

## Oklahoma Repeater Society, Inc.

### Frequency Coordination Guidelines

#### Purpose

These coordination guidelines were developed to provide an efficient and consistent method of providing coordination services to amateur operators in the State of Oklahoma. These guidelines were developed by the Frequency Oversight Committee (FOC) of the Oklahoma Repeater Society, Inc. and are intended to provide direction for the State Frequency Coordinator. These guidelines take effect upon approval of the Frequency Oversight Committee and remain in effect until such time as they are superceded by a future FOC.

#### Standards and Definitions

1. Days- All references to "Day/s" are calendar days.
2. ERP "Effective Radiated Power". A calculated power value derived by factoring the transmitter output power and the antenna system gain. Measured in watts.  $ERP = (TX \text{ Output in Db.}) + (\text{Antenna System Gain in Db.})$
3. CTCSS - "Continuous Tone Coded Squelch System". A subaudible tone system used to control the input of a repeater's receiver. Sometimes also encoded on a repeater's transmitter to minimize intermodulation in user's receiver.
4. ATV "Amateur Television". Television transmissions (AM or FM) conducted by radio amateurs.
5. HAAT - "Height Above Average Terrain". A calculated value of average terrain height. Not the same as average elevation above mean sea level (AMSL) or height above ground level (AGL).
6. GPS - "Global Positioning Satellite" system commonly available for determination of latitude and longitude of a given location.
7. ORSI - "Oklahoma Repeater Society, Inc.". The official name of this organization.
8. MACC - "Mid-America Coordination Council". National association of amateur frequency coordinators. (ORSI is a member of MACC).
9. SNPP - "Shared Non-Protected Pair". A repeater pair reserved specifically for low altitude, low power repeaters (garage repeaters) assigned on a non-protected basis.
10. SFC - "State Frequency Coordinator". The individual appointed by ORSI to provide frequency coordination services to amateur repeater operators throughout the State of Oklahoma.
11. FOC - "Frequency Oversight Committee". A committee formed by members of the ORSI board of directors as specified by the bylaws of the Society.

#### Coordination Procedure

Any individual or organization desiring to establish a repeater system should first make a request for coordination, in writing, to the Oklahoma Repeater Society Inc. (ORSI) State Frequency Coordinator (SFC).

## Application for Coordination

Upon receipt of a written request for coordination, the ORSI coordinator (SFC) shall, within thirty (30) days, respond with the following:

1. A copy of the "Application for Coordination" form.
2. A copy of the ORSI "Coordination Guidelines".

Upon receipt of the completed "Application for Coordination", the State Frequency Coordinator (SFC) shall process the application and respond to the applicant within 90 days. In the event an application is denied, the SFC shall include an explanation of the denial and outline possible alternatives to the applicant.

## Repeater Construction Period

Upon the approval of a request for frequency coordination, a period of one hundred and twenty (120) days is allowed to place the repeater into operation. Operation is defined as fully tested repeater operation from the final repeater location or site. If the system is not in operation after this construction period, the coordination is automatically withdrawn. The State Frequency Coordinator (SFC) may immediately assign the frequency to another applicant. If however, during this one hundred and twenty (120) day period the applicant determines that he will be unable to place the repeater on the assigned frequency in operation, he may request, in writing an extension from the SFC. At his discretion, the SFC may grant an extension provided that the total length of time allowed for construction may not exceed one hundred and eighty (180) days from the date of the original coordination. If the construction and installation of the repeater system is not completed within this extended period, the frequency assignment is automatically withdrawn. The applicant may then reapply for coordination, but there is no guarantee that the previously coordinated frequency will be available. This allows for efficient use of valuable spectrum and ensures that frequency pairs are not wasted by holding assignments for protracted periods when applicants fail to construct in a timely manner. The applicant must notify the SFC or his assistant in writing at the time the repeater is placed into regular service for the applicant to retain coordination.

If a previously constructed repeater system is rendered inoperative for more than sixty (60) days, the sponsor must notify the SFC in writing of the failure of the repeater system. The sponsor will have ninety (90) days to return the repeater system to the air. The sponsor will notify the coordinator in writing of the date the system is returned to operation.

## Coordination of Remote Receivers and Link Frequencies

All remote receivers associated with a repeater system must be coordinated. Such receivers may be listed on the original request for

coordination or requested as a modification of an existing coordination.

Radio link frequencies associated with a repeater system must also be coordinated, provided that radio links utilizing a transmitter output of less than two watts do not require a separate coordination. The repeater operator is required to provide a list of all frequencies utilized in linking operations. Said notification will include the frequency used, the system(s) associated with the link and the date the link was placed into service. Repeater operators placing new link transmitters in operation under this exception are responsible for any interference caused to any other existing links or repeaters, provided the incumbent system was properly listed with the coordinator. Any radio link not subject to this exception must be listed on the original request for coordination or requested as a modification of an existing coordination.

