# Step-by-step instruction

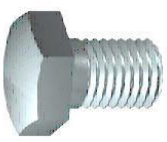
Spot + Sonic Viewer Integration

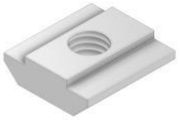
PN 5306246, Jun 2023

# Table of Contents

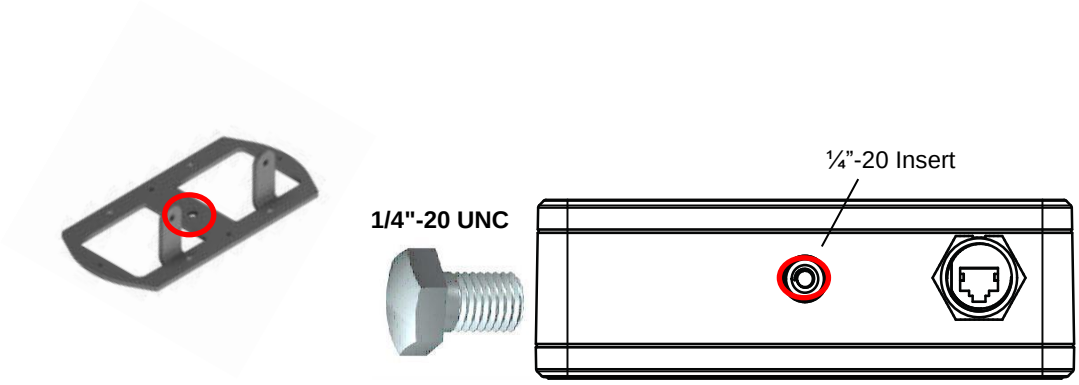
# 1 How to assemble the cage for SV600

Cage Components:

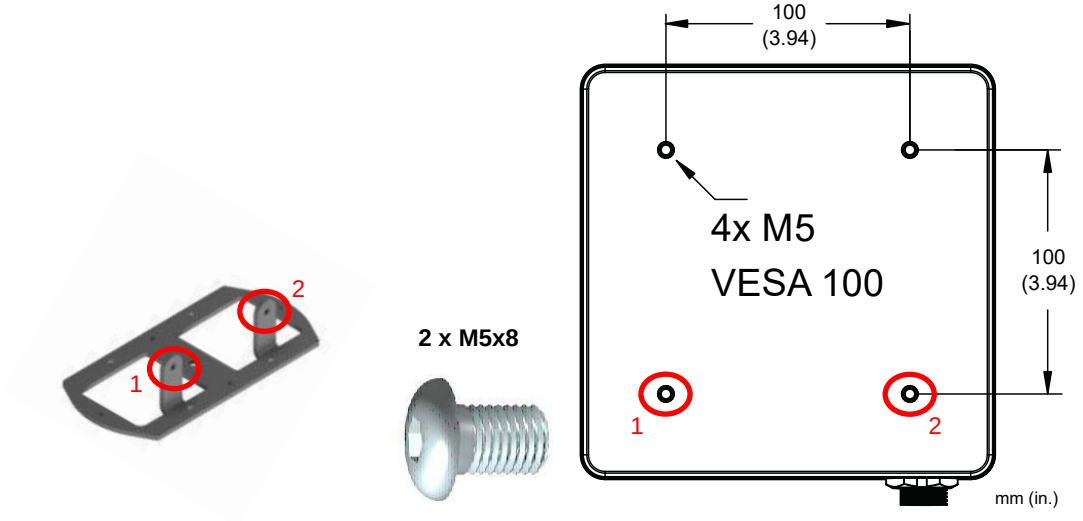
| Name | Image | Quantity |
|---|---|---|
| **base plate** |  | **1** |
| **Rail adapter** |  | **1** |
| **M5x8** |  | **2** |
| **M4 washer** |  | **8** |
| **M5x10** |  | **4** |
| **M5 Washer** |  | **4** |
| **M4x8** |  | **8** |
| **1/4"-20 UNC** |  | **1** |

| | | |
|---|---|---|
| **Lidar plate** |  | **1** |
| **Rail mount** |  | **4** |
| **Cage assy** |  | **1** |

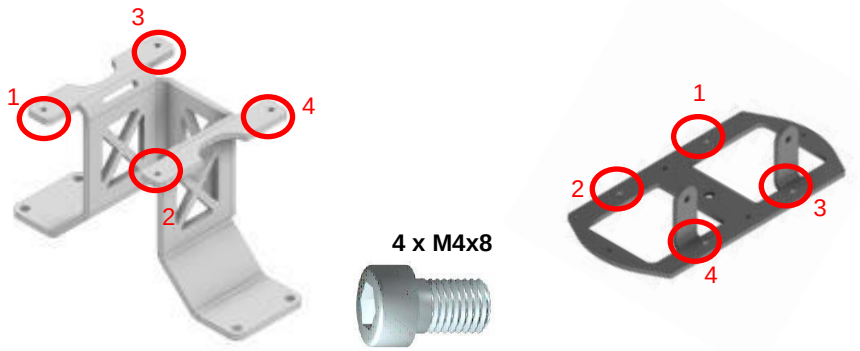
**Step 1.** Place SV600 on top of <Base Plate>, fix SV600 on <Base Plate> using a <1/4"-20 UNC>



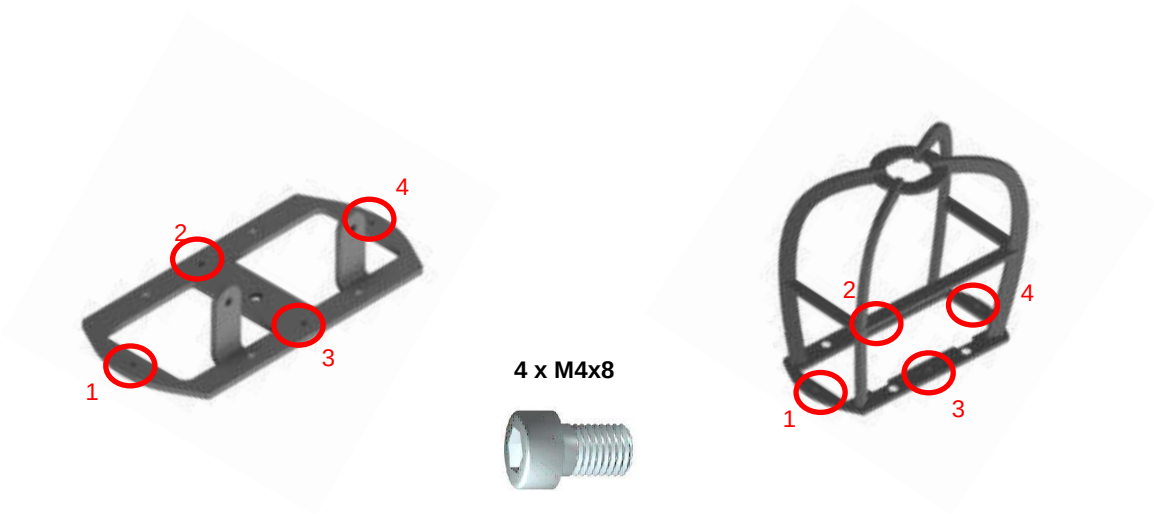

**Step 2.** Fix the back plate of SV600 using 2x <M5x8>



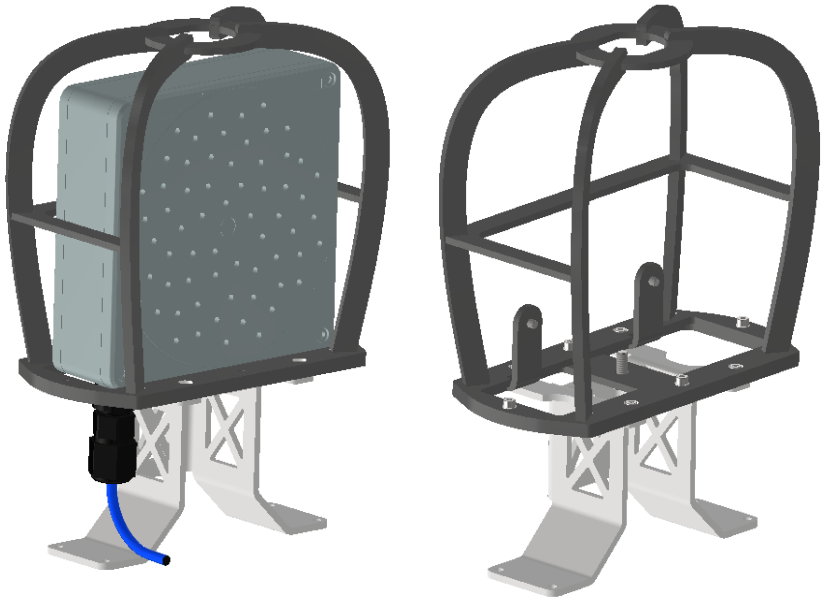
**Step 3.** Fix <Base Plate> on <Rail Adapter> using 4x <M4x8>




**Step 4.** Cover the assembled object with <Cage Assy> and fix it with using 4x <M4x8>




**Step 5.** It will look like below,



**Step 6.** Mount the SV600 with the cage on Spot using 4x <M5x10> and <Rail mount>

Place the <Rail mount> in the rail of Spot, screw up <M5x10>

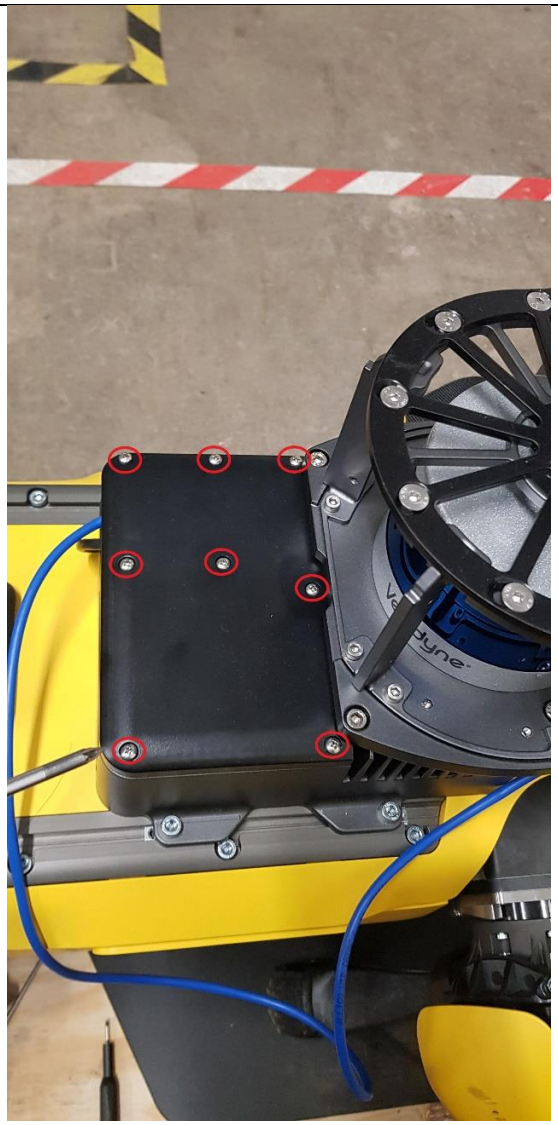
## 2 Connecting the cable from Spot to SV600

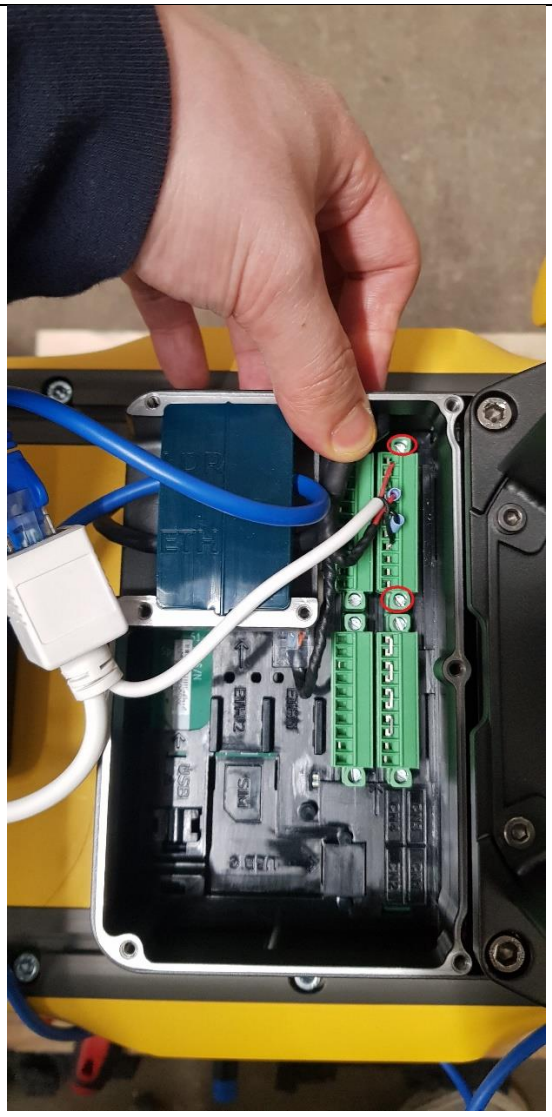
**Step 1.** Connect a DB25 cable, which has the ethernet cable on the opposite side, to the female cable connector (payload ports) on the top of Spot.

