



# **XR3 SATELLITE METER OPERATIONS GUIDE**

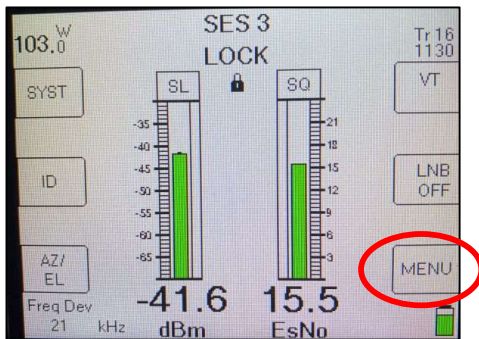
**SES C-Band Project Filter Installations**

**December 6, 2021**

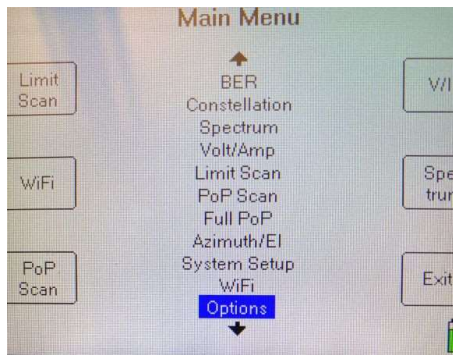
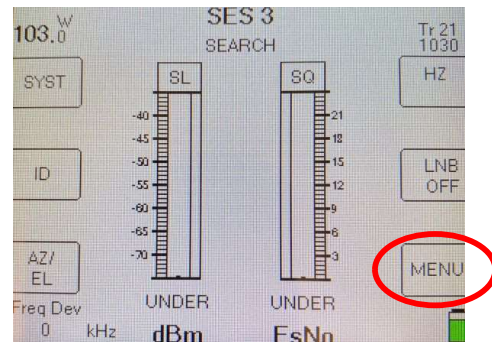
## Initial Configuration

For first time use of the XR3, select Es/No as the “Quality” metric and “Auto file names” to pre-populate Proof Of Performance (POP) files. Follow the instructions below.

1) From the Main screen of the XR3, select “Menu” using the button next to the “Menu” label.



OR



2) Navigate to the “Options” selection using the up/down arrows on the XR3 and press the Enter key.



3) Navigate to the “Level” selection using the up/down arrows on the XR3. Using the right/left arrows, select “dBm” as the level metric.

4) Navigate to the “Quality” selection using the up/down arrows on the XR3. Using the right/left arrows, select “Es/No” as the quality metric.

5) Navigate to the “Auto file names” selection using the up/down arrows on the XR3. Using the right/left arrows, select “YES”.

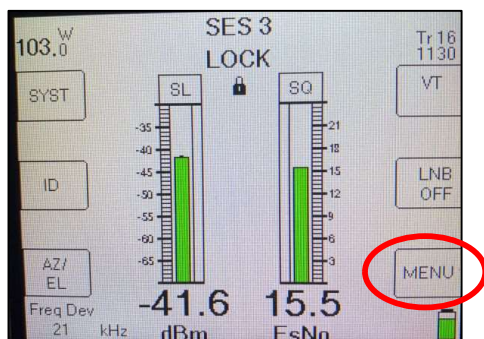
6) Exit the Options menu by pressing the button next to the “Exit” label.

# 1. Pre-Installation Proof Of Performance (POP) Report and Limits Test

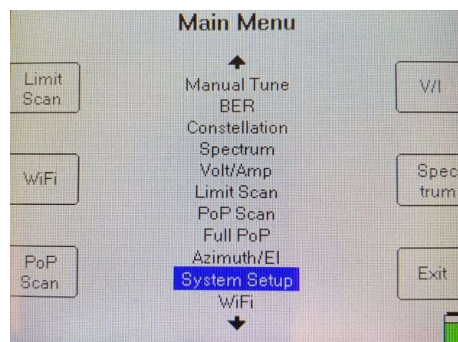
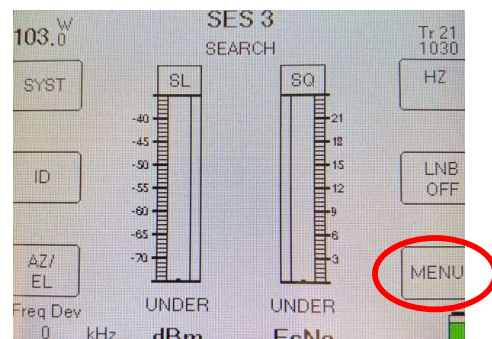
## 1.1 Select the SES/Intelsat XR3 Carrier Database in the XR3

We start by selecting the SES/Intelsat carrier database for antennas without a filter. This is the database that the XR3 will use for carrier browsing and for generating the carriers POP reports. The XR3 remembers the database selection, therefore is not necessary to select the database before every POP report test. Database selection should be done before first time use or when you are not sure what database has been previously selected on the XR3.

