radiocommunication station for suborbital vehicle by the purpose of the mission:

- Some suborbital vehicles that will have at least one phase of its their flight occurring in airspace shared with other aircraft, should use onboard terrestrial stations or/and Earth stations operated in the same radiocommunication services as the ones for conventional aircraft independently of the maximum altitude reached.
- Other types of suborbital vehicles that fly in non-shared airspace, may use onboard terrestrial stations or/and Earth stations operated in relevant radiocommunication service to allow the transmission of location information during all phases of flight and communication of other data for other functions.

The suborbital vehicles shall ensure the protection and not impose any constraint on other services or applications operated in the same service. The suborbital vehicles shall not impact the radiocommunications of conventional satellite launchers.

CEPT Coordinator:
Benoit LOUVET (F)

WRC-23 Agenda item 1.7

*to consider a new aeronautical mobile-satellite (R) service (AMS(R)S) allocation in accordance with Resolution **428 (WRC-19)** for both the Earth-to-space and space-to-Earth directions of aeronautical VHF communications in all or part of the frequency band 117.975-137 MHz, while preventing any undue constraints on existing VHF systems operating in the AM(R)S, the ARNS, and in adjacent frequency bands*

Background

Initiative from Asia:

A satellite system in VHF for Aviation allows:

- coverage of remote regions and oceanic areas
- use of existing equipment of aircrafts
- Maintain existing communication procedures

But difficult to be implemented in Europe due congestion in the band

CEPT Coordinator:
Benoit LOUVET (F)

WRC-23 Agenda item 1.7

*to consider a new aeronautical mobile-satellite (R) service (AMS(R)S) allocation in accordance with Resolution **428 (WRC-19)** for both the Earth-to-space and space-to-Earth directions of aeronautical VHF communications in all or part of the frequency band 117.975-137 MHz, while preventing any undue constraints on existing VHF systems operating in the AM(R)S, the ARNS, and in adjacent frequency bands*

Preliminary CEPT position

CEPT supports a new primary allocation to AMS(R)S in the Earth-to-space and space-to-Earth directions in all or part of the frequency band 117.975-137 MHz while:

- limiting the use of the new AMS(R)S allocation to internationally standardised aeronautical systems;
- ensuring protection of AM(OR)S service in the band 117.975-137 MHz;
- ensuring protection of services in adjacent bands and not constraining these services.

CEPT is of the view that in-band coexistence between AM(R)S and AMS(R)S and adjacent-band coexistence between ARNS and AMS(R)S around 117.975 MHz will be ensured through frequency planning and coordination work.

CEPT Coordinator:
Martin WEBER (D)

CEPT ECC
Electronic Communications Committee

WRC-23 Agenda item 1.8

*to consider, on the basis of ITU-R studies in accordance with Resolution **171 (WRC-19)**, appropriate regulatory actions, with a view to reviewing and, if necessary, revising Resolution **155 (Rev.WRC-19)** and No. **5.484B** to accommodate the use of fixed-satellite service (FSS) networks by control and non-payload communications of unmanned aircraft systems*

Background

- Operation of unmanned aircraft over long distances require Satellite links
- FSS Networks are available and offer
  - sufficient bandwidth and
  - opportunities for redundancy
- Problems
  - Mobile earth stations are not part of the definition of FSS
    - Resolution 155 was establish to allow communication with FSS networks and
    - to solves compatibility issues with terrestrial services
- A revision of Resolution 155 by WRC 23 was already foreseen by WRC-15 to solve open question on its applicability and to adopt to provision to be established in ICAO

CEPT Coordinator:
Martin WEBER (D)

CEPT ECC
Electronic Communications Committee

WRC-23 Agenda item 1.8 (1/3)

*to consider, on the basis of ITU-R studies in accordance with Resolution **171 (WRC-19)**, appropriate regulatory actions, with a view to reviewing and, if necessary, revising Resolution **155 (Rev.WRC-19)** and No. **5.484B** to accommodate the use of fixed-satellite service (FSS) networks by control and non-payload communications of unmanned aircraft systems*

Preliminary CEPT position

CEPT acknowledges the opportunities of the use of networks of the FSS for UAS CNPC links and CEPT is of the view that UAS CNPC links using FSS in non-segregated airspace shall operate:

- in accordance with ICAO SARPs (see *resolves* 3 of Resolution **155 (Rev.WRC-19)**);
- under successfully coordinated assignments for FSS applications notified with class of earth station "UG" (see *resolves* 2 and 13 of Resolution **155 (Rev.WRC-19)**).