**Step 2.** Connect the other side of cable to the ethernet socket of SV600

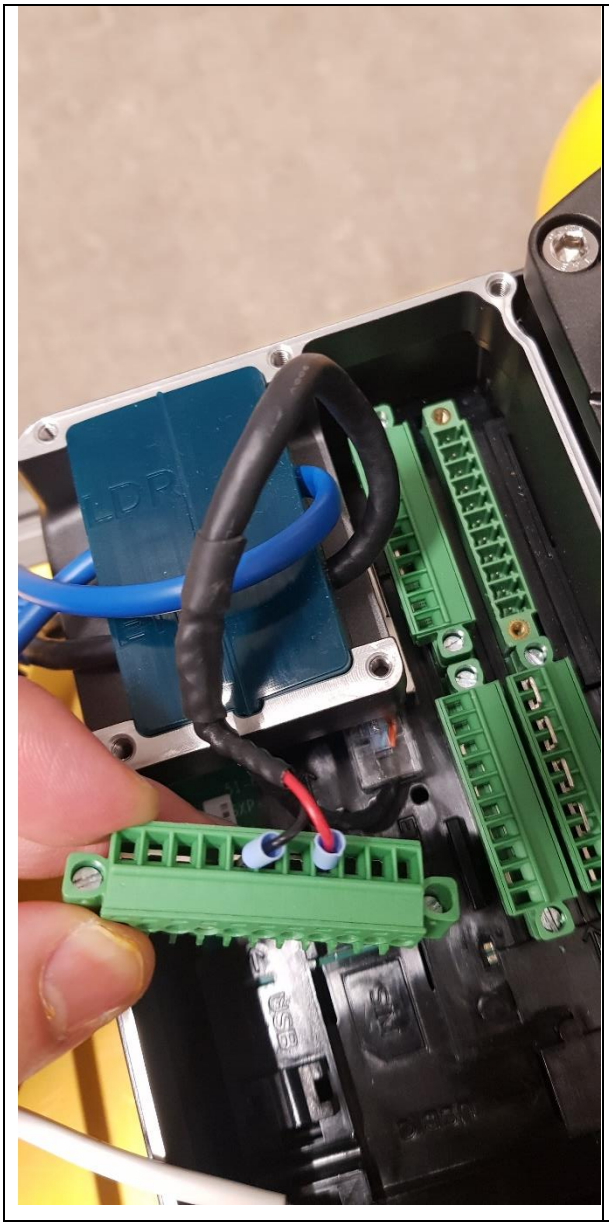
## 3 Connecting the cable from Spot I/O to SV600

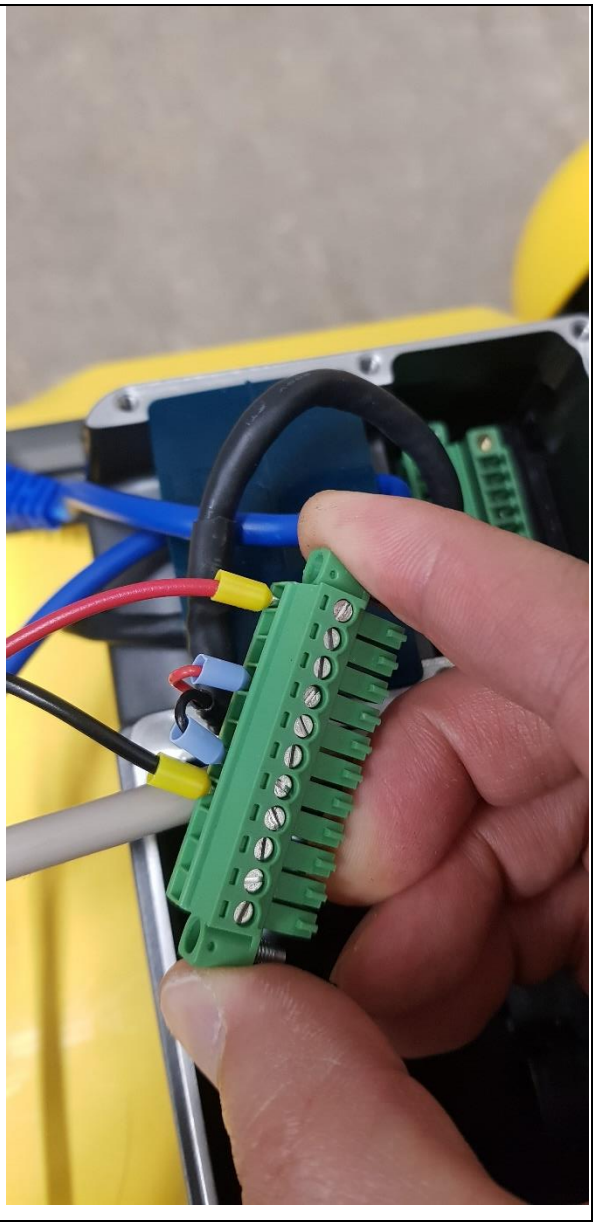
**Step 1.** Loosen the screws on Spot Core I/O (Switch off Spot if Core I/O is mounted)
**Step 2.** Loosen two screws in the green sockets



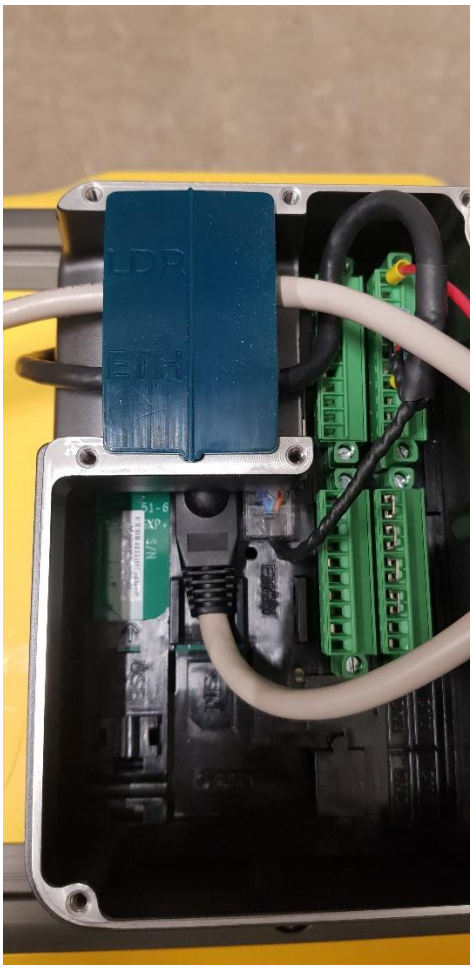


**Step 3.** Detach the upper part of the socket
**Step 4.** Put the red and black cable pin inside the one of the socket pins
**Step 5.** Tighten the pin

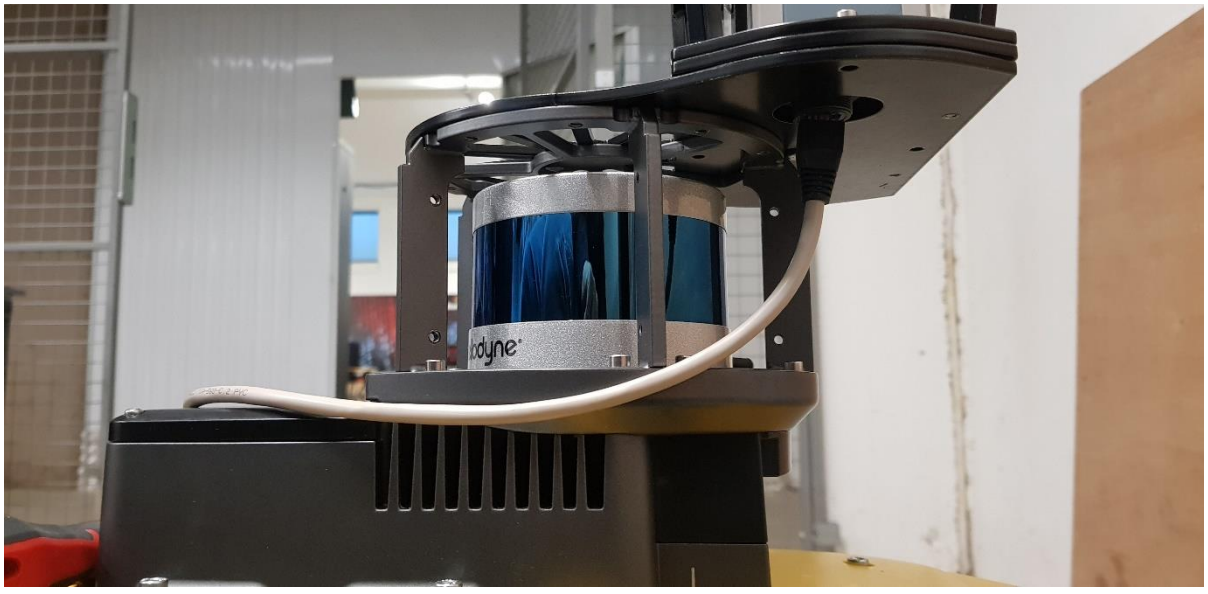




**Step 6.** Place the upper part of the socket back into the original position
**Step 7.** Tighten up two screws
**Step 8.** Connect the ethernet cable to the port



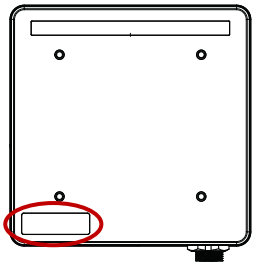
**Step 9.** Close the lid and fixate the lid with the screws
**Step 10.** Connect the other side of cable to SV600



# 4 Network settings for SV600 as a Spot payload

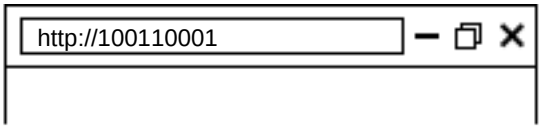
**Step 1.** Connect the SV600 via a suitable PoE injector to a free ethernet port on your PC/Laptop

**Step 2.** Keep the serial number of the SV600 ready. The serial number can be found on the back of the device at the bottom-left.



**Step 3.** Open your web browser (Chrome, Firefox, Edge, Safari)

**Step 4.** Type *http://<serial number>* in your address bar. E.g. *http://100110001*

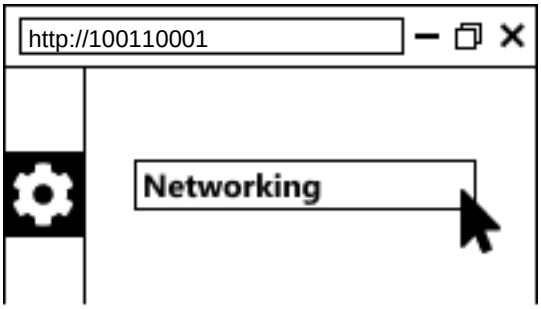



If your network does not have DNS server or if you connected the device directly to your PC add *.local* at the end of the serial number address. e.g. *http:// 100110001.local*

**Step 5.** Your browser will now show the device dashboard and prompt you to login. The default credentials are:

| |
|---|
| Username: admin |
| Password: admin |

**Step 6.** In the device dashboard go to the “Device Configuration” page and click on “Networking”.




**Step 7.** In the Network page set the network settings to “Use a Static IP address”

**Step 8.** Set

| | |
|---|---|
| IP address | : 192.168.50.7 |
| Subnetmask | : 255.255.255.0 |
| Gateway | : 192.168.50.3 |
| Primary DNS Address | : 0.0.0.0 |
| Secondary DNS Address | : 1.1.1.1 |

**Step 9.** Press “Save”

## 5 SV600 Payload Registration

**Step 1.** Mount your SV600 in the cage on Spot with the layout suggested

e.g. Looking Forward

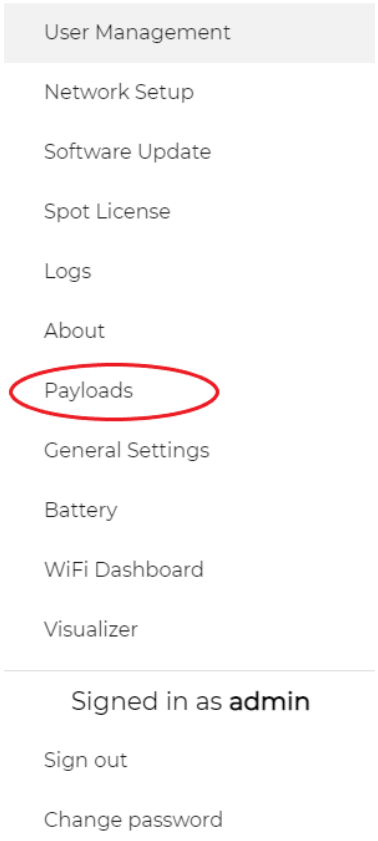

**Step 2.** Connect the enclosed ethernet cable from SV600 to the Spot's port

**Step 3.** Open your web browser (Chrome)

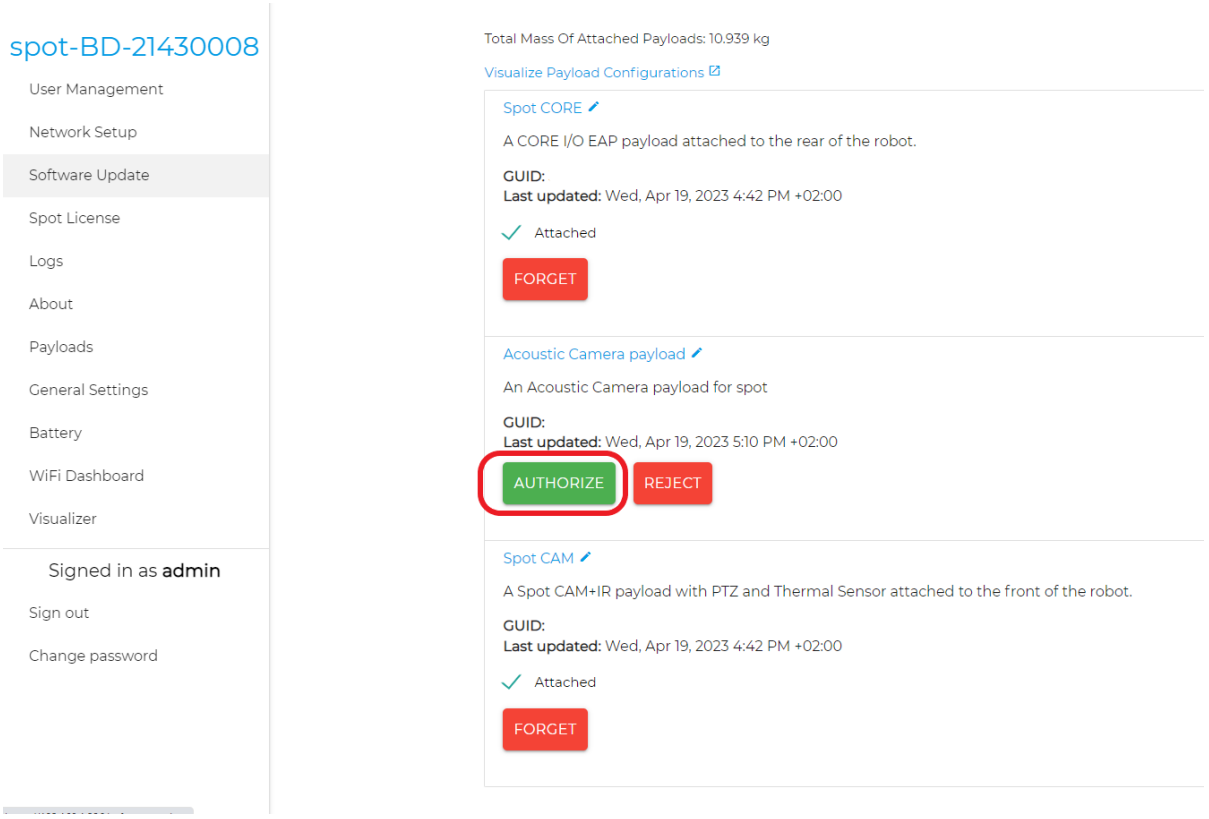
**Step 4.** If Access point mode, *type https://192.168.80.3* in your address bar
If Client mode, type *https://<assinged IP address>* in your address bar. **e.g.** *https://192.168.1.199*

