EXPERIMENTERENDE DANSKE RADIOAMATØRER
AFDELING AF
INTERNATIONAL AMATEUR RADIO UNION

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Odense, den 10. november 2024

Teleområdet under Digitaliseringsministeriet
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Høringssvar fra Experimenterende Danske Radioamatører (EDR)

Ref. J nr. 1640-6326

EDR takker for muligheden for at afgive høringssvar i forbindelse med Teleområdet under Digitaliseringsministeriets høring af 10. oktober 2024 over udkast til fem bekendtgørelser på frekvensområdet, herunder bl.a. ny Frekvensplan.

EDR har følgende bemærkninger til bekendtgørelserne:

Bekendtgørelse om fastlæggelse af rammerne for anvendelse og indbyrdes prioritering af de samlede radiofrekvensressourcer (frekvensplan)
og
Bekendtgørelse om anvendelse af radiofrekvenser uden tilladelse samt om amatørradioprøver og kaldesignaler m.v.

1240-1300 MHz frekvensbåndet

EDR noterer, at Teleområdet har indarbejdet den nye fodnote 5.332A (WRC-23) fra RR i frekvensplanen under frekvensbåndet 1240-1300 MHz.

> 5.332A
> Administrationer, der tillader amatør- og amatør-satellittjenesten i frekvensbåndet 1240-1300 MHz, eller dele heraf, skal sikre, at amatør- og amatør-satellittjenesten ikke forårsager uacceptable forstyrrelser for modtagere i radionavigations-satellittjenesten (rum-til-Jord) i overensstemmelse med nr. 5.29 (se den seneste version af anbefaling ITU-R M.2164). Den autoriserende administration skal, efter at have modtaget en rapport om en uacceptabel forstyrrelse forårsaget af en station i amatør- eller amatør-satellittjenesten, tage alle nødvendige skridt for hurtigt at eliminere forstyrrelsen.

EDR er bekendt med, at der i CEPT-regi arbejdes på løsninger til implementering af resultaterne fra WRC-23 i relation til frekvensbåndet 1240-1300 MHz. Således har ECC/WGSE

på mødet i september 2024 godkendt ECC Report 359 "Coexistence between the radio-navigation-satellite and the amateur services in the frequency range 1240-1300 MHz, approved 27 September 2024" og under ECC/WGFM arbejder PT FM44 med baggrund i bl.a. ECC Report 359 på et udkast til ECC-beslutning, som forventes præsenteret for ECC/WGFM på mødet i februar 2025 med henblik på godkendelse og udsendelse i offentlig høring. En endelig vedtagelse af ECC-beslutningen vil således tidligst kunne ske på ECC-mødet i juni 2025.

Et foreløbigt udkast til ECC-beslutning blev udarbejdet på PT FM44's møde i september 2024, se vedlagte dokument "FM44(24)049A11_draft ECC decision on RNSS and Amateurs in E6 band.docx".

Det er EDR's opfattelse, at udkastet har et detaljeringsniveau, som vil være vanskeligt at implementere i praksis. EDR skal derfor anbefale, at en ECC-beslutning med dette indhold ikke tiltrædes af og implementeres i Danmark, men at der alene administreres i overensstemmelse med ovennævnte nye fodnote 5.332A.

Yderligere skal EDR henlede opmærksomheden på høringen i januar 2023 (J nr. 1640-4291), hvor et forslag til repeaterspacing i frekvensbåndet, se vedlagte uddrag "1240-1300 MHz repeater.pdf", på foranledning af EDR blev udsat til efter WRC-23. EDR vil senere vende tilbage til, om forslaget fortsat ønskes at indgå i forbindelse med Teleområdets samlede overvejelser i frekvensbåndet.

Øvrige udkast til bekendtgørelser

EDR har gennemgået de øvrige udkast til bekendtgørelser og kan konstatere, at udkastene set i relation til amatørradioområdet ikke giver anledning til bemærkninger.

