
AREA REPEATER COORDINATION COUNCIL (ARCC). INC.

Amateur Radio Repeater and Auxiliary Link Frequency Coordination

Revision C

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INSTRUCTIONS FOR COMPLETING COORDINATION APPLICATION FORMS

INTRODUCTION

There are two types of forms -- one is for repeaters, the other is for auxiliary links. Use the repeater form for FM, ATV, and digital repeaters that will be accessed by users. Use the link form for point-to-point link frequencies, and linking hub transmitters not to be accessed by users directly which are used solely for the interconnection and networking of other coordinated repeaters and auxiliary links.

For ATV and digital operations, use the appropriate form and skip the fields which do not apply. Ensure that the operation type on the frequency(s) specified is permitted per ARCC's bandplans.

For non-standard operations, please use the form most appropriate for the application and include a separate, concise description of the system.

We ask that you only use exact copies of these forms; photocopy these forms as necessary for multiple submissions. Please print or type all information, and fill out all required sections. Completed forms, along with any accompanying documents, should be sent to the ARCC mailing address. Incomplete applications and those that contain inaccurate data will be returned without action. It is strongly suggested that you read ARCC's list of Frequently Asked Questions (FAQ) and review ARCC's bandplans before completing the forms; both are available on ARCC's web site.

GENERAL INFORMATION

Transmitter Callsign: The station callsign that will be sent on the transmitted signal per FCC regulations. It does not necessarily have to be the same as the callsign of the person or group the coordination is issued to provided that the entity to whom the coordination is issued to has the approval of the trustee or licensee of the callsign being used.

Club/Sponsor: The name of the club or sponsor of the repeater. The contents of this field are used for the "Sponsor" field in repeater directories (when applicable).

Issue Coordination To: The person or group specified here will be considered the "owner" of the coordination. Clubs are strongly encouraged to have coordinations issued to the club rather than a club officer or trustee. Think carefully about who you want the holder of the coordination to be - it can't be changed later as ARCC does not allow coordinations to be transferred.

- Callsign:** The callsign of the individual or club the coordination is issued to. For coordinations issued to clubs that do not have a **club** callsign, write "CLUB" in this field.
- Sponsor Type:** If the repeater is sponsored by a club, specify the number of members in the club.
- Web Page URL:** Applicable to repeaters only. If there is a web site associated with this repeater, indicate its URL here. This will be converted into a hyperlink in databases published on ARCC's web site.

APPLICATION PROCESSING INFORMATION

- New:** If this is an application for a repeater or link transmitter that has never been coordinated before, select the first box.
- Modification:** If you are submitting this form to change any of the parameters for a repeater or link transmitter that is currently coordinated, select the second box. Note that if any of the parameters that affect transmitter coverage have changed, including, but not limited to EIRP, HAAT, location, antenna pattern, etc., or if the frequencies have changed, your application will be reviewed in full. If the parameters that have changed do not affect coverage, such as transmitter callsign, contact information, etc. then the changes will be made to the database, typically without any additional delay or review.
- Suggest Alternatives:** If this is an application for a new coordination, you may check off the last box, which requests that ARCC provide you with a frequency or list of frequencies if the one requested cannot be coordinated given the parameters specified in the application. However, it is important to note that if ARCC suggests a frequency or frequency pair to use as an alternative, in no way does it guarantee that it will be interference-free. The entire review process, including the initial probationary period, still applies.
- Waiting List:** If this application is for a frequency band or area in which applications are being accepted only through a waiting list, mark this box. ARCC will return applications, without action, if they are for a band or area for which there is a waiting list unless this box is marked.

FREQUENCIES

- Repeaters:** Specify one frequency per line only. If you do not use a control receiver, specify "NONE" (repeater form only). Note that control channels are a shared resource, i.e. more than one repeater can use a particular frequency in a given area provided they use different PL, DPL, or DTMF codes, and that your choice of control channel has no effect on the processing, acceptance, or denial of a repeater coordination application. Contact ARCC for suggestions as to usable control frequencies and PL tones.
- Auxiliary Links:** Specify the frequency of the link transmitter, and how it is used. For a link transmitter that is activated whenever a signal is received, such as for a remote receiver link, a repeater-to-repeater link, etc., specify the input frequency. For example, a remote receiver that receives the 147.600 input of a 147.000+ repeater and transmits out on the specified link frequency, the input frequency would be 147.600. Specify the PL, DPL, or other access control mechanism on the link transmitter frequency; carrier squelch access is not permitted.

