Wireless Advisor Advanced Pedestrian System (WiAAPS) Common Procedures

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1 Introduction

1.1 Purpose of this Document

The purpose of the document is to describe the common procedures of the Wireless Advisor Advanced Pedestrian System (WiAAPS). This document doesn't cover the installation of the WiAAPS.

1.2 Additional Information

- See the WiAAPS Installation Guide for installation instructions.
- See the WiAAPS Installation Quick Guide for a brief graphical installation guide.
- See the Guardian/WiAAPS Base Station Mounting Template for an easy to use hole pattern for mounting APBs.
- These documents are available on the Campbell Company website www.pedsafety.com

- Reference the Campbell Company Intersection Worksheet for location specific information.

1.3 Contact Information

The first line of contact should be the distributor that the system was purchased from. If you are unable to contact the distributor, contact Campbell Company directly

WiAAPS
WiAPB and WiAPC

2 Accessing the Webpage

Required equipment: Laptop and Ethernet cable

1. Connect your laptop to the WiAPC via the Ethernet cable (internet access is not required)

2. Using your browser (Chrome is highly recommended), navigate to the IP address for the WiAPC. The default IP is 192.168.1.101. If needed, the IP address can be verified by pressing the "B1" button on the front of the WiAPC until its IP is displayed.

Figure 1: Webpage address bar

3. You will see the following screen pop up looking for credentials. The default user name is "admin" and the default password is "password".

Figure 2: Authentication page

3 Swapping Out a WiAPB

Required equipment: Laptop and Ethernet cable

1. Connect your laptop to the WiAPC via the Ethernet cable. *(see Section 2, page 3)*
2. If you have not powered down the station you are removing, go ahead and do so. Once it is offline, it will be indicated in the Station Status display with "ATTN" (see below).

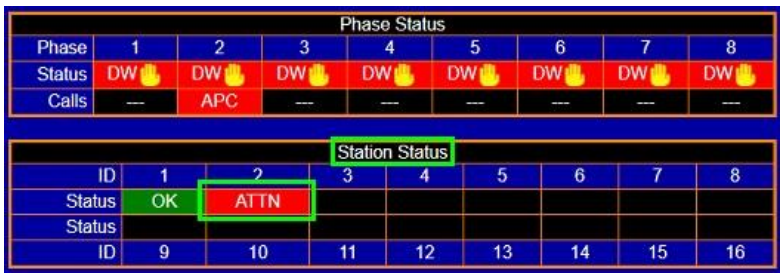


Figure 3: Station status display

3. Now, navigate to the "Station Settings" tab. Scroll down to the Station ID section. The MAC address for the old station needs to be removed. In our example the current MAC address associated with Station #2 (highlighted in green, below) needs to be removed. Take note of the last 4 digits of that address, because we will be removing it in the next step.

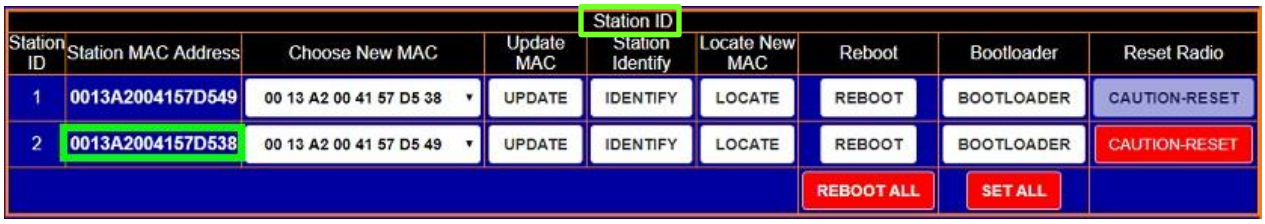


Figure 4: Finding the MAC address associated with a particular station ID

4. Navigate to the "Station Setup" tab to find the MAC address you identified in the previous step. Click the "Delete" button next to that address. *(NOTE: The "Radio Number" may not match the Station ID).* A verification window will pop up; click "Yes".

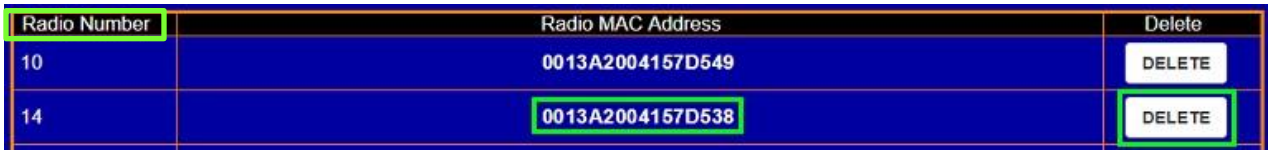


Figure 5: Deleting a station's MAC address from the WiAPC

5. If you have not installed and powered up the station you are installing, go ahead and do so. Take note of the last 4 digits of MAC address printed on the label on the front as you will need this to continue (see below).

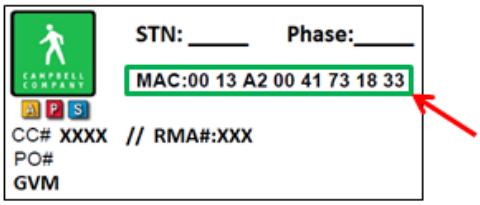


Figure 6: The MAC address listed on the label on the front of the station

6. On the "Station Setup" tab, scroll down and click on the yellow bar that says "Search For Stations". A window will pop up that lists all stations that the network detects. If you cannot find your MAC address there may be a yellow bar in the pop-up that reads "Other Stations" (see below). Click on that bar. Look carefully through all the MAC addresses that are listed. Once you have found the matching MAC address, click the "Add" button next to it. Allow the ten second countdown to finish, and click "Close".

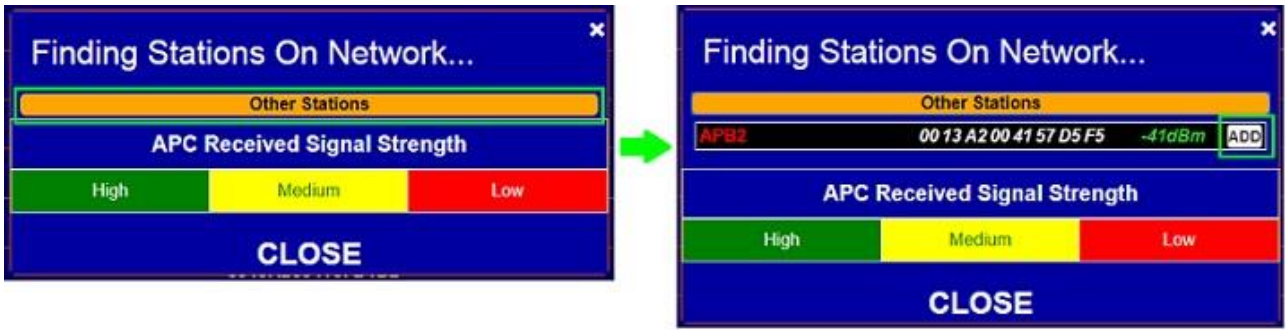


Figure 7: Finding the new station by MAC address

7. Navigate to the "Station Settings" tab and under "Station ID" look for the station number you want to add, and choose the new corresponding MAC address – in our example it is Station ID #2 and MAC address 00 13 A2 00 41 57 D5 F5. Once you have the correct MAC address selected, click the "Set ID" button in that column.

