

Instructions for Operation of Alereon Radio Evaluation Tool (RET) Software

I. Introduction

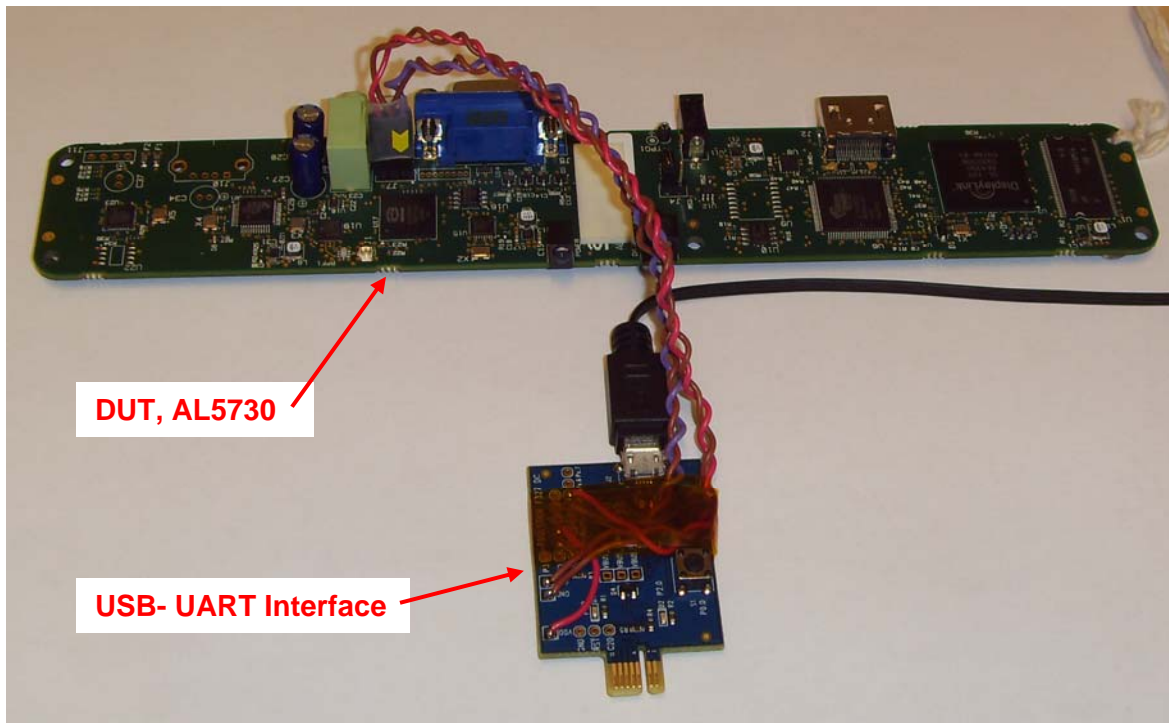
The Alereon UWB radio transmitter normally operates by intermittent transmissions. Data transfers between host and device radios is bursty by nature and this results in intermittent transmissions. The FCC requires that UWB transmitters be tested in continuous transmit mode so that instruments may determine the true transmitted PSD.

To achieve this testing requirement it is necessary to use the Alereon development software, the RET tool. These instructions provide information about how to use the RET tool to control the transmitter operation.

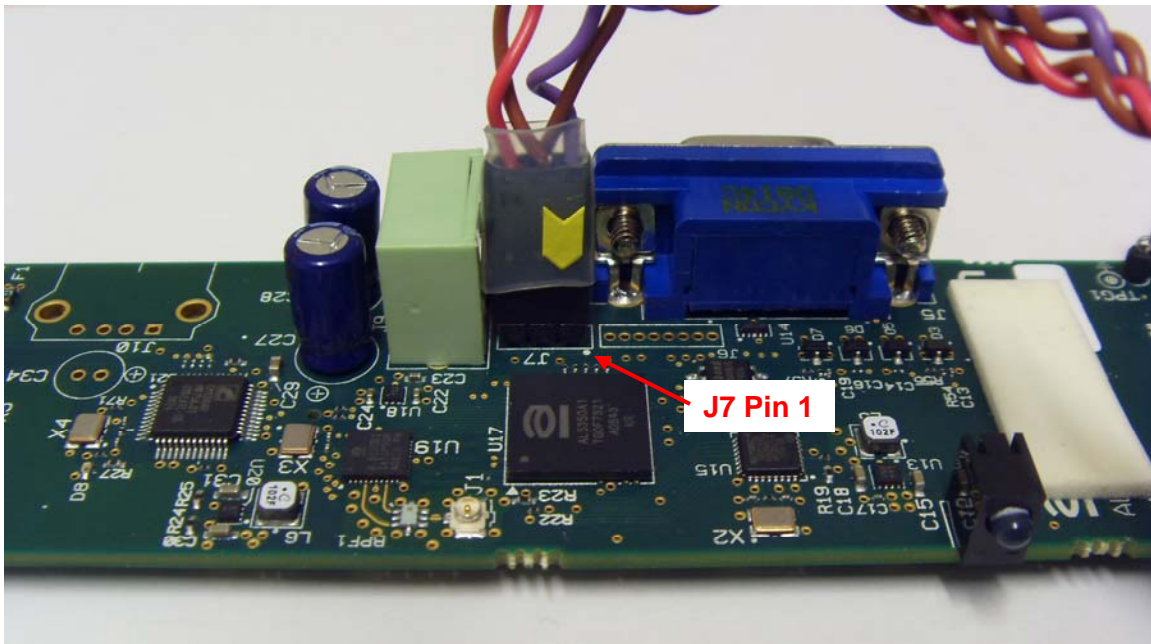
II. Specific instructions for the Alereon AL5730 Worldwide Wireless HDMI PC Extender transmitter test (step-by-step).