Emission Designator: Use FCC standard emissions designators. Some common emissions designators are listed below:

FM Voice on a 10 kHz channel (10m only):	10K0F3E
FM Voice on a 15 kHz channel (2m above 146 MHz):	15K0F3E
FM Voice on a 20 kHz channel (6m, 2m below 146 MHz, 1.25m):	16K0F3E
FM Voice on a 25 kHz channel (70cm and up):	18K0F3E
Narrowband FM Voice:	11K2F3E
1200 baud AFSK Packet:	16K0F2D
D-Star Digital Voice:	6K00F7W
P25 Digital Voice ("narrowband" Phase I channel):	8K10F1E

GEOGRAPHIC INFORMATION FOR REPEATER/LINK TRANSMITTER SITE AND LINK TARGET SITE

- Facility:** The name of the facility where the transmitter (or receiver for link target site) is located (e.g. WXYZ-TV tower, Sky-High Apartment Building). This will be kept confidential.
- Address, City, State:** Address of the site. This, too, will be kept confidential.
- Location Name to List:** (Repeaters only) Name of the location to show for the repeater in the repeater directory. Some individuals or groups prefer to use a more general or more specific location name in the directories, such as using "Allentown" when the repeater might actually be located a couple of miles outside the city limits. There is only room for 14 characters maximum, including spaces. If you specify more than 14 characters, only the first 14 will be printed. The directory entries are grouped by county in the directory, and then sorted by location name within the county group.
- Base Ground Elev.:** The elevation at ground level of the site.
- Height Above Ground:** Distance from the center of radiation of the antenna to the ground (not height above sea level!).
- Above Avg. Terrain:** Use the FCC-standard method of determining HAAT *It is imperative that the value provided for this field be calculated accurately!* Applications with guesstimated values for HAAT will be returned without action. **Use the HAAT Worksheet to assist you in determining HAAT.**
- Latitude/Longitude:** Coordinates of repeater or link transmitter site. *Please supply data accurate to within 1 second in degrees/minutes/seconds format, NAD27 datum.*
- ASR#:** FCC Antenna Structure Registration number. If the proposed site does not have an ASR#, leave this field blank.
- Link Target Site:** This location is where the auxiliary link is being received at. For example, for a remote receiver for a repeater, the link target site is often the repeater transmitter site. ARCC needs to be able to provide protection for the receiver at the link target site, hence accurate data for this site is just as important as it is for the link transmitter site.

TRANSMITTER POWER

- Transmitter Power Out:** The maximum power output from the transmitter before any external filtering, duplexing, or combining equipment.
- Antenna System Loss:** The total loss, in decibels, through the antenna system. This includes feedline, duplexer, filter cavities, combining equipment, cross-band couplers, lightning arrestors, patch cables, and anything else in the path between the transmitter and the antenna which contribute to power loss.
- Max. Gain at Horizon:** The maximum antenna gain of the main lobe of the antenna's horizontal pattern at the horizon. Note that an antenna with electrical or mechanical downtilt will have less gain at the horizon than the same antenna without downtilt. Consult your antenna manufacturer's catalog or spec sheet to obtain this value. This value is specified in decibels referenced to an isotropic radiator (dBi). Most amateur antenna manufacturers specify their gain values referenced to an isotropic radiator (dBi). Most commercial manufacturers specify gain values referenced to a dipole (dBd). For manufacturers that do not specify dBd or dBi, assume dBi.
- EIRP:** This is the product of the transmitter power output, plus antenna gain, minus system losses. You can leave this field blank and the EIRP will be calculated for you provided you have filled in the above three fields. **Use the EIRP Worksheet to assist you in calculating EIRP properly.**

