

## SERA FREQUENCY UTILIZATION PLAN for 420-450 MHz

420.0000 - 420.2000	Repeater Links	
420.0000 - 426.0000	ATV Repeater Output	421.250 Video - 425.750 Audio
426.0000 - 432.0000	ATV Simplex	427.250 Video - 431.750 Audio
432.0000 - 433.0000	SSB & Weak Signal	432.100 National SSB Calling Frequency
433.0125 - 433.2000	Repeater Links	
433.0000 - 439.0000	ATV Simplex Only	434.000 Video - 438.500 Audio
438.7750 - 439.5875	Repeater Links	
439.6000 - 440.4750	FM Digital/Packet Operation	
440.5125 - 440.7250	Narrow Band Digital Repeater Outputs/Duplex Backbones/Link	
440.7375 - 440.9000	Simplex Cross Band Voice - Base	
440.9125 - 441.1750	Simplex Digital	
441.1875 - 441.4875	Links, Control Frequencies	
441.5000	Simplex Digital	441.000 National Digital Calling Frequency
441.5250 - 441.7750	Duplex Link Repeaters	
441.8000 - 444.9750	FM, APCO P25, DMR, Fusion and D-Star Repeater Outputs	
445.0250 - 445.4750	Digital	
445.5125 - 445.7250	Digital Repeater Inputs	
445.7375 - 445.9000	Simplex Cross Band Voice - Mobile	
445.9125 - 446.1750	FM Simplex	446.000 National FM Calling Frequency
446.1875 - 446.4875	Links, Control Frequencies	
446.5000	Simplex Digital	
446.5250 - 446.7750	Duplex Link Repeaters	
446.8000 - 449.9750	FM, APCO P25, DMR, Fusion and D-Star Repeater Inputs, wideband/mixed mode digital	

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### Voice FM Simplex Frequencies

#### 22 Simplex FM Voice Channels

445.9125	445.9250	445.9375	445.9500	445.9625	445.9750
445.9875	<b>446.0000 *</b>	446.0125	446.0250	446.0375	446.0500
446.0625	446.0750	446.0875	446.1000	446.1125	446.1250
446.1375	446.1500	446.1625	446.1750		

\* 446.000 is the National FM Voice Simplex Calling Frequency

## Narrow Band FM Digital, NXDN, DStar, DMR, Packet Repeater or Digital Packet/Duplex Backbone

18 Duplex Channels, 12.5 KHz split, 5 MHz split, High input - Low output

445.5125 - 440.5125	445.5250 - 440.5250	445.5375 - 440.5375
445.5500 - 440.5500	445.5625 - 440.5625	445.5750 - 440.5750
445.5875 - 440.5875	445.6000 - 440.6000	445.6125 - 440.6125
445.6250 - 440.6250	445.6375 - 440.6375	445.6500 - 440.6500
445.6625 - 440.6625	445.6750 - 440.6750	445.6875 - 440.6875
445.7000 - 440.7000	445.7125 - 440.7125	445.7250 - 440.7250

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## Wide Band Digital/Packet Duplex Backbones/Links

19 Duplex, Mixed 50/100 KHz, 5 MHz split, High input, Low output, horizontal or vertical polarization optional

445.0250 - 440.0250	445.0500 - 440.0500	445.0750 - 440.0750
445.1000 - 440.1000	445.1250 - 440.1250	445.1500 - 440.1500
445.1750 - 440.1750	445.2000 - 440.2000	445.2250 - 440.2250
445.2500 - 440.2500	445.2750 - 440.2750	445.3000 - 440.3000
445.3250 - 440.3250	445.3500 - 440.3500	445.3750 - 440.3750
445.4000 - 440.4000	445.4250 - 440.4250	445.4500 - 440.4500
445.4750 - 440.4750		

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## Narrow Band FM Digital, DMR, P25 (APCO25) /Packet Simplex

440.9125	440.9250	440.9375	440.9500	440.9625	440.9750
440.9875	<b>441.0000 *</b>	441.0125	441.0250	441.0375	441.0500
441.0625	441.0750	441.0875	441.1000	441.1125	441.1250
441.1375	441.1500	441.1625	441.1750		

