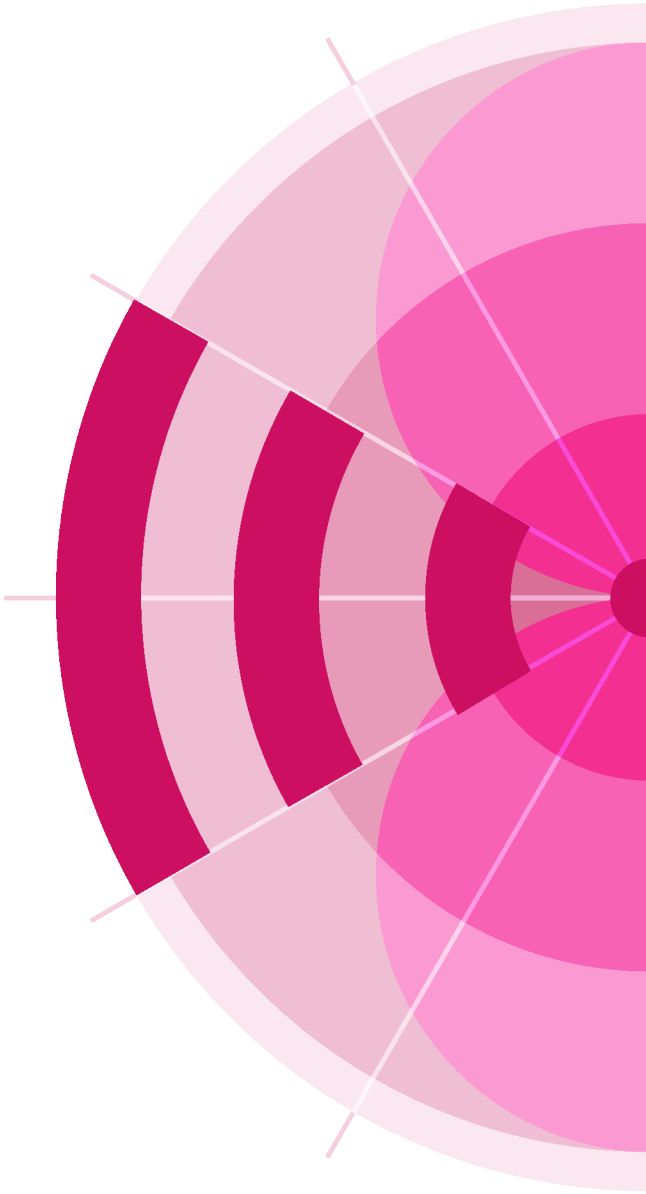
30TH WORLD RADIOCOMMUNICATION SEMINAR

24 – 28 October 2022
Geneva, Switzerland



Notification of Radio Astronomy Station

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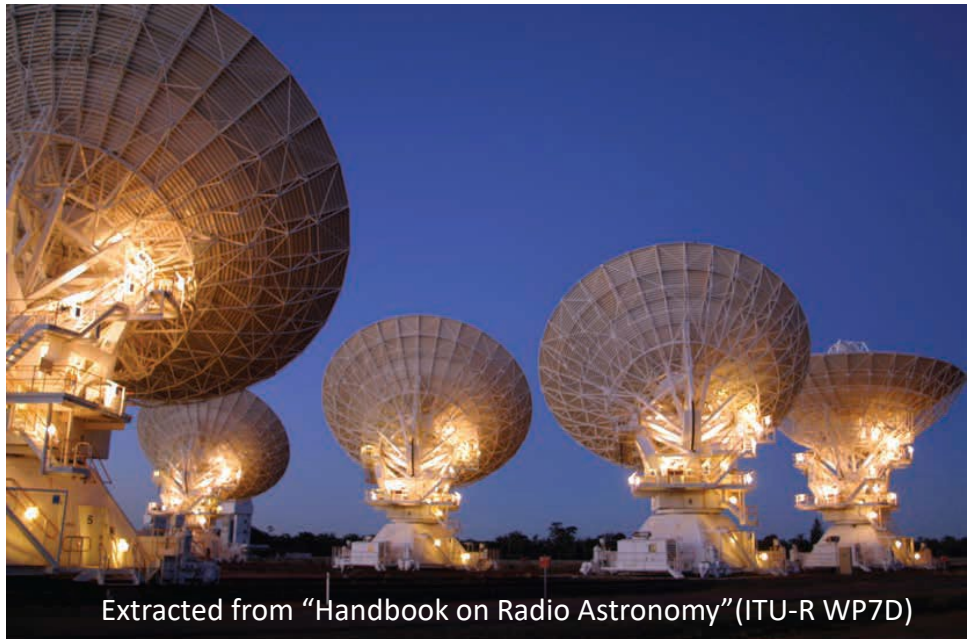
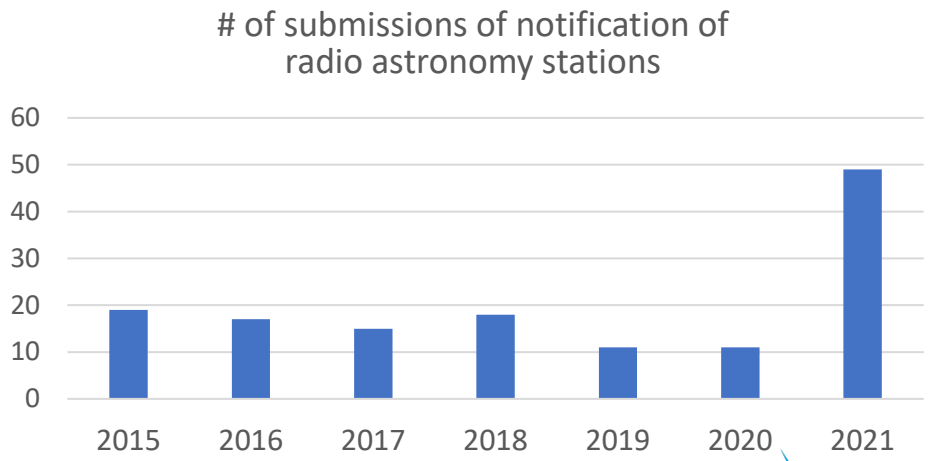
#ITUWRS

Radio Astronomy Station

- Radio astronomy stations are radio stations to provide the service of radio astronomy service defined by RR No. **1.58**.
  - **1.13** *radio astronomy:* Astronomy based on the reception of *radio waves* of cosmic origin.
  - **1.58** *radio astronomy service:* A service involving the use of *radio astronomy*.
- Any frequency to be used for reception by a radio astronomy station may be notified if it is desired that such data be included in the Master Register according to RR No. **11.12**.
  - **11.12** *Any frequency to be used for reception by a particular radio astronomy station may be notified if it is desired that such data be included in the Master Register.*


Extracted from "Handbook on Radio Astronomy"(ITU-R WP7D)



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ITU

General regulatory process of notification of radio astronomy stations

1. Submission of a notification from Administration to ITU

1.1 An administration captures data of the characteristics of a notified radio astronomy station in SNS data format with BR Space Software **SpaceCap**.

1.2 The notice shall be submitted to BR via the **e-Submission system**.

1.3 BR has received your Notification notice for a radio astronomy station. The submitted notice is published as-received on the As-Received website.

2. Receivability examination

BR conducts a receivability examination to confirm the completeness and the correctness of the data in the submitted notice according to AP**4** of RR and RoP.

3. Publication of Part I-S

4. Regulatory examination

5. Registration of observation frequencies or return of a notice

When the examination leads to a favourable findings, Part II-S to BR IFIC is published and the observation frequencies are recorded in the Master Register.

