

Wisconsin Band Plan – Revised 12/2018

Purpose:

Wisconsin Association of Repeaters (WAR) coordinates FM repeaters and auxiliary links on frequencies appropriate for the type of operation according to the following band-plan.

W.A.R. has the duty to not only produce band-plans that satisfy the needs of repeater owners within the State of Wisconsin, but also to protect the interests of coordinated systems in adjacent states, weak signal modes, digital (packet) communications, AM and FM simplex, and satellite uplinks and downlinks. As a frequency coordinator, W.A.R. defines the band-plan for both coordinated and non-coordinated activities within the State of Wisconsin.

It should be noted, that any changes made to the band-plans only affect pending and future coordination applications. Existing, coordinated operations are considered grandfathered and shall be protected as they always have been. No existing coordinated operation is at risk due to the adoption of band-plan changes. The sub-bands appearing in this document in **bold typeface** are sub-bands in which the W.A.R. issues coordination. Those sub-bands in normal typeface are for non-coordinated activities.

In this document, each sub-band is identified. For FM operations, the start and end frequencies specified for the sub-band are the first and last channels available in the sub-band, not the absolute band edges. For example, although the 2m band ends at 148.000 MHz spectrally, the highest channel available on the band is 147.990 MHz, an FM repeater input. That is the carrier frequency of the channel, not the spectral limits of the sub-band, are listed. For all non-channelized operations such as SSB and CW, the start and end frequencies specified are the absolute sub-band edges.

The recent increase in popularity of frequency-agile “hot-spot” devices, especially for digital modes like DMR, P25, NXDN are usually low-profile, neighborhood devices and likely will not need formal coordination. Guidance for where to run them would be in the UHF 420-432Mhz range **below frequencies for links or international satellite allocations**. Most modern radios cover the full 420-450 amateur range so this should be adequate for most needs. If you want a higher-profile installation, please consider requesting a formal coordination and using narrowband emissions for maximum sharing of our spectrum.

Spectral purity requirements for FM voice repeater and auxiliary link operations will be comparable to modern land-mobile requirements and to FCC requirements for the band in question, whichever is more stringent. The occupied bandwidth shall not exceed 15 kHz on channels spaced every 15 kHz, 16 kHz on channels spaced every 20 kHz, and 18 kHz on channels spaced every 25 kHz. Additional adjacent-channel protection is required for 2m repeaters operating on 15 kHz spacing in the 146 to 148 MHz segment due to the increased possibility of interference to adjacent channels and is considered in the coordination review of those repeater pairs.

Aside from the nominal spectral purity requirements, any repeater or auxiliary link which is found to cause interference to another coordinated repeater or auxiliary link or to a non-amateur service due to spurious emissions must cease operation and take the necessary steps to eliminate the interference when so notified of the condition. Failure to eliminate a spurious product creating an interference condition constitutes willful interference and is considered a violation of FCC regulations, which will result in revocation of coordination.

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10 Meters / 29.3 – 29.7 MHz

All assignments in this band shall be in accordance with the nationally accepted 10 meter band plan agreed upon by the W.A.R. Currently there are only 4 repeater pairs allocated with 100 kHz spacing between input and output frequencies. 29.600 MHz is recognized as the National Simplex channel on 10 meters.

29.300 - 29.510 Satellite Down-links

29.520 - 29.580 Repeater Inputs

29.600 - National Simplex Calling Channel

29.620 - 29.680 Repeater Outputs

Repeater Pairs

<u>Input</u>	<u>Output</u>
29.520	29.620
29.540	29.640
29.560	29.660
29.580	29.680

6 Meters / 51.110 - 53.99 MHz

All assignments in this band shall be in accordance with the Mid-America Repeater Council (MACC) accepted 6-meter band plan agreed upon by the W.A.R. This plan calls for a 1.700 MHz spacing for repeater inputs/outputs.

Standard Repeater Pairs

The frequencies between 51.100 to 52.300, and 52.800 to 54.000 MHz are used for repeaters and are coordinated on 20 kHz steps starting with 52.810 MHz output with inputs located 1.7 MHz below the output.

Simplex and Packet

The frequencies between 52.300 and 52.800 MHz are used for simplex and packet operation. Channel assignments start at 52.310 MHz and are spaced on 20 kHz steps.

50.000 – 50.100 CW, Beacons

50.100 – 50.600 SSB, AM

50.600 – 50.980 Experimental, Special Modes

51.000 – 51.100 DX

51.110 – 52.290 Repeater Inputs

52.310 – 52.790 Simplex

52.525 - National Calling frequency

52.810 – 53.990 Repeater Outputs

Repeater Pairs – 1.7Mhz split

<u>Input</u>	<u>Output</u>	<u>Input</u>	<u>Output</u>	<u>Input</u>	<u>Output</u>
51.1100	52.8100	51.5100	53.2100*	51.9300	53.6300
51.1300	52.8300	51.5300	53.2300	51.9500	53.6500
51.1500	52.8500	51.5500	53.2500	51.9700	53.6700
51.1700	52.8700	51.5700	53.2700	51.9900	53.6900*
51.1900	52.8900	51.5900	53.2900*	52.0100	53.7100*
51.2100	52.9100	51.6100	53.3100*	52.0300	53.7300
51.2300	52.9300	51.6300	53.3300	52.0500	53.7500
51.2500	52.9500	51.6500	53.3500	52.0700	53.7700
51.2700	52.9700	51.6700	53.3700	52.0900	53.7900*
51.2900	52.9900	51.6900	53.3900*	52.1100	53.8100*
51.3100	53.0100	51.7100	53.4100*	52.1300	53.8300
51.3300	53.0300	51.7300	53.4300	52.1500	53.8500
51.3500	53.0500	51.7500	53.4500	52.1700	53.8700
51.3700	53.0700	51.7700	53.4700	52.1900	53.8900*
51.3900	53.0900*	51.7900	53.4900*	52.2100	53.9100*
51.4100	53.1100*	51.8100	53.5100*	52.2300	53.9300
51.4300	53.1300	51.8300	53.5300	52.2500	53.9500
51.4500	53.1500	51.8500	53.5500	52.2700	53.9700
51.4700	53.1700	51.8700	53.5700	52.2900	53.9900
51.4900	53.1900*	51.8900	53.5900*		
		51.9100	53.6100*		