The Alereon RET software controls the Alereon UWB chipset via a USB interface. The Alereon AL5730 Worldwide Wireless HDMI PC Extender does not implement a USB interface. For testing purposes it is necessary to use a USB to UART interface board that is connected to the UART factory test port of the AL5730.

The connection between the AL5730 test specimen and the USB – UART interface is shown in the following picture:



Connection of UART interface cable from USB-UART interface board to AL5730. The factory test UART port connector is non-polarized, please observe the mark on the connector and orient the connector as in the picture.

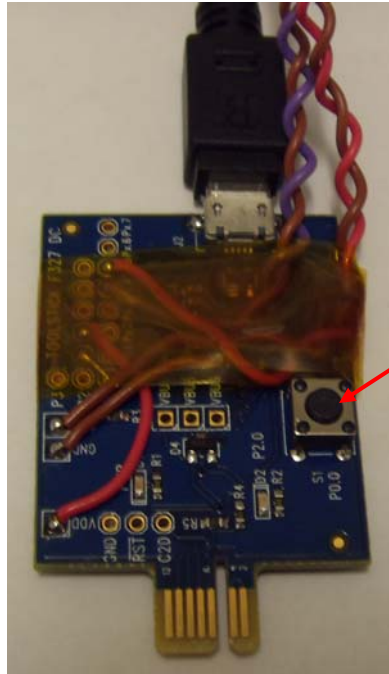


The test PC has been configured with the RET software and the AL5730 test specimens drivers have been installed to this computer.

Please refer to Appendix B of this document for information regarding the configuration of the test PC.

1. Start the PC and wait until windows finishes loading.
2. Apply power to the AL5730 by inserting the connector of the power supply into J3.

3. Press and hold the button on the USB-UART interface board while inserting the USB connector of the cable to the USB-UART interface board into the upper USB socket at the Right-hand side near to the rear of the PC.



4. Release the button on the USB-UART interface board.

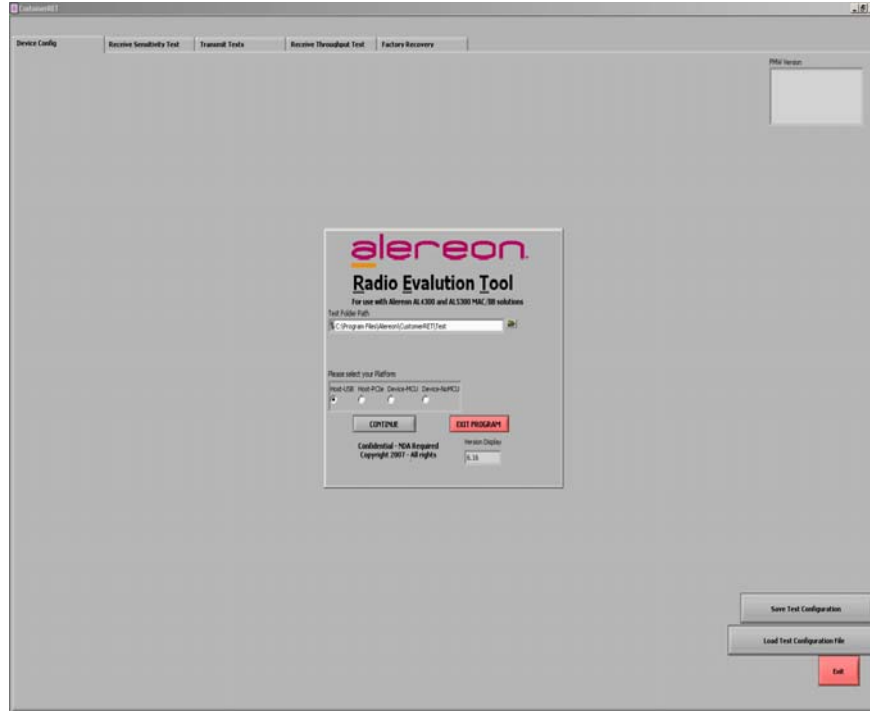
Proper installation will be indicated by the flashing Green light of the specimen.

Note: The Alereon drivers are pointed to the USB socket into which the specimen was originally installed. If it is desired or necessary to make the compliance test with the specimen in another USB socket the PC will request to install drivers pointed to that USB socket. Please refer to Appendix A of this document for information on the drivers installation process.

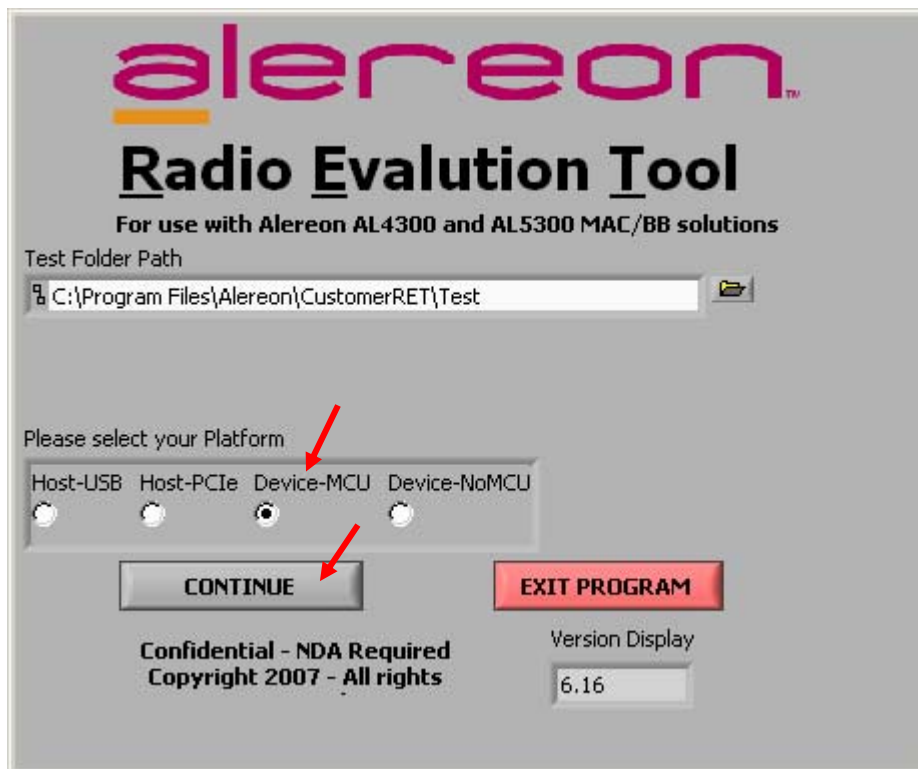
3. Click on the CustomerRET icon on the PC desktop to start the RET software tool.



