APPLICATION NOTE

AN60302

DSI Display Add-On for the RK3399-Q7 Devkit

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1 Introduction

The DSI Display Add-On is meant to be used in conjunction with the RK3399-Q7 Development Kit.

The display features a brilliant portrait-mode 800x1200 pixel IPS panel and a 10-point multitouch controller.

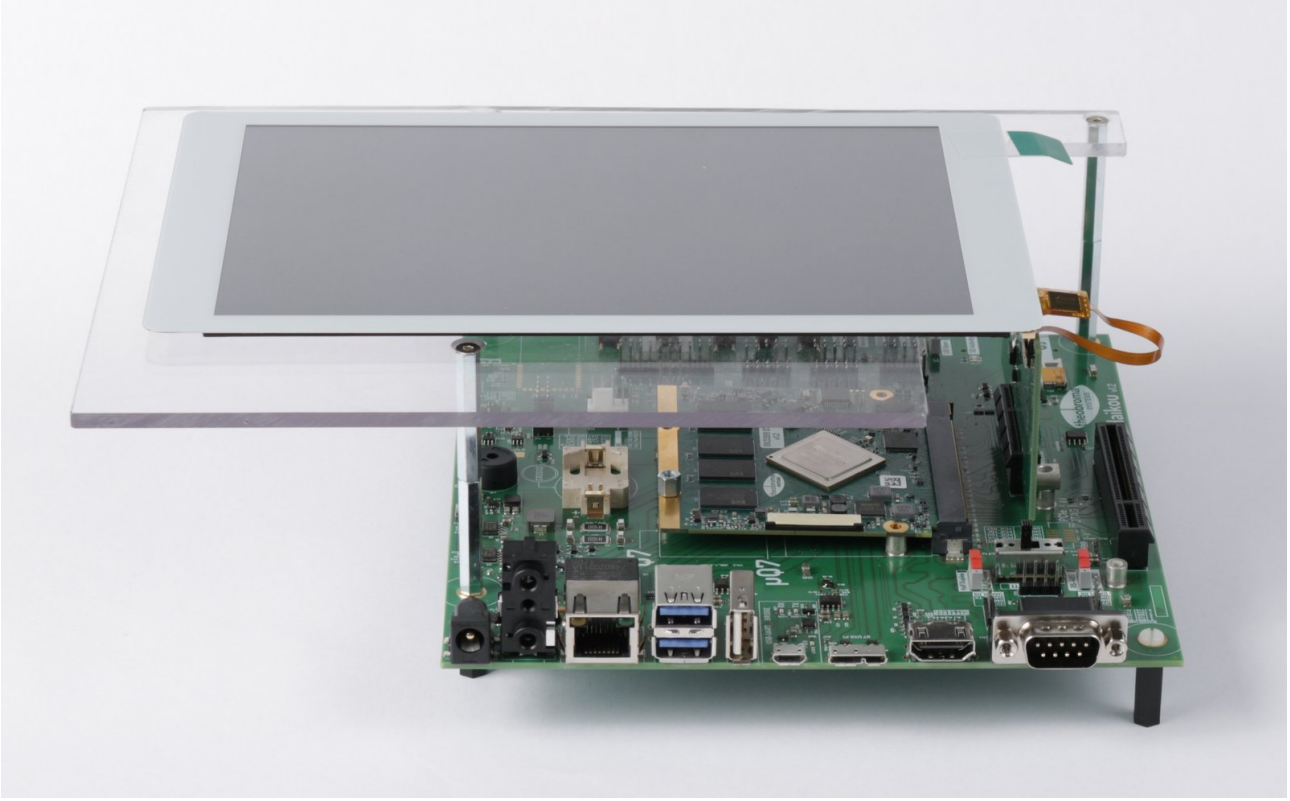

Fig. 1.1: Complete setup

1.1 Package Contents

1. Display assembly with two flat-flex cables on mounting plate
2. DSI adapter PCB (labeled “Haikou Video -> DSI”)
3. Three hexagonal M3 metal standoffs, 6cm each
4. One M3 screw
5. Four M3 nuts

1.2 Mounting Instructions

Step 1: Lay the display assembly face-down on a flat surface, lay the DSI adapter PCB next to it. Connect the flat-flex cables as show below:

