1. Introduction

This document describes how to use the QC4pDB1532 Portway adapter and the TEA1936xDB1530 demo board with the SP05127-05 demonstration kit.

1.1 Contents

Fig 1.   SP05127-05 demonstration kit

This kit contains:

- PD3DB1548 PD3.0 type-C tester.
- Portway 27W Global Travel Charger
- 1 × type-C cable, 1 m

2. Safety requirements

This kit is to be used in combination with a QC4pDB1532 Portway adapter and a TEA1936xDB1530 demo board. For supplying this application AC power with galvanic isolation from the mains is strongly advised, as the TEA1936xDB1530 demo board is connected to AC power. For supplying the TEA1936xDB1530 demo board a mains isolated transformer/variac or an AC power source can be used.

Use a protective shield over the TEA1936xDB1530 demo board and never touch the board when testing, i.e. with mains power on. After switching off the mains power, do not touch the primary part of the board (red area), because the electrolytic buffer capacitors will remain charged for several minutes. Only handle the board at the secondary side (green) after testing, see Fig 2.
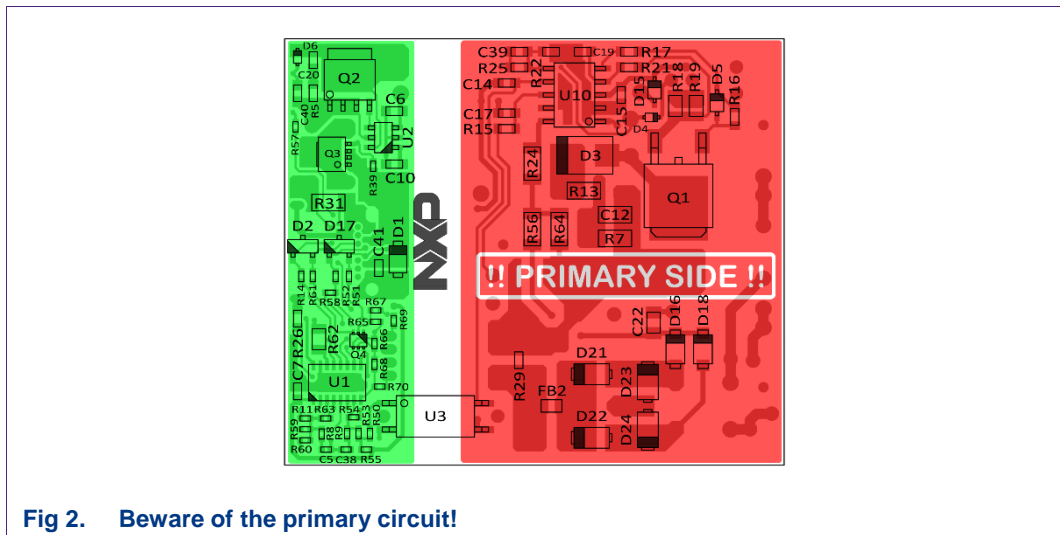

Fig 2.   Beware of the primary circuit!

USB-PD/QC4.0 Development Kit A

3. How to use

3.1 PD 3.0 Type-C tester

The PD3DB1548 PD 3.0 Type-C tester is shown in Fig 3.
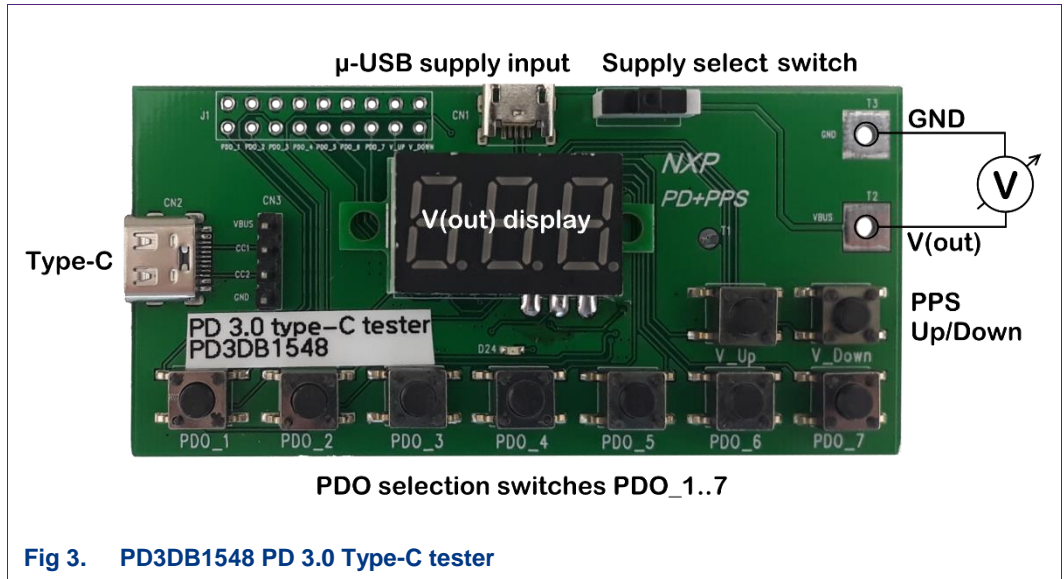

Fig 3.   PD3DB1548 PD 3.0 Type-C tester

This board is used for PD 3.0 and 4.0(+) evaluation. A load and/or a voltage meter can be connected to T2 and T3 to measure the output voltage and to draw current from the USB-PD application with a resistive or electronic load.

