



GRL Platform Solutions

User Guide

WPC Qi Wireless Magnetic Power Profile (MPP) Test Power Receiver Tester (GRL-C3-MP-TPR) Compliance Testing with Positioning Tool - ATL Guide

This material is provided as a reference to perform compliance testing for the PTx DUT using the GRL Platform Solutions WPC Qi Wireless MPP Test Power Receiver Tester (GRL-C3-MP-TPR) and the GRL Platform Solutions Positioning Tool.

For software support, contact support@grlps.com.

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1 Scope of this User Guide

This User Guide describes how to perform compliance testing using the GRL-C3-MP-TPR and GRL Platform Solutions Positioning Tool. The subsequent sections provide the procedures to set up the GRL-C3-MP-TPR automation test application and positioning tool and run compliance tests for the wireless power transmitter DUT.

Note: For details on how to get started with the GRL-C3-MP-TPR App and tester hardware, refer to the GRL-C3-MP-TPR App user documentation in <http://grlps.com/download-center/>.

2 Introduction

Note: ATL's are required to follow the procedure in this User Guide to perform compliance or certification testing.

The GRL Platform Solutions manual positioning tool is used to precisely measure movements along the X, Y & Z axis for the TPR and TPT equipment for the Device Under Test (DUT) Qi 2.0 Compliance testing.

The digital scale display shows precise measurements for movements along the X and Y axis, with a range of up to +/- 50 mm.

For table-mounted DUT's, the Z-axis knobs and leveling legs can be adjusted to ensure proper positioning.

Note: Users need to purchase batteries as shown below for the GRL Platform Solutions positioning tool. These batteries are not included as part of the product shipment.



FIGURE 2.1: BATTERIES FOR GRL PLATFORM SOLUTIONS POSITIONING TOOL

3 Overview of the GRL Platform Solutions Positioning Tool

Figure 3.1 below illustrates the movement directions of the GRL Platform Solutions positioning tool and its various components.

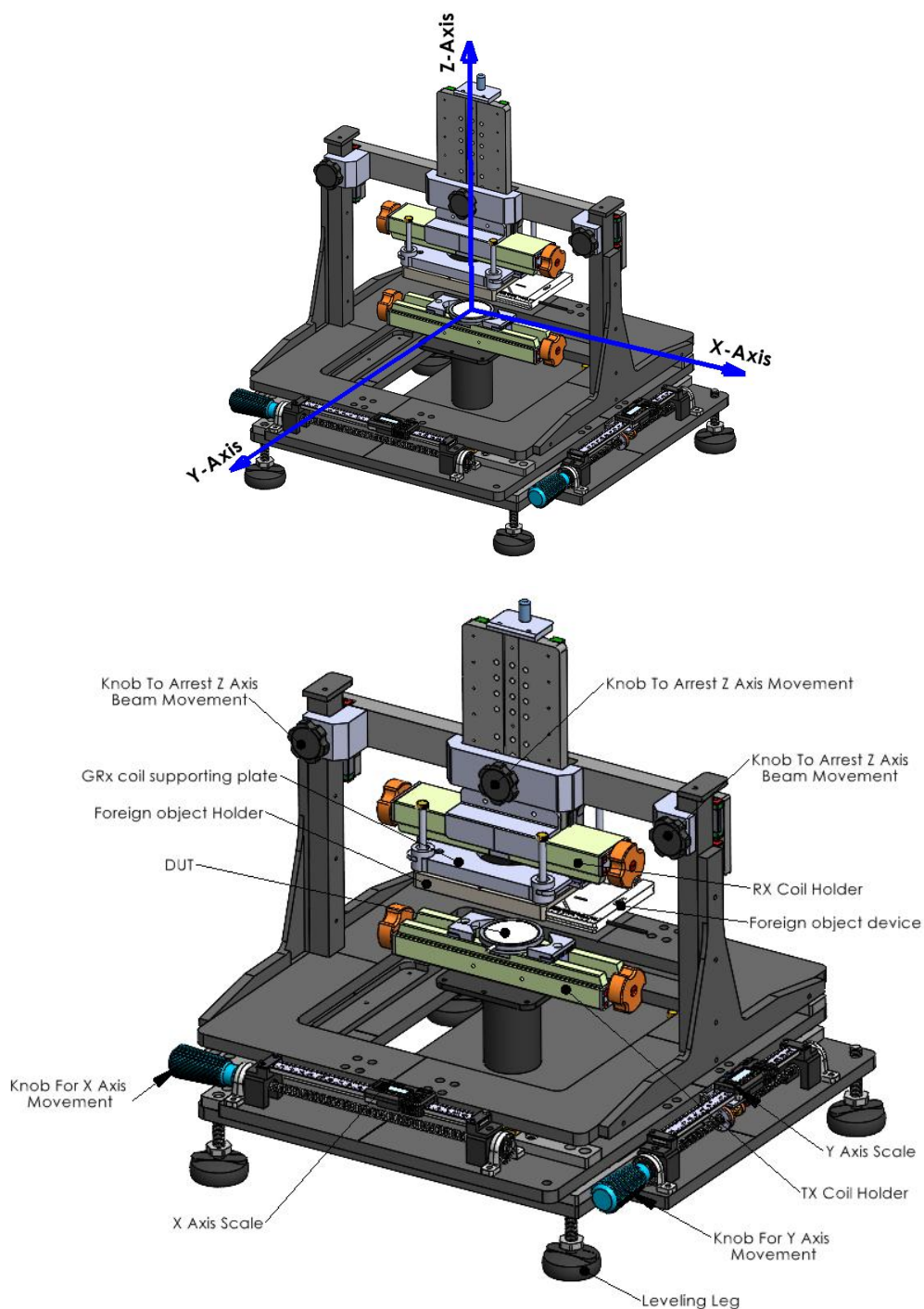


FIGURE 3.1: GRL PLATFORM SOLUTIONS POSITIONING TOOL OVERVIEW

4 GRL Platform Solutions Positioning Tool Mechanical Dimensions

Figure 4.1 below shows the mechanical dimensions of the positioning tool.

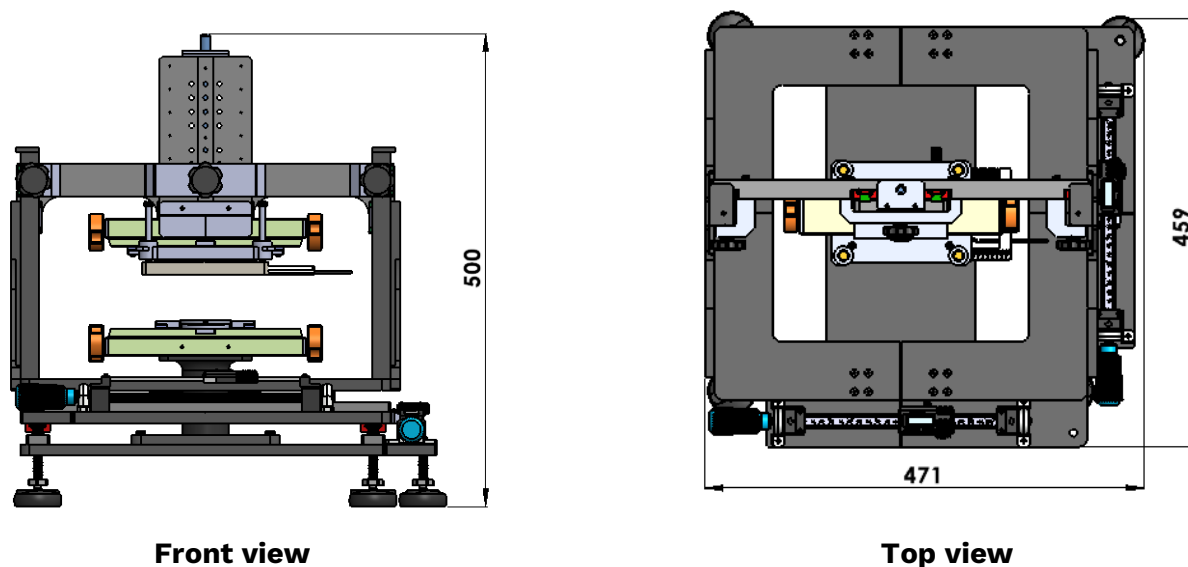


FIGURE 4.1: POSITIONING TOOL MECHANICAL DIMENSIONS

5 Positioning Tool Usage

5.1 DUT Fixing

Place the DUT in the bottom-side Tx coil holder by opening the coil holding jaws. Adjust the coil holding jaws using the rotating thumb wheels, as shown in Figure 5.1 below.