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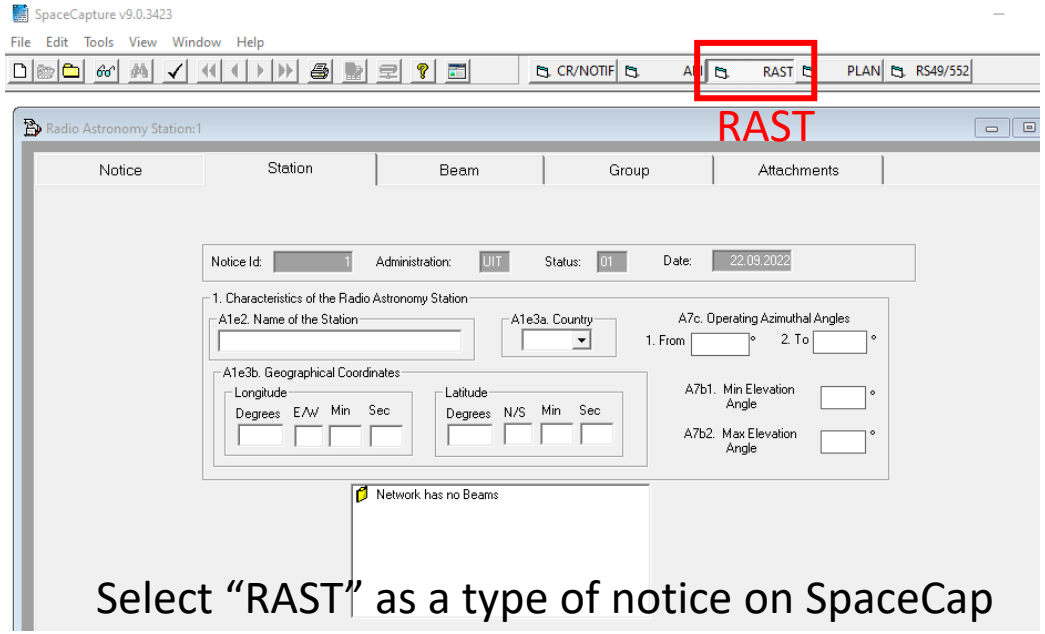
Characteristics of Radio Astronomy Stations

All information notified to ITU shall be captured with BR Space Software **SpaceCap** and submitted to BR via **e-Submission**.

Mandatory information specified in Appendix 4

- Name of station
- Country or geographical area in which the station is located
- Geographical coordinates of each transmitting or receiving antenna site (latitude and longitude in degrees and minutes)
- Notifying administration
- Date of bringing into use
- Operating administration or agency
- Minimum/maximum antenna main beam elevation
- Operating azimuths of antenna main beam
- Antenna characteristics (see the Preface)
- Centre of the frequency band observed
- Bandwidth of the frequency band observed by the station
- Class of station (see the Preface)
- Overall receiving system noise temperature
- Characteristics of observations for radio astronomy stations



Select “RAST” as a type of notice on SpaceCap

Please note that, if the radio astronomy station is operated in a frequency band not allocated for radio astronomy service in the Table of Frequency Allocations of RR (Art. **5**), **the provision No.4.4 must be requested.**

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Antenna characteristics - Preface Table 6

The antenna radiation pattern information **(antenna type, antenna dimensions, effective area of the antenna)** of a notified radio astronomy station needs to be captured in the notification notice as data item **B.6** in AP **4** of RR with BR Software **SpaceCap**.

If an appropriate antenna characteristics of a radio astronomy station cannot be found on Table 6 to the Preface,

- a notifying administration can submit a notification of a radio astronomy station with indicating 999 (Other) as data item **B.6** in AP **4** on the notification, and
- a notifying administration is requested to provide the specific information about antenna characteristics including the antenna type and the effective area of the antenna (items **B.6.a** and **B.6.c** of AP **4**) as attachments attached to the notification.

