



## COORDINATION APPLICATION INSTRUCTIONS

Revision K

### INTRODUCTION

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There are two types of coordination application forms: one for repeaters and one for auxiliary links. Use the repeater form for FM, ATV, and digital repeaters that will be accessed by user stations. Use the auxiliary link form for point-to-point auxiliary link frequencies used solely for the interconnection and networking of other coordinated repeaters and auxiliary links, but otherwise not accessed directly by user stations. Note that ARCC will not coordinate an auxiliary link within a repeater subband nor vice-versa, and likewise, the use of repeater input and/or output frequencies to accomplish an auxiliary link is contrary to bandplans and is not permissible. For atypical operations not adequately addressed by the standard forms, please use the form most appropriate for the application and include a separate, concise description of the system.

Please print or type. Complete all required sections. Do not alter the form in any way, nor provide information that is not requested in the margins or elsewhere. It is strongly recommended that you read this document in full, read ARCC's list of Frequently Asked Questions (FAQ) on the web site, review ARCC's bandplans and other coordination policies, and if necessary ask questions before submitting an application. Incomplete applications or those that contain inaccurate data will be dismissed without action.

### GENERAL INFORMATION

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<b>Transmitter Callsign:</b>	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 individual or group the coordination is issued to (i.e. the "Holder of Coordination") provided that the Holder of Coordination has the approval of the trustee of the club station license, or the individual licensee, that holds the callsign being used on the transmitter.
<b>Club/Sponsor:</b>	If applicable, the name of the club, group, or association that sponsors the repeater. The contents of this field are shown in the "Sponsor" field in repeater directories and other publications, but has no bearing on who the Holder of Coordination is. This field is not used for repeaters operated by an individual.
<b>Issue Coordination To:</b>	The person or group specified here will be considered the "Holder of Coordination". This is the only party that has rights or claims to the coordination. <i>Clubs are strongly encouraged to have coordinations issued in the name of the club rather than to a club officer, trustee, or other individual.</i> Think carefully about who you want the Holder of Coordination to be - it cannot be changed later as <b>ARCC does not allow coordinations to be transferred or re-issued to a different Holder of Coordination</b> , including posthumously.
<b>Callsign:</b>	The callsign of the Holder of Coordination. For coordinations issued to a club that does not have a club station license, write "CLUB" in this field.
<b>Sponsor Type:</b>	If the repeater is sponsored by a club or other organization, specify the number of members in the club.

## NEW COORDINATION APPLICATIONS

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- New:** If this is an application for a new repeater or auxiliary link for which a valid coordination does not already exist, select the first box.
- New SNP:** Applications for new SNP (shared, non-protected) repeaters must select this box. Policies and procedures specific to SNP repeaters are published on the ARCC web site.
- Waiting List:** If this application is for a frequency band in an area which applications are being accepted only through a waiting list, mark this box, and only this box. ARCC will dismiss an application if it is in a band/area for which there is a waiting list unless this box is marked. The waiting list policies and procedures are published on ARCC's web site.
- Auxiliary Link Use:** For auxiliary links, specify what the link is used for. Note that auxiliary links may not utilize an omnidirectional antenna with the exception of linking hubs coordinated within the auxiliary link subbands. Each of the associated stations linking into a hub must utilize a directional antenna, each of which requires a separate coordination. Linking hubs may NOT operate on standard repeater pairs – they may only be coordinated in the auxiliary link subbands. Use of a standard repeater as a linking hub is contrary to the intent of the bandplan and repeater frequency coordination will result in cancellation of coordination if used as such.
- Band:** Select the desired band. Do not specify a particular frequency. ARCC will attempt to find an available frequency through database searches and coverage models of ARCC-coordinated systems as well as those in adjacent coordination councils' territories. If a viable frequency cannot be found, unless the application was submitted for a waiting list, it will be dismissed. Applications for SNP pairs will always be approved unless objected to by an adjacent coordination council.

## COORDINATION MODIFICATIONS

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Specify the *currently-coordinated* values for the coordination that the modification application is associated with. New/revised data for the associated modifications is specified in the later sections on the form. Do not enter any data in this section for an application for a new coordination.