*Please refer to "Spot and SV600 integration User Manual" for more details*

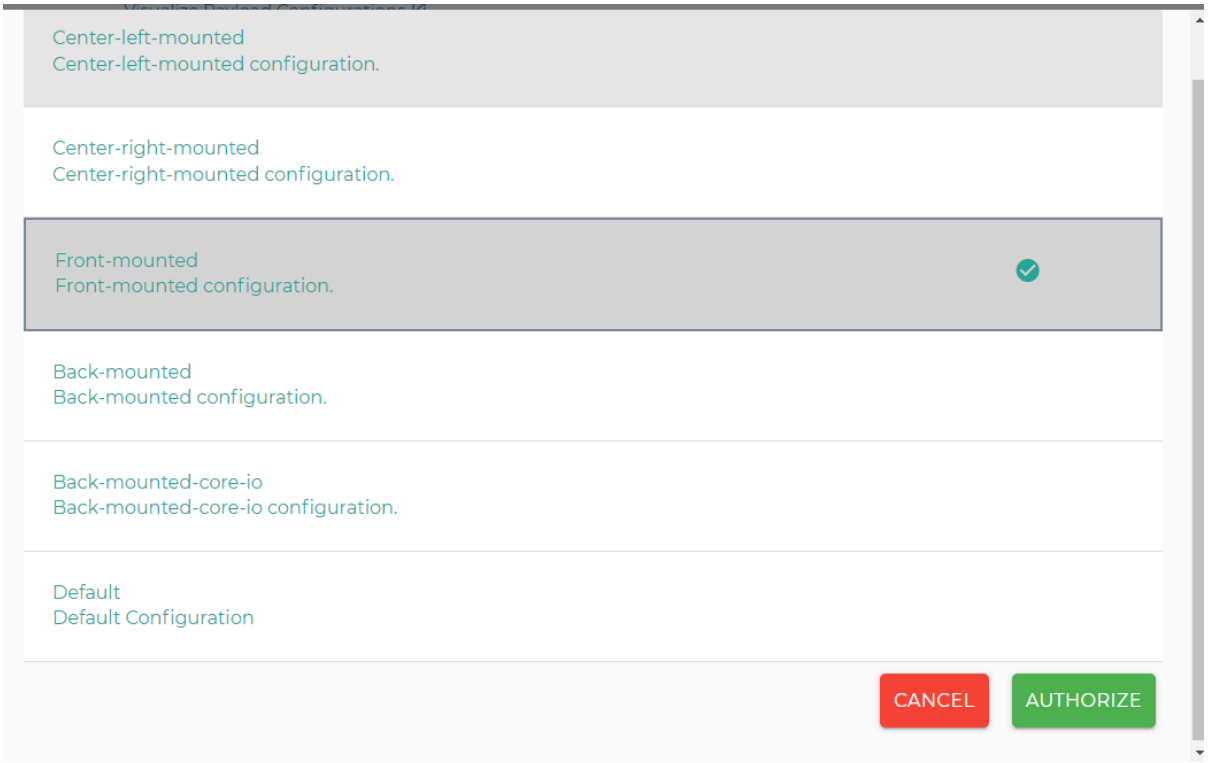
**Step 5.** In Spot dashboard, go to "Payloads"



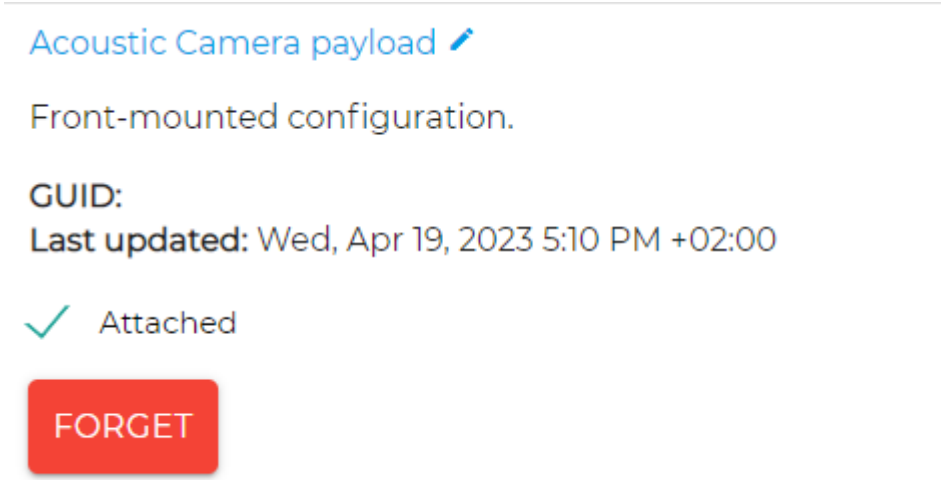
**Step 6.** SV600 payload will automatically appear as “Acoustic Camera payload”, and press “Authorize”




**Step 7.** Choose the payload layout that matches the actual layout **e.g.** “Front-mounted”

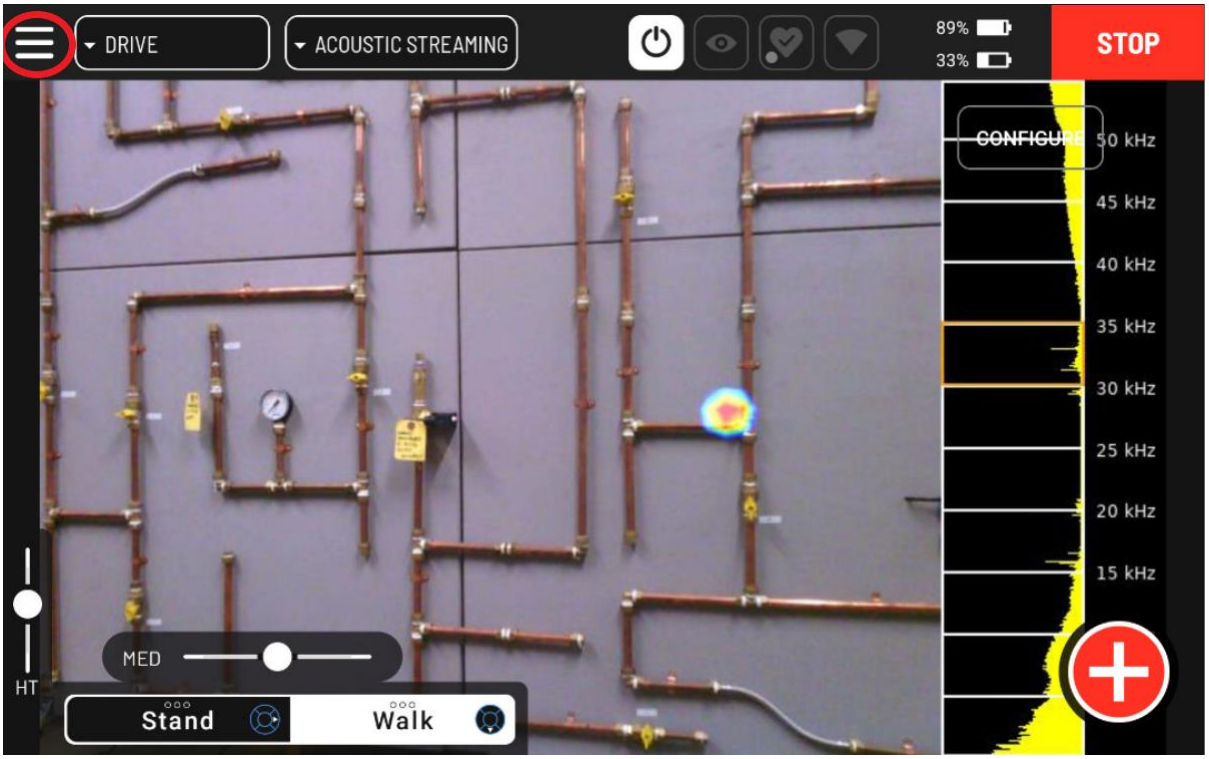


**Step 8.** If successfully registered, Acoustic Camera payload is now in the list with a GUID and layout indicated. Also with attached mark