Med venlig hilsen

Peter Marlau Knudsen
EDR's Teleudvalg

24,194-24,250 GHz	100 W	0
47,0-47,2 GHz	100 W	0
76,0-81,5 GHz	100 W	0
134-141 GHz	100 W	0
241-250 GHz	100 W	0

1.4. Amatørradiotjenesten - ubemandede amatørradiorepeatere

Frekvensbånd	**Certifikattype**	
	Kategori A og B	Kategori D
29,615-29,695 MHz [1) 5)]	100 W	0
51,80375-51,99625 MHz [2) 6)]	100 W	50 W
70,4875-70,5125 MHz [3) 6)]	25 W	25 W
145,56875-145,79375 MHz [3) 6)]	100 W	50 W
434,50625-434,59375 MHz [3) 7)]	100 W	50 W
434,59375-434,99375 MHz [3) 7)]	100 W	50 W
1296,9875-1297,4875 MHz [4) 8) 9)]	100 W	50 W
2410-2411 MHz	100 W	0
2445-2446 MHz	100 W	0
5720-5760 MHz	100 W	0
5762-5790 MHz	100 W	0
10,150-10,250 GHz	100 W	0
10,350-10,368 GHz	100 W	0
10,370-10,450 GHz	100 W	0
24,050-24,192 GHz	100 W	0
24,194-24,250 GHz	100 W	0
47,0-47,2 GHz	100 W	0
76,0-81,5 GHz	100 W	0
134-141 GHz	100 W	0
241-250 GHz	100 W	0

1) Kanalafstand 10 kHz

2) Kanalafstand 20 kHz

3) Kanalafstand 12,5 kHz

4) Kanalafstand 25 kHz

5) Korresponderende indgangsfrekvens: -100 kHz

6) Korresponderende indgangsfrekvens: -600 kHz

7) Korresponderende indgangsfrekvens: -2,0 MHz

8) Korresponderende indgangsfrekvens: -6,0 MHz

[9] Korresponderende indgangsfrekvens: -28,0 MHz

1.5. Amatørradiosatellittjenesten - bemandede radioanlæg

Frekvensbånd	**Certifikattype**		
	Kategori A	Kategori B	Kategori D
7000-7100 kHz	1000 W	100 W	0
14,0000-14,2500 MHz	1000 W	100 W	0
18,0680-18,1680 MHz	1000 W	100 W	0
21,0000-21,4500 MHz	1000 W	100 W	0
24,8900-24,9900 MHz	1000 W	100 W	0
28,0000-29,7000 MHz	1000 W	100 W	0
144-146 MHz	1000 W	100 W	50 W
435-438 MHz	1000 W	100 W	50 W
1260-1270 MHz	250 W	100 W	50 W
2400-2450 MHz	250 W	100 W	0
3400-3410 MHz	250 W	100 W	0
5660-5670 MHz	250 W	100 W	0
10,45-10,50 GHz	250 W	100 W	0
24,00-24,05 GHz	250 W	100 W	0
47,0-47,2 GHz	250 W	100 W	0
76,0-81,5 GHz	250 W	100 W	0
134-141 GHz	250 W	100 W	0
241-250 GHz	250 W	100 W	0

2. Sendeeffekter

Ved sendeeffekt forstås spidssendeeffekt (PEP), det vil sige den maksimale middeleffekt, som senderen i løbet af en periode af HF-signalet afgiver til en refleksionsfri belastning på 50 ohm ved sendere med ubalanceret udgang og 300 ohm eller 600 ohm ved sendere med balanceret udgang. Effekten måles med et spidsvisende effektmeter på det sted, hvor antennen (antennekablet) eller en antennetuner tilsluttes senderens sidste trin.

Det anvendte effektmeter skal have så stor båndbredde, at det kan måle alle sendesignalets komposanter inden for det pågældende frekvensbånd, som er afsat til amatørradio- eller amatørradiosatellittjenesten.

Ved sendere, hvor sendeeffekten er afhængig af det modulerende signal, måles sendeeffekten under fuld modulation af senderen med et for den pågældende sender repræsentativt modulationssignal efter ~~Energistyrelsen~~Styrelsen for Dataforsyning og Infrastruktur's skøn.

