**EUMETNET programme on protection of Radio-Frequencies (Eumetfreq)**

**Meeting report N° 15/09**

**Meeting** : ITU-R WP 7B and 7C and Study Group 7

**Venue and date** : Geneva (Switzerland), 7-15 September 2009

**Eumetfreq participant*** : Roger CARTER (UK Metoffice)
Philippe TRISTANT (Meteo France)**

* unlike within CEPT, EUMETNET is not a recognised body within ITU-R. However, Eumetfreq participation to these meetings is made under national delegations.

** Also representing WMO

---

Within ITU-R Study Group 7, Working parties 7B and 7C deal with the following topics:

- 7B : space radio systems, including meteorological satellites
- 7C : Earth Exploration Satellite (EES) and meteorological aids

Following are given summary of these two working parties concerning the main meteorological related topics.

## 1) Agenda item 1.24 (METSAT in the 7850-7900 MHz)(in WP 7B)

As expected at previous meeting, WP7B considered the Draft New Report ITU-R [METSAT 7.9 GHz] on "*Compatibility between the meteorological satellite and the fixed service in the band 7 850-7 900 MHz*" mature enough to be finalised. This Report, mainly based on a EUMETSAT analysis, shows on the one hand that, using the same pfd limits related to the 7750-7850 MHz, there is, in all scenarios, a large margin compared to the protection of Fixed Service stations (11 dB considering all worst cases) and, on the other hand, that the separation distance between FS stations and METSAT Earth Stations will be of few tens km (50 km in the worst case). It was subsequently sent to SG7 for adoption.

The CPM text on this agenda item 1.24 was slightly modified, confirming one single method to satisfy the agenda item to add an allocation to the MetSat service in the band 7 850-7 900 MHz on a world-wide basis, limited to non-geostationary satellite systems with the application of the pfd limits contained in Table 21-4 of Article 21 and Table 8c of Appendix 7 currently applicable to the band 7 850-7 850 MHz.

Next WP 7B meeting would have to complete this CPM Text and one can expect that it will remain in its current shape.

**2) Agenda item 1.25 (Mobile Satellite Service)(in WPs 7B and 7C)**

Under agenda item 1.25, WP 4C is currently performing sharing studies between possible future MSS allocations in various bands and corresponding incumbent services, including METSAT and EESS (passive and active) in the following bands:

- 7055 – 7250 MHz (passive satellite sensing)
- 7750 – 7900 MHz (non-geostationary meteorological satellite space-to-Earth links)
- 10500 - 10600 MHz (adjacent to passive band 10.6-10.7 GHz)
- 13250 – 13400 MHz (active satellite sensing)

The current working document towards a draft new Report on "*Feasibility of MSS operations in certain frequency bands*" developed in WP4C was considered by WP7B and WP7C that sent back their comments to be considered in further studies in WP 4C. In particular, WP7B is stressing the fact that, currently, sharing studies related to the potential interference from Mobile Earth Stations (MES) to METSAT receiving Earth stations is not considered and would probably lead to high separation distances.

**3) Characteristics of EESS and MetSat and Status of SA Recommendations (in WP 7B)**

Following initial work handled at previous meeting on the revision of certain Recommendations dealing with EESS and METSAT characteristics and protection criteria, WP7B considered a proposal from the US Administration to undertake a global review of all Recommendations dealing with Earth exploration satellite and meteorological satellite services, including a combination of the current concepts of performance criteria (C/N) and interference criteria (I) into a single concept of a required minimum C/(N+I) value.

The goal of this work would be a merger of Recommendations ITU-R SA.1021 and SA.1022 and a merger of Recommendations ITU-R SA.1025, SA.1159, and SA.1162, as well as the shift of most of the material from Recommendations ITU-R SA.1026, SA.1160, SA.1163, and SA.1627 into a single Report providing typical EESS and MetSat parameters that can be used for interference assessment.

Finally, this would lead to the suppression of Recommendations ITU-R SA.1023, SA.1026, SA.1027, SA.1160, SA.1161, SA.1163, and SA.1164.

These proposal and principles were supported and WP7B encouraged future inputs from Administrations, however recognising the long-term challenge of this global review.

**4) Agenda item 1.6 (Passive bands above 275 GHz)(in WP 7C)**

As far as EESS (passive) is concerned, WP7C further progressed on the current Preliminary Draft Report ITU-R RS.[above 275] "*Passive bands of interest to EESS/SRS from 275 to 3000 GHz*" and can assume that it represents a mature reference document. The main progress were made in relation to frequency bands between 1 and 3 THz for which on the one hand no meteorology/climatology requirements are proposed and on the other hand, in the field of atmospheric chemistry, the Report agrees that a number of frequency lines would be of interest in this range but recognises that the atmospheric attenuation is such that it can be assumed that sharing with active services will be possible. As a consequence, this report is therefore only proposing specific EESS frequency bands between 275 and 1000 GHz.

One can note that, in addition to this Report, the US Administration proposed to also draft a Recommendation on this issue. The question arose about the necessity to propose two documents almost similar on the same issue and next WP7B will have to decide on this and, in any case, to finalise these elements that would serve as a support to the methods to satisfy this agenda item 1.6.

By the way, WP7C also furthered its work on the CPM Text, by adding to the current Method A (as proposed by European countries at last meeting) a new Method B (proposed by the US) that, in complement to Method A (that only refers to specific Resolutions) aims at also including in Footnote 5.565 the list of relevant frequency bands.

One can note that it is here more of a formal issue but that both Methods are consistent in their results. On this basis, one can expect that next WP7C will finalise this CPM Text proposing one single method.

