



FLORIDA REPEATER COUNCIL, INC.
<http://florida-repeaters.org/>

Voice Repeater Coordination Policy
Analog and Digital Revised Oct 1, 2011

1. The Florida Repeater Council, Inc. (FRC) is the ARRL recognized amateur frequency coordinating agency for the State of Florida.
2. The FRC provides frequency coordination and interference resolution services to all Florida repeater operators, FRC members and non-members alike.
3. The FRC coordinates only one type of fixed amateur transmitting system in those amateur band segments in which such a system is authorized by the Federal Communications Commission (FCC). That system is a repeater. The FRC at this time does not coordinate link or control transmitters but is requesting this information to assist in frequency/interference conflicts and any new 441/446 coordinations.
4. The FRC protects groups of frequencies for Packet Radio, and has appointed a representative from the digital community to assist in allocating digital systems within these groups of frequencies.
- 5a. The FRC issues repeater pairs according to the following spectrum utilization plan: (See our Band Plans for guidance).

29 MHz: The FRC does not coordinate 10-Meter frequencies, but it will list all 10-Meter repeaters desiring to be included in the *ARRL Repeater Directory and Travel Plus CD*.

50 MHz: 51-52 MHz, -500 kHz offset on even raster with 20 kHz channel spacing; 52-54 MHz, -1000 kHz offset on odd raster with 20 kHz channel spacing. All channels Low in/High out.

144 MHz: +600 kHz offset with 15 kHz channel spacing above 147 MHz; -600 kHz offset with 15 kHz channel spacing below 147 MHz, Narrow Band repeaters are permitted on 7.5Khz channels between the existing 15Khz channels.; -600 kHz offset with 20 kHz channel spacing below 146 MHz. Narrow Band repeaters are permitted on 10Khz channels between the existing 20Khz channels and on 7.5 Khz channels between the existing 15 Khz channels. The frequency pair 146.550 MHz (output), 147.550 MHz (input) is allocated statewide for transportable, temporary repeaters used only for emergencies.

222 MHz: -1.6 MHz offset with 20 kHz channel spacing. Low in/High out **ONLY**.

440 MHz: +5.0 MHz offset with 25 kHz channel spacing. High in/Low out **ONLY**.

12.5 Khz channels may be assigned for Narrow Band systems. Coordinations in the frequency range 440.000 – 441.975 (out) / 445.000 – 446.975 (in) are allowed in FRC Districts 1, 2 and 4 **ONLY**. Due to existing voice and data links, coordinations in this range are always conditional; the repeater must not operate in carrier squelch and a sub-audible encoded squelch system (e.g. CTCSS, DCS, P25 NAC, etc.) is required; transmitter output power is limited to 50 watts; and antenna height is limited to 100 feet above ground level.

902 MHz: -12.0 or -25.0 MHz offset with 12.5 or 25 kHz channel spacing. Low in/High out **ONLY**.

1240 MHz: -12.0 MHz (and -20.0 MHz alternate) offset with 25 kHz channel spacing. Low in/High out **ONLY**.

5b. The FRC will only coordinate "Wide Band" repeaters on the existing frequencies that were previously allocated for wide band repeater use in the FRC 144-148 and 430-450 MHz Band Plan prior to 1-1-2011.

This means no wide band systems on the NEW Narrow Band channels.

5c. No New "Wide Band" coordination will be issued after 1-1-2015 unless the applicant provides suitable documentation to show sufficient need for such New "Wide Band" systems based on user demand or other advanced technology experimentation. The FRC Board shall determine the appropriate requirements for such showing of sufficient need.

5d. The FRC will not routinely renew a wide band coordination which expires after 1-1-2020 However, a repeater operator may apply to the FRC Board for renewal of an existing "Wide Band" coordination after 1-1-2020 upon showing of sufficient need to continue to serve legacy "Wide Band" users or other advanced technology experimentation. The FRC Board shall determine the appropriate requirements for such showing of sufficient need.