CEPT is of the view that the safety aspects of UAS CNPC shall not have any impact on:

- the existing terrestrial services and their current and expected applications (see *resolves* 8 of Resolution **155 (Rev.WRC-19)**);
- the relevant existing agreements reached during FSS satellite coordination process (see *resolves* 6, 7, and 9 of Resolution **155 (Rev.WRC-19)**);
- the future coordination of FSS networks during the application of provisions of Articles **9** and **11** of the RR (see *resolves* 9 of Resolution **155 (Rev.WRC-19)**);
- all cases which fall under RR **11.41** (see *resolves* 9 of Resolution **155 (Rev.WRC-19)**).

CEPT Coordinator:
Martin WEBER (D)

WRC-23 Agenda item 1.8 (2/3)

*to consider, on the basis of ITU-R studies in accordance with Resolution **171 (WRC-19)**, appropriate regulatory actions, with a view to reviewing and, if necessary, revising Resolution **155 (Rev.WRC-19)** and No. **5.484B** to accommodate the use of fixed-satellite service (FSS) networks by control and non-payload communications of unmanned aircraft systems*

Preliminary CEPT position (cont.)

CEPT is of the view that in order to ensure safety-of-flight operation of UAS, the administrations responsible for the operation of UAS CNPC links under the ICAO SARPs shall take the required measures on their side to ensure freedom from harmful interference to earth stations on board UA. (see *resolves* 7 and 13 of Resolution **155 (Rev.WRC-19)**).

CEPT is of the view that the pfd mask labelled as example b in Annex 2 of Resolution **155 (Rev. WRC-19)** is appropriate to protect the terrestrial services.

CEPT is of the view that the RR No. **5.149** for the protection of Radioastronomy from harmful interference in the frequency band 14.47-14.5 GHz has to be taken into account (see *resolves* 17 of Resolution **155 (Rev.WRC-19)**).

CEPT Coordinator:
Martin WEBER (D)

WRC-23 Agenda item 1.8 (3/3)

*to consider, on the basis of ITU-R studies in accordance with Resolution **171 (WRC-19)**, appropriate regulatory actions, with a view to reviewing and, if necessary, revising Resolution **155 (Rev.WRC-19)** and No. **5.484B** to accommodate the use of fixed-satellite service (FSS) networks by control and non-payload communications of unmanned aircraft systems*

Preliminary CEPT position (cont.)

CEPT recognises that ICAO is responsible for the safe operation of aircraft including UAS and is developing appropriate SARPs covering all aspects of safe operation of UAS including the required communication system and that RR **4.10** does not apply to the use of networks of the FSS for UAS CNPC links. This implies that any administration notifying FSS network as well as any administration authorising the operation of stations of the terrestrial services in accordance with the RR in the frequency bands identified in *resolves* 1 of Resolution **155 (Rev.WRC-19)** are not responsible for the application of RR **4.10**.

CEPT is of the view that if the conditions for the safety operation of CNPC established by ICAO cannot be met with the existing FSS link as it stands, then this link should not be used for UAS.

Interim CEPT Coordinator:
Martin WEBER (D)

WRC-23 Agenda item 1.9

*to review Appendix **27** of the Radio Regulations and consider appropriate regulatory actions and updates based on ITU-R studies, in order to accommodate digital technologies for commercial aviation safety-of-life applications in existing HF bands allocated to the aeronautical mobile (route) service and ensure coexistence of current HF systems alongside modernized HF systems, in accordance with Resolution **429 (WRC-19)***

Background

- Aviation industry suggested to open HF communication to digital system
- Beyond the limitation given by the 3kHz limitations in RR AP 27

Preliminary CEPT position

CEPT supports the modification of the Appendix **27** of RR that would allow new digital wideband HF systems including aggregating contiguous and/or not contiguous channels, if retained, ensuring:

- the protection of other primary services operating in band and in adjacent frequency bands, and
- coexistence with existing aeronautical analogue voice and data HF systems.