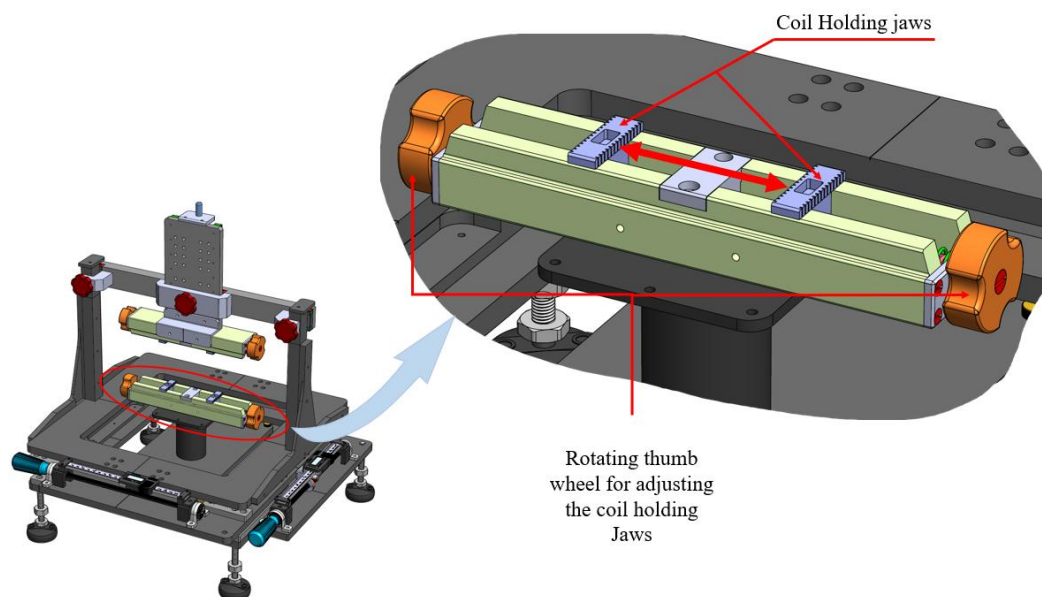


FIGURE 5.1: POSITIONING TOOL DUT FIXING

5.2 GRx (PRx) Coil Fixing

1. Assemble the GRx coil to the GRx coil supporting plate using four screws, as shown in Figure 5.2 below.

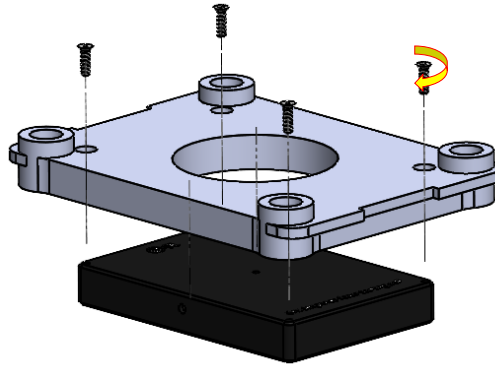


FIGURE 5.2: GRx (PRx) COIL FIXING - #1

Note: While assembling the GRx coil with the coil supporting plate, use a foreign object holder to ensure that the alignment is correct.

2. Attach the entire GRx coil assembly into the Rx coil holder using the rotating thumb wheels. Refer Figure 5.3 below.

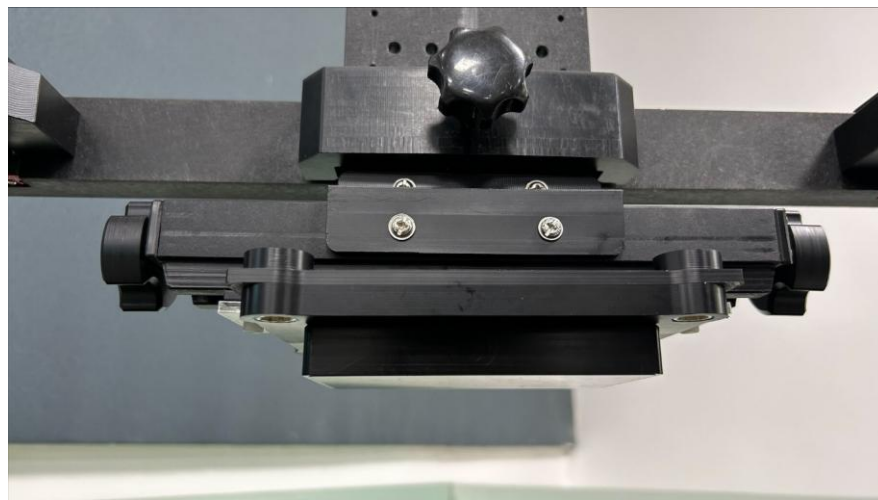
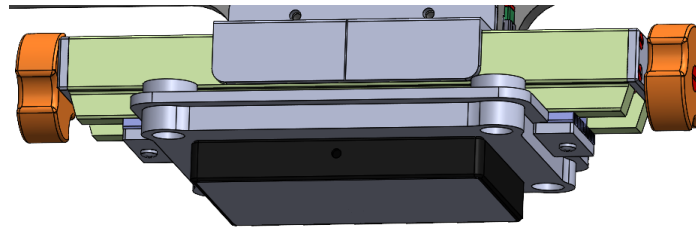


FIGURE 5.3: GRx (PRx) COIL FIXING - #2

6 Procedure to Find Optimum Position

1. From the desktop, open the GRL-C3-MP-TPR App by double-clicking on the “GRL-C3-MP-TPR” App desktop shortcut:

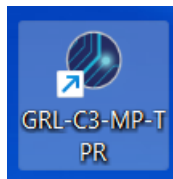


FIGURE 6.1: GRL-C3-MP-TPR APP DESKTOP SHORTCUT

2. Click on the **Test Configuration** tab on the left-side bar of the application as shown in Figure 6.2 below.

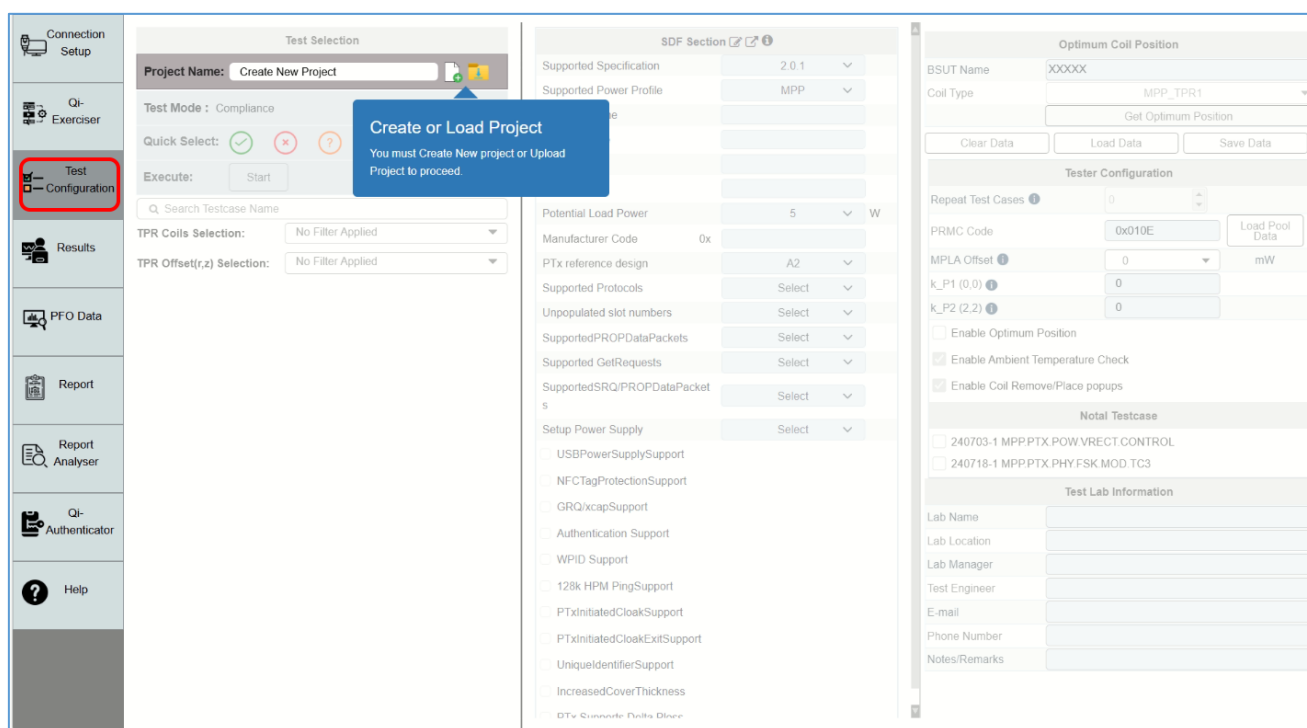


FIGURE 6.2: TEST CONFIGURATION SCREEN

3. Create a new Project by clicking on the Project Name entry field or Create New Project icon as shown in Figure 6.3 below.