5e. The FRC may coordinate "Narrow Band" repeaters on any frequency allocated for repeaters in the FRC Band Plan in the 144-148 and 430-450 MHz bands. This will allow assignment of the frequencies located between the existing repeater pairs for "Narrow Band" systems such as D-STAR, P-25 or narrow FM repeaters.

5f. FRC will only issue a new or modified coordination on the newly created pairs provided the proposed system meets the new part 90 requirements as "Narrow Band" or less than 2.5 KHz deviation. These systems will require a minimum adjacent-channel separation of 30 miles between 12.5 or 15 KHz spaced channels, 35 miles between 10 KHz or 7.5 KHz channels where both are Narrow Band and 50 miles between 10 KHz or 7.5 KHz channels when either is Wide Band.

6. The FRC will not honor requests for non-standard pairs (per Paragraph 5), or for more than one input or output frequency per band on any one repeater.

7. Upon application for coordination the applicant shall designate the Individual or Entity that shall be considered the "Holder of the Coordination" this is the party that controls the coordination and has the authority to change the trustee or "Holder" information, transfer or relinquish the coordination. The Licensee if an individual or Trustee if a club call sign, of an FRC coordination must be a person who holds a valid license under the Amateur Radio Service Part 97 of the Federal Communications Commission Rules and Regulations. This is the Amateur Licensee who is responsible for the proper technical and operational use of the repeater. The licensee's call sign will identify that repeater on the air, except when the repeater is a club station identifying with the club's call sign, in which case the FCC-recognized trustee of the club station is the licensee. The applicant may designate an Entity that shall be considered the "Sponsor", this is the club or other organization that uses and/or supports the repeater but shall have NO AUTHORITY to make changes to the coordination. The Sponsor information will be provided to the ARRL repeater Directory for publication.

All requests for new coordination, or changes in coordination to reflect changes to the designated "Holder", "Trustee", frequency or geographical location must be submitted over the signature of the "Holder" and submit such documentation as may be required to authenticate such request. Requests for changes to technical specifications must be submitted in writing over the signature of the licensee or Trustee. The frequency coordination document shall be emailed to the applicant. The FRC may request verification in writing by a principal officer of the club or other "Holder".

If ANY technical changes are made to a repeater that alters the location, antenna height, coverage pattern or ERP then the coordination will be treated as a NEW coordination. The FRC may require a repeater operator to agree to antenna height or pattern restrictions, ERP limitations, the use of a tone or digital squelch system or other access control methods, or all of the above as a condition of coordination.

8. SEPARATION. All coordinations are issued with the co-channel spacing or "radius of protection" listed in Table 8.1. The FRC will consider both the separation required of a proposed repeater and the required separation from all existing coordinated co and adjacent channel repeaters as applicable. Coordinations are issued with a minimum adjacent-channel separation of 30 miles between 12.5 or 15 KHz spaced channels, 35 miles between 10 KHz or 7.5 KHz channels where both are Narrow Band and 50 miles between 10 KHz or 7.5 KHz channels when either is Wide Band. There are no minimum adjacent-channel separation requirements where the frequencies are separated by 20 KHz or more but a new system must avoid creating harmful interference to an existing adjacent channel system.

TABLE 8.1 Minimum Co-Channel Separations

Height of Repeater Antenna above average terrain (feet)	Minimum Co-Channel Separation (Radius of Protection) (miles)		
	144 MHz	220 & 440 MHz	All other bands
50 to 200	65	50	85
201 to 300	70	60	85
301 to 500	80	70	85
501 to 700	90	80	85
701 to 1000	100	90	85
1001 to 1500	140	110	85
1501 to 2000	160	125	85

Coordinations will be issued for Narrow Band repeaters in the 2 meter and 70cm bands on frequencies and with spacing as designated for Narrow Band operation in the FRC band plan. These will be issued for Narrow Band FM or Digital repeaters only if the maximum deviation of the repeater output does not exceed 2.5 KHz and the transmitter otherwise meets the modulation specifications for part 90 Narrow Band systems.

