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# OTS

**OUTLET TEST SYSTEM**  
**Application User Manual**

Version: 3, December 2019

Designed and manufactured in Australia by Ampcontrol Pty Ltd



**WARNING!**



The **warning** symbol highlights a potential risk of **injury or death**.  
Please share these warnings with other operators.

**CAUTION!**



The **caution** symbol highlights a potential risk of **damage to equipment**.  
Please share these cautions with other operators.

**NOTE**



The **note** symbol highlights **key information**.  
Please share these notes with other operators.

**ENVIRO**



The **enviro** (environmental) symbol highlights areas which may have an impact on the surrounding **fauna and/or flora**.

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## Before You Begin

Thank you for purchasing the Ampcontrol OTS.

### WARNING!



In the interests of **safety and correct equipment operation**, please take the time to read and understand the content in this manual.

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# 1 SAFETY AND OTHER WARNINGS

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*For safety reasons, the OTS and OTS-EL must be operated by competent personnel. Please read and understand this instruction manual completely before operating or servicing this equipment. Failure to operate this instrument in accordance with the instructions contained in this manual may create hazardous operating conditions.*

## 1.1 Safe Use of Equipment

The equipment supplied has been designed and manufactured to ensure safe operation. The equipment must only be used within the design parameters.

The instructions within this manual must be observed as an aid towards achieving the safest possible installation.

**Persons responsible for installation, maintenance, or operation, must observe the following instructions:**

### 1.1.1 Changes to Equipment

Changes in the design and modifications to the equipment are not permitted. Unauthorised changes made to the hardware or operating firmware will void the manufacturer's warranty, and may compromise the integrity of the system into which it is installed and other connected equipment.

### 1.1.2 Equipment Knowledge

Experience with, or understanding of, this equipment is essential for the safe installation and removal of the equipment. Therefore, please read and understand this manual prior to use. Competency based training courses are recommended and are available on request.

### 1.1.3 Manual Handling

Precautions have been taken to ensure all equipment is safe to handle and free from sharp edges. However, care should always be taken when handling enclosures and gloves should be worn.

### 1.1.4 Installation

Correct operation and safety depend on the Outlet Test System and associated equipment being installed correctly. Mechanical and or electrical installation and maintenance of plant and equipment must only be carried out by appropriately qualified personnel and must be tested thoroughly prior to operation.

## 2 PRODUCT OVERVIEW

The Ampcontrol Outlet Test System (OTS) and Outlet Test System – Earth Leakage (OTS-EL) provide a fully automated testing facility. The OTS completely eliminates paper-based record keeping by concurrently updating a historical database with the latest test data.

The OTS (or OTS-EL) is comprised of an OTS module, embedded within the outlet electrics, and an OTS Comms Module, mounted on the door to provide Bluetooth connectivity to the Tester.

The full OTS module will test the outlet’s earth leakage, earth continuity, earth fault lockout and frozen contactor protection functions while the OTS-EL version will limit testing to earth leakage protection only.

All tests, for both the OTS and OTS-EL, are initiated wirelessly via the OTS Application Software, which is installed on compatible Bluetooth enabled devices. Each outlet is able to be individually targeted to prevent incorrect outlet testing.

All local test records are managed within the OTS Application Software until the tablet performs an authorised sync with the AWARE cloud storage. When this occurs all local test reports are uploaded to the cloud, and then all Assets and Users are refreshed for selected site. All OTS test records can be accessed by anyone with internet access and authorisation (user account).

### Key Features

- Fully automated, outlet protection function testing
- Wireless outlet testing
- Test data logging (Uploads to cloud storage)

### 2.1 Supplementary Documents

The Ampcontrol OTS Application User Manual is expected to be read in conjunction with the following documents:

- MAG-196 OTS User Manual
- MAG-205 OTS-EL User Manual
- MAG-204 OTS Dashboard User Manual

**NOTE**



The application is the same for both the OTS and the OTS-EL. If a test is performed on the OTS-EL, the results from the additional functionality of the OTS will simply read N/A.

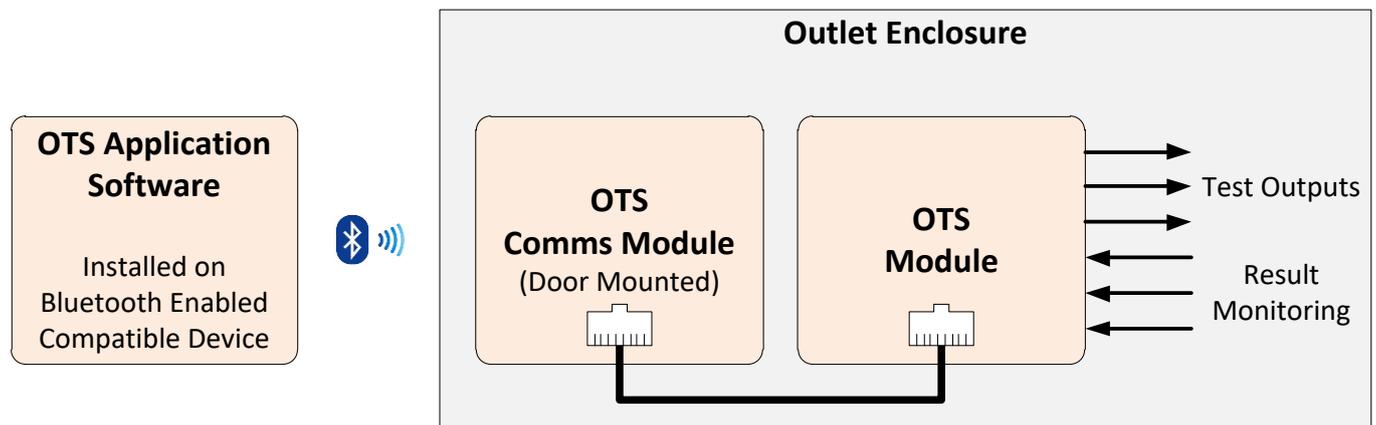


Figure 2-1: OTS System Overview (Application Software)

## 2.2 Installing/Updating the Application

If you have purchased a compatible tablet from Ampcontrol with the OTS System, the application will already be installed on the tablet and configured with the correct site identification number.

## 2.3 Compatibility

The Ampcontrol OTS Application software has been developed and tested on the Samsung Galaxy Tab A with Android version 6.0.1 and newer, this is the only device with guaranteed compatibility to the OTS application.

### CAUTION!



Ampcontrol cannot guarantee correct operation of the Ampcontrol OTS application if a non-compatible smart device is utilised.

## 3 DOWNLOADING THE APPLICATION

The Application can be downloaded from the Google Play Store, Search “Ampcontrol OTS” and follow directions.

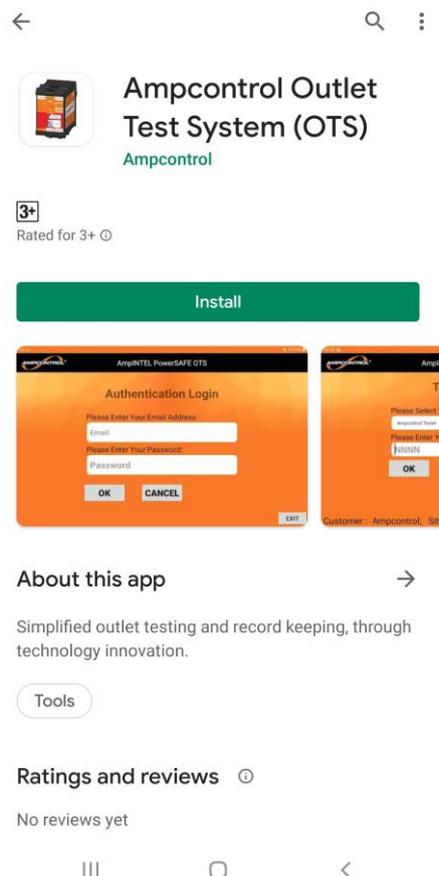


Figure 3-1: Google Play Store - Ampcontrol Outlet Test System (OTS)

## 4 INITIALISING THE APPLICATION

Upon opening the application, the user will need to enter AWARE Account details to sync the tablet to the chosen site. If this is the first time the application is being used you will be required to perform this step, for following uses you can skip this step, see Figure 4-1.