Radio astronomy station antenna characteristics

Code	Nr	Antenna type and dimensions	Effective area and angular coverage in azimuth and elevation
AFS	1	64 Offset Gregorian design. Each made up of 13.5 m diameter main reflector and a 3.8 m sub-reflector.	7700 square meters; azimuth is between -185° and 275°. Elevation is between 15 °and 88°
AFS	2	A 25.9m equatorially mounted dish with Cassegrain design.	526 square meters; all azimuth. Elevation is between 0°and 90°
AFS	3	A 13.2 m diameter paraboloid dish with ring focus design and 1.55m sub-reflector.	136 square meters; azimuth is between 90°and 270°. Elevation is between 0°and 90°
AFS	4	A 15 m diameter paraboloid dish with prime focus design	176 square meters; all azimuth is between 90° and 270°. Elevation is between 0°and 90°
ARG	1	Parabolic Diameter: 30 m	330 square metres, Mount: Equatorial Azimuth limits: 55° S - 26° N Elevation angle limits: +30° relative to the

Extraction of Table 6: Radio astronomy station antenna characteristics in Preface to BR IFIC (Space Services)

Please access the following tutorial webpage for more information about antenna characteristics:

https://www.itu.int/en/ITU-R/space/Pages/Antenna_pattern_RAS.aspx

Examination of Radio Astronomy Station Notices

After the publication of Part I-S, BR conducts the regulatory examination according to No. **11.31** in the Radio Regulations and Rules of Procedure to formulate findings.

Radio Regulations

11.31 *a)* with respect to its conformity with the Table of Frequency Allocations and the other provisions of these Regulations, except those relating to conformity with the procedures for obtaining coordination or the probability of harmful interference, or those relating to conformity with a plan, as appropriate, which are the subject of the following sub-paragraphs;

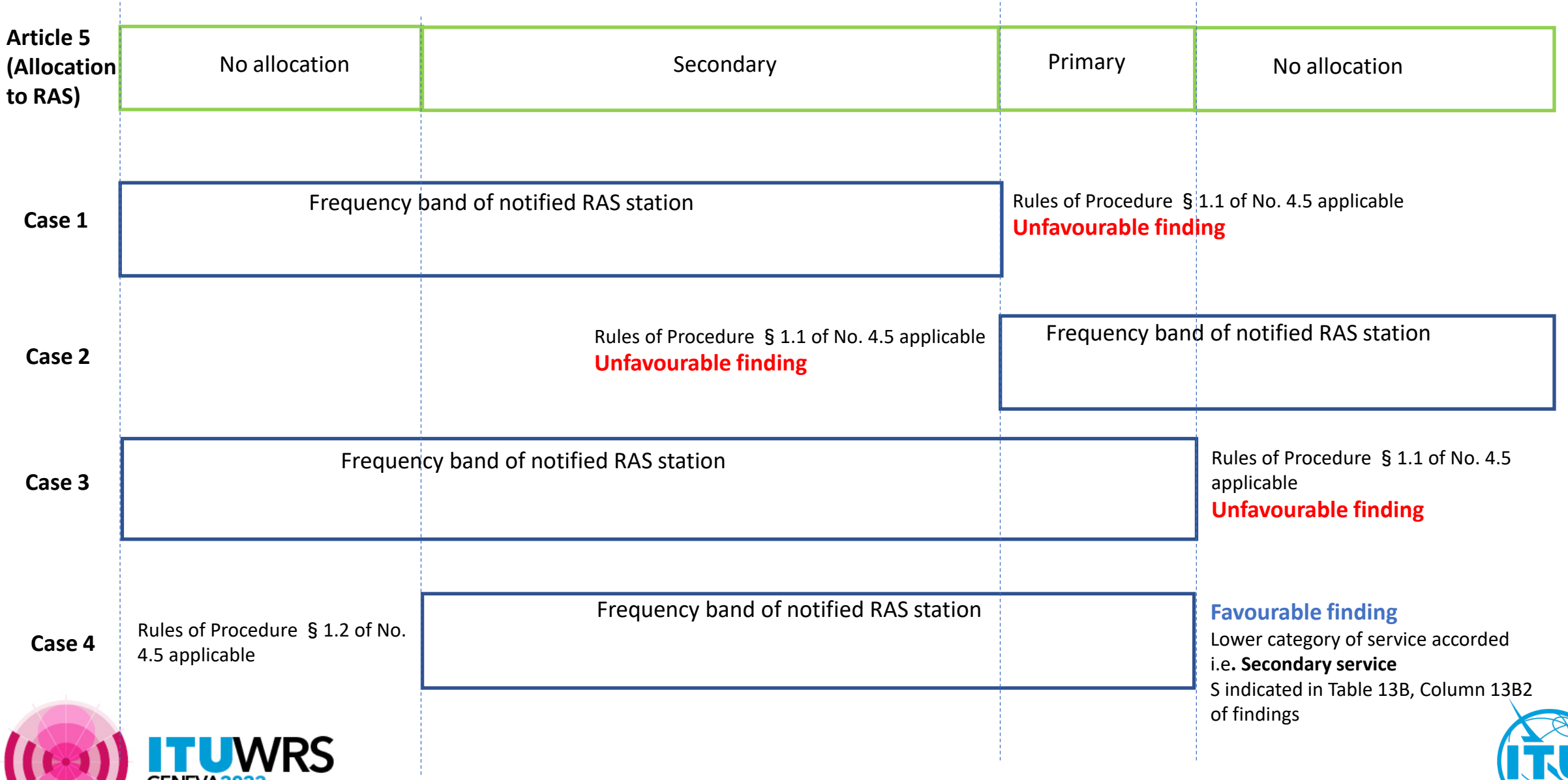
Rules of Procedure § 1 of No. 4.5 about rules concerning Article 4 of the RR