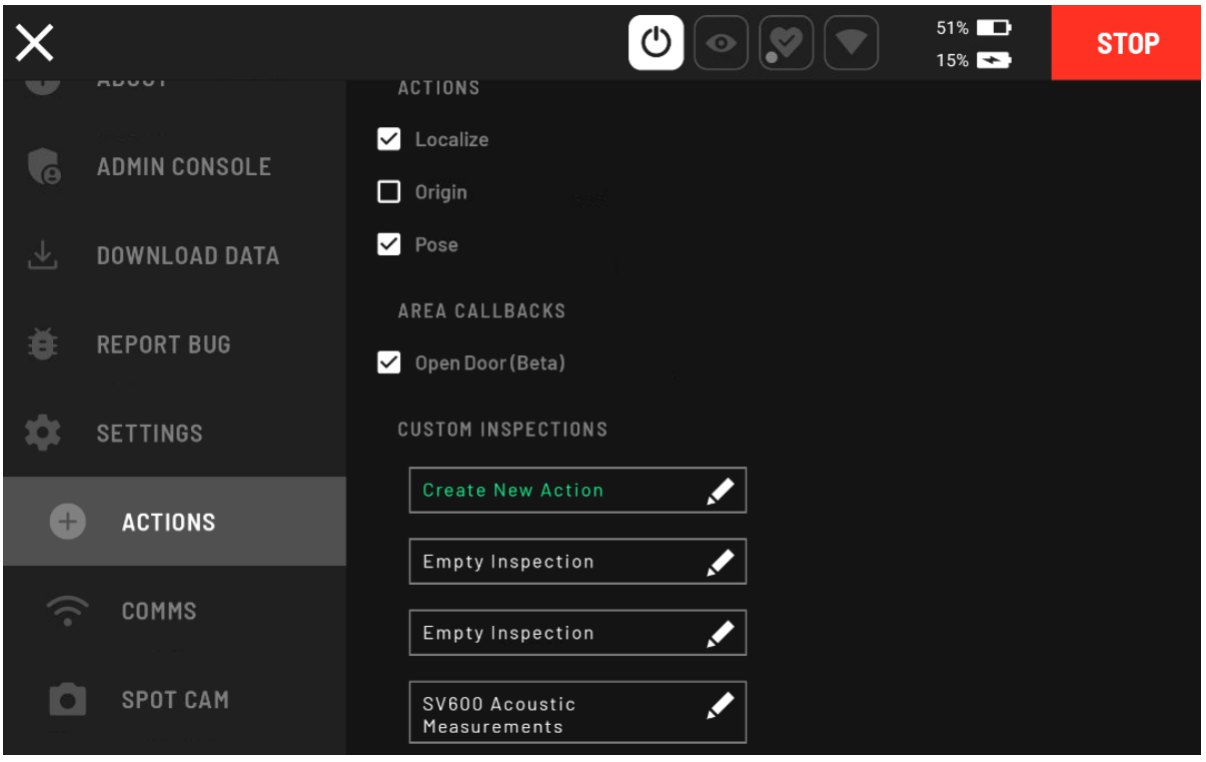


# 6 Create SV600 Acoustic Measurement DAQ plugin action

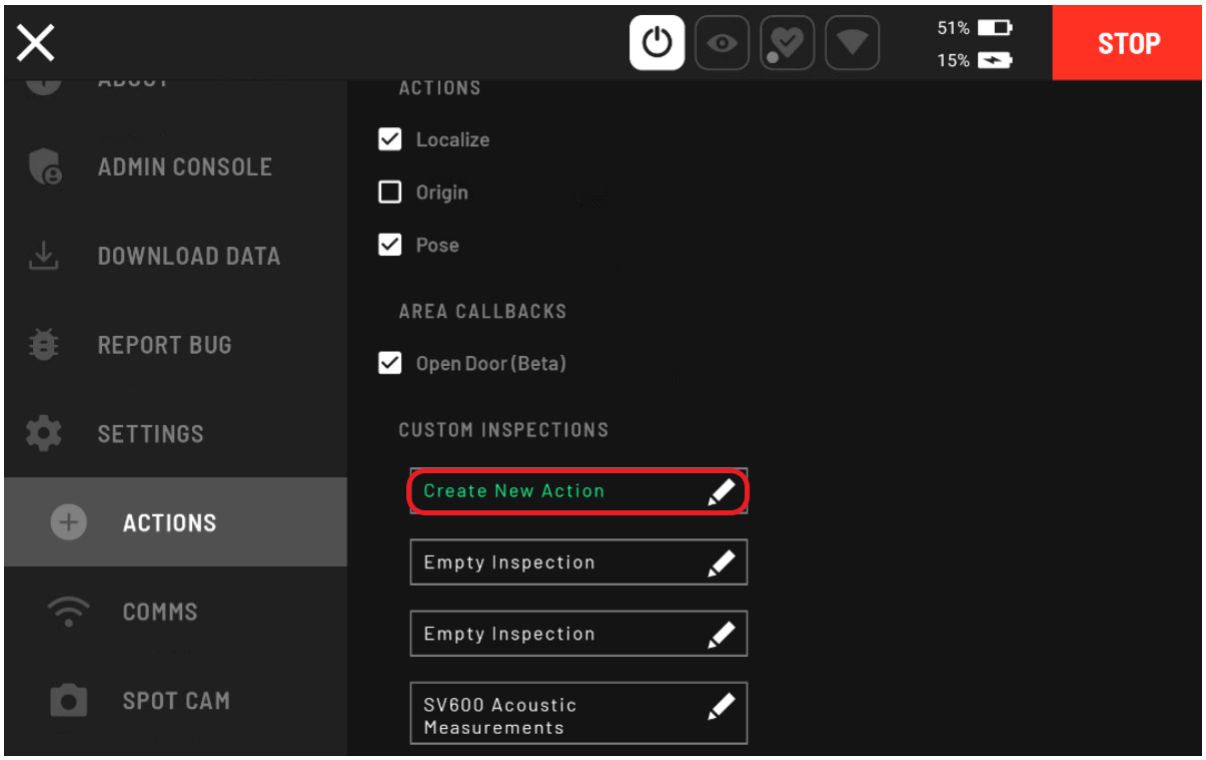
**Step 1.** Press “Hamburger” menu



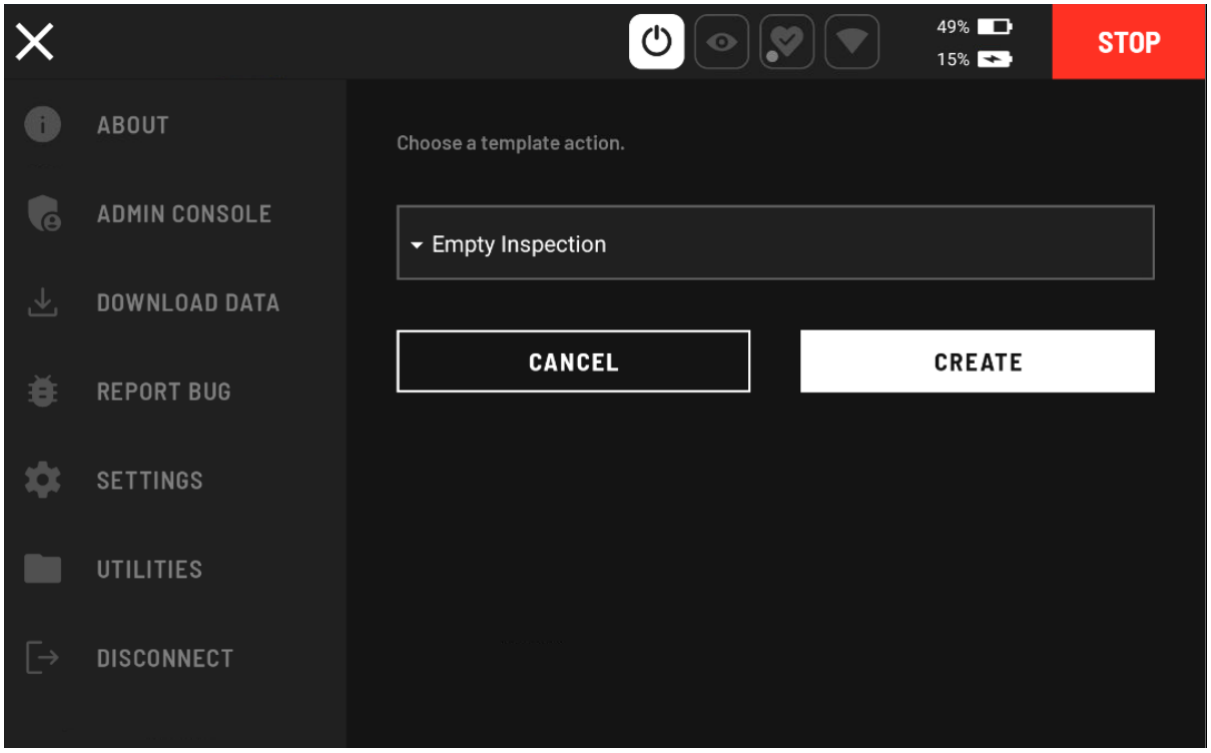

**Step 2.** In “Settings”, go to “Actions”



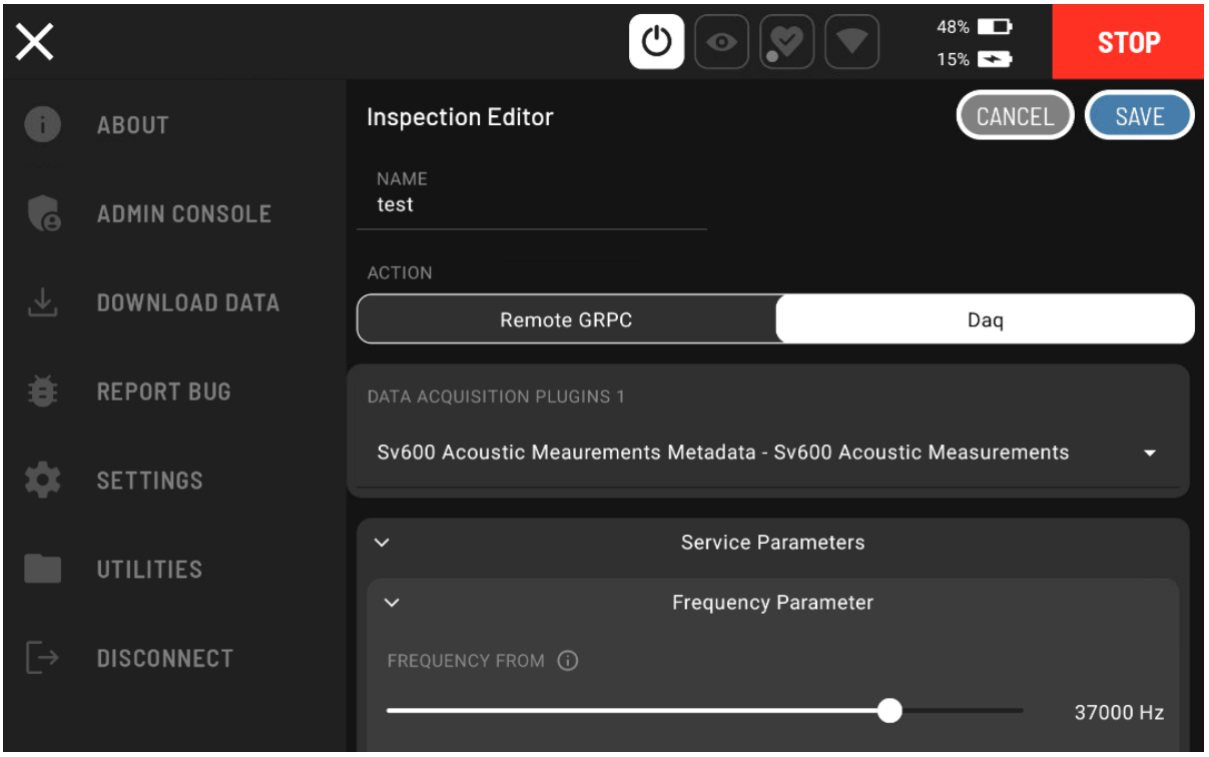
**Step 3.** In “Custom Inspections” section, press “Create New Action”



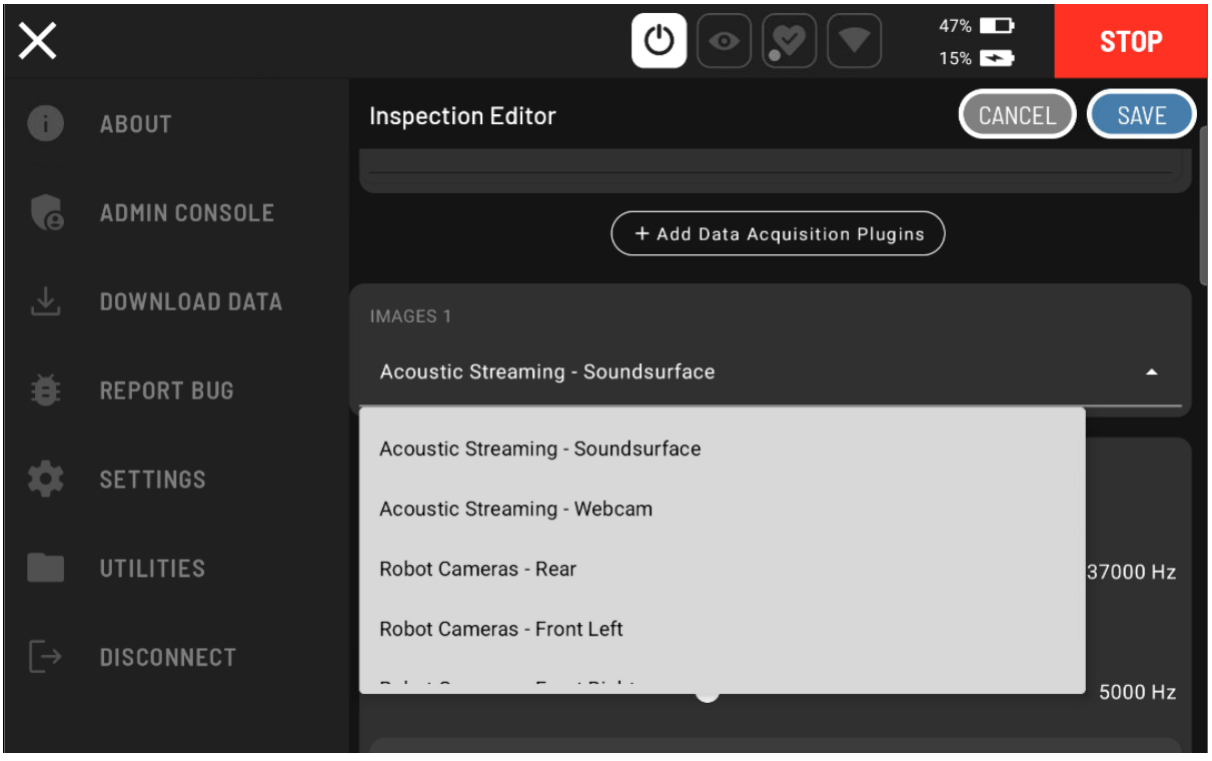

**Step 4.** Select “Empty Inspection” and press “Create”



**Step 5.** Name your acoustic measurement
**Step 6.** In Action, Choose “Daq”
**Step 7.** In Data Acquisition Plugins 1, select “Sv600 Acoustic Measurements Metadata – Sv600 Acoustic Measurements”



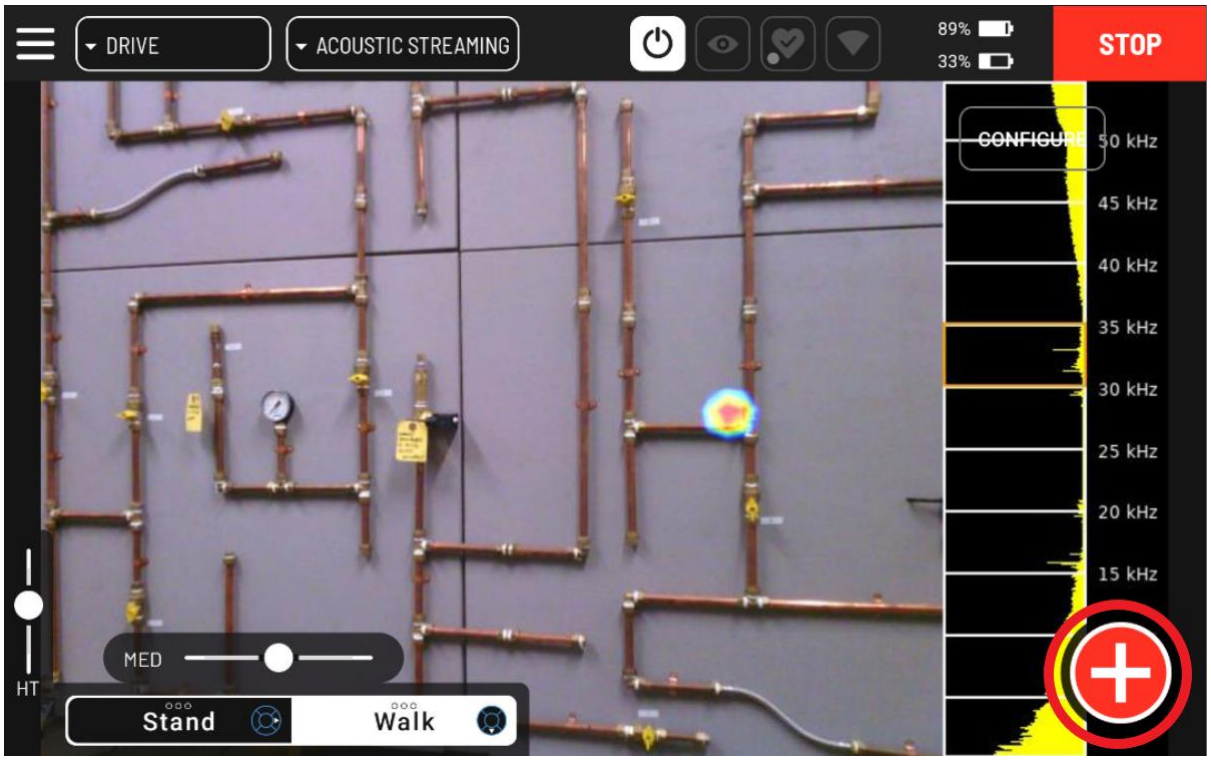

**Step 8.** In Image 1, select “Soundsurface”



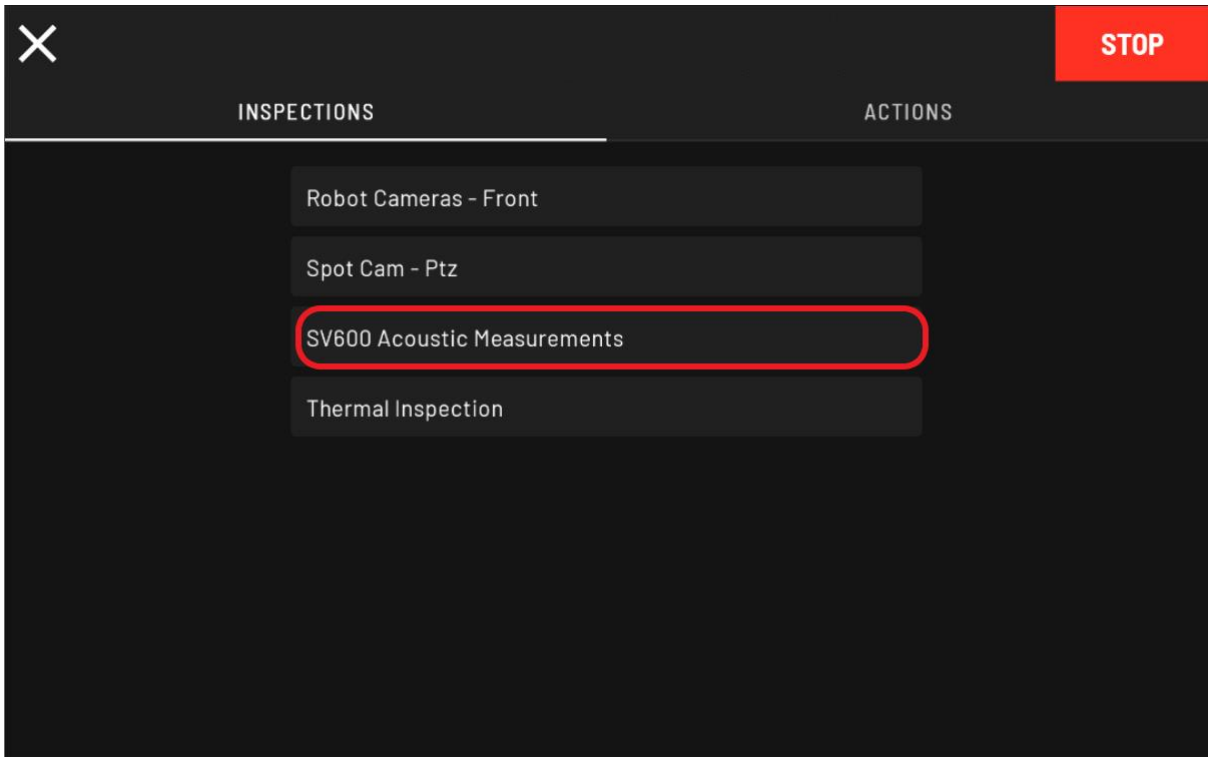

**Step 9.** Press “Save”

## 7 Run a single DAQ plugin – SV600 acoustic measurements

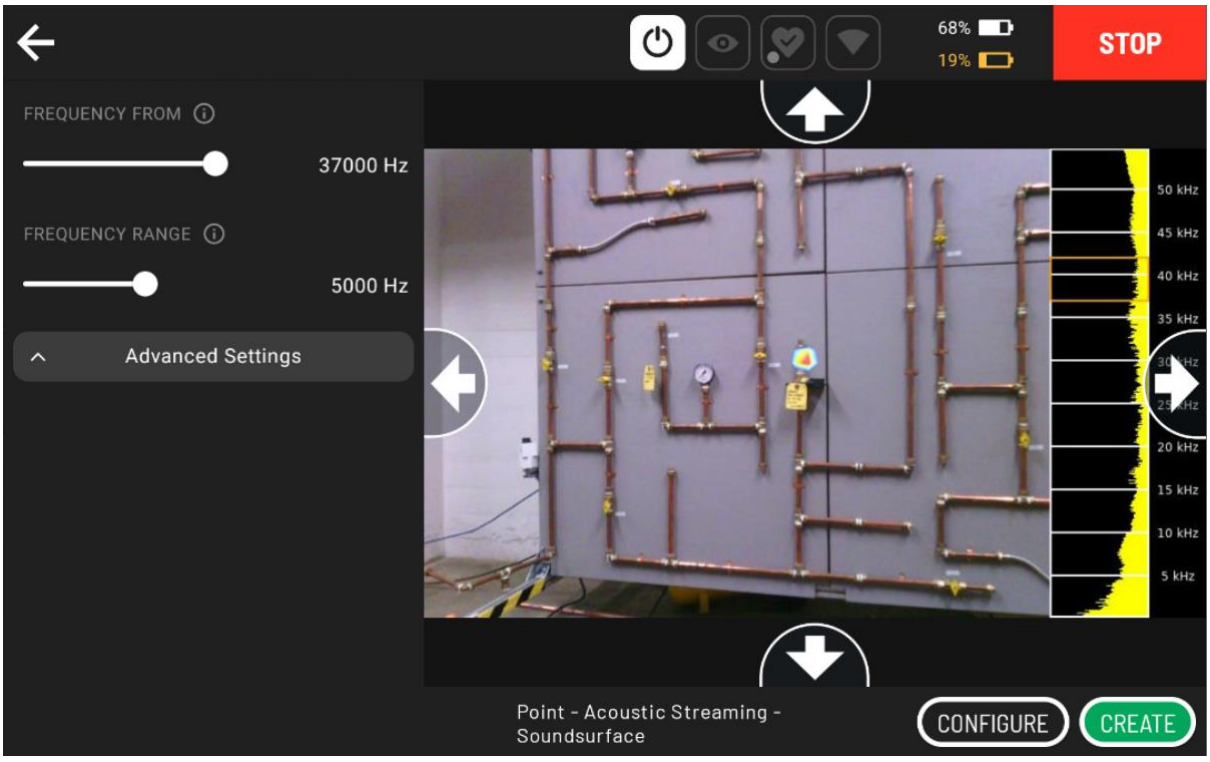
**Step 1.** In drive mode, Press red + button