Repeaters that are deployed as mixed-mode, that are capable of both analog and digital modulation, must request a Wide Band allocation unless the system uses only narrow band emission for both analog and digital modes. When coordination is requested as digital or narrow band FM only then a narrow band coordination will be issued if available unless the applicant provides suitable justification for use of a wide band allocation.

8a. An alternative to the arbitrary separation-distance method for coordinating frequency pairs exists when it can be shown that somewhat shorter separation distances will provide satisfactory interference-free operation. This alternative method will be considered on a case-by-case basis. This alternate method of coordination will also include consideration of antenna heights and ERP of all repeaters geographically involved. The success or failure of such operation will be determined experimentally on a trial basis after issuing a 6 month conditional coordination to the applicant. If the experimental repeater operation produces acceptable interference-free operation, then upon application, the conditional coordination will be upgraded to full coordination; if not, the conditional coordination will be rescinded, and another frequency search can begin.

8b. An applicant desiring coordination on a frequency at less than the required spacing may submit a fully executed "Close Spacing Agreement" between the applicant and ALL affected co and adjacent channel trustees.

8c. UNCOORDINATED repeaters including previously coordinated repeaters which have expired and passed the grace period for renewal may not be considered in the processing of coordination requests.

9. NO technical or geographical changes may be made to a coordinated repeater installation, such as effective radiated output power (ERP), antenna height, or location, without prior approval by the FRC. Any unauthorized changes could result in an immediate de-coordination. If technical changes are required the applicant shall submit a complete application for New Coordination also noting the items to be modified. Upon granting of the modified coordination the previous coordination shall be cancelled.

10. When either the licensee or owner of a coordinated repeater changes, the FRC, upon proper application, including proof of transfer acceptable to the FRC, will re-coordinate the frequency pair to the new licensee or owner, providing there have been no modifications to the technical or geographical specifications. If modified coordination specifications are proposed, an application for new coordination must be submitted along with the proof of transfer acceptable to the FRC. The FRC does not guarantee the transfer of an existing coordination, a new application must be filed and processed in due course. Should the new application fail to be approved the incumbent coordination is unchanged except as provided elsewhere in the FRC policies.

11. To apply for a new or changed coordination the following information must be submitted to the FRC on an FRC New Coordination Application form:

- a. The Name, address and contact information of the Individual or Entity that shall be considered the "Holder of the Coordination" this is the party that controls the coordination and has the authority to change the trustee or "Holder" information, transfer or relinquish the coordination.
- b. The Name, address and contact information of the licensee or Trustee if a club call sign, mailing address, home and work telephone numbers and email address. This is the Amateur Licensee who is responsible for the proper technical and operational use of the repeater.
- c. The Name, address and contact information of the Entity that shall be considered the "Sponsor", this is the club or other organization that uses and/or supports the repeater but shall have NO AUTHORITY to make changes to the coordination.
- d. Specific frequency pair applied for.
- e. Proposed location of the repeater: city, county, FCC antenna site registration number, latitude and longitude. The latitude and longitude must be stated in the standard form for indicating geographical coordinates in degrees, minutes and seconds, for example, 25° 28' 10 N, 80° 14' 23 W. Do NOT use decimal degrees.
- f. All repeater features, such as open, autopatch, Tone, digital or other access method, RACES, etc. If requested, the access tone or codes will not be published.
- g. Proposed antenna height and effective radiated output power (ERP). The application form used for coordination contains instructions for calculating ERP from known transmitter output power, duplexer loss, feed line loss and antenna gain.