The board is connected to the demo board via the Type-C port. The board can be supplied by the Type-C application under test, but also via an external +5 V supply that is connected to the micro USB port CN1.

The supply select switch needs to be set in the correct position. In the photograph the switch is set for supply via the Type-C connection.

The board is connected to a charger application via the Type-C port.

For USB-PD 3.0 the board can be used to select the desired PDO by pressing the corresponding switches. The on-board display shows the value of the output voltage V(bus).

For USB-PD 4.0(+) this version of the Type-C tester will also work. Pressing V_Up or V_down will increase or decrease the output voltage respectively with 20 mV steps.

Holding V_Up or V_Down pressed down will result in the maximum or minimum voltage of the selected PDO respectively when PPS is enabled for that particular PDO.

3.2 Testing the Portway 27 Watt adapter

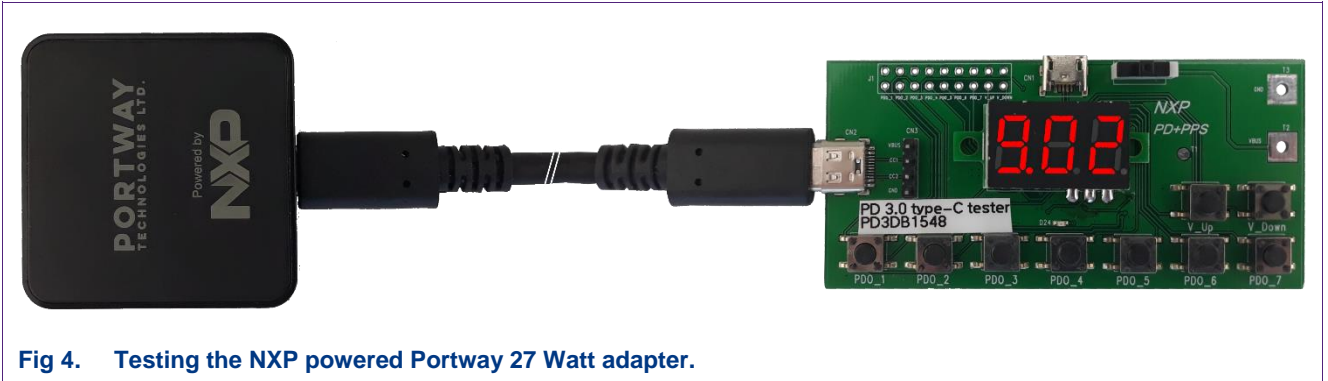The diagram in Fig 4 shows how the Portway adapter can be tested with the Type-C tester.

Fig 3

Fig 4.   Testing the NXP powered Portway 27 Watt adapter.

Table 1.   Portway PDO settings

Portway 27 Watt adapter

PDO #	V(out) [V]	I(out,max) [A]	PPS [y/n]
1	5	3	n
2	9	3	n
3	12	2.25	n
4	3.3 .. 5.9	3	y
5	3.3 .. 11.0	2.45	y

All PDO's in the Portway adapter are now easily accessible with the Type-C tester, although it is recommended to use the PD3QC4DB1547 which is equipped with a 4 digit display which shows the voltage as intended for QC4/PPS when V(out) ≥ 10 V.

3.3   Testing the TEA1936xDB1530 demo board

The diagram in Fig 5 shows how the TEA1936xDB1530 demo board can be tested with the Type-C tester.
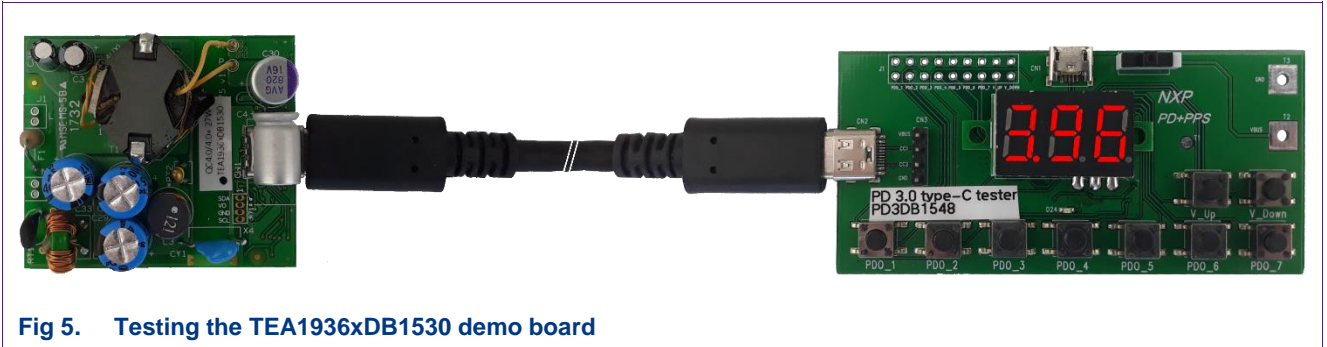

Fig 5.   Testing the TEA1936xDB1530 demo board

Table 2.   Demo board PDO settings

TEA1936xDB1530 27 Watt adapter

PDO #	V(out) [V]	I(out,max) [A]	PPS [y/n]
1	5	3	n
2	9	3	n
3	12	2.25	n
4	3.3 .. 5.9	3	y
5	3.3 .. 11.0	3	y

Also here all PDO's in the demo board are easily accessible with the Type-C tester, although it is recommended to use the PD3QC4DB1547 which is equipped with a 4 digit display which shows the voltage as intended for QC4/PPS when V(out) ≥ 10 V.