1) From the Main screen of the XR3, select "Menu" using the button next to the "Menu" label.



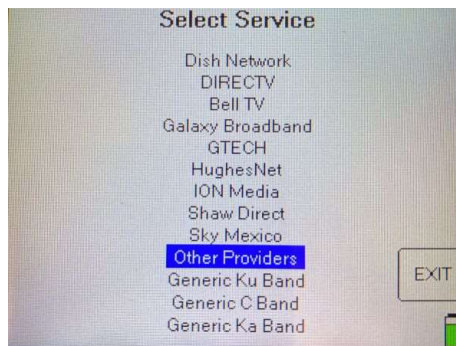
OR



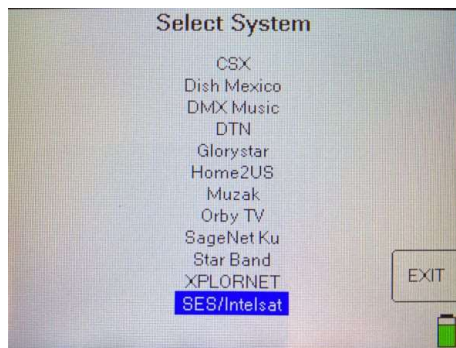
2) From the "Main Menu", select "System Setup" using the up/down arrow buttons and then "Enter" key.



3) Select the field under "SERVICE" by using the up/down arrows (set to Dish Network on the example on the left) and press the "Enter" key to display the "Select Service" menu screen (see next step).



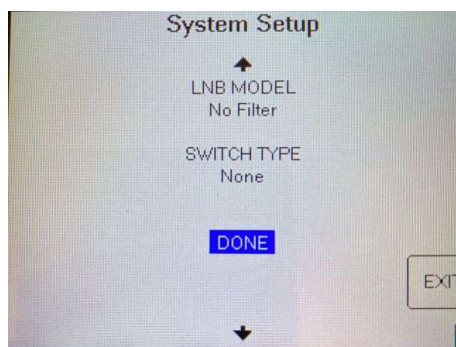
4) From the "Select Service" menu, select "Other Providers" using the up/down arrow buttons and then "Enter" key.



5) From the Select "System Menu", select "SES/Intelsat" using the up/down arrow buttons and then "Enter" key



6) From the Select LNB Model menu, select "No Filters" using the up/down arrow buttons and the "Enter" key. Note: the other two database options, AR Filter and 5G Filter, are not longer used.

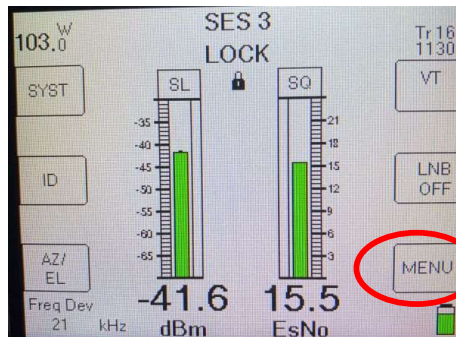


7) From the System Setup menu, select "DONE" using the up/down arrow buttons and then "Enter" key or alternatively, press the button next to the "EXIT" label.



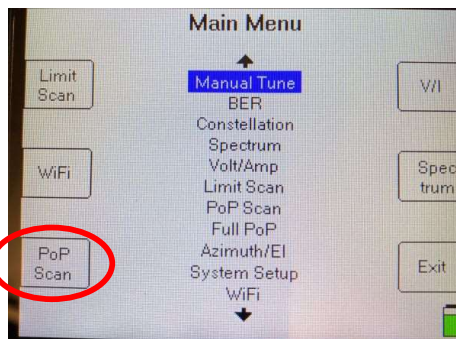
## 1.2 Run and Save the Pre-Installation POP Report

1) Obtain a lock on a carrier on the satellite and polarization of interest, the one you connected to the XR3. (a) Select the satellite using the right/left arrows. (b) Select the polarization (VT for Vertical or HZ for Horizontal). (c) Power the LNB by turning the LNB power ON (if connected directly to the antenna LNB). (d) Browse through carriers (use the Up/Down arrows to change carriers) and make sure you get carrier lock (see picture below). (e) You can use the "ID" button to verify that you are on the correct satellite.