The tablet will use the entered account to synchronise with the AWARE cloud. In the next step the user is required to select the site they want to synchronise with from a drop down list. The tablet will synchronise active asset and user details for the site selected.

### NOTE



If the user has access across multiple sites, the tablet will only synchronise with the site selected.

If a user has not been setup on the AWARE website prior to synchronising the tablet to the cloud, the user will not be able to synchronise the tablet or log in to the tablet to perform offline testing.

If an asset has not been set up on the AWARE website prior to synchronising the tablet to the cloud, testing of that outlet will not be possible. The OTS Application will only recognise OTS modules that are active and have been configured.

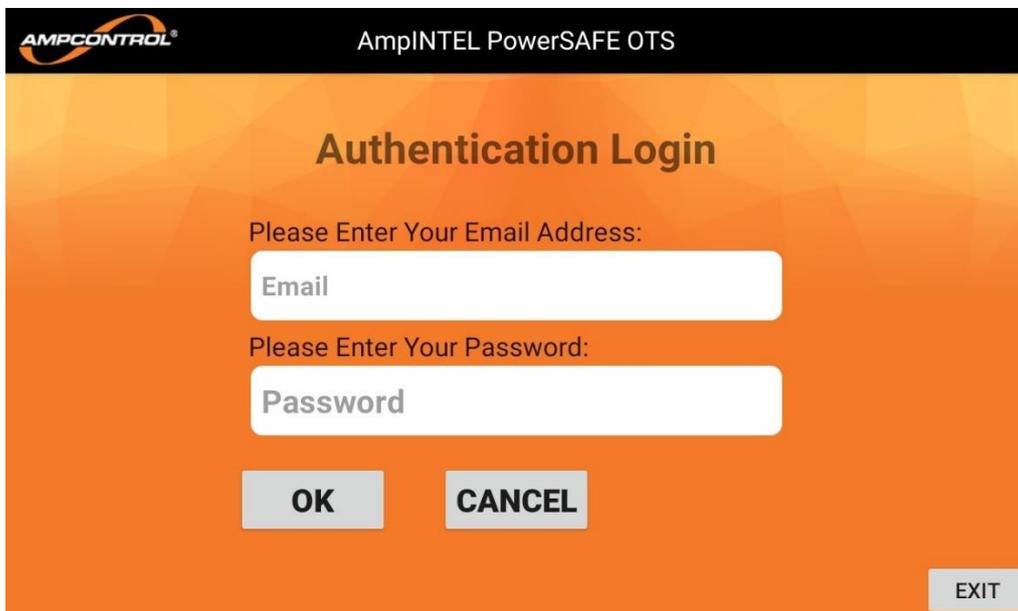


Figure 4-1: Initialising the Application

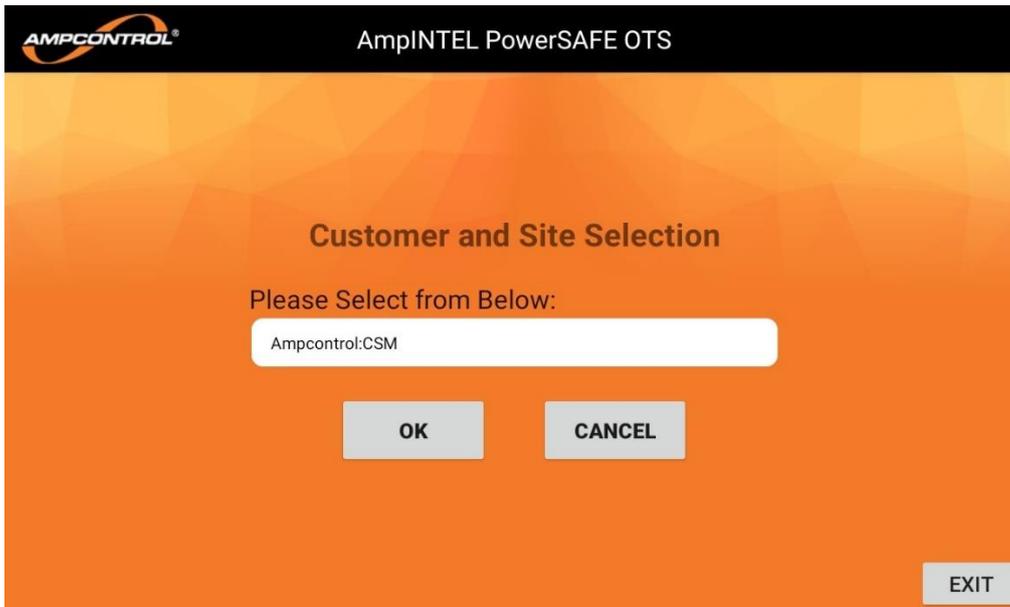


Figure 4-2: Selecting Site

## 5 LOGGING INTO THE APPLICATION

Once the tablet is synchronised to a site, all users who have been set up online with tablet access will appear in a selectable drop down list. To set up a user for offline access the user needs to enter a password in the profile settings online. Once user is selected, enter the 4 digit pin to gain access, Figure 5-1.

