



International Amateur Radio Union

Region 1

Working for the future of amateur radio

HF Committee Newsletter

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(IARU-R1)

SUBJECT: Region 1 HF Bandplan

1. Introduction

The concept of a band-plan based upon emission bandwidths was put to the IARU Region 1 HF Committee in 1992 by DARC. The idea was prompted by the emergence of new modes, changes in usage of existing modes and the need to ensure spectrum efficiency. The Region 1 HF Committee reviewed that plan several times. Following the Lillehammer Conference in 1999 further discussions between DARC, RSGB and SARA has resulted in the following proposal of a technical bandplan

2. Proposal

Harmonisation of the high and changing usage patterns seen on the amateur HF bands is going to improve along with spectral efficiency when operating modes, which cause each other equivalent interference, occupy the same spectrum sub-band. The logical extension, or "could be" position, for an emission bandwidth based band-plan would be to de-regulate usage to the point where emission bandwidth was allowed, for example, to continuously increase with frequency across each amateur band. The frequency boundary at which different bandwidth usages change could flex depending upon demand. A framework would be in place to enable all to understand where a new mode would slot into any specific HF amateur band. However, for a number of reasons this "could be" position, even if wanted, is not realisable in the medium-term. This proposal sets out a logic that allows a transition from the "as is" position of today to a "should be" position for tomorrow. This is an improvement and part way towards the ultimate "could be" state. The proposal would enable better spectral efficiency to be achieved without the need for continual review, yet would provide the necessary framework to allow flexible interpretation as demands change. Further, it would provide useful guidance to Regions 2 & 3 in order to achieve harmonisation in the future.

The initial step towards continuously variable bandwidth is to group emission widths into four categories that for convenience are named by their bandwidth in term of Hz, thus

- 200 Emissions less than 200Hz
- 500 Emissions less than 500Hz
- 2700 Emissions less than 2700Hz
- 6000 Emissions less than 6000Hz

Given current practice, preference and existing band plan definition the first step is to map these categories of emission bandwidth onto the existing usage of the HF amateur bands, but ignoring much of the detail of current practice and preference.

3. Bandplan table:

Based on Chapter 5.1 of the HF Managers Handbook

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IARU REGION 1 HF BAND PLAN

Note: The column "Type of emission" points to the usage of the frequency segment, as based on the bandwidth taken into consideration.

FREQUENCY SEGMENT (kHz) MAX BAND- WIDTH (Hz) TYPE OF EMISSION

1.8 MHz Band:

1810 – 1838

200 cw

1838 – 1840 500 digimode except packet, cw

1840 – 1842 2700 digimode except packet, phone, cw

1842 – 2000 2700 phone, cw

3.5 MHz Band:

3500 – 3510

200 intercontinental dx cw

3500 – 3560 200 cw, contest preferred segment cw

3560 – 3580 200 cw

3580 – 3590 500 digimode, cw

3590 – 3600 500 digimode (packet preferred), cw

3600 – 3620 2700 phone, digimode, cw

3600 – 3650 2700 phone, contest preferred segment phone, cw

3650 – 3775 2700 phone, cw

3700 – 3800 2700 phone, contest preferred segment phone, cw

3730 – 3740 2700 SSTV & FAX, phone, cw

3775 – 3800 2700 intercontinental dx phone, cw

7 MHz Band:

7000 - 7035

200 cw

7035 - 7040 500 digimode except packet (*), SSTV, FAX, cw

7040 - 7045 2700 digimode except packet (*), SSTV, FAX, phone, cw

7045 - 7100 2700 phone, cw

10 MHz Band:

10100 - 10140

200 cw (*)