I frekvensbåndene 135,7-137,8 kHz og 472-479 kHz forstås ved sendeeffekt den effektivt udstrålede effekt (ERP), det vil sige den til antennen tilførte spids sendeeffekt multipliceret med antennens virkningsgrad.

Tilsvarende begrænsninger gælder for et eventuelt tilsluttet forstærkertrin.

TEMP09

CEPT ECC

Electronic Communications Committee

ECC Decision (XX)XX

Technical and operational measures for the use of the frequency band 1 258 -1 300 MHz by the amateur and amateur-satellite service in order to protect the radionavigation-satellite service (space-to-Earth)

approved XX XX XXXX

EXPLANATORY MEMORANDUM

1 INTRODUCTION

This Decision addresses the technical and operational measures for administrations authorizing stations operating in the amateur and amateur-satellite services to protect the radionavigation-satellite service (space-to-Earth) in the frequency band 1 258-1 300 MHz. The relevant measures are contained in Annex 1 to this Decision.

2 BACKGROUND

The frequency range 1 258-1 300 MHz covered by this Decision is allocated on a primary basis to the RNSS and is used by the European ~~GALILEO~~ Galileo system across the frequency range 1 258.29-1 299.21 MHz in RNSS sub-band E6 for the provisioning of radio navigation satellite services (RNSS). The frequency band 1 258-1 300 MHz is also allocated to the amateur service and partly to the amateur satellite service (1 260-1 270 MHz), both on a secondary basis in the ITU Radio Regulations [1]. This band is further shared with primary allocations to the radiolocation (RLS), radionavigation (RNS) on a co-primary basis and with the Earth exploration-satellite service (EESS (active)) a co-secondary basis.

ECC Report 359 [1][~~2~~], details studies that show that there is a potential for amateur station emissions in the range 1 258-1 300 MHz to be received in ~~GALILEO~~ Galileo RNSS receivers at levels exceeding the receiver protection criteria defined by the Recommendation ITU-R M. 1902-2 [2][~~3~~].

Between 2019 and 2023, ITU-R studied the global set of RNSS systems in the range 1 240- 1 300 MHz, including additionally the Russian Federation system GLONASS, the Chinese Beidou system and the Japanese QZSS. As a result of that work, Report ITU-R M.2513-~~0~~ 1 [3][~~4~~] and Report ITU-R M.2532-0 [4][~~5~~] were published, along with Recommendation ITU-R M.2164-0 [5][~~6~~].

With the implementation of the ~~GALILEO~~ Galileo system, it has become necessary to study the operating conditions for applications and operating modes in the amateur and amateur satellite services to assess their potential for interference into the terrestrial RNSS receivers and ensure the protection of the RNSS whilst enabling continued use of this band and ensuring the continued development of both amateur and amateur satellite services in this band.

In order to ensure the protection of the RNSS, technical and operational measures have been considered that can allow the amateur and amateur satellite services to continue to operate in part of the band 1 258 to 1 300 MHz in a way that can reduce the potential for interference into ~~GALILEO~~ Galileo RNSS receivers. These are detailed in Annex 1.

3 REQUIREMENT FOR AN ECC DECISION

In order to provide a clear regulatory framework for the protection of the RNSS whilst enabling continued use of this band and ensuring the continued long-term development of both amateur and amateur satellite services in this band, an ECC Decision is necessary for the frequency range 1 258 – 1 300 MHz.

ECC recognises that:

- the authorisation regimes are decided at national level in particular in response to market demand;
- administrations need flexibility to adapt their use of the band 1 258 – 1 300 MHz to national circumstances due to the current usage implementation of RNSS and amateur stations alike;
- administrations need to maintain the possibility for operation/deployment of existing and future amateur stations;
- administrations need to protect RNSS in 1 258 – 1 300 MHz from the emissions of amateur and amateur satellite stations.

