



Rooftop Solar

Installation and commissioning: a troubleshooting guide

Exploring the steps solar installers can take to successfully register and test rooftop solar systems to comply with emergency backstop requirements.

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This guide provides detailed explanations of the steps solar installers can take to successfully register and test new rooftop solar systems. Installing the right hardware and configuring it correctly allows customers to get the most from solar installations.

Registration and verification

Have you completed a Solar Pre-approval (SPA)?

Prior to installation - and before starting the registration process - ensure a SPA is completed, 'approved' and in the 'valid' state, and there is internet available on site.

Registration is a two-step process. Firstly, to connect to our network, a communication device (e.g: inverter, gateway, aggregator) must be registered with the manufacturer. Registration is undertaken through the relevant manufacturers' app.

During registration, the manufacturer generates a 40-character Long Form Device Identifier (LFDI). This ensures that the connection is private, protected, and secure.



Please contact the manufacturer for assistance if you experience difficulties generating an LFDI.

Once the LFDI is generated and registered in the manufacturer's app, the next step is to verify the registration in eConnect, via your solar alteration request. To complete this step, the SPA must be completed, 'approved' and in the 'valid' state.

If you experience difficulties verifying the registration in our system, check:

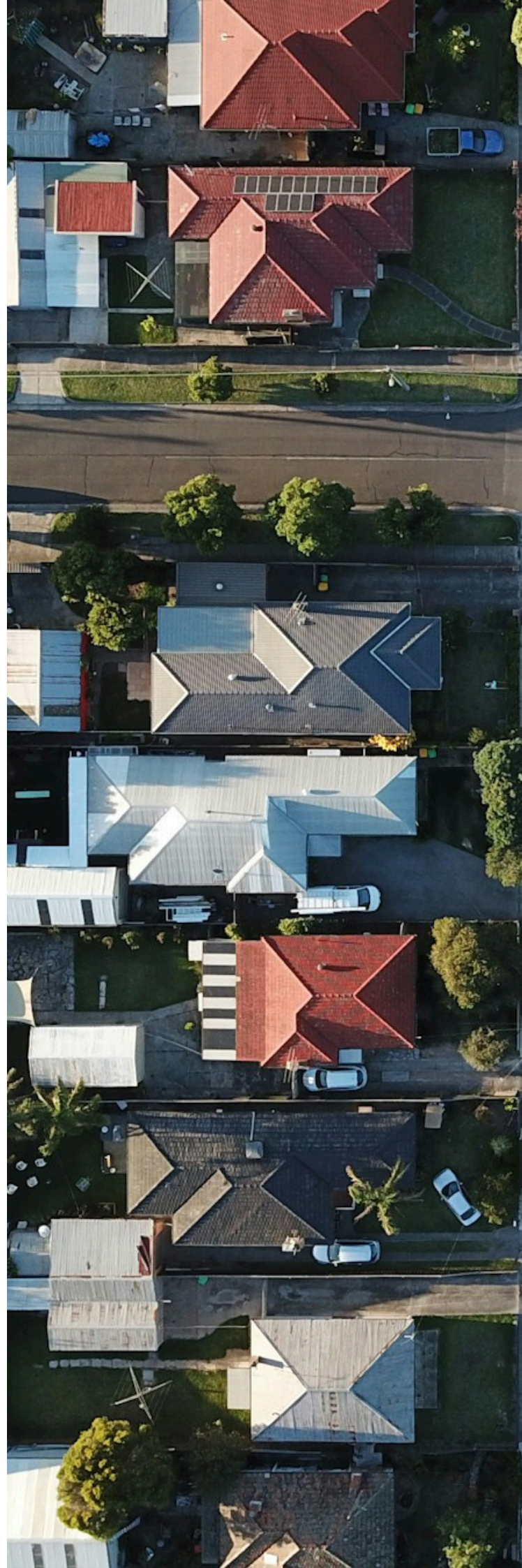


- Have you raised a SPA?
- Is it 'approved' and in the 'valid' state?

If the SPA is 'approved' and in a 'valid' state, please contact the manufacturer to assist you.