10140 - 10150 500 digimode except packet, cw

14 MHz Band:

14000 - 14070

200 cw

14000 - 14060 200 cw, contest preferred segment cw

14070 - 14089 200 digimode, cw

14089 - 14099 500 digimode (non-automatic packet preferred), cw

14099 - 14101 200 IBP

14101 - 14112 2700 digimode (store-and-forward preferred), phone, cw

14112 - 14125 2700 phone, cw

14125 - 14300 2700 phone, contest preferred segment phone, cw

14230 2700 calling frequency SSTV & FAX

14300 - 14350 2700 phone, cw

18 MHz Band:
18068 - 18100
200 cw
18100 - 18109 500 digimode, cw
18109 - 18111 200 IBP
18111 - 18168 2700 phone, cw

21 MHz Band:
21000 - 21080
200 cw
21080 - 21100 500 digimode, cw
21100 - 21120 500 digimode (packet preferred), cw
21120 - 21149 200 cw
21149 - 21151 200 IBP
21151 - 21450 2700 phone, cw
21340 2700 calling frequency SSTV & FAX

24 MHz Band:
24890 - 24920
200 cw
24920 - 24929 500 digimode, cw
24929 - 24931 200 IBP
24931 - 24990 2700 phone, cw

28 MHz Band:
28000 - 28050
200 cw
28050 - 28120 500 digimode, cw
28120 - 28150 500 digimode (packet preferred), cw
28150 - 28190 200 cw
28190 - 28199 200 regional time shared IBP
28199 - 28201 200 world wide time shared IBP
28201 - 28225 200 continuous-duty IBP
28225 - 29200 2700 phone, cw
28680 2700 calling frequency SSTV & FAX
29200 - 29300 6000 digimode (NBFM packet), phone, cw
29300 - 29510 6000 satellite down-link
29510 - 29700 6000 phone, cw

AM is permitted in the phone segments of all these bands

Notes

Usage is to be on a non-interference basis according to ITU regulations.

Within the same bandwidth sub-division the operation of incompatible modes, i.e. those that exhibit unequal levels of mutual interference, could benefit from mode separation. CW is allowed within the entire band.

The above Band Plan shows that the emission widths do not consistently increase with frequency across each sub-band. Neither is there a specific allocation for modes that occupy significantly less than 2700Hz but more than 500Hz. These are areas for further transition towards the "could be" state, that will be appropriate when either harmonisation with Regions 2 and 3 is being discussed or when usage patterns significantly change, including the impact of new modes.

Preference should be given to quoting centre frequencies for any mode when national societies specify further sub-division of the band plan. In some cases, guard-bands will be required to avoid errors where the "dial" frequency is offset from the centre frequency for the emission.

Remarks to the Bandplan:

Packet Radio is not allowed on the 1.8, 7, and 10 MHz bands.

1.8 MHz band:

Those societies which have SSB allocation below 1840 kHz may continue to use it, but they are requested to take all necessary steps with their licence administrations to adjust the phone allocations in accordance with the Region 1 Bandplan.

3.5 MHz band:

3.500 – 3.510 and 3.775 – 3.800 MHz Intercontinental operation should be given priority in these segments.

Member societies should approach their national telecommunication authorities and ask them not to allocate frequencies to other than amateur stations in the band segment that IARU has assigned to intercontinental long distance traffic.

Contest Preferred Segments:

Where no DX traffic is involved, the contest segments should not include 3.500 – 3.510 MHz or 3.775 – 3.800 MHz (National Contest). Member societies will be permitted to set other (lower) limits for national contest (within these limits).

Contest activity shall not take place on the 10, 18 and 24 MHz bands.

7 MHz band:

The use of Packet Radio is discouraged on the 7 MHz band. The band segment 7.035 – 7.045 MHz may be used for S&F traffic in the area of Africa south from the equator during local daylight hours. However, the use of more efficient modes than AX.25 packet radio should be encouraged.

10 MHz band:

The use of Packet Radio is discouraged on the 10 MHz band.

It is recommended that unmanned stations using S&F shall avoid the use of the 10 MHz band.

SSB may be used during emergencies involving the immediate safety of life and property and only by stations actually involved in the handling of emergency traffic.

The bandsegment 10120 to 10140 kHz may be used for SSB transmissions in the area of Africa south of equator during local daylight hours.

News bulletins on any mode should be transmitted on the 10 MHz band.