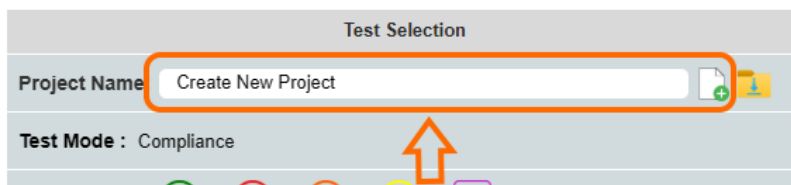
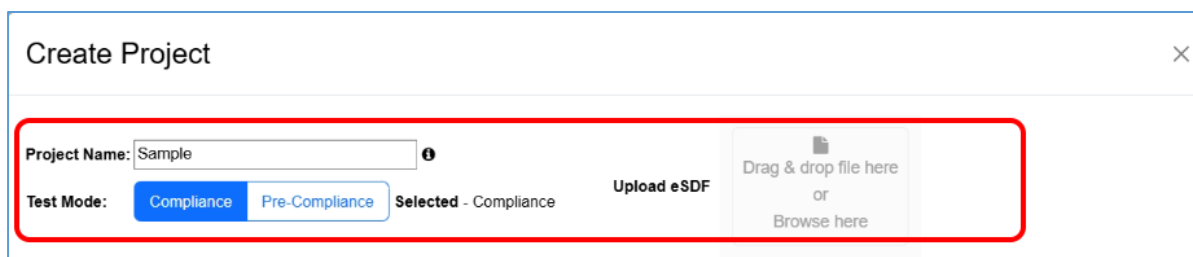


FIGURE 6.3: CREATE NEW PROJECT

4. Enter the **Project Name** (allowed up to 15 letters and special characters) and select the **Test Mode** as “Compliance”.

Note: Select the “Compliance” test mode if the eSDF (Electronic Self Declaration Form) file of the DUT is available. If the eSDF is not available, select the “Pre-Compliance” test mode.



Create Project

Project Name:

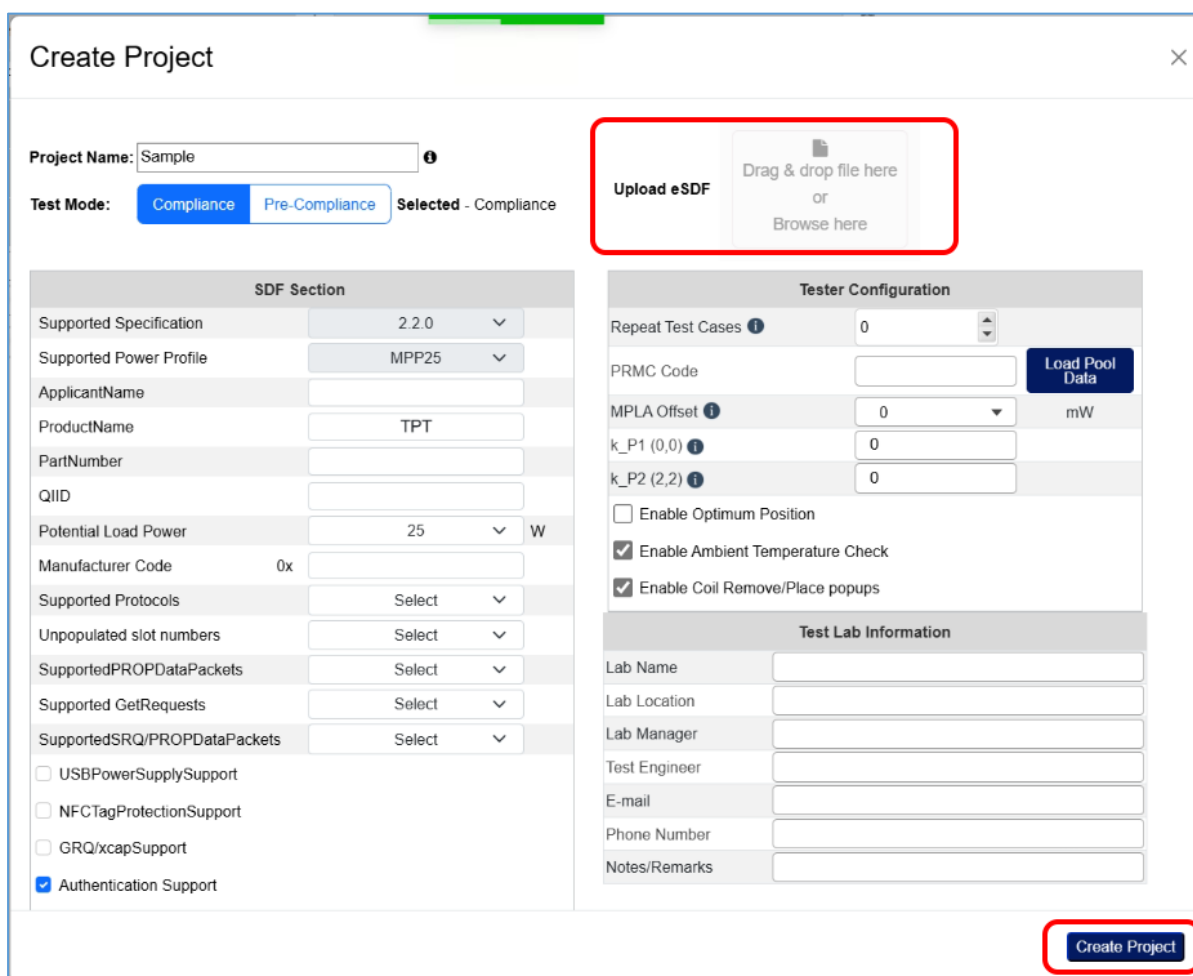
Test Mode: Compliance Pre-Compliance Selected - Compliance

Upload eSDF

Drag & drop file here
or
Browse here

FIGURE 6.4: CREATE NEW PROJECT— #1

5. **Upload** the **eSDF** file of the DUT by dragging and dropping the file into the panel on the right or clicking on the panel to select the file from the system. Then click on the **Create Project** button at the bottom.



Create Project

Project Name:

Test Mode: Compliance Pre-Compliance Selected - Compliance

Upload eSDF

Drag & drop file here
or
Browse here

SDF Section	
Supported Specification	2.2.0
Supported Power Profile	MPP25
ApplicantName	
ProductName	TPT
PartNumber	
QIID	
Potential Load Power	25 W
Manufacturer Code	0x
Supported Protocols	Select
Unpopulated slot numbers	Select
SupportedPROPDataPackets	Select
Supported GetRequests	Select
SupportedSRQ/PROPDataPackets	Select
☐ USBPowerSupplySupport ☐ NFC_TagProtectionSupport ☐ GRQ/xcapSupport ☒ Authentication Support	

Tester Configuration	
Repeat Test Cases	0
PRMC Code	
MPLA Offset	0 mW
k_P1 (0,0)	0
k_P2 (2,2)	0
☐ Enable Optimum Position ☒ Enable Ambient Temperature Check ☒ Enable Coil Remove/Place popups	

Test Lab Information	
Lab Name	
Lab Location	
Lab Manager	
Test Engineer	
E-mail	
Phone Number	
Notes/Remarks	

Create Project

FIGURE 6.5: CREATE NEW PROJECT— #2

6. Adjust the PTx DUT in the GRL Platform Solutions PRx Coil to align with the magnetic position on the positioning tool as shown in Figure 6.6 below.