ECC DECISION OF XX XX XXXX ON TECHNICAL AND OPERATIONAL MEASURES FOR THE USE OF THE FREQUENCY BAND 1 258 -1 300 MHZ BY THE AMATEUR AND AMATEUR-SATELLITE SERVICE IN ORDER TO PROTECT THE RADIONAVIGATION-SATELLITE SERVICE (SPACE-TO-EARTH) (ECC DECISION (XX)XX)

"The European Conference of Postal and Telecommunications Administrations,

considering

a) that the frequency band 1 240-1 300 MHz is allocated to the RNSS (space-to-Earth) and (space-to-space) on a primary basis;

b) that the frequency band 1 240-1 300 MHz is also allocated to the amateur service on a secondary basis;

c) that the amateur-satellite service (Earth-to-space) may operate in the frequency band 1 260-1 270 MHz under the provisions of RR No. **5.282**;

d) that the frequency band 1 240-1 300 MHz is also allocated worldwide to the Earth exploration-satellite service (active), radiolocation service (RR No. **5.329** applies) and the space research service (active) on a primary basis;

e) that additional services are also allocated on a primary basis in some countries under RR Nos. **5.330** (fixed and mobile services) and **5.331** (radionavigation service) within the frequency band 1 215-1 300 MHz;

f) that the amateur and amateur-satellite services continually develop their use of the frequency band 1 240-1 300 MHz in accordance with RR Nos. **1.56** and **1.57**;

g) that the maximum power of amateur stations is fixed by the administrations concerned, as stipulated in RR No. **25.7**;

h) that the International Amateur Radio Union (IARU) develops, maintains and publishes detailed band plans for the operation and development of the amateur and amateur-satellite services in all three Regions;

i) that ECC Report 359 [1][~~2~~] provides studies and measurements studies that show that there is a potential for amateur station emissions in the range 1 258-1 300 MHz to be received in ~~GALILEO~~ Galileo RNSS receivers at levels exceeding the receiver protection criteria defined by the Recommendation ITU-R M. 1902-2 [2][~~3~~];

j) that Report ITU-R M.2532-0 [4][~~5~~] provides information on the applications and operational characteristics of the use of the band 1 240-1 300 MHz by the amateur and amateur-satellite services;

k) that Report ITU-R M.2513-~~0~~ 1 [3][~~4~~] provides studies and measurements regarding the amateur and amateur-satellite services transmissions and their potential to cause harmful interference to radionavigation-satellite service (RNSS) (space-to-Earth) that may, under certain conditions, exceed the protection criteria given in Recommendation ITU-R M.1902-2 [2][~~3~~];

l) that Recommendation ITU-R M.1902-2 [2][~~3~~] provides the characteristics and protection criteria for RNSS (space-to-Earth) receivers operating in the band 1 215-1 300 MHz;

m) that Recommendation ITU-R M. 2164-0 [5][~~6~~] provides guidance on technical and operational measures for administrations authorizing stations operating in the amateur and amateur-satellite services to protect the radionavigation-satellite service (space-to-Earth) in the frequency band 1 240-1 300 MHz;

n) that RNSS systems using the frequency band 1 240-1 300 MHz are operational, or becoming operational, worldwide, with the aim of supporting a wide range of new satellite positioning applications;

o) that administrations wishing to implement this ~~Recommendation~~ Decision may need a transition period to make the necessary changes to their national amateur and amateur-satellite services authorizations;

DECIDES

1. that administrations wishing to allow operations or continue the operation of the amateur and amateur-satellite services across their territory in all or part of the frequency band 1 258-1 300 MHz, shall use the technical and operational measures described in **Fejl! Henvisningskilde ikke fundet.**~~ANNEX 1:~~ in order to protect RNSS (space-to-Earth);

2. that this Decision will enter into force on ~~1~~ XX/~~January~~ XX/2025;

3. that the preferred date for implementation of this Decision shall be ~~1 January~~ XX/XX/2025;

4. that CEPT administrations shall communicate the national measures implementing this Decision to the ECC Chairman and the Office when the Decision is nationally implemented."

