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| Hilversum, The Netherlands, 27th - 20th November 2018 |
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| Subject:  | Draft CEPT Brief on WRC-19 Agenda item 1.1 |
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| Summary:  |
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| Proposal: |
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DRAFT CEPT BRIEF ON AGENDA ITEM 1.1

1.1 to consider an allocation of the frequency band 50-54 MHz to the amateur service in Region 1, in accordance with Resolution 658 (WRC-15)

# ISSUE

CEPT has identified the following elements, relevant for this Agenda item:

* to study spectrum needs for the amateur service in the band 50-54 MHz;
* to study sharing between the amateur service, and the mobile, fixed, radiolocation and broadcasting services, in order to ensure protection of these services

# Preliminary CEPT position

CEPT supports an allocation of 2 MHz in the frequency range 50-52 MHz to the amateur service in Region 1 on a secondary basis. CEPT is still discussing the future regulatory status of the amateur service in part of the band 50-52 MHz.

CEPT is of the view that the amateur service shall not cause harmful interference to, nor claim protection from harmful interference caused by the incumbent services.

# Background

This Agenda item was developed based on proposals of CEPT and ASMG administrations during WRC-15. According to the Radio Regulations (RR) the band 50-54 MHz is allocated to the Amateur service in Regions 2 and 3. Therefore an allocation of this frequency band to the amateur service in Region 1 would contribute to the harmonized use of this band by amateur service in all ITU-R Regions.

In Region 1 the frequency band 50-54 MHz is allocated in the RR to the broadcasting service on primary basis.

While the Region 1 African countries listed in No 5.169 have an alternative allocation to the amateur service in the frequency band 50-54 MHz on a primary basis, a number of other Region 1 countries have authorised the use of all or parts of the band 50-52 MHz by the amateur service on a mainly secondary (but sometimes national primary) basis in accordance with No 4.4.

The frequency band 47-68 MHz or part of it, also has an additional allocation to the land mobile service on a primary basis in a number of countries in Region 1 according to No 5.164. The frequency band 50-54 MHz is also allocated to the land mobile service on a primary basis as shown in the European Table of Frequency Allocations.

No 5.162A provides for an additional allocation to the radiolocation service on a secondary basis in a number of countries, limited to the operation of windprofiler radars in accordance with Resolution 217 (**WRC-97**).

lTU-R WP 5A was designated as the responsible group for studies under WRC-19 Agenda item 1.1. During its latest meeting (22 May - 1 June 2017) WP 5A continues work for WRC-19 Agenda item 1.1. The preliminary draft CPM text and work plan for this Agenda item appear in Annexes 4 and 5 of Doc. 5A/469, respectively. WP 5A developed a working document towards a preliminary draft new Report ITU-R M.[AMATEUR\_50\_MHz] (Annex 14 of Doc. 5A/469*).*This PDNR includes studies on spectrum needs, sharing and compatibility. WP 5A noted the need to continue work on these studies during next meeting, as a lot of issues still need to be clarified (e.g. more explanation of a method determining spectrum needs is required as well as some assumptions for others studies also should be clarified). It was also noted that the preliminary draft. CPM text is in a very early stage and needs further developing.

The amateur community highlighted their need to access the band 50-54 MHz or parts therein on a primary basis in order to secure its operation in the future.

1. further justification is to be provided

## Spectrum Needs Summary

An application-based approach to assess amateur spectrum needs for the frequency band 50–54 MHz has been considered.

Table 1 shows a comparison between two calculations. These calculations reflect the achieved results according to different densities taken into account.