CEPT Coordinator:
Jérôme ANDRÉ (F)

WRC-23 Agenda item 1.10

*to conduct studies on spectrum needs, coexistence with radiocommunication services and regulatory measures for possible new allocations for the aeronautical mobile service for the use of non-safety aeronautical mobile applications, in accordance with Resolution **430 (WRC-19)***

Background

- Desire to use aircraft in wildfire monitoring, movie making, border surveillance, Earth observation missions …
  - A wide range of sensor may be used (optical, infrared cameras, radar…)
  - Real time monitoring of the sensor data require appropriate radio links
- Most mobile allocation exclude the aeronautical mobile service
- Two bands are under study
  - 22 – 21.21 GHz to delete the restriction “except aeronautical mobile”
  - 15,4 – 15,7 MHz for a new allocation to the Aeronautical Mobile Service

CEPT Coordinator:
Jérôme ANDRÉ (F)

WRC-23 Agenda item 1.10

*to conduct studies on spectrum needs, coexistence with radiocommunication services and regulatory measures for possible new allocations for the aeronautical mobile service for the use of non-safety aeronautical mobile applications, in accordance with Resolution **430 (WRC-19)***

Preliminary CEPT position

CEPT acknowledges the need for additional spectrum to fulfil the increasing demand for non-safety aeronautical applications and is considering a new allocation to AMS for non-safety application in whole range or a part of the frequency bands 15.4-15.7 GHz and 22-22.21 GHz while:

- any modification of the RR should ensure appropriate protection for the EESS/SRS (passive) and the RAS (taking into account RR No. **5.149**) allocated in adjacent frequency band from unwanted emissions of the AMS;
- ensuring protection for in-band radiolocation and aeronautical radionavigation and FSS (Earth-to-space) services in the relevant part of the frequency band 15.4 – 15. 7 GHz;
- ensuring protection for in-band fixed and mobile services in the frequency band 22-22.21 GHz, noting that the fixed service is allocated in the 21.2-23.6 GHz frequency range.

CEPT Coordinator:
Till RETTBERG (D)

WRC-23 Agenda item 1.11

*to consider possible regulatory actions to support the modernization of the Global Maritime Distress and Safety System and the implementation of e-navigation, in accordance with Resolution **361 (Rev.WRC-19)***

Background

For historical reason the Radio Regulation contain detailed provision for the maritime mobile service which need regular updates

- Modernisation of GMDSS
  - To reflect decisions by IMO, which are still under development
- E-navigation
  - This concept is discussed already for a longer period but it is still unclear what implication for the RR are to be expected
- Regulatory actions due to the introduction of additional satellite systems into the GMDSS by IMO
  - A Chinese satellite system is proposed to be part of the GMDSS a decision in IMO is still to come

CEPT Coordinator:
Till RETTBERG (D)

CEPT ECC
Electronic Communications Committee

WRC-23 Agenda item 1.11

*to consider possible regulatory actions to support the modernization of the Global Maritime Distress and Safety System and the implementation of e-navigation, in accordance with Resolution **361 (Rev.WRC-19)***

Preliminary CEPT position

Issue A: Modernisation of GMDSS

CEPT supports the possible regulatory actions needed to implement the GMDSS modernisation in the Radio Regulation based on decisions to be taken in IMO.

Issue B: e-navigation

CEPT supports, based on decisions to be taken in IMO, the possible regulatory actions in the Radio Regulation needed to support the implementation of the e-navigation, if appropriate.

Issue C: Regulatory actions due to the introduction of additional satellite systems into the GMDSS by IMO

CEPT supports regulatory actions to introduce an additional satellite system into the GMDSS, based on decisions to be taken in IMO. . However, approval by IMO of any existing satellite system/network as complying with the requirements for GMDSS shall not lead to a change in the status of frequency assignments of this system/network and/or the allocation status of the corresponding service within which this system/network is notified.