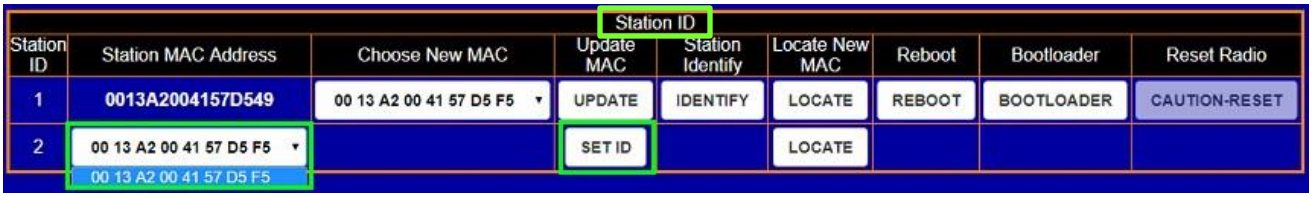


Figure 8: Setting the new station's Station ID by MAC address

8. Remain on the "Station Settings" tab and scroll down to the section titled "Station Phase And Sync Call". Verify that the phase for your new station is set correctly using the drop-down menu. Click on the SEND>>2 button for that station. Allow a few seconds for the settings to send and for the Station to reboot.

Figure 9: Setting the new station's phase

9. Scroll down to the next section, "Station Mode". Under "Set APS Mode" ensure that MUTCD is selected in the drop-down list for your newly-added station, and click SEND>>2.

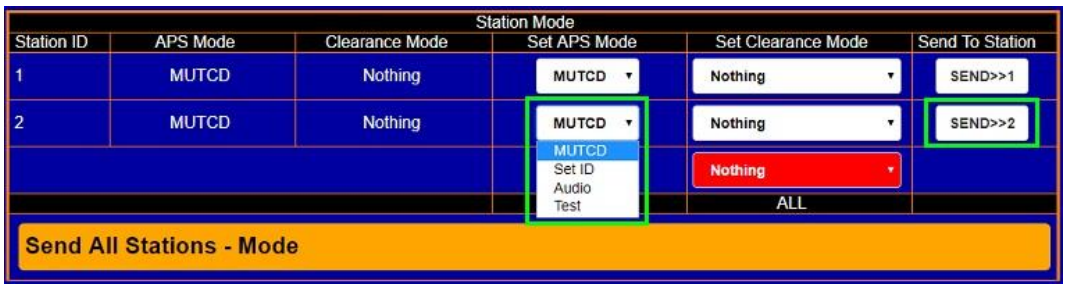


Figure 10: Setting the new station's mode to MUTCD

10. Your station should now be added and functioning. We recommend sending all the settings on the "Station Settings" tab to the new station to make sure they match what is programmed in the WiAPC:
    a. Station Walk Timeout
    b. Station Button Timing (Set Button Debounce: 100ms)
    c. Station Vibration Settings (We recommend Intensity of 30%; Vibro-tactile default: 0ms)
    d. Station Audio Timing
    e. Daytime Locator and Non-Locator Volumes (We recommend starting with the settings below, and adjusting from there as needed. *Note: 39 is the lowest audible setting.*)

Figure 11: Latest factory recommended audio settings

    f. Night Mode settings if you are using the Night Mode feature

Each of those settings can be quickly sent by their respective SEND>>2 buttons, or sent to all stations using each set of settings' respective yellow button.

4 Swapping Out a WiAPC

1. Take a note of all the MAC addresses of the stations in the intersection and the Station IDs. (This is very important.)

    a. Check the "WiAAPS Message Worksheet" inside the manila envelope from Campbell Company. The picture below is an example of a list of MAC addresses. MAC addresses will be unique to each WiAPB.

Phase	Station ID:	(Start at NW crossing of NS Street)			Direction of Arrow	MAC Address
P8 1	8	Lowell (Blvd)	@	Misty (St)	L	00 13 A2 00 41 5D 71 E4
P8 2	1	Lowell (Blvd)	@	Paul Derda Rec Center	R	00 13 A2 00 41 5D 72 02
P6 1	2	Paul Derda Re	@	Lowell (Blvd)	L	00 13 A2 00 41 5D 72 0A
P6 2	3	Paul Derda Re	@	Lowell (Blvd)	R	00 13 A2 00 41 5D 71 E5
P4 1	4	Lowell (Blvd)	@	Paul Derda Rec Center	L	00 13 A2 00 41 5D 71 CC
P4 2	5	Lowell (Blvd)	@	Misty (St)	R	00 13 A2 00 41 5D 71 73
P2 1	6	Misty (St)	@	Lowell (Blvd)	L	00 13 A2 00 41 5D 72 09
P2 2	7	Misty (St)	@	Lowell (Blvd)	R	00 13 A2 00 41 5D 71 BD
					APC MAC ID	00 13 A2 00 41 5D 73 1B

Figure 12: WiAAPS Message Worksheet with MAC addresses and phases for each station

    b. If the manila envelope is not available, each WiAPB has the MAC address on the label behind the adapter plate and sign.

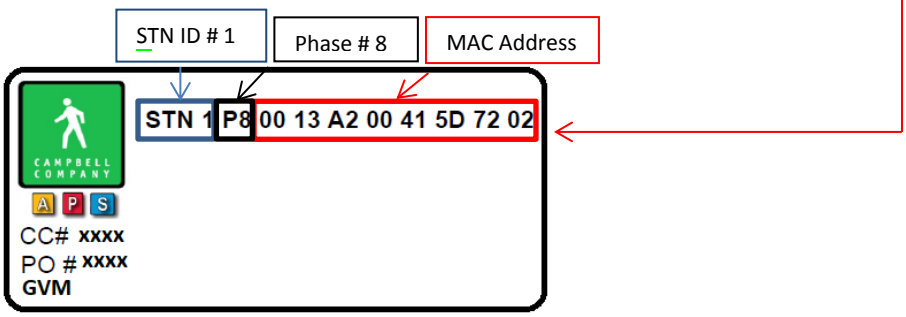


Figure 13: Sample station label with station ID, phase, and MAC address highlighted

c. Check the map to locate all the WiAPBs. Make sure the phases are according with the intersection

