West Kootenay Amateur Radio Club

West Kootenay Amateur Radio Club Repeaters User Guide

WKARC Repeaters User Guide

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WEST KOOTENAY AMATEUR RADIO CLUB
459 WARD STREET, NELSON, B.C., CANADA. V1L 1S7

Revision History

Revision	Date	Author	Comments
0.41	2023-Jul-04	VE7IHL	Updated with VE7RCT DTMF codes and CTCSS 100 Hz tone.
0.40	2023-May-31	VE7IHL	Updated to match new DTMF codes for VE7BDY and VE7BTU repeaters
0.33	2022-Dec-24	VE7IHL	Added new VE7BDY DTMF codes for AllStar
0.32	2022-Aug-18	VE7IHL	Changed 146.640- repeater to use 88.5 Hz Tone
0.31	2022-Jun-15	VE7IHL	Changed 147.060 repeater offset to be positive
0.30	2021-Oct-01	VE7IHL	Added info regarding VE7WKM
0.22	2021-Jan-16	VE7IHL	Fixed some typos.
0.21	2021-Jan-15	VE7IHL	Updated to reflect changes done summer 2020
0.20	2020-Jul-13	L. Wilson VE7IHL	Updated information about VE7BDY
0.10	2020-Jan-26	L. Wilson VE7IHL	First Draft

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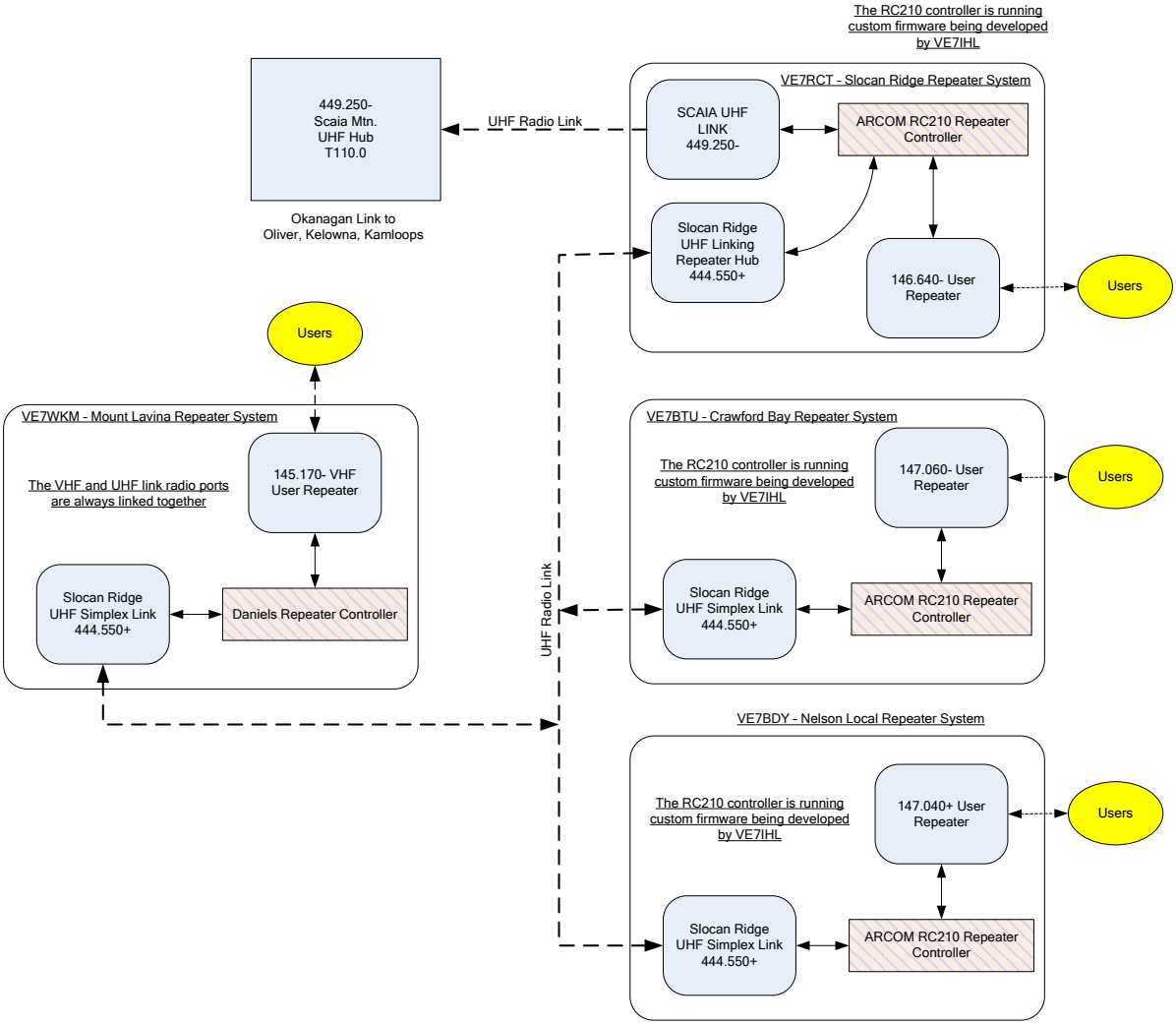
1. RADIO LINKING