If you accidentally register the site with the wrong LFDI, please contact our New Energy Services Team on **1800 772 940** to correct the registration.

Please don't try to register the site again or ask the manufacturer to delete the record.



Preparation

Please complete the following six preparation steps before beginning the DER communication capability test. Following these steps will help to achieve a successful test outcome:

Step 1	Check that the gateway device includes an export limiting meter (or that a separate export limiting meter has been installed).	An export limiting meter is required for ALL installations to ensure that exports can be remotely reduced as per the emergency backstop requirements.
Step 2	Ensure the CT clamps associated with the export meter are wired correctly.	Export and/or generation may flow in the wrong direction if they are wired incorrectly.
Step 3	Check the inverter's firmware is up to date.	Firmware is the software programming installed directly into the hardware during manufacturing.
Step 4	Install the required hardware correctly.	Check the inverter(s), export meter and communication device have been correctly installed, set up and connected to the customer's internet and our utility server. Internet connectivity is needed to run the test.
Step 5	Ensure the system can generate at least 500W during the test.	There must be sufficient generation to verify the system has been correctly installed. The solar system needs to be 'export ready' so we can test commands to reduce or turn off solar generation and exports. The ideal time to perform the test is in the middle of the day.
Step 6	Turn off any connected energy storage devices (e.g. home battery, vehicle-to-grid electric vehicle).	Any batteries must be disabled to prevent the battery charging and impacting any export to the network during the capability test.

Preparation steps must be completed correctly or the capability test will fail.
If a test fails, you may need to return to the site to fix the issue.



Testing

We recommend waiting approximately five minutes after the device has been successfully registered before starting the DER Communication Capability Test.

The DER Communication Capability Test shows if the newly-installed rooftop solar system can receive and comply with our signals to reduce generation or turn off exports.

This involves four tests to verify your site is emergency backstop compliant. One test is completed at a time. The to-do list is updated in our portal with a pass or fail result each time a test is completed.

It's preferable for the DER Capability Test to be triggered while someone is on site so that any installation errors can be addressed. Tests can be triggered later remotely if conditions on site aren't favourable (e.g. not enough sunlight), provided you have successfully completed preparation steps one to four.

Test 1 - Connectivity: May take up to 10 minutes to complete (typically less than five minutes)

Test 1 confirms the device is registered and communicating correctly by posting power measurements. This test also updates the post and poll rates to ensure the capability tests can be completed faster.

Test 1 requires the device to report power measurements to our system.

If this test fails:

- Using the manufacturer portal, confirm the DER is: registered correctly; online, communicating and reporting power measurements. The received readings are displayed in the portal for each step.
 - Is the inverter connected to the internet? Is there sufficient internet signal strength?
 - Is the inverter collecting measurement data? Can you see the measurements on the manufacturer portal?
- Check the inverter had the correct settings applied, and firmware is up to date.
- Contact the manufacturer support team to confirm they can see the inverter connected to their system, and that the inverter is collecting the correct measurement data.

Test 2 - Default Export: May take up to six minutes to complete (typically one to two minutes)

Test 2 confirms the site adheres to the set default export limit (0kW) if the connection to the internet is lost.

If this test fails, there might be a problem with the measurements from the export meter or the configuration of the inverter. **The test will only pass if there is no export to the grid.**



You may see the site is still generating if there is load on site. This should only be for self-consumption; the system should not be exporting.

- Check that the inverter has the correct settings applied and firmware updated. Sometimes the wrong settings or firmware will stop the inverter from following the controls we have sent.
- Check that the export meter and CT clamps are correctly installed and wired with the correct polarity. The test will always fail if the export meter is interpreting load as export.
- Contact the manufacturer support team to help identify why the site is exporting.

Test 3 - Controls: May take up to eight minutes (typically two to three minutes)

Test 3 confirms the inverter responds to a control by either turning the generation down if the site load is large (Test 3a) or relaxing the export limit if the site load is small (Test 3b).

Two different tests could be run, depending on the loads at the site. The test type is automatically determined by our system after measuring the export and generation at the site.

