



# International Amateur Radio Union

## Summary Meeting Report

### ITU-R WP4C #28: 4 – 10 May 2022 (Hybrid Meeting)

### Relating to preparatory work on WRC23 AI 9.1b only

The IARU was represented by Ole Garpstad (LA2RR – ITU Lead) and Barry Lewis (G4SJH – WRC23 AI9.1b Lead).

The IARU did not provide written contributions to this meeting.

## Background

As detailed in the report from WRC23 CPM-1, ITU-R WP4C is a contributing group and is responsible for developing the studies identified under *invites 2* of Resolution 774 on **WRC23 AI 9.1 topic b (RNSS and Amateur services coexistence)**.

As usual, the contributions relating to this work were quickly referred to Sub Group 4C3 and dealt with directly in the 4C3 group chaired by Mr Harding from the USA. Sub group 4C3 met in eight sessions over the period of the meeting.

## Contributions to the meeting relevant to AI 9.1b

The draft technical report **ITU-R M.[AMATEUR\_RNSS]** which had been attached as Annex 4 to the chairman's report Doc 4C/283 from the previous meeting formed the basis as the working document for the work to progress.

**Doc 4C/290** – Liaison document from WP5A.

**Doc 4C/308** – USA – Revisions to ITU-R M.[AMATEUR-RNSS].

**Doc 4C/309** – USA – Proposal for a liaison back to WP5A.

**Doc 4C/311** – Russian Federation - New study for ITU-R M.[AMATEUR-RNSS].

**Doc 4C/312** – China – Updated study for ITU-R M.[AMATEUR-RNSS].

**Doc 4C/319** – France – Revisions and new study for ITU-R M.[AMATEUR-RNSS].

**Doc 4C/320** – France – Proposal for a liaison back to WP5A.

## IARU objectives

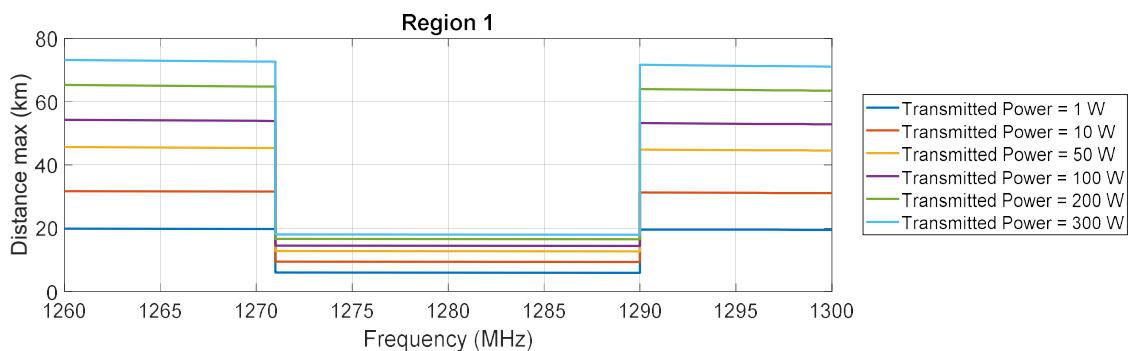
The IARU objectives for the meeting on the 9.1b topic were:

- 1) To maintain the integrity of the amateur and amateur satellite service characteristics provided through WP5A.
- 2) Ensure any contributed studies choose appropriate characteristics for the scenarios under study.
- 3) Ensure that no pre-mature conclusions are drawn before full evaluation of the results have been considered by all parties.
- 4) Drive for balanced text in any proposals for the CPM text to be liaised to WP5A.