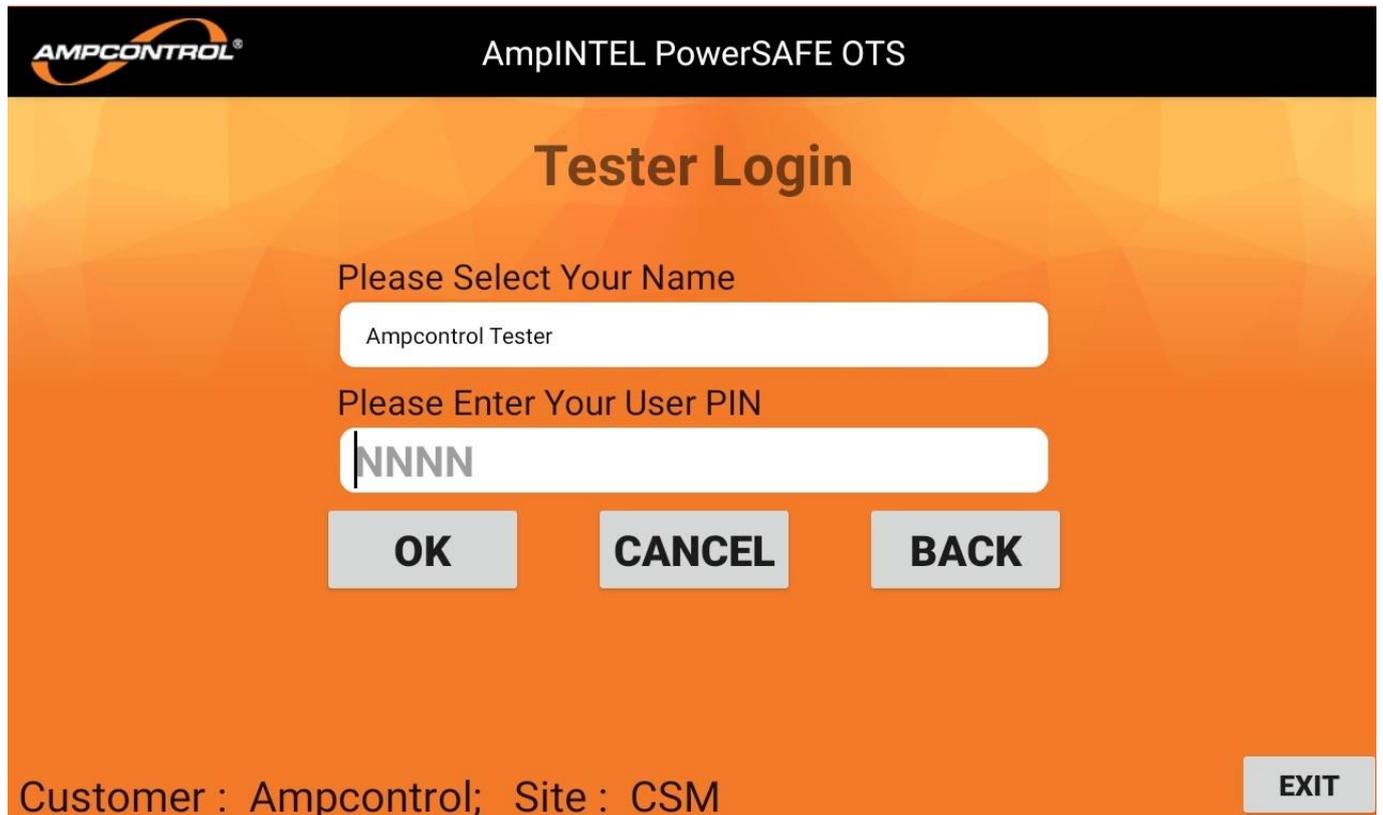


Figure 5-1: Logging In

If Bluetooth is not enabled, the device will ask for permission to enable Bluetooth (Figure 5-2), before proceeding to the home page.

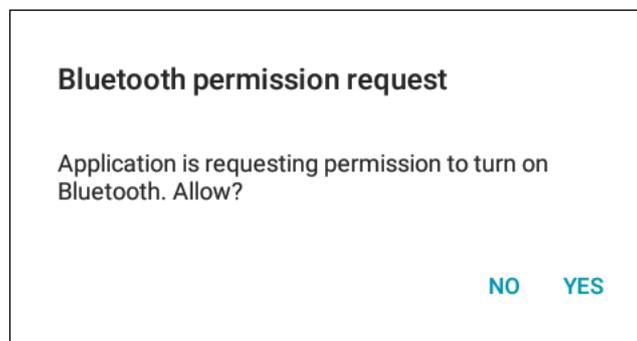


Figure 5-2: Bluetooth Permission Request

## 6 NAVIGATING THE APPLICATION

### 6.1 Overview

Upon logging in the user will be presented with the Home page, similar to that shown in Figure 6-1. The application has a number of features, common to all views, which are identified in this figure by numbered circles.

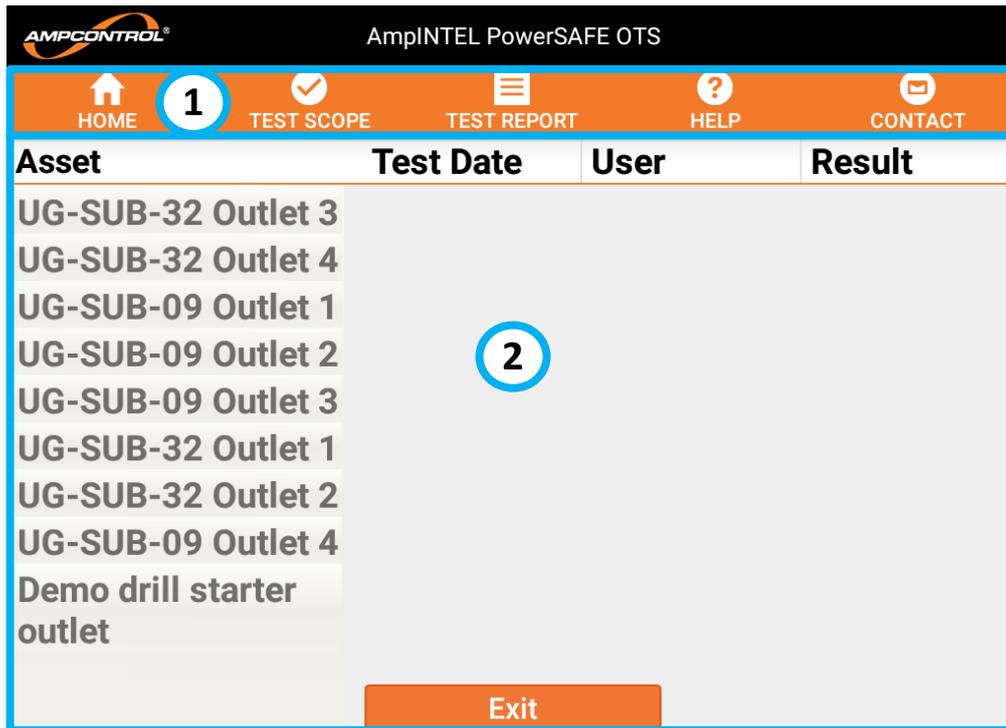


Figure 6-1: Home Page

#### 6.1.1 Item 1: Tab Selection Panel

The Tab Selection Panel allows the user to navigate between the different pages of the application. To move between pages, simply touch the desired tab. An overview of these five pages is given below in Table 1. Refer to the relevant sub-section for a more detailed description of each page.

Table 1: Application Tabs

Tab	Function
Home	Allows the user to view details of the previous tests. (See Section 6.2)
Test Scope	Allows the user to connect to the OTS and perform a test sweep. (See Section 6.3)
Test report	Details all of the results for the selected test report. (See Section 6.4)
Help	An overview of the functions of the Application. (See Section 6.5)
Contact	Ampcontrol contact details. (See Section 6.6)

#### 6.1.2 Item 2: Tab viewing area

This area of the application will display the information that is relevant to the tab that has been selected.

## 6.2 Home Tab

The Home page displays the sites assets and available test reports. The Asset list will match those listed on the AWARE dashboard. When an asset is selected, all test reports that are stored on the tablet and associated to that asset will be shown in the adjacent asset list column. To view a test report, simply click on the desired report and it will open in the Test Report page. The tests are ordered by date of completion, new to old.

Test reports will only be available to view through the application until the software has uploaded them to the online AWARE cloud storage.

To exit the application, press the exit button, Item 3 of Figure 6-2.

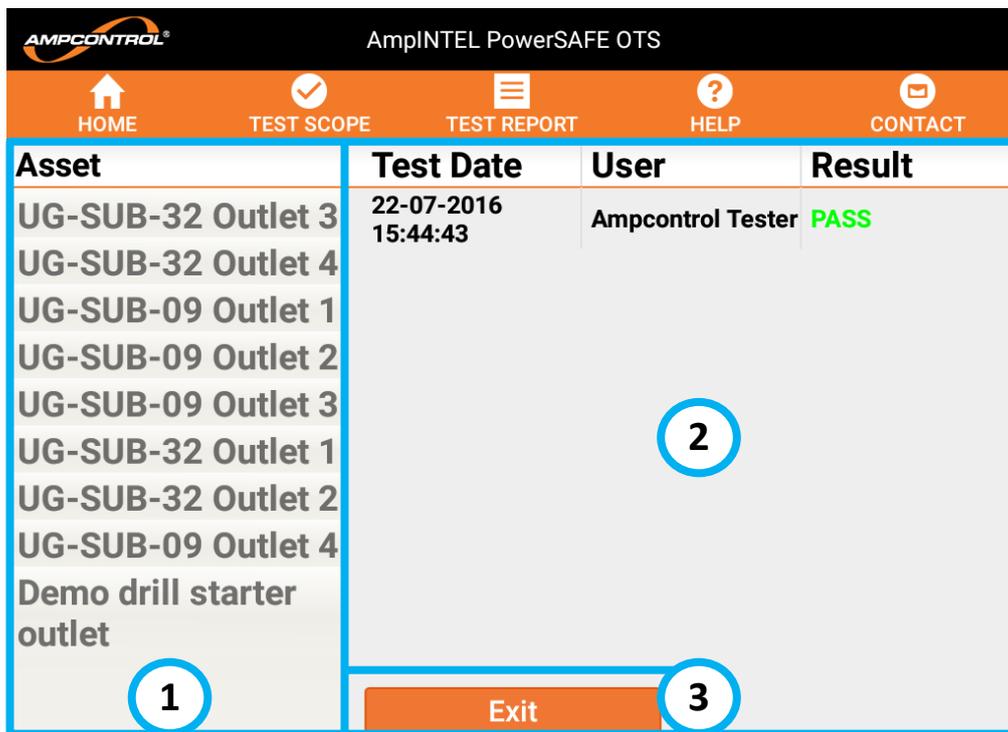


Figure 6-2: Home Page

## 6.3 Test Scope Tab

The test scope page (Figure 6-3) allows the user to connect to an available OTS and to perform the protection function test/s. The OTS testing procedure is broken into 4 procedural steps. The status of a test is outlined by the progress of item 1 in Figure 6-3. Item 2 of Figure 6-3 displays the status and information relevant to the current test process. These features are explained in Section 7.