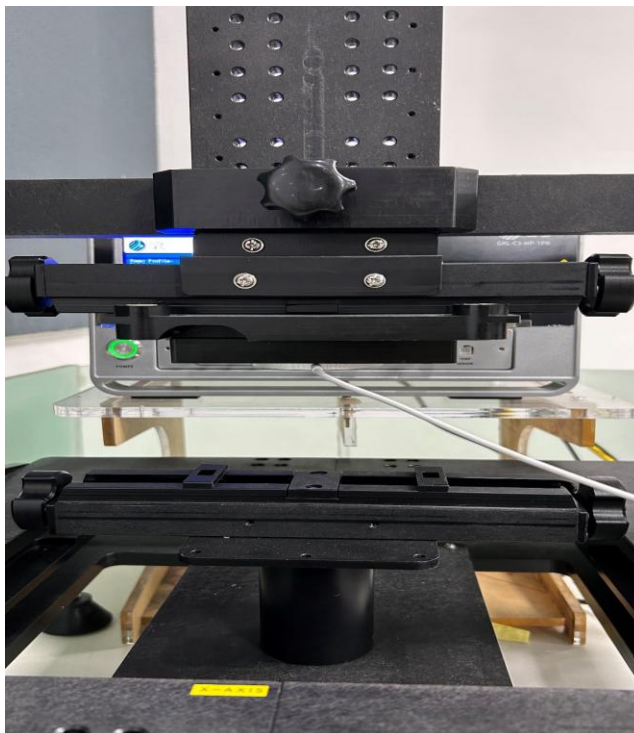


FIGURE 6.6: FIND OPTIMUM COIL POSITION - #1

7. Adjust the positioning tool to make sure the coil is placed at the center as shown in Figure 6.7 below.

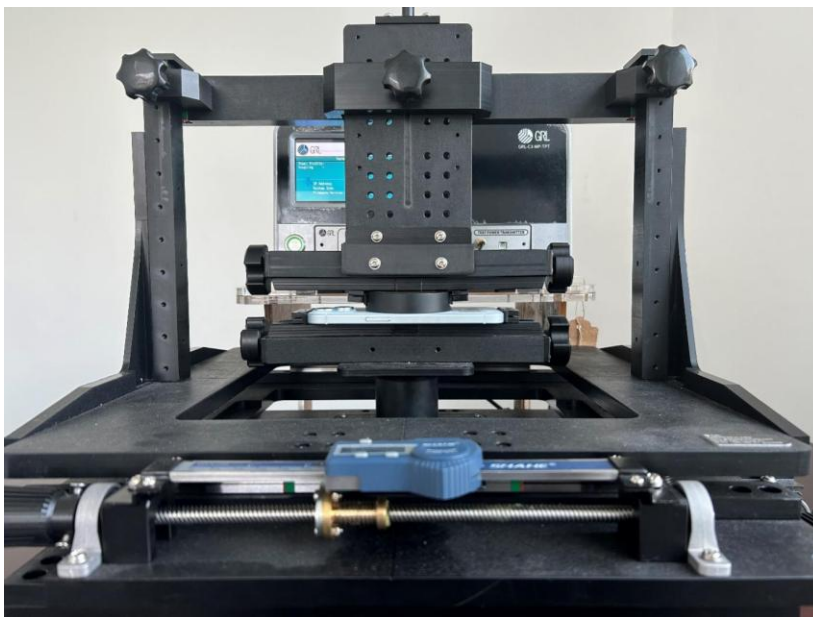


FIGURE 6.7: FIND OPTIMUM COIL POSITION - #2

8. Press the reset button (labeled as ZERO) to set the X axis and Y axis as (0,0) before starting the test as shown in Figure 6.8 below.



FIGURE 6.8: FIND OPTIMUM COIL POSITION - #3

9. On the Test Configuration screen, click on the **Get Optimum Position** button under the “Optimum Coil Position” section as indicated in Figure 6.9 below.

Test Selection		SDF Section ☒ 1		Optimum Coil Position	
Project Name: Sample - 2.2.0		Supported Specification: 2.2.0		BSUT Name: XXXXX	
Test Mode: Compliance		Supported Power Profile: MPP25		Coil Type: MPP_TPR1	
Quick Select: ☒ ☒ ☒ ☒ ☒ 0/683		ApplicantName:		Get Optimum Position	
Execute: Start		ProductName: TPT		Clear Data Load Data Save Data	
Q Search Testcase Name		PartNumber:		Tester Configuration	
TPR Coils Selection: No Filter Applied		QIID:		Repeat Test Cases: 0	
TPR Offset(r,z) Selection: No Filter Applied		Potential Load Power: 25 W		PRMC Code: Load Pool Data	
☐ PTx Compliance Tests MPP V2.2 ☐ Self Declaration Form (1) ☐ Thermal requirements (1) ☐ Digital Ping (59) ☐ K-est requirements (5) ☐ Power Delivery Requirements (43) ☐ MPP Legacy Receivers (2) ☐ Communication Physical layer requirements (53) ☐ General Comms Test (1) ☐ Ping and Configuration Phase Tests (29) ☐ Negotiation Phase Tests (73) ☐ Power Transfer Phase Tests (26) ☐ Cloak Phase Tests (25) ☐ Extended Data Stream Tests (10) ☐ Other MPP Tests (9) ☐ Authentication Requirements (38) ☐ Pre-power Transfer Test (112) ☐ In-power Transfer Test (191) ☐ PTx Compliance Book: Connected Loads (2) ☐ Compliance with Communications Protocol Requirements (1) ☐ OCP Test cases (2)		Supported Protocols: Select Unpopulated slot numbers: Select SupportedPROPDataPackets: Select Supported GetRequests: Select SupportedSRQ/PROPDataPackets: Select ☐ USBPowerSupplySupport ☐ NFCTagProtectionSupport ☐ GRQ/xcapSupport ☒ Authentication Support ☐ WPID Support ☒ 128k HPM PingSupport ☐ PTxInitiatedCloakSupport ☐ PTxInitiatedCloakExitSupport ☐ UniqueIdentifierSupport ☐ IncreasedCoverThickness		MPLA Offset: 0 mW k_P1 (0,0): 0 k_P2 (2,2): 0 ☐ Enable Optimum Position ☒ Enable Ambient Temperature Check ☒ Enable Coil Remove/Place popups	
Test Lab Information					
Lab Name:					
Lab Location:					
Lab Manager:					
Test Engineer:					
E-mail:					
Phone Number:					
Notes/Remarks:					

FIGURE 6.9: FIND OPTIMUM COIL POSITION - #4

10. A pop-up message will appear (as shown in Figure 6.10 below) to prompt the user to select the method for optimum coil positioning (using default SS values or Vrect). Click **Yes** to continue with the next step by using the default SS values.

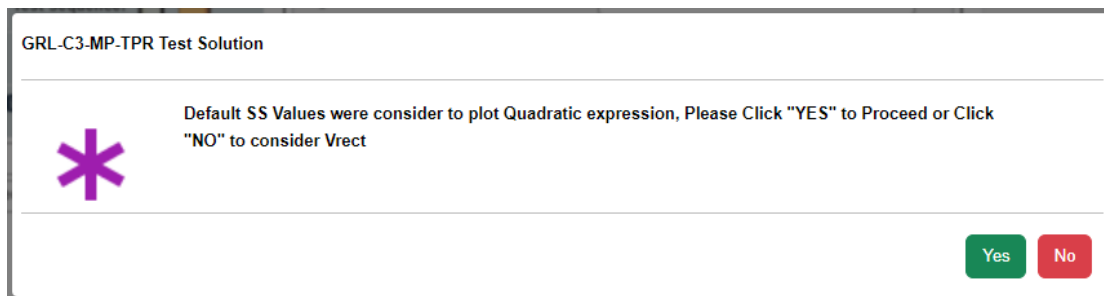


FIGURE 6.10: FIND OPTIMUM COIL POSITION - #5

11. Follow the instructions (as seen in Figure 6.11 below) to align the X-axis and Y-axis values accordingly using the respective knobs. Then click **Ok** to proceed with the next step.

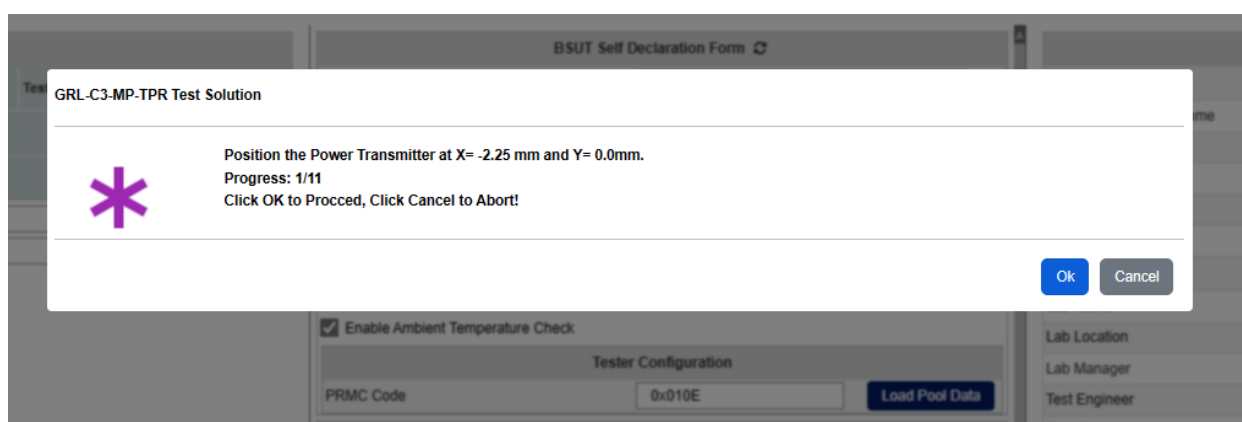


FIGURE 6.11: FIND OPTIMUM COIL POSITION - #6

12. Obtain the active referencing value from the final pop-up message (as seen in Figure 6.12 below).

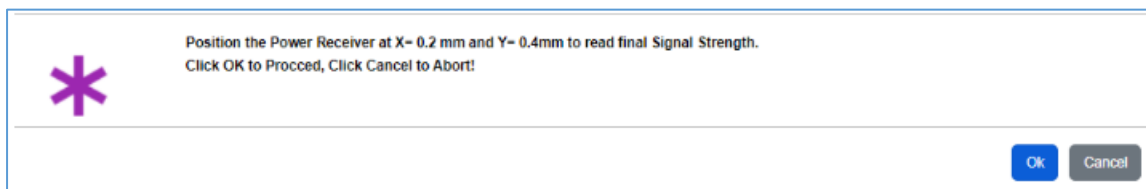


FIGURE 6.12: FIND OPTIMUM COIL POSITION - #7

13. After aligning the X-axis and Y-axis values based on the pop-up message, reset both the X- and Y-axis to zero as the optimum position in the positioning tool as shown in Figure 6.13 below.