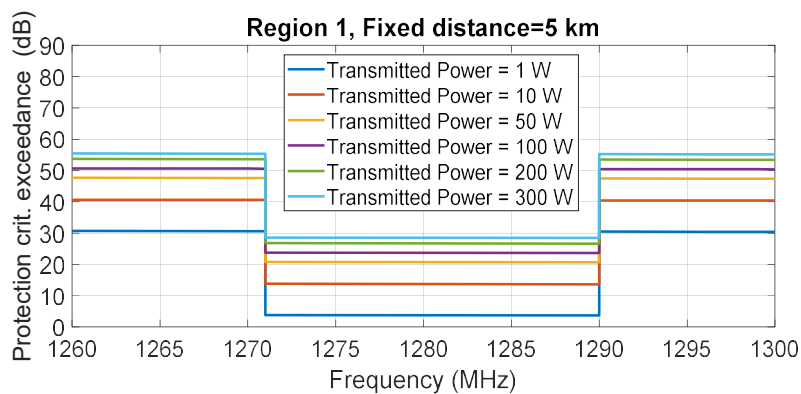
## Meeting Activity

The working document now contains new studies provided by France, China and the Russian Federation to estimate the interfered area that might exist around an amateur service transmitter.

In a new study across just the GALILEO system spectrum, France assumed characteristics relevant to a “Home Station 1” and a “Permanent Station” operating at 1W to 300W anywhere in the band with an emission less than 128kHz and a wideband signal operating in those parts identified for ATV (1272 – 1290 MHz). “Home Station 2” was considered for EME in the 1296-1298MHz portion over the same power range. The antenna main beam distances were calculated for a range of power levels. This is a typical plot of the results for the Home Station 1:



France also represented the same information in terms of RNSS (Galileo) protection criteria exceedance over three (relatively short) distances. This is the same example for 5km:



The Chinese study considered a wideband (ATV) application, a narrow-band application, amateur-satellite uplink and EME communication. A power level of 1W was assumed except for EME where 50W was assumed. 2-D plots showed the area around the assumed transmitter that the protection criteria for the COMPASS system was exceeded.

The Russian Federation study assumed only an ATV scenario and GLONASS general purpose receivers and air-navigation receivers. A power level of 1W was assumed. The

results for the general purpose receivers are similar to those from other studies but the airborne case shows exceedance results extending up to 100km.

After some discussion and clarification these studies were added to the draft report.

The meeting also developed proposals for the draft CPM text which had been liaised from WP5A. Proposals summarising the studies from France and the USA were discussed and a reply was developed to send back to WP5A.

### **Summary of the meeting outputs relevant to AI 9.1b**

**Annex 1** to the chairman's report **4C/333**: Preliminary draft new report **ITU-R M.[AMATEUR-RNSS]**. This document will form the basis for ongoing contributions and work at the next meeting. This was shared in a liaison to WP5A also.

The draft report now contains:

- a) Information on the RNSS use including frequencies and receiver protection criteria.
- b) Information on the amateur characteristics provided by WP5A.
- c) Propagation model.
- d) Methodology including "interference area" calculation procedure.
- e) Reported interference cases in Germany and Italy.
- f) A study from France in the range 1260-1300 MHz against the GALILEO system only.
- g) A study from China to assess the impact of ATV, narrow band emissions, EME operation and satellite uplink to the COMPASS system.
- h) A study from the Russian Federation considering ATV stations into GLONASS general purpose receiver and also into GLONASS air- navigation receiver.
- i) Measurements carried out by the European Commission Joint Research Centre and by Germany.
- j) Summary section – somewhat draft at this time.
- k) Seven Annexes containing detailed studies and measurement results.

The draft report can be downloaded found [here](#) (It is a big file!)

**Annex 7** to the chairman's report **4C/333**: Working Party 4C comments on Working Party 5A working document towards a preliminary draft CPM text for WRC-23 agenda item 9.1, topic b).

### **IARU Observations**

All the studies have assumed static scenarios in the sense that no consideration has been given to the geographic distribution and density of amateur transmitters or the temporal aspects of amateur operations. Some studies take account of antenna patterns but other results are based only on main beam consideration.

However the scale of the problem for the amateur service is clear with even relatively low power stations predicted to have the potential to cause interference to the co-frequency primary service. For example, the studies predict that even a 10W station could cause interference to RNSS receivers at up to 30km on the antenna main beam heading.

Given the heavy spectrum occupancy of the band by the various RNSS systems it seems quite likely that the amateur service occupancy will come under consideration and in particular we can expect to see proposals that may restrict our ability to operate in certain parts of the band and at the power levels we are allowed to use today.

**Next WP-4C meeting**

The next WP4C meeting will continue to work towards finalising this study activity.

7th –13th September 2022