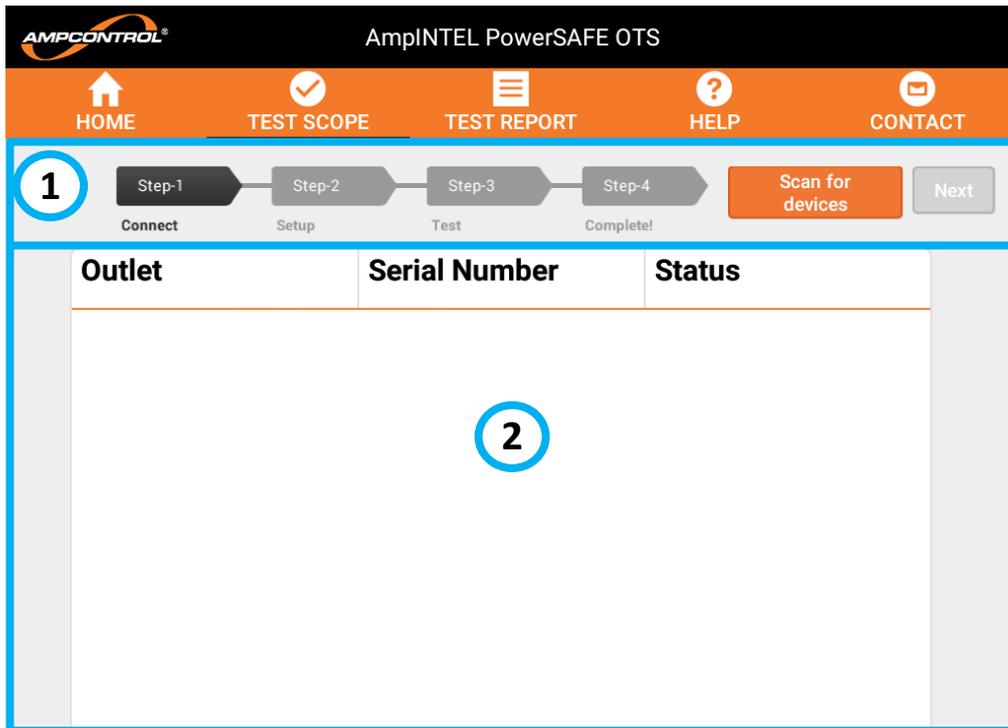


Figure 6-3: Test Scope Page

### 6.3.1 Item 1: Test Steps

There are four steps to conducting a test. These are:

- Step 1: Connect – the user can scan for and select the desired Bluetooth device. OTS Testers are identified via their serial number and outlet name.
- Step 2: Setup – This step configures the OTS for the desired test to be completed.
- Step 3: Test – The OTS or OTS-EL will run the required tests.
- Step 4: Complete! – The test report will be displayed.

These steps are detailed further in Section 7 of this document.

### 6.3.2 Item 2: Step Viewing Area

This area of the application will display the information that is relevant to the current Step.

## 6.4 Test Report Tab

This page details all of the information for a test report. This page will display the most recent test report completed or the test report selected on the Home Page. When reviewing a test report, the tester has the ability to add additional notes or to save all test reports on the tablet to a CSV file. To add notes, simply press the “Add Test Notes” button, Item 2 in Figure 6-4. To save test reports into a CSV file, simply press the “Save All Reports” button, Item 1 in Figure 6-4.

<p><b>NOTE</b></p> 	<p>Switching to the Test Report page without selecting a previous test on the Home page will display the most recently completed test.</p>
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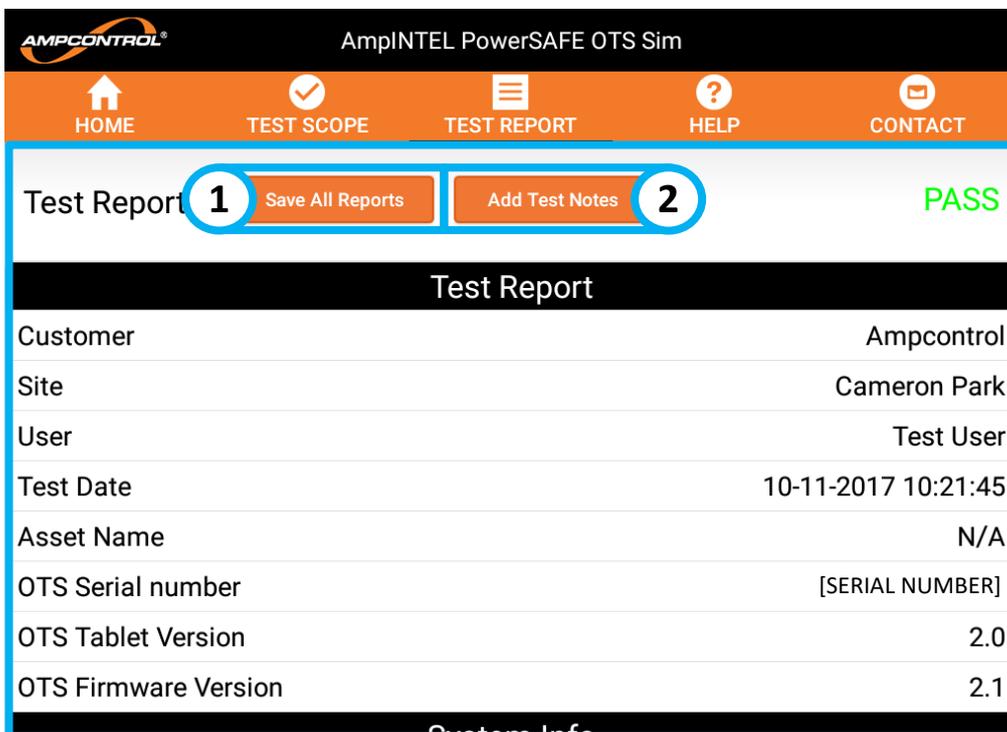


Figure 6-4: Test Report Page

## 6.5 Help Tab

The Help Tab provides an overview of the functions of the Ampcontrol OTS Application. If necessary, the user can find a PDF copy of this document for on-site referencing.