The RET opening screen will appear after the RET software loads.

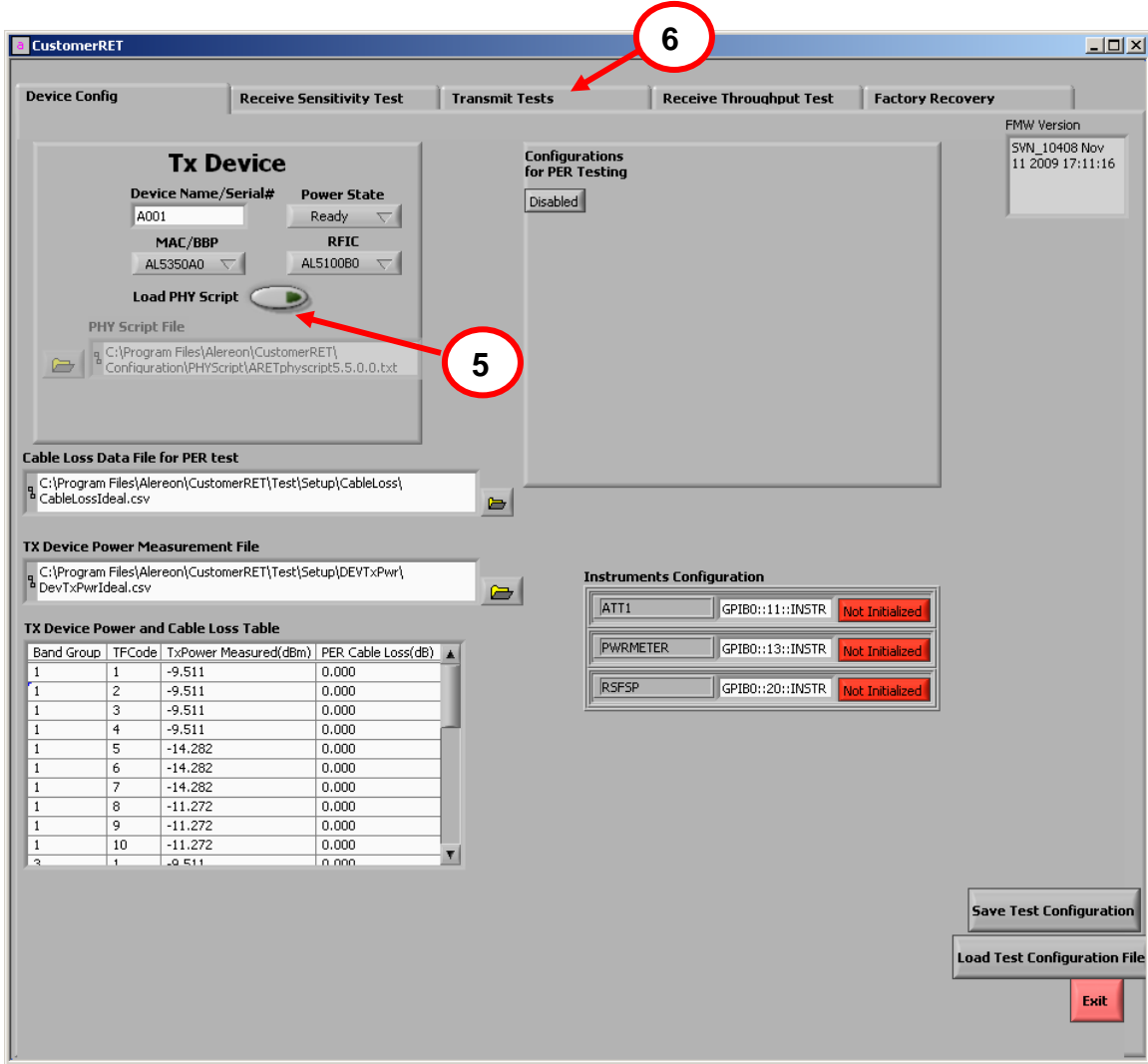


4. Select **Device-MCU** as the Platform type and then click **CONTINUE**.



When the RET program has successfully connected to the specimen and taken control of it the following **Device Config.** screen will appear.

5. Click on the **Load PHY Script** button to configure the specimen for operation. The indicator within the button will turn Green indicating a successful operation.