Radio Remote Control (R/C) – Intermittent Use

*These are adjacent to 53.x Repeater Outputs above

53.1000
53.2000
53.3000
53.4000
53.5000
53.6000
53.7000
53.8000
53.9000

Simplex

52.3100	52.4900	52.6500
52.3300	52.5100	52.6700
52.3500	52.5300**	52.6900
52.3700	52.5500	52.7100
52.3900	52.5700	52.7300
52.4100	52.5900	52.7500
52.4300	52.6100	52.7700
52.4500	52.6300	52.7900
52.4700		

****52.5300 adjacent to National Simplex Frequency of 52.525, use sparingly**

2 Meters / 144-148 MHz

Standard Repeater Pairs

Unless otherwise described in this policy, all assignments in this band shall be in accordance with the MACC 2 Meter band plan agreed upon by W.A.R. 146.520 MHz is recognized as the National Simplex calling frequency.

In Wisconsin, the frequencies between 144.500 and 145.500 MHz used for repeaters are coordinated on 20 kHz steps starting with 144.510 MHz. Repeater inputs are low, with the outputs located 600 kHz above the inputs.

In Wisconsin, the frequencies between 146.000 and 147.990 MHz, used for repeaters, are coordinated on 15 kHz steps starting with 146.010 MHz. Between 146.010 and 146.985 MHz repeater inputs are low, with the outputs located 600 kHz above the input. Between 147.000 and 147.990 MHz repeater inputs are high, with the outputs located 600 kHz below the input.

144.0000	144.0500	EME CW
144.0500	144.1000	General CW Operation
144.1000		National CW Calling Frequency
144.1000	144.2000	EME and Weak Signal SSB
144.2000		National SSB Calling Frequency
144.2000	144.3000	General SSB Operation
144.2750	144.3000	Propagation Beacons
144.3000	144.5000	Multi-Mode Operation
144.3900		Nationwide APRS 1200-baud Packet
144.5100	144.8900	FM Repeater Inputs – 20 kHz spacing
144.9100	145.0900	FM Digital/Packet Simplex – 20 kHz spacing
145.1100	145.4900	FM Repeater Outputs – 20 kHz spacing
145.5100	145.7900	FM Digital/Packet Simplex – 20 kHz spacing
145.6100		Statewide ARES Packet
145.8000	146.0000	Satellite Sub-Band
146.0100	146.3850	FM Repeater Inputs – 15 and 7.5kHz spacing
146.4000	146.5950	FM Voice Simplex – 15 and 7.5kHz spacing
146.4600	147.4600	Shared Non-Protected Pair
146.4750	147.4750	Shared Non-Protected Pair
146.4900	147.4900	Shared Non-Protected Pair
146.5200		National FM Calling Frequency
146.6100	147.3900	FM Repeater Outputs – 15 and 7.5 kHz spacing
147.4050	147.5850	FM Voice Simplex – 15 and 7.5kHz spacing
147.6000	147.9900	FM Repeater Outputs – 15 and 7.5 kHz spacing

Repeaters

145.11 – 145.49 – low in, high out

<u>Input</u>	<u>Output</u>	<u>600 kHz split</u>
144.5100	145.1100	20 kHz spacing, standard mask
144.5300	145.1300	20 kHz spacing, standard mask
144.5500	145.1500	20 kHz spacing, standard mask
144.5700	145.1700	20 kHz spacing, standard mask
144.5900	145.1900	20 kHz spacing, standard mask
144.6100	145.2100	20 kHz spacing, standard mask
144.6300	145.2300	20 khz spacing, standard mask - Shared with MN SNP
144.6500	145.2500	20 kHz spacing, standard mask
144.6700	145.2700	20 kHz spacing, standard mask
144.6900	145.2900	20 kHz spacing, standard mask
144.7100	145.3100	20 kHz spacing, standard mask
144.7300	145.3300	20 kHz spacing, standard mask
144.7500	145.3500	20 kHz spacing, standard mask
144.7700	145.3700	20 kHz spacing, standard mask
144.7900	145.3900	20 kHz spacing, standard mask
144.8100	145.4100	20 kHz spacing, standard mask
144.8300	145.4300	20 kHz spacing, standard mask
144.8500	145.4500	20 kHz spacing, standard mask
144.8700	145.4700	20 kHz spacing, standard mask
144.8900	145.4900	20 kHz spacing, standard mask