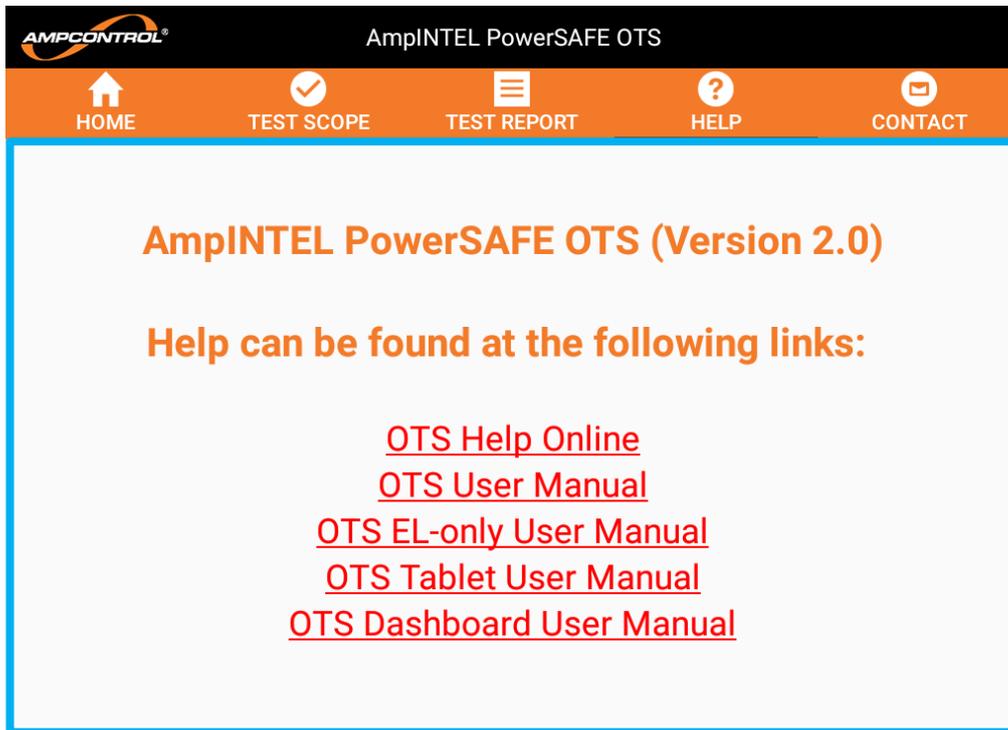


Figure 6-5: Help Page

### NOTE



These PDF links are to documents located within the Downloads folder. Should they fail to open confirm the documents have not been removed from this location.

## 6.6 Contact Tab

The Contact tab provides contact information for the Ampcontrol Customer Service Team.

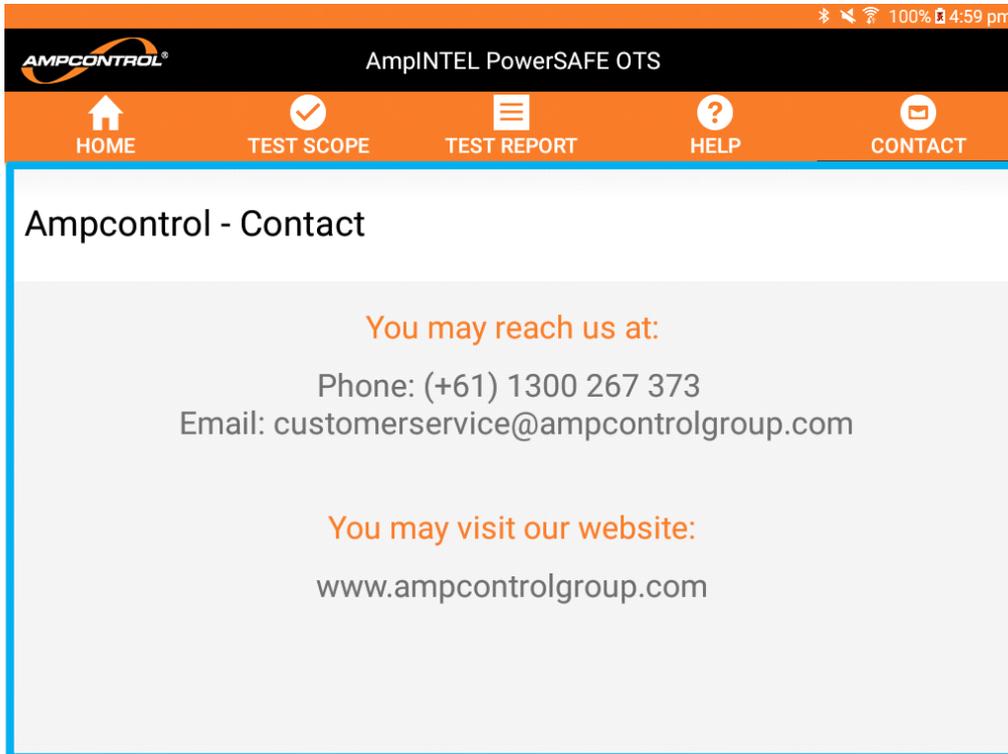


Figure 6-6: Contact Page

## 7 PERFORMING A TEST

Tests are controlled from the test scope page (Section 6.3). There are four steps to performing a test.

- Step 1: Connect
- Step 2: Setup
- Step 3: Test
- Step 4: Complete

Once a test is complete, test results will be stored on the tablet until they are uploaded to the AWARE cloud storage. The Aware web interface allows the user to access sites Asset and user information as well as review previous tests performed. The test reports will be uploaded to the cloud during a successful synchronisation with the cloud.

If the tablet loses Bluetooth communications with the OTS during testing or a communication fault occurs, the test report stored on the tablet will be incomplete. It is necessary for the tester to reconnect to the OTS before trying to upload the test report to prevent losing the test data. The user will be informed that the test data has been updated and that they are not required to continue with a second test.

### 7.1 Step 1: Connect to the Outlet Test System

Select “Scan for devices” at the top right of the Test Scope page, Item 1 of Figure 7-1. A list of the available devices will appear in the table below, Item 2 of Figure 7-1. The “Outlet” column will display the name of all available OTS modules, with the corresponding serial number shown in the “Serial Number” column. The “Status” column displays the current connection status for the available devices. There are only two status states, “Disconnected” and “Connected”. Only one device can be connected at a time.

To connect to an outlet’s OTS, touch the orange button labelled “Disconnected” of the desired OTS. The “Status” column will change to “Connected” once the connection is successful, Item 2 of Figure 7-2. The Outlet column will form the primary means of outlet identification. Alternatively, a constantly illuminated “Paired” LED on the Comm’s module indicates that the tablet is connected to that communications module. If a Comm’s module is indicating a paired status, but doesn’t match the tablets outlet description, the user / tester needs to confirm the serial number on the side of the OTS module is correct or confirm the websites asset details are correct.

#### NOTE



The Bluetooth range is limited to a maximum of approximately three metres (3m). This distance is an advised maximum, various factors will influence the connection distance.

#### NOTE



Only Assets configured on the AWARE website will be detected by the tablet. It is important to ensure all asset and user details are up to date and the tablet has synchronised to the cloud before performing tests.

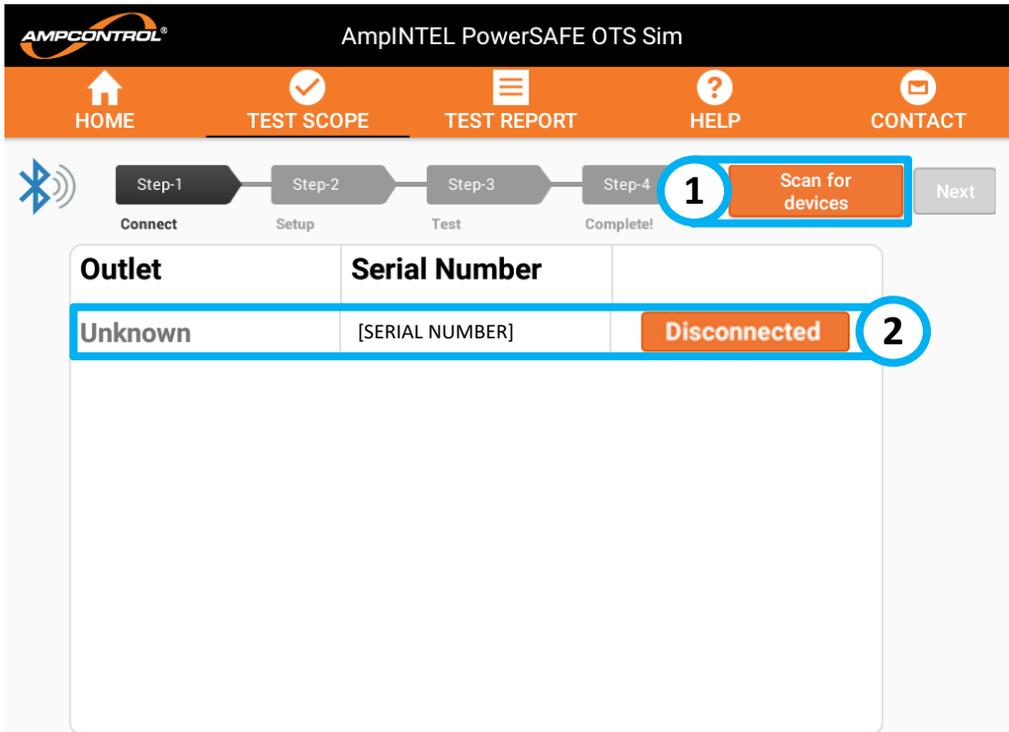


Figure 7-1: Step 1 - Disconnected

The “Next” button, Item 1 of Figure 7-2, will turn orange when the user is able to progress to the next step.