ANTENNA RADIATION PATTERN

- Omnidirectional, top:** An top-mounted antenna that radiates equally well in all horizontal directions.
- Omnidirectional, side:** An omnidirectional antenna mounted on the side of the tower. Side-mounted antennas typically have a distorted pattern due to proximity to the metallic tower. Be sure to note the shadowed direction and favored direction of a side-mounted omni, using degrees relative to true north (e.g. east = 90 degrees).
- Elliptical/Bidirectional:** An antenna that has two major lobes opposite each other by 180 degrees. For the major lobe axis, specify the bearing of either one of the major lobes (it is assumed that the other major lobe is 180 degrees opposite the one specified). Specify the half-power (-3dB) beamwidth of one of the major lobes. The front-to-side ratio is the ratio of maximum gain in the major lobe to the gain 90 degrees off the major lobe. These parameters should be included in manufacturer's spec sheets.
- Cardiod/Unidirectional:** An antenna that radiates primarily in one direction. Examples of this type of antenna are yagis, corner reflectors, and dipole arrays with all elements on the same side of the mast or tower. Specify the bearing of the center of the major lobe, the half-power (-3dB) beamwidth of the major lobe, and the front-to-back ratio. These parameters should be listed in manufacturer's spec sheets.
- Antenna Polarization:** Polarization of the transmitting antenna. Please note that only certain polarizations are allowed for certain operation types. Please review ARCC's bandplans for details.

REPEATER OPERATING PARAMETERS AND SPECIAL FEATURES

Most of the items in this section are self-explanatory. The following are some additional clarifications.

- Usage Policy:** Open repeaters are those which any licensed amateur of applicable license class can use. Closed repeaters are those which are only to be used by amateurs as authorized by the repeater owner/trustee.
- List Rpt. in Directories:** If you select No, your coordination information will not be published in ARCC's public databases (either printed or on the web site), nor distributed to the ARRL or to any other entity soliciting information from ARCC to produce or distribute any type of repeater directory. Auxiliary link and control frequencies are never listed in public directories.
- Linked System:** Select Yes if this repeater is linked to one or more other repeaters. It is suggested that you do not check this box if the repeaters are not linked full-time.
- Remote Base(s):** Indicate if this repeater has a remote base connected to it directly. Do not check this box to imply that repeater users may use remote bases to access this repeater.
- Severe Weather Net:** If this repeater has severe weather nets on a regular basis, such as Skywarn, indicate such.
- List PL/DPL in Dir.:** If you selected Yes to "List Repeater in Directories", you have the option of listing or not listing the PL tone or DPL code for this repeater in published directories.
- Rpt. Access Mode:** Select the appropriate response and enter the appropriate code as necessary. **Note that all repeaters and auxiliary links require a means of access control; carrier squelch is no longer permitted for new coordination applications or modifications to existing coordinations.** Digital and ATV repeaters are considered to have *de facto* access control. PL or other means of access control is a coordinated parameter and may not be changed without submitting an application to modify the coordination.
- Autopatch Type:** Open autopatches are available for use by anyone, whether or not they are a member of the group or club that sponsors the repeater. Open autopatches typically use the "star-up, pound-down" convention. Closed autopatches are for use only by club members or those authorized by the repeater owner/trustee.
- Alternative Power:** If the repeater has battery or generator backup power, or operates via solar power, indicate such.
- Long-Tone Zero:** Select yes if your repeater supports the long-tone zero protocol for emergency help.
- Bi-Lingual Repeater:** Select yes if the use of a non-English language on the repeater is acceptable. Keep in mind that all station identification done by phone (i.e. either by human speech or synthesized voice) must be done in English per FCC regulations (47 CFR §97.119(b)(2)).

PRIMARY CONTACT/SECONDARY CONTACT

The ARCC will use this information for all future correspondence. The secondary contact will only be used in the event that repeated attempts at contacting the primary contact have failed. The name, callsign, address, and one telephone number are required. Email is a very efficient way to communicate - if you have an email address, please note it. ARCC will use email as the primary means of communication if there are any questions that arise during coordination application processing. If you routinely monitor a frequency, please note it as well.

REPEATER HARDWARE

Completing this section is optional, however, it is recommended that you complete it. It assists ARCC in determining if any errors were made elsewhere in the application by allowing us to correlate the repeater hardware to the specified values for fields such as antenna gain, transmitter power, and antenna system losses.

ADDITIONAL INFORMATION

If there is any additional information that you feel is important that ARCC know about your repeater, such as an obstacle that significantly affects your coverage in a certain direction, or a particular direction that your repeater covers unusually well, or operating characteristics of your repeater that are not adequately explained based solely on the information in these forms, please provide concise information on a separate sheet and attach it to the form.

It is not necessary to include coverage maps, contour maps, details regarding other co-channel or adjacent-channel repeaters, or other information related to interference analysis. ARCC performs detailed interference analysis, including coverage plots of the proposed and incumbent operations, when reviewing applications.

Send completed forms, along with copies of any relevant documents, to the ARCC's mailing address. You can use regular or certified US Postal System mail only.

If you have any questions, please contact ARCC prior to submitting the application form at the postal or email address above.