



Club Radio Update & Two-way Radio 101



At the general club meeting in February, Al Hall presented more information on the GMRS radios to build on the info that was presented by him at the Oct 2007 meeting. For the benefit of the club members that were not at the meeting or had questions after the meeting here is a review of what was covered:

CoF members can optionally use three different types of two-way radio technology on car runs. They are, Citizen Band (CB), Family Radio Service (FRS), and General Mobile Radio Service (GMRS) radios. CoF has used CBs since the 1960's when this was the only technology available at an affordable cost and CB licensing requirements (FCC Part 95, Subpart D) that did not require a FCC test and specialize training in order to operate the CB.

In the 1990's a new type radio technology was developed for two-way radio communication called the FRS radio. The FRS radio was allotted a group of frequencies for operation and is permitted to operate at a maximum output of $\frac{1}{2}$ watt. The FRS radio was the first consumer two-way radio that does not require FCC licensing to operate. FRS radios have an approximate range of a consumer grade CB radio but since the FRS radio is FM modulated it is not affected by atmospheric conditions, power lines, sunspots, or other natural conditions thus providing more reliable and consistence noise free communication. The fact that these radios are not affected by these natural and manmade conditions enables these radios to communication a range of 2-5 miles on just $\frac{1}{2}$ watt.

Recently, hybrid FRS/GMRS consumer radios have been introduced that have 22 channels. These radios have been certified for unlicensed operation (on the 14 FRS frequencies) under FRS rules. The hybrid radio power output can be adjusted to a high power setting of 5 watts that increase the transmit range to over 20 miles.

The FCC rules and statements regarding the use of hybrid radios on channels 1-7 stipulate the need for GMRS licensing **only when operating under the RULES that apply to the GMRS in the 5 watt transmit power output mode**. Many hybrid radios have an output rating that is $\frac{1}{2}$ watt on channels 1-7, or can be set by the user to operate at low/high power on these channels. This allows hybrid radios to be used under the *license free* FRS rules if $\frac{1}{2}$ watt is used and the radio is set to FRS frequencies for operation. When the hybrid radios are operated at the high power transmit setting, they are certified for GMRS operation.

Channels 1-7 are shared channels for FRS, and GMRS operation. If transmit power is $\frac{1}{2}$ watt or less, FRS rules are applied and no license is required. If operated above $\frac{1}{2}$ watt, then GMRS rules are applied and a license is needed. A GMRS radio license can be order on the FCC web site for a nominal fee. <wireless.fcc.gov/uls/index.htm?job=home>

Channels 8-14 are reserved exclusively for the FRS, and GMRS operation is not allowed on these channels.

Channels 15-22 are reserved exclusively for GMRS, and FRS operation is not allowed on these channels.

The FRS/GMRS radio that has been selected by the club operates on all 22 FRS/GMRS channels has Hi/Lo power settings and automatically adjust the power output to stay within the license free operating parameters of the FRS rules established by the FCC.

The following is direct from the FCC website:

If you operate a radio that has been approved exclusively under the rules that apply to FRS, you are not required to have a license. FRS radios have a maximum power of ½ watt (500 milliwatt) effective radiated power and integral (non-detachable) antennas. If you operate a radio under the rules that apply to GMRS, you must have a GMRS license. GMRS radios generally transmit at higher power levels (1 to 5 watts is typical) and may have detachable antennas. To get more info from the FCC website go to:

http://wireless.fcc.gov/services/index.htm?job=service_home&id=family

List of FRS/GMRS channels

Channel	Frequency (MHz)	Notes
1	462.5625	Unofficially designated the National Call Channel. Shared with FRS/GMRS
2	462.5875	Shared FRS/GMRS channel
3	462.6125	Shared FRS/GMRS channel
4	462.6375	Shared FRS/GMRS channel
5	462.6625	Shared FRS/GMRS channel
6	462.6875	Shared FRS/GMRS channel
7	462.7125	Shared FRS/GMRS channel
8	467.5625	FRS use ONLY (GMRS not allowed)
9	467.5875	FRS use ONLY (GMRS not allowed)
10	467.6125	FRS use ONLY (GMRS not allowed)
11	467.6375	FRS use ONLY (GMRS not allowed)
12	467.6625	FRS use ONLY (GMRS not allowed)
13	467.6875	FRS use ONLY (GMRS not allowed)
14	467.7125	FRS use ONLY (GMRS not allowed)
15	462.5500	GMRS use ONLY (FRS not allowed)
16	462.5750	GMRS use ONLY (FRS not allowed)
18	462.6250	GMRS use ONLY (FRS not allowed)
19	462.6500	GMRS use ONLY (FRS not allowed)
20	462.6750	GMRS use ONLY (FRS not allowed)
21	462.7000	GMRS use ONLY (FRS not allowed)
22	462.7250	GMRS use ONLY (FRS not allowed)