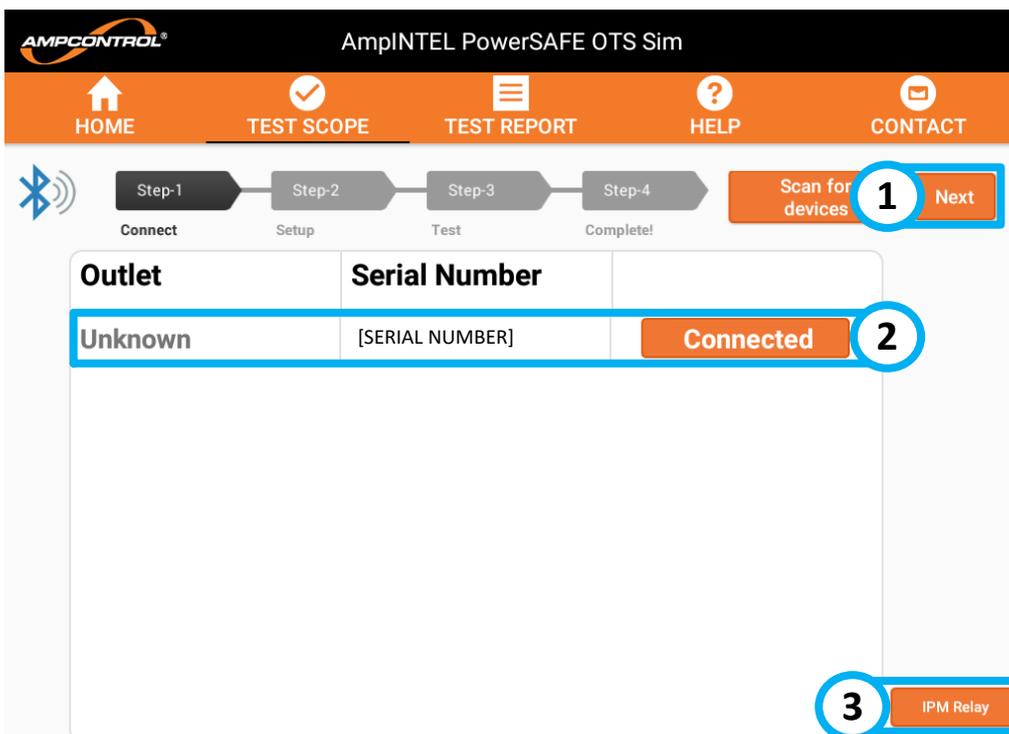


Figure 7-2: Step 1 – Connected

The OTS (and OTS-EL) modules need to be configured correctly to ensure the accuracy of the system. As the OTS can be configured to operate on systems that utilise different HV barriers, the scaling factors can differ and cause incorrect voltage measurements. An OTS should only need to be configured once installed; the configuration of the OTS will be added to the test report to ensure a record of the test parameters is maintained. Configuration of an OTS is accessed through Item 3 of Figure 7-2.

When configuring the OTS, a drop down menu will be visible with all configuration options, as shown in Figure 7-3 and Table 2.

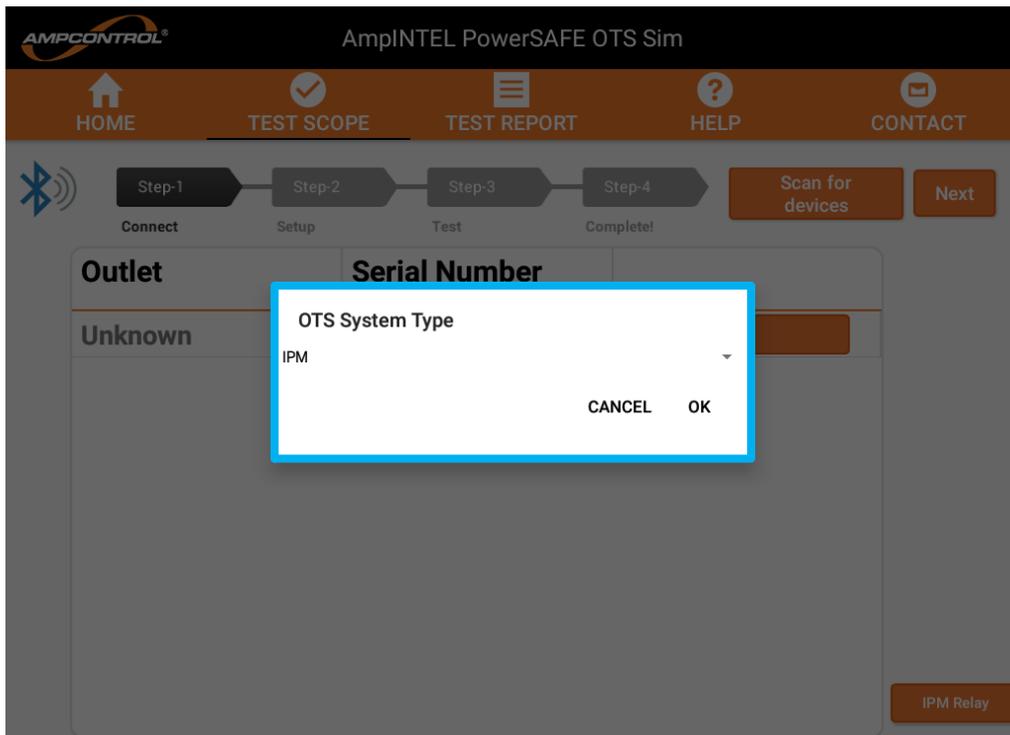


Figure 7-3: Configuration

Table 2: Configuration Options

OTS System Type
IPM
PF1
PF1 with EFL

## 7.2 Step 2: Setup

This step involves three separate pages. The first being test selection, allowing the tester to select the required test. See Section 7.2.1. A permission checklist follows, ensuring the tester is aware of the consequences and that the testing will not be initiated on an outlet that is tripped or faulty. See Section 7.2.2. The final setup page is an initialisation checklist that ensures the outlet's test switch is on, the circuit breaker is in the closed position and the outlet is running. See Section 7.2.3.

### 7.2.1 Test Selection Page

The OTS has the ability to test Earth Leakage (EL), Back EMF Clearing time, Earth Continuity (EC), Earth Fault Lockout (EFLO) and Frozen Contact (FC). The OTS greys out any testing options that the outlet is not capable of testing based on the configuration setting. To select a test, check the box next to the associated test as seen in Figure 7-4.