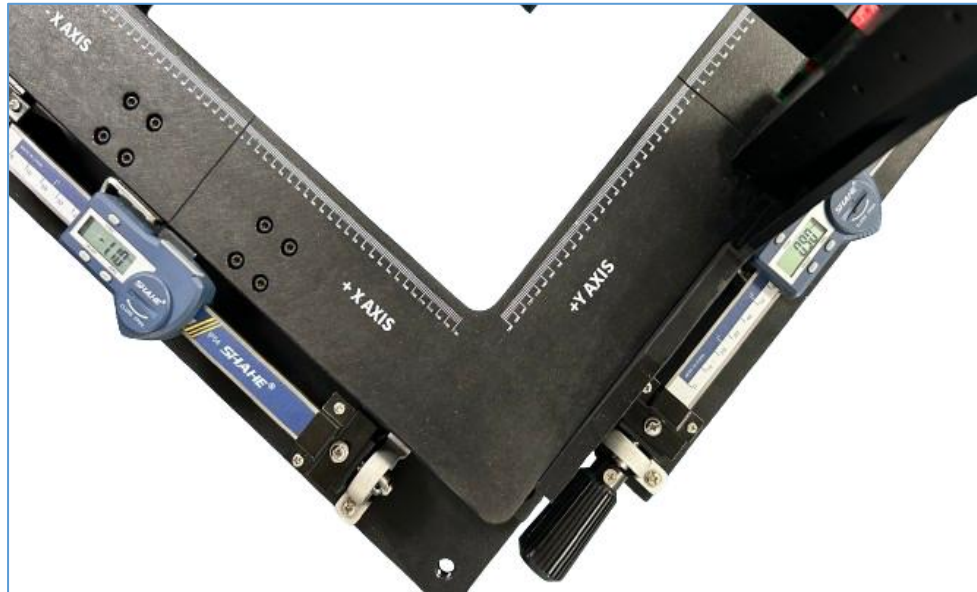


FIGURE 6.13: RESET X- AND Y-AXIS TO ZERO IN POSITIONING TOOL

14. The position in which the active referencing is achieved will also be available in the *Active Referencing* excel sheet generated along with the Project file "C:\GRL\GRL-C3-MP-TPR\Report\Optimum DUT_MPP_240124_113522".

Name	Date modified	Type	Size
Run1	1/24/2024 11:28 AM	File folder	
Run2	1/24/2024 11:39 AM	File folder	
Run3	1/24/2024 12:02 PM	File folder	
Run4	1/24/2024 12:08 PM	File folder	
Run5	1/24/2024 12:17 PM	File folder	
Run6	1/24/2024 12:20 PM	File folder	
Run7	1/24/2024 12:22 PM	File folder	
Run8	1/24/2024 12:39 PM	File folder	
Run9	1/24/2024 12:44 PM	File folder	
ActiveAlignment_240124_101242	1/24/2024 10:27 AM	Microsoft Excel Co...	2 KB
GetCoilOptimumPosition.grltrace	1/24/2024 10:28 AM	GRLTRACE File	6.383 KB
MPP_Final_TestBackup.gproj	1/24/2024 12:44 PM	GPROJ File	0 KB
MPP_GRL_C3_FinalReport	1/24/2024 12:44 PM	Chrome HTML Do...	570 KB
MPP_GRL_C3_FinalReport	1/24/2024 12:44 PM	JSON Source File	8.958 KB
MPP_GRL_C3_FinalReport	1/24/2024 12:44 PM	Microsoft Edge PD...	225 KB
TPT-52 OptimumCoilValue.xml	1/24/2024 10:35 AM	xmlfile	1 KB

	a	b	c	AxisCenter
X-Axis	-0.2293	0.4674	47.3168	1
Y-Axis	-1.7752	1.1657	49.7553	0.3
Step 5. Find SS value at final AxisCenter (X and Y) Positions				
Signal Strength Value: 47.55				

FIGURE 6.14: ACTIVE REFERENCING EXCEL SHEET

- Take note of the signal strength value as displayed in the Optimum Coil Position table (refer Figure 6.15 below).

Test Selection

Project Name: Sample - 2.2.0

Test Mode: Compliance

Quick Select: ✓ ✗ ? ⏮ ⏭ 0/683

Execute: Start

Q Search Testcase Name

TPR Coils Selection: No Filter Applied

TPR Offset(r,z) Selection: No Filter Applied

☐ PTx Compliance Tests MPP V2.2

- ☐ Self Declaration Form (1)
- ☐ Thermal requirements (1)
- ☐ Digital Ping (59)
- ☐ K-est requirements (5)
- ☐ Power Delivery Requirements (43)
- ☐ MPP Legacy Receivers (2)
- ☐ Communication Physical layer requirements (53)
- ☐ General Comms Test (1)
- ☐ Ping and Configuration Phase Tests (29)
- ☐ Negotiation Phase Tests (73)
- ☐ Power Transfer Phase Tests (26)
- ☐ Cloak Phase Tests (25)
- ☐ Extended Data Stream Tests (10)
- ☐ Other MPP Tests (9)
- ☐ Authentication Requirements (38)
- ☐ Pre-power Transfer Test (112)
- ☐ In-power Transfer Test (191)
- ☐ PTx Compliance Book: Connected Loads (2)
- ☐ Compliance with Communications Protocol Requirements (1)
- ☐ OCP Test cases (2)

SDF Section

Supported Specification: 2.2.0

Supported Power Profile: MPP25

ApplicantName: TPT

PartNumber:

QIID:

Potential Load Power: 25 W

Manufacturer Code: 0x

Supported Protocols: Select

Unpopulated slot numbers: Select

SupportedPROPDataPackets: Select

SupportedGetRequests: Select

SupportedSRQ/PROPDataPackets: Select

☐ USBPowerSupplySupport
 ☐ NFCTagProtectionSupport
 ☐ GRQ/xcapSupport
 ☒ Authentication Support
 ☐ WPID Support
 ☒ 128k HPM PingSupport
 ☐ PTxInitiatedCloakSupport
 ☐ PTxInitiatedCloakExitSupport
 ☐ UniqueIdentifierSupport
 ☐ IncreasedCoverThickness

Optimum Coil Position

BSUT Name: XXXXX

Coil Type: MPP_TPR1

Get Optimum Position

Coil	Value
TPR_MPP4	46.1
MPP_TPR1	46.08

Clear Data
Load Data
Save Data

Tester Configuration

Repeat Test Cases: 0

PRMC Code:

MPLA Offset: 0 mW

k_P1 (0,0): 0

k_P2 (2,2): 0

☐ Enable Optimum Position
 ☒ Enable Ambient Temperature Check
 ☒ Enable Coil Remove/Place popups

Test Lab Information

Lab Name:

Lab Location:

Lab Manager:

Test Engineer:

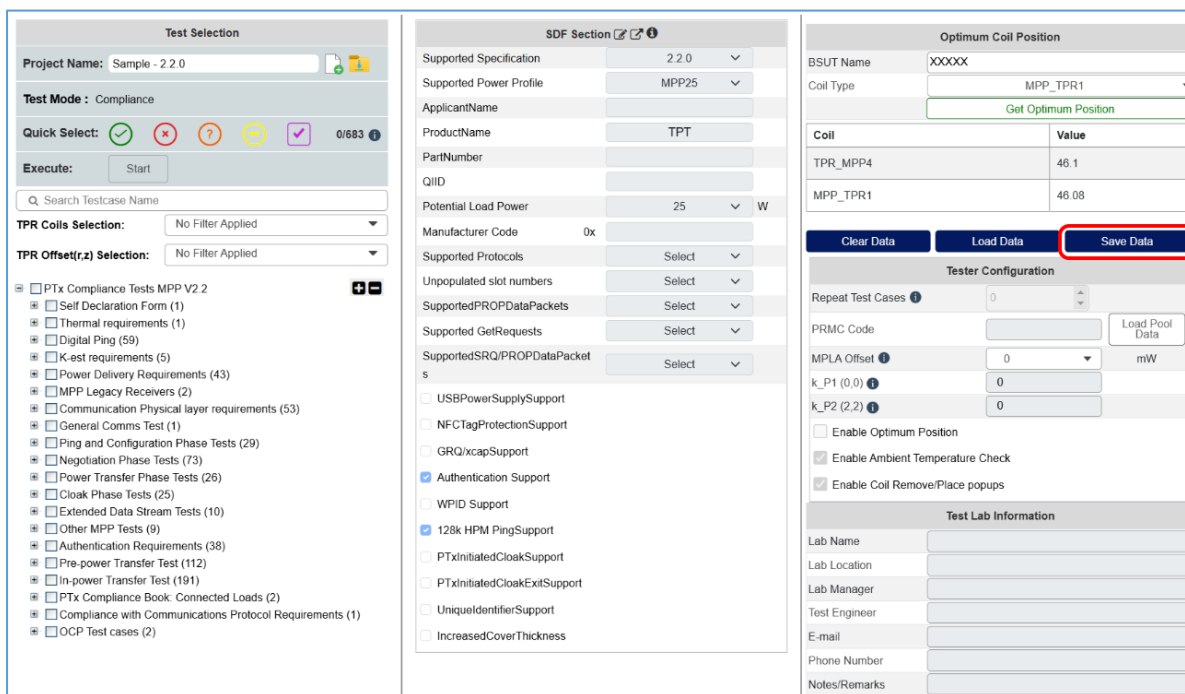
E-mail:

Phone Number:

Notes/Remarks:

FIGURE 6.15: OPTIMUM COIL POSITION ACQUIRED SIGNAL STRENGTH VALUE

16. Click on the **Save Data** button to save the obtained Optimum Coil Position signal strength value to a XML file in the desired location.



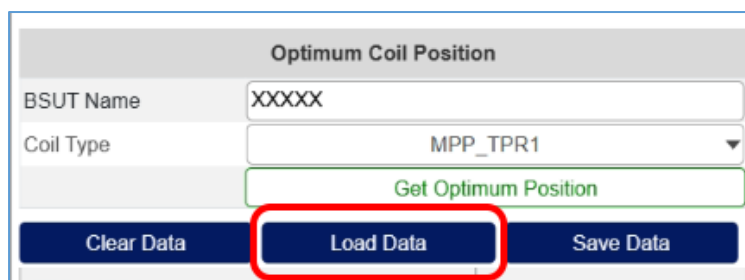
The screenshot displays the 'Optimum Coil Position' section of the software. It includes fields for 'BSUT Name' (XXXXXX), 'Coil Type' (MPP_TPR1), and a 'Get Optimum Position' button. Below these are two tables showing test results for 'TPR_MPP4' and 'MPP_TPR1'. The 'Save Data' button is highlighted with a red rectangle.

Coil	Value
TPR_MPP4	46.1
MPP_TPR1	46.08

FIGURE 6.16: SAVE OPTIMUM COIL POSITION SIGNAL STRENGTH VALUE

17. Execute the (0,0) position test cases and compare the 128kHz signal strength value with the above noted signal strength value.

If the user wants to test with the available optimum coil position data for a new project, then click on the **Load Data** button to load the existing data (for example, the XML file saved in step 14). Refer to Figure 6.17 below.



The screenshot displays the 'Optimum Coil Position' section of the software. It includes fields for 'BSUT Name' (XXXXXX), 'Coil Type' (MPP_TPR1), and a 'Get Optimum Position' button. Below these are three buttons: 'Clear Data', 'Load Data', and 'Save Data'. The 'Load Data' button is highlighted with a red rectangle.

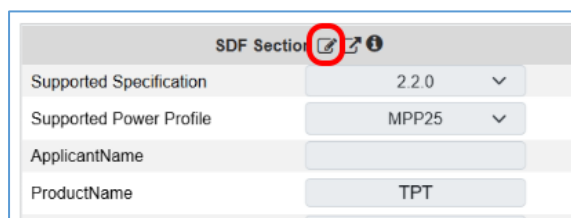
FIGURE 6.17: LOAD OPTIMUM COIL POSITION DATA

7 Procedure to Run the Compliance Tests

After acquiring the optimum coil position and the final signal strength value, the user can start to execute the (0,0) position test cases after providing the following details:

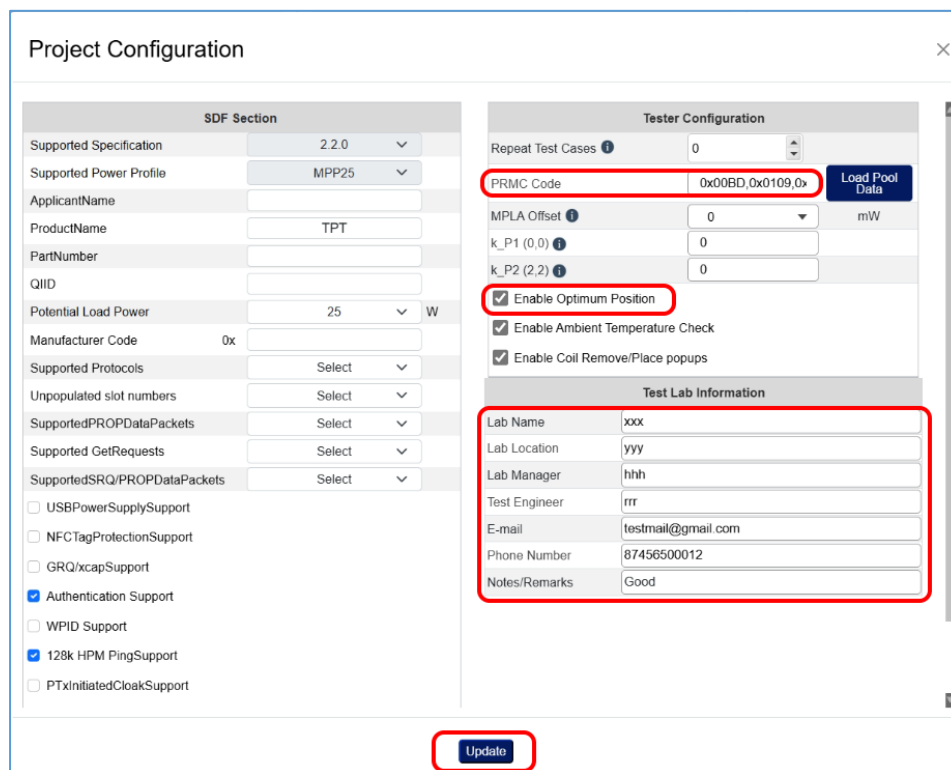
- Load the **PRMC Code**.
 - The latest PRMC codes can be downloaded from the WPC website.
- Provide all necessary information under the **Test Lab Information** section.
- Select the **Enable Optimum Position** checkbox.
- Click on the **Update** button.

In the SDF Section, click on  to edit the eSDF data and the following pop-up window will allow the user to make the required edits.



SDF Section	
Supported Specification	2.2.0
Supported Power Profile	MPP25
ApplicantName	
ProductName	TPT

Refer to Figure 7.1 below.



Project Configuration

SDF Section

Supported Specification: 2.2.0
Supported Power Profile: MPP25
ApplicantName:
ProductName: TPT
PartNumber:
QIID:
Potential Load Power: 25 W
Manufacturer Code: 0x
Supported Protocols: Select
Unpopulated slot numbers: Select
SupportedPROPDataPackets: Select
SupportedGetRequests: Select
SupportedSRQ/PROPDataPackets: Select
☐ USBPowerSupplySupport
☐ NFC TagProtectionSupport
☐ GRQ/xcapSupport
☒ Authentication Support
☐ WPID Support
☒ 128k HPM PingSupport
☐ PTxInitiatedCloakSupport

Tester Configuration

Repeat Test Cases: 0
PRMC Code: 0x00BD,0x0109,0x
MPLA Offset: 0 mW
k_P1 (0,0): 0
k_P2 (2,2): 0
☒ Enable Optimum Position
☒ Enable Ambient Temperature Check
☒ Enable Coil Remove/Place popups

Test Lab Information

Lab Name: xxx
Lab Location: yyy
Lab Manager: hhh
Test Engineer: rrr
E-mail: testmail@gmail.com
Phone Number: 87456500012
Notes/Remarks: Good

Update

FIGURE 7.1: (0,0) POSITION TEST CASES SETUP

Note: Follow the above procedure for all other radius(r) positions by adjusting the X/Y axis and introducing the necessary spacer (2mm, 3mm, 4mm).

