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ARCC BANDPLAN SUMMARY AND TECHNICAL REQUIREMENTS

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PREFACE

ARCC coordinates repeaters and auxiliary links for all modes on frequencies in specific subbands appropriate for the type of operation according to a set of bandplans. As a frequency coordinator and steward of spectrum planning, ARCC develops, and periodically revises, FCC-compliant bandplans to meet the changing needs for spectrum for both coordinated and non-coordinated activities within the ARCC service area.

Unlike HF bandplans which involve international consensus and cooperation, VHF/UHF bandplans are developed, recognized, and adhered to on a local or regional basis. While frequency coordinators in adjacent regions work cooperatively when reviewing coordinations and in developing bandplans in order to address potential conflicts along and across borders, there does not exist a universal set of VHF/UHF bandplans that suits the diverse needs, restrictions, and conventions of each unique area. Amateurs in ARCC's service area are urged to not be confused by "suggested" bandplans published by any other individual or organization. Do not assume that other amateurs, particularly those from outside the area, have any knowledge of established local bandplans and operating conventions. Recommended frequencies set forth by or for special interests should be dismissed as invalid if they are not reflected in the local bandplan. In this regard, the Internet is rife with reckless claims and patently erroneous information that conflicts with recognized bandplans.

ARCC bandplans include subbands in which ARCC issues coordinations for repeaters and auxiliary links, as well as non-coordinated subbands such as simplex, satellite, experimental, and weak-signal modes. The subbands which appear in **bold** typeface are subbands in which ARCC coordinates repeater and auxiliary link operations. Those subbands which appear in normal typeface are for non-coordinated activities. Operations for any given activity should only occur in a subband allocated for such purpose. In cases where there does not exist a subband dedicated to a given type of operation, an experimental subband should be used.

ARCC will only process new coordination applications and modifications to existing coordinations that are in compliance with the bandplans in effect at the time the coordination application was received. Any existing coordination which does not comply with current ARCC bandplans and policies is considered grandfathered, and may continue to operate as a coordinated station under its coordinated parameters until a sunset date is announced. Any proposed modifications to a grandfathered operation will require that it brought into compliance with current bandplans and policies.

SUBBAND DELINEATIONS

In this document, each subband is identified. For channelized operations such as FM and digital repeaters and auxiliary links, the start and end frequencies specified for the subband are the first and last channels available in the subband, not the absolute band edges. For example, although the 2m band ends at 148.000 MHz spectrally, the highest channel available in the band is 147.990, which an FM repeater input. That is, the center carrier frequency of the channel, not the spectral limits of the subband is shown for subbands containing channelized operations. For all non-channelized operations such as weak-signal modes, the start and end frequencies indicated are the absolute sub-band edges beyond which those emissions should not extend.

EXPERIMENTAL AND LOW-POWER SUBBANDS

Due to the experimental nature and ever-evolving state of amateur radio, where spectrum availability allows there exist subbands dedicated for experimental modes, short-distance low-power operations, and other activities which do not otherwise align with the intended use of subbands dedicated to specific types of operations or modes. As new technologies emerge, some mature and gain wide acceptance which, either due to demand or the unique nature of the mode, warrants dedicated spectrum during bandplanning. In other cases, modes which are experimental, or low-power with very limited coverage intended for use only by oneself or those in close proximity, or otherwise capable of operating cooperatively with other stations of the same or different type by virtue of their itinerant or occasional nature are able to share spectrum set aside for purposes.

Frustrations and interference can occur when a new mode or type of operation emerges for which there is no compatible spectrum in the bandplan. On occasion, these conflicts escalate into formal interference complaints when the interference condition is not quickly remedied by the interferor, or when there exists a rule violation that exacerbates the condition, such as operating a type of station or emission that is not permissible on a given frequency, failure to maintain control of the station, failure to identify, or not following good amateur practice, the last being a catch-all that includes not operating in compliance with local bandplans.

It is ARCC's desire, and likely all well-meaning groups and individuals as well, to see that licensed amateurs are able to enjoy their respective pursuits within the confines of the limited spectrum available, and do so without the need for FCC intervention to the maximum extent possible. ARCC responsibilities in bandplanning extend beyond just reserving spectrum for coordinated operations. The subbands in which ARCC does not issue coordinations are clearly delineated in the bandplans, and where applicable for channelized operations, the recognized channel spacing and resulting center frequencies are given to aid in frequency selection.

TECHNICAL REQUIREMENTS

Spectral purity requirements for digital and analog voice and/or data repeaters and auxiliary link operations must be comparable to modern land-mobile requirements, to FCC requirements for the band in question, and to good amateur practice, whichever is the most stringent. The occupied bandwidth shall not exceed 11.2 kHz on channels spaced every 12.5 kHz, 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 wideband (15 kHz occupied bandwidth) FM repeaters operating with 15 kHz channel spacing in the 146 to 148 MHz segment due to the increased possibility of interference to adjacent channels, and such protection and interference analysis is considered during coordination review.

On the 70cm band where repeaters' input/output offsets are in opposite directions in certain subbands, additional protection is required to prevent repeater transmitters from desensitizing adjacent-channel repeaters' receivers.

Narrowband operations must maintain an occupied bandwidth not exceeding those given above for each channel spacing. Wideband digital operations, digital amateur television, and other modes are reviewed on a case-by-case basis. Additional detail regarding coordination policies applicable to narrowband analog and digital operations, and wideband digital operations, can be found in a separate policy document available on ARCC's web site entitled *ARCC Coordination Policies for Narrowband Analog/Digital and Wideband Digital Operations*.

AM ATV operations must use VSB filtering to remote the lower sideband and be NTSC-compliant. The visual carrier frequency must be 1.25 MHz above the lower limit of the specified subband edge specified, and if used, the aural carrier frequency 4.5 MHz above the visual carrier. FM ATV operations on 23cm must use the center of the channel as the carrier frequency. All emissions must be at least 50 dB below carrier at the subband edge for any wideband digital or analog ATV operation. Proposed digital ATV operations will be reviewed on a case-by-case basis.