1.1 A frequency assignment, of which the assigned frequency band overlaps a band not allocated to the service concerned, shall receive an unfavourable regulatory finding under No. **11.31**.

1.2 A frequency assignment, of which the assigned frequency band overlaps a band allocated with a lower category of service will be considered as having the lower category of service and, when recorded, will bear a symbol to this effect. (See Symbols R and S in Table 13B, Column 13B2, of the Preface to the IFL.)

Please access the following tutorial webpage for more information about examination of radio astronomy station:
https://www.itu.int/en/ITU-R/space/Pages/findings_RAS.aspx

Examples of Application of the Rules of Procedure



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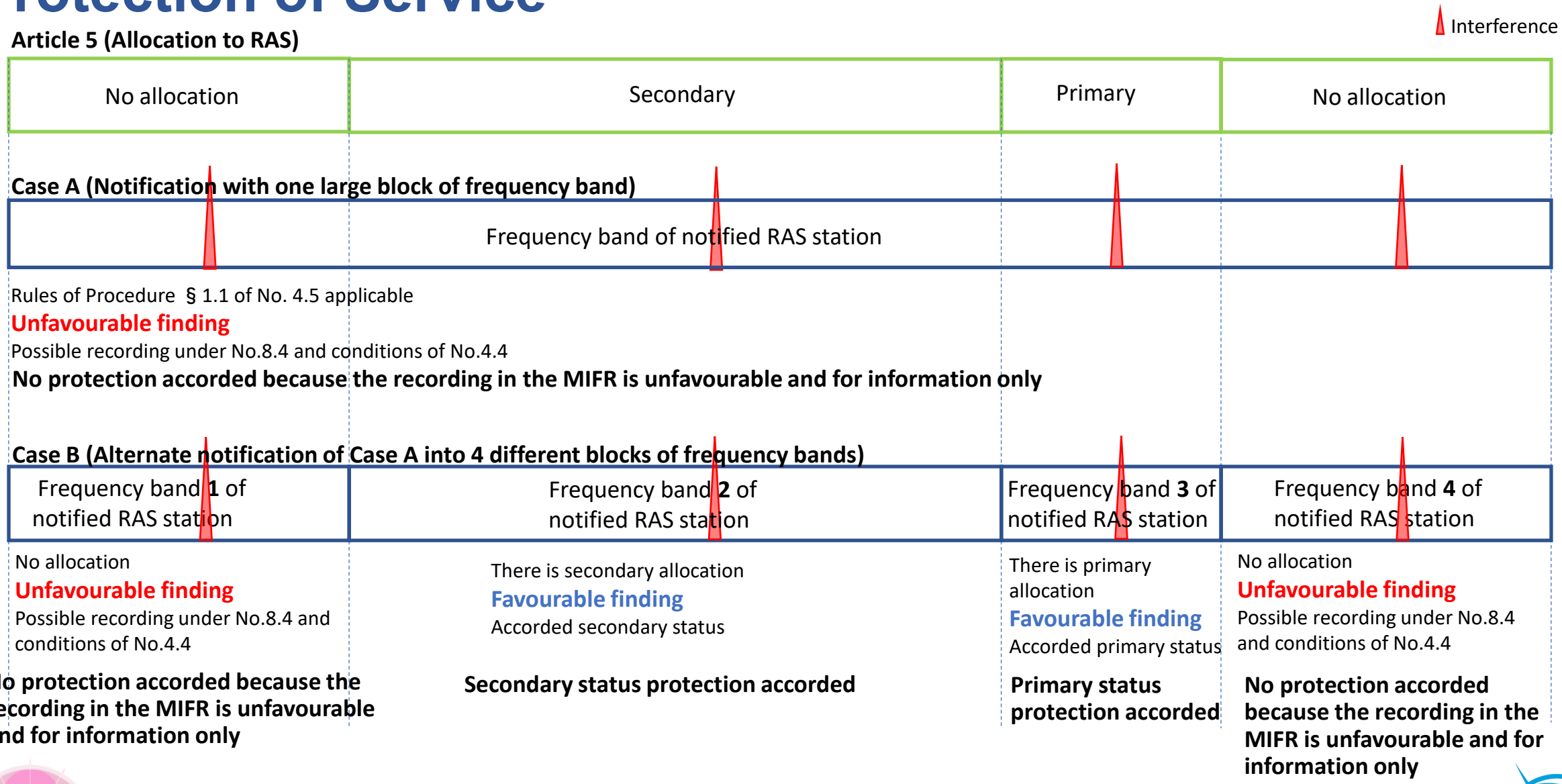
Protection of Service



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Protection Consideration at Notification of Radio Astronomy Stations

- Possible to represent a large observation frequency band to several smaller observation frequency bands.
  - This will allow the appropriate allocation status for radio astronomy services to be reflected in the findings when recorded in the MIFR.
  - The RAS can then benefit from the protection accorded to it according to the allocation status in the frequency band of the observation bandwidth.
- Responsibility of administrations is to prepare and submit fillings and to comply with the applicable provisions of the Radio Regulations.
- The examination of the RAS notification will be based on
  - The information submitted by the administrations in the AP4 notice form
  - Relevant rules of procedure to formulate findings

Summary of Notification of Radio Astronomy Stations

No.11.12 Any frequency to be used for reception by a particular RA station may be notified if it is desired that such data be included in the MIFR.

If you are operating in a band not allocated for radio astronomy service in the Table of Frequency Allocations of RR, the provision No.4.4 must be requested.

Notices shall be submitted using the e-Submission system.

Regulatory examination is conducted under RR No.**11.31** and RoP.

BR software **SpaceCap** is used for capture RA stations.
Required information is specified in **Appendix 4** of RR.

RA antenna characteristics are described in Table 6 of the Preface.

RA submission are exempt from cost recovery fee.

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Thank you !

ITU – Radiocommunication Bureau

Questions to brmail@itu.int

Please access the following tutorial page for more information about a notification of radio astronomy station

https://www.itu.int/en/ITU-R/space/Pages/RadioastronomyStations.aspx