- **Test 3a)** The test will turn generation down if the site has a large load and generation is fully consumed by customer load.
- **Test 3b)** The test will relax the export limit if the site has a small load, which will allow the site to briefly increase the generation and export (above the default).

Both tests result in a rapid change in the amount of generation produced on-site. Both tests require enough sunlight to produce >500W of generation.

If Test 3 fails, double check the CT clamps are wired with the correct polarity, and that the system is configured in accordance with the manufacturer instructions and with the latest firmware and then try to run the capability test again. If you have already tried a second time and the test still fails, contact the manufacturer support team for assistance to identify why the site did not make the expected change to generation or exports during the test.

Note: Some sites larger than 30kVA may exceed the generation limit and fail Test 3. If you experience multiple test failures on a site larger than 30kVA, please contact our New Energy Services Team on 1800 772 940.

Test 4 - Final Configuration: May take up to 60 seconds (typically less than 20 seconds)

The final configuration: Configuration settings are set, and the post and poll rate is restored to 300 seconds.

The final test resets the poll rate of the inverter to 300s. If this step fails, call United Energy on 1800 772 940.



Finalising

After successfully completing the DER capability test, you need to arrange for a Licensed Electrical Inspector (LEI) to visit the site and submit the required documents to United Energy.

The DER will be registered and confirmed after the solar alteration request has been completed and paperwork validated by United Energy (this may take up to 10 business days). Only then will the approved export limit be activated and sent continuously to the device.

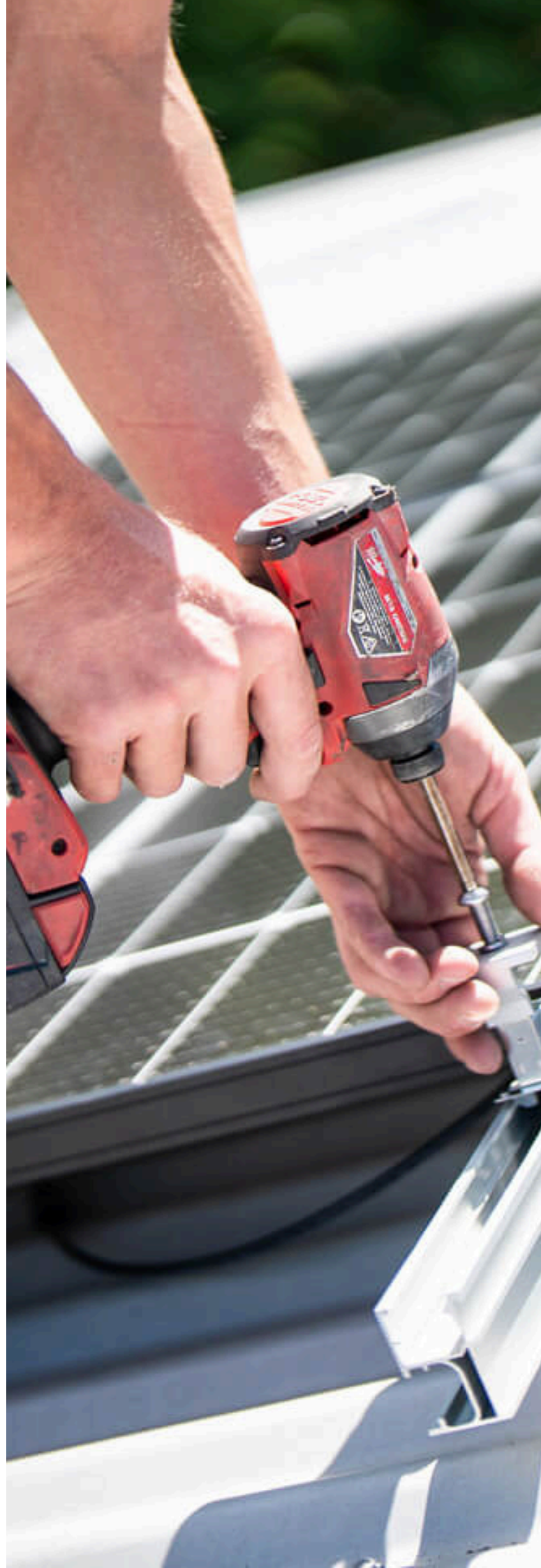
Any questions about the application should be directed to:

United Energy

1800 772 940

newenergyservices@unitedenergy.com.au

Note: Once the capability test has been passed (unless the emergency backstop has been enacted), we will never limit a site's ability to use its generation to power the onsite loads. This applies even if a site briefly loses internet connectivity.