Aside from the nominal spectral purity requirements outlined above, 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, excessive bandwidth, harmonics, or other distortions 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.

FREQUENTLY USED TERMS

access control: The tone, code, or other in-band signaling used to qualify a signal as being valid, and which results in the acceptance and/or retransmission of that signal. A method of access control is required on all repeater and auxiliary link receivers at all times; "noise squelch" and analogous open-access digital equivalents are not permitted. The specific access control tone or code is a fixed, coordinated, parameter for repeater and auxiliary link coordinations. The tone/code must not duplicate that of any other operations on the same frequency within ARCC's service area or that of any neighboring frequency coordination council.

adjacent channel: The next channel above or below a given channel based on the *channel spacing*.

auxiliary link: Terrestrial point-to-point RF communication on a single frequency between two fixed stations operating within a system of coordinated repeaters and/or auxiliary links, with one being the transmitting station for the auxiliary link and the other the receiving station. Bidirectional communication on the same frequency or different frequencies are coordinated individually as separate auxiliary links (one per direction).

channel: One of multiple spectral partitions derived by segmenting a wider spectral range, with each capable of supporting communication between two or more stations. A channel is typically identified by the unmodulated carrier frequency, or by the center frequency for non-carrier emissions or those comprised of multiple carriers.

channel spacing: The frequency increment between adjacent channel centers. For example, on 2 meters the FM simplex frequencies of 146.505, 146.520, 146.535, and 146.550 are spaced at 15 kHz intervals. Operating on frequencies that do not maintain the recognized channel spacing is contrary to the bandplans, and in the case of repeaters and auxiliary links, is not permissible for coordination.

channelized: A *subband* which has been segmented into channels with a uniform *channel spacing*.

co-channel: Two or more stations that utilize the same channel(s) whether within the same coverage area or otherwise.

coordinated: A repeater or auxiliary link station that has met the requirements for frequency coordination based on compliance with all applicable regulations and policies and lack of predicted interference to any other incumbent coordinated operations.

input: the frequency on which the repeater receives transmissions from users

narrowband: Channelized FM and digital emissions with 11.2 kHz or less occupied bandwidth.

non-coordinated: Activities that not eligible for repeater or auxiliary link frequency coordination.

offset: the difference between the repeater's output frequency and input frequency. For example, a repeater that has an output (transmitter) on 146.700 MHz and an input (receiver) on 146.100 MHz has a negative (-) offset of 0.600 MHz, or -600 kHz. A repeater with an output on 443.000 MHz and input on 448.000 MHz has a positive (+) offset of 5 MHz. The correct offset value and direction (positive versus negative) for a given repeater frequency pair is dictated by the bandplan.

output: the frequency on which the repeater transmits out to users

repeater: A terrestrial station that receives the transmissions of one amateur station on one frequency (input channel) and retransmits the same content in real time (propagation and coding delays not withstanding) on a different channel or channels (output channel).

simplex: Communications on a single frequency by and between two or more stations. In the context of ARCC bandplans, subbands reserved for simplex are intended to be used by stations operating under local control, and explicitly not for use by repeaters (either in-band or crossband), auxiliary links, remotely-controlled stations, linked or networked remote stations including RoIP "nodes" and "hotspots", or other purposes. By FCC regulation, simplex stations may not be automatically controlled and thus require that the control operator be present, and have control, at all times. Store-and-forward messaging systems (e.g. "digipeaters") that operate on a single frequency may operate in the digital simplex subbands.

subband: A spectral range that is part over a larger range (band) within which multiple *channels* exist. In a given subband, multiple communications occur (typically one per *channel*), which all communications using the same or similar mode(s) and/or emission(s). The amateur radio bands are divided into subbands pursuant to FCC regulations which dictate in what spectrum certain emissions and/or modes are permitted, as well as to prevent interference by and between incompatible emission/modes.

SNP: Shared, non-protected. Specific frequencies that are set aside for coordinated repeaters which, due to a combination of limited coverage, light utilization, or portable/itinerant use, are able to share a common frequency despite overlapping coverage. Coordination of SNP repeaters does not involve interference analysis with respect to other SNP repeaters in ARCC territory or other SNP repeaters in adjacent coordinators' territories. Coordinated SNP repeaters are not protected from interference to/from each other and are expected to cooperate to share the same spectrum, but they <u>are</u> <u>coordinated</u>, and as such, are protected from interference from uncoordinated repeaters per FCC regulation. ARCC assigns access control tones/codes

for SNP operations such that duplication of the use of tones/codes is avoided both within ARCC territory as well as adjacent territories.

spacing: See *channel spacing*

uncoordinated*:* A repeater or auxiliary link that is operating without coordination, or which continues to operate after coordination has been cancelled, or which is operating in non-compliance with the terms of its current coordination.

waiting list: In areas where, in a given frequency band, there are few or no frequencies available for new operations, coordination applicants can request to be added to the waiting list. Whenever an existing repeater or auxiliary link coordination is modified or terminated, the waiting list is reviewed to determine if an opportunity has been created which would allow the waiting list application to be processed, with the applications that have been on the waiting list the longest given priority.

wideband: Channelized FM and digital emissions with greater than 11.2 kHz occupied bandwidth.