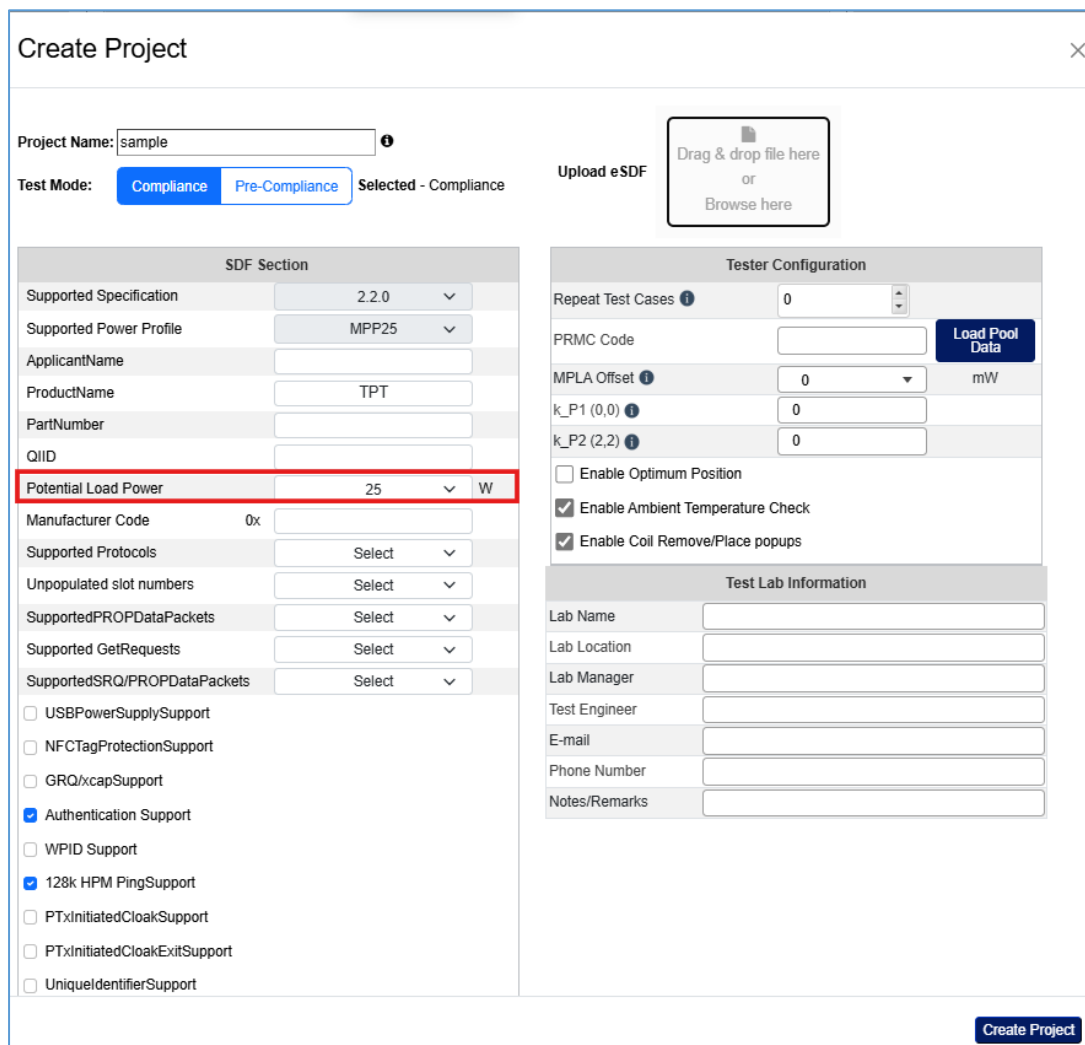
For example, to execute the (2,2) test cases:

- move the X/Y axis in the positioning tool to adjust 2mm, and
- insert the 2 mm spacer.

7.1 Procedure to Execute Other Test Cases

Scenario 1:

For Test Case 1.10.3.4 – Ensure that the **Potential Load Power** is set to 25 W before executing the test case. See Figure 7.2 below.



Create Project

Project Name:

Test Mode: Compliance Pre-Compliance Selected - Compliance

Upload eSDF Drag & drop file here or Browse here

SDF Section	
Supported Specification	2.2.0
Supported Power Profile	MPP25
ApplicantName	
ProductName	TPT
PartNumber	
QIID	
Potential Load Power	25 W
Manufacturer Code	0x
Supported Protocols	Select
Unpopulated slot numbers	Select
SupportedPROPDataPackets	Select
Supported GetRequests	Select
SupportedSRQ/PROPDataPackets	Select
☐ USBPowerSupplySupport ☐ NFCtagProtectionSupport ☐ GRQ/xcapSupport ☒ Authentication Support ☐ WPID Support ☒ 128k HPM PingSupport ☐ PTxInitiatedCloakSupport ☐ PTxInitiatedCloakExitSupport ☐ UniqueIdentifierSupport	

Tester Configuration	
Repeat Test Cases	0
PRMC Code	
MPLA Offset	0 mW
k_P1 (0,0)	0
k_P2 (2,2)	0
☐ Enable Optimum Position ☒ Enable Ambient Temperature Check ☒ Enable Coil Remove/Place popups	

Test Lab Information	
Lab Name	
Lab Location	
Lab Manager	
Test Engineer	
E-mail	
Phone Number	
Notes/Remarks	

Create Project

FIGURE 7.2: SETUP FOR TEST CASE 1.10.3.4

Scenario 2:

For **EDS** and **Authentication** test cases, ensure that the checkbox for supporting authentication test cases is enabled as indicated in Figure 7.3 below.

SDF Section	
Supported Specification	2.2.0 ▼
Supported Power Profile	MPP25 ▼
ApplicantName	
ProductName	TPT
PartNumber	
QIID	
Potential Load Power	25 ▼ W
Manufacturer Code	0x
Supported Protocols	Select ▼
Unpopulated slot numbers	Select ▼
SupportedPROPDataPackets	Select ▼
Supported GetRequests	Select ▼
SupportedSRQ/PROPDataPackets	Select ▼
☐ USBPowerSupplySupport	
☐ NFCTagProtectionSupport	
☐ GRQ/xcapSupport	
☒ Authentication Support	
☐ WPID Support	
☒ 128k HPM PingSupport	
☐ PTxInitiatedCloakSupport	

FIGURE 7.3: SETUP FOR EDS AND AUTHENTICATION TEST CASES

Scenario 3:

Before executing the **Authentication** test case, ensure that the following parameters are set:

- Qi-ID (for specific DUT)
- Manufacturer Code

See Figure 7.4 below.

Create Project

Project Name: sample

Test Mode:

Compliance

Pre-Compliance

Selected - Compliance

Upload eSDF

Drag & drop file here

or

Browse here

SDF Section

Supported Specification	2.2.0	▼
Supported Power Profile	MPP25	▼
ApplicantName		
ProductName	TPT	
PartNumber		
QIID		
Potential Load Power	25	W ▼
Manufacturer Code	0x	
Supported Protocols	Select	▼
Unpopulated slot numbers	Select	▼
SupportedPROPDataPackets	Select	▼
Supported GetRequests	Select	▼
SupportedSRQ/PROPDataPackets	Select	▼
☐ USBPowerSupplySupport ☐ NFCTagProtectionSupport ☐ GRQ/xcapSupport ☒ Authentication Support ☐ WPID Support ☒ 128k HPM PingSupport ☐ PTxInitiatedCloakSupport ☐ PTxInitiatedCloakExitSupport ☐ UniqueIdentifierSupport		

Tester Configuration

Repeat Test Cases	0	▲ ▼
PRMC Code		Load Pool Data
MPLA Offset	0	mW ▼
k_P1 (0,0)	0	
k_P2 (2,2)	0	
☐ Enable Optimum Position ☒ Enable Ambient Temperature Check ☒ Enable Coil Remove/Place popups		

Test Lab Information

Lab Name	
Lab Location	
Lab Manager	
Test Engineer	
E-mail	
Phone Number	
Notes/Remarks	

Create Project

FIGURE 7.4: SETUP FOR AUTHENTICATION TEST CASE

Scenario 4:

For Test Case 1.10.5.6 - Ensure that the **PTxInitiatedCloakSupport** and **PTxInitiatedCloakExitSupport** checkboxes in the eSDF are selected before executing the test case as indicated in Figure 7.5 below.

Supported Specification	2.2.0	▼
Supported Power Profile	MPP25	▼
ApplicantName		
ProductName	TPT	
PartNumber		
QIID		
Potential Load Power	25	▼ W
Manufacturer Code	0x	
Supported Protocols	Select	▼
Unpopulated slot numbers	Select	▼
SupportedPROPDataPackets	Select	▼
Supported GetRequests	Select	▼
SupportedSRQ/PROPDataPackets	Select	▼
☐ USBPowerSupplySupport ☐ NFCTagProtectionSupport ☐ GRQ/xcapSupport ☒ Authentication Support ☐ WPID Support ☒ 128k HPM PingSupport ☒ PTxInitiatedCloakSupport ☒ PTxInitiatedCloakExitSupport		

FIGURE 7.5: SETUP FOR TEST CASE 1.10.5.6

8 Foreign Object Holder Fixing

*Ensure that the **Enable Ambient Temperature Check** checkbox is selected before executing the FOD related test cases. Refer Figure 8.1 below.