12. When a new repeater coordination is approved, a conditional, non-renewable, six-month coordination will be issued. Once the District Director and Coordinator are notified that the repeater is in-service by the filing of a repeater update form, a full two-year coordination will be granted. A repeater will be considered uncoordinated on the expiration date of the coordination, even if the repeater is still in-service. It is solely the repeater licensee's responsibility to renew the coordination before its expiration date if they wish to remain coordinated. If the two-year coordination expires it may still be renewed during a six-month grace period after the expiration date. If the coordination is not renewed during the six-month grace period, the pair will become immediately available to be reissued without notice. After the six-month grace period a new application for repeater coordination must be filed if a coordination is desired. Effective 1/1/2004, no new or renewal repeater coordinations will be granted without an expiration date. A coordination will not be renewed if the repeater is not in-service unless upon timely application to the FRC, an exception or extension is granted by the FRC Board of Directors in the event a repeater is under repair or is relocating. Expired repeater coordinations will be listed on the FRC web site, <http://florida-repeaters.org> as a courtesy to Trustees. The failure of the FRC to list an expired coordination does not relieve the trustee or "Holder" from the responsibility of timely renewing their coordination.

13. The FRC will not honor any request for an UNLISTED pair. It is the policy of the FRC to furnish to the ARRL all coordinated repeater pairs for publication in the ARRL Repeater Directory, except as noted in paragraph 15. This policy assists in maintaining the integrity of the frequency utilization plan. Link and control frequencies are not published but may be made available to FRC Staff and Directors as necessary.

14. The following information will be published in the Repeater Directory: input and output frequencies, location, callsign, sponsor and features. All other information will be held strictly CONFIDENTIAL.

15. A requirement for listing repeaters in the ARRL Repeater Directory is the submission of any required repeater coordination renewal. Due to the many issues involved in the production of repeater listings the FRC can not guarantee that any or every coordinated repeater will be listed in the repeater directory. To qualify for the Directory listing the coordination must be current in the FRC Data Base on December 1 to meet the following year directory publication deadline.

16. FRC policies regarding interference between repeaters are in accordance with FCC rulings and guidelines, as follows:

- a. If an uncoordinated repeater causes harmful interference to a coordinated repeater, the primary responsibility for correcting the interference rests with the operator of the uncoordinated repeater.

- b. If both systems are coordinated, the FRC will determine who bears the primary responsibility for correcting the interference.

- c. If a repeater operator changes the location, antenna height, ERP, or other parameters of his system in a manner which causes harmful interference to other repeaters, that repeater operator bears the primary responsibility for correcting the interference, and possibly becomes subject to the requirement for recoordination. (See paragraph 9)