10 METER BANDPLAN

28.000	-	29.500	CW, SSB, Beacons, Digital, SSTV, etc. per FCC and international HF bandplans
29.520	**-**	**29.580**	**FM Voice Repeater Inputs (20 kHz spacing)**
29.600			National FM Voice Simplex Frequency
29.620	**-**	**29.680**	**FM Voice Repeater Outputs (20 kHz spacing)**

10m FM Voice Repeater Pairs (-100 kHz offset):

29.620	29.640	29.660	29.680

6 METER BANDPLAN

50.000	-	50.600	CW, SSB, DX, Beacons, AM, etc.
50.610	-	50.790	Digital Simplex (20 kHz spacing)
50.800	-	51.000	Radio Remote Control
51.000	-	51.100	Pacific DX window
51.120	**-**	**51.180**	**Digital Repeater Inputs (20 kHz spacing)**
51.200			Digital Simplex
51.220	**-**	**51.480**	**FM Voice Repeater Inputs (20 kHz spacing)**[1]
51.500	-	51.600	FM Voice Simplex Channels (20 kHz spacing)
51.620	**-**	**51.680**	**Digital Repeater Outputs (20 kHz spacing)**
51.700	-		Digital Simplex Calling Frequency
51.720	**-**	**51.980**	**FM Voice Repeater Outputs (20 kHz spacing)**[1]
52.010	**-**	**52.470**	**FM Voice Repeater Inputs (20 kHz spacing)**[2]
52.490	-	52.550	FM Voice Simplex (20 kHz spacing typical)
52.525			National FM Voice Simplex Calling Frequency
52.570	**-**	**52.990**	**FM Voice Repeater Inputs (20 kHz spacing)**[2]
53.010	**-**	**53.470**	**FM Voice Repeater Outputs (20 kHz spacing)**[2]
53.490	**-**	**53.55**	FM Voice simplex (20 kHz spacing)
53.570	**-**	**53.990**	**FM Voice Repeater Outputs (20 kHz spacing)**[2]

[1] ARCC coordinates repeaters with -500 kHz offset in the 51 MHz repeater subbands specified above. ARCC recommends split-site repeaters utilize the 51 MHz subband.

[2] ARCC coordinates repeaters using -1 MHz transmit-receive offset in the 52/53 MHz repeater subbands specified above. ARCC recommends single-site repeaters utilize the 52/53 MHz repeater subband. Some coordinations grandfathered into ARCC may use non-standard offsets in this segment.

6m FM Voice Repeater Pairs (-500 kHz offset):

51.720	51.760	51.800	51.840	51.880	51.920	51.960
51.740	51.780	51.820	51.860	51.900	51.940	51.980

6m FM Voice Repeater Pairs (-1 MHz offset):

53.010	53.150	53.290	53.430	53.650	53.790	53.930
53.030	53.170	53.310	53.450	53.670	53.810	53.950
53.050	53.190	53.330	53.470	53.690	53.830	53.970
53.070	53.210	53.350	53.570	53.710	53.850	53.990
53.090	53.230	53.370	53.590	53.730	53.870	
53.110	53.250	53.390	53.610	53.750	53.890	
53.130	53.270	53.410	53.630	53.770	53.910	

6m Digital Repeater Pairs (-500 kHz offset):

51.62	51.64	51.66	51.68

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2 METER BANDPLAN

144.000	-	144.300	Weak signal modes only (CW, SSB, EME, Beacons)
144.310	-	144.370	FM Voice Simplex (20 kHz spacing)
144.390			National APRS digital channel
144.400	-	144.500	Reserved satellite/space subband
144.510	**-**	**144.890**	**FM Voice Repeater Inputs (20 kHz spacing)**[3]
144.910	-	145.090	Digital simplex (20 kHz spacing)
145.110	**-**	**145.490**	**FM Voice Repeater Outputs (20 kHz spacing)**[3]
145.510	-	145.790	Digital and experimental modes (20 kHz spacing) [5]
145.800	-	146.000	International satellite-exclusive subband
146.010	**-**	**146.385**	**FM Voice Repeater Inputs (15 kHz spacing)**[3]
146.400	-	146.430	FM Voice Simplex (15 kHz spacing)
146.445	**-**	**146.490**	**FM Voice Repeater Outputs (15 kHz spacing)**[4]
146.505	-	146.595	FM Voice Simplex (15 kHz spacing)
146.610	**-**	**147.390**	**FM Voice Repeater Outputs (15 kHz spacing)**[3]
147.410	-	147.425	FM Voice Simplex (15 kHz spacing)
147.445	**-**	**147.490**	**FM Repeater Inputs (15 kHz spacing)**[4]
147.505	-	147.580	FM Voice Simplex (15 kHz spacing)
147.600	**-**	**147.990**	**FM Voice Repeater Inputs (15 kHz spacing)**[3]

[3] Repeater outputs on or above 147.000 have inputs 600 kHz higher than the output. Repeater outputs below 147.000 have inputs 600 kHz lower than the output. The exception to this rule are the 1-MHz pairs as described in footnote 4 below.

[4] Repeater pairs in this segment use a 1 MHz offset, with the repeater transmitter channels in the 146 MHz range and the repeater receiver channels in the 147 MHz range. 146.475+ and 146.490+ are available only for limited-coverage repeaters and are subject to additional coordination processes – refer to the *SNP Policies* document or contact ARCC for details.

[5] Fifteen wideband/narrowband channels (145.510, 145.530, 145.550, 145.570, 145.590, 145.610, 145.630, 145.650, 145.670, 145.690, 145.710, 145.730, 145.750, 145.770, 145.790). Only narrowband operations are permissible by regulation on 145.790 due to the international satellite subband. Repeater operation expressly prohibited by FCC regulation. See the ***Experimental and Low-Power Subbands*** section above for details.