146.6100 – 146.9875 – low in, high out; wide/narrowband

<u>Input</u>	<u>Output</u>	<u>600 kHz split</u>	<u>Input</u>	<u>Output</u>	<u>600 kHz split</u>
146.0100	146.6100	15/7.5 kHz spacing	146.2050	146.8050	15/7.5 kHz spacing
146.0175	146.6175	15/7.5 kHz spacing	146.2125	146.8125	15/7.5 kHz spacing
146.0250	146.6250	15/7.5 kHz spacing	146.2200	146.8200	15/7.5 kHz spacing
146.0325	146.6325	15/7.5 kHz spacing	146.2275	146.8275	15/7.5 kHz spacing
146.0400	146.6400	15/7.5 kHz spacing	146.2350	146.8350	15/7.5 kHz spacing
146.0475	146.6475	15/7.5 kHz spacing	146.2425	146.8425	15/7.5 kHz spacing
146.0550	146.6550	15/7.5 kHz spacing	146.2500	146.8500	15/7.5 kHz spacing
146.0625	146.6625	15/7.5 kHz spacing	146.2575	146.8575	15/7.5 kHz spacing
146.0700	146.6700	15/7.5 kHz spacing	146.2650	146.8650	15/7.5 kHz spacing
146.0775	146.6775	15/7.5 kHz spacing	146.2725	146.8725	15/7.5 kHz spacing
146.0850	146.6850	15/7.5 kHz spacing	146.2800	146.8800	15/7.5 kHz spacing
146.0925	146.6925	15/7.5 kHz spacing	146.2875	146.8875	15/7.5 kHz spacing
146.1000	146.7000	15/7.5 kHz spacing	146.2950	146.8950	15/7.5 kHz spacing
146.1075	146.7075	15/7.5 kHz spacing	146.3025	146.9025	15/7.5 kHz spacing
146.1150	146.7150	15/7.5 kHz spacing	146.3100	146.9100	15/7.5 kHz spacing
146.1225	146.7225	15/7.5 kHz spacing	146.3175	146.9175	15/7.5 kHz spacing
146.1300	146.7300	15/7.5 kHz spacing	146.3250	146.9250	15/7.5 kHz spacing
146.1375	146.7375	15/7.5 kHz spacing	146.3325	146.9325	15/7.5 kHz spacing
146.1450	146.7450	15/7.5 kHz spacing	146.3400	146.9400	15/7.5 kHz spacing

<u>Input</u>	<u>Output</u>	<u>600 kHz split</u>	<u>Input</u>	<u>Output</u>	<u>600 kHz split</u>
146.1525	146.7525	15/7.5 kHz spacing	146.3475	146.9475	15/7.5 kHz spacing
146.1600	146.7600	15/7.5 kHz spacing	146.3550	146.9550	15/7.5 kHz spacing
146.1675	146.7675	15/7.5 kHz spacing	146.3625	146.9625	15/7.5 kHz spacing
146.1750	146.7750	15/7.5 kHz spacing	146.3700	146.9700	15/7.5 kHz spacing
146.1825	146.7825	15/7.5 kHz spacing	146.3775	146.9775	15/7.5 kHz spacing
146.1900	146.7900	15/7.5 kHz spacing	146.3850	146.9850	15/7.5 kHz spacing
146.1975	146.7975	15/7.5 kHz spacing	146.3925	146.9925	15/7.5 kHz spacing

147.000 – 147.3975 – high in, low out; wide/narrowband

<u>Input</u>	<u>Output</u>	<u>600 kHz split</u>	<u>Input</u>	<u>Output</u>	<u>600 kHz split</u>
147.6000	147.0000	15/7.5 kHz spacing	147.8025	147.2025	15/7.5 kHz spacing
147.6075	147.0075	15/7.5 kHz spacing	147.8100	147.2100	15/7.5 kHz spacing
147.6150	147.0150	15/7.5 kHz spacing	147.8175	147.2175	15/7.5 kHz spacing
147.6225	147.0225	15/7.5 kHz spacing	147.8250	147.2250	15/7.5 kHz spacing
147.6300	147.0300	15/7.5 kHz spacing	147.8325	147.2325	15/7.5 kHz spacing
147.6375	147.0375	15/7.5 kHz spacing	147.8400	147.2400	15/7.5 kHz spacing
147.6450	147.0450	15/7.5 kHz spacing	147.8475	147.2475	15/7.5 kHz spacing
147.6525	147.0525	15/7.5 kHz spacing	147.8550	147.2550	15/7.5 kHz spacing
147.6600	147.0600	15/7.5 kHz spacing	147.8625	147.2625	15/7.5 kHz spacing
147.6675	147.0675	15/7.5 kHz spacing	147.8700	147.2700	15/7.5 kHz spacing
147.6750	147.0750	15/7.5 kHz spacing	147.8775	147.2775	15/7.5 kHz spacing
147.6825	147.0825	15/7.5 kHz spacing	147.8850	147.2850	15/7.5 kHz spacing
147.6900	147.0900	15/7.5 kHz spacing	147.8925	147.2925	15/7.5 kHz spacing
147.6975	147.0975	15/7.5 kHz spacing	147.9000	147.3000	15/7.5 kHz spacing
147.7050	147.1050	15/7.5 kHz spacing	147.9075	147.3075	15/7.5 kHz spacing
147.7125	147.1125	15/7.5 kHz spacing	147.9150	147.3150	15/7.5 kHz spacing
147.7200	147.1200	15/7.5 kHz spacing	147.9225	147.3225	15/7.5 kHz spacing
147.7275	147.1275	15/7.5 kHz spacing	147.9300	147.3300	15/7.5 kHz spacing
147.7350	147.1350	15/7.5 kHz spacing	147.9375	147.3375	15/7.5 kHz spacing
147.7425	147.1425	15/7.5 kHz spacing	147.9450	147.3450	15/7.5 kHz spacing
147.7500	147.1500	15/7.5 kHz spacing	147.9525	147.3525	15/7.5 kHz spacing
147.7575	147.1575	15/7.5 kHz spacing	147.9600	147.3600	15/7.5 kHz spacing
147.7650	147.1650	15/7.5 kHz spacing	147.9675	147.3675	15/7.5 kHz spacing
147.7725	147.1725	15/7.5 kHz spacing	147.9750	147.3750	15/7.5 kHz spacing
147.7800	147.1800	15/7.5 kHz spacing	147.9825	147.3825	15/7.5 kHz spacing
147.7875	147.1875	15/7.5 kHz spacing	147.9900	147.3900	15/7.5 kHz spacing
147.7950	147.1950	15/7.5 kHz spacing	147.9975	147.3975	15/7.5 kHz spacing