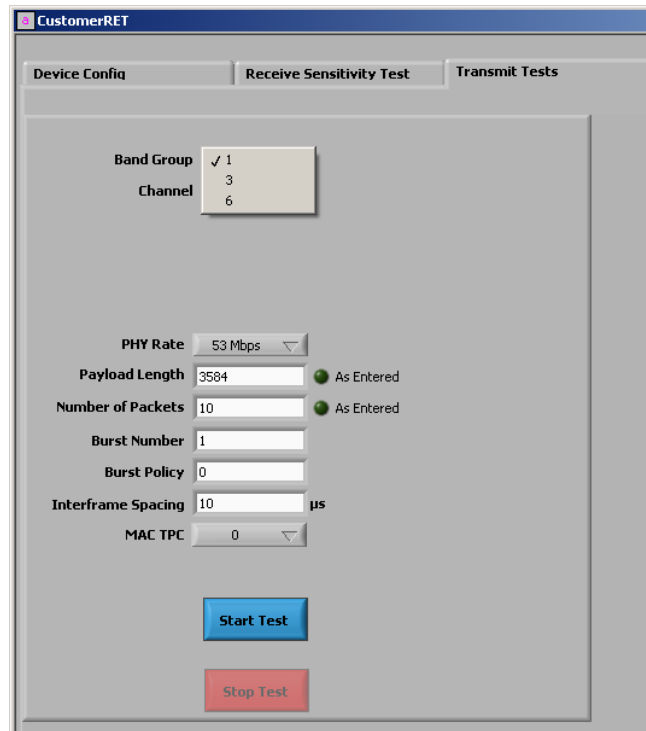


These steps conclude configuring the specimen for RET control.

6. Click on the **Transmit Tests** tab at the top of the Device Config. Screen. This will open the transmitter control screen. From this screen transmitter operating parameters may be selected as required for testing. The following are possible to control:

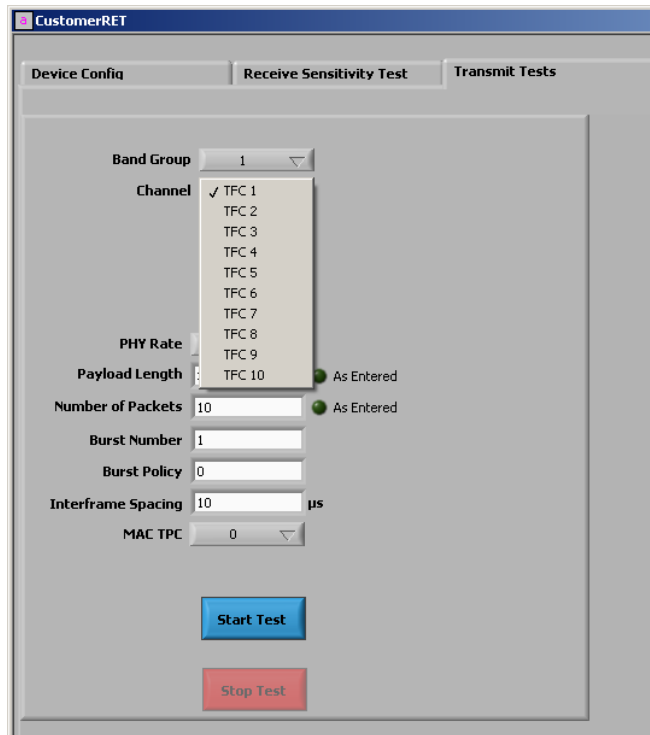
Band Group; click on the desired band group: 1, 3 or 6 the active band group is indicated with a check mark and after selection is completed the button will indicate the selection.

Note: Being a universal test tool for all products, the factory test allows access to all band groups. The product configuration of the AL5730 will restrict operation to BG#1 only. This restriction is accomplished by the device configuration firmware loaded at factory test.

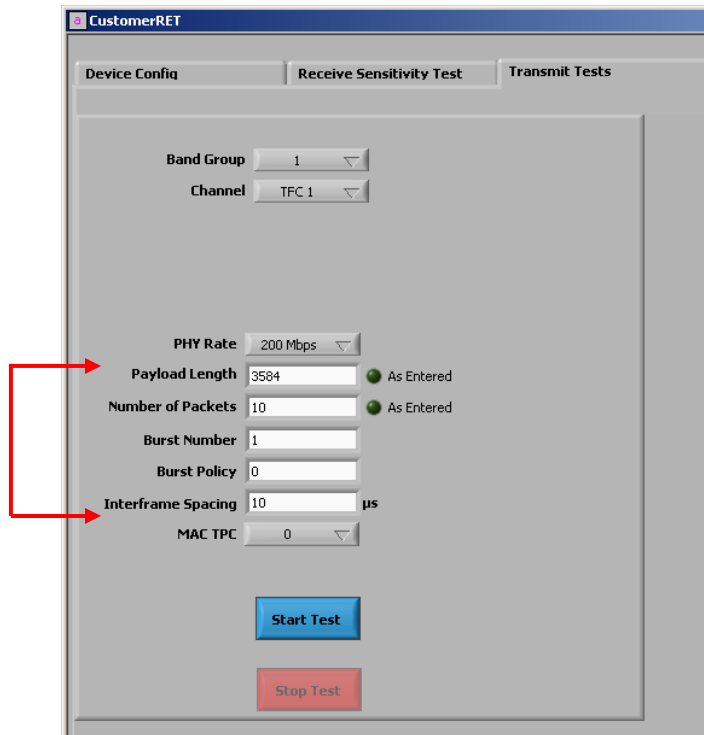


Channel; click on the desired channel. Channel TFC1 is the 1-2-3 hop code sequence and is normally used for compliance testing.

Note: Being a universal test tool for all products, the factory test allows access to all channels. The product configuration of the AL5730 will restrict operation to TFC1, 2, 3 and 4 (the hopping codes) only. This restriction is accomplished by the device configuration firmware loaded at factory test.



PHY Rate; click on the desired PHY Data Rate, 200 Mbps is QPSK modulated and is normally used for compliance testing as this is a more complex modulation than the lower rates and produces the longest data sequences for the test.



The boxes below the PHY Rate button accept typed entries, the entries that are present at starting are the normal default values which should be used for the compliance test.