2m FM Voice Repeater Pairs (-600 kHz offset):

145.110	145.250	145.390	146.625	146.730	146.835	146.940
145.130	145.270	145.410	146.640	146.745	146.850	146.955
145.150	145.290	145.430	146.655	146.760	146.865	146.970
145.170	145.310	145.450	146.670	146.775	146.880	146.985
145.190	145.330	145.470	146.685	146.790	146.895	
145.210	145.350	145.490	146.700	146.805	146.910	
145.230	145.370	146.610	146.715	146.820	146.925	

2m FM Voice Repeater Pairs (+600 kHz offset):

147.000	147.075	147.150	147.225	147.300	147.375
147.015	147.090	147.165	147.240	147.315	147.390
147.030	147.105	147.180	147.255	147.330	
147.045	147.120	147.195	147.270	147.345	
147.060	147.135	147.210	147.285	147.360	

2m FM Voice Repeater Pairs (+1 MHz offset):

146.445	146.460	146.475	146.490

1.25 METER BANDPLAN

222.000	-	222.150	Weak signal modes only (CW, SSB, EME, Beacons)
222.160	**-**	**223.380**	**FM Voice Repeater Inputs (20 kHz spacing)**
223.400	-	223.480	Digital Simplex (20 kHz spacing)
223.500	-	223.540	FM Voice Simplex (20 kHz spacing)
223.560	**-**	**223.600**	**FM Voice Auxiliary Links (20 kHz spacing)**
223.620	-	223.740	Digital Simplex (20 kHz spacing)
223.760	**-**	**224.980**	**FM Voice Repeater Outputs (20 kHz spacing)**

1.25m FM Voice Repeater Pairs (-1.6 MHz offset):

223.760	223.940	224.120	224.300	224.480	224.660	224.840
223.780	223.960	224.140	224.320	224.500	224.680	224.860
223.800	223.980	224.160	224.340	224.520	224.700	224.880
223.820	224.000	224.180	224.360	224.540	224.720	224.900
223.840	224.020	224.200	224.380	224.560	224.740	224.920
223.860	224.040	224.220	224.400	224.580	224.760	224.940
223.880	224.060	224.240	224.420	224.600	224.780	224.960
223.900	224.080	224.260	224.440	224.620	224.800	224.980
223.920	224.100	224.280	224.460	224.640	224.820	

1.25m FM Voice Auxiliary Links Frequencies:

223.560	223.580	223.600

70 CENTIMETER BANDPLAN

420.0000	**-**	**426.0000**	**ATV Repeater Output Primary (421.250 visual carrier)**[5]
424.0125	**-**	**424.9875**	**FM Voice Auxiliary Links Secondary (12.5 kHz spacing)**[6]
425.0000	**-**	**431.0000**	**ATV Input Primary (426.250 visual carrier)**[7]
430.0125	**-**	**430.9875**	**FM Voice Auxiliary Links Secondary (12.5 kHz spacing)** [6]
431.0000	-	432.0000	Reserved for future assignment
432.0000	-	433.0000	Weak signal modes only (CW, SSB, EME, Beacons)
433.0250	**-**	**434.9750**	**FM Voice Auxiliary Links (12.5 kHz spacing)**
435.0000	-	438.0000	International satellite-exclusive subband
438.0125	-	438.2875	Indoor antenna/low-power single-frequency remote bases and hotspots Indoor antenna/low-power duplex hotspot inputs[8]
438.3000	**-**	**439.7000**	Reserved for next-phase bandplan modifications
439.7125	-	439.9875	Outdoor antenna single-frequency remote bases/hotspots, Indoor/low-power duplex hotspot outputs, Crossband repeater inputs and outputs, Experimental modes[9]
440.0000	**-**	**440.0750**	**Digital repeater input/outputs (25 kHz spacing)**[12]
440.1000	**-**	**440.9000**	**FM Voice Repeater Inputs/Outputs (25 kHz spacing)** [11, 12]
440.9250	-	441.0750	Digital simplex (25 kHz spacing)
441.1000	**-**	**444.9750**	**FM Voice Repeater Inputs/Outputs (25 kHz spacing)** [11, 12]
445.0000	**-**	**445.0750**	**Digital repeater input/outputs (25 kHz spacing)**[12]
445.1000	**-**	**445.9000**	**FM Voice Repeater Inputs/Outputs (25 kHz spacing)** [11, 12]
445.9250	-	446.0750	FM Voice Simplex
446.1000	**-**	**446.9750**	**FM Voice Repeater Inputs/Outputs Links (25 kHz spacing)** [11, 12]
447.0000	**-**	**449.9750**	**FM Voice Repeater Inputs and Outputs (25 kHz spacing)**[11, 12]

[5] The 420 to 426 MHz subband is the primary ATV repeater output channel, with visual carrier on 421.250 MHz. ARCC strongly encourages cross-band ATV operations between 70 centimeters and the higher bands. ATV operations must use horizontal polarization.

[6] FM auxiliary links in the 424 to 425 MHz and 430 to 431 MHz segments have secondary status to primary ATV operations. FM auxiliary links must use vertical polarization and directional antennas with a minimum of 9 dBi forward gain and 15 dB front/back and front/side ratio.

[7] The 425 to 431 MHz subband is the primary ATV input channel, with visual carrier on 426.250 MHz. ARCC strongly encourages cross-band ATV operations between 70 centimeters and the higher bands. ATV operations must use horizontal polarization.

[8] Indoor, low-power (100 mW or less effective isotropic radiated power) analog and digital simplex remote bases, RoIP nodes/hotspots, and similar interconnected or networked NON-duplex operations. Eleven wideband channels on 25 kHz centers (438.025, 438.050, 438.075, 438.100, 438.125, 438.150, 438.175, 438.200, 438.225, 438.250, 438.275) and twelve interstitial narrowband channels (438.0125, 438.0375, 438.0625, 438.0875, 438.1125, 438.1375, 438.1625, 438.1875, 438.2125, 438.2375, 438.2625, 438.2875). See the ***Experimental and Low-Power Subbands*** section above for additional detail.