14 MHz band

The band segment 14.089 – 14.099 MHz should be used for non-automatic digimode transmissions. The band segment 14.101 – 14.112 MHz should be used for store and forward traffic.

However, the use of more efficient modes than AX.25 packet radio should be encouraged.

Satellite operation frequency:

Member Societies should advise operators not to transmit on frequencies between 29,3 and 29,51 MHz to avoid interference to amateur satellite downlink.

Unmanned transmitting stations:

IARU Member Societies are requested to limit this activity on the HF bands. It is recommended that any unmanned transmitting station on HF shall only be activated under operator control except for IARU approved beacons or specially licensed experimental stations. It is recommended to use more efficient modes than AX.25 packet radio.

Transmitting frequencies:

The announced frequencies in the Bandplan are understood as "transmitting frequencies" (not those of the suppressed carrier!).

Experimentation with NBFM Packet Radio on 29 MHz Band

Preferred operating frequencies on each 10 kHz from 29.210 to 29.290 MHz included should be used. A deviation of +/-2,5 kHz being used with 2.5 kHz as maximum modulation frequency.

National Societies are requested to advise their members to follow this Bandplan.

13th November 2002 On behalf of C4: DL1VDL, G3PSM, OM3LU

An Introduction to the New HF-Bandplan

Summary of Arguments:

Advantage of the old HF-bandplan:

- Allocation of mode to frequency has been well understood,
- It's a traditionally grown bandplan,

Disadvantage

- Not flexible for implementing new modes, especially computer-assisted modes, which are developing rapidly,

Why did we (HFC of Region 1) create a new bandplan ?

- Because radio-amateurs are experimenters and we need flexibility to implement new kinds of transmissions into the given frame of the HF-bandplan,
- Because we are aware that our authorities want to have self-regulation of the amateur-radio service within the ITU band allocations,

What has changed ?

- In the old bandplan frequency segments were allocated to a certain type of transmission, that was fixed but known worldwide.
- In the new bandplan an association between frequency and usage is made, whereas frequency includes the frequency segment plus the maximum bandwidth within a given segment, and usage defines the mode.
- In the case of worldwide programmes established and co-ordinated with Region-2 and Region-3, frequency segments such as beacon-windows, dx-windows and contest-preferred segments the new bandplan is equivalent to the old one,
- Frequency segments formerly assigned to various different modes like phone, cw and digimodes have now been "summarised", taking account the maximum bandwidth of the modes used in the old bandplan, This decision requires more tolerance between hams, because new wideband (within 2700 Hz bandwidth) digimodes or MGM-machine generated modes may be used within the formally allocated to "phone-only" segments of the band. Care was taken where dx-windows and contest segments were concerned,

SSTV and FAX

- We decided to add all "so called" centres of activity to the annex of the bandplan, to keep the bandplan-table as readable as possible,
- Practice has shown, that SSTV and FAX operators start experimenting after having established a ssb-contact. That is why the frequencies mentioned in the former bandplan are added to the annex of the bandplan table. For those parts of the bandplan the usage is named: "all = all modes with less than 2700 Hz bandwidth".

How to deal with certain DIGIMODES or MGM (Machine Generated Modes).

- No change in operating MGM's (digimodes) as it is at present,
- MGM's with maximum bandwidth of 200 Hz , like PSK31, may be operated within the 200 Hz frequency segments, when "Usage=ALL" is indicated.

Experimentation with upcoming MGM's or Digital-Voice with maximum bandwidth of 2700 Hz may take place within frequency segments, when "Usage=ALL" is indicated.

HF-BANDPLAN (based on mode)

HF-BANDPLAN (based on BANDWIDTH) NEW !!