Digital / Packet Simplex – 20khz spacing

144.9100	145.0300	145.5500	145.6700
144.9300	145.0500	145.5700	145.6900
144.9500	145.0700	145.5900	145.7100
144.9700	145.0900	145.6100	145.7300
144.9900	145.5100	145.6300	145.7500
145.0100	145.5300	145.6500	145.7700

145.7900

FM Voice Simplex – 7.5/15khz spacing; wide/narrowband

146.4000		146.5050	
146.4075		146.5125	
146.4150		146.5200	National FM Calling Frequency
146.4225		146.5275	
146.4300		146.5350	
146.4375		146.5425	
146.4450		146.5500	Popular choice for FM Simplex
146.4525		146.5575	
146.4600	Shared SNP Pair with 147.4600 – 1 MHz split	146.5650	
146.4675		146.5725	
146.4750	Shared SNP Pair with 147.4750 – 1 MHz split	146.5800	Popular choice for FM Simplex
146.4825		146.5875	
146.4900	Shared SNP Pair with 147.4900 – 1 MHz split	146.5950	
146.4975			
147.4050		147.5025	
147.4125		147.5100	
147.4200		147.5175	
147.4275		147.5250	
147.4350		147.5325	
147.4425		147.5400	
147.4500		147.5475	
147.4575	Adjacent to SNP output 146.460	147.5550	Popular choice for FM Simplex
147.4650	Adjacent to SNP output 146.460	147.5625	
147.4725	Adjacent to SNP output 146.475	147.5700	
147.4800	Adjacent to SNP output 146.475	147.5775	
147.4875	Adjacent to SNP output 146.490	147.5850	
147.4950	Adjacent to SNP output 146.490		

Shared Non-Protected (SNP) Pairs – included above

<u>Input</u>	<u>Output</u>	
146.4600	147.4600	
146.4750	147.4750	
146.4900	147.4900	
144.6300	145.2300	Minnesota Recognized SNP – determine mileage spacing from western border

1.25 Meter / 222.00 - 225.00 MHz

Standard repeater pairs

Unless otherwise described in this policy, frequencies between 222.160 and 225.00 will be assigned in accordance with the nationally accepted 220 MHz band plan agreed upon by the W.A.R. 223.500 MHz is recognized as the National Simplex calling frequency.

The frequencies between 222.260 and 223.380 MHz are used as repeater inputs with the repeater outputs located 1.6 MHz above them at 223.860 to 224.980 MHz. These frequencies pairs are spaced 20 kHz apart starting with 222.260 MHz.

Repeater operation on inputs below 222.240 MHz. are discouraged unless other pairs are not available.

Auxiliary Links and Control Channels

The use of certain 10 kHz. split frequencies have been afforded to 220 MHz link users displaced by the loss of the lower 2 MHz of the band.

The frequencies between 222.150 and 222.260 MHz and 223.640 to 223.860 MHz are available for linking and control. Channel assignments will be made on a 20 kHz spacing starting at 222.170 MHz and 223.650 MHz within their respective frequency blocks.

Five channels starting at 222.270 MHz may also contain auxiliary stations and are primarily “grandfathered” users that were displaced when the lower 2MHz of this band was reallocated to commercial use. Future assignments will be at the discretion of the Frequency Coordinator.

222.1700	Control / Link	222.2700	Displaced Link Channels – future discretion only
222.1900	Control / Link	222.2900	Displaced Link Channels – future discretion only
222.2100	Control / Link	222.3100	Displaced Link Channels – future discretion only
222.2300	Control / Link	222.3300	Displaced Link Channels – future discretion only
222.2500	Control / Link	222.3500	Displaced Link Channels – future discretion only

223.6100	Control / Link – adjacent to Simplex/Packet 10kHz higher
223.6300	Control / Link – adjacent to Simplex/Packet 10kHz higher
223.6500	Control / Link – adjacent to Simplex/Packet 10kHz higher

223.6700	Control / Link	223.7700	Control / Link
223.6900	Control / Link	223.7900	Control / Link
223.7100	Control / Link	223.8100	Control / Link
223.7300	Control / Link	223.8300	Control / Link
223.7500	Control / Link	223.8500	Control / Link

Simplex and Packet

The frequencies between 223.400 and 223.640 MHz inclusive are available for simplex and packet operation. Channel assignments begin with 223.400 MHz and are on 20kHz steps.

222.0000	222.1500	Weak Signal Modes (EME, CW, SSB, Beacons)
222.1000		CW and SSB National Calling Frequency
222.1500	222.1700	Guard Band
222.1700	222.2500	FM Repeater Control / Link (20 kHz spacing – 5 channels)
222.2600	223.3800	FM Repeater Inputs (20 kHz spacing)
223.4000	223.5800	FM Simplex / Packet (20 kHz spacing)
223.5000		National FM Calling Frequency
223.6100	223.8500	FM Links and Control (20 kHz spacing)
223.8600	224.9800	FM Repeater Outputs (20 kHz spacing)

FM Voice Simplex / Packet Frequencies

223.4000	223.5000
223.4200	223.5200
223.4400	223.5400
223.4600	223.5600
223.4800	223.5800
223.6000	Adjacent to Link and Control Channels 10kHz lower
223.6200	Adjacent to Link and Control Channels 10kHz lower
223.6400	Adjacent to Link and Control Channels 10kHz lower