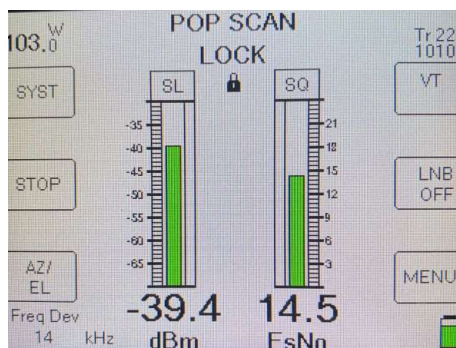


The screenshot shown here shows a Carrier Lock on SES-3 (103.0W), VT (Vertical Pol), Transponder 16 (Tr. 16), Frequency 1130 MHz. The signal power is -41.6 dBm and the Es/No is 15.5 dB.

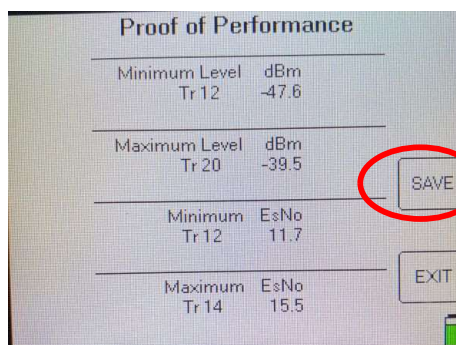
2) Go the "Menu" screen by pressing the button next to the "MENU" label.



3) From the "Main Menu", select "PoP Scan" by pressing the button next to the "PoP Scan" label (bottom left).



4) The XR3 will execute a POP scan and while the POP scan is running, it will show the "POP SCAN LOCK" screen (see below). Let it run until it finishes (Step 4).



5) Once the POP scan is completed, the "Proof of Performance" completion menu is shown. On the "Proof of Performance" menu, select "SAVE" by pressing the button next to the "SAVE" label. If you press the "EXIT" button accidentally, you must re-run the POP report (back to step 1).

PoP Scan File 12/03/2021

Work order# 1234567

File prefix PRE-

Antenna # -A01

File Name 103\_0W-V-PRE-1234567-A01

DATE TIME

Location

Technician

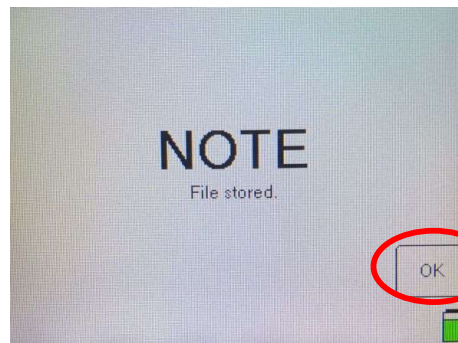
Notes

SAVE

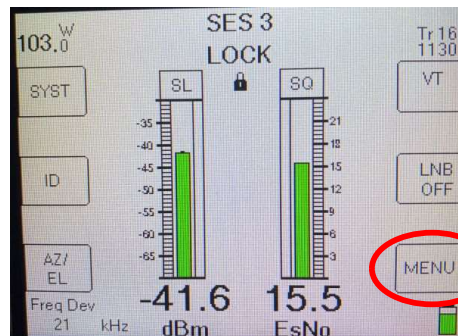
EXIT

Clear

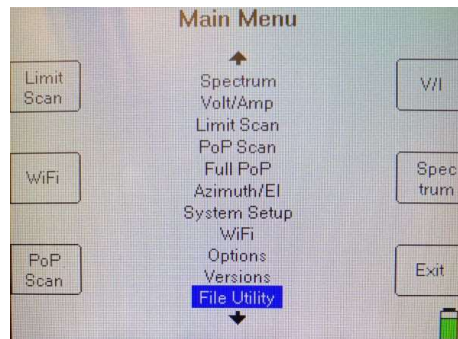
6) From the PoP Scan File menu, fill out the "Work Order #" field, select the "PRE-" file prefix (use the left/right arrow buttons), enter the "Antenna #" (use the left/right arrow). In most cases, this would be A01 unless there is more than one antenna for the same satellite, then it would be A02 (second antenna), A03 (third antenna), etc. Include other relevant information in the Location, Technician, or Notes fields. When done, select "SAVE" by pressing the button next to the "SAVE" label.