**Step 2.** Choose your acoustic measurement with the name that you set



**Step 3.** Pose SPOT to point toward the area of interest




**Step 4.** Select Frequency Range using “Frequency From” and “Frequency Range” parameters

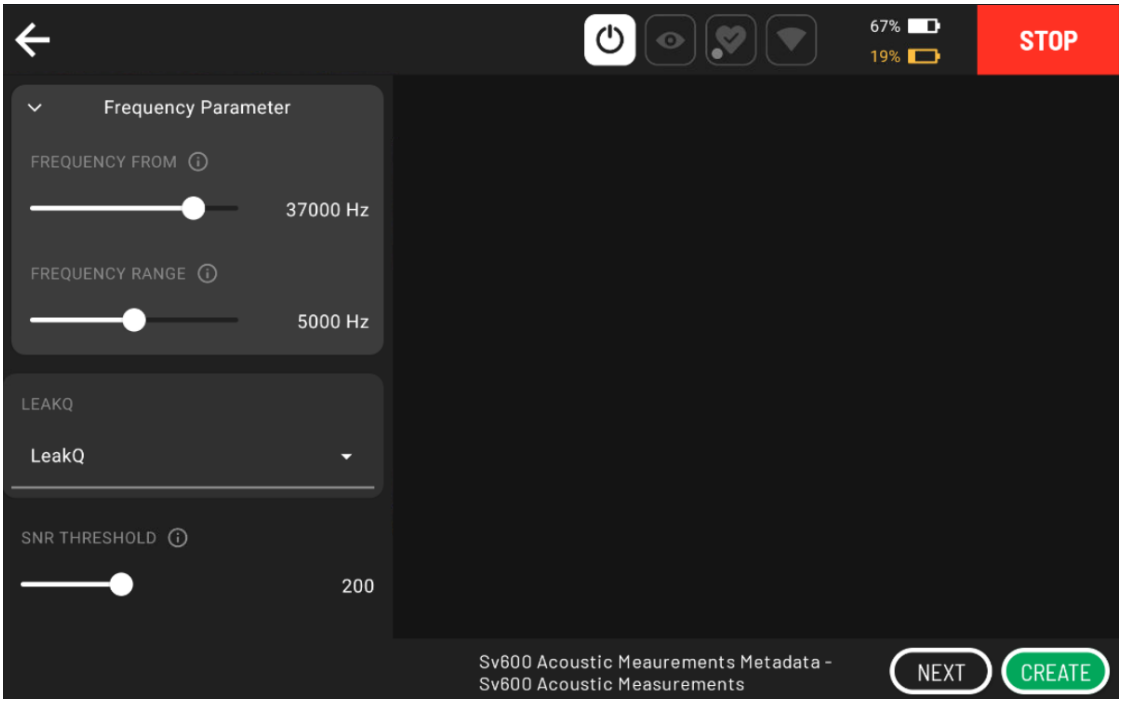
**Step 5.** Press “Configure”

**Step 6.** Choose your measurement among LeakQ, Image and Video

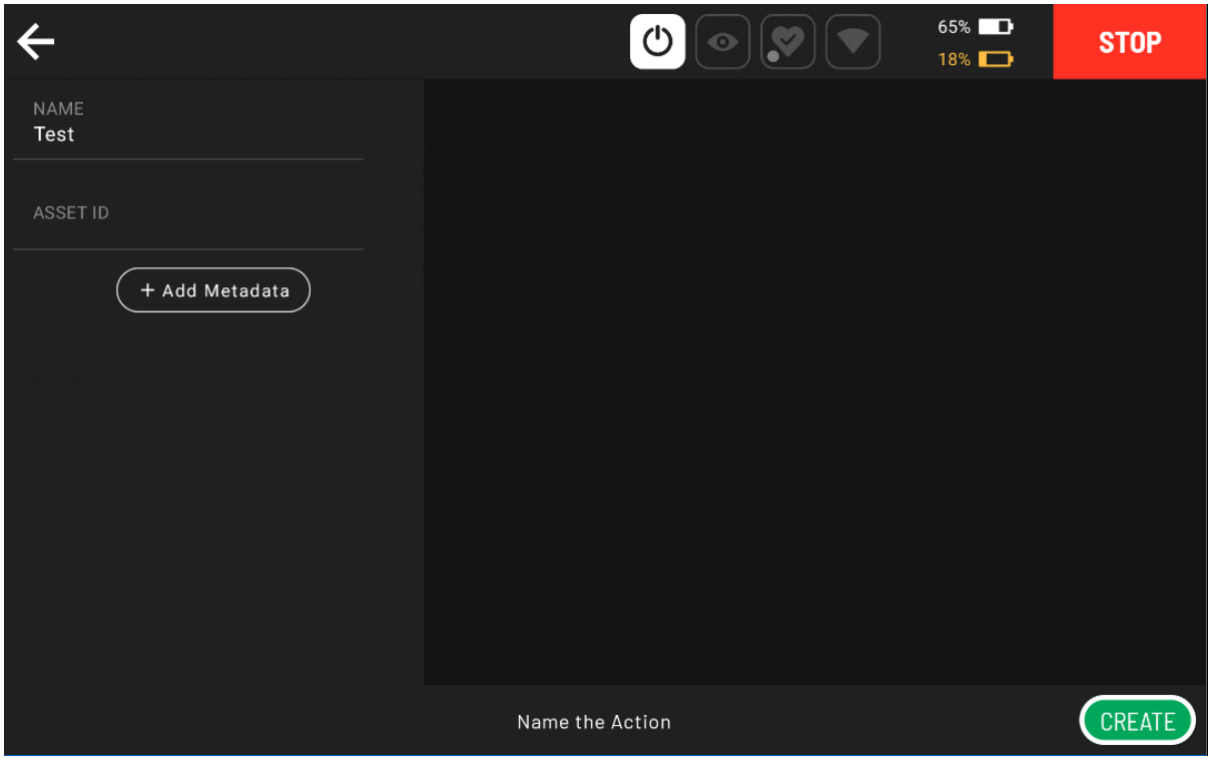
e.g. LeakQ measurement

**Step 7.** Adjust the parameters

e.g SNR threshold, frequency range



**Step 8.** Fill in metadata if needed




**Step 9.** Press “Create”

# 8 Check Acoustic Measurement Results in SV600 dashboard

**Step 1.** Once the measurement is done, open your web browser (Chrome, Firefox, Edge, Safari).
**Step 2.** E.g. the static IP address of SV600 is 192.168.50.7.

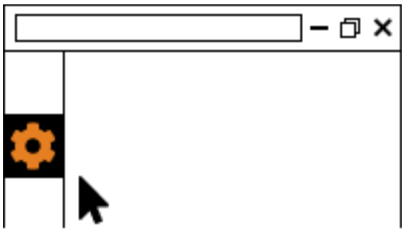
If Spot's network is set to 'Access point', go to
**http://192.168.80.3:23080**

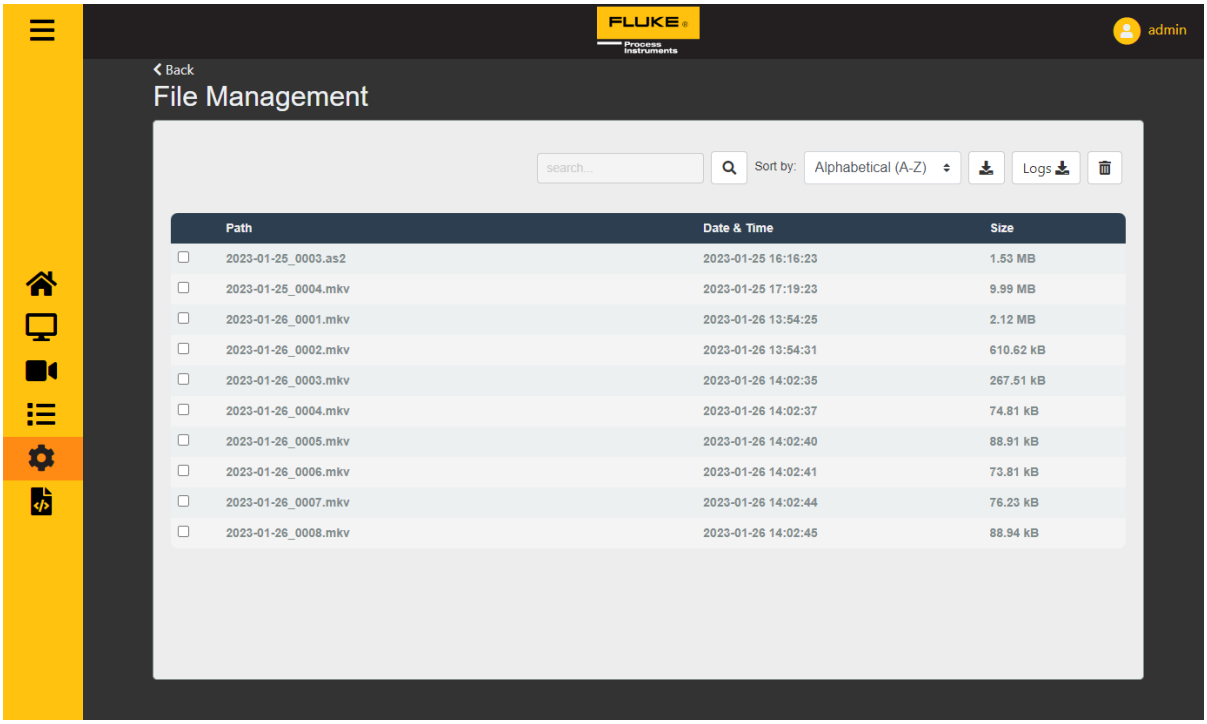
If Spot's network is set to 'Client', go to corresponding IP address with the port added, for example,
**http://192.168.1.199:23080**

**Step 3.** Your browser will now show the device dashboard and prompt you to login. The default credentials are:

| |
|---|
| Username: admin |
| Password: admin |

**Step 4.** In the device dashboard go to the "Device Configuration" page and click on "File Management"





**Step 5. choose the file and download it**

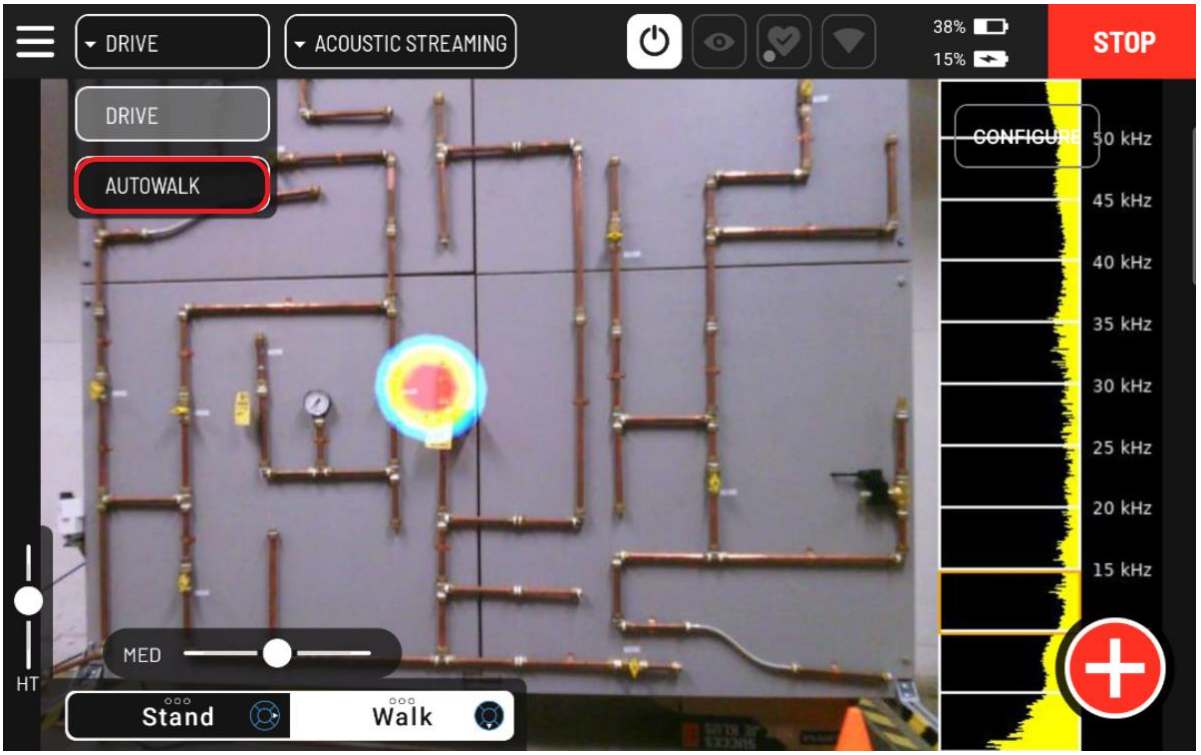
- Path: The name of a file or item.
- Date & Time: Date and time of when the item was created.
- Size: The size of the item.
- Files can be searched by name by using the search bar.
- Sort by: Click the “Filters” button to sort the files by name, by date, or by size in ascending or descending order.
-  : Click the “Download” button to download the currently selected files.
- 

: Click the “Logs” button to download all the logs from the device.
-  : Use the “Delete” button to delete the selected files.