Repeater Pairs – low in, high out – 1.6Mhz split

<u>Input</u>	<u>Output</u>	<u>1.6 Mhz split</u>	<u>Input</u>	<u>Output</u>	<u>1.6 Mhz split</u>
222.2600	223.8600	20 kHz spacing	222.8200	224.4200	20 kHz spacing
222.2800	223.8800	20 kHz spacing	222.8400	224.4400	20 kHz spacing
222.3000	223.9000	20 kHz spacing	222.8600	224.4600	20 kHz spacing
222.3200	223.9200	20 kHz spacing	222.8800	224.4800	20 kHz spacing
222.3400	223.9400	20 kHz spacing	222.9000	224.5000	20 kHz spacing
222.3600	223.9600	20 kHz spacing	222.9200	224.5200	20 kHz spacing
222.3800	223.9800	20 kHz spacing	222.9400	224.5400	20 kHz spacing
222.4000	224.0000	20 kHz spacing	222.9600	224.5600	20 kHz spacing
222.4200	224.0200	20 kHz spacing	222.9800	224.5800	20 kHz spacing
222.4400	224.0400	20 kHz spacing	223.0000	224.6000	20 kHz spacing
222.4600	224.0600	20 kHz spacing	223.0200	224.6200	20 kHz spacing
222.4800	224.0800	20 kHz spacing	223.0400	224.6400	20 kHz spacing
222.5000	224.1000	20 kHz spacing	223.0600	224.6600	20 kHz spacing
222.5200	224.1200	20 kHz spacing	223.0800	224.6800	20 kHz spacing
222.5400	224.1400	20 kHz spacing	223.1000	224.7000	20 kHz spacing
222.5600	224.1600	20 kHz spacing	223.1200	224.7200	20 kHz spacing
222.5800	224.1800	20 kHz spacing	223.1400	224.7400	20 kHz spacing
222.6000	224.2000	20 kHz spacing	223.1600	224.7600	20 kHz spacing
222.6200	224.2200	20 kHz spacing	223.1800	224.7800	20 kHz spacing
222.6400	224.2400	20 kHz spacing	223.2000	224.8000	20 kHz spacing

<u>Input</u>	<u>Output</u>	<u>1.6 Mhz split</u>	<u>Input</u>	<u>Output</u>	<u>1.6 Mhz split</u>
222.6600	224.2600	20 kHz spacing	223.2200	224.8200	20 kHz spacing
222.6800	224.2800	20 kHz spacing	223.2400	224.8400	20 kHz spacing
222.7000	224.3000	20 kHz spacing	223.2600	224.8600	20 kHz spacing
222.7200	224.3200	20 kHz spacing	223.2800	224.8800	20 kHz spacing
222.7400	224.3400	20 kHz spacing	223.3000	224.9000	20 kHz spacing
222.7600	224.3600	20 kHz spacing	223.3200	224.9200	20 kHz spacing
222.7800	224.3800	20 kHz spacing	223.3400	224.9400	20 kHz spacing
222.8000	224.4000	20 kHz spacing	223.3600	224.9600	20 kHz spacing
			223.3800	224.9800	20 kHz spacing

70 cm / 420.00 – 450.00 MHz

Modernized band-plan to better align with adjacent states

The 2018 version of the WAR Band-plan takes into consideration modern use of narrowband technologies (NBFM, DMR, P25, NXDN, Fusion, IDEN, etc) and retires use of Amateur Television (ATV). Adjacent states are further utilizing the lower half of the 420-450 band for links and other experimental needs.

Further, new “Hot-Spot” or low-power digital modes continue to emerge and need a place to run. Given the low-power and low-elevation nature of a hot-spot, WAR will not be officially coordinating these “neighborhood” nodes, but provide guidance to where they can run, such as between 420 and 432Mhz since modern amateur equipment covers the entire band.

420-430 Above Line “A” restricted. Very top of WI above 45 degrees North Latitude

420.0000 432.0000 Re-allocated for Repeaters/Links – 12.5kHz spacing

Notes:

- IL 420.025-430.975 all 25 kHz spaced
 - MI 100kHz packet 430.050/150/250/350/450; 431.025 25 kHz
 - MN Line “A” Restrictions; 420.025-421 25 kHz spacing links
- *Low-power, neighborhood range hot-spots

432.0000 433.0000 Weak Signal (432.100 Calling Frequency)

433.0250 434.9750 Auxiliary Links (12.5 kHz spacing)

435.0000 438.0000 Satellite Only – Internationally

438.0000 441.4000 Re-allocated for Repeaters/Links – 12.5kHz spacing

Notes:

- IL 440.900-441.075 25 kHz Simplex/Packet
- MI packet 440.975/441.050/441.075
440.500/445.500 & 441.500/446.500 SNP

441.4250 441.4750 Cross-band repeaters / remote base (12.5 kHz spacing)

441.5000 445.9750 FM Repeater Outputs (12.5 kHz spacing)

Notes:

- MI FM Simplex 445.0/.1/.2/.7/.800;445.825/850/875/900/925/950/975

Digital Voice/Packet/Experimental
- MN 445-446.975 links, 12.5 kHz spacing

446.0000		National Simplex Frequency
446.0000	446.3750	Simplex and Packet (12.5 kHz spacing) Notes: - IL 446.400-446.475 – Six 12.5 kHz Temp Cross-band - MI FM Simplex 446.025/050/075/100/125/150
446.4000	446.5000	Cross-band repeaters / remote base (12.5 kHz spacing)
446.5250	446.9750	FM Auxiliary Links (12.5 kHz spacing)
447.0000	449.9750	FM Repeater Outputs (12.5 kHz spacing) Notes: - MI All 25kHz spacing - MN 449.725-, 449.325-, 448.700-, 448.000-, 447.700- SNP w/120 miles spacing

Standard repeater frequencies

Frequencies between 438.000 to 444.975 MHz are reserved for repeater outputs with inputs located 5 MHz above the output. See the plan above for adjacent state exceptions. Common channels are found between 440 and 445 Mhz. We are now promoting use of narrowband and digital modes to enable new capabilities, although placement is still according to normal NOPC guidelines.