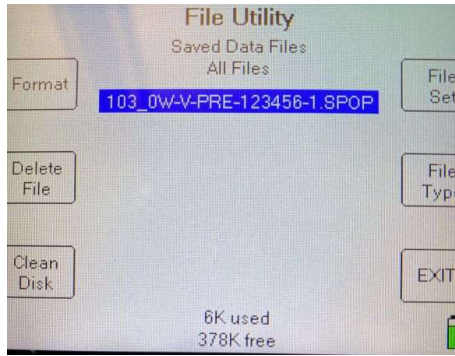
7) Once the POP file is saved, you can press the button next to the "OK" label to return to the main XR3 screen.



8) To verify that the file has been installed in the XR3, select "MENU" by pressing the button next to the "MENU" label.



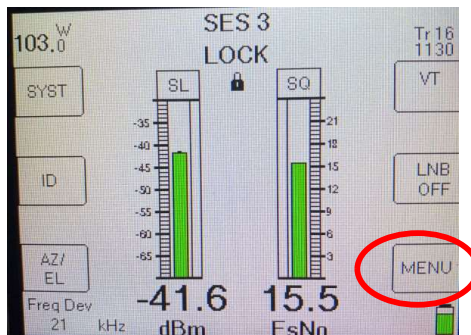
9) Under the "Main Menu", select "File Utility" using the up/down arrow buttons and press enter.



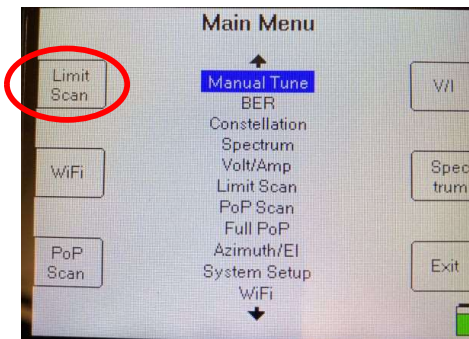
10) All POP files will show up in the “File Utility” menu screen. If the file was successfully saved, it will be listed in this menu. If you cannot find the file, you must repeat the POP test. If the memory is full, you can use this utility to select and delete old files to make room for the new POP files. Use the “Delete File” button after selecting the file that you want to delete. Be careful with the “Clean Disk” option in this menu as this will erase all POP files in the XR3.

### 1.3 Pre-Installation Limits Testing

Pre-Installation limits testing provides an assessment of the antenna before filter installation is performed. Pictures of the XR3 screen showing the Pre-Installation limits test results are required in the “Checklist” report.



1) At the main screen, select the satellite, polarization, and LNB On and then browse through transponders until you get a signal lock (see below). Select the “Menu” option by pressing the button next to the “Menu” label.



2) From the “Main Menu” screen, select “Limit Scan” by pressing the button next to the “Limit Scan” label.



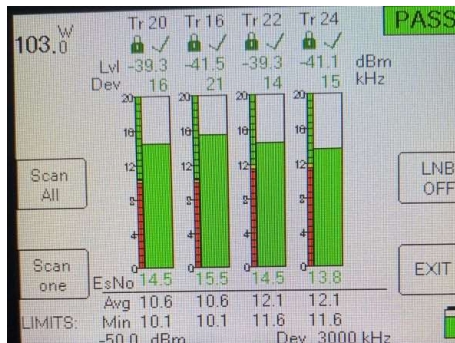
3) From the Select Limits File menu, use the up/down arrow button and to select the "Cband No Filter.SLF" limits file (if the antenna has no filters installed or the "Cband AR Filter.SLF" limits file (if antenna has an Altimeter Radar filter installed). If this menu does not show or an error is displayed instead, re-load the limits file to the XR3 from the Applied Instruments Web site. You can use the Flash Update application from the Applied Instruments website to make sure that the "Cband Limits" files are selected. If problems persists, contact Applied Instruments for further instructions.