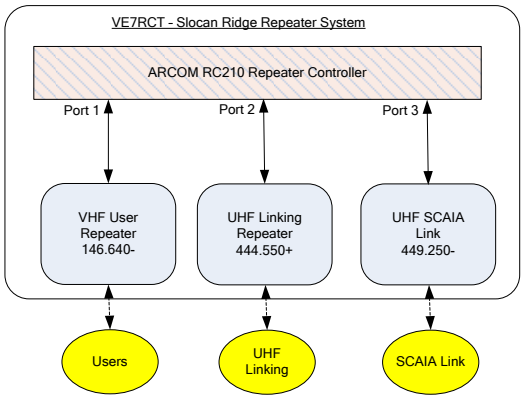
1.1 Radio Linking Diagram

The following diagram shows the WKARC repeater system. The Slocan Ridge VE7RCT repeater site is where the central linking occurs. The Slocan Ridge 444.550+ UHF linking repeater is used to link (connect) all the WKARC repeater sites together. The 444.550+ UHF repeater can also be used as a user repeater, but it has no courtesy tones, no IDs, and no transmit hang time.



1.2 VE7RCT Linking Options

The 3 radio ports at the Slocan Ridge VE7RCT repeater site, can be linked together in any combination. This is controlled via DTMF commands sent to the VE7RCT RC210 repeater controller. (see the following sections on actual DTMF linking commands)

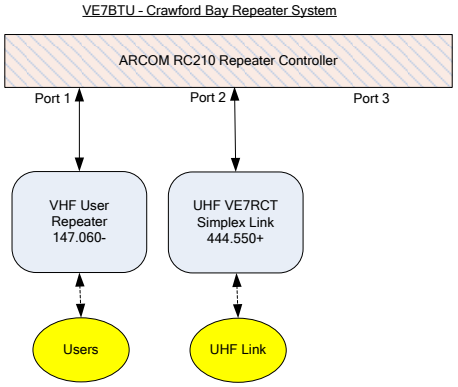


1.2.1 Default Operation

The default operation is to leave the 444.550+ UHF linking repeater connected to the 146.640- VHF user radio port. This allows users of the 145.170- VE7WKM (Mount Lavina) repeater to be automatically heard on the VE7RTC 146.640- radio port.

1.3 VE7BTU Linking Options

The 2 radio ports at the Crawford Bay VE7BTU repeater site, can be linked together in any combination. This is controlled via DTMF commands sent to the VE7BTU RC210 repeater controller. (see the following sections on actual DTMF linking commands)

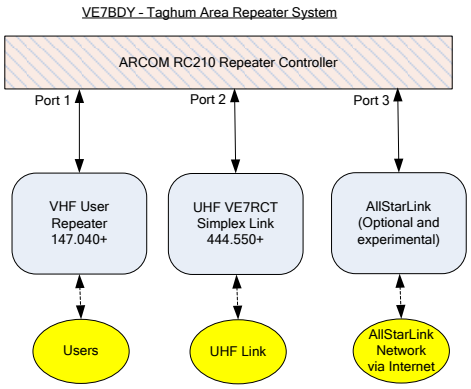


1.3.1 Default Operation

The default operation is to leave the 444.550+ UHF link connected to the Slocan Ridge UHF hub. This allows users of the 147.060- VE7BTU repeater to be heard on the VE7RTC 146.640- radio port.

