The DZ Company, LLC

710 Grove Ct.

Loveland, CO 80537

970-667-2254

# Saguaro Construction Note #6

03/11/2023

**Software Update – Rev A.01.01**

This software release has these features:

1. The left button at the bottom of the screen has been changed so that the button cycles through four states, as follows:

**AGC: xxx**, where xxx = 000-400 - This is a relative threshold below which automatic gain control is not applied. Using a low value (default 50) can improve AM reception because pauses in speech, which are common in talk radio, are not amplified at the same level as the rest of the audio. This function has very little effect on FM. When selected, use the Tuning knob to change values.

**Atten: xx dB -** The input amplifier in the SDR can have 0 to 62 dB of “gain reduction” applied. This was formerly fixed at 12dB. For frequencies less than 60MHz, the attenuation ranges from 0 to 42dB in 6 steps. For higher frequencies, the range is 0 to 62dB in 10 steps. Use the Tuning knob to change values.

**Muted -** Clicking the Mute button formerly caused the audio to be muted. Now that you are cycling through four settings, this button indicates that the radio is now muted. If you change the volume while muted, the new setting will be remembered when you select “Receiving”.

**Receiving –** Clicking the Receive button formerly caused the audio to be un-muted. Now that you are cycling through four settings, this button indicates that the radio is now un-muted. The volume control will have an immediate effect on loudness.

1. The **RFG** control range has been lowered to 0-42dB from the original 0-59dB. This control is commonly set at about 12:00 (pointer pointing up) or less. Full clockwise (all the way to the right) = 0 dB.
2. The buttons along the bottom have been moved up 10 pixels and the border has been reduced by 35 pixels so that the white border can be seen. This makes it easier to touch the controls.
3. The **Exit** function has been cleaned up to shut the radio down more efficiently. It also blanks the screen and displays the shutdown notice in the center of the screen.
4. Startup is cleaner. This change should also result in fewer “burps” in the audio.
5. Certain frequency labels on the right side of the screen have been adjusted to line up better with the others.
6. The software revision and a “free-use” note has been added to the source code. Unused code that was previously commented out has also been removed.

To install:

1. Save the zip file to a convenient place on a PC (not Saguaro)
2. Extract the three files (sw\_rx.py, sw\_rx\_globals.py and stream\_sdr\_to\_audio.py)
3. Copy the three files to a flash drive
4. Eject the flash drive
5. Turn on Saguaro
6. Exit the Saguaro program if it is running by clicking “Exit”, then “No”, which takes you to Linux
7. Insert the flash drive into a spare USB port on your Saguaro
8. Linux will see that you have inserted a flash drive and ask you if you want to open it in File Manager. Click Yes
9. In File Manager, navigate to the media you inserted, locate the three files on that drive, highlight all three, right click and select “Copy”
10. In File Manager, navigate to home/dzkit/Saguaro. You should see the same three files (sw\_rx.py, sw\_rx\_globals.py and stream\_sdr\_to\_audio.py)
11. Rename the existing files by adding \_orig to the names, e.g., sw\_rx\_orig.py
12. Paste the new files in that same folder
13. Exit the File Manager
14. Click the “Eject” symbol on the top menu bar
15. When you see the “safe to remove” message, remove the flash drive
16. Start the Saguaro program by clicking the raspberry, then Other, then Saguaro
17. The program will also continue to start automatically when you turn power on.