OR



4) The XR3 will test four reference carriers and provides a report (see below). The limits test tunes the XR3 to each reference carrier on a round-robin fashion. If a carrier does not lock on the first pass, it may lock on the second pass. If all is well, all labels would be green and a "PASS" status is displayed on the upper right hand corner. A "FAIL" status should not stop you from proceeding with filter installation. It is just an indication that some optimization may be required after filter installation.



The limits test results screen is shown here. A "FAIL" diagnostics is not reason enough from not installing filters. Take a picture of the limits test results screen to be included in the "Checklist" report.

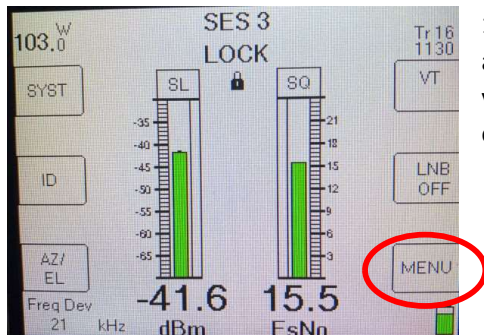


## 2. Post-Installation Limits Testing and POP Report

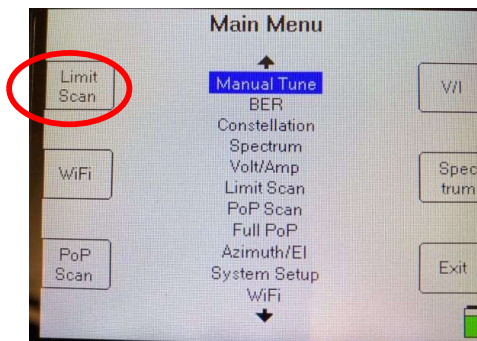
These are the instructions for performing the Post-Installation tests. Limits tests are performed first and just before leaving the site, a POP report must be generated.

### 2.1 Post-Installation Limits Testing

After filter has been installed, performed limits tests and optimize the antenna system as needed.



1) At the main screen, select the satellite, polarization, and LNB On and then browse through transponders until you get a signal lock (see below). Select the "Menu" option by pressing the button next to the "Menu" label.

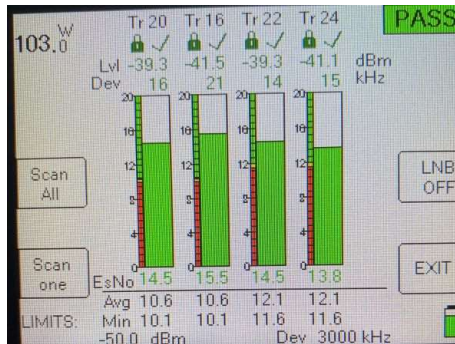


2) From the "Main Menu" screen, select "Limit Scan" by pressing the button next to the "Limit Scan" label.



3) From the Select Limits File menu, use the up/down arrow button and to select the "Cband 5G Filter.SLF" limits file. If this menu does not show or an error is displayed instead, re-load the limits file to the XR3 from the Applied Instruments Web site. If problems persists, contact Applied Instruments for further instructions.

4) The XR3 will test four reference carriers and provides a report (see below). The limits test tunes the XR3 to each reference carrier on a round-robin fashion. If a carrier does not lock on the first pass, it may lock on the second pass. If all is well, all labels would be green and a "PASS" label is displayed on the upper right hand corner. Follow the established procedures in case the limits test does not pass.

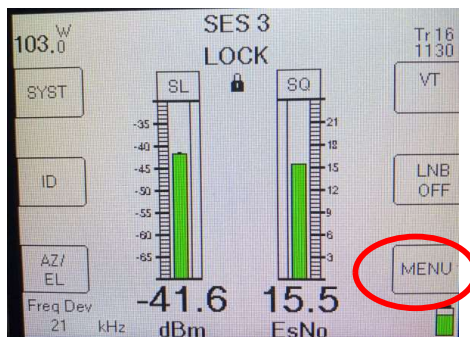


The limits test results screen is shown here. Note that a "FAIL" diagnostics would be shown if the signal level (see "Lvl" row) fails. If the Es/No of the carrier passes the test, the issue is not antenna pointing but LNB, cable, or splitter issues.