### Modification of Existing Coordinations

Changes in Effective Radiated Power (ERP) and Antenna Height Above Average Terrain (HAAT) are not grounds for revocation of a coordination provided however, the repeater's sponsor must notify the SFC or his assistant in writing within thirty (30) days of any change in ERP or HAAT. Upon proper notification of a change in ERP or HAAT, the Coordinator must return a new "Certificate of Coordination" for any granted changes within thirty (30) days of receipt. In the event of any interference complaints a sponsor's failure to properly notify the SFC or his assistant of changes in ERP or HAAT in a timely fashion may be used as grounds to revoke or modify the sponsor's coordination approval.

If a repeater is to be moved from its coordinated location the sponsor of the system must file a new "Application for Coordination". The sponsor must clearly state on the application that it includes a "Request for Relocation". The request must be filed with the SFC or his assistant. Upon receipt of the application, the request will be reviewed. The SFC will confirm that the proposed change in location meets all criteria set forth in the coordination guidelines. If it is determined that the proposed relocation of the repeater will not conform to the applicable coordination guidelines, the application for relocation will not be granted. The coordinator must reply in writing within thirty (30) days of receipt-of the request. Under no circumstances shall the sponsor begin operation of the repeater system prior to receiving an approval of the change in operating location from the SFC.

### Transfer of Coordinated Frequencies

A frequency coordination may be transferred under certain conditions. If a coordinated repeater system that is currently in complete operation is sold, the sponsorship will transfer with the repeater system. Any such sale or transfer must include the actual equipment that comprises the repeater system. Both the original sponsor and the new sponsor must sign an agreement to transfer the coordination and forward a copy to the coordinator within thirty (30) days. The coordinator shall then send a revised Certificate of Coordination to the new sponsor within thirty (30) days. As the sponsor, not the trustee, holds the coordination of any given frequency, any change in trustee of any coordinated repeater will not be grounds for the revocation of a frequency coordination. The SFC or his assistant must, however, be notified in writing of a change in trusteeship within sixty (60) days.

## Release of Coordinated Frequencies

Licenses who terminate their coordination on assigned frequencies for any reason, with the intent of not resuming such operation are requested to notify the ORSI State Frequency Coordinator within thirty (30) days of the cessation of their operation and surrender the frequencies involved. The Coordinator shall then entertain requests from eligible applicants for the reassignment of those frequencies. The coordinator may immediately reassign the frequency to any applicant on a first come basis. No individual may hold a frequency pair for future use.

## Notification of Unoccupied Coordinated Frequencies

If any amateur operator finds an unoccupied coordinated frequency, said amateur may file for coordination of the potentially abandoned frequency. To qualify for reassignment under this section, the frequency in question must be abandoned for a period of no less than thirty (30) days. The amateur requesting the abandoned frequency must file a new "Application for Coordination" with the SFC or his assistant. The application must be clearly marked "Request for Abandoned Frequency" and indicate the date upon which the applicant first determined that the frequency was potentially abandoned. Upon receipt of the application the frequency coordinator shall notify the current sponsor of the coordination in question by certified mail. Upon such notification the current coordination holder shall provide verification that the system has returned to operation within sixty (60) days. Failure to return the system to operation within the allowed time period shall result in the revocation of the original coordination. Upon revocation of the original coordination, the pending application for the abandoned frequency shall be processed and given first consideration for the specified frequency in advance of any other pending applications.

## Grandfather Clause

Any coordination issued prior to October 9, 1998 shall be unaffected by these guidelines excepting that any request to modify such existing coordinations must comply with these guidelines. Shared Non-Protected (SNPP) operation on 146.700Mhz. shall be discontinued after October 10, 1998. Any existing SNPP coordination(s) on 146.700Mhz. shall be converted to standard protected coordinations after this date, provided that such operation will comply with all coordination guidelines in effect at the date of conversion. Such conversion shall be automatic, provided that the SFC shall review all affected SNPP coordinations for compliance with current guidelines. If the conversion of a particular coordination will result in any non-compliance of the guidelines, the sponsor of said system shall be required to accept a substitute protected frequency pair or continue SNPP operation on 145.250Mhz.

## Technical Guidelines

The ORSI State Coordinator shall adhere to the bandplans adopted by the Oklahoma Repeater Society Inc. No coordinations will be issued which conflict with applicable FCC rules and regulations. No coordinations will be issued on frequencies that conflict with other established modes of operation.

Note to coordinators: ATV audio and color sub-carriers shall always be entered into the data base along with the video carrier channel, but shall never be published in the directory. These frequencies will always be kept clear of FM repeater operation. ATV audio uses 25 KHz deviation and is not compatible with 5 KHz deviation FM repeaters. The aural carrier is located 4.5 MHz above the video carrier and the color subcarrier 3.579545 MHz above the video carrier. The frequency 3.580 MHz above the video carrier may be entered in the database for the color subcarrier. Amplitude Modulated (AM) ATV repeaters on 70cm will be required to use vestigial side band (VSB) filtering. Although extremely desirable, simplex operation or non-repeater stations will not be required to use VSB filtering.