Fast Scan TV Repeaters

No new Fast Scan Legacy modes will be coordinated.

Simplex and Packet

The frequencies between 446.000 and 446.200 MHz inclusive are available for simplex and packet operation. Additionally, packet shall have primary status on the paired frequencies of 441.025/446.025, 441.050/446.050, and 441.075/446.075 MHz.

446.000MHz is recognized as the national FM simplex calling frequency.

The existing coordinated auxiliary links in this segment will not be displaced, however, should the auxiliary operations on these channels in their respective areas of operation cease of voluntary QSY to one of the other auxiliary link subbands, the channels will be made available for their scheduled uses.

Remote base, and temporary cross-band repeaters

The frequencies between 441.4250 to 441.4750, and 446.4250 to 446.4750 MHz are available for remote base and temporary/portable cross band repeaters. Channel assignments are inclusive of the frequencies shown and will be made on 12.5 kHz channels.

Although the term “temporary” might encourage some to just go ahead and use a particular channel, coordination is still required to avoid harmful interference to existing operations. The existing coordinated auxiliary links in this segment will not be displaced, however, should the auxiliary operations on these channels in their respective areas of operation cease of

voluntary QSY to one of the other auxiliary link sub-bands, the channels will be made available for their scheduled uses.

70 cm Auxiliary Link Channels

433.0250	433.5250	434.0000	434.5250
433.0500	433.5500	434.0250	434.5500
433.0750	433.5750	434.0500	434.5750
433.1000	433.6000	434.0750	434.6000
433.1250	433.6250	434.1000	434.6250
433.1500	433.6500	434.1250	434.6500
433.1750	433.6750	434.1500	434.6750
433.2000	433.7000	434.1750	434.7000
433.2250	433.7250	434.2000	434.7250
433.2500	433.7500	434.2250	434.7500
433.2750	433.7750	434.2500	434.7750
433.3000	433.8000	434.2750	434.8000
433.3250	433.8250	434.3000	434.8250
433.3500	433.8500	434.3250	434.8500
433.3750	433.8750	434.3500	434.8750
433.4000	433.9000	434.3750	434.9000
433.4250	433.9250	434.4000	434.9250
433.4500	433.9500	434.4250	434.9500
433.4750	433.9750	434.4500	434.9750
433.5000		434.4750	
		434.5000	

The following Link channels may be issued in pairs for full duplex auxiliary links or individually for point to point or use as control channels. Directional antennas are highly encouraged and may be a condition of coordination.

<u>Pair A</u>	<u>Pair B</u>	<u>Pair A</u>	<u>Pair B</u>	<u>Pair A</u>	<u>Pair B</u>
440.0000	445.0000	440.3500	445.3500	440.7000	445.7000
440.0250	445.0250	440.3750	445.3750	440.7250	445.7250
440.0500	445.0500	440.4000	445.4000	440.7500	445.7500
440.0750	445.0750	440.4250	445.4250	440.7750	445.7750
440.1000	445.1000	440.4500	445.4500	440.8000	445.8000
440.1250	445.1250	440.4750	445.4750	440.8250	445.8250
440.1500	445.1500	440.5000	445.5000	440.8500	445.8500
440.1750	445.1750	440.5250	445.5250	440.8750	445.8750
440.2000	445.2000	440.5500	445.5500	440.9000	445.9000
440.2250	445.2250	440.5750	445.5750	440.9250	445.9250
440.2500	445.2500	440.6000	445.6000	440.9500	445.9500
440.2750	445.2750	440.6250	445.6250	440.9750	445.9750
440.3000	445.3000	440.6500	445.6500		
440.3250	445.3250	440.6750	445.6750		

<u>Pair A</u>	<u>Pair B</u>	<u>Pair A</u>	<u>Pair B</u>	<u>Pair A</u>	<u>Pair B</u>
441.2250	446.2250	441.4000	446.4000	441.8750	446.8750
441.2500	446.2500	441.5000	446.5000	441.9000	446.9000
441.2750	446.2750	441.5250	446.5250	441.9250	446.9250
441.3000	446.3000	441.5500	446.5500	441.9500	446.9500
441.3250	446.3250	441.5750	446.5750	441.9750	446.9750
441.3500	446.3500	441.6000	446.6000		
441.3750	446.3750	441.6250	446.6250		

Non-Paired Auxiliary channels

441.0000	446.0000	441.2250	446.2250
441.1000	446.1000	441.2500	446.2500
441.1250	446.1250	441.2750	446.2750
441.1500	446.1500	441.3000	446.3000
441.1750	446.1750	441.3250	446.3250
441.2000	446.2000	441.3500	446.3500
		441.3750	446.3750

70 cm Simplex Frequencies Voice/Packet

441.0250	446.0750
441.0500	446.1000
441.0750	446.1250
446.0000	446.1500
446.0250	446.1750
446.0500	446.2000

* = National FM Calling frequency

Temporary Cross-band repeaters and remote base operation

441.4250	446.4125
441.4375	446.4250
441.4500	446.4375
441.4625	446.4500
441.4750	446.4625
441.4875	446.4750

70 cm Standard FM Repeaters, 5Mhz split

440.000 – 449.9875 – high in, low out; wide/narrowband

Valid for 440 - 444 Outputs, 445 – 449 Inputs

Only the last four of channel shown, repeats for each Megahertz:
(example 442.1125 out, 447.1125 in)