Table 1: Required spectrum for amateurs in the 50-54 MHz band

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| Required Spectrum (MHz) |
| Amateur Applications | Results calculated with parameters based on a traffic measurement approach | Results calculated based on estimated parameters |
| Average use\* (avg) | Maximum use\*\* (max) | Calculation | Band plan |
| SSB, FM, WB | 0.540 | 0.765 | 0.712 | 0.925\*\*\*\*\* |
| SSB, FM, WB, Repeaters | 0.740 | 1.865\*\*\*\* | 1.662 | 1.875 |
| SSB, FM, WB, Repeaters, Infrastructure | 1.240 | 4.865\*\*\*\* | 4.162 | 3.475 |
| Repeaters (avg);WB, SSB, FM (max) | 0.965 | - | - |
| Remarks / Parameters |
| Amateur License density | 0.117(forecasted SUI density) | 0.117(forecasted SUI density) | 0.07(average European density) | - |
| Amateur Station density using 50 MHz frequency band | 0.00936(forecasted SUI density) | 0.00936(forecasted SUI density) | 0.0056(average European density) | - |
| Fraction of Amateurs Stations which are active | 10.3%\*\*\* | 74.7% | 100% | - |
| Fraction of time where the spectrum is required | 98% | 2% | - | - |

\*average spectrum use occurring in about 98% of time (average day)

\*\*exceptional intensive spectrum use (e.g., contest) occurring in about 2% of time

\*\*\*including a margin of 200% by multiplying the calculated number by 3.

\*\*\*\*the spectrum needs calculation regarding infrastructure and repeaters in the intensive use case assumes the same value for the fraction of active amateur stations using SSB; however, such situation is unlikely to occur in practice and may need to be ignored

\*\*\*\*\*including a single wide band channel

In view of one administration the amateur service does not need any additional spectrum in the band 50‑54 MHz.

## sharing with broadcasting service

Option 1

[Protection of the broadcasting service requires that the amateur service stations’ field strength values do not exceed 6 dBμV/m within 50-51.25 MHz band and 12 dBμV/m within 51.25-52 MHz band for more than 10% of time at any point inside the service area (within the 46 dBμV/m boundary in 50% of the locations, 90% of the time for each station) of a broadcasting station in operation, measured at a height of 10 m above ground.]

Option 2

[Adequate protection of the broadcasting service requires that the amateur service stations’ field strength values do not exceed 6 dBμV/m for more than 10% of time along the border of a country with operational analogue broadcasting stations, measured at a height of 10 m above ground.]

End of options

Administrations shall be required to assess and if necessary to coordinate the usage of the band by the amateur service.

This provision does not apply to countries listed in No 5.169.

## sharing with mobile service

Interference is inevitable if two transmitters operating within the same area transmit on the same frequency at the same time. In this case sharing a frequency is unlikely to be possible, unless acceptable mitigation techniques are defined.

ITU-R is developing a working document towards a preliminary draft new Report ITU-R M.[AMATEUR\_50\_MHz]. This PDNR includes studies on spectrum needs, sharing and compatibility. A number of open issues still need to be clarified.

Co-existence studies conducted within PTD to assess the separation distances between an amateur radio transmitter and a mobile radio receiver, suggest separation distances between 172 – >500 km, depending on amateur operation mode and frequency offset.

The sharing between the mobile service and the amateur service applications such as SSB, Beacons and FM may be possible. The sharing with other amateur service applications, such as wide band mode and repeaters, may only be possible for the average use case (100 kHz for repeaters and 500 kHz for wideband). However, for these latter applications a careful evaluation of sharing conditions needs to be done.

Monte Carlo simulations conducted with no mitigation techniques have shown that the probability of interference is highly dependent on the usage density of the band by amateurs. For the SSB mode, it has been shown that the probability of harmful interference ranges between 8 and 86% given the number of active amateur channels considered in the simulation radius. For the FM mode, it is about 28%. For the wideband digital mode, the probability of interference is around 93% for the in-band case (affecting up to 20 land mobile channels) and decreases for the out-of-band emissions.

## sharing with radiolocation service

Taking into account the low number of WPR stations sharing can be considered on a case-by-case basis provided that amateurs do not claim protection from or priority over WPR.