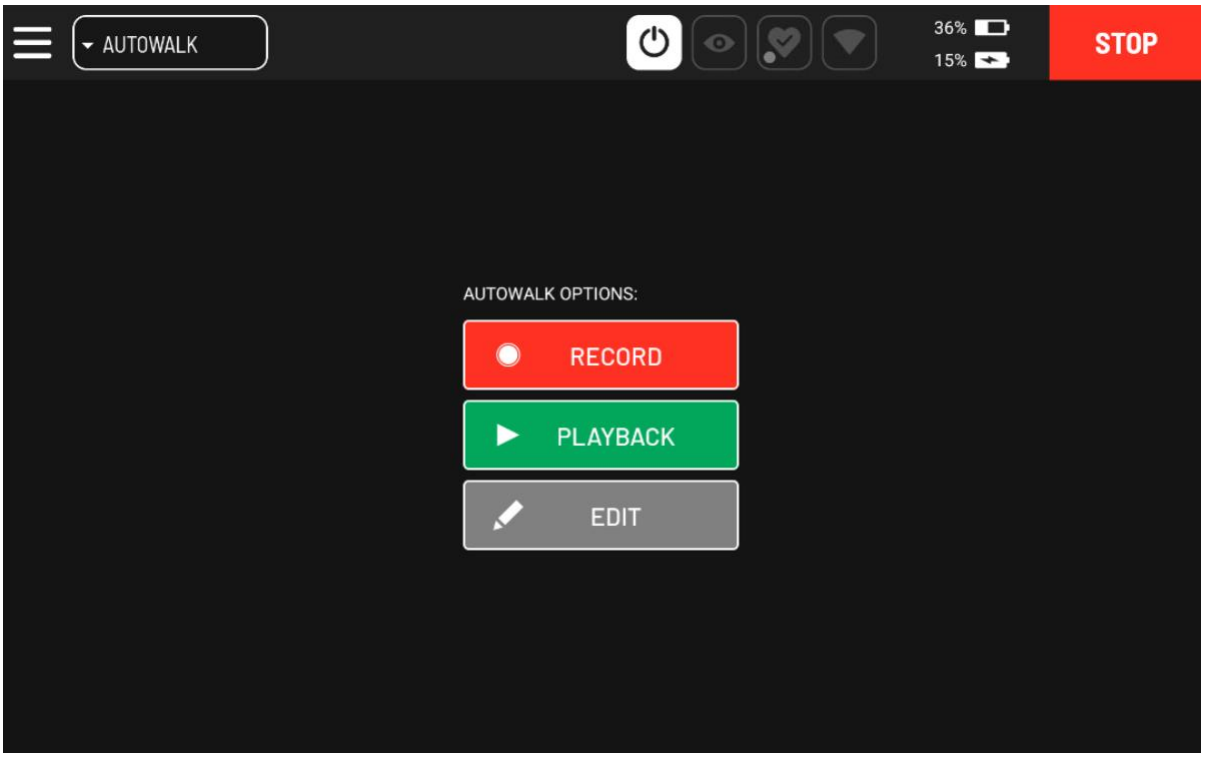
# 9 Record and Playback Autowalk Mission with Acoustic Measurements on the Tablet

## 9.1 Record

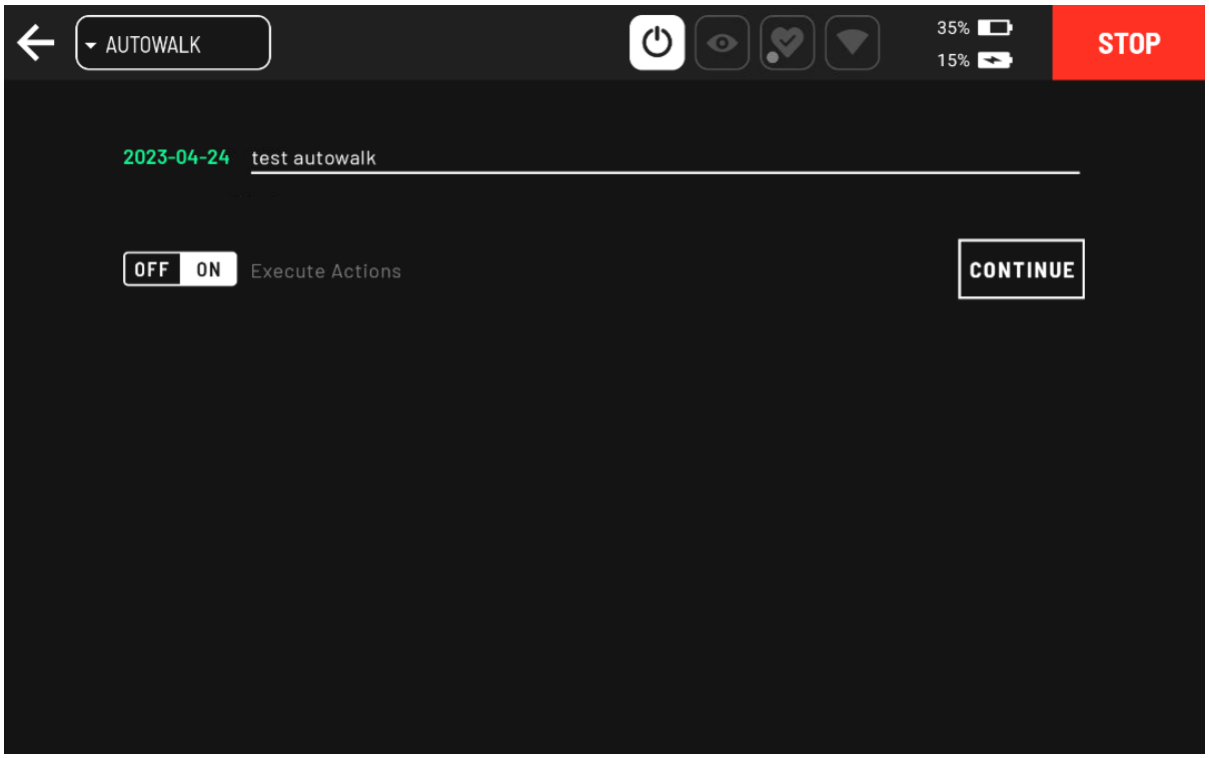
**Step 1.** Change Spot's mode from "Drive" to "Autowalk"



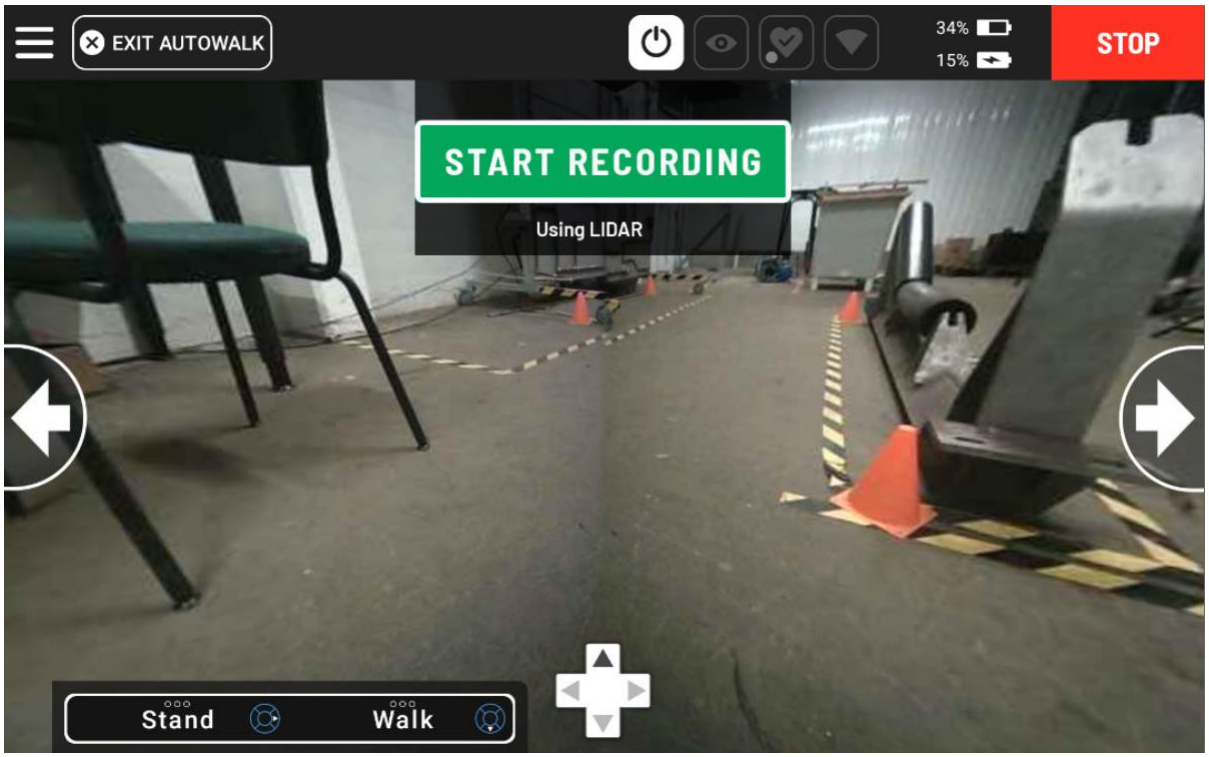

**Step 2.** Press "Record"



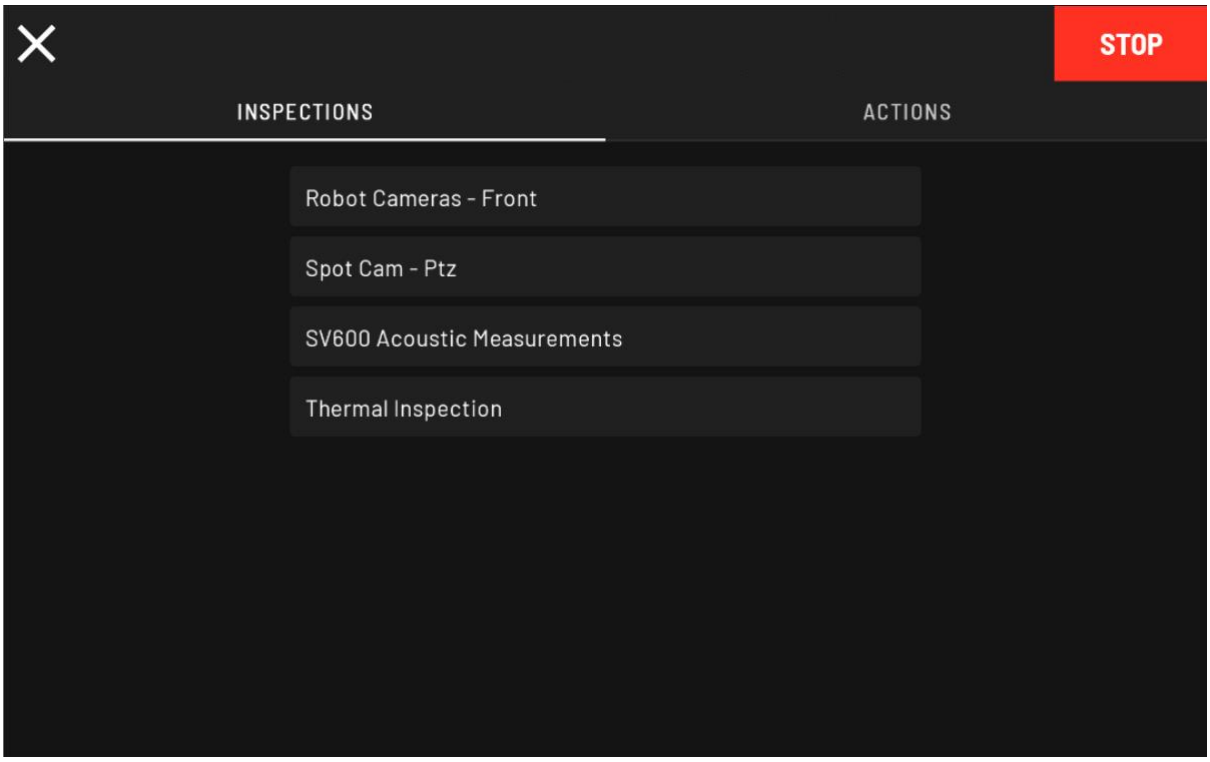
**Step 3.** Name your autowalk mission and continue




**Step 4.** Press “Start Recording” to start recording



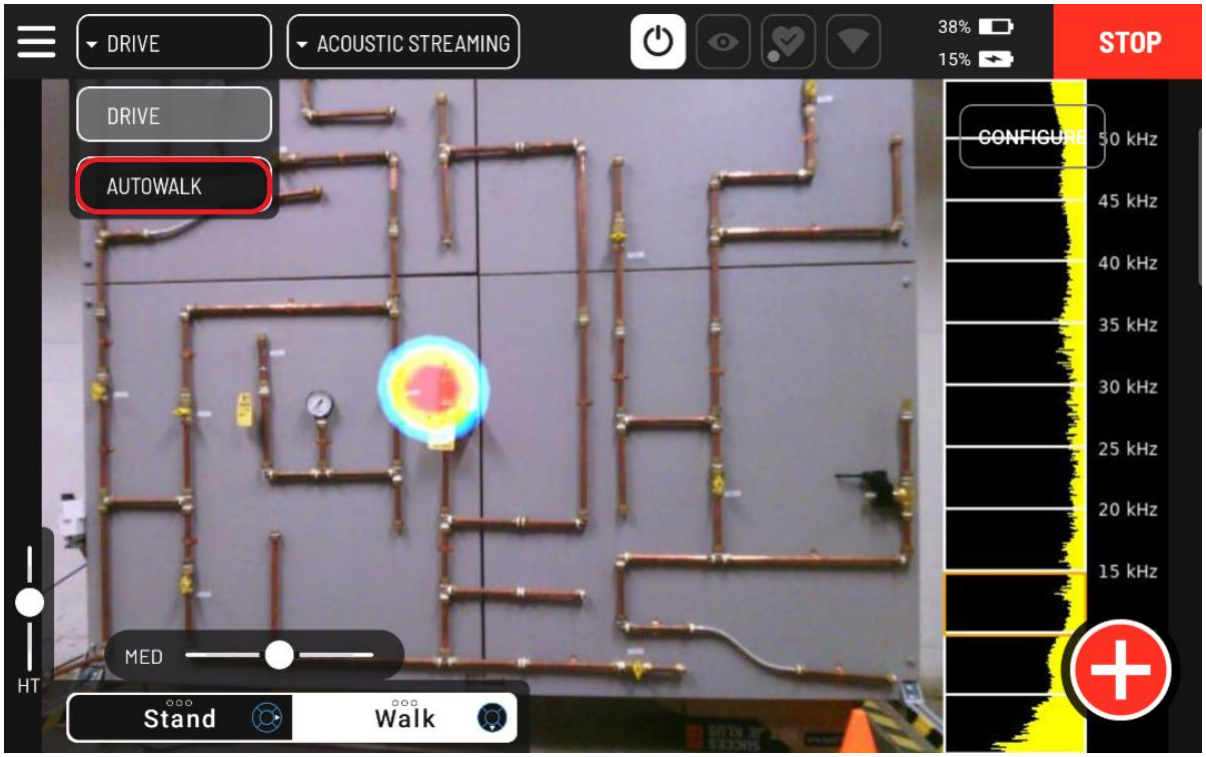
**Step 5.** Control your Spot and run multiple acoustic measurements when you need, as described at Chapter 4.