[9] Analog and digital simplex remote bases, RoIP nodes/hotspots, and similar single-frequency operations, either with or without network connectivity, which utilize outdoor antennas and/or exceed 100 mW EIRP. Itinerant crossband repeaters otherwise ineligible for frequency coordination may operate with inputs or outputs in this subband. Duplex hotspots may use this subband for outputs paired with inputs -1.7 MHz below (refer to the 438.0125-438.2875 subband for details). Eleven wideband channels on 25 kHz centers (439.725, 439.750, 439.775, 439.800, 439.825, 439.850, 439.875, 439.900, 439.925, 439.950, 439.975), and twelve interstitial narrowband channels (439.7125, 439.7375, 439.7625, 439.7875, 439.8125, 439.8375, 439.8625, 439.8875, 439.9125, 439.9375, 439.9625, 439.9875). See the ***Experimental and Low-Power Subbands*** section above for additional detail.

[10] This subband may also be used for miscellaneous and experimental operations for which there does not otherwise exist applicable subbands on 70cm, with all emissions within -50 dBc constrained to the spectral limits of the subband.

[11] All repeater FM repeater pairs use 5 MHz transmit/receive spacing. Repeaters on odd 25 kHz pairs (44x.x25 and 44x.x75) will transmit high and receive low. Repeaters on even 25 kHz pairs (44x.x00 and 44x.x50) will transmit low and receive high

[12] Narrowband FM and digital repeaters will be offset +6.25 kHz or -6.25 kHz from the wideband channel center, thereby allowing two narrowband operations to coexist at 12.5 kHz spacing within the nominal bandwidth normally occupied by a single wideband operation. The duplex offset direction (positive or negative) will follow the same convention as the wideband channel center in either case. Wideband FM repeaters applying to modify an existing coordination to convert to digital operation will be required to relocate to the digital subband, unless no frequencies exist therein, in which case they will operate +6.25 kHz or -6.25 kHz from the previously-coordinated analog channel center.

70cm FM Voice Repeater Pairs (+5 MHz offset):

440.100	440.800	441.650	442.350	443.050	443.750	444.450
440.150	440.850	441.700	442.400	443.100	443.800	444.500
440.200	440.900	441.750	442.450	443.150	443.850	444.550
440.250	441.100	441.800	442.500	443.200	443.900	444.600
440.300	441.150	441.850	442.550	443.250	443.950	444.650
440.350	441.200	441.900	442.600	443.300	444.000	444.700
440.400	441.250	441.950	442.650	443.350	444.050	444.750
440.450	441.300	442.000	442.700	443.400	444.100	444.800
440.500	441.350	442.050	442.750	443.450	444.150	444.850
440.550	441.400	442.100	442.800	443.500	444.200	444.900
440.600	441.450	442.150	442.850	443.550	444.250	444.950
440.650	441.500	442.200	442.900	443.600	444.300	
440.700	441.550	442.250	442.950	443.650	444.350	
440.750	441.600	442.300	443.000	443.700	444.400	

70cm FM Voice Repeater Pairs (-5 MHz offset):

445.125	445.825	446.725	447.425	448.125	448.825	449.525
445.175	445.875	446.775	447.475	448.175	448.875	449.575
445.225	446.125	446.825	447.525	448.225	448.925	449.625
445.275	446.175	446.875	447.575	448.275	448.975	449.675
445.325	446.225	446.925	447.625	448.325	449.025	449.725
445.375	446.275	446.975	447.675	448.375	449.075	449.775
445.425	446.325	447.025	447.725	448.425	449.125	449.825
445.475	446.375	447.075	447.775	448.475	449.175	449.875
445.525	446.425	447.125	447.825	448.525	449.225	449.925
445.575	446.475	447.175	447.875	448.575	449.275	449.975
445.625	446.525	447.225	447.925	448.625	449.325	
445.675	446.575	447.275	447.975	448.675	449.375	
445.725	446.625	447.325	448.025	448.725	449.425	
445.775	446.675	447.375	448.075	448.775	449.475	

70cm FM Voice Auxiliary Links:

424.0125	424.0750	424.1375	424.2000	424.2625	424.3250	424.3875
424.0250	424.0875	424.1500	424.2125	424.2750	424.3375	424.4000
424.0375	424.1000	424.1625	424.2250	424.2875	424.3500	424.4125
424.0500	424.1125	424.1750	424.2375	424.3000	424.3625	424.4250
424.0625	424.1250	424.1875	424.2500	424.3125	424.3750	424.4375