Failure messages: summary

Test	Failure message	Issue/check	Contact
Any	We're experiencing an issue with our server. Please try again later. If the problem persists, please contact us on 1800 772 940.	<ul style="list-style-type: none"> This is caused by a problem with our server. Please check myEnergy to see if there is a system outage. If you receive this issue multiple times, please report the issue to our New Energy Services team on 1800 772 940. 	CitiPower/ Powercor
Test 1	Generation not detected. Check device settings and try again. If the problem persists, please contact the manufacturer.	<ul style="list-style-type: none"> No generation telemetry received. Call the manufacturer and ask whether they have sent generation telemetry to our utility server and have received corresponding code from our server indicating successful communication. 	Manufacturer
Test 1	Export not detected. Please check your export meter and device settings. If the problem persists, please contact the manufacturer.	<ul style="list-style-type: none"> No export telemetry received. Call the manufacturer and ask whether they have sent generation telemetry to our utility server and have received corresponding code from our server indicating successful communication. 	Manufacturer
Test 1	No power measurements detected. Check device settings or restart device and try again. If the problem persists, please contact the manufacturer.	<ul style="list-style-type: none"> The inverter is not sending power measurements. Check the inverter and site export meter are collecting and reporting the power measurements (via the manufacturer portal). 	Manufacturer
Test 1	Generation detected but generation is 0W. Check device settings or restart device and try again. If the problem persists, please contact the manufacturer.	<ul style="list-style-type: none"> Generation telemetry was received however it was 0W. Check the inverter firmware is up to date. Check the site export meter is set up correctly and export CT wiring is not reversed. No hard limit is set up locally. Confirm there is load on site to trigger the generation. If there is still an issue, please call the manufacturer to check no hard limit is set by them, and they have received corresponding code from our server indicating successful communication. 	Manufacturer
Test 2	Generation not detected. Check device settings and try again. If the problem persists, please contact the manufacturer.	<ul style="list-style-type: none"> No generation telemetry received. Call the manufacturer and ask whether they have sent generation telemetry to our utility server and have received corresponding code from our server indicating successful communication. 	Manufacturer

Failure messages: summary

Test	Failure message	Issue/check	Contact
Test 2	Export not detected. Please check your export meter and device settings. If the problem persists, please contact the manufacturer.	<ul style="list-style-type: none"> No export telemetry received. Call the manufacturer and ask whether they have sent site telemetry to our utility server and have received corresponding code from our server indicating successful communication. 	Manufacturer
Test 2	No power measurements detected. Check device settings or restart device and try again. If the problem persists, please contact the manufacturer.	<ul style="list-style-type: none"> The inverter is not sending power measurements. Check the inverter and site export meter are collecting and reporting the power measurements (via the manufacturer portal). Call the manufacturer and ask whether they have sent telemetry to our utility server and have received corresponding code from our server indicating successful communication. 	Manufacturer
Test 2	Still exporting but export must be 0W. Check site, export meter and device settings or restart device and try again. If the problem persists, please contact the manufacturer.	<ul style="list-style-type: none"> The site is still exporting >-200W. Check the inverter firmware is up to date. Check site export meter is set up correctly and export CT wiring is not reversed. No hard limit is set up locally. If a site is still exporting >- 200W, call the manufacturer and ask if the default export limit in their system is 0W. There is no hard limit set in their system for this site. Identify why the site does not adhere to 0W default control which will help them to identify the issue. 	Manufacturer
Test 3a	Generation detected but generation must be 0W. Check device settings or restart device and try again. If the problem persists, please contact the manufacturer.	<ul style="list-style-type: none"> Generation telemetry has been received however it must be 0W After receiving a control of 0W, the reported generation measurement was >+500W'. Check the site, export meter and device settings or restart device and start again. If there is still an issue, please call the manufacturer and ask if they have received a generation limit control for 0W and if they did, why the site was still generating for the test duration. 	Manufacturer
Test 3a	Generation limit set to 0W, but site is still exporting. Check export meter and device settings, then try again. If the problem persists, please contact the manufacturer.	<ul style="list-style-type: none"> After receiving a generation limit control of 0W, the reported Site Real Power < 0W. Check if export CT is wired correctly. If this still fails, call the manufacturer and ask for help to identify why the site was not able to adhere to generation limit control. If the site is larger than 30kVA or less than 1kVA and you experience multiple test failures, please contact our New Energy Services Team on 1800 772 940. 	Manufacturer