Recognizing the secondary status of the radiolocation service in this band (see No 5.162A), an allocation of the band 50-54 MHz or part therein to the amateur service can only be made on the secondary status. It needs to be noted that there are currently no wind profiler radars in the band 50-52 MHz operating in CEPT countries, whereas there are a few in the band 52-54 MHz.

1. ’A consequential update of Report ITU-R M.2013 may be required to specify the sharing conditions between WPR and the Amateur service

## sharing with fixed service and other services

This does not apply to CEPT.

# List of relevant documents

ITU-Documentation (Recommendations, Reports, other)

Recommendation ITU-R M.1732-1 ‘Characteristics of systems operating in the amateur and amateur-satellite services for use in sharing studies´;

Amateur and amateur-satellite services Handbook

Work plan for WRC-19 Agenda item 1.1

Resolution 658 (WRC-15)

Working Document Toward Preliminary Draft New report ITU-R M.[AMATEUR\_50\_MHz]

Report ITU-R BT. 2387-0 (07/2015) contains information on responses from administrations on use of various frequency bands, including 50-54 MHz for broadcasting.

Recommendation ITU-R BT.1368 ‘Planning criteria, including protection ratios, for digital terrestrial television services in the VHF/UHF bands’.

Recommendation ITU-R BT.2033 ‘Planning criteria, including protection ratios, for second generation of digital terrestrial television broadcasting systems in the VHF/UHF bands’.

Recommendation ITU-R SM.851 ‘Sharing between the broadcasting service and the fixed and/or mobile services in the VHF and UHF bands’.

Final Acts of the European Broadcasting Conference (Stockholm, 1961 as revised in Geneva, 2006) (“ST61”) in the European Broadcasting Area

Final Acts of the African Broadcasting Conference (Geneva, 1989 as revised in Geneva, 2006) (“GE89”) in the African Broadcasting Area and neighboring countries.

CEPT and/or ECC Documentation (Decisions, Recommendations, Reports)

ECC Report 117 ´Managing the transition to Digital Sound Broadcasting in the frequency bands below 80 MHz

ECC Recommendation T/R 25-08 ´Planning criteria and coordination of frequencies for land mobile systems in the range 29.7-470 MHz´

EU Documentation (Directives, Decisions, Recommendations, other), if applicable

ETSI Documentation

ETSI EN 301 783 ´Commercially available amateur radio equipment; Harmonised Standard covering the essential requirements of article 3.2 of the Directive 2014/53/EU´

# Actions to be taken

Continue to assess compatibility studies based on characteristics, protection criteria and interference scenarios;

for mobile sharing update the SEAMCAT studies

further discuss a possible partial primary allocation for the amateur service and consequently propose regulatory solution(s) to protect incumbent services.

Develop two options for an ECP with the considered regulatory status

# Relevant information from outside CEPT

## European Union (date of proposal)

## Regional telecommunication organisations

APT (June 2018)

Preliminary Views

APT Members support ongoing ITU-R studies relevant to WRC-19 agenda item 1.1.

Noting this is a Region 1 issue, APT Members agree that any changes made to the Radio Regulations under WRC-19 Agenda Item 1.1 shall not adversely impact the incumbent amateur, broadcasting, fixed and mobile services in the 50 – 54 MHz frequency band and adjacent frequency bands in Region 3.

ATU (October 2018)

Method A, which entails an allocation to the amateur service on a primary basis in all the band 50-54 MHz, or part thereof, with appropriate footnotes to provide protection to services which already have an allocation in the band –this preliminary position is therefore in principle and is subject to favourable compatibility studies with the incumbent services.

Arab Group (11 April 2018)

* Some administrations support frequency allocation for amateur service within the band 50-54 MHz on a primary basis.
* Some administration prefers to wait and follow up the studies at this stage.
* Some administration doesn’t support frequency allocation for amateur service within the band 50-54 MHz on an initial basis

CITEL (June 2018)

Outcome should not impact our region or studies do not support taking action

RCC (15 November 2018)

The RCC Administrations consider that in order to decide on possible allocation of the frequency band 50-54 MHz or a part of the band to the amateur service in Region 1, spectrum requirements for the amateur service shall be justified and agreed upon in ITU-R.