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

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- Facility:** The name of the facility where the transmitter (or receiver for link target site) is located (e.g. "WXYZ-TV tower"). This will be kept confidential.
- Address, City, State:** Address of the site. This, too, will be kept confidential.
- Location Name to List:** (Repeaters only) Location name to be shown in repeater directory listings. Some individuals or groups prefer to use a well-known location name in the directories, such as the name of the closest major city, even though the repeater may be located 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 appear. The directory listings are grouped by county, and then sorted by location name within the county group.
- Base Ground Elev.:** The elevation at ground level of the antenna tower or other structure on which the antenna is mounted. If you do not have accurate elevation data, you may leave

this field blank provided that accurate latitude/longitude coordinates are supplied. ARCC will obtain the elevation based on the coordinates given, but the antenna structure (tower, building, etc.) must be visible on satellite imagery at those exact coordinates. If an antenna structure is not visible at the specified coordinates, the application will be dismissed.

- Height Above Ground:** Distance from the center of radiation of the antenna to the ground (not height above sea level!). This field may not be left blank.
- 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 erroneous or estimated values for HAAT will be returned without action. There are on-line HAAT calculators available, including one on the FCC web site. As an alternative, you may leave this field blank and HAAT will be calculated for you provided that all of the other information (ground elevation, antenna height, and coordinates) are accurate.
- Latitude/Longitude:** Coordinates of repeater or link transmitter site. *Please supply data accurate to within 1 second in degrees/minutes/seconds format.* Note that ARCC now uses NAD83 (WGS84) datum for lat/lon coordinates, which is the same datum as used for FCC antenna structure registration (ASR).
- ASR#:** FCC Antenna Structure Registration number. If the proposed site does not have an ASR#, leave this field blank. All antenna structures 200 feet or more in height have an ASR, as well as many lower structures that are along a flight path or are near an airport or heliport.
- Link Target Site:** This location is receiving endpoint of an auxiliary link. For example, for a remote receiver for a repeater, the link target site is often the repeater transmitter site. When performing analyses during the coordination process, the receiver at the link target site requires protection from interference, thus accurate data for this site is equally important as it is for the link transmitter site.

## TRANSMITTER POWER AND EMISSIONS

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- Transmitter Power Out:** The power output from the transmitter's power amplifier before any external filtering, duplexer, combiner, isolator, or any other device.
- Filtering/Combining Loss:** The total loss, in decibels, for all passive filtering. This includes duplexer, filter cavities, combining equipment, isolators, cross-band couplers, lightening arrestors, patch cables, and anything else in the path between the transmitter and the antenna feedline.
- Transmission Line Loss:** The loss in the main feedline from the equipment to the antenna and associated jumpers from the equipment to the feedline and from the feedline to the antenna. Consult the manufacturer's datasheets for loss values. Some manufacturers have loss calculators on their web sites to simplify the process.
- 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), and in such cases, add 2.14 dB to the published value to obtain dBi. For manufacturers that do not specify dBd or dBi, assume dBi.

**EIRP:** Effective Isotropic Radiated Power. This is the total of the transmitter power output, plus antenna gain, minus antenna system losses. You can leave this field blank and the EIRP will be calculated for you provided you have filled in the four fields above.

**Emission(s):** Select which types of emissions are to be used by the repeater. Analog (FM) repeaters should select either wideband FM or narrowband FM but not both. Mixed-mode (FM + digital) repeaters and multiple-mode repeaters should select all emission types that will be repeated. The type of emission is a coordinated parameter and may not be altered without applying for, and receiving approval of, a coordination modification. In some cases, a change in emission will require a change in frequency based on the bandplan.

## ANTENNA RADIATION PATTERN

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**Manufacturer/Model:** Provide the name of the manufacturer of the antenna, and the complete model number.

**Omnidirectional, top:** A 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 the center 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. 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 types of operations; please review ARCC's bandplans for details.

## REPEATER OPERATING PARAMETERS AND SPECIAL FEATURES

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**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 when authorized by the owner.

**List Rpt. in Directories:** If you select No, your coordination information will not be published in the listings on ARCC's web site, nor distributed to any other entity soliciting data from ARCC. Auxiliary link and control frequencies are never listed in public directories, nor is

the site location coordinates, contact information, or any private information ever published.