0.0000	0.2000	0.4000	0.6000	0.8000
0.0125	0.2125	0.4125	0.6125	0.8125
0.0250	0.2250	0.4250	0.6250	0.8250
0.0375	0.2375	0.4375	0.6375	0.8375
0.0500	0.2500	0.4500	0.6500	0.8500
0.0625	0.2625	0.4625	0.6625	0.8625
0.0750	0.2750	0.4750	0.6750	0.8750
0.0875	0.2875	0.4875	0.6875	0.8875
0.1000	0.3000	0.5000	0.7000	0.9000
0.1125	0.3125	0.5125	0.7125	0.9125
0.1250	0.3250	0.5250	0.7250	0.9250
0.1375	0.3375	0.5375	0.7375	0.9375
0.1500	0.3500	0.5500	0.7500	0.9500
0.1625	0.3625	0.5625	0.7625	0.9625
0.1750	0.3750	0.5750	0.7750	0.9750
0.1875	0.3875	0.5875	0.7875	0.9875

Shared Non-Protected Pairs:

440.500 – 445.500

441.500 – 446.500

442.125 – 447.125

33 cm 902.00 - 928.00 MHz

Standard Repeater Frequencies

The frequencies from 918.000 to 921.000 MHz are coordinated as repeater outputs with the inputs 12 MHz below them on 906.000 to 909.000 MHz. Channel assignments are made with 25 kHz spacing starting at 918.000 MHz.

The frequencies from 927.0125 to 927.9750 are coordinated as repeater outputs with the inputs 25 Mhz below then on 902.0125 to 902.9750. Channel assignments are made with 12.5Khz spacing.

927.9875 with an input of 902.9875 is a Shared, Non-Protected or Portable repeater pair.

Auxiliary and Control Links

The frequencies from 909.000 to 910.000, and 921.000 to 922.000 MHz are available for point to point auxiliary links and control receivers. Channel assignments are made on 25 kHz spacing starting at 909.000 and 921.000 MHz respectively.

Digital / Packet

The frequencies from 904.000 to 906.000 and 917.000 to 918.000 MHz are reserved for digital communications.

ATV

No new ATV coordinations will be granted.

Spread Spectrum, and other experimental modes

The frequencies from 922.000 to 928.000 may be used on a secondary basis for spread spectrum and other experimental modes.

902.0000	902.3000	Weak Signal Modes (EME, CW, SSB, Beacons)
902.3125	902.4875	Narrowband FM/DV Repeater Inputs (12.5kHz spacing, 25Mhz split)
902.5000		National FM Simplex
902.5125	902.9750	Narrowband FM/DV Repeater Inputs (12.5kHz spacing, 25 MHz split)
902.9875		Narrowband SNP/portable repeater input (25 MHz split)
903.0000	903.4000	Weak Signal Modes (EME, CW, SSB, Beacons)
903.4125	904.9875	Digital Auxiliary Primary, Digital Simplex Secondary
905.0250	905.9750	Digital Repeater Inputs (spacing based on OBW)
906.0250	908.4750	FM Repeater Inputs (25 kHz spacing. 12 MHz split)
906.5000		National FM Simplex
906.5250	908.9750	FM Repeater Inputs (25 kHz spacing, 12 MHz split)
909.0000	910.0000	Point-to-point Auxiliary Links / Control Receivers (25 kHz spacing)
910.0000	915.0000	ATV Repeater Input (12 MHz split)
915.0250	916.9750	FM Auxiliary Links (25 kHz spacing)
917.0250	917.9750	Digital Repeater Outputs (spacing based on OBW)
918.0250	920.4750	FM Repeater Outputs (25 kHz spacing)
918.5000		National FM Simplex
918.5250	920.9750	FM Repeater Outputs (25 kHz spacing)
921.0000	922.0000	Point-to-point Auxiliary Links / Control Receivers (25 kHz spacing)
922.0000	927.0000	ATV Repeater Outputs (12 MHz split)

922.0000	928.0000	Secondary use for Spread Spectrum and Experimental Modes
927.0125	927.2875	FM Auxiliary Links (12.5 kHz spacing)
927.3125	927.4875	Narrowband FM/DV Repeater Outputs (12.5kHz spacing, 25 MHz split)
927.5000		National FM Simplex
927.5125	927.9750	Narrowband FM/DV Repeater Outputs (12.5kHz spacing, 25 MHz split)
927.9875		Narrowband SNP/portable repeater output (25 MHz split)

33 cm Repeater Pairs, 12 MHz split, 25 Khz spacing

Repeater Outputs 918.025 – 920.975

Repeater Inputs 906.025 – 908.975

Input	Output
906.025 – 918.025	
906.050 – 918.050	
906.075 – 918.075	

.. and every 25 kHz thereafter through ..

908.925 – 920.925
908.950 – 920.950
908.975 – 920.975

33 cm Repeater Pairs, 25 MHz split, 12.5 Khz spacing

Repeater Outputs Shown – Inputs are 902.xxxx to match

	927.2000	927.4000	927.6000	927.8000
927.0125	927.2125	927.4125	927.6125	927.8125
927.0250	927.2250	927.4250	927.6250	927.8250
927.0375	927.2375	927.4375	927.6375	927.8375
927.0500	927.2500	927.4500	927.6500	927.8500
927.0625	927.2625	927.4625	927.6625	927.8625
927.0750	927.2750	927.4750	927.6750	927.8750
927.0875	927.2875	927.4875	927.6875	927.8875
927.1000	927.3000	927.5000	927.7000	927.9000
927.1125	927.3125	927.5125	927.7125	927.9125
927.1250	927.3250	927.5250	927.7250	927.9250
927.1375	927.3375	927.5375	927.7375	927.9375
927.1500	927.3500	927.5500	927.7500	927.9500
927.1625	927.3625	927.5625	927.7625	927.9625
927.1750	927.3750	927.5750	927.7750	927.9750
927.1875	927.3875	927.5875	927.7875	927.9875

23cm / 1240 to 1300 MHz

Standard Repeater Frequencies

The frequencies from 1282.000 to 1287.975 MHz are coordinated repeater outputs with inputs located 12 MHz below at 1270.000 to 1275.975 MHz. Channel assignments are made on 25 kHz spacing starting at 1282.000 MHz.