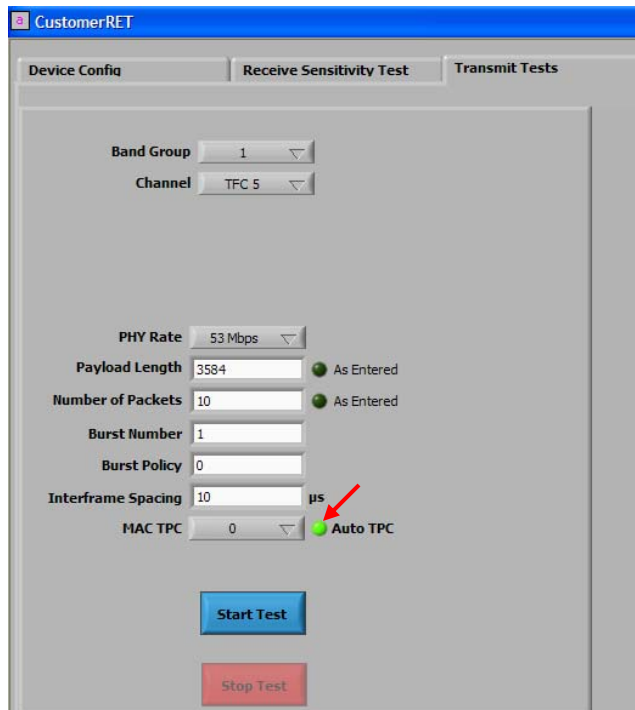
To the right of the second box (**Number of Packets**) is a Green button, click on this button to change it to **Continuous Transmit**.

The screenshot shows the 'CustomerRET' application window with three tabs: 'Device Config', 'Receive Sensitivity Test', and 'Transmit Tests'. The 'Transmit Tests' tab is active. The configuration area includes the following fields and controls:

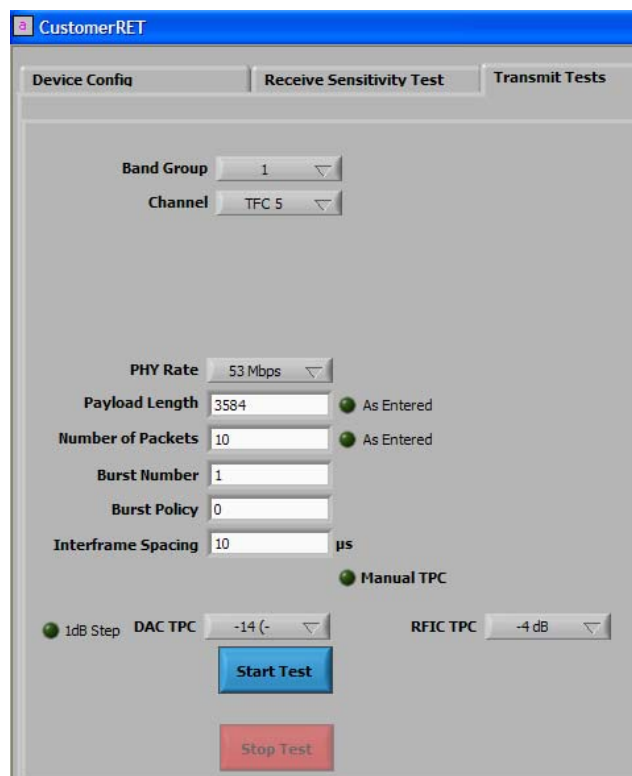
- Band Group:** 1 (dropdown)
- Channel:** TFC 1 (dropdown)
- PHY Rate:** 200 Mbps (dropdown)
- Payload Length:** 3584 (text input) with a radio button labeled 'As Entered' (selected).
- Number of Packets:** 10 (text input) with a radio button labeled 'Continuous Transmit' (unselected).
- Burst Number:** 1 (text input)
- Burst Policy:** 0 (text input)
- Interframe Spacing:** 10 (text input) with a unit of μs .
- MAC TPC:** 0 (dropdown)

At the bottom of the configuration area, there are two buttons: a blue 'Start Test' button and a red 'Stop Test' button. A red arrow points from the 'PHY Rate' dropdown to the 'Continuous Transmit' radio button.

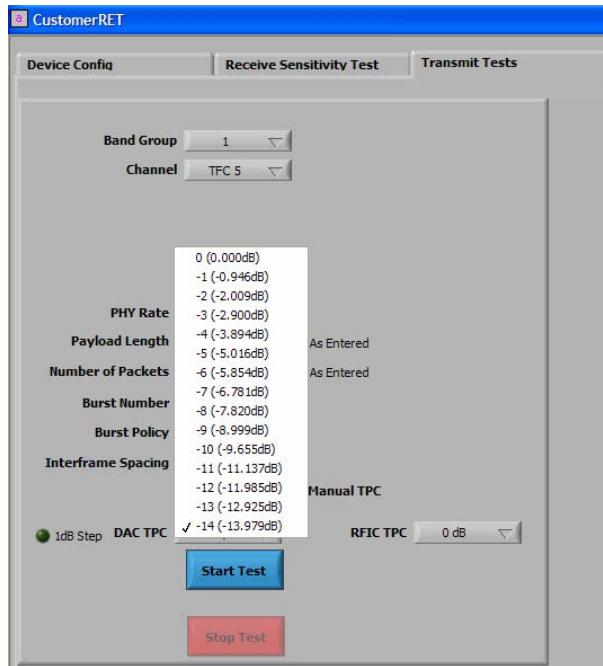
MAC TPC; to the right of the MAC TPC box, click on the **Auto TPC** button.