Consequential to this work on bands above 275 GHz, WP7C initiated a work toward revising Recommendations ITU-R RS 515, 1028 and 1029 (EESS passive frequency bands, performance criteria and interference criteria, respectively) to limit their scope to bands below 275 GHz.

## 5) Agenda item 1.16 (Lightning detection below 20 kHz)(in WP 7C)

Unlike previous meetings, WP7C progressed its work on this agenda item, thanks to tremendous work performed by the UK Administration and in particular the UK Metoffice. One can in particular highlight the progress made in the field of Lightning detection sensors protection criteria and coexistence with Radionavigation.

4 different reports are currently on-going :

- *Radio services and radio-frequency environment within the band below 20 kHz*
- *Protection criteria for arrival time difference (ATD) receivers operating in the met aids service in the frequency band below 20 kHz*
- *Arrival time difference lightning detection systems in the meteorological aids service in operation below 20 kHz*
- *Study on compatibility between arrival time difference (ATD) stations of the meteorological aids service and the radionavigation service in the frequency band 9 to 14 kHz*

WP7C was also in a position to progress its work on the CPM Text, although at this stage, the 4 different Methods proposed were not discussed in length. All of these Methods propose somehow a recognition of Metaids service in bands below 14 kHz but either with a primary status, a secondary status or even only by footnote.

Next WP7C will have to finalise this CPM text and one can expect that discussions will not be straightforward, in particular with the Russian Federation that wishes to protect its radionavigation system. Without any doubt, the final CPM text will still include several methods, hence leaving to Administrations and WRC the final choice.

## 6) Agenda item 8.1.1 (Issue C) : Essential role of Earth Observations (in WP 7C)

Following recent work by correspondence, WP7C considered the new version of the Report on "*The essential role and global importance of radio spectrum use for Earth observations and for related applications*" mainly as a response to resolution 673 (WRC-07).

Although Part A of this Report on "Earth Observation" was unanimously considered as mature enough, stressing the societal and economic importance of these activities, and could have justified a finalisation of the report, the other parts of the report, that are not really related to "Earth Observations" are definitively not at the same stage of maturity and are hence slowing down its completion :

- Part B is a new part proposed by Canada at this meeting on "Solar radio monitoring" and hence need a review
- Part C relates to "Radioastronomy and Space research" but did not benefit from the same level of involvement from experts.

Indeed, Part A is formally the Response to Resolution 673 (WRC-07) and to the related agenda item 8.1.1 (Issue C) and is therefore under the pressure of being finalised before the CPM Text deadline (July 2010). This can explain the strongest involvement of "Earth Observation" community. This issue was raised during WP7C, even proposing to separate Part A from other parts, but as a compromise, it was agreed to wait until next meeting at which, whatever is the status of Part B and C, Part A will be finalised and proposed for adoption.

Finally, WP7C initiated the work toward the CPM Text on this agenda item, focusing on analysing the current studies but still not proposing any Methods.

## 7) Protection of the passive band 31.5-31.8 GHz (in WP 7C)

Unlike the 31.3-31.5 GHz that is a worldwide passive band under Footnote 5.340 (all emissions are prohibited), the 31.5-31.8 GHz only benefit of this status in Region 2 (Americas).

WP 7C furthered its work on sharing studies with Fixed Service to determine whether and under which conditions this band can be shared between EESS and Fixed Service. Initial calculations show that passive sensors interference criteria would be exceeded by interference from a deployment of FS stations but these analysis need further investigations before being able to provide relevant conclusions.

## 8) Other items related to passive sensing (in WP 7C)

WP 7C finalised a number of important Reports or Recommendations of general nature and that would all serve as important reference documents:

- Recommendation ITU-R RS.[Aggregate] on "*Characterization and assessment of aggregate interference to EESS (passive) sensor operations from man-made emission power sources*"
- Recommendation ITU-R RS.[Disaster] on "*Use of remote sensing systems in the event of natural disasters and similar emergencies for warning and relief operations*"

- Recommendation ITU-R RS.[Passive_Chars] on "*Typical technical and operational characteristics of Earth exploration-satellite service (passive) systems using allocations between 1.4 and 275 GHz*"
- Report ITU-R RS.[Ident_Degrad] on "*Identification of degradation due to interference and characterization of possible interference mitigation techniques for passive sensors operating in the Earth exploration-satellite service (passive)*"

In addition, although not completed yet, WP7C also progressed its work on the preliminary draft Recommendation ITU-R RS.[Climate] on "*Use of remote sensing systems in the study of climate change and the effects thereof*".

## 9) Radiosondes (in WP 7C)

Following measurements and analysis performed by NOAA and presented by the US Administration, WP7C finalised the revision of ITU-R Recommendation RS 1263 on "*Interference criteria for meteorological aids operated in the 400.15-406 MHz and 1 668.4-1 700 MHz bands"* that provides up-to-date radiosondes protection criteria for use in future sharing studies.

## 10) Study Group 7

All documents mentioned above as finalised by WP7B and 7C were presented to Study Group 7. SG7 did adopted or approved all these documents (note that Recommendations are only adopted by SG7 and that a correspondence procedure among all ITU-R members is following to get this Recommendation finally approved).

One can in addition note that SG7 finally approved the ITU-R Question on "ground-based passive sensors" that is asking to undertake studies to determine characteristics and protection requirements of such devices.

## 10) Next meeting

The next meetings of ITU-R WP 7B and WP7C are scheduled 14-18 June and 5-11 October 2010 in Geneva.

---