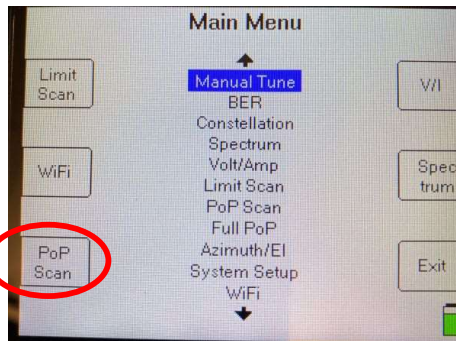
## 2.2 Run and Save the Post-Installation POP Report

After optimization (if required) and when done working on the antenna, a Post-Installation POP report is required. Follow the same database selection procedure outlined in Section 1.1 if necessary. The XR3 remembers that database selection therefore is not necessary to select the database every time a POP report is run.

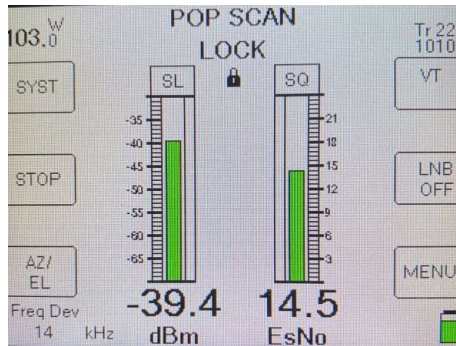
1) Browse carriers (use the Left/Right arrows to navigate) and make sure you get carrier lock (see picture below). Make sure that the satellite (use arrow buttons), polarization (VT or HZ soft button next to label), and LNB (ON or OFF) is powered. From the XR3 Main screen, select "MENU" by pressing the button next to the "MENU" label.



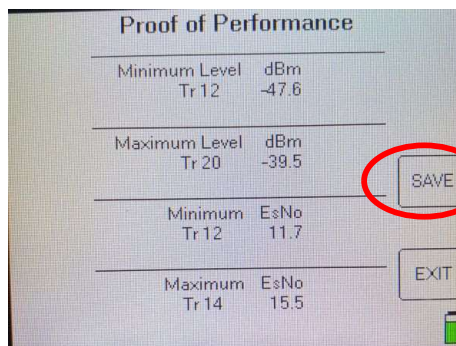
The screenshot shown here shows a Carrier Lock on SES-3 (103.0W), VT (Vertical Pol), Transponder 16 (Tr. 16), Frequency 1130 MHz. The signal power is -41.6 dBm and the Es/No is 15.5 dB.



2) From the Main Menu, select “PoP Scan” by pressing the button next to the “PoP Scan” label.



3) The XR3 will execute a POP scan and while the POP scan is running, it will show the “POP SCAN LOCK” screen (see below). Let it run until it finishes (Step 4).



4) Once the POP scan is completed, the “Proof of Performance” completion menu is shown. On the “Proof of Performance” menu, select “SAVE” by pressing the button next to the “SAVE” label. If you press the “EXIT” button accidentally, you must re-run the POP report (back to step 1).

PoP Scan File 12/03/2021

Work order# 1234567

File prefix POST-

Antenna # -A01

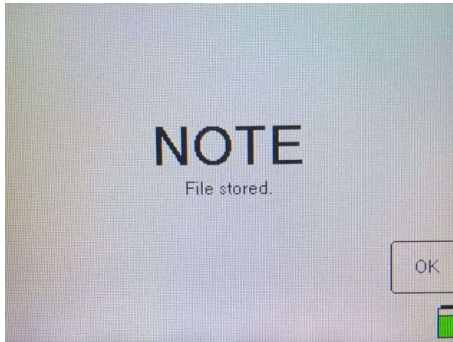
File Name 103\_0w-V-POST-1234567-A01

Location

Technician

Notes

5) From the PoP Scan File menu, fill out the “Work Order #” field, select the “POST-” file prefix (use the left/right arrow buttons), enter the “Antenna #” (use the left/right arrow). In most cases, this would be A01 unless there is more than one antenna for the same satellite, then it would be A02 (second antenna), A03 (third antenna), etc. Include other relevant information in the Location, Technician, or Notes fields. When done, select “SAVE” by pressing the button next to the “SAVE” label.



6) Once the POP file is saved, you can press the button next to the “OK” label to return to the main XR3 screen. You can check that the file is on the XR3 by following the Steps 7 to 9 in Section 1.2.