17. The FRC may de-coordinate a repeater under the following conditions:

- a. If a system is ordered permanently shut down by the FCC for any reason.
 - b. If the operator of a system consistently violates good engineering practice by transmitting with excessive deviation (in excess of accepted standards for the band in which repeater is operating), with spurious emissions, or so far off-frequency as to cause harmful interference, and does not attempt in good faith to correct the problem within 60 days when notified by the FRC.
 - c. When it has been determined by means of research that a pair has been inactive for a period of 60 days without submitting a satisfactory explanation for the inactivity in writing to the FRC.
 - d. If a repeater is inoperative for more than 90 days without timely notice to the FRC of some extenuating circumstances, the coordination is automatically withdrawn. No individual or owner group is allowed to hold a frequency pair for future use.
 - e. Any repeater that has not submitted a repeater coordination renewal form within the last 30 months (2 years term, 6 months grace) is cancelled. If mail sent to the latest address appearing in the FRC Data Base is returned undeliverable, and if the date of that address appearing in the data base is three or more years old, the coordination shall be cancelled immediately on the date the mail is returned. See paragraph 12.
18. All known cases of apparent malicious interference will be forwarded to the FCC Field Office with jurisdiction over the area in which the source of the interference is located.
19. If the phone number or address of the licensee is changed, making immediate FRC contact with licensee impossible, the licensee must notify the FRC by submitting new or accessible phone number and address within 14 days; the FRC must be able to contact the licensee if a situation arises that needs his immediate attention. Failure to report such changes shall be grounds for decoordination. In addition, if a coordination is abandoned for any reason, the FRC must be notified within 14 days of the abandonment.
20. The minimum antenna height for coordination is 50 feet measured between ground level and the top of the antenna. FRC may upon application coordinate a repeater at less than 50' AGL upon showing of high ground elevation or other special conditions.
21. All 144 and 440 MHz repeaters coordinated after January 1, 2003 are no longer approved to operate in Carrier Squelch and must support a tone, digital or other suitable access control method. If a CTCSS system is chosen it is strongly recommended that these repeaters choose the CTCSS frequencies recommended by the FRC for the respective district to prevent overlap with co-channel repeaters in adjacent districts, but they may choose other frequencies that aren't utilized in adjacent districts or other technologies such as Digital Coded Squelch (DCS). See our CTCSS info page on the FRC web site. Existing repeaters that choose not to utilize a sub-audible squelch system should not expect the FRC to resolve their interference problem if a sub-audible encoded squelch system would likely solve the problem.
22. New applications for coordination must specify the expected RF output power of the repeater transmitter. Federal Communications Commission Rule 97.313 (f) states that "No station may transmit with a transmitter power exceeding 50 W PEP on the 440 MHz band unless expressly authorized by the FCC and the military area frequency coordinator at the applicable military base." Any application submitted with a transmitter RF output power level (not ERP) greater than 50 watts must include written permission from the military frequency coordinator of Florida. Otherwise it will not be processed and returned to the applicant.
23. In order to allow for the timely processing of applications the FRC coordination committee may waive parts of these procedures where there is no detrimental impact on an applicant or existing trustee. Such waiver shall not create any special consideration for any future applications.

Notes,

The following charts show the existing allocations and the frequencies that are added for Narrow Band under the band plan. Since the 145 MHz repeater allocations in Florida use 20 KHz spacing FRC will assign "Narrow Band" systems on 10 KHz spacing between the existing frequencies. The 146 and 147 MHz repeater allocations in Florida are spaced at 15 KHz. FRC will assign "Narrow Band" systems on 7.5 KHz between the existing frequencies. This does NOT require any relocation of existing repeater frequencies in the 2 meter repeater sub-band. Frequencies marked with an asterisk are reserved for D-STAR only.

EXISTING Wideband	NEW Narrow Band
145.1100	
	145.1200
145.1300	
	145.1400
145.1500	
	145.1600
145.1700	
	145.1800
145.1900	
	145.2000
145.2100	
	145.2200
145.2300	
	145.2400
145.2500	
	145.2600
145.2700	
	145.2800
145.2900	
	145.3000
145.3100	
	145.3200
145.3300	
	145.3400
145.3500	
	145.3600
145.3700	
	145.3800
145.3900	
	145.4000
145.4100	
	145.4200
145.4300	

EXISTING Wideband	NEW Narrow Band
146.6100	
	146.6175
146.6250	
	146.6325
146.6400	
	146.6475
146.6550	
	*146.6625
146.6700	
	146.6775
146.6850	
	146.6925
146.7000	
	146.7075
146.7150	
	146.7225
146.7300	
	*146.7375
146.7450	
	146.7525
146.7600	
	146.7675
146.7750	
	146.7825
146.7900	
	146.7975
146.8050	
	*146.8125
146.8200	
	146.8275
146.8350	
	146.8425
146.8500	

EXISTING Wideband	NEW Narrow Band
147.0000	
	147.0075
147.0150	
	147.0225
147.0300	
	*147.0375
147.0450	
	147.0525
147.0600	
	147.0675
147.0750	
	147.0825
147.0900	
	147.0975
147.1050	
	*147.1125
147.1200	
	147.1275
147.1350	
	147.1425
147.1500	
	147.1575
147.1650	
	147.1725
147.1800	
	*147.1875
147.1950	
	147.2025
147.2100	
	147.2175
147.2250	
	147.2325
147.2400	