\* 441.000 is the National Digital Simplex Calling Frequency

## **Standard FM Repeaters and NXDN, Fusion, P25, DMR if mixed mode wideband FM**

**128 Repeater Pairs, 25 KHz spacing, 5 MHz split, High input, Low output**

446.8000 - 441.8000	446.8250 - 441.8250	446.8500 - 441.8500
446.8750 - 441.8750	446.9000 - 441.9000	446.9250 - 441.9250
447.0250 - 442.0250	447.0500 - 442.0500	447.0750 - 442.0750
447.1000 - 442.1000	447.1250 - 442.1250	447.1500 - 442.1500
447.1750 - 442.1750	447.2000 - 442.2000	447.2250 - 442.2250
447.2500 - 442.2500	447.2750 - 442.2750	447.3000 - 442.3000
447.3250 - 442.3250	447.3500 - 442.3500	447.3750 - 442.3750
447.4000 - 442.4000	447.4250 - 442.4250	447.4500 - 442.4500
447.4750 - 442.4750	447.5000 - 442.5000	447.5250 - 442.5250
447.5500 - 442.5500	447.5750 - 442.5750	447.6000 - 442.6000
447.6250 - 442.6250	447.6500 - 442.6500	447.6750 - 442.6750
447.7000 - 442.7000	447.7250 - 442.7250	447.7500 - 442.7500
447.7750 - 442.7750	447.8000 - 442.8000	447.8250 - 442.8250

447.0250 - 442.0250	447.0500 - 442.0500	447.0750 - 442.0750
447.1000 - 442.1000	447.1250 - 442.1250	447.1500 - 442.1500
447.1750 - 442.1750	447.2000 - 442.2000	447.2250 - 442.2250
447.2500 - 442.2500	447.2750 - 442.2750	447.3000 - 442.3000
447.3250 - 442.3250	447.3500 - 442.3500	447.3750 - 442.3750
447.4000 - 442.4000	447.4250 - 442.4250	447.4500 - 442.4500
447.4750 - 442.4750	447.5000 - 442.5000	447.5250 - 442.5250
447.5500 - 442.5500	447.5750 - 442.5750	447.6000 - 442.6000
447.6250 442.6250	447.6500 - 442.6500	447.6750 - 442.6750
447.7000 442.7000	447.7250 - 442.7250	447.7500 - 442.7500
447.7750 442.7750	447.8000 - 442.8000	447.8250 - 442.8250

447.8500 - 442.8500	447.8750 - 442.8750	447.9000 - 442.9000
447.9250 - 442.9250	447.9500 - 442.9500	447.9750 - 442.9750
448.0000 - 443.0000	448.0250 - 443.0250	448.0500 - 443.0500
448.0750 - 443.0750	448.1000 - 443.1000	448.1250 - 443.1250
448.1500 - 443.1500	448.1750 - 443.1750	448.2000 - 443.2000
448.2250 - 443.2250	448.2500 - 443.2500	448.2750 - 443.2750
448.3000 - 443.3000	448.3250 - 443.3250	448.3500 - 443.3500
448.3750 - 443.3750	448.4000 - 443.4000	448.4250 - 443.4250
448.4500 - 443.4500	448.4750 - 448.4750	448.5000 - 443.5000
448.5250 - 443.5250	448.5500 - 443.5500	448.5750 - 443.5750
448.6000 - 443.6000	448.6250 - 443.6250	448.6500 - 443.6500
448.6750 - 443.6750	448.7000 - 443.7000	448.7250 - 443.7250
448.7500 - 443.7500	448.7750 - 443.7750	448.8000 - 443.8000
448.8250 - 443.8250	448.8500 - 443.8500	448.8750 - 443.8750
448.9000 - 443.9000	448.9250 - 443.9250	448.9500 - 443.9500
448.9750 - 443.9750	449.0000 - 444.0000	449.0250 - 444.0250
449.0500 - 444.0500	449.0750 - 444.0750	449.1000 - 444.1000
449.1250 - 444.1250	449.1500 - 444.1500	449.1750 - 444.1750
449.2000 - 444.2000	449.2250 - 444.2250	449.2500 - 444.2500
449.2750 - 444.2750	449.3000 - 444.3000	449.3250 - 444.3250
449.3500 - 444.3500	449.3750 - 444.3750	449.4000 - 444.4000
449.4250 - 444.4250	449.4500 - 444.4500	449.4750 - 444.4750
449.5000 - 444.5000	449.5250 - 444.5250	449.5500 - 444.5500
449.5750 - 444.5750	449.6000 - 444.6000	449.6250 - 444.6250
449.6500 - 444.6500	449.6750 - 444.6750	449.7000 - 444.7000

449.7250 - 444.7250	449.7500 - 444.7500	449.7750 - 444.7750
449.8000 - 444.8000	449.8250 - 444.8250	449.8500 - 444.8500
449.8750 - 444.8750	449.9000 - 444.9000	449.9250 - 444.9250
449.9500 - 444.9500	449.9750 - 444.9750	

**These pairs are available for the coordination and assignment of analog FM and digital mixed mode repeaters.** Their coordination and assignment is determined using nominal FM coordination guidelines and other considerations, and those pertinent to co-channel and adjacent channel assignment.