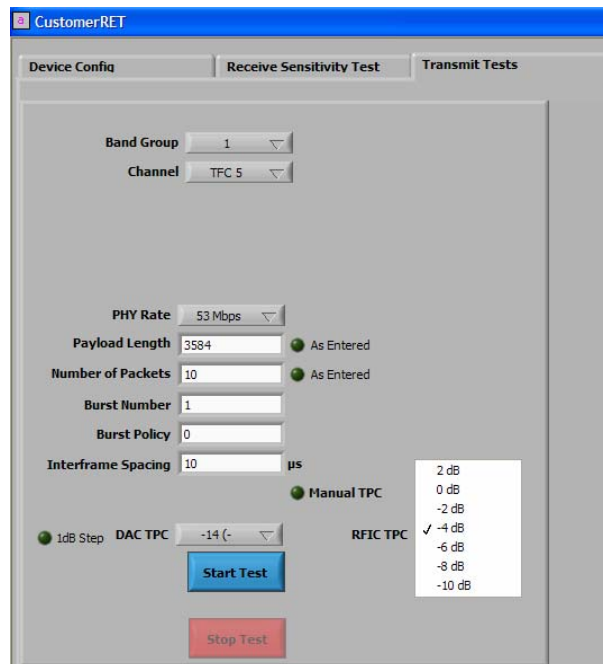
This will change the control to Manual TPC.



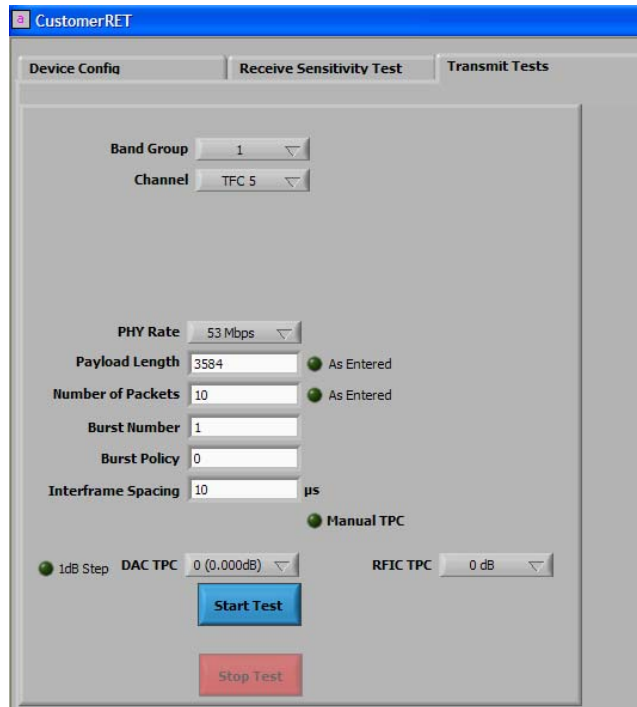
DAC TPC; select -14dB.



RFIC TPC; select -4dB.



After all of the desired parameters have been chosen, click on the Blue **Start Test** button, the transmitter will be active under the chosen parameters and will operate continuously until the Red **Stop Test** button is clicked.



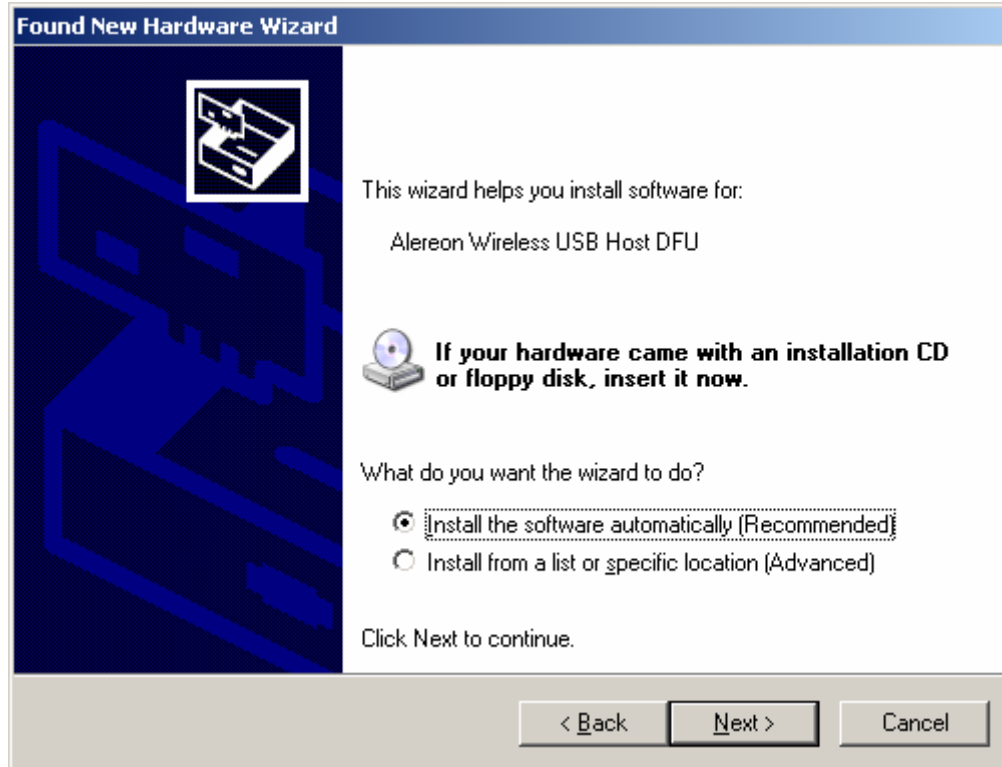
When a test is completed, to change any of the parameters it is necessary to click the **Stop Test** button, change the necessary parameter(s) and then click on the **Start Test** button to re-activate the transmitter with the newly chosen parameters.

Appendix A.