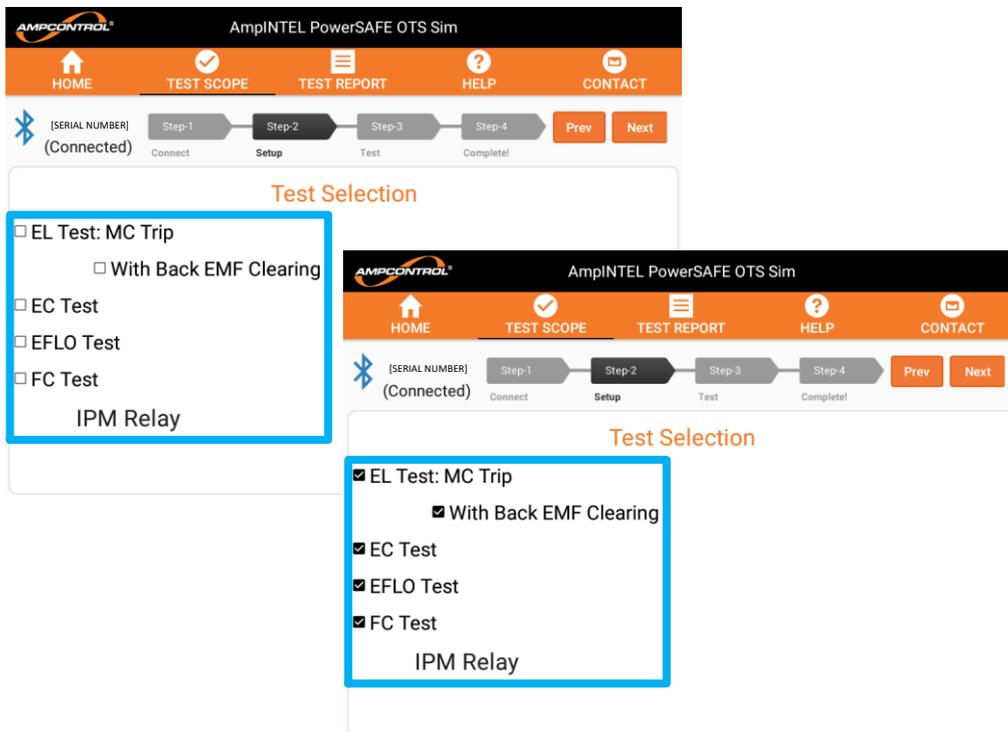


Figure 7-4: Test Selection

### 7.2.2 Permission Page

This page offers a checklist to ensure that the tester understands the risks and possible consequences of testing the outlet are understood, with appropriate precautions undertaken. This includes site specific risk assessments / Take 5 checklists (Ampcontrol’s standard risk assessment term, “Take 5”, has been used), ensuring the outlet is not in a tripped state requiring permission to be reset or recorded. In addition it outlines that the outlet may be energised and anyone in the vicinity should be informed and aware of the upcoming testing to be carried out on the outlet. The checklist can be seen below in Figure 7-5. To proceed with the testing of the outlet, all check boxes need to be checked.

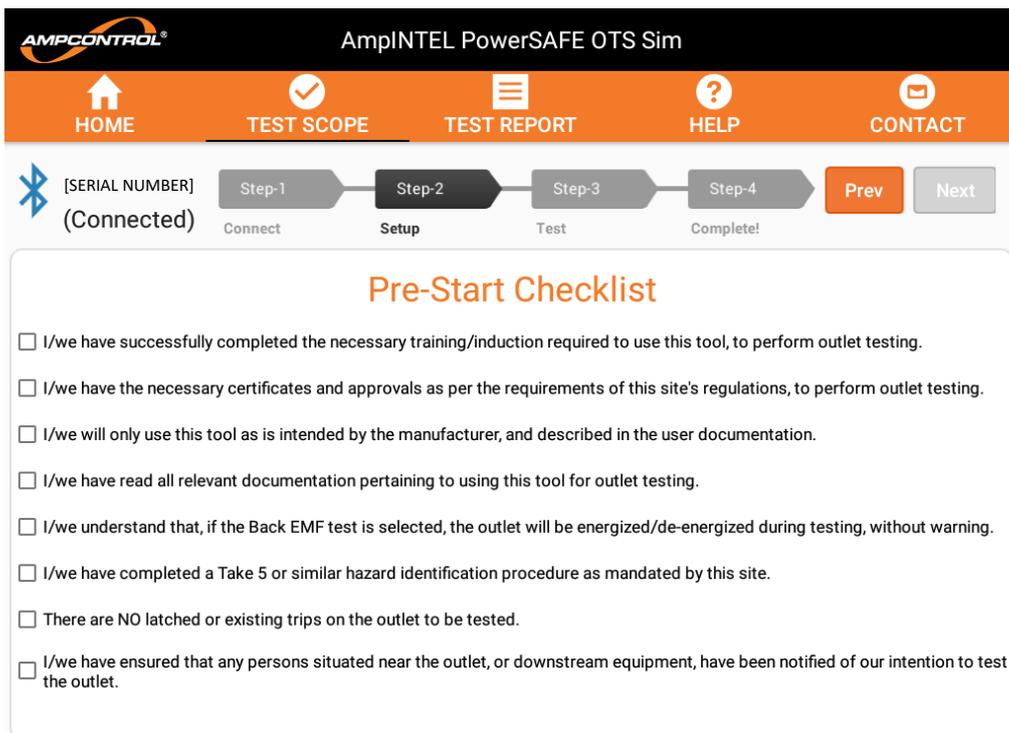


Figure 7-5: Permissions

### 7.2.3 Initialisation Page

This page shows all of the requirements for the test sequence of the OTS to be initiated. The measured system voltage is also displayed at the bottom of the page as seen in Figure 7-6. Some of these checks involve the following:

- Test Mode Enabled - The OTS confirms that the outlet chosen on the application matches the physical outlet by checking the status of the test switch (not required on OTS-EL)
- Circuit Breaker CLOSED - The OTS confirms the CB is in the CLOSED position
- Outlet RUNNING - The OTS confirms outlet is running, used for test sequences where Back EMF clearing time measurement is required
- Outlet STOPPED – The OTS confirms the outlet is stopped, for test sequences that do not include Back EMF clearing time measurement

The check boxes are automatically checked by the application once the OTS detects them. Confirmation will take a short amount of time after the action has been completed.

Once all of these checks have been confirmed the “TEST” button at the top right of the page will turn orange and the user is now able to initiate testing.

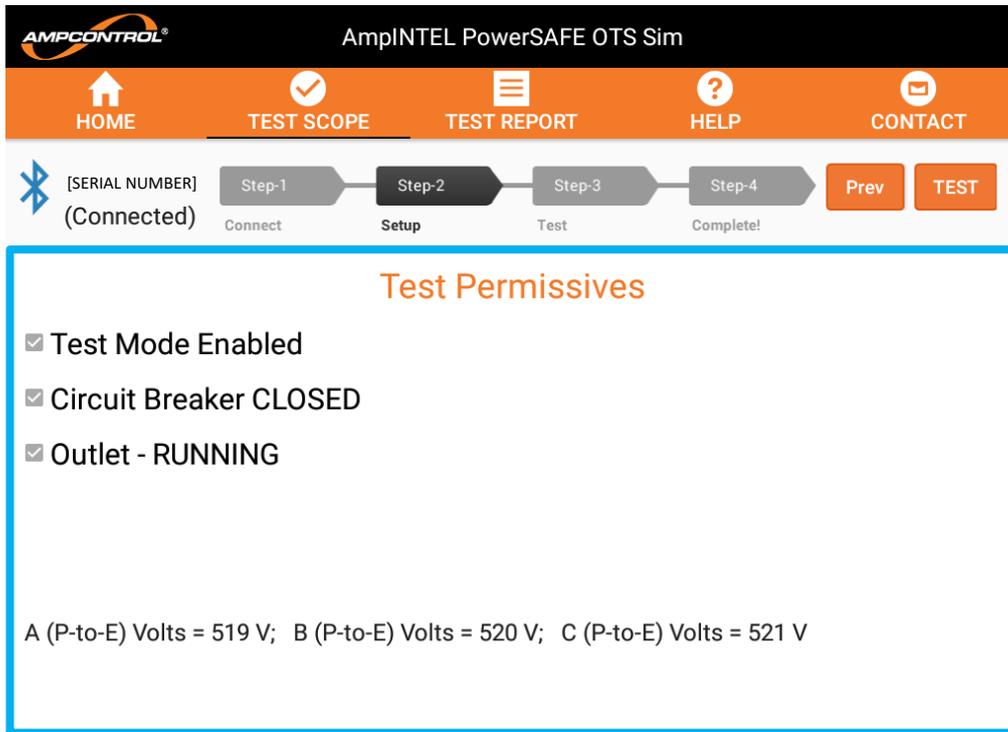


Figure 7-6: Step 2 - Setup

### 7.3 Step 3: Test

The OTS module is now performing a test and will display the progress of each individual testing stage through a bar graph as shown in Figure 7-7.