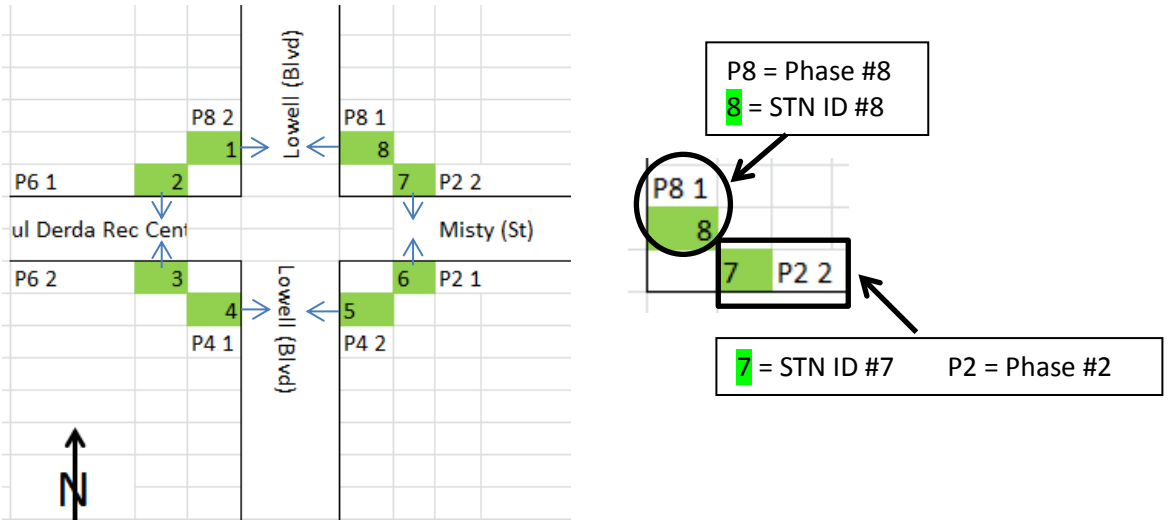


Figure 14: Sample intersection map with station IDs and phases indicated

2. Remove the old WiAPC and install the new one. (Connect power and all the cables to the unit).
3. Turn the WiAPC ON and connect your laptop via the Ethernet cable. *(see Section 2, page 3)*
4. On the "Station Setup" tab, scroll down and click on the yellow bar that says "Search For Stations". A window will pop up that lists all stations that the network detects. If you cannot find all of your MAC addresses there may be a yellow bar in the pop-up that reads "Other Stations" (see below). Click on that bar. Look carefully through all the MAC addresses that are listed. Click on the "Add" button next to the first MAC address that belongs to this intersection, and allow the ten second countdown to finish, and repeat for each station. Since the stations were attached to another WiAPC previously, you may get a dialog that says, "The Station has been attached to another APC. Do you want to attach to this APC?" Click "Yes".

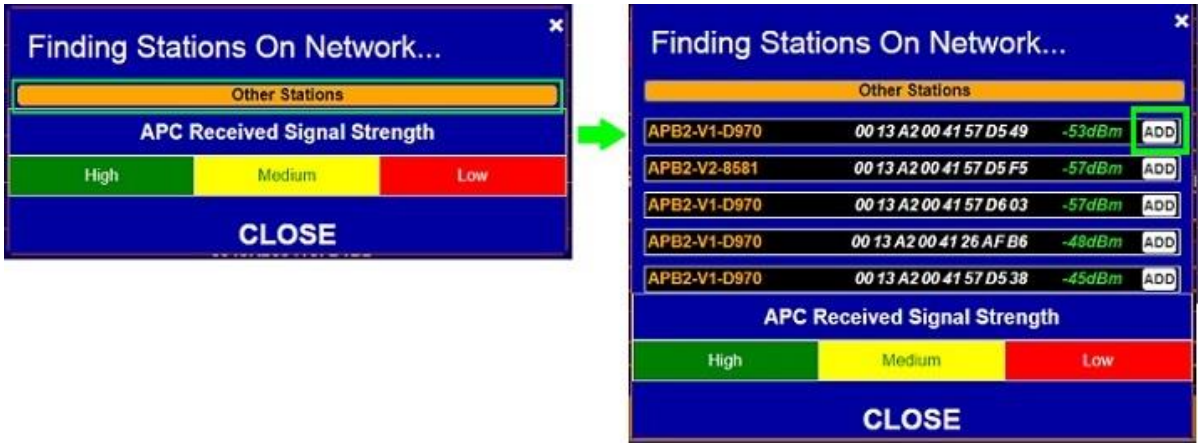


Figure 15: Finding the stations by MAC addresses

Note: If the list shows a MAC address that doesn't correspond to the intersection that you are working on, **DON'T** click on the ADD button; this could be a station from a different intersection. (Make sure you have the right MAC addresses for each intersection.)

6. Navigate to the "Station Settings" tab and under "Station ID" look for the Station ID number and choose the corresponding MAC address. Once you have the correct MAC address selected, click the "Set ID" button in that row. (Add one station at a time.)

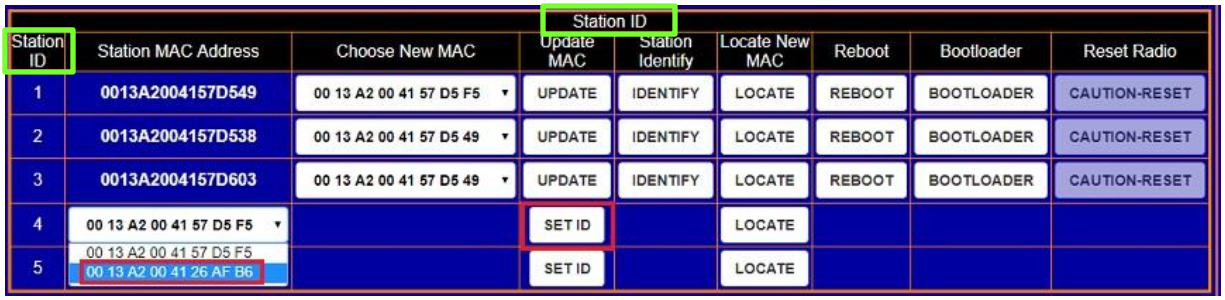


Figure 16: Setting the stations' Station IDs by MAC addresses

7. Remain on the "Station Settings" tab and scroll down to the section titled "Station Phase and Sync Call". Select the right phase for each Station ID using the drop-down menu. After you have selected all the phases to all the stations, click on the yellow "Send All Stations – Phase and Sync Call" button. This will send the phase number to all Stations. Allow a few seconds for the settings to send and for the stations to reboot.

Figure 17: Setting all the stations' phases

8. Scroll down to the next section, "Station Mode". Under "Set APS Mode" ensure that MUTCD is selected in all stations' drop-down lists (if needed, all can be set simultaneously by using the red drop-down at the bottom), then click on the yellow "Send All Stations - Mode" button. This will set all the stations to MUTCD Mode. Allow a few seconds for the settings to send and for the stations to reboot.

Figure 18: Setting all the stations' to MUTCD mode

9. Your stations should now be added to your new WiAPC and functioning. We recommend sending all the settings on the "Station Settings" tab to the stations to make sure they match what is programmed in the WiAPC:
    a. Station Walk Timeout
    b. Station Button Timing (Set Button Debounce: 100ms)
    c. Station Vibration Settings (We recommend Intensity of 30%; Vibro-tactile default: 0ms)
    d. Station Audio Timing
    e. Daytime Locator and Non-Locator Volumes (We recommend starting with the settings below, and adjusting from there as needed. *Note: 39 is the lowest audible setting.*)

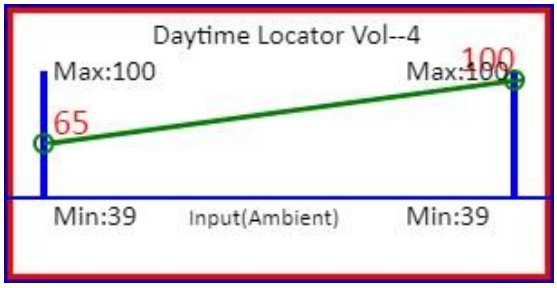


Figure 19: Latest factory recommended audio settings

    f. As well as time and Night Mode settings if you are using the Night Mode feature.

Each of those settings can be quickly sent to all stations using each set of settings' respective yellow button.

5 Adding or Changing Audio Files

Required equipment: Laptop with required audio files and Ethernet cable

1. Connect your laptop to the WiAPC via the Ethernet cable. *(see Section 2, page 3)*
2. Navigate to the "Station Settings" tab. Scroll down to the "Station Mode" section. In the "Set APS Mode" column, for each button that needs audio files, click on the drop-down list and select "Audio MODE" then click the "SEND>>" button for each. Alternatively, all buttons can be put into Audio Mode by clicking on the red drop-down list at the bottom of all rows and selecting "Audio" (see below). Then click on the yellow button "Send All Stations - Mode".

