**App Note: Interfacing the BCR Repeater to Amateur Radio Controllers**

Although the BCR Repeater is a complete stand-alone FM repeater with built-in controller, it is often desirable by many Hams to connect the repeater to an external controller (e.g. CAT series, RLC series). However, many of these controllers do not decode CTCSS. This application note details the programming setup for interfacing these controllers and taking advantage of the BCR Repeater's ability to decode CTCSS.
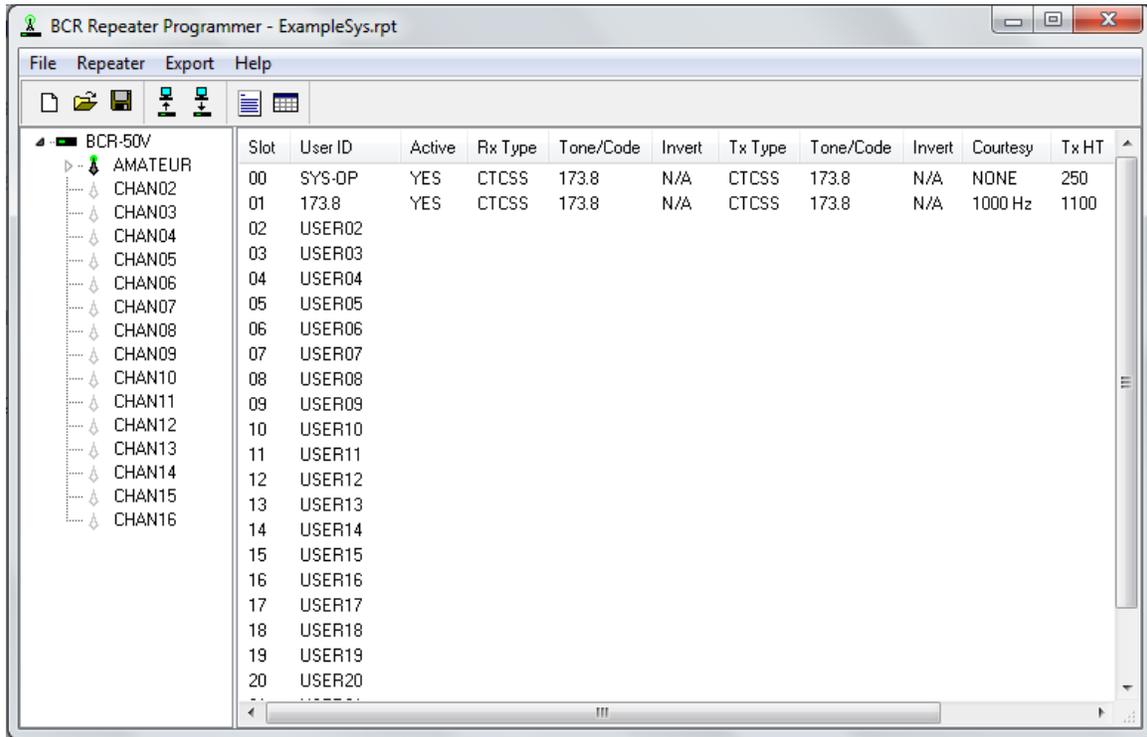
If your controller does not support CTCSS decode, the BCR Repeater can be programmed to decode CTCSS and not repeat the call. This allows the external controller to have 100% control of managing the transmitter. To do this the COS settings must have the Valid Signal checked. The COS output is what alerts the external controller a valid call is received. Keep in mind, the BCR Repeater's COS output pin is an active low output. This is an open drain circuit and requires a pull-up resistor (~10K) to whatever voltage the external controller recognizes as a HI. See Screen Shot 1 example
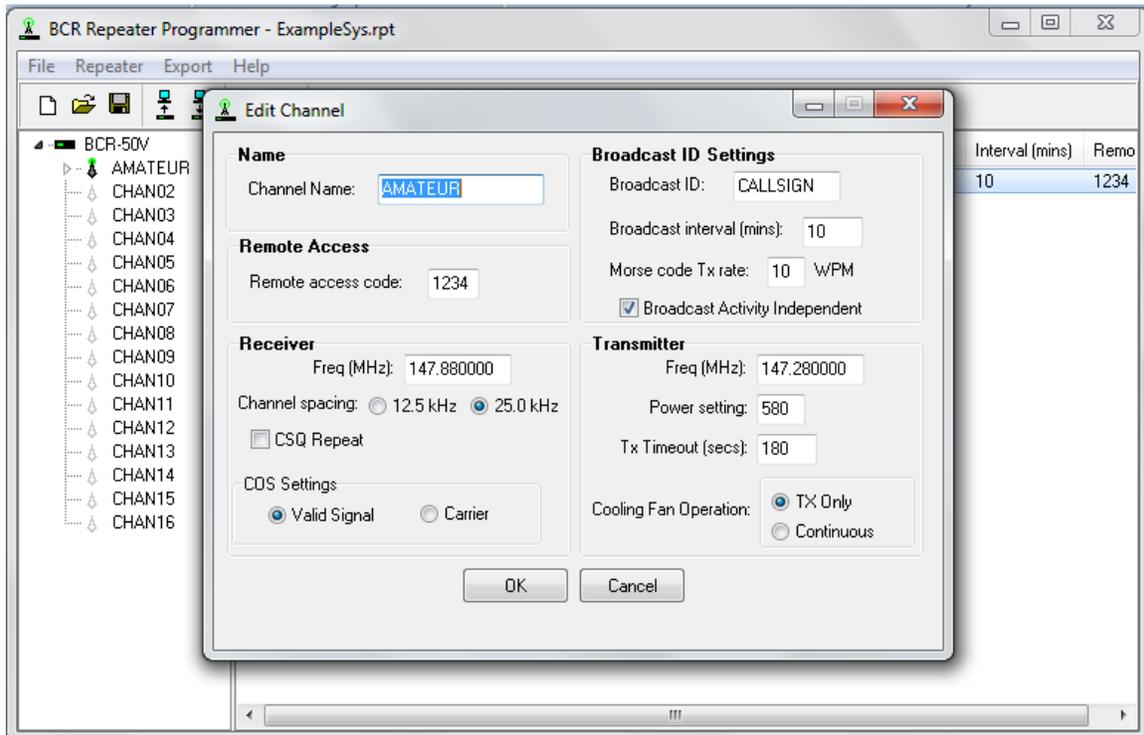
Screen Shot 1

Next, the CTCSS tone to decode must be in the SYSOP slot. When the tone in the SYSOP slot is decoded, the call is not repeated. However, the COS line will toggle indicating to the external controller that a valid call has been received. When the external controller wishes to pass the received voice or send station ID, it pulls the BCR's external PTT input line LO. The BCR will then use the TX signaling option in **Slot 1** to mix with the TX audio from the external controller. So you must create a user for Slot 1 when

using external PTT. You can make Slot 1's RX tone the same as the SYSOP as it will decode and assign the call to the SYSOP user. See Screen Shot 2 example.

Screen Shot 2

In the event you require no tone on RX or TX, then operating the repeater in AUX mode is the best way. AUX mode puts the repeater in a complete slave mode to the external controller.

As can be seen, setting up the repeater to decode CTCSS and work with an external controller is easy to program. In the event of a problem, make sure the BCR Repeaters accessory port pins are wired to the controller properly. Please reference the BCR operators manual for more pin-out information.