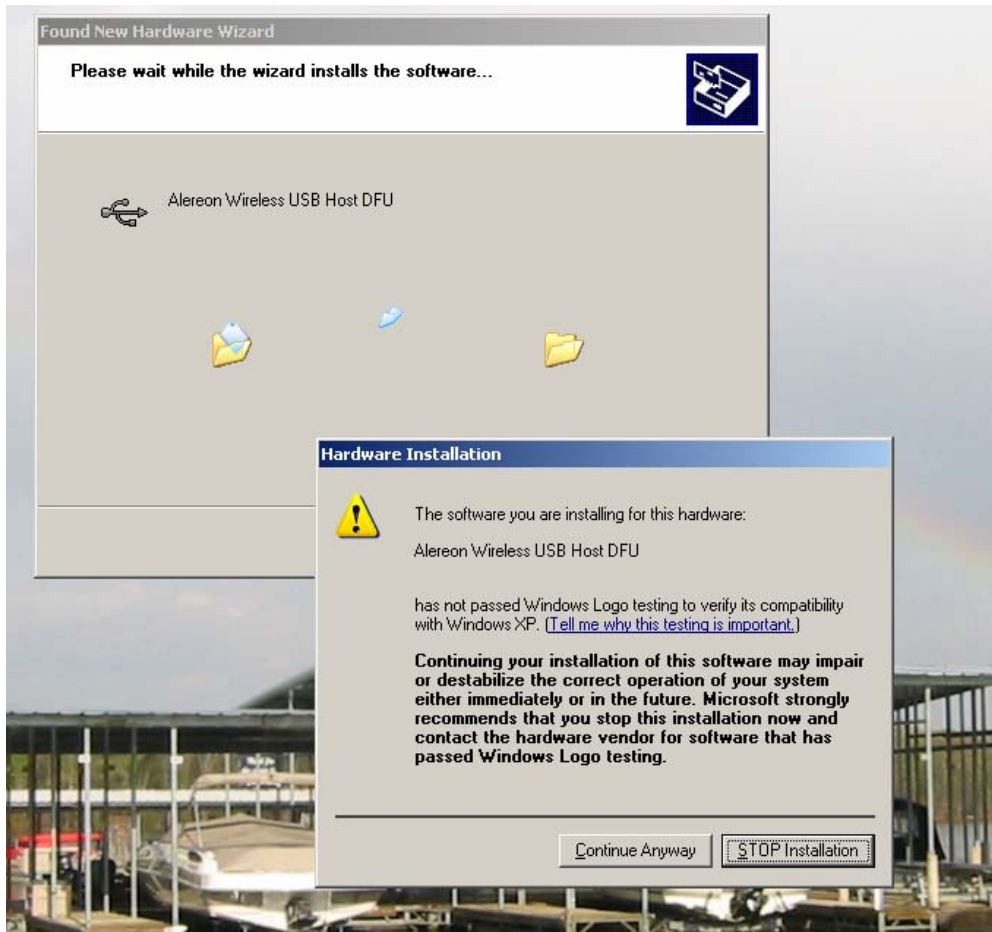
Drivers installation. If it is desired or necessary to use a USB socket of the test PC other than the one originally configured, the PC will request to load the drivers pointed to that socket. Insert the specimen into the desired socket, the screen below will appear. Select **Yes, this time only** and click **Next >**.



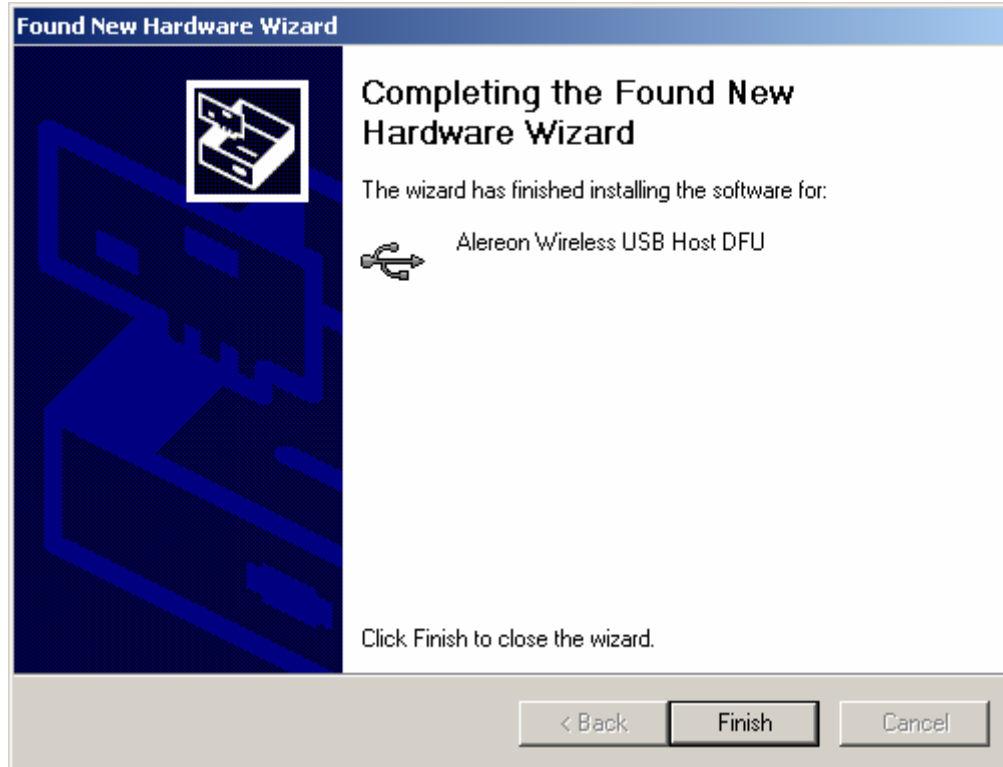
At the next screen allow the default to remain and click **Next >**.



The installation of the DFU driver will start, at some time the warning window below will appear, click on **Continue Anyway**.