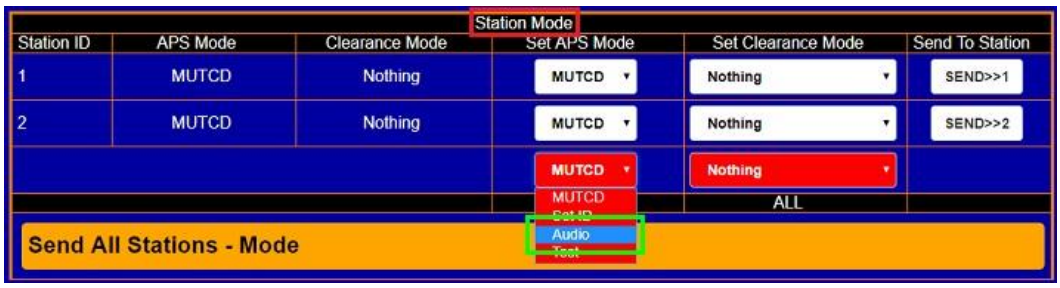


Figure 20: Putting all stations into Audio Mode

3. Now navigate to the "Audio Files" tab. To add custom audio files to the WiAPC, scroll down to "Upload File" and click "Choose Files". Multiple files can be chosen at once. After selecting files, mousing over "Choose Files" will display a list of files chosen, if desired. Now click "Upload to APC". The audio tab should reload when upload is complete. *Note: All uploaded audio files must be in .WAV format.*

Figure 21: Uploading custom audio files to WiAPC

4. Scroll down to "Location". Use the drop down menus to select the custom Location file for each station in the intersection. Unless the same file will be used for every station, you can disregard what is displayed in the "ALL" drop down menu. Once all your selections have been made, click "Save All Location Choices to APC". The audio tab should reload when upload is complete.

Figure 22: Saving Location audio file choices for each station to the WiAPC

5. Scroll down to "Walk". Use the same method as before to select the custom Walk file for each station in the intersection. Once all your selections have been made, click "Save All Walk Choices to APC". The audio tab should reload when upload is complete.

Figure 23: Saving Walk audio file choices for each station to the WiAPC

6. Once all your custom audio files are chosen, scroll to the top of the Audio Files tab and click on "Go To Audio File Transfer Mode".

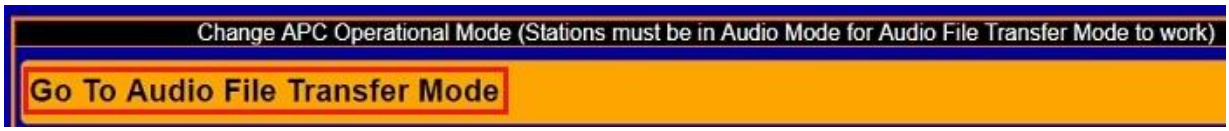


Figure 24: Click "Go To Audio File Transfer Mode" to begin transferring files from the WiAPC to WiAPBs

7. Scroll down to "Send Files From APC To Stations". To send all audio files to all stations, click on the red "Send" button in the bottom right corner. A progress window will pop up to show progress. If you only need to send custom Location and/or Walk files, it will be faster to click on the yellow "Send" button in the Location column, followed by the same for the Walk files. If at any point during your file upload, the progress window indicates that a file did not upload correctly, once the entire process is done, you can resend individual files using the white "Send" buttons.

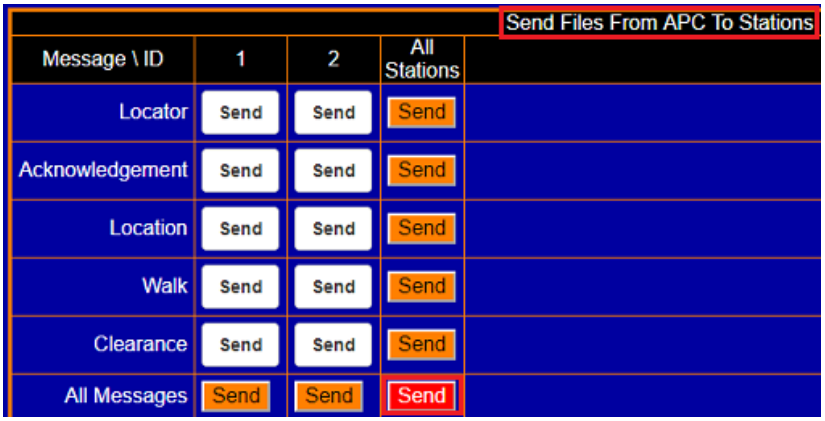


Figure 25: Interface for sending audio files to the WiAPBs

8. Once all audio files are uploaded, scroll back to the top of the page and click on "Go Back To Intersection APC Mode".

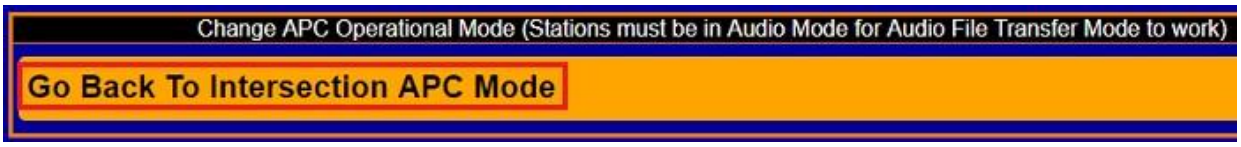


Figure 26: Click "Go Back To Intersection APC Mode" to put the WiAPC back into operational mode

9. Navigate back to the "Station Settings" tab, and scroll down to the "Station Mode" section. Select MUTCD mode from the drop-down list for either an individual station or for all stations, and send the setting change to each or all stations.

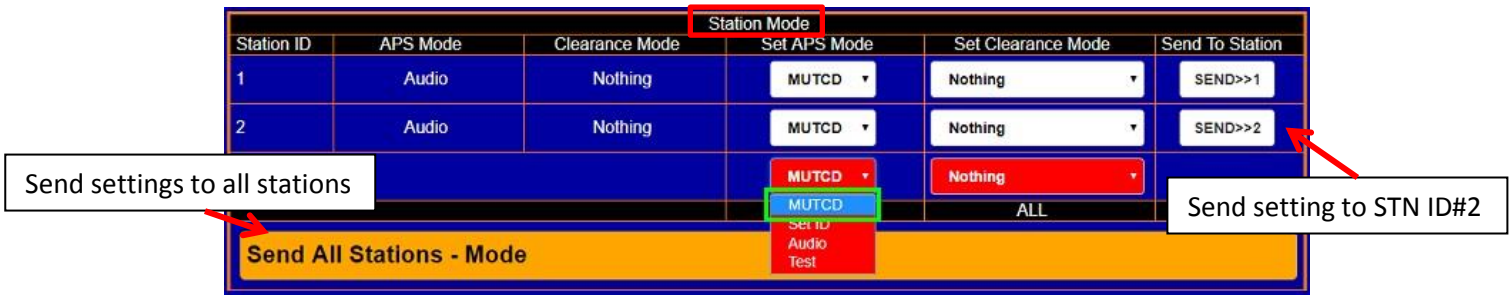


Figure 27: Changing stations back to MUTCD mode

10. New audio should now be uploaded and stations should be functioning normally

6 Backing up Audio Files from the WiAPC

Required equipment: Laptop and Ethernet cable

1. Connect your laptop to the WiAPC via the Ethernet cable. *(see Section 2, page 3)*
2. **For WiAAPS V0.1.0**: Click over to the "Sound Files" tab. Within the Audio Files section at the top, all custom audio files should be listed under both "Locations" and "Walks" headings. To download each custom audio file, click on the downward arrow in the preview column next to each file (see below). The files should download into your computer's Downloads folder.