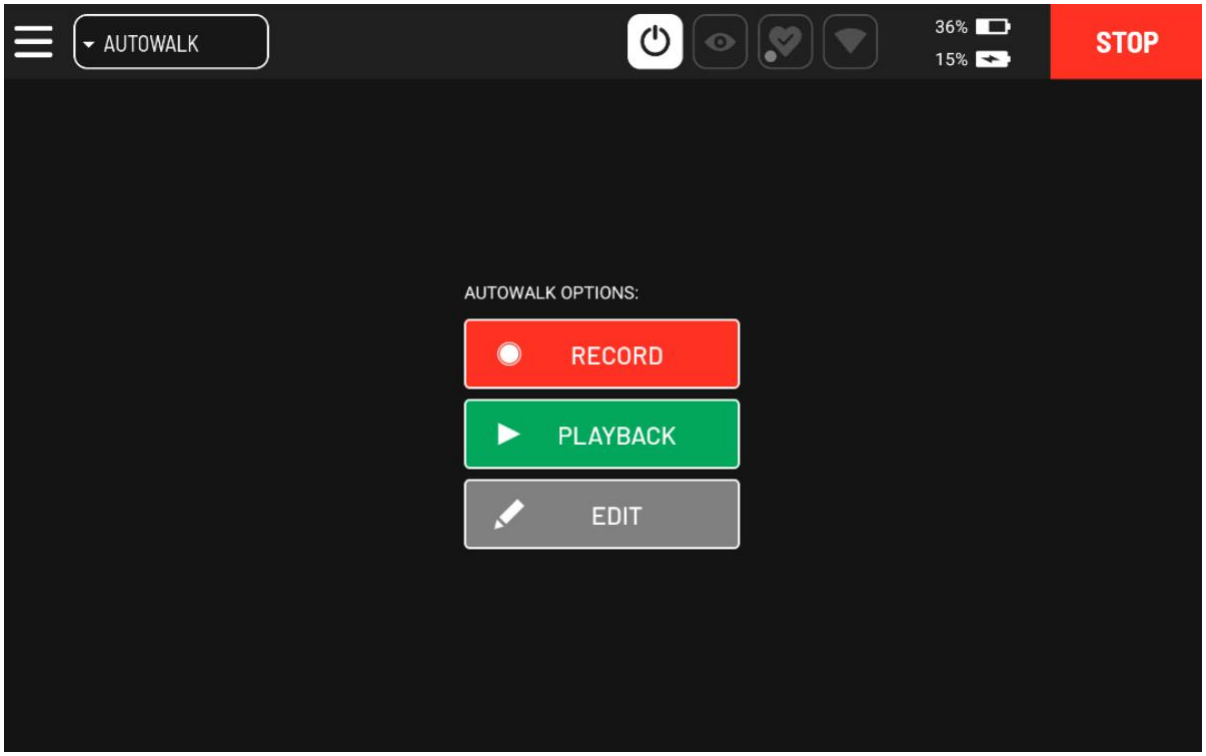

**Step 6.** Press “Finish Recording” to stop recording

## 9.2 Playback

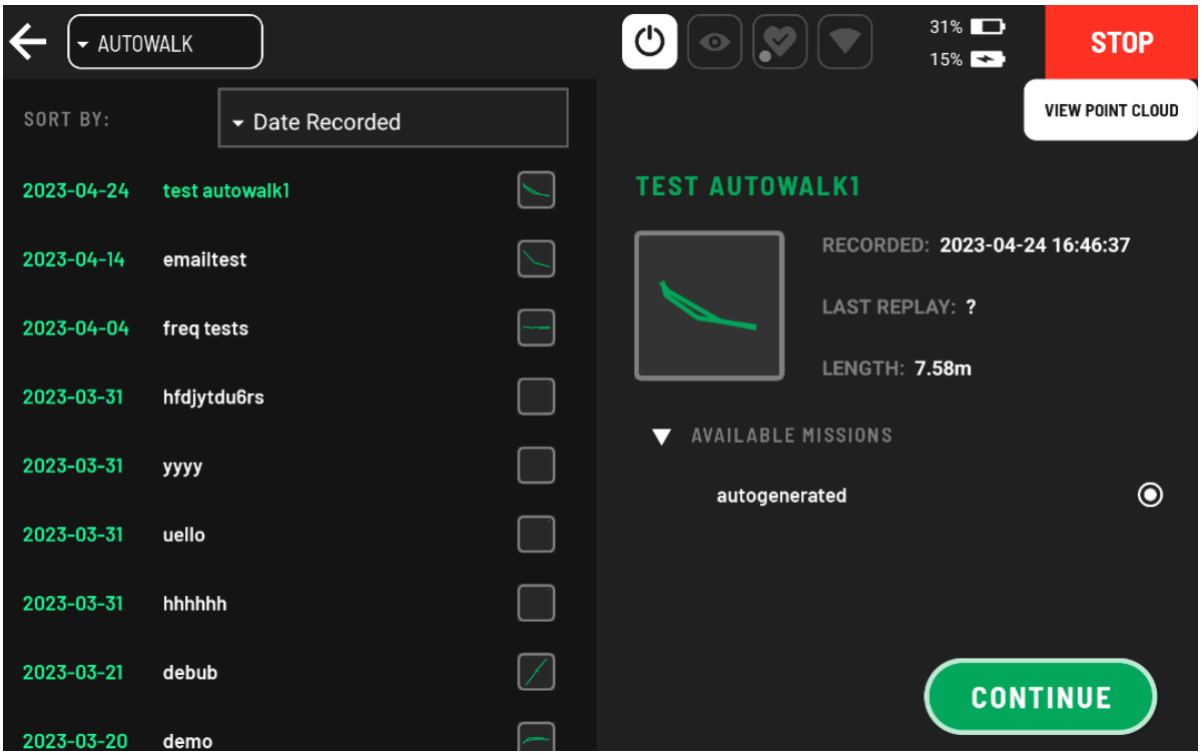
**Step 1.** Change Spot's mode from "Drive" to "Autowalk"



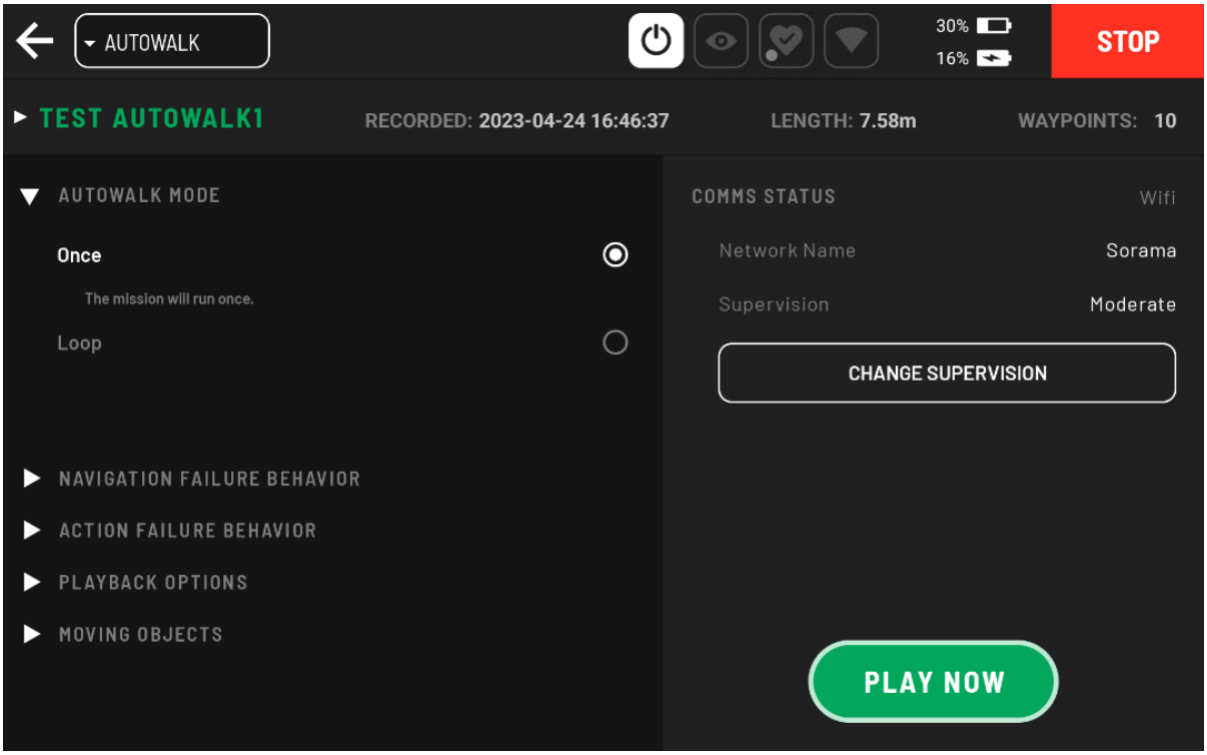

**Step 2.** Press "Playback"



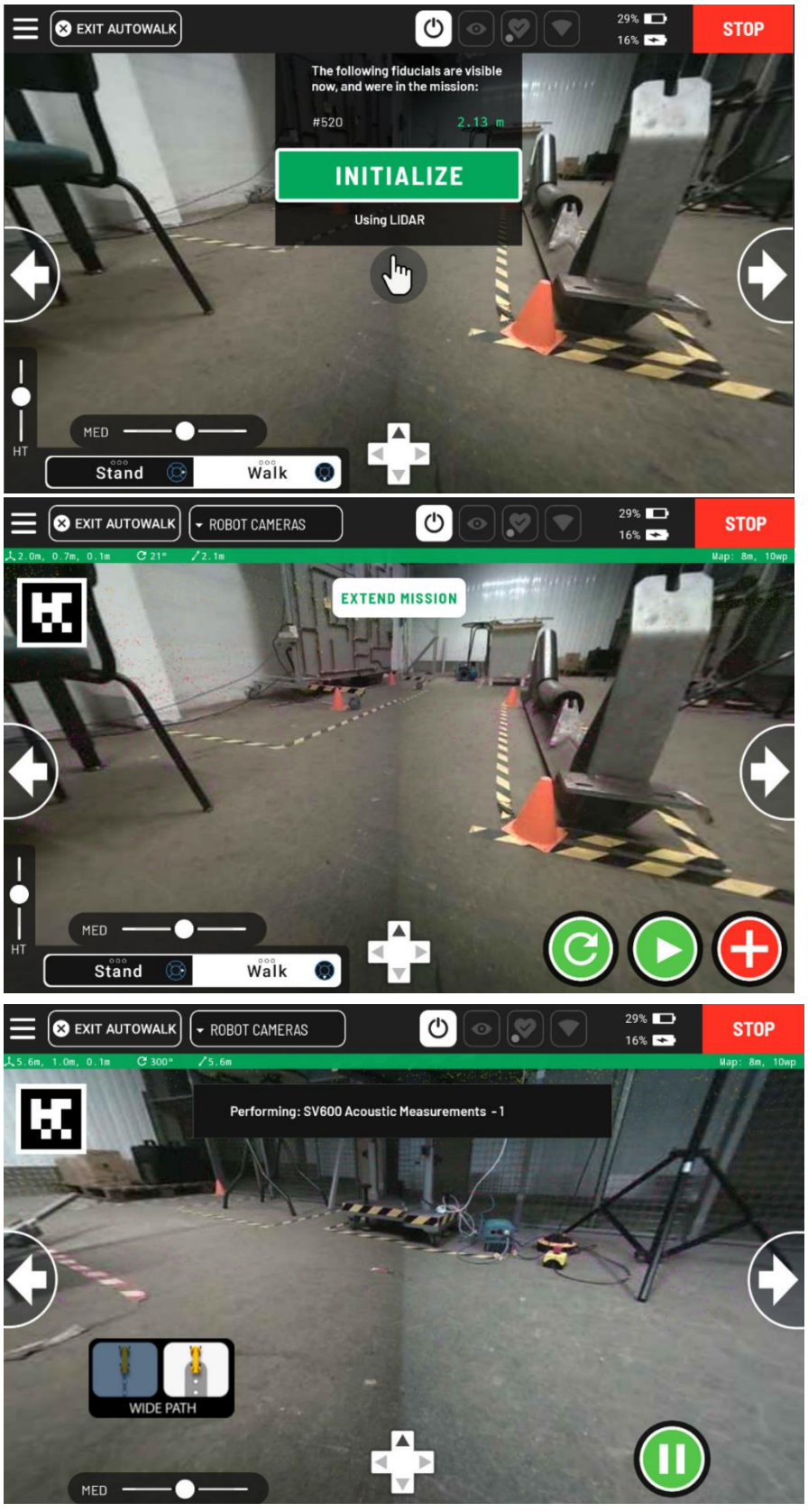
**Step 3.** Choose your recorded autowalk mission and continue