1.4 VE7BDY Linking Options

The 2 radio ports at the Taghum VE7BDY repeater site, can be linked together in any combination. This is controlled via DTMF commands sent to the VE7BDY RC210 repeater controller. (see the following sections on actual DTMF linking commands) The AllStar-link is experimental and may not always be connected. It connects using a Raspberry Pi running AllStar-Link software to the Internet.



1.4.1 Default Operation

The default operation is to leave the 444.550+ UHF link connected to the Slocan Ridge UHF hub. This allows users of the 147.040+ VE7BDY repeater to be heard on the VE7RTC 146.640- radio port.

1.5 VE7WKM Linking Options

The 2 radio ports at the Mount Lavina VE7WKM repeater site, are always linked together. There are no additional linking options available.

Due to change once the RC210 controller is install late summer 2023.

1.5.1 Default Operation

N/A

2. COMMON LINKING DTMF COMMANDS TO ALL SITES

The following list of DTMF command codes are **common to all sites** that use the RC210 repeater controller.

DTMF Code	Description
752#	Link Ports 1 - 2
753#	Unlink Ports 1 - 2
756#	Link ALL Ports
757#	Unlink ALL Ports

3. SLOCAN RIDGE VE7RCT 146.640- INFORMATION

This repeater is located at the Slocan Ridge Telus site. This is at 6500 ft. elevation. It covers Nelson, Castlegar, and Slocan Valley.

3.1 Battery/Solar Backup Power

VE7RCT has 440AH of backup battery power available in case of a site AC power loss. There are two 100W solar panels that will charge the batteries in the event of an AC power loss.

3.2 Radio Ports

Each radio port can be linked independently to another radio port. Only analog operation is supported.

Radio Port	Port Description	Can be Linked to Radio Port
1	VHF User 146.640- 100 Hz CTCSS Tone	2 – UHF Link 3 – SCAIA UHF Link 2 & 3 – Both UHF link and SCAIA UHF link
2	UHF Link 444.550+	1 – VHF user port 3 – SCAIA UHF Link 1 & 3 – Both VHF and SCAIA UHF link
3	SCAIA UHF Link 449.250-	1 – VHF user port 2 – UHF Link 1 & 2 – Both VHF and UHF link

3.3 User DTMF Codes

DTMF Code	Description
760#	Link VHF (Port 1) to SCAIA (Port 3)
761#	Unlink VHF (Port 1) to SCAIA (Port 3)
762#	Link VHF (Port 1) to UHF Hub 440.550+ (Port 2)
763#	Unlink VHF (Port 1) to UHF Hub 440.550+ (Port 2)
764#	Link UHF (Port 2) to SCAIA (Port 3)
765#	Unlink UHF (Port 2) to SCAIA (Port 3)
766#	Link ALL Ports
767#	Unlink ALL Ports
430*	Say Time
431*	Say Date
432*	Record user voice playback (and then erase)
433*	Enable DTMF tones re-transmit
434*	Disable DTMF tones re-transmit
435*	Say (Internal) Temperature
436*	Say (Outside) Temperature
437*	Read Battery #1 Volts
438*	Read Battery #2 Volts
85xxxx	DTMF test. Use 85, then any additional DTMF digits to be played back to you.

4. SLOCAN RIDGE VE7RRW 145.130- INFORMATION

This repeater is a backup to the 146.640- repeater. This is at 6500 ft. elevation. It covers Nelson, Castlegar, and Slocan Valley. It has about the same coverage as the 146.640- repeater.

4.1 Battery Backup Power

VE7RRW has 200AH of backup battery power available in case of a site AC power loss. The batteries are only charged when there is site AC power.

4.2 Radio Ports

A single radio port is supported.

Analog and Yaesu C4FM digital is supported.

Wires-X support may also be enabled via a ground station at times.

Radio Port	Port Description	Can be Linked to Radio Port
1	VHF User 145.130- 100Hz CTCSS Tone C4FM Digital	None

4.3 User DTMF Codes

No User DTMDF codes are supported.

5. NELSON/TAGHUM VE7BDY 147.040+ INFORMATION

This is not a high-profile repeater. It will have limited coverage compared to the Slocan Ridge repeaters. Users have used it from Nelson, North Shore, and from Castlegar. It is mainly used as an experimental repeater by VE7IHL. Different hardware and software options may be used for testing occasionally. It may also have an AllStar Link node connected to it.

