

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

<b>IARU Region 1 Bandplan</b>	<b>Usage</b>
<b>430.000</b>  <p align="center">SUB-REGIONAL (national bandplanning) <b>(d)</b></p>	430.025 - 430.375 NBFM repeater output-channel freqs (F/PA/ON), 12,5 kHz spacing, 1.6 MHz shift <b>(f)</b>  430.400 - 430.575 Digital communication link channels <b>(g) (j)</b>  430.600 - 430.925 Digital communications repeater channels <b>(g) (j) (l)</b>  430.925 - 431.025 Multi mode channels <b>(j) (k) (l)</b>  431.050 - 431.825 Repeater input channel freqs (HB/DL/OE), 25 kHz spacing, 7.6 MHz shift <b>(f)</b>  431.625 - 431.975 Repeater input channel freqs (F/PA/ON), 12.5 kHz spacing, 1.6 MHz shift
<b>431.981</b> <b>432.000</b>  <p align="center">Telegraphy <b>(a)</b></p>	432.000 - 432.025 EME  432.050 Telegraphy centre of activity  432.088 PSK31 centre of activity
<b>432.100</b> <b>432.100</b>  <p align="center">SSB/Telegraphy</p>	432.200 SSB centre of activity  432.350 Microwave talkback centre of activity  432.370 FSK441 random calling
<b>432.399</b> <b>432.400</b>  <p align="center">Beacons <b>(b)</b></p>	
<b>432.490</b> <b>432.500</b>  <p align="center">All Modes</p>	432.500 Narrow-band SSTV  432.500-432.600 LINEAR TRANSPONDER IN <b>(e)</b>  432.600 RTTY (ASK/PSK)  432.700 FAX (ASK)  <b>432.994</b> 432.600-432.800 LINEAR TRANSPONDER OUT <b>(e)</b>
<b>432.994</b>  <p align="center">FM</p>	REPEATER INPUT REGION 1 STANDARD, 25 kHz spacing, 1.6 MHz shift (Channel freq 433.000--433.375 MHz)
<b>433.381</b> <b>433.394</b>  <p align="center">NBFM</p>	In the UK repeater OUTPUT channels. 433.400 SSTV(FM/AFSK)  433.500 (Mobile) NBFM calling  SIMPLEX CHANNELS, 25 kHz spacing, ( Channel freq 433.400 -- 433.575 MHz)
<b>433.581</b>	

IARU Region 1 Bandplan	Usage	
<b>433.600</b> All modes <b>434.000</b>	433.600 433.625 - 433.775 433.700 434.000	RTTY (AFSK/FM) Digital communications channels <b>(g) (h) (i)</b> FAX channel (FM/AFSK) Centre frequency of digital experiments as defined on note <b>m</b>
<b>434.000</b> All modes & ATV <b>(c)</b> <b>434.594</b>	434.450 - 434.575	Digital communications channels (by exception !! ) <b>(i)</b>
<b>434.594</b> ATV <b>(c)</b> & FM <b>434.981</b>	<b>434.594</b> <b>434.981</b>	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
<b>435.000</b> Satellite service & ATV <b>(c)</b> <b>438.000</b>	<b>435.000</b> <b>438.000</b>	
<b>438.000</b> ATV <b>(c)</b> & SUB-REGIONAL (national bandplanning ) <b>(d)</b> <b>440.000</b>	<b>438.000</b> 438.025 - 438.175 438.200 - 438.525 438.550 - 438.625 438.650 - 439.425 439.800 -- 439.975 439,9875 <b>440.000</b>	Digital communications channel freqs <b>(g)</b> Digital communications repeater channels <b>(g) (j) (l)</b> Multi-mode <b>(j) (k) (l)</b> Repeater output channels (HB/DL/OE), 25 kHz spacing, 7.6 MHz shift, <b>(f)</b> Digital communications link channels <b>(g) (j)</b> 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 are ....between 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 "exclusive" 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.  
438.194 - 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)

## 1240 - 1300 MHz BANDPLAN

IARU REGION 1 bandplan		Usage	
1240.000	ALL MODES	1240.000-1241.000 1242.025-1242.250 1242.250-1242.700 1242.725-1243.250	Digital communications Repeater output, ch. RS1 – RS10 Repeater output, ch. RS11 – RS28 Packet radio duplex, ch. RS29 – RS50
1243.250			
1243.250	ATV	1258.150-1259.350	Repeater output, ch. R20 – R68
1260.000			
1260.000	SATELLITE SERVICE		
1270.000			
1270.000	ALL MODES	1270.025-1270.700 1270.725-1271.250	Repeater input, ch. RS1 -- RS28 Packet Radio duplex, ch. RS29 -- RS50
1272.000			
1272.000	ATV		
1290.994			
1290.994	NBFM REPEATER INPUT, 25 kHz spacing, ch. RM0 (1291.000) -- RM19 (1291.475)		
1291.481			
1291.494	ALL MODES	1293.150-1294.350	Repeater input, ch. R20 – R68
1296.000			
1296.000	TELEGRAPHY (a)	1296.00-1296.025 1296.138	Moonbounce PSK31 centre of activity
1296.150			
1296.150	TELEGRAPHY/SSB	1296.200 1296.400-1296.600 1296.500 1296.600 1296.700 1296.600-1296.800	Narrow-band centre of activity Linear transponder input SSTV RTTY FAX Linear transponder output
1296.800			
1296.800	BEACONS EXCLUSIVE (b)		
1296.994			
1296.994	NBFM REPEATER OUTPUT, ch. RM0 -- RM19		
1297.481			
1297.494	NBFM SIMPLEX, ch. SM20 -- SM39 (c)	1297.500	NBFM center of activity
1297.981			