Note:

Please check the Office documentation database https://docdb.cept.org/ for the up to date position on the implementation of this and other ECC Decisions.

ANNEX 1: TECHNICAL AND OPERATIONAL MEASURES FOR THE USE OF THE FREQUENCY BAND 1 258-1 300 MHZ BY THE AMATEUR AND AMATEUR-SATELLITE SERVICE IN ORDER TO PROTECT THE RADIONAVIGATION-SATELLITE SERVICE (SPACE-TO-EARTH)

This Annex provides technical and operational measures to be used by administrations wishing to allow or continue the operation of the amateur and amateur-satellite services across their territory in all or parts of the frequency band 1 258-1 300 MHz in order to protect RNSS.

a) For narrowband (bandwidth ≤ 150 kHz) applications operating in the amateur service:

   i) 1 258-1 296 MHz: Maximum value of e.i.r.p.[1] = –17 dBW

   ii) 1 296-1 298 MHz: Maximum transmitter power[2] = 17 dBW

   iii) 1 298-1 300 MHz: Maximum transmitter power[2] = 22 dBW

   - for narrowband Earth-Moon-Earth applications in the amateur service using a symmetric high-performance antenna (e.g. boresight gain at least 30 dBi) pointing at least 15 degrees above the horizontal:

     - 1 298-1 300 MHz: Maximum transmitter power[2] = 27 dBW

b) For narrowband applications operating in the amateur-satellite service (Earth-to-space) (bandwidth ≤ 150 kHz):

   i) 1 260-1 262 MHz:

   Maximum value of e.i.r.p.[1]:

–3 dBW	for $0° \le \theta < 15°$
17 dBW	for $15° \le \theta < 55°$
26.8 dBW	for $55° \le \theta < 90°$

   where θ = elevation angle of amateur station antenna,

   ii) 1 262-1 270 MHz: Maximum value of e.i.r.p.[1] = –17 dBW

c) For broadband (bandwidth > 150 kHz), including amateur television (ATV), applications operating in the amateur service:

   i) 1 258-1 300 MHz: Maximum value of e.i.r.p.[1] = –17 dBW/1 MHz

d) When amateur and amateur-satellite station antennas are installed at much higher antenna heights compared to the representative values contained in Report ITU-R M.2513-0 [3][4] (representative antenna height above ground is 25 m), further constraints or limitations in addition to those listed in the above points a) to c) may need to be considered by administrations, in particular for cases of the amateur station category referred to as "permanent installations" such as repeaters and propagation beacons.

e) In addition to point b) above, in case of an increase of the current use of the frequency band 1 260-1 270 MHz by amateur satellites, Administrations may consider applying a limitation to the duty cycle of relevant amateur satellite operations.

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[1] Where e.i.r.p. refers to the radiated power of the amateur station.
[2] Where maximum power means either peak envelope power or carrier power (as appropriate) delivered by the transmitter to the amateur station antenna.

ANNEX 2: LIST OF REFERENCES

[1] ITU Radio Regulations, Edition of ~~2020~~2024

~~[2]~~ ECC Report 359, "Coexistence between the radionavigation-satellite and the amateur services in the frequency range 1240-1300 MHz", approved 27 September 2024~~XX XXXX~~

~~[3]~~[2] Recommendation ITU-R M. 1902-2, "Characteristics and protection criteria for receiving earth stations in the radionavigation-satellite service (space-to-Earth) operating in the band 1 215-1 300 MHz"

~~[4]~~[3] Report ITU-R M.2513: "Studies regarding the protection of the primary radionavigation-satellite service (space-to-Earth) by the secondary amateur and amateur-satellite services in the frequency band 1 240-1 300 MHz"

~~[5]~~[4] Report ITU-R M.2532: "Amateur and amateur-satellite services characteristics and usage in the 1 240-1 300 MHz frequency band"

~~[6]~~[5] Recommendation ITU-R M.2164-0: "Guidance on technical and operational measures for the use of the frequency band 1 240-1 300 MHz by the amateur and amateur-satellite service in order to protect the radionavigation-satellite service (space-to-Earth)"