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## **APCO P25 DMR D-Star NXDN Repeaters**

**128 Repeater Pairs, 25 KHz spacing, 5 MHz split, High input, Low output**

446.8125 - 441.8125	446.8375 - 441.8375	446.8625 - 441.8625
446.8875 - 441.8875	446.9125 - 441.9125	446.9375 - 441.9375
446.9625 - 441.9625	446.9875 - 441.9875	447.0125 - 442.0125
447.0375 - 442.0375	447.0625 - 442.0625	447.0875 - 442.0875
447.1125 - 442.1125	447.1375 - 442.1375	447.1625 - 442.1625
447.1875 - 442.1875	447.2125 - 442.2125	447.2375 - 442.2375
447.2625 - 442.2625	447.2875 - 442.2875	447.3125 - 442.3125
447.3375 - 442.3375	447.3625 - 442.3625	447.3875 - 442.3875
447.4125 - 442.4125	447.4375 - 442.4375	447.4625 - 442.4625
447.4875 - 442.4875	447.5125 - 442.5125	447.5375 - 442.5375
447.5625 - 442.5625	447.5875 - 442.5875	447.6125 - 442.6125
447.6375 - 442.6375	447.6625 - 442.6625	447.6875 - 442.6875
447.7125 - 442.7125	447.7375 - 442.7375	447.7625 - 442.7625
447.7875 - 442.7875	447.8125 - 442.8125	447.8375 - 442.8375
447.8625 - 442.8625	447.8875 - 442.8875	447.9125 - 442.9125
447.9375 - 442.9375	447.9625 - 442.9625	447.9875 - 442.9875
448.0125 - 443.0125	448.0375 - 443.0375	448.0625 - 443.0625
448.0875 - 443.0875	448.1125 - 443.1125	448.1375 - 443.1375
448.1625 - 443.1625	448.1875 - 443.1875	448.2125 - 443.2125
448.2375 - 443.2375	448.2625 - 443.2625	448.2875 - 443.2875
448.3125 - 443.3125	448.3375 - 443.3375	448.3625 - 443.3625
448.3875 - 443.3875	448.4125 - 443.4125	448.4375 - 443.4375
448.4625 - 443.4625	448.4875 - 443.4875	448.5125 - 443.5125

448.5375 - 443.5375	448.5625 - 443.5625	448.5875 - 443.5875
448.6125 - 443.6125	448.6375 - 443.6375	448.6625 - 443.6625
448.6875 - 443.6875	448.7125 - 443.7125	448.7375 - 443.7375
448.7625 - 443.7625	448.7875 - 443.7875	448.8125 - 443.8125
448.8375 - 443.8375	448.8625 - 443.8625	448.8875 - 443.8875
448.9125 - 443.9125	448.9375 - 443.9375	448.9625 - 443.9625
448.9875 - 443.9875	449.0125 - 444.0125	449.0375 - 444.0375
449.0625 - 444.0625	449.0875 - 444.0875	449.1125 - 444.1125
449.1375 - 444.1375	449.1625 - 444.1625	449.1875 - 444.1875
449.2125 - 444.2125	449.2375 - 444.2375	449.2625 - 444.2625
449.2875 - 444.2875	449.3125 - 444.3125	449.3375 - 444.3375
449.3625 - 444.3625	449.3875 - 444.3875	449.4125 - 444.4125
449.4375 - 444.4375	449.4625 - 444.4625	449.4875 - 444.4875
449.5125 - 444.5125	449.5375 - 444.5375	449.5625 - 444.5625
449.5875 - 444.5875	449.6125 - 444.6125	449.6375 - 444.6375
449.6625 - 444.6625	449.6875 - 444.6875	449.7125 - 444.7125
449.7375 - 444.7375	449.7625 - 444.7625	449.7875 - 444.7875
449.8125 - 444.8125	449.8375 - 444.8375	449.8625 - 444.8625
449.8875 - 444.8875	449.9125 - 444.9125	449.9375 - 444.9375
449.9625 - 444.9625	449.9875 - 444.9875	

**These interleaved pairs are exclusively available for the coordination and assignment of APCO P25 DMR, NXDN and D-Star digital voice technology (DVT) repeaters.** Their coordination and assignment is determined using nominal FM coordination guidelines and other considerations relating to the narrow bandwidth signals of DVT and those pertinent to cochannel and adjacent channel assignment.

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## FM Itinerant Voice Repeaters

**2 Repeater Pairs, 25 KHz spacing between channels, 5 MHz split, High input, Low output**

445.750 - 440.750      445.800 - 440.800

Reserved for itinerant and short term use during a special event or emergency with no formal coordination required. Trustees/Owners are encouraged to notify their local coordinator to inform them of system parameters and expected duration of use.