424.4500	424.9625	430.4875	433.0125	433.5250	434.0375	434.5500
424.4625	424.9750	430.5000	433.0250	433.5375	434.0500	434.5625
424.4750	424.9875	430.5125	433.0375	433.5500	434.0625	434.5750
424.4875	430.0125	430.5250	433.0500	433.5625	434.0750	434.5875
424.5000	430.0250	430.5375	433.0625	433.5750	434.0875	434.6000
424.5125	430.0375	430.5500	433.0750	433.5875	434.1000	434.6125
424.5250	430.0500	430.5625	433.0875	433.6000	434.1125	434.6250
424.5375	430.0625	430.5750	433.1000	433.6125	434.1250	434.6375
424.5500	430.0750	430.5875	433.1125	433.6250	434.1375	434.6500
424.5625	430.0875	430.6000	433.1250	433.6375	434.1500	434.6625
424.5750	430.1000	430.6125	433.1375	433.6500	434.1625	434.6750
424.5875	430.1125	430.6250	433.1500	433.6625	434.1750	434.6875
424.6000	430.1250	430.6375	433.1625	433.6750	434.1875	434.7000
424.6125	430.1375	430.6500	433.1750	433.6875	434.2000	434.7125
424.6250	430.1500	430.6625	433.1875	433.7000	434.2125	434.7250
424.6375	430.1625	430.6750	433.2000	433.7125	434.2250	434.7375
424.6500	430.1750	430.6875	433.2125	433.7250	434.2375	434.7500
424.6625	430.1875	430.7000	433.2250	433.7375	434.2500	434.7625
424.6750	430.2000	430.7125	433.2375	433.7500	434.2625	434.7750
424.6875	430.2125	430.7250	433.2500	433.7625	434.2750	434.7875
424.7000	430.2250	430.7375	433.2625	433.7750	434.2875	434.8000
424.7125	430.2375	430.7500	433.2750	433.7875	434.3000	434.8125
424.7250	430.2500	430.7625	433.2875	433.8000	434.3125	434.8250
424.7375	430.2625	430.7750	433.3000	433.8125	434.3250	434.8375
424.7500	430.2750	430.7875	433.3125	433.8250	434.3375	434.8500
424.7625	430.2875	430.8000	433.3250	433.8375	434.3500	434.8625
424.7750	430.3000	430.8125	433.3375	433.8500	434.3625	434.8750
424.7875	430.3125	430.8250	433.3500	433.8625	434.3750	434.8875
424.8000	430.3250	430.8375	433.3625	433.8750	434.3875	434.9000
424.8125	430.3375	430.8500	433.3750	433.8875	434.4000	434.9125
424.8250	430.3500	430.8625	433.3875	433.9000	434.4125	434.9250
424.8375	430.3625	430.8750	433.4000	433.9125	434.4250	434.9375
424.8500	430.3750	430.8875	433.4125	433.9250	434.4375	434.9500
424.8625	430.3875	430.9000	433.4250	433.9375	434.4500	434.9625
424.8750	430.4000	430.9125	433.4375	433.9500	434.4625	434.9750
424.8875	430.4125	430.9250	433.4500	433.9625	434.4750	434.9875
424.9000	430.4250	430.9375	433.4625	433.9750	434.4875	
424.9125	430.4375	430.9500	433.4750	433.9875	434.5000	
424.9250	430.4500	430.9625	433.4875	434.0000	434.5125	
424.9375	430.4625	430.9750	433.5000	434.0125	434.5250	
424.9500	430.4750	430.9875	433.5125	434.0250	434.5375	

70cm VSB-AM ATV Repeater Channels:

421.250 visual (output primary)
426.250 visual (input primary)

70cm Digital Repeater Pairs (+5 MHz offset):

440.000 440.050

70cm Digital Repeater Pairs (-5 MHz offset):

445.025 445.075

33 CENTIMETER BANDPLAN

902.0000	-	902.3000	Weak signal modes (CW, SSB, EME, beacons)
902.3125	**-**	**902.4875**	**Narrowband FM/DV repeater inputs (12.5 kHz spacing)**
902.5000			FM simplex calling frequency
902.5125	**-**	**902.9750**	**Narrowband FM/DV repeater inputs (12.5 kHz spacing)**
902.9875			Narrowband SNP/portable repeater input
903.0000	-	903.4000	Weak signal modes (CW, SSB, EME, beacons)
903.4125	**-**	**904.9875**	**Digital auxiliary links primary, digital simplex secondary (spacing based on OBW)**
905.0250	**-**	**905.9750**	**Digital repeater inputs (spacing based on OBW)**
906.0250	**-**	**908.4750**	**FM repeater inputs (25 kHz spacing)**
906.5000			FM simplex
906.5250	**-**	**908.9750**	**FM repeater inputs (25 kHz spacing)**
909.0000	**-**	**915.0000**	**ATV repeater input**
915.0250	**-**	**916.9750**	**FM auxiliary links (25 kHz spacing)**
917.0250	**-**	**917.9750**	**Digital repeater outputs (channel spacing based on OBW)**
918.0250	**-**	**920.4750**	**FM repeater outputs (25 kHz spacing)**
918.5000			FM simplex
918.5250	**-**	**920.9750**	**FM repeater outputs (25 kHz spacing)**
921.0250	-	921.9750	FM simplex
921.0000	**-**	**927.0000**	**ATV repeater output**
927.0125	**-**	**927.3000**	**Narrowband FM/DV auxiliary links (12.5 kHz spacing)**
927.3125	**-**	**927.4875**	**Narrowband FM/DV repeater outputs (12.5 kHz spacing)**
927.5000			FM simplex calling frequency
927.5125	**-**	**902.9750**	**Narrowband FM/DV repeater outputs (12.5 kHz spacing)**
927.9875			Narrowband SNP/portable repeater output

33cm FM Voice Repeater Pairs (-12 MHz offset):

918.0250	918.4500	918.9000	919.3250	919.7500	920.1750	920.6250
918.0500	918.4750	918.9250	919.3500	919.7750	920.2000	920.6500
918.0750	918.5250	918.9500	919.3750	919.8000	920.2250	920.6750
918.1000	918.5500	918.9750	919.4000	919.8250	920.2500	920.7000
918.1250	918.5750	919.0000	919.4250	919.8500	920.2750	920.7250
918.1500	918.6000	919.0250	919.4500	919.8750	920.3000	920.7500
918.1750	918.6250	919.0500	919.4750	919.9000	920.3250	920.7750
918.2000	918.6500	919.0750	919.5000	919.9250	920.3500	920.8000
918.2250	918.6750	919.1000	919.5250	919.9500	920.3750	920.8250
918.2500	918.7000	919.1250	919.5500	919.9750	920.4000	920.8500
918.2750	918.7250	919.1500	919.5750	920.0000	920.4250	920.8750
918.3000	918.7500	919.1750	919.6000	920.0250	920.4500	920.9000
918.3250	918.7750	919.2000	919.6250	920.0500	920.4750	920.9250
918.3500	918.8000	919.2250	919.6500	920.0750	920.5250	920.9500
918.3750	918.8250	919.2500	919.6750	920.1000	920.5500	920.9750
918.4000	918.8500	919.2750	919.7000	920.1250	920.5750	
918.4250	918.8750	919.3000	919.7250	920.1500	920.6000	

33cm Narrowband FM/DV Repeater Pairs (-25 MHz offset):

927.3125	927.3375	927.3625	927.3875	927.4125	927.4375	927.4625
927.3250	927.3500	927.3750	927.4000	927.4250	927.4500	927.4750