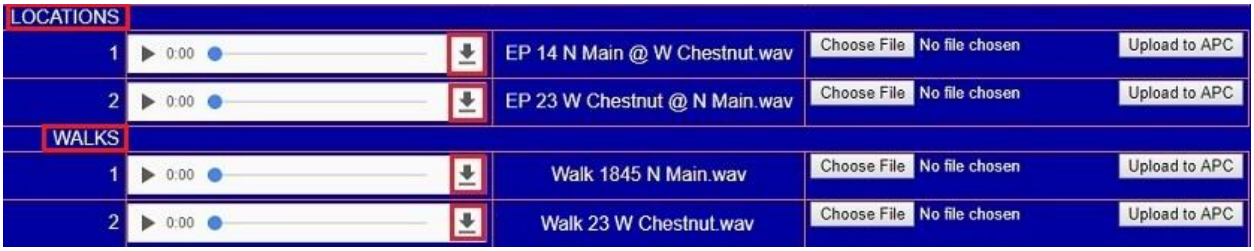


Figure 28: Backing up audio files from the WiAPC for V0.1.0

3. **For WiAAPS V0.5.0 and V1.0**: Click over to the "Audio Files" tab. Scroll down to the "Location" heading. All custom audio files should be listed within the Location section and the following Walk section. To download each custom audio file, click on the downward arrow in the preview column next to each file (see below). The files should download into your computer's Downloads folder.

Figure 29: Backing up audio files from the WiAPC for V0.5.0 and V1.0

Audio file backup is now complete. If for any reason all of your custom files cannot be backed up or are missing, please contact Campbell Company and we can send the files to you.

7 Updating WiAPB Firmware

WiAPB Firmware:

BL: V0.1.0 B-0002 A: V0.1.0 B-0002

BL: V(Wi)0.1.0 B-0000 A: V(Wi)2.1 B-0000

Version 2.1 and older: Needs to be upgraded to V2.5
(BL: V(Wi)0.1.0 B-0000 A: V(Wi)2.5 B0)

BL: V(Wi)3.0 B0 A: V(Wi)3.0 B0

Version 3.0: Latest factory firmware – do NOT upgrade

Required equipment: Laptop, USB cable, PedConnex utility

1. Open up the PedConnex utility. (If you do not have the PedConnex utility, it can be downloaded here: http://www.pedsafety.com/downloads/)
2. Connect your computer to the first station via USB. After allowing a few seconds, on the PedConnex utility click on "Connect".
3. Make sure to check the firmware version at the bottom of the utility. If application is 2.1 or older (lower), proceed with the update.

BL: V(Wi)0.1.0 B-0000 A: V(Wi)2.1 B-0000

Figure 30: Version number must be 2.1 or older to proceed with upgrade

4. Navigate to the "Advanced" tab and click on "Open Firmware". Navigate to the location where you saved your firmware updates, and open the folder WiAPB firmware. This contains the WiAPB firmware file.

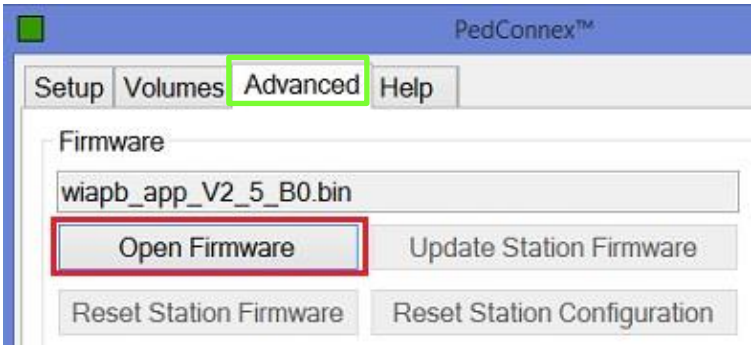


Figure 31: Opening the new WiAPB firmware via the Advanced tab in PedConnex

5. ***VERIFY*** that the station firmware file is **wiapb_app_V2_5_B0.bin**. Then click on "Update Station Firmware". It is very important that "Save to Station" is ***NOT CLICKED*** at any point in this process.

Figure 32: Do NOT click "Save to Station" at any point during the firmware update process.

6. At the bottom of the utility, there will be a status bar. When the firmware update is complete the status bar will be completely green and a message will display that says "Upgrading Firmware DONE". If you want to verify that the firmware was updated successfully, you can match the firmware revisions to the one in the image below. (If it does not match, try disconnecting your station from PedConnex, then reconnecting.)

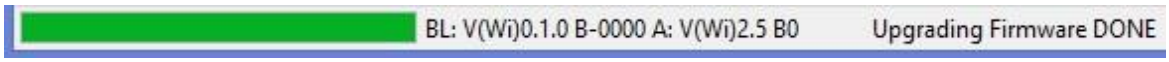


Figure 33: PedConnex status bar indicating when firmware updating is complete

7. Now navigate to the Setup tab and scroll down to the Audio section. We need to load the countdown audio file onto the station. Next to the Countdown audio file, click on "Send". **Do NOT click on "Save to Station".**

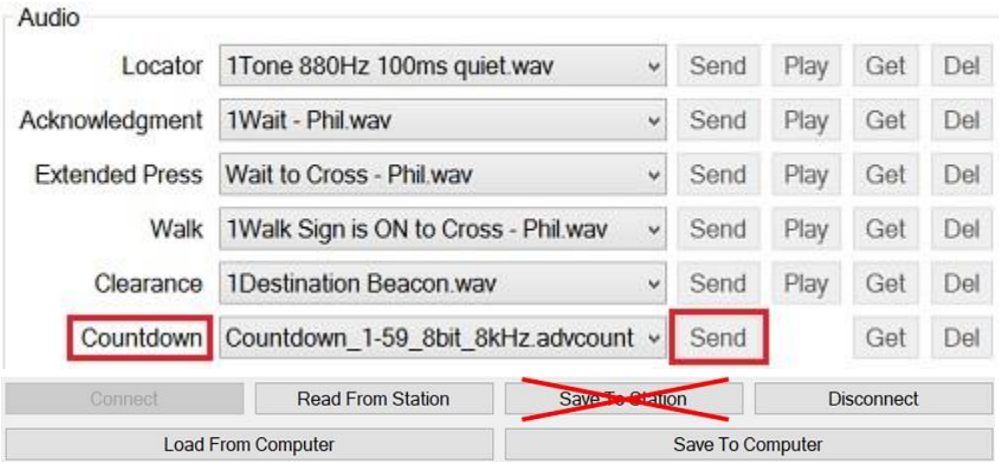


Figure 34: Sending the Countdown file to the station.

8. Now disconnect the station from the utility, and repeat the above steps for all stations in the intersection. ****The firmware listed on the Advanced tab will change to the default when connecting each time. Always relocate the new firmware file after connecting and before updating. ****
9. The WiAPB firmware upgrade for the intersection is now complete, and the WiAPC firmware update process is ready to begin. Proceed to Section 8.