Frequency Segment (kHz) TYPE OF EMISSION BAND Source USAGE changes

Frequency Segment (kHz) Max. Bandwidth [Hz]

1810 - 1838 cw 160 m 1810 - 1838 200 cw

1838 - 1840 digimode except PR, cw 1838 - 1840 500 all

1840 - 1842 digimode except PR, phone, cw 1840 - 1842 2700 all

1842 - 2000 phone, cw 1842 - 2000 2700 phone,cw

3500 -3510 intercontinental dx, cw 80 m 3500 -3510 200 cw-dx

3500 -3560 cw, contest preferred segment cw 3500 -3560 200 cw, contest preferred

3560 - 3580 cw

3580 - 3590 digimode, cw 3560 - 3600 500 all Integration

3590 - 3600 digimode, (packet preferred) cw

3600 - 3620 phone, digimode, cw

3600 - 3650 phone, contest preferred phone, cw 3600 - 3650 2700 phone, contest preferred, all integration

3650 - 3775 phone, cw 3650 - 3700 2700 phone,all+F61

3700 - 3800 phone, contest preferred phone, cw 3700 - 3800 2700 phone, contest preferred,all

3730 - 3740 sstv & fax, phone, cw integration

3775 - 3800 intercontinental dx phone, cw 3775 - 3800 2700 phone-dx, cw

7000 -7035 cw 40 m 7000 -7035 200 cw

7035 - 7040 digimode, except pr, cw, sstv, fax 7035 - 7040 500 all

7040 - 7045 digimode, except pr, sstv, fax, phone, cw 7040 - 7045 2700 all

7045 - 7100 phone, cw 7045 - 7100 2700 phone,cw

10100 - 10140 cw 30 m 10100 - 10140 200 cw

10140 - 10150 digimode, except PR, cw 10140 - 10150 500 all

14000 - 14070 cw 20 m

14000 - 14060 cw,contest preferred segment cw, 14000 - 14060 200 cw, contest preferred integration

14070 - 14089 digimode, cw 14060 - 14070 200 cw

14089 - 14099 digimode (non-automatic PR preferred), cw 14070 - 14099 500 all

14099 - 14101 IBP 14099 - 14101 200 IBP

14101 - 14112 digimode (store and forward preferred),phone, cw 14101 - 14112 500 all

14112 - 14125 phone, cw 14112 - 14125 2700 phone,cw

14125 - 14300 phone, contest preferred segment phone, cw 14125 - 14300 2700 phone, contest preferred, all integration

14230 calling frequency sstv &fax

14300 - 14350 phone, cw 14300 - 14350 2700 all

18068 - 18100 cw 17 m 18068 - 18100 200 cw

18100 - 18109 digimode, cw 18100 - 18109 500 all

18109 - 18111 IBP 18109 - 18111 200 IBP

18111 - 18168 phone, cw 18111 - 18168 2700 phone, cw

21000 - 21080 cw 15 m 21000 - 21080 200 cw

21080 - 21100 digimode, cw

21100 -21120 digimode (packet preferred), cw 21080 - 21120 500 all integration

21120 - 21149 cw 21120 - 21149 200 cw

21149 -21151 IBP 21149 -21151 200 IBP

21151 - 21450 phone, cw

21340 calling frrequency sstv & fax 21151 - 21450 2700 phone, all integration

24890 - 24920 cw 12 m 24890 - 24920 200 cw

24920 - 24929 digimode, cw 24920 - 24929 500 all

24929 - 24931 IBP 24929 - 24931 200 IBP

24931 - 24990 phone, cw 24931 - 24990 2700 phone, cw

28000 - 28050 cw 10 m 28000 - 28050 200 cw

28050 - 28120 digimode, cw

28120 - 28150 digimode (packet preferred), cw 28050 - 28150 500 all integration

28150 - 28190 cw 28150 - 28190 200 cw

28190 - 28199 regional time shared IBP 28190 - 28199 200 regional time shared IBP

28199 - 28201 world wide time shared IBP 28199 - 28201 200 world wide time shared IBP

28201 - 28225 continuous-duty IBP 28201 - 28225 200 continuous-duty IBP

28225 - 29200 phone, cw 28225 - 29200 2700 phone, all

28680 calling frfrequency sstv & fax integration

29200 - 29300 digimode (NBFM packet), phone, cw 29200 - 29300 6000 all

29300 - 29510 satellite down-link 29300 - 29510 6000 satellite down-link

29510 - 29700 phone, cw 29510 - 29700 6000 all