



**ITUWRC**

DUBAI2023

20 November - 15 December 2023  
Dubai, United Arab Emirates

## Radiocommunication Bureau (BR)

Administrative Circular  
**CACE/1078**

26 September 2023

**To Administrations of Member States of the ITU, Radiocommunication Sector Members,  
ITU-R Associates participating in the work of the Radiocommunication Study Group 4  
and ITU Academia**

Subject: **Radiocommunication Study Group 4 (Satellite Services)**

- **Approval of 1 revised ITU-R Question**
- **Suppression of 1 ITU-R Question**

By Administrative Circular [CACE/1070](#) dated 19 July 2023, 1 draft revised ITU-R Question was submitted for approval by correspondence in accordance with Resolution ITU-R 1-8 (§ A2.5.2.3). In addition, the Study Group proposed the suppression of 1 ITU-R Question.

The conditions governing this procedure were met on 19 September 2023.

The text of the approved Question is attached for your reference in Annex 1 and will be published by the ITU. The suppressed ITU-R Question is indicated in Annex 2.

Mario Maniewicz  
Director

**Annexes: 2**

## Annex 1

### QUESTION ITU-R 218-2/4

#### **On-board processing in mobile-satellite service and fixed-satellite service systems**

(1993-1995-2023)

The ITU Radiocommunication Assembly,

*considering*

- a)* that satellite systems in the fixed-satellite service (FSS) utilizing various degrees of digital baseband on-board processing (OBP) have been launched and are under development by a number of administrations, both for GSO and non-GSO (e.g. low-Earth orbit (LEO)) operation;
- b)* that such systems are intended to carry both synchronous and asynchronous digital information streams of various rates;
- c)* that such information streams could consist of various types of traffic, extending from relatively low-bit rate traffic (e.g. for VSATs) up to high density FSS, and Internet Protocol (IP) packet services;
- d)* that GSO satellite networks or non-GSO systems with digital OBP may support various levels of functionalities for satellite radio access networks, satellite core networks and applications and thus they may be a part of candidate system architectures for delivering the satellite component of International Mobile Telecommunication (IMT) services using the MSS, and the detailed technical specification is under development;
- e)* that such protocols and techniques may be highly sensitive to the use of OBP and that satellite/terrestrial integration with respect to various interworking and interconnection scenarios may be affected by certain on-board processing functions;
- f)* that global system(s) consisting a large number of OBP satellites in LEO and using intersatellite links (ISLs) are under development for the fixed-satellite service and mobile-satellite service, and that such system(s) raise new and fundamentally unexplored system and networking issues concerning performance and availability, latency, routing and delay (both fixed and variable) timing, synchronization, mobility management, multi connectivity, satellite edge computing, local data switching, store and forward, and congestion control;
- g)* that digital performance is characterized in Recommendation ITU-R S.1062 for systems providing constant bit rate applications operating at frequencies below 15 GHz, and a method for the determination of performance objectives for satellite networks/systems using adaptive coding and modulation as specified in Recommendation ITU-R S.2131;
- h)* that OBP can provide enhanced performance, flexibility, services and spectrum efficiency,

*decides* that the following Questions should be studied

- 1 What specific network and traffic parameters are potentially uniquely affected by the use of digital baseband OBP?
- 2 What specific network and traffic parameters are potentially uniquely affected by digital traffic routing through a potentially large number of LEO satellites using both OBP and ISLs?
- 3 What general OBP system characteristics might result in incompatibilities at the satellite subnetwork interface (such as signalling, queuing and processing delays, synchronization, routing, reliability and performance)?
- 4 What are the specific OBP system functional characteristics required to assure conformance with relevant ITU performance requirements, and to achieve an efficient utilization of satellite radio frequency assignments and orbital locations?
- 5 Are the existing performance objectives specified in Recommendation ITU-R S.1062 and the method specified in Recommendation ITU-R S.2131 valid and applicable for satellite networks/systems using OBP, and if they are not, how must the performance requirements be specified to make them applicable?
- 6 What existing and developmental ITU Recommendations might limit or otherwise impair the use of OBP systems in the FSS or MSS?

*further decides*

- 1 that the results of the above studies should be included in appropriate Recommendations and/or Reports;
- 2 that the above studies should be completed by 2027.

Category: S2

## Annex 2

### Suppressed ITU-R Question

Question ITU-R	Title
244/4	Sharing between feeder links of the mobile-satellite (non-geostationary) service in the band 5 091-5 250 MHz and the aeronautical radionavigation service in the band 5 000-5 250 MHz

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