8 Updating WiAPC Firmware

WiAPC Firmware:

WiAAPS: 0.1.0 Version 0.1.0: Needs to be upgraded to V0.5.0 (WiAAPS: 0.5.0)

WiAAPS: 1.0. Version 1.0: Latest factory firmware – do NOT upgrade

Required equipment: Laptop, Ethernet cable

WARNING: Upgrading the WiAPC firmware will delete custom audio files from the WiAPC. WiAPBs will retain their audio files, but we do recommend backing up the audio files from your WiAPC if you do not already have them saved elsewhere (see Section 6 for how to back up audio files from your WiAPC), and reloading them to your WiAPC after the update. (See Section 5, page 11,steps 1-5, for how to load and configure audio files on your WiAPC.)

1. Check firmware version on the WiAPC by pressing B1. If the firmware version is different from VER: WiAAPS: 1.0, proceed with the update.
2. Connect your laptop to the WiAPC via the Ethernet cable. *(see Section 2, page 3)*
3. Navigate to the location where you saved the firmware upgrade files. Open the WiAAPS_APC_Patch_V00_05 folder. Open up the putty application located within that folder.
4. In the PuTTY configuration screen, enter the IP address of the WiAPC into the Host Name field, verify "SSH" is selected as the connection type, and click "Open".

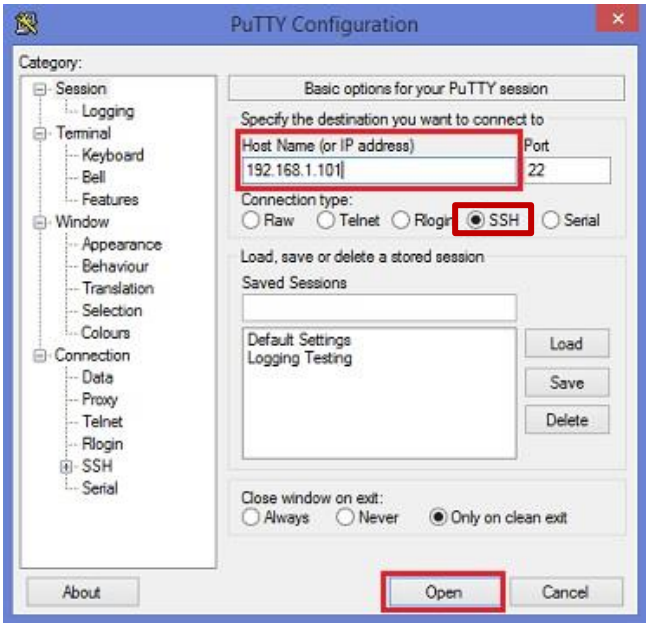
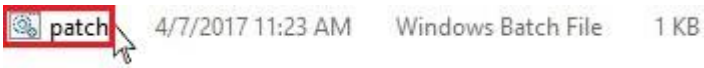


Figure 35: PuTTY configuration screen

5. A terminal window will try to open, but you will likely get a PuTTY Security Alert window. ***Click "yes" on this screen.***

Figure 36: PuTTY Security Alert window. Click "Yes" for this alert, or ***the update will not be able to be performed****.*

6. You can now close the PuTTY terminal window that just opened.
7. If your WiAPC is networked and the IP address is different from the default, you will need to open the document ips Text Document and change the IP address in that document to match your WiAPC's IP address and save.
8. Double-click on the Windows Batch File "patch" (see below).



9. If you get the following Windows message, click on "More Info" and then "Run Anyway".

Figure 37: Windows protection message. Click on "More info" (left) and then "Run anyway" (right).

10. A terminal window will open and automatically run the patch. When it is finished it will display “Patch of 192.168.1.101 complete”. Pressing any key will close the terminal window.

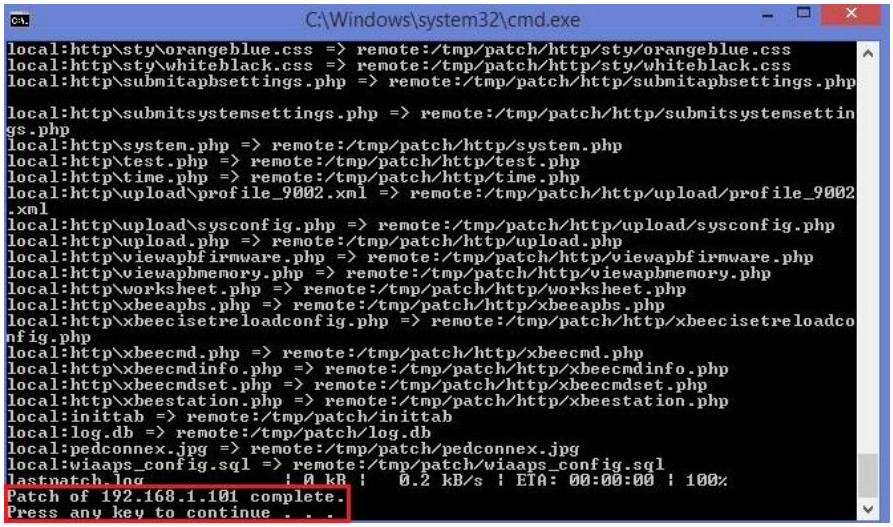


Figure 38: Terminal window installing firmware update patch

11. Power off the WiAPC using the power switch in front of the WiAPC. If your WiAPBs are not powered from your WiAPC, ensure that they are also power cycled at this time. After several seconds have passed, power it back on.
12. Return to your browser. You will likely need to clear the cache on your browser to eliminate some visual formatting issues that may occur. For Chrome:
    a. Go to the Chrome menu and select settings.
    b. Scroll to the bottom of the Settings Page and click on “Advanced”. At the bottom of the first section, “Privacy and Security”, click on “Clear Browsing Data”.

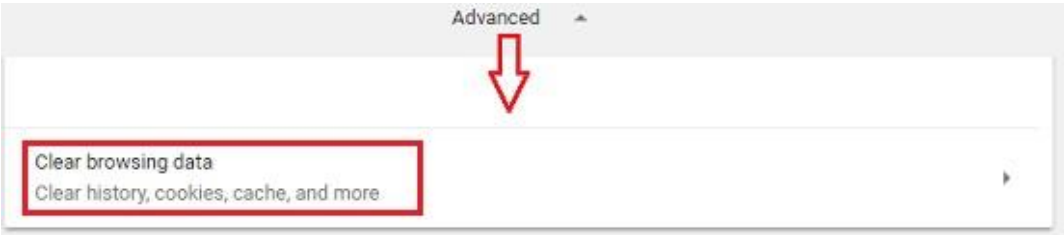


Figure 39: Locating the “Clear browsing data” section in Chrome

c. Change the drop down menu at the top to display “All Time”, and make sure only the “Cached images and files” check box is selected. Then click “Clear data”. You can now close the settings tab.