The frequencies from 1290.00 to 1293.975 MHz are coordinated repeater outputs with inputs located 20 MHz below at 1270.000 to 1273.975 MHz. Channel assignments are made on 25 kHz spacing starting at 1290.000 MHz.

Auxiliary Links and Control

The frequencies from 1259.00 to 1259.9875 MHz are available for use as point to point auxiliary links control receivers. Channel assignments are made on 12.5 kHz spacing starting at 1259.00 MHz.

ATV

Existing coordinated ATV operation shall occur between 1240.00 to 1255.00, 1252.00 to 1258.00, and 1276.00 to 1282.00 MHz.

Simplex

Simplex operation shall be permitted between 1294.00 and 1295.00 MHz. The recognized National Simplex calling frequency is 1294.50 MHz.

1240.0000	1255.0000	ATV, AM or FM
1252.0000	1258.0000	ATV, AM Video Carrier 1253.2500
1258.0000	1258.9750	Digital
1259.0000	1259.9875	Narrowband FM Point-to-Point links (12.5 kHz spacing)
1260.0000	1267.0000	Satellite uplinks, experimental
1267.0000	1270.0000	Reserved for future expansion / experimental
1270.0250	1276.9750	Repeater inputs – 25 kHz spacing paired with 1270-1276
1276.0000	1282.0000	ATV, AM video Carrier 1277.2500
1282.0250	1287.9750	Repeater Outputs paired with 1270-1276
1288.0000	1290.0000	Wideband experimental
1290.0250	1293.9750	Repeater Outputs paired with 1270-1274
1294.0000	1295.0000	Narrowband FM Simplex – every 25 kHz
1294.5000		National Simplex Calling Channel
1295.0000	1297.0000	Narrowband Weak Signal (No FM)
1295.0000	1295.8000	SSTV, FAX, ACSSB Experimental
1295.8000	1296.0000	EME / CW
1296.0000	1296.0500	EME Exclusive
1296.0700	1296.0800	CW Beacons
1296.1000		CW/SSB Calling Frequency
1296.3000	1296.4000	Beacons
1296.4000	1296.6000	Crossband linear translator input
1296.6000	1296.8000	Crossband linear translator output
1296.8000	1297.0000	Experimental Beacons (exclusive)
1297.0000	1300.0000	Wideband Digital Communications

23 CM FM 12 MHz split Repeater Pairs

Input	Output
1270.025 – 1282.025	
1270.050 – 1282.050	
1270.075 – 1282.075	

.. and every 25 kHz thereafter through ..

1275.925 – 1287.925	
1275.950 – 1287.950	
1275.975 – 1287.975	

23 CM FM 20 MHz split Repeater Pairs

Input	Output
1270.025 – 1290.025	
1270.050 – 1290.050	
1270.075 – 1290.075	

.. and every 25 kHz thereafter through ..

1273.925 – 1293.925	
1273.950 – 1293.950	
1273.975 – 1293.975	

13cm / 2300-2310 and 2390-2450 MHz

Simplex

Simplex operation shall be permitted between 2305.00 and 2306.00 MHz. The recognized National Simplex calling frequency is 2305.20 MHz.

2300.0000	2303.0000	High-rate data
2303.0000	2303.5000	Packet
2303.5000	2303.8000	TTY Packet
2303.9000	2303.9000	Packet, TTY, CW, EME
2303.9000	2304.1000	CW, EME
2304.1000		National Calling Frequency
2304.1000	2304.2000	CW, EME, SSB
2304.2000	2304.3000	SSB, SSTV, FAX, Packet, AM, Amtor
2304.3000	2304.3200	Propagation Beacons
2304.3200	2304.4000	General propagation beacons
2304.4000	2304.5000	SSB, SSTV, ACSSB, FAX, Packet, AM, experimental
2304.5000	2304.7000	Crossband linear translator input
2304.7000	2304.9000	Crossband linear translator output
2304.9000	2305.0000	Experimental Beacons
2305.0000	2305.2000	FM Simplex (25 kHz spacing)
2305.2000		National Calling Frequency
2305.2000	2306.0000	FM Simplex (25 kHz spacing)
2306.0000	2309.0000	FM Repeaters Input (25 kHz spacing)
2309.0000	2310.0000	Control and Auxiliary links
2390.0000	2396.0000	Fast-rate TV
2396.0000	2399.0000	High-rate data
2390.0000	2399.5000	Packet
2399.5000	2400.0000	Control and Auxiliary links
2400.0000	2403.0000	Satellite
2403.0000	2408.0000	Satellite and high-rate data
2408.0000	2410.0000	Satellite
2410.0000	2413.0000	FM Repeaters Output (25 kHz spacing)
2413.0000	2418.0000	High-rate data
2418.0000	2430.0000	Fast-scan TV
2430.0000	2433.0000	Satellite
2433.0000	2438.0000	Satellite high-rate data
2438.0000	2450.0000	Wideband FM, FSTV, FMTV, SS Experimental