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## FM Cross Band Repeat Simplex (NBFM)

**Channels for Fixed Stations ONLY, 12 Simplex Channels, for Fixed Cross Band Repeat**

440.7375	440.7625	440.7750	440.7875	440.8125	440.8250
440.8375	440.8500	440.8625	440.8750	440.8875	440.9000

**Channels for Mobile Stations ONLY, 12 Simplex Channels, for Mobile Cross Band Repeat**

445.7375	445.7625	445.7750	445.7875	445.8125	445.8250
445.8375	445.8500	445.8625	445.8750	445.8875	445.9000

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## Link & Control Channels (Narrow Band FM)

**May be paired on "440", or individually paired with 222 MHz band fixed link frequencies. These may be individually coordinated. Some may be coordinated as simplex remote base or remote control systems.**

446.1875 - 441.1875	446.2000 - 441.2000	446.2125 - 441.2125
446.2250 - 441.2250	446.2375 - 441.2375	446.2500 - 441.2500
446.2625 - 441.2625	446.2750 - 441.2750	446.2875 - 441.2875
446.3000 - 441.3000	446.3125 - 441.3125	446.3250 - 441.3250
446.3375 - 441.3375	446.3500 - 441.3500	446.3625 - 441.3625
446.3750 - 441.3750	446.3875 - 441.3875	446.4000 - 441.4000
446.4125 - 441.4125	446.4250 - 441.4250	446.4375 - 441.4375
446.4500 - 441.4500	446.4625 - 441.4625	446.4750 - 441.4750
446.4875 - 441.4875		

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## Duplex "Hub" Linking Repeaters

**11 Repeater Pairs, 25 KHz spacing, 5 MHz split, High input, Low output, maximum 100w ERP.**

446.525 - 441.525	446.550 - 441.550	446.575 - 441.575
446.600 - 441.600	446.625 - 441.625	446.650 - 441.650
446.675 - 441.675	446.700 - 441.700	446.725 - 441.725
446.750 - 441.750	446.775 - 441.775	

These repeater pairs are reserved for use as a wide area linking "hub" repeater that tie a group of standard FM voice repeaters together. The SERA strongly recommends this method of linking rather than using in band or remote base type linking.

## Link Channels (Narrow Band FM)

**These link channels share designated ATV Bandwidths using horizontal antenna polarity. Frequencies will be coordinated with a maximum 25 watts ERP and directional antenna systems.**

420.0125	420.0250	420.0375	420.0500	420.0625	420.0750
420.0875	420.1000	420.1125	420.1250	420.1375	420.1500
420.1625	420.1750	420.1875	420.2000	433.0125	433.0250
433.0375	433.0500	433.0625	433.0750	433.0875	433.1000
433.1125	433.1250	433.1375	433.1500	433.1625	433.1750
433.1875	433.2000	438.7750	438.7875	438.8000	438.8125
438.8250	438.8375	438.8500	438.8625	438.8750	438.8875
438.9000	438.9125	438.9250	438.9375	438.9500	438.9625
438.9750	438.9875	439.0000*	439.0125*	439.0250*	439.0375*
439.0500*	439.0625*	439.0750*	439.0875*	439.1000*	439.1125*
439.1250*	439.1375*	439.1500*	439.1625*	439.1750*	439.1875*
439.2000*	439.2125*				
439.2250*	439.2375*	439.2500*	439.2625*	439.2750*	439.2875*
439.3000*	439.3125*	439.3250*	439.3375*	439.3500*	439.3625*
439.3750*	439.3875*	439.4000*	439.4125*	439.4250*	439.4375*
439.4500*	439.4625*	439.4750*	439.4875*	439.5000*	439.5125*

439.5250\*    439.5375\*    439.5500\*    439.5625\*    439.5750\*    439.5875\*

\* Link frequencies above 439 MHz may use vertical polarity at the coordinator's discretion.

**NOTE:** Contact your respective SERA Director, Vice Director, or Frequency Coordinator, for information about the need for coordination of your system, before installing and operating the system. Most simplex voice and digital-packet operations are itinerant in nature, and as such will not be coordinated by SERA. Digital-Packet operators should contact their local digital-packet organization for additional information. Simplex cross band voice, as is possible with most over the counter dual band radios, is also considered itinerant in nature and will not be coordinated; however, users are asked to use the assigned frequencies shown in this document.

Approved version    02/14/2000 @10:29 AM/EDT    FAL/HAHjr

Typographical error CORRECTED    01/04/01 @ 23:20 PM/EST    HAHjr

Amended by action of the SERA Board of Directors - 01/06/01    HAHjr

Changes to the SERA 420 - 450 MHz FUP approved by action of the SERA Board of Directors on January 05, 2008.    HAHjr

Changes made at BOD meeting on June 6, 2015.    Mike Fariss , K4EZ

