

430 - 440 MHz BANDPLAN (From 1-1-2004 onwards, San Marino 2002)

IARU Region 1 Bandplan	Usage
430.000 SUB-REGIONAL (national bandplanning) (d)	430.025 - 430.375 NBFM repeater output-channel freqs (F/PA/ON), 12,5 kHz spacing, 1.6 MHz shift (f)
	430.400 - 430.575 Digital communication link channels (g) (j)
	430.600 - 430.925 Digital communications repeater channels (g) (j) (l)
	430.925 - 431.025 Multi mode channels (j) (k) (l)
	431.050 - 431.825 Repeater input channel freqs (HB/DL/OE), 25 kHz spacing, 7.6 MHz shift (f)
431.981 432.000	431.625 - 431.975 Repeater input channel freqs (F/PA/ON), 12.5 kHz spacing, 1.6 MHz shift
432.000 Telegraphy (a)	432.000 - 432.025 EME
	432.050 Telegraphy centre of activity
	432.088 PSK31 centre of activity
432.100 SSB/Telegraphy	432.200 SSB centre of activity
	432.350 Microwave talkback centre of activity
	432.370 FSK441 random calling
432.399 432.400	
432.490 Beacons (b)	432.432 MHz HB9F, Jungfraujoch 3574m a.s.l.
432.500 All Modes	432.500 Narrow-band SSTV
	432.500-432.600 LINEAR TRANSPONDER IN(e)
	432.600 RTTY (ASK/PSK)
	432.700 FAX (ASK)
	432.600-432.800 LINEAR TRANSPONDER OUT (e)
432.994 432.994 FM	REPEATER INPUT REGION 1 STANDARD, 25 kHz spacing, 1.6 MHz shift (Channel freq 433.000--433.375 MHz) In the UK repeater OUTPUT channels.
433.381	

IARU Region 1 Bandplan	Usage	
433.394 <p style="text-align: center;">NBFM</p>	433.400 433.500 433.400 – 433.575	SSTV(FM/AFSK) (Mobile) NBFM calling SIMPLEX CHANNELS, 25 kHz spacing,
433.581 433.600 <p style="text-align: center;">All modes</p>	433.600 433.625 - 433.775 433.700 434.000	RTTY (AFSK/FM) Digital communications channels (g) (h) (i) FAX channel (FM/AFSK) Centre frequency of digital experiments as defined on note m
434.000 434.000 <p style="text-align: center;">All modes & ATV (c)</p>	434.000 434.000 434.450 - 434.575	Digital communications channels (by exception !!) (i)
434.594 <p style="text-align: center;">ATV (c) & FM</p>	434.594 434.594 434.981	REPEATER OUTPUT (region 1 system), 25 kHz spacing, 1.6 MHz shift, (Channel freq 434.600 -- 434.975 MHz) In the UK repeater INPUT channels
435.000 <p style="text-align: center;">Satellite service & ATV (c)</p>	435.000 438.000	
438.000 <p style="text-align: center;">ATV (c) & SUB-REGIONAL (national bandplanning) (d)</p>	438.000 438.025 - 438.175 438.200 - 438.525 438.550 - 438.625 438.650 - 439.425 439.800 -- 439.975 439,9875 440.000	Digital communications channel freqs (g) Digital communications repeater channels (g) (j) (l) Multi-mode (j) (k) (l) Repeater output channels (HB/DL/OE), 25 kHz spacing, 7.6 MHz shift, (f) Digital communications link channels (g) (j) POCSAG centre

NOTES ON THE 430 - 440 MHz BANDPLAN

1. IARU REGION 1 BANDPLAN

The following notes are part of the officially adopted IARU Region 1 bandplan, and all member societies should strongly promote adherence to the recommendations made in these notes.

1.1. General

- i. In Europe no input or output channels of telephony repeaters shall be allowed to operate between 432 and 433 MHz. (From 1-1-2004 those frequencies arebetween 432.000 and 432.600 MHz))
- ii. Beacons, irrespective of their ERP, will have to be located in the exclusive beacon part of the band.
- iii. NBFM telephony channels and Repeaters are specified in section VIb

1.2. Footnotes

- a. Telegraphy is permitted over the whole narrow-band DX part of the band; Telegraphy exclusive between 432.000 - 432.150 MHz(After 1-1-2004 432.100 MHz). PSK31, however, can be used as well in this segment
- b. Within IARU Region 1 the frequencies for beacons with an ERP of more than 50 Watts are coordinated by the IARU Region 1 Beacon Coordinator (see section IX).
- c.
 - i. ATV operators should be encouraged to use the microwave allocations where available, but may continue to use the 430 MHz band where permitted by the licensing authority. In case of interference between ATV and the Amateur Satellite Service the Satellite Service should have priority.
 - ii. ATV transmissions in the 435 MHz band should take place in the segment 434.000 - 440.000 MHz. The video carrier should be below 434.500 MHz or above 438.500 MHz. National societies should provide guidance to their members on the exact frequencies to be used, with due consideration of the interests of other users.
(Noordwijkerhout 1987)
- d. The words "Sub-regional (national) bandplanning" appearing in IARU Region 1 VHF/UHF/Microwave bandplans mean the following:

In bands and sub-bands not available throughout Region 1, band-planning should be coordinated on a sub-regional basis between the countries where those bands and sub-bands are allocated to the Amateur Service. The words "national bandplanning" refer to bands/segments which are available only in a single country (such as the 70 MHz band allocation), or only in a few widely separated countries.(Torremolinos 1990)
- e. At the IARU Region 1 Conference in Torremolinos (1990) the output band for linear transponders was extended from 432.700 to 432.800 MHz under the following condition:

The established use of 432.600 MHz for RTTY (ASK/PSK) and 432.700 MHz for FAX should be respected when installing linear transponders which use this allocation.

2. USAGE

The following notes are referring to the Usage column in the bandplan. As already set out in the introduction to section IIC, in the right amateur spirit operators should take notice of these

agreements which are made for operating convenience, but no right to reserved frequencies can be derived from a mention in the Usage column or from the following notes (except where Aexclusive@is mentioned@).

2.1. General

During contests and bandopenings local traffic using narrow-band modes should operate between 432.500 - 432.800 MHz. (This note is only valid till 31-12-2003)

2.2. Footnotes

- f. The HB/DL/OE wide-shift repeater system, already in use for a long time, is valuable with a view to a better utilisation of the whole band. Hence IARU Region 1 endorses the system.
This also applies for the French repeater channel system, also adopted by the Netherlands and Belgium, which IARU Region 1 supports as a useful measure to fill a hitherto unused part of the band.
For the numbering of NBFM telephony channels see appendix 2 to this section

- g. In the Usage section of the 435 MHz bandplan the following frequency segments have been designated for digital communications:

- i) 430.544 - 430.931 MHz Extension of the 7.6 MHz repeater system input for digital comm.
437.194 - 438.531 MHz Output channels for the above
- ii) 433.619 - 433.781 MHz
438.019 - 438.181 MHz
- iii) 430.394 - 430.581 MHz For digital communication links
439.794 - 439.981 MHz For digital communication links

With due regard to the band allocated to the Amateur Service by the national Administration, the interests of other users, possible interference from e.g. ISM, the specific digital technique or system to be accommodated etc., a sub-regional, or national choice may be made within the above segments.

- h. In those countries where 433.619 - 433.781 MHz is the only segment of the 435 MHz band available for digital communications, modulation techniques requiring a channel separation exceeding 25 kHz should not be used. If different or incompatible use of this part of the frequency spectrum is contemplated in neighbouring countries, this use should be coordinated between the countries concerned with the aim of avoiding harmful interference.
- i. On a temporary basis, in those countries where 433.619 - 433.781 MHz is the only segment of the 435 MHz band available for Digital Communications:
- 1. Channels with centre frequencies 432.700, 432.725, 432.750, 432.775, 434.450, 434.475, 434.500, 434.525, 434.550 and 434.575 may be used for digital communications.
 - 2. Use of these channels must not interfere with linear transponders.
 - 3. Modulation techniques requiring a channel separation exceeding 25 kHz must not be used on these channels.

(De Haan, 1993)

- j. At the IARU Region 1 Conference in Torremolinos (1990) the following recommendation

was adopted regarding the segments for repeaters and links, shown in footnote g:

For a repeater/link to be installed within 150 km of a national border, the member society should co-ordinate the frequency allocation and the technical (system) data with the member societies in neighbouring countries. Special attention should be paid to the common good practice of using directional antennas and the minimum power necessary.

As a matter of course this agreement is also valid for any link experiments carried out on the multi-mode channels in the segment 438.544--438.631 MHz. (De Haan, 1993).

- k. These multi-mode channels are to be used for experimenting with new transmission technologies (De Haan, 1993)
- l. In the United Kingdom the use of low-power speech repeaters on repeater channels in the segment 438.419--438.581 is allowed. Where necessary, frequencies will be coordinated with neighbouring countries (De Haan, 1993).
- m. Experiments using wide band digital modes may take place in the 435 MHz band in those countries that have the full 10 MHz allocation. These experiments should be in the all modes section around a frequency of 434 MHz, use horizontal polarisation and the minimum power required.(Tel Aviv 1996)