927.4875	927.5750	927.6500	927.7250	927.8000	927.8750	927.9500
927.5125	927.5875	927.6625	927.7375	927.8125	927.8875	927.9625
927.5250	927.6000	927.6750	927.7500	927.8250	927.9000	927.9750
927.5375	927.6125	927.6875	927.7625	927.8375	927.9125	
927.5500	927.6250	927.7000	927.7750	927.8500	927.9250	
927.5625	927.6375	927.7125	927.7875	927.8625	927.9375	

33cm FM Voice Auxiliary Link Frequencies (25 kHz channels):

915.0250	915.3250	915.6250	915.9250	916.2250	916.5250	916.8250
915.0500	915.3500	915.6500	915.9500	916.2500	916.5500	916.8500
915.0750	915.3750	915.6750	915.9750	916.2750	916.5750	916.8750
915.1000	915.4000	915.7000	916.0000	916.3000	916.6000	916.9000
915.1250	915.4250	915.7250	916.0250	916.3250	916.6250	916.9250
915.1500	915.4500	915.7500	916.0500	916.3500	916.6500	916.9500
915.1750	915.4750	915.7750	916.0750	916.3750	916.6750	916.9750
915.2000	915.5000	915.8000	916.1000	916.4000	916.7000	
915.2250	915.5250	915.8250	916.1250	916.4250	916.7250	
915.2500	915.5500	915.8500	916.1500	916.4500	916.7500	
915.2750	915.5750	915.8750	916.1750	916.4750	916.7750	
915.3000	915.6000	915.9000	916.2000	916.5000	916.8000	

33cm FM Voice Auxiliary Link Frequencies (25 kHz channels):

927.0125	927.0625	927.1125	927.1625	927.2125	927.2625
927.0250	927.0750	927.1250	927.1750	927.2250	927.2750
927.0375	927.0875	927.1375	927.1875	927.2375	927.2875
927.0500	927.1000	927.1500	927.2000	927.2500	927.3000

33cm VSB-AM ATV Repeater Frequencies:

910.2500 visual (input)

922.2500 visual (output) – grandfathered systems may use 923.250

23 CENTIMETER BANDPLAN

1240.0000	**-**	**1255.0000**	**ATV Channel #1**[13]
1255.0000	**-**	**1255.9750**	**Digital Repeater Outputs (25 kHz spacing)**
1256.0000	**-**	**1256.9750**	**Digital Auxiliary Links (25 and 100 kHz channels)**
1257.0000	**-**	**1259.9875**	**FM Voice Auxiliary Links (12.5 kHz spacing)**
1260.0000	-	1267.0000	Satellite uplinks and experimental modes
1267.0000	**-**	**1267.9750**	**Digital Repeater Inputs (25 kHz spacing)**
1268.000	-	1271.0000	Reserved for future assignment
1271.0000	**-**	**1275.9750**	**FM Voice Repeater Inputs (25 kHz spacing)**
1276.0000	**-**	**1291.0000**	**ATV Channel #2**[13]
1291.0000	**-**	**1295.9750**	**FM Voice Repeater Outputs (25 kHz spacing)**
1296.0000	-	1296.4000	Weak Signal Only (EME, CW, SSB, Beacons)
1296.4000	-	1296.6000	Linear translator outputs (crossband)
1296.6000	-	1296.8000	Reserved for future assignment
1296.8000	-	1297.0000	Experimental Beacons Only
1297.0000	**-**	**1300.0000**	**Wideband Digital Auxiliary Links (100+ kHz bandwidth per channel)** [14]

[13] ATV Channels #1 and #2 may be used as a single FM ATV channel or each may be split into two AM-VSB ATV channels. When used as single FM ATV channels, the carrier frequency shall be in the center of the channel, i.e. 1247.500 and 1283.500 respectively. When used split, they are designated ATV channels 1A/1B and 2A/2B. AM-VSB operations must use the frequency 1.25 MHz above the bottom of the subband and 10.25 MHz above the bottom of the subband as the two VSB ATV visual carrier frequencies.

[14] Non-coordinated wideband digital simplex stations may operate in this subband on a non-interference basis to coordinated auxiliary links.

23cm FM Voice Repeater Pairs (-20 MHz offset):

1291.000	1291.600	1292.200	1292.800	1293.400	1294.000	1294.600
1291.025	1291.625	1292.225	1292.825	1293.425	1294.025	1294.625
1291.050	1291.650	1292.250	1292.850	1293.450	1294.050	1294.650
1291.075	1291.675	1292.275	1292.875	1293.475	1294.075	1294.675
1291.100	1291.700	1292.300	1292.900	1293.500	1294.100	1294.700
1291.125	1291.725	1292.325	1292.925	1293.525	1294.125	1294.725
1291.150	1291.750	1292.350	1292.950	1293.550	1294.150	1294.750
1291.175	1291.775	1292.375	1292.975	1293.575	1294.175	1294.775
1291.200	1291.800	1292.400	1293.000	1293.600	1294.200	1294.800
1291.225	1291.825	1292.425	1293.025	1293.625	1294.225	1294.825
1291.250	1291.850	1292.450	1293.050	1293.650	1294.250	1294.850
1291.275	1291.875	1292.475	1293.075	1293.675	1294.275	1294.875
1291.300	1291.900	1292.500	1293.100	1293.700	1294.300	1294.900
1291.325	1291.925	1292.525	1293.125	1293.725	1294.325	1294.925
1291.350	1291.950	1292.550	1293.150	1293.750	1294.350	1294.950
1291.375	1291.975	1292.575	1293.175	1293.775	1294.375	1294.975
1291.400	1292.000	1292.600	1293.200	1293.800	1294.400	1295.000
1291.425	1292.025	1292.625	1293.225	1293.825	1294.425	1295.025
1291.450	1292.050	1292.650	1293.250	1293.850	1294.450	1295.050
1291.475	1292.075	1292.675	1293.275	1293.875	1294.475	1295.075
1291.500	1292.100	1292.700	1293.300	1293.900	1294.500	1295.100
1291.525	1292.125	1292.725	1293.325	1293.925	1294.525	1295.125
1291.550	1292.150	1292.750	1293.350	1293.950	1294.550	1295.150
1291.575	1292.175	1292.775	1293.375	1293.975	1294.575	1295.175