The test/s that will not be carried out will be greyed out and skipped.

The coloured progress bar shows the current testing status. The progress bar changes from Yellow to Orange as the test progresses. Once complete, the entire bar will become Green and the next test will commence. If all tests are successful then “PASS” will be displayed in the top right corner. A failed test will display “FAIL” in the top right corner.

The “Stop” button in the top right corner will abort the test procedure at any time.

To continue sequence once testing is complete, the user can continue to Step 4 by pressing the “Done” button at the top right hand corner, once it has turned orange.

**NOTE**



The application is the same for both the OTS and the OTS-EL. If a test is not carried out the report will record N/A.

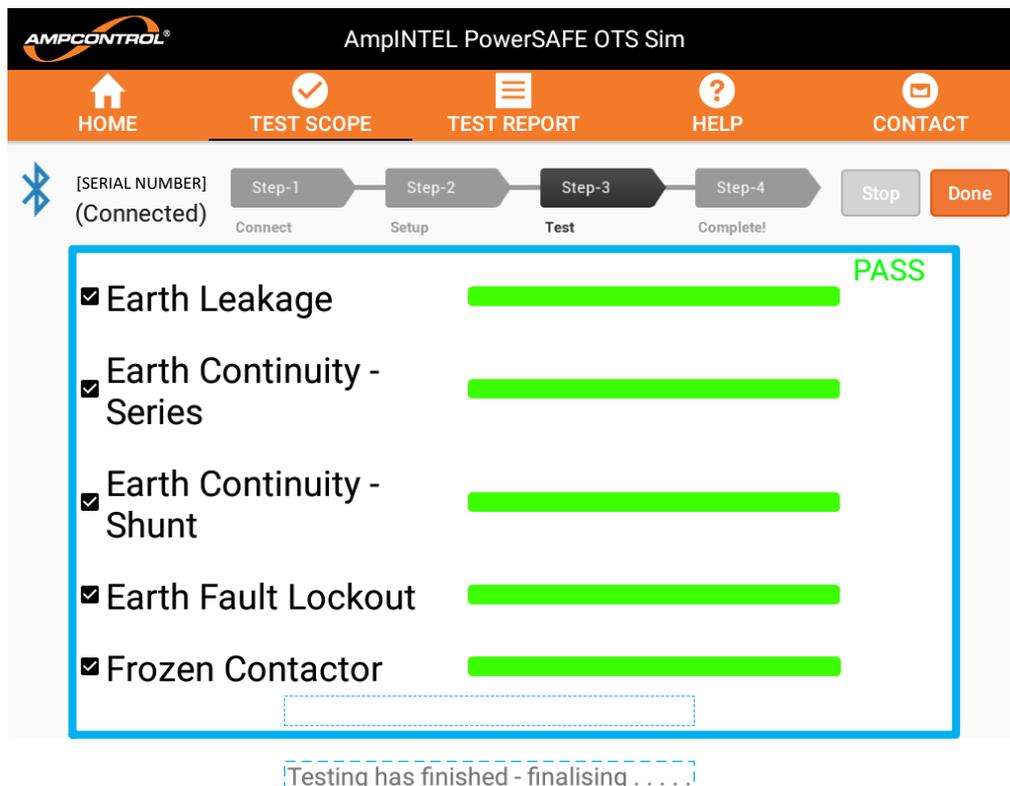


Figure 7-7: Step 3 – Test

## 7.4 Step 4: Complete!

This step will automatically display the test report.

This page consists of seven sections including

- Test Report Data– general information about the report including customer information, asset name, time, date, serial numbers and firmware versions
- System Info – including actual line voltages and allocated phase rotation from the dashboard
- Earth Leakage Test Results
- Earth Continuity Test Results
- Earth Fault Lockout Test Results
- Frozen Contactor Test Results
- Testing Notes – including OTS configuration, selected tests and any additional notes added.

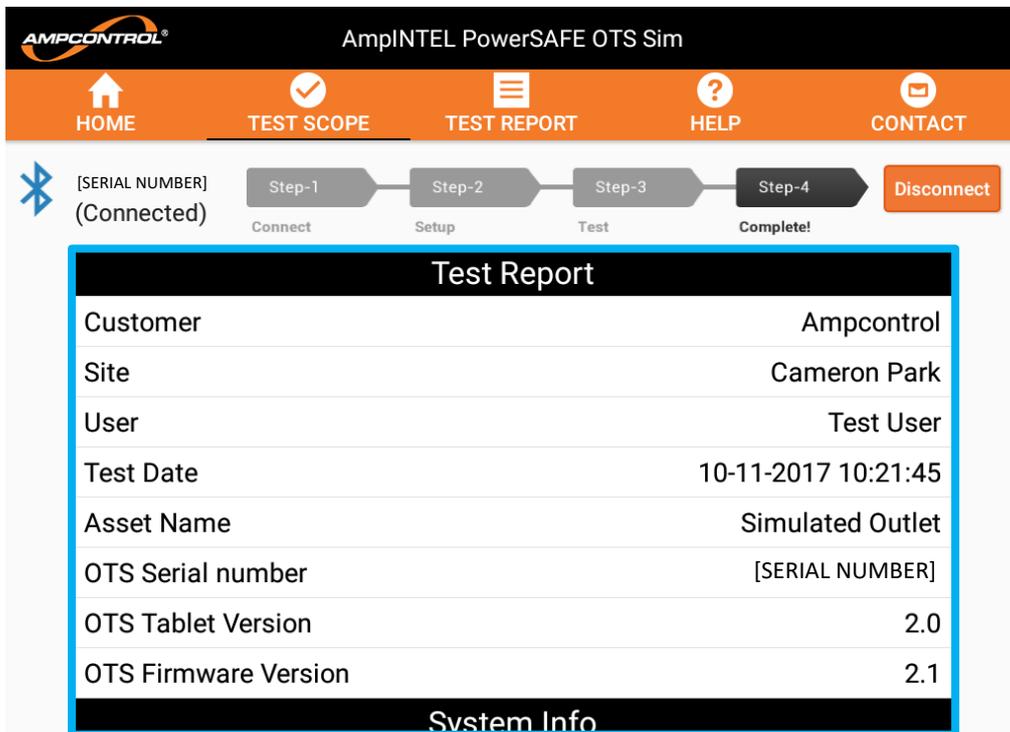
The user must now press the “Disconnect” button in the top right hand corner and will be returned to the Home page. To bring up this test again or any other test report, simply select it from the home page as described in Section 6.2.

### NOTE



After completing a test cycle, turn off the Test Switch (if installed) and reset all protection trips.

The Outlet will then be available for use.



The screenshot shows the AmpINTEL PowerSAFE OTS Sim interface. At the top, there is a navigation bar with icons for HOME, TEST SCOPE, TEST REPORT, HELP, and CONTACT. Below this, a progress bar shows four steps: Step-1 (Connect), Step-2 (Setup), Step-3 (Test), and Step-4 (Complete!). A 'Disconnect' button is visible to the right of the progress bar. The main content area displays a 'Test Report' table with the following data:

Test Report	
Customer	Ampcontrol
Site	Cameron Park
User	Test User
Test Date	10-11-2017 10:21:45
Asset Name	Simulated Outlet
OTS Serial number	[SERIAL NUMBER]
OTS Tablet Version	2.0
OTS Firmware Version	2.1

Below the table, the text 'System Info' is visible.

Figure 7-8: Step 4 - Complete!