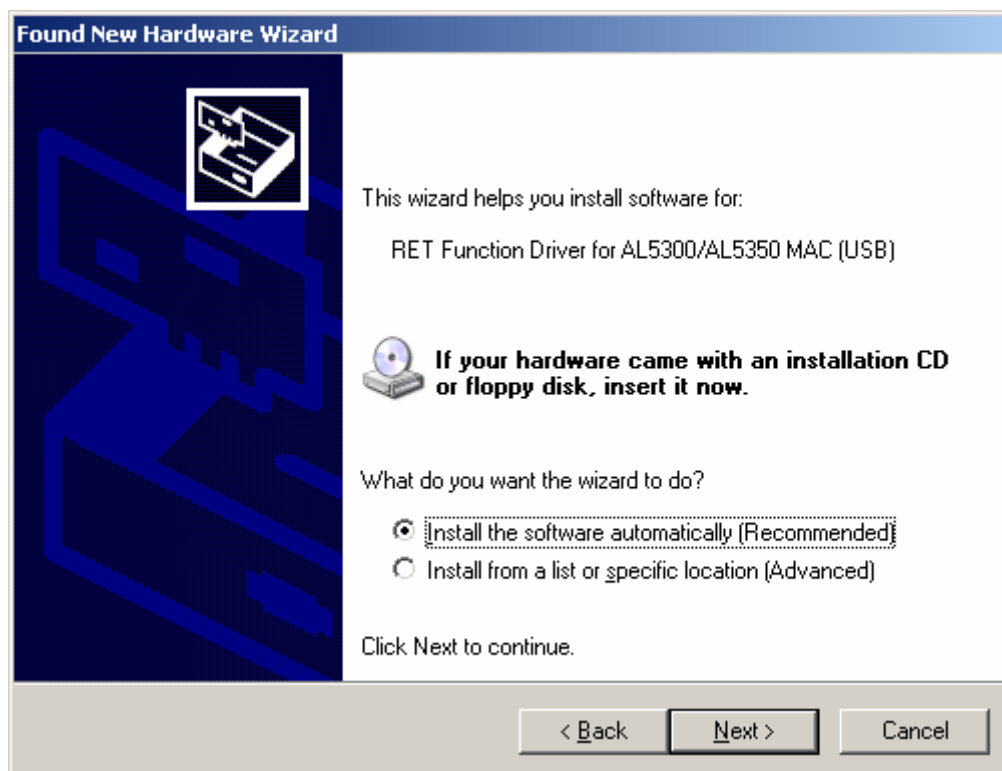
When the completed screen appears, click **Finish**.



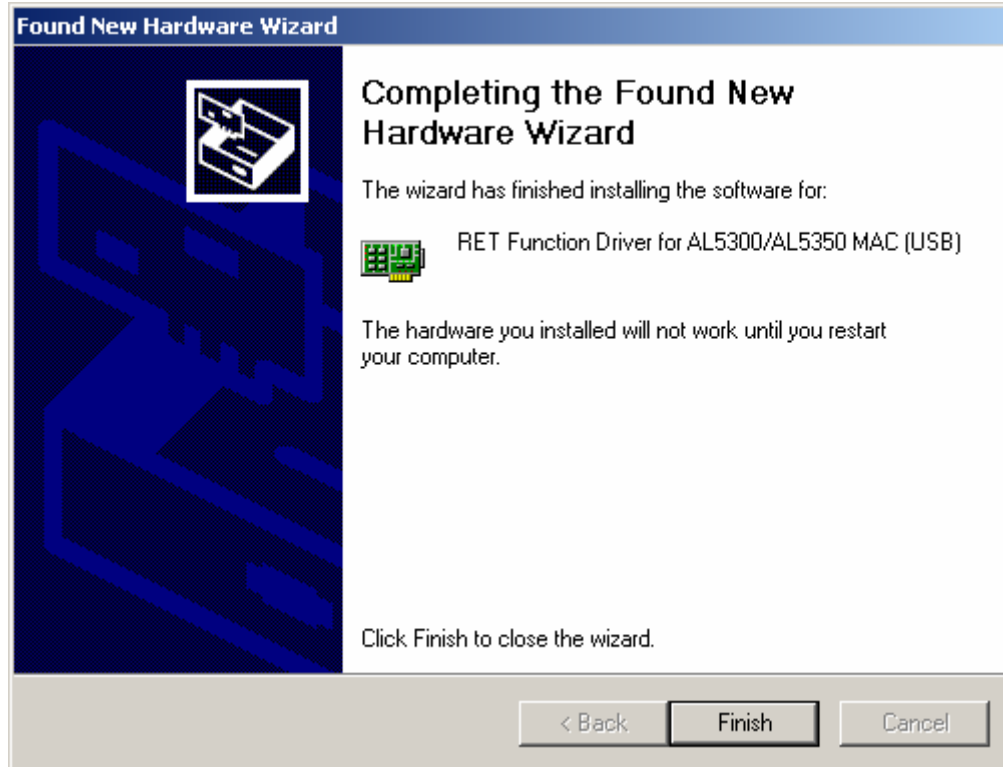
The PC will now request to install a second driver. Select **Yes this time only** and click **Next >**.



At the next screen allow the default to remain and click **Next >**.



When the completed screen appears, click **Finish**.



Please restart the test PC to enable the new drivers installation and proceed with RET operation.

Appendix B.

Test PC power options configuration.

The power options of the test PC have been set to support long running tests by selection of power options that do not allow the PC to detect keyboard or mouse inactivity and go to a sleep or shut-down state. Accordingly, when testing is concluded and mains power is to be removed from the PC please exit the RET software and execute a normal shut down of the PC so that it does not exhaust its battery and crash. Do not attempt to perform long running test sequences on PC battery power.