- Linked System:** Select Yes if this repeater is linked to one or more other repeaters via RF or other means. It is suggested that you do not check this box if the repeater is not linked full-time to one or more other repeaters.
- Remote Base(s):** Indicate if this repeater has a remote base directly connected to it. 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 Access Modes:** If you selected Yes to "List Repeater in Directories", you have the option of listing the access control tone/code in published directories (typical of open repeaters) or not listing the tone/code (typical of closed repeaters).
- Access Control:** Select the appropriate response and enter the appropriate code as necessary. All repeaters and auxiliary links require a means of access control; carrier squelch is not permitted for analog repeaters, nor is the "all access" equivalent permitted for digital repeaters. Select the check boxes that are appropriate for the emission(s) selected in the *Transmitter Power and Emissions* section, and fill in the associated tone/code for each. With the exception of SNP repeaters, applications for analog repeaters should specify a single CTCSS tone or DTCSS code. For SNP repeaters, ARCC will select a tone/code for you that will not duplicate that used by any other co-channel SNP repeater – leave the tone/code value blank. By default, ARCC will select a CTCSS tone for an SNP repeater, but a DTCSS code may be requested instead (indicate such on the form). Mixed-mode (analog + one digital emission) and multi-mode (multiple digital emissions) repeaters should mark all applicable boxes and fill in the associated values.
- The tone/code may for a given repeater or auxiliary link may not duplicate the tone/code of any co-channel system within ARCC's territory or any adjacent coordination council's territory. PL tones included in the Western PA Repeater Council Regional Tone Plan (123.0, 131.8, 173.8, 186.2) should be avoided.
- If there is a conflict between the requested tone/code and another coordinated system, or if the tone/code for is left blank, ARCC will select a viable tone/code for the operation.
- Emissions, access control method, and the associated tones/codes are coordinated parameters, none of which may be altered without applying for, and receiving approval of, a coordination modification.
- 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 (LiTZ) 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 performed by phone (i.e. either by human speech or prerecorded/synthesized voice) must be in English per FCC regulations (47 CFR §97.119(b)(2)).

**Web Page URL:** Applicable to published repeaters only. If there is a web site associated with this repeater, indicate its URL here. This will be converted into a hyperlink in directory listings published on ARCC's web site.

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## **HOLDER OF COORDINATION / PRIMARY CONTACT / SECONDARY CONTACT**

The ARCC will use this information for all future correspondence. If the Holder of Coordination is also the Primary Contact (typical for coordinations held by an individual), leave the Primary Contact information blank. If the Primary Contact is not the same as the Holder of Coordination (common for coordinations held by a club where the license trustee or club officer may be the primary contact), complete both Holder of Coordination and Primary Contact sections. A Secondary Contact is optional. ARCC uses email as the primary means of communication. ***It is the responsibility of the Holder of Coordination and any other contacts to provide accurate and updated contact information as one of the requirements for maintaining coordination!***

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## **REPEATER HARDWARE**

Completing this section is optional. It assists ARCC in determining if any errors were made elsewhere in the application by correlating the parameters provided with the repeater hardware indicated.

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## **180-DAY CONSTRUCTION PERIOD**

If the proposed operation can be coordinated, ARCC will issue a Construction Coordination which is valid for 180 days. It is the responsibility of the coordination holder to notify ARCC that construction has been completed before the 180 day construction deadline, at which point an ARCC representative will confirm that the station is on the air and operating pursuant to its coordinated parameters, and then a permanent Certificate of Coordination will be issued. Notification should be made via email to the address indicated in the Construction Coordination document. If a notification of construction completion is not received before the 180 day expiry of the Construction Coordination, it will be presumed that the station was never constructed, no permanent coordination will be issued, and the coordination record will be deleted from the database. Please do not apply for coordination until you have all of the necessary resources available to ensure that the station will be operational within the 180 day construction period.

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## **APPLICATION FILING**

If there is any additional information that you feel is important that ARCC know about the operation which is not adequately conveyed by the fields on the form, please provide concise information in a separate document. Please do not submit coverage models, contour maps, information regarding other co-channel or adjacent-channel repeaters, or other such information as it will not be used in coordination review. ARCC performs detailed interference analysis, including coverage models of the proposed and incumbent operations, when reviewing applications. Please do not include any information unrelated to the technical aspects of the repeater, as ARCC approves or rejects coordination applications based solely on interference potential and compliance with ARCC and FCC policies and regulations.

The completed application form, along any relevant documents, should be sent as PDF files to the email address indicated on the application form. Be sure to keep a copy of the application and any other exhibits for your own records as well.

Applications with incomplete or inaccurate data will be dismissed without action. If you have any questions, please contact ARCC before submitting the application, as once the application is submitted there is no opportunity to make changes or corrections. At its discretion, ARCC may correct or modify data supplied in an application if it is apparent that a typographical error was made by the applicant in completing the form or when performing any required calculations therein.