Tester Configuration	
Repeat Test Cases <i>i</i>	0
PRMC Code	Load Pool Data
MPLA Offset <i>i</i>	0 mW
k_P1 (0,0) <i>i</i>	0
k_P2 (2,2) <i>i</i>	0
☐ Enable Optimum Position ☒ Enable Ambient Temperature Check ☒ Enable Coil Remove/Place popups	

FIGURE 8.1: ENABLE AMBIENT TEMPERATURE CHECK

1. Insert the foreign object holder into the GRx coil supporting plate and tighten the four thumb screws as illustrated in Figure 8.2 below.

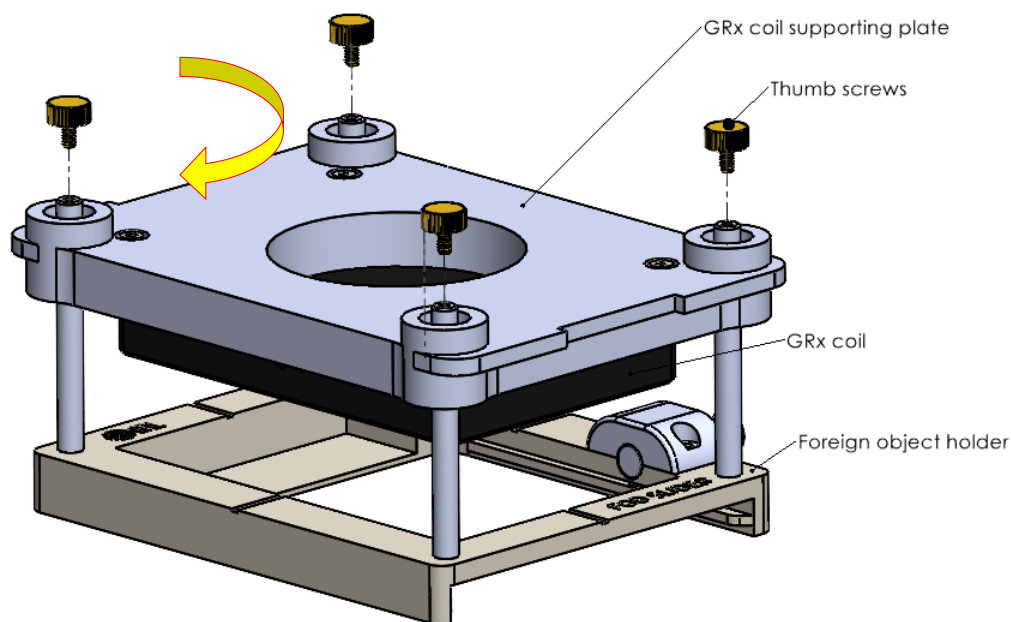


FIGURE 8.2: SET UP FOREIGN OBJECT HOLDER

9 Foreign Object Test Cases

For alignment of the r (radius) in the FOD related test cases, only the X axis should be adjusted in the positive direction.

Spacers to be used for FOD related test cases are as follows:

- 0.5 mm
- 2.5 mm

9.1 Procedure to Execute Pre-Power Test Cases

Note: The following steps must be followed before executing the Pre-Power test cases.

An example of the Pre-Power test case:

1.12.1.2 MPP.PTX.FOD.BEFOREPOWER_FO_PRESENT.TC2h_RFO_3

1. Insert the RFO into the foreign object holder (as shown in the image below) until it fits properly. This will ensure the center position of the TPR coil is achieved.

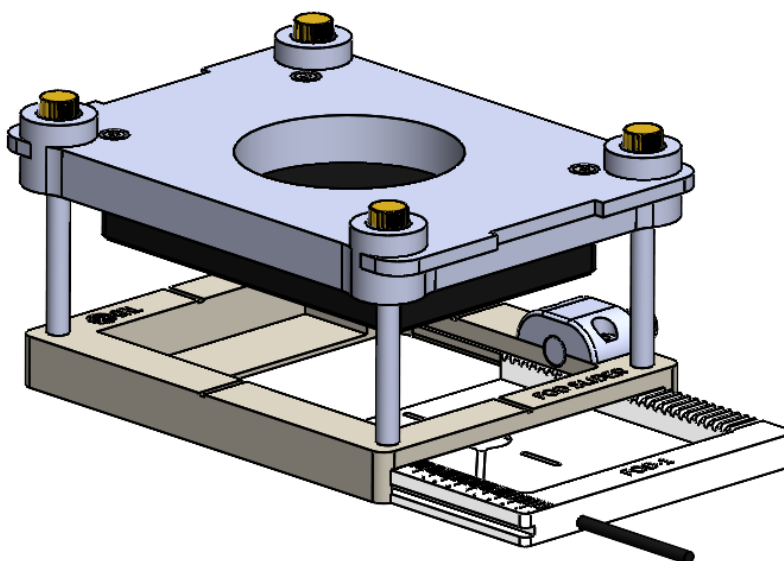


FIGURE 9.1: INSERT RFO INTO FO HOLDER

2. Follow the instructions provided by the App and adjust the RFO-3 position along with the spacer as 0.5 mm and RFO position from the PTx center as 5 mm.

Spacer thickness, $Z = 0.5 \text{ mm}[\text{spacer}] + 1.5 \text{ mm} [\text{RFO thickness}] = 2 \text{ mm}$

3. Once the RFO is set up properly, follow the instructions provided by the App and place the FO by sliding downwards.

9.2 Procedure to Execute In-Power Test Cases

Note: The Y-axis will not be adjusted for the TPR.

Before executing the In-Power test cases, follow the below instructions carefully to set up the RFO.

An example of In-Power test case:

1.12.2.7 MPP.PTX.FOD.INPOWER_FO_HEATING.TC2n_RFO_3

1. Position the RFO-3 at a distance of 45 mm (using the RFO scale) from the center in the foreign object holder along with the spacer specified in the test case and start the execution by following the pop-up instructions provided by the App.

***Do not insert the RFO all the way into the FO holder.**

Spacer thickness, $Z = 2.5 \text{ mm}[\text{spacer}] + 1.5 \text{ mm} [\text{RFO thickness}] = 4 \text{ mm}$

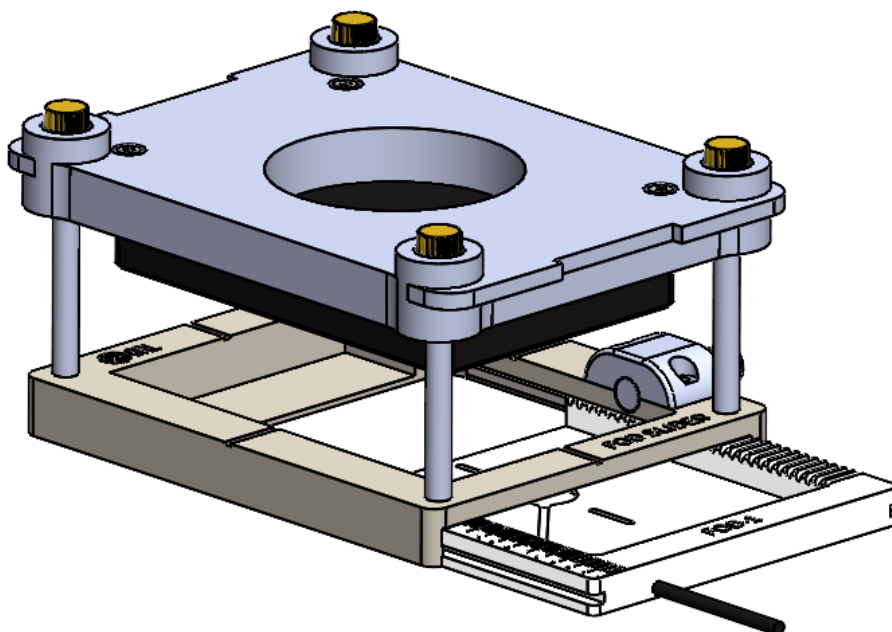


FIGURE 9.2: INSERT RFO INTO FO HOLDER

2. Follow the application pop-up instructions to insert the RFO-3 when specified at the distance of 5 mm from the PTX center.

Note: As the RFO moment is aligned with the TPR coil, the RFO moment should Add/Minus the TPR coil “off-centered” value to the RFO position specified in the CTS.

For example, the TPR and RFO should be placed in the 3 mm and 15 mm positions respectively.

To achieve this, initially the TPR position will be set to +/- 3 mm. Then while adjusting the RFO, the user should maintain the 15 mm +/- 3 mm. Based on the side, the user should move the TPR on the X-axis.

END_OF_DOCUMENT