The RCC Administrations consider that, when identifying technical and regulatory conditions for such allocation, protection shall be ensured to the broadcasting service to which this frequency band is allocated on a primary basis, including stations of the broadcasting service in the frequency band 50-54 MHz, regulated by Stockholm-61 and Geneva-89.

The RCC Administrations allow for the possibility of allocation of a part of the frequency band 50 – 54 MHz to the amateur service on a secondary basis provided that additional measures will be introduced to protect broadcasting service on the border of an administration using broadcasting service.

## International organisations

IARU (April 2017) and EURAO (2 September 2017)

The IARU and EURAO support modification of the Table of Frequency Allocations to allocate the band 50-54 MHz to the Amateur Service on a primary basis in Region 1 and so provide a harmonized allocation across all three Regions.

IATA (date of proposal)

ICAO (November 2017)

No impact on aeronautical services has been identified from WRC-19 Agenda Items 1.1

IMO (date of proposal)

NATO (22 November 2018)

NATO Military Assessment

The whole range 30.005 - 87.5 MHz is essential for NATO military tactical communication. A diminished access to the whole band would reduce the ability to fulfill combined missions. At this stage studies show difficulties with sharing between amateur service and mobile service in fixed channel mode

NATO Position

NATO does not oppose to an amateur service allocation in 50-52 MHz in Region 1 provided that the military systems operated under the land mobile service are protected and not further constrained. Thus NATO is still assessing the appropriate regulatory status associated with that allocation.

SFCG (date of proposal)

WMO and EUMETNET (February 2018)

WMO does not oppose an allocation to amateur service in the 50-54 MHz provided that:

* appropriate protection of radiolocation service allocated by RR No 5.162A is ensured based on a case by case approach and
* the status of the new allocation to amateur service provides the radiolocation service equality or precedence relative to the amateur service.

WMO opposes any new allocation to amateur-satellite service in this frequency band

## Regional organisations

ESA (date of proposal)

Eurocontrol (date of proposal)

## OTHER INTERNATIONAL AND REGIONAL ORGANISATIONS

EBU (21 November 2018)

The EBU notes that the Stockholm 1961 Regional Agreement (Rev. Geneva 2006) still applies in the 50-54 MHz band.

This Agreement regulates the use of VHF bands for the broadcasting service by the countries of the European Broadcasting Area which covers almost all CEPT member states.

Many administrations in this area still have broadcasting assignments registered in the ST61 Plan or in the MIFR, and the provisions of the Agreement regarding protection of those assignments need to be respected, unless agreed otherwise by the administrations concerned.

As recorded by footnote ECA3 in the ECA Table: CEPT administrations are urged to take all practical steps to clear the band 47-68 MHz of assignments to the broadcasting service. The broadcasting assignments according to Stockholm Agreement 1961 shall be protected.

GSMA (date of proposal)

CRAF (20 November 2018)

There are several radio telescopes in Region 1 that operate in the band 50-54 MHz, many of which are also involved in the passive space weather research. The wideband use for the 52 – 54 MHz band by the amateur service would make this frequency band practically unusable for these radio telescopes. Separation distances between these and amateur stations in the order of 500 km would be required in order to not limit research for radio astronomy and related fields, such as space weather research. Radio telescopes identified from now as space weather sensors are LOFAR (Europe), NENUFAR (France), the Radio Heliograph and ORFEES (France), the Decametre Array (France), GURT (Ukraine) and 32 CALLISTO instruments (with a station in Switzerland).

Resolution 657 (WRC-15) invites ITU-R to document for WRC-19 the technical and operational characteristics of space weather sensors with the objective to conduct for WRC-23 the necessary sharing studies for incumbent systems operating in frequency bands used by space weather sensors. CRAF requests great care in allocating bands to active services, which may block the further development of space weather research.