5.1 Battery Backup Power

None currently.

5.2 Radio Ports

Each radio port can be linked independently to another radio port.

Radio Port	Port Description	Can be Linked to Radio Port
1	VHF User 147.040+ 100Hz Tone	2 – UHF Link
2	UHF Link 444.550+	1 – VHF user port
3	AllStar node	Any

5.3 User DTMF Codes

DTMF Code	Description
770#	Link VHF (Port 1) to AllStar (Port 3)
771#	Unlink VHF (Port 1) from AllStar (Port 3)
772#	Link VHF (Port 1) to UHF Hub 444.550+ (Port 2)
773#	Unlink VHF (Port 1) from UHF Hub 444.550+ (Port 2)
774#	Link UHF (Port 2) to AllStar (Port 3)
775#	Unlink UHF (Port 2) from AllStar (Port 3)
776#	Link ALL Ports
777#	Unlink all Ports
530*	Say Time
531*	Say Date
532*	Record user voice playback (and erase)
533*	Enable DTMF tones re-transmit
534*	Disable DTMF tones re-transmit
535*	Say inside temperature
536*	Say outside temperature
537*	Read battery Voltage
538*	--reserved for future---
86xxxx	DTMF test. Use 86, then any additional DTMF digits to be played back to you.

6. CRAWFORD BAY VE7BTU 147.060+ INFORMATION

This repeater is located above the ferry landing on the east side of Kootenay lake.

6.1 Battery Backup Power

None.

6.2 Radio Ports

Each radio port can be linked independently to another radio port. Only analog operation is supported.

Radio Port	Port Description	Can be Linked to Radio Port
1	VHF User 147.060+ 100Hz CTCSS Tone	2 – UHF Link
2	UHF Link 444.550+	1 – VHF user port

6.3 User DTMF Codes

DTMF Code	Description
780#	--reserved for future---
781#	--reserved for future---
782#	Link VHF (Port 1) to UHF Hub 444.550+ (Port 2)
783#	Unlink VHF (Port 1) from UHF Hub 444.550+ (Port 2)
784#	--reserved for future---
785#	--reserved for future---
786#	Link ALL Ports
787#	Unlink all Ports
630*	Say Time
631*	Say Date
632*	Record user voice playback (and erase)
633*	Enable DTMF tones re-transmit
634*	Disable DTMF tones re-transmit
635*	Say (Internal) Temperature
636*	Say (Outside) Temperature
637*	--reserved for future---
638*	--reserved for future---
87xxxx	DTMF test. Use 87, then any additional DTMF digits to be played back to you.

7. MOUNT LAVINA VE7WKM 145.170- INFORMATION

This repeater is located at the Lavina Mountain Foresty lookout site. This is at 7300 ft. elevation. It covers most of Kootenay lake and Duncan Lake. Can be heard/used as far south as the Kokanee Creek campground. Works well for HT in the Glacier Creek campground (Duncan Lake)

There are no DTMF commands or any special features with this repeater. When using this repeater, you will not hear any courtesy tones, and a short transmit hang time.

7.1 Battery/Solar Power

The VE7WKM repeater is a Battery/Solar powered repeater. It has low power VHF and UHF radios and is basic in its operation.

7.2 Radio Ports

There are two radio ports. They are linked together. Only analog operation is supported.

Radio Port	Port Description	Linked to Radio Port
1	VHF User 145.170- 100Hz CTCSS Tone	2 - UHF Link
2	UHF Link 444.550+	1 – VHF user port

7.3 User DTMF Codes

There are no local DTMF codes available with this repeater, but you can send DTMF codes to the VE7RCT Slocan Ridge repeater for linking. See below.

DTMF Code	Description

7.4 Connecting 145.170- to Slocan Ridge UHF link

To connect the 145.170- repeater to the 146.640- (VE7RCT) repeater, use the following DTMF codes to connect / disconnect. Note: if you get a voice response back, this means that the VE7RCT repeater has heard and understood the linking DTMF command. The voice responds are coming from the VE7RCT repeater, and NOT the VE7WKM repeater.

DTMF Code	Description
762#	Link 146.640 VHF to UHF Hub 440.550+
763#	Unlink 146.640 VHF from UHF Hub 440.550+