**Step 4.** Press “Play Now”

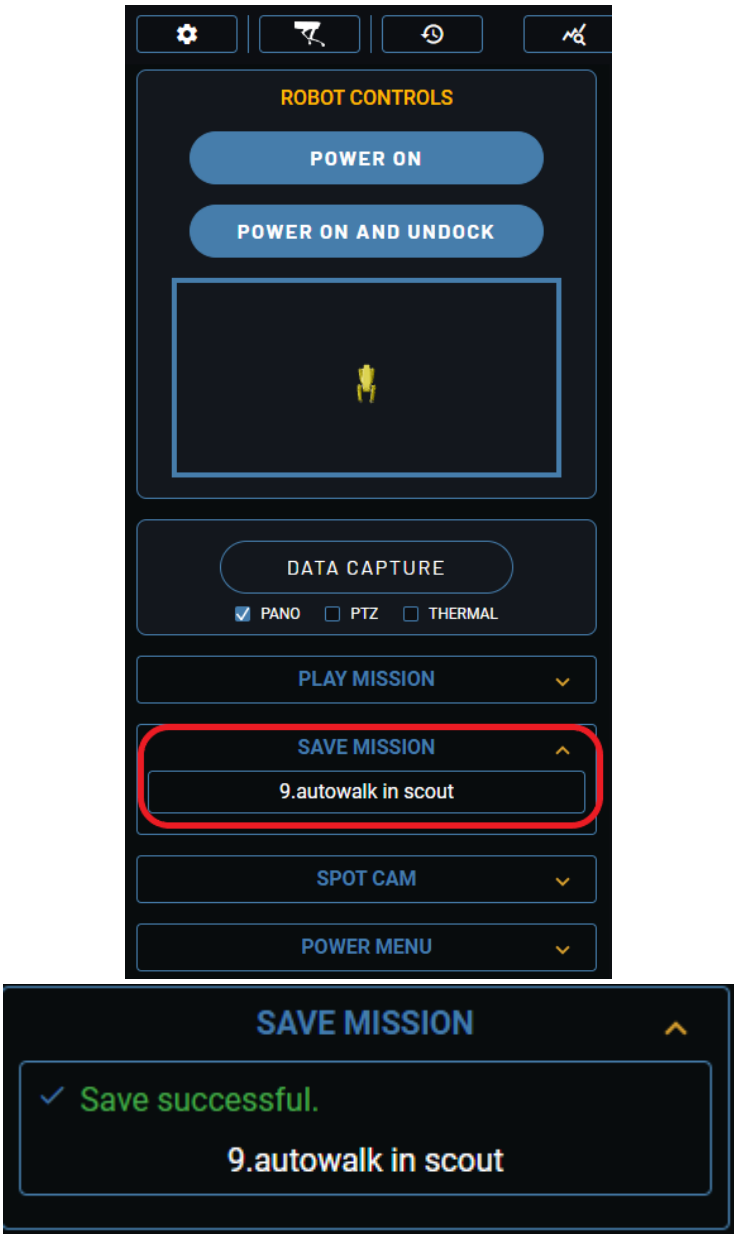


**Step 5.** Press “Initialize” to start the autowalk mission

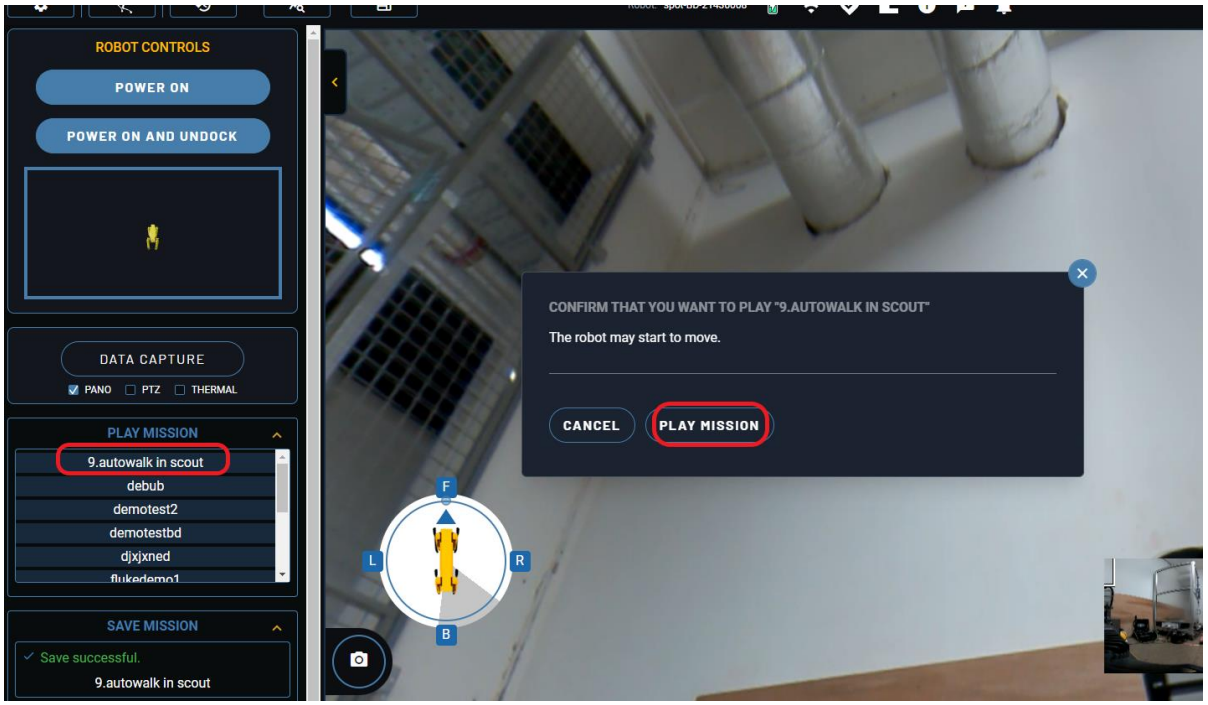


# 10 Running Autowalk Mission through Scout

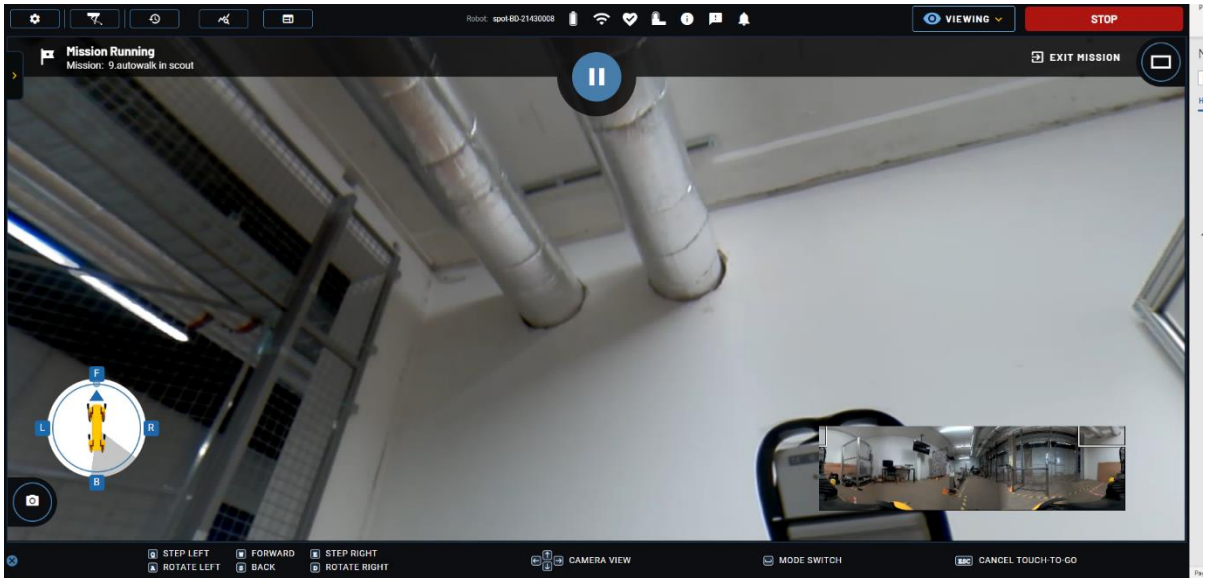
**Step 1.** Make sure you record your autowalk mission on your tablet
**Step 2.** Go to Scout dashboard via an assigned IP address in your network. e.g. https://192.168.1.125
**Step 3.** Sign in with the username and password specified in the sheet enclosed with Scout hub.
**Step 4.** Make sure the robot is properly registered on Scout, *please refer to Boston Dynamics Documentation*
**Step 5.** Press “Drive”
**Step 6.** First save the mission that you recorded on the tablet, by clicking “Save Mission” and selecting the measurement with the corresponding name.



**Step 7.** Click “Play Mission” and click “Play Mission” again on the pop-up window

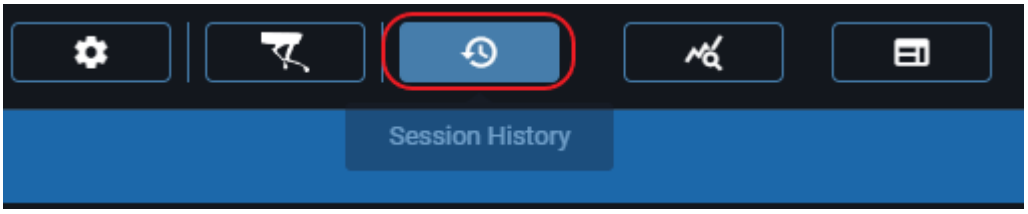



**Step 8.** While Scout is running autowalk mission, it is also possible to monitor the acoustic streaming service on the tablet.

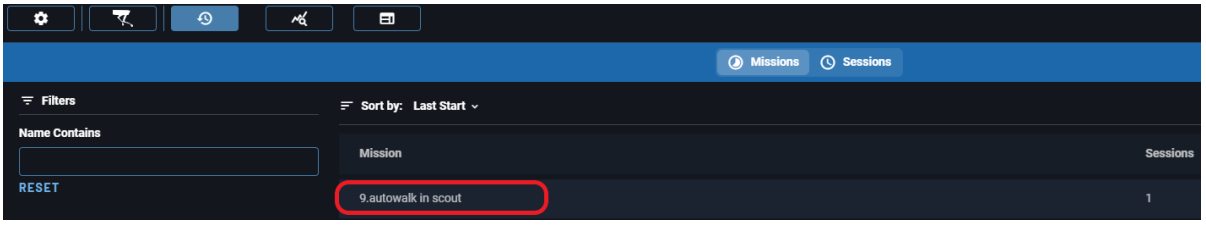


# 11 Monitoring Autowalk Mission – Acoustic Measurements Results through Scout

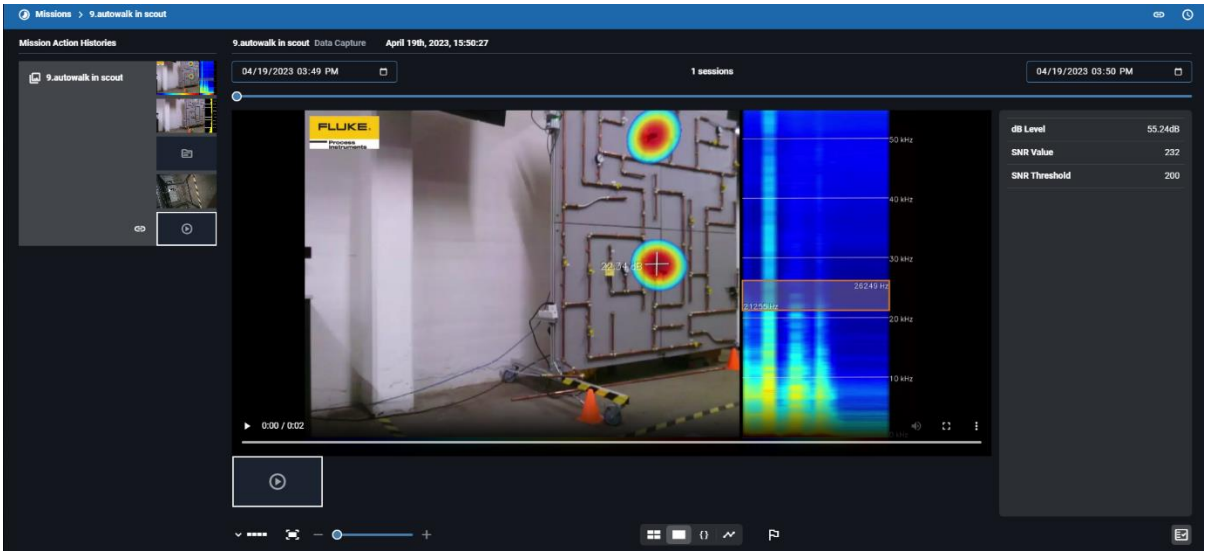
**Step 1.** Go to “Session History”



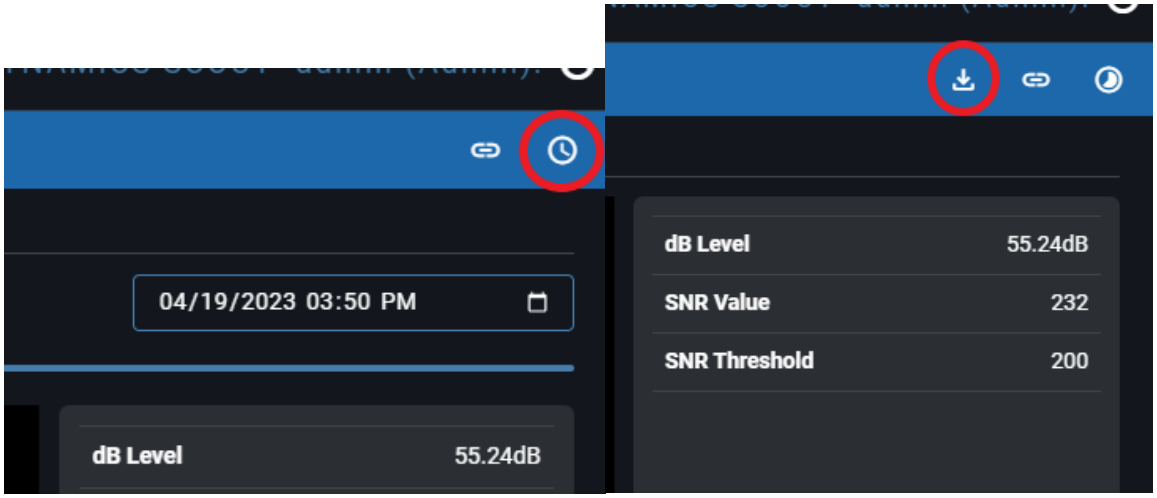

**Step 2.** Click the mission with the chosen mission name



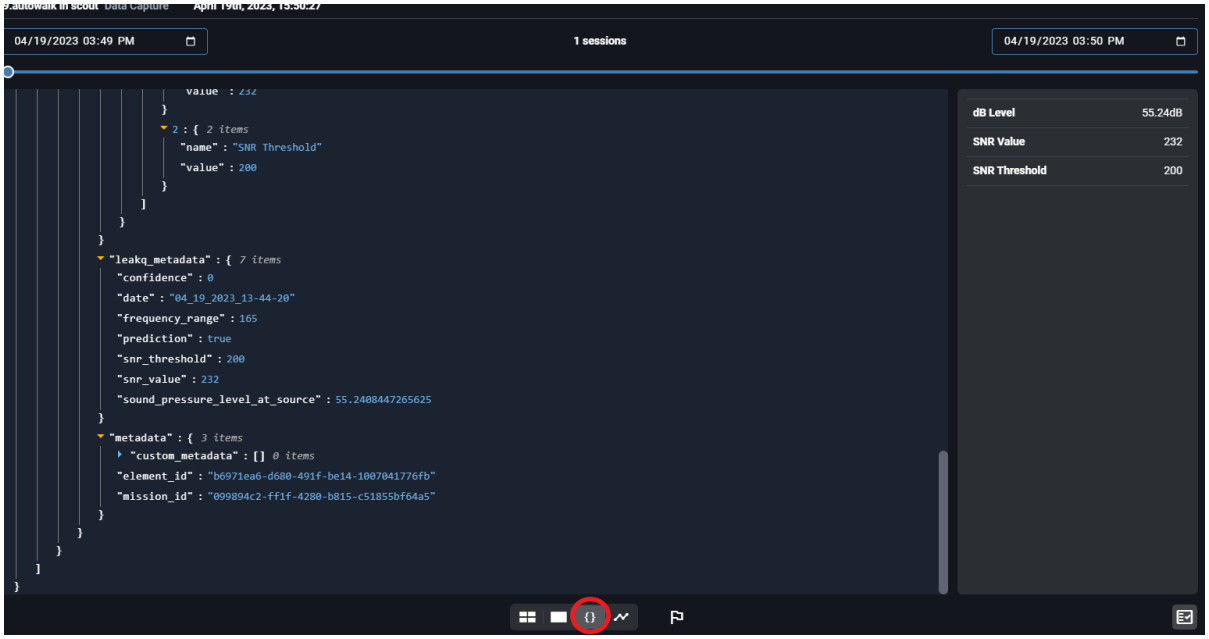

**Step 3.** E.g. LeakQ acoustic measurements contain webm video, captured acoustic streaming image from Spot tablet and image measurement from SV600.




**Step 4.** You can also preview the video and download it by clicking “View Session Details”.




**Step 5.** Click “View Action Metadata” to see metadata information mainly indicating SPL value, SNR value and SNR Threshold



**Step 6.** Click “View Line Chart” to see the line graph drawn using SNR value.