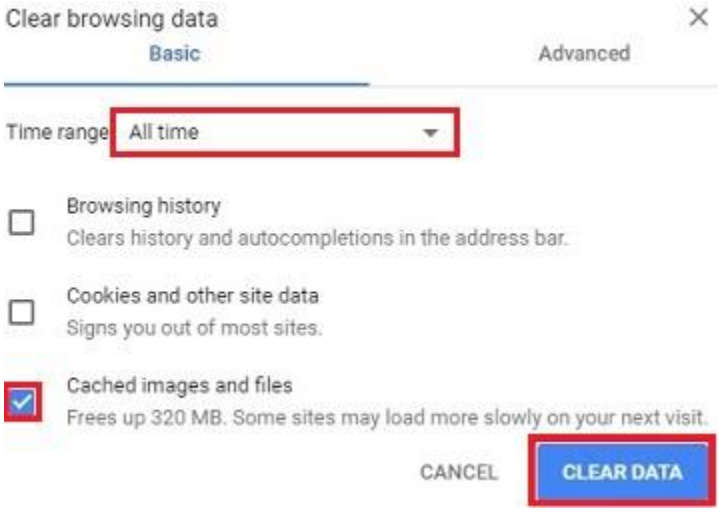


Figure 40: Clearing all cached images from Chrome

13. Re-enter the WiAPC’s IP address in the browser, and log in using your user name and password.
14. We highly recommend resending all settings from the WiAPC to all the WiAPBs at this time, paying attention in particular to vibration and volume settings. Please refer to the instructions in Section 3, page 6, Step #10.
15. The WiAPC firmware upgrade is now complete, and the radio settings update process is ready to begin. Proceed to Section 9.

9 Changing Radio Settings for V0.5.0 and V1.0 Firmware Compatibility

Required equipment: Laptop, Ethernet cable

1. Connect your laptop to the WiAPC via the Ethernet cable. *(see Section 2, page 3)*
2. Click over to the "Station Settings" tab. In the "Station ID" section, click the red button under the Bootloader column that reads "Set all". This will place all stations into bootloader mode.

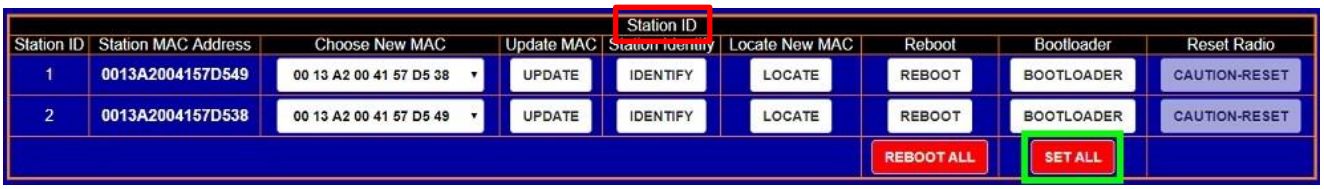


Figure 41: Put all stations into bootloader mode by clicking the red "Set All" button

3. As the system places all the stations into bootloader mode, a pop-up window will display the status of each station. **Please take extra care to verify that all stations are successfully placed into bootloader mode!** If there are any failures (as in the first example below) **take note of the station(s) that fail**, and once the process finishes, individual stations can be set using each individual white BOOTLOADER button.

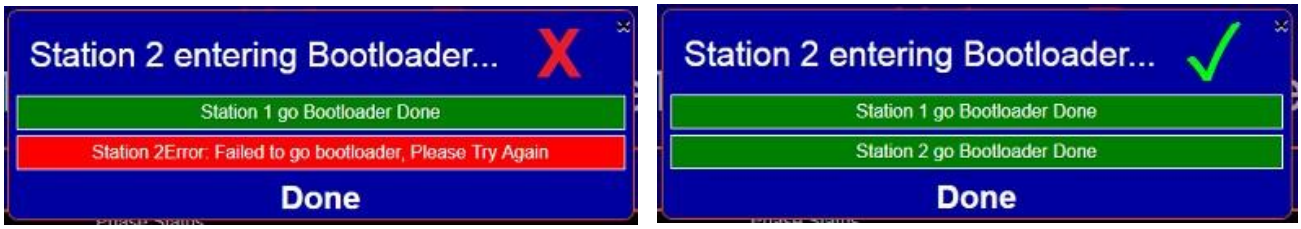


Figure 42: Make sure all station enter bootloader mode (right) and that none fail (as left)

4. Once all stations are in bootloader mode, they will appear down (ATTN) in the Station Status display. Now navigate to the "Advanced" tab. Scroll down to the bottom of the page and click on "Go To Wireless Network Set Up Mode."

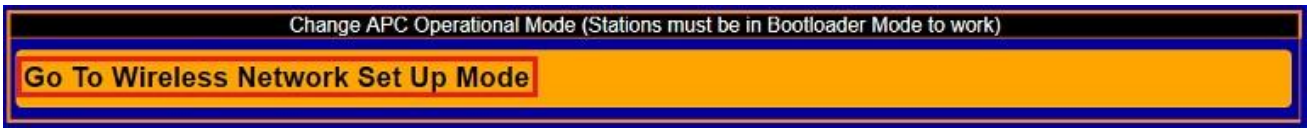


Figure 43: Click to go into Wireless Network Set Up Mode

5. Scroll down to the bottom of the page and click on “Open-RSSI”. A notification will pop up. Click, “Done”.

Figure 44: Updating the WiAPC RSSI radio setting

6. Now scroll up to “Station Wireless Network Setup” and click on “**Get** All Stations – Network Settings”. A pop-up window will display progress. If any fail, click “Get All Stations – Network Settings” again.

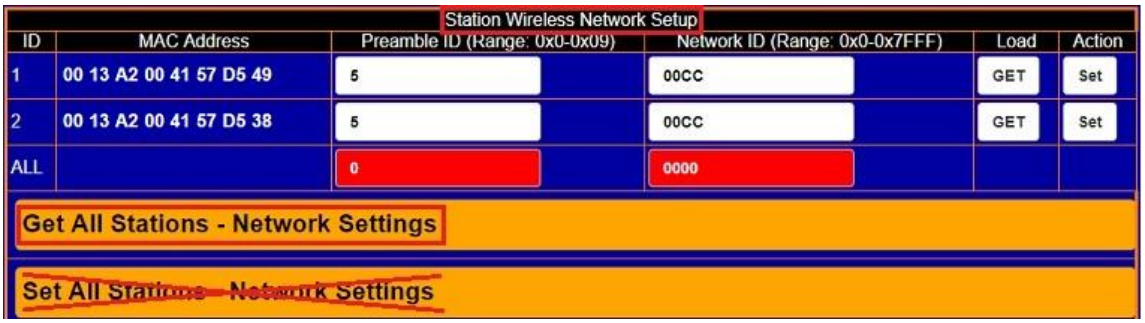


Figure 45: Retrieve current radio network settings from WiAPBs

7. Once the Preamble IDs and Network IDs have loaded for all the stations, in the red field at the bottom of the Preamble ID column, change this value from 5 to **6**. Make sure all the Preamble ID fields above it have changed to 6 as well, and then click “**Set** All Stations – Network Settings”.