EXISTING Wideband	NEW Narrow Band
442.0000	
	442.0125
442.0250	
	442.0375
442.0500	
	442.0625
442.0750	
	442.0875
442.1000	
	442.1125
442.1250	
	442.1375
442.1500	
	442.1625
442.1750	
	442.1875
442.2000	
	442.2125
442.2250	
	442.2375
442.2500	
	442.2625
442.2750	
	442.2875
442.3000	
	442.3125
442.3250	
	442.3375
442.3500	
	442.3625
442.3750	
	442.3875
442.4000	
	442.4125
442.4250	
	442.4375
442.4500	
	442.4625

EXISTING Wideband	NEW Narrow Band
443.0000	
	443.0125
443.0250	
	443.0375
443.0500	
	443.0625
443.0750	
	443.0875
443.1000	
	443.1125
443.1250	
	443.1375
443.1500	
	443.1625
443.1750	
	443.1875
443.2000	
	443.2125
443.2250	
	443.2375
443.2500	
	443.2625
443.2750	
	443.2875
443.3000	
	443.3125
443.3250	
	443.3375
443.3500	
	443.3625
443.3750	
	443.3875
443.4000	
	443.4125
443.4250	
	443.4375
443.4500	
	443.4625

EXISTING Wideband	NEW Narrow Band
444.0000	
	444.0125
444.0250	
	444.0375
444.0500	
	444.0625
444.0750	
	444.0875
444.1000	
	444.1125
444.1250	
	444.1375
444.1500	
	444.1625
444.1750	
	444.1875
444.2000	
	444.2125
444.2250	
	444.2375
444.2500	
	444.2625
444.2750	
	444.2875
444.3000	
	444.3125
444.3250	
	444.3375
444.3500	
	444.3625
444.3750	
	444.3875
444.4000	
	444.4125
444.4250	
	444.4375
444.4500	
	444.4625

EXISTING Wideband	NEW Narrow Band
442.4750	
	442.4875
442.5000	
	442.5125
442.5250	
	442.5375
442.5500	
	442.5625
442.5750	
	442.5875
442.6000	
	442.6125
442.6250	
	442.6375
442.6500	
	442.6625
442.6750	
	442.6875
442.7000	
	442.7125
442.7250	
	442.7375
442.7500	
	442.7625
442.7750	
	442.7875
442.8000	
	442.8125
442.8250	
	442.8375
442.8500	
	442.8625
442.8750	
	442.8875
442.9000	
	442.9125
442.9250	
	442.9375
442.9500	
	442.9625

EXISTING Wideband	NEW Narrow Band
443.4750	
	443.4875
443.5000	
	443.5125
443.5250	
	443.5375
443.5500	
	443.5625
443.5750	
	443.5875
443.6000	
	443.6125
443.6250	
	443.6375
443.6500	
	443.6625
443.6750	
	443.6875
443.7000	
	443.7125
443.7250	
	443.7375
443.7500	
	443.7625
443.7750	
	443.7875
443.8000	
	443.8125
443.8250	
	443.8375
443.8500	
	443.8625
443.8750	
	443.8875
443.9000	
	443.9125
443.9250	
	443.9375
443.9500	
	443.9625

EXISTING Wideband	NEW Narrow Band
444.4750	
	444.4875
444.5000	
	444.5125
444.5250	
	444.5375
444.5500	
	444.5625
444.5750	
	444.5875
444.6000	
	444.6125
444.6250	
	444.6375
444.6500	
	444.6625
444.6750	
	444.6875
444.7000	
	444.7125
444.7250	
	444.7375
444.7500	
	444.7625
444.7750	
	444.7875
444.8000	
	444.8125
444.8250	
	444.8375
444.8500	
	444.8625
444.8750	
	444.8875
444.9000	
	444.9125
444.9250	
	444.9375
444.9500	
	444.9625

EXISTING Wideband	NEW Narrow Band
442.9750	
	442.9875

EXISTING Wideband	NEW Narrow Band
443.9750	
	443.9875

EXISTING Wideband	NEW Narrow Band
444.9750	
	444.9875