IARU REGION 1 bandplan	Usage	
<b>1298.000</b>  ALL MODES  <b>1300.000</b>	1298.025-1298.500  1298.500-1300.000 1298.725-1299.000	Repeater output channel freqs, ch. RS1 -- RS28 Digital communications Packet-Radio duplex channel freqs, ch. RS29 -- RS40

NOTES ON THE 1240 - 1300 MHz BANDPLAN

1. **IARU REGION 1 BANDPLAN**

The following notes are part of the IARU Region 1 bandplan for this band, originally adopted during the IARU Region 1 Conference at Noordwijkerhout (1987), and all member societies should strongly promote adherence to the recommendations made in these notes. For the specification of NBFM see section VIb

1.1. Footnotes

- a. Telegraphy is permitted over the whole narrow-band DX part of the band; Telegraphy exclusive between 1296.000 - 1296.150 MHz.
- 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. In countries where 1298 - 1300 MHz is not allocated to the Amateur Service (e.g. Italy) the FM simplex segment may also be used for digital communications.

2. **USAGE**

The following note refers 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.

2.1. General

During contests and bandopenings local traffic using narrow-band modes should operate between 1296.500 - 1296.800 MHz.

## 2300 -2450 MHz BANDPLAN

IARU Region 1 bandplan		Usage	
<b>2300.000</b>	SUB-REGIONAL (national) BANDPLANNING (a)	2304 - 2306	Narrow band segment in countries where the 2320-2322 segment is not available Narrow band segment in HB
<b>2320.000</b>		2308 - 2310	
<b>2320.000</b>	TELEGRAPHY EXCLUSIVE (c)	2320.000-2320.025	EME PSK31 centre of activity
<b>2320.150</b>		2320.138	
<b>2320.150</b>	TELEGRAPHY/ SSB (c)	2320.200	SSB centre of activity
<b>2320.800</b>			
<b>2320.800</b>	BEACONS EXCLUSIVE (c)		
<b>2321.000</b>			
<b>2321.000</b>	NBFM SIMPLEX & REPEATERS (b)		
<b>2322.000</b>			
<b>2322.000</b>	ALL MODES (b)	2322.000-2355.000	ATV
		2355.000-2365.000	Digital communications
		2365.000-2370.000	Repeaters
		2370.000-2392.000	ATV
<b>2400.000</b>		2392.000-2400.000	Digital communications
<b>2400.000</b>	AMATEUR SATELLITE SERVICE	2427.00 - 2443.00	ATV if no satellite uses this segment
<b>2450.000</b>			

### NOTES ON THE 2300 - 2450 MHz BANDPLAN

- a) 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 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)

- b) In countries where the ALL MODES segment 2322 - 2400 MHz is not allocated to the Amateur Service, the FM SIMPLEX & REPEATER segment 2321 - 2322 MHz may be used for digital data transmissions.  
For the specification of NBFM see section VIb
- c) In countries where the narrow-band segment 2320 - 2322 MHz is not available, the following alternative narrow-band segments can be used:

2304 - 2306 MHz  
2308 - 2310 MHz

### 3400 -3475 MHz BANDPLAN

IARU Region 1 bandplan		Usage	
3400.000	NARROW-BAND MODES	3400.100	Center of activity
3402.000			
3402.000	ALL MODES	3420.000-3430.000	Digital Communications
3475.000		3450.000-3455.000	Digital Communications

### 5650 - 5850 MHz BANDPLAN

IARU Region 1 bandplan		Usage	
5650.000	AMATEUR SATELLITE SERVICE ( up-link)		
5668.000			
5668.000	AMATEUR SATELLITE SERVICE ( up-link) & NARROW BAND MODES (a)	5668.200	Narrow band center of activity
5670.000			
5670.000	DIGITAL		
5700.000			
5700.000	ATV		
5720.000			
5720.000	ALL MODES		
5760.000			
5760.000	NARROW BAND MODES (a)	5760.200	Narrow band center of activity
5762.000			
5762.000	ALL MODES		
5790.000			
5790.000	AMATEUR SATELLITE SERVICE (down-link)		
5850.000			

#### NOTES ON THE 5650 - 5850 MHz BANDPLAN

1. Footnotes

- a. Societies are urged to inform their members that stations should preferably be able to operate in both narrow-band segments.

### 10.000 - 10.500 GHz BANDPLAN

IARU Region 1 bandplan		Usage	
10.000	DIGITAL		
10.150			
10.150	ALL MODES		
10.250			
10.250	DIGITAL		
10.350			
10.350	ALL MODES		
10.368			
10.368	NARROW BAND MODES	10.3682	Narrow band center of activity
10.370			
10.370	ALL MODES		
10.450			
10.450	AMATEUR SATELLITE SERVICE & ALL MODES	10.450-10.452	Narrow band modes in countries where 10.368-10.370 is not available
10.500			

#### NOTES ON THE 10.0 - 10.5 GHz BANDPLAN

##### 1. Footnotes

- a. In those countries where the narrow-band segment 10368 - 10370 MHz is not available, the segment 10450 - 10452 MHz is suggested as an alternative narrow-bandwidth segment.