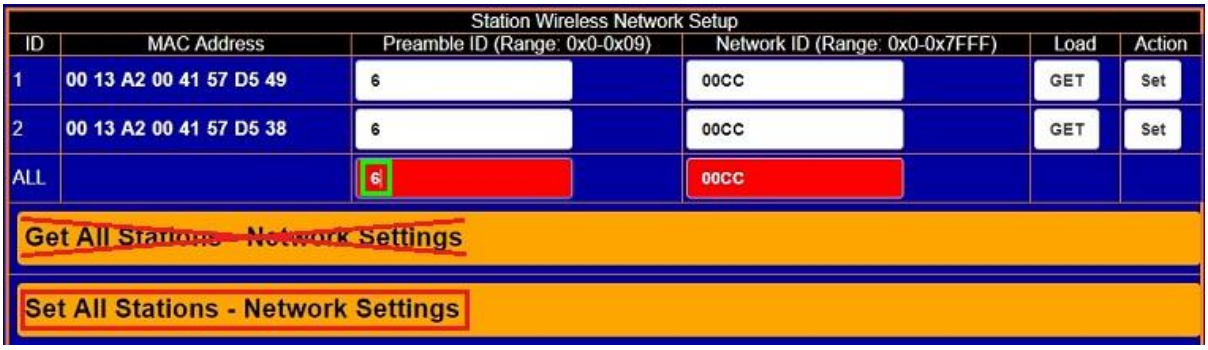


Figure 46: Changing the Preamble value for both the WiAPC and WiAPBs

8. As the system changes the Preamble IDs on all stations, a pop-up window will display the status of each station. **Please take care to verify that Preamble IDs on all stations are successfully updated!** If there are any failures (as in the first example below), **take note of the station numbers that failed.**

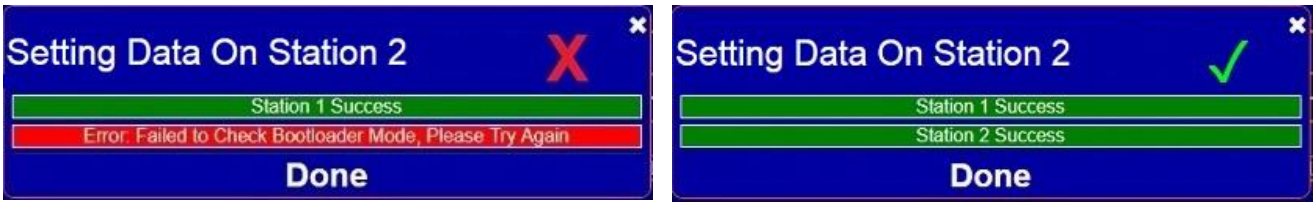


Figure 47: Make sure that all stations update their Preamble ID information (right). ***If any fail (as left), in the next step you can set those stations individually.***

9. If any stations failed in the previous step, you can send the new Preamble IDs individually to each of those stations. In the Preamble ID column, enter the value "**6**" for the first station that failed earlier. Then click on the white "Set" button in that row. This process should be repeated for as many stations as failed previously, until all are successful.

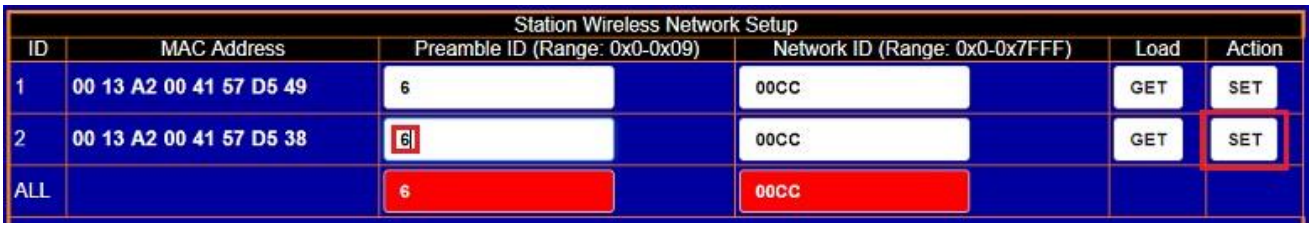


Figure 48: Changing the Preamble IDs to value "6" for each of the stations that previously failed

10. When all stations have successfully updated their Preamble IDs, scroll up to the "APC Wireless Network Setup" section. Change the Preamble ID to the value "**6**", and then click on the yellow "Update APC Radio Network" button.

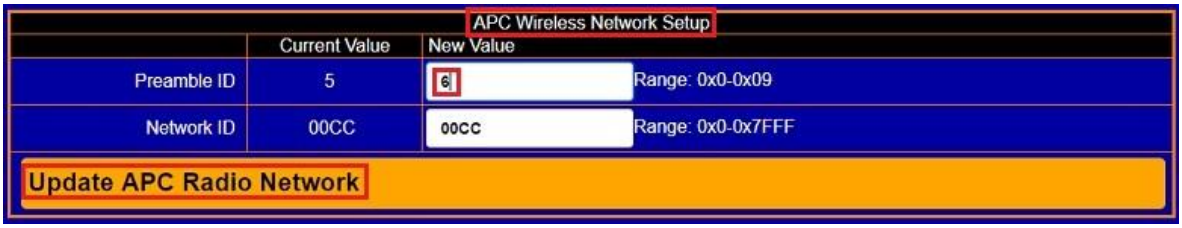


*Figure 49: Changing the Preamble value for the WiAPC to the value "**6**"*

11. Once everything is updated correctly, scroll to the top of the page and click on the yellow "Reboot all stations" button. A pop-up window will display the progress of all stations rebooting. If one of the stations does not reboot, this is ok. You can either try the "Reboot all stations" button again, or we can reboot it individually in a moment.

Figure 50: Rebooting all stations to bring them out of bootloader mode.

12. Next click on the yellow "Go Back to Intersection APC Mode" button at the top of the page.

Figure 51: Putting the WiAPC back into operational mode

13. At the top of the page take a look at your Station Status display. All stations should now show a status of "OK". If there are any stations that are down (as in the example below), navigate to the "Station Settings" tab.

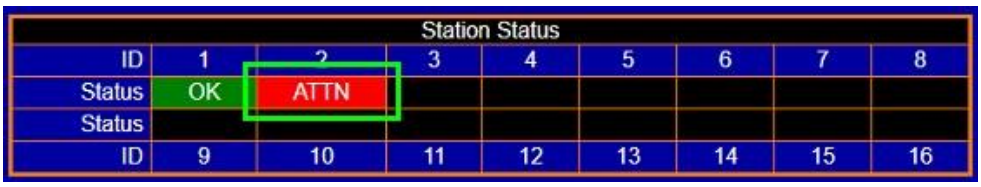


Figure 52: Verify whether all stations have a status of "OK"

14. Scroll slightly down to the "Station ID" section, and for the station(s) that did not reboot correctly, click on the individual white REBOOT button for each station (in our example, Stn #2), allowing enough time between stations for them to reboot.

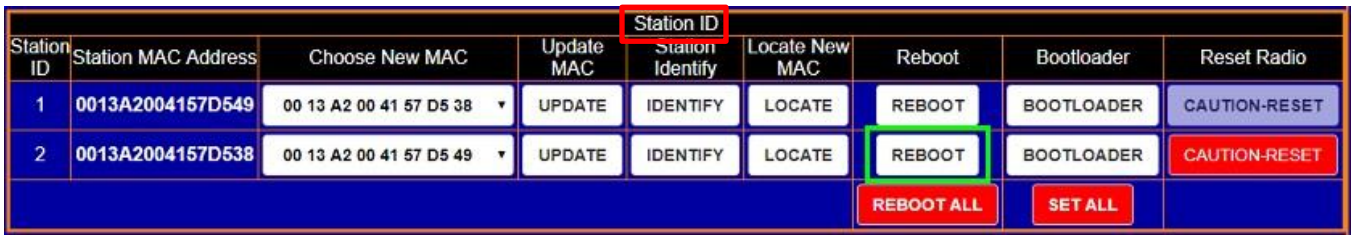


Figure 53: Rebooting individual stations to bring them back up

Firmware and radio updates for the intersection are now complete!