## Geographical Spacing of Coordinated Systems

I. The following coordination parameters for geographical spacing are to be used as a guideline, as displayed in the tables below.

TABLE I Geographical Spacing Guidelines

FREQUENCY BAND	52 MHz
Co-Channel Separation	120 Miles
Adj. Chan Spacing/Separation	20 kHz /20 Miles
FREQUENCY BAND	144 MHz
Co-Channel Separation	120 Miles
Adj. Chan Spacing/Separation	15 kHz/ 40 Miles
Adj. Chan Spacing/Separation	20 kHz/ 25 Miles
Adj. Chan Spacing/Separation	30 kHz/ 20 Miles
FREQUENCY BAND	222 MHz
Co-Channel Separation	120 Miles
Adj. Chan Spacing/Separation	20 kHz/ 25 Miles
Adj. Chan Spacing/Separation	40 kHz/ 5 Miles
FREQUENCY BAND	440 MHz
Co-Channel Separation	120 Miles
Adj. Chan Spacing/Separation	25 kHz/ 5 Miles
Adj. Chan Spacing/Separation	50 kHz/ 1 Mile
FREQUENCY BAND	902 MHz
Co-Channel Separation	120 Miles

Adi. Chan Spacing/Separation 25 kHz/ 5 Miles  
 Adj. Chan Spacing/Separation 50 kHz/ 1 Mile

FREQUENCY BAND 1215 MHz  
 Co-Channel Separation 120 Miles  
 Adj. Chan Spacing/Separation 25 kHz/ 5 Miles  
 Adj. Chan Spacing/Separation 50 kHz/ 1 Mile

### Frequency Spacing for Coordinated Systems

2. All coordinations should be made according to the ORSI bandplans below. Repeater and link frequencies should be assigned to make the maximum possible frequency utilization of the various bands.

TABLE 3: Repeater Bandplans

Frequency Range 29.620 to 29.680 MHz  
 Channel Spacing 20 KHz  
 Transmit Offset 100KHz (Minus Offset)

Frequency Range 52.810 to 53.990 MHz  
 Channel Spacing 20 KHz  
 Transmit Offset 1.700 MHz (Minus Offset) \*

Frequency Range 145.110 to 145.490 MHz  
 Channel Spacing 20 KHz  
 Transmit Offset 600 KHz (Minus Offset)

Frequency Range 146.610 to 147.000 MHz  
 Channel Spacing 15KHz  
 Transmit Offset 600 KHz (Minus Offset)

Frequency Range 147.000 to 147.390 MHz  
 Channel Spacing 15 KHz  
 Transmit Offset 600 KHz (Plus Offset)

Frequency Range 223.860 to 224.980 MHz

Channel Spacing 20 KHz  
Transmit Offset 1.600MHz (Minus Offset)

Frequency Range 442.000 to 444.975 MHz  
Channel Spacing 25 KHz  
Transmit Offset 5.000 MHz (Plus Offset)

Frequency Range 906.000 to 909.000 MHz  
Channel Spacing 25 KHz  
Transmit Offset 12.000 MHz (Plus Offset)

Frequency Range 1282.000 to 1288.000MHz  
Channel Spacing 25 KHz  
Transmit Offset 12.000 MHz (Minus Offset)

\* Existing 52 Mhz. Coordinations utilizing a 1.00 Mhz. Minus Offset shall remain valid under the grandfather clause.

3. All repeater and user equipment is assumed to be technically comparable to current land mobile standards, including adjacent channel selectivity, sensitivity and intermodulation susceptibility.
4. A system balanced between repeater output power and receive capabilities is desirable. Unnecessary repeater transmitter power encourages operators to use more power and creates the possibility for interference to other repeaters.
5. Repeater users should use only the amount of power necessary to operate into a specified repeater system. This prevents unwanted interference of other co-channel or adjacent channel systems.
6. Specific frequency pairs in each band are reserved for Shared Non-Protected operation (SNPP). Coordination of these pairs is reserved for repeaters that will utilize antenna systems below 100 feet above ground and maximum output power not to exceed 100 Watts ERE. Repeaters operating on a SNPP basis shall utilize CTCSS on both the repeater's transmitter and receiver. Repeaters operating on a SNPP basis shall have no protective geographical halo, but shall be considered protected coordinations in all other regards. Upon receiving a request for a SNPP repeater coordination, the SFC shall assign a CTCSS code designed to eliminate interference with other repeaters in SNPP operation.

Approved this 9th Day of October, 1998

Leon E. Matula, WBSEDN Chairman, Frequency Oversight Committee

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