Failure messages: summary

Test	Failure message	Issue/check	Contact
Test 3b	Device did not increase to minimum generation limit. Try again in better sunlight conditions or check export meter and device settings, then try again. If the problem persists, please contact the manufacturer.	<ul style="list-style-type: none"> After receiving an export limit control of 1500W, the reported DER Real Power < +500W. If this fails, try again when there is enough sunshine. Call the manufacturer and ask if they have received the 1500W export limit control and why this site does not adhere to the control. If the site is larger than 30kVA or less than 1kVA and you experience multiple test failures, please contact our New Energy Services Team on 1800 772 940. 	Manufacturer
Test 3b	Site exceeded 1500W export limit. Site export meter not configured properly or additional uncontrolled generation onsite. Check export meter and device settings, then try again. If the problem persists, please contact the manufacturer.	<ul style="list-style-type: none"> Export limit error. After receiving an export limit control of 1500W, the reported DER Real Power < -1700W. Check if export CT is wired correctly. Check if there is a hard export limit set up locally. Call the manufacturer and ask if they have received the 1500W export limit control and why this site does not adhere to the control. If the site is larger than 30kVA or less than 1kVA and you experience multiple test failures, please contact our New Energy Services Team on 1800 772 940. 	Manufacturer
Test 3a/3b	Generation not detected. Check device settings and try again. If the problem persists, please contact the manufacturer.	<ul style="list-style-type: none"> No generation telemetry received. Call the manufacturer and ask whether they can see that a control was sent from our utility server to the site and the device has responded. 	Manufacturer
Test 3a/3b	Export not detected. Please check your export meter and device settings. If the problem persists, please contact the manufacturer.	<ul style="list-style-type: none"> No export telemetry received. Call the manufacturer and ask whether they can see that a control was sent from our utility server to the site and the device has responded. 	Manufacturer
Test 3a/3b	No power measurements detected. Check device settings or restart device and try again. If the problem persists, please contact the manufacturer.	<ul style="list-style-type: none"> The inverter is not sending power measurements to us. Check the inverter and site export meter are collecting and reporting the power measurements (via the manufacturer portal). If it still fails, call the manufacturer and advise 'the inverter is not sending DER and site real power to our utility server', which will help them identify the issue. Ask whether they have sent telemetry to our utility server and have received corresponding code indicating successful communication. 	Manufacturer

Failure messages: summary

Test	Failure message	Issue/check	Contact
Test 3a/3b	Device did not respond with 'event received'. Please contact the manufacturer.	<ul style="list-style-type: none">• No response received from the manufacturer software communication client to a control.• Please call and advise the manufacturer 'Device did not respond with event received', which will help them to identify the issue.	Manufacturer
Test 3a/3b	Device did not respond with 'event started'. Please contact the manufacturer.	<ul style="list-style-type: none">• Device responded with 'event received' however an 'event started' control response was not received.• Please call and advise the manufacturer 'Device did not respond with event started', which will help them to identify the issue.	Manufacturer
Test 3a/3b	No power measurements detected after device responded with 'event started'. Check device settings or restart device and try again. If the problem persists, please contact the manufacturer.	<ul style="list-style-type: none">• No telemetry was received.• Please call and advise the manufacturer 'no telemetry was posted after event started', which will help them to identify the issue.	Manufacturer