1295.200	1295.325	1295.450	1295.575	1295.700	1295.825	1295.950
1295.225	1295.350	1295.475	1295.600	1295.725	1295.850	1295.975
1295.250	1295.375	1295.500	1295.625	1295.750	1295.875	
1295.275	1295.400	1295.525	1295.650	1295.775	1295.900	
1295.300	1295.425	1295.550	1295.675	1295.800	1295.925	

23cm FM Voice Auxiliary Link Frequencies:

1257.0000	1257.4375	1257.8750	1258.3125	1258.7500	1259.1875	1259.6250
1257.0125	1257.4500	1257.8875	1258.3250	1258.7625	1259.2000	1259.6375
1257.0250	1257.4625	1257.9000	1258.3375	1258.7750	1259.2125	1259.6500
1257.0375	1257.4750	1257.9125	1258.3500	1258.7875	1259.2250	1259.6625
1257.0500	1257.4875	1257.9250	1258.3625	1258.8000	1259.2375	1259.6750
1257.0625	1257.5000	1257.9375	1258.3750	1258.8125	1259.2500	1259.6875
1257.0750	1257.5125	1257.9500	1258.3875	1258.8250	1259.2625	1259.7000
1257.0875	1257.5250	1257.9625	1258.4000	1258.8375	1259.2750	1259.7125
1257.1000	1257.5375	1257.9750	1258.4125	1258.8500	1259.2875	1259.7250
1257.1125	1257.5500	1257.9875	1258.4250	1258.8625	1259.3000	1259.7375
1257.1250	1257.5625	1258.0000	1258.4375	1258.8750	1259.3125	1259.7500
1257.1375	1257.5750	1258.0125	1258.4500	1258.8875	1259.3250	1259.7625
1257.1500	1257.5875	1258.0250	1258.4625	1258.9000	1259.3375	1259.7750
1257.1625	1257.6000	1258.0375	1258.4750	1258.9125	1259.3500	1259.7875
1257.1750	1257.6125	1258.0500	1258.4875	1258.9250	1259.3625	1259.8000
1257.1875	1257.6250	1258.0625	1258.5000	1258.9375	1259.3750	1259.8125
1257.2000	1257.6375	1258.0750	1258.5125	1258.9500	1259.3875	1259.8250
1257.2125	1257.6500	1258.0875	1258.5250	1258.9625	1259.4000	1259.8375
1257.2250	1257.6625	1258.1000	1258.5375	1258.9750	1259.4125	1259.8500
1257.2375	1257.6750	1258.1125	1258.5500	1258.9875	1259.4250	1259.8625
1257.2500	1257.6875	1258.1250	1258.5625	1259.0000	1259.4375	1259.8750
1257.2625	1257.7000	1258.1375	1258.5750	1259.0125	1259.4500	1259.8875
1257.2750	1257.7125	1258.1500	1258.5875	1259.0250	1259.4625	1259.9000
1257.2875	1257.7250	1258.1625	1258.6000	1259.0375	1259.4750	1259.9125
1257.3000	1257.7375	1258.1750	1258.6125	1259.0500	1259.4875	1259.9250
1257.3125	1257.7500	1258.1875	1258.6250	1259.0625	1259.5000	1259.9375
1257.3250	1257.7625	1258.2000	1258.6375	1259.0750	1259.5125	1259.9500
1257.3375	1257.7750	1258.2125	1258.6500	1259.0875	1259.5250	1259.9625
1257.3500	1257.7875	1258.2250	1258.6625	1259.1000	1259.5375	1259.9750
1257.3625	1257.8000	1258.2375	1258.6750	1259.1125	1259.5500	1259.9875
1257.3750	1257.8125	1258.2500	1258.6875	1259.1250	1259.5625	
1257.3875	1257.8250	1258.2625	1258.7000	1259.1375	1259.5750	
1257.4000	1257.8375	1258.2750	1258.7125	1259.1500	1259.5875	
1257.4125	1257.8500	1258.2875	1258.7250	1259.1625	1259.6000	
1257.4250	1257.8625	1258.3000	1258.7375	1259.1750	1259.6125	

23cm Digital Repeater Pairs (+12 MHz offset):

1255.000	1255.150	1255.300	1255.450	1255.600	1255.750	1255.900
1255.025	1255.175	1255.325	1255.475	1255.625	1255.775	1255.925
1255.050	1255.200	1255.350	1255.500	1255.650	1255.800	1255.950
1255.075	1255.225	1255.375	1255.525	1255.675	1255.825	1255.975
1255.100	1255.250	1255.400	1255.550	1255.700	1255.850	
1255.125	1255.275	1255.425	1255.575	1255.725	1255.875	

23cm Digital Auxiliary Link Frequencies (25 kHz channels):

1256.625	1256.650	1256.675	1256.700	1256.725	1256.750	1256.775
1256.800	1256.850	1256.900	1256.950			
1256.825	1256.875	1256.925	1256.975			

23cm Digital Auxiliary Link Frequencies (100 kHz channels):

1256.050	1256.150	1256.250	1256.350	1256.450	1256.550

23cm FM ATV Repeater Channels (15 MHz channels):

1247.500	1283.500

23cm VSB-AM ATV Repeater Channels:

1241.250 visual carrier
1250.250 visual carrier
1277.250 visual carrier
1286.250 visual carrier

13CM AND SHORTER

ARCC utilizes the ARRL's suggested bandplan for the 13cm and shorter-wavelength bands <u>only</u>.