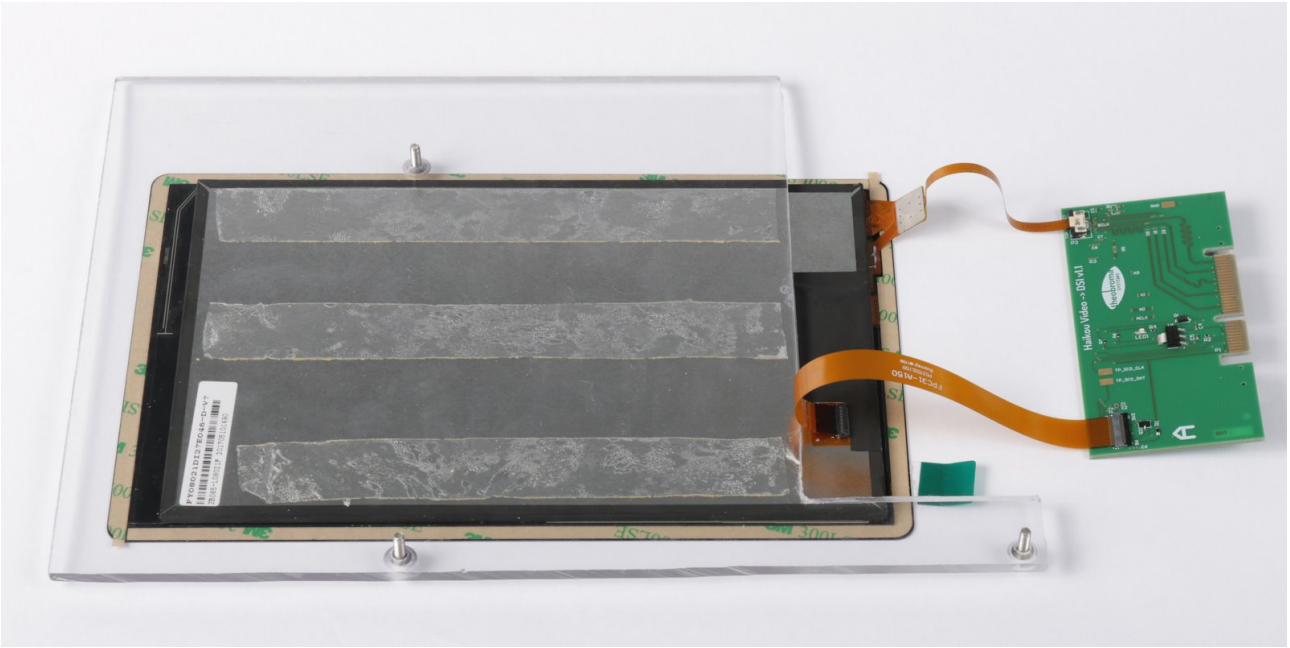

Fig. 1.2: Flat-flex cabling

Note that both connectors on the DSI adapter PCB are TOP-CONTACT. As seen below, the gold plated contacs of both flat-flex cables should be facing UP.

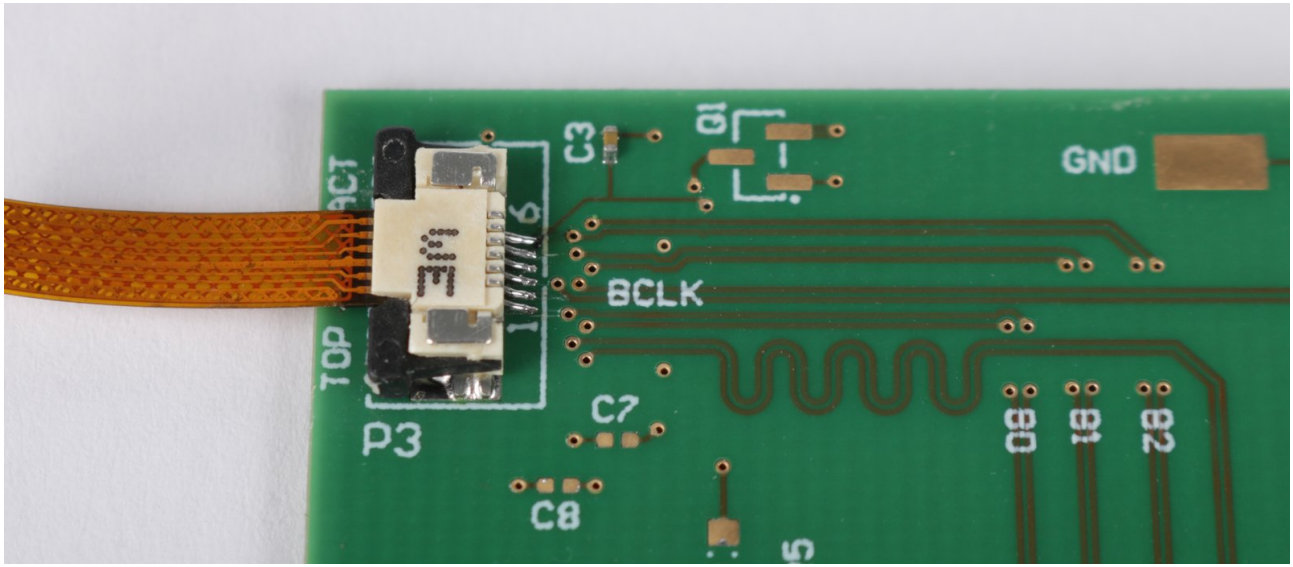

Fig. 1.3: Connector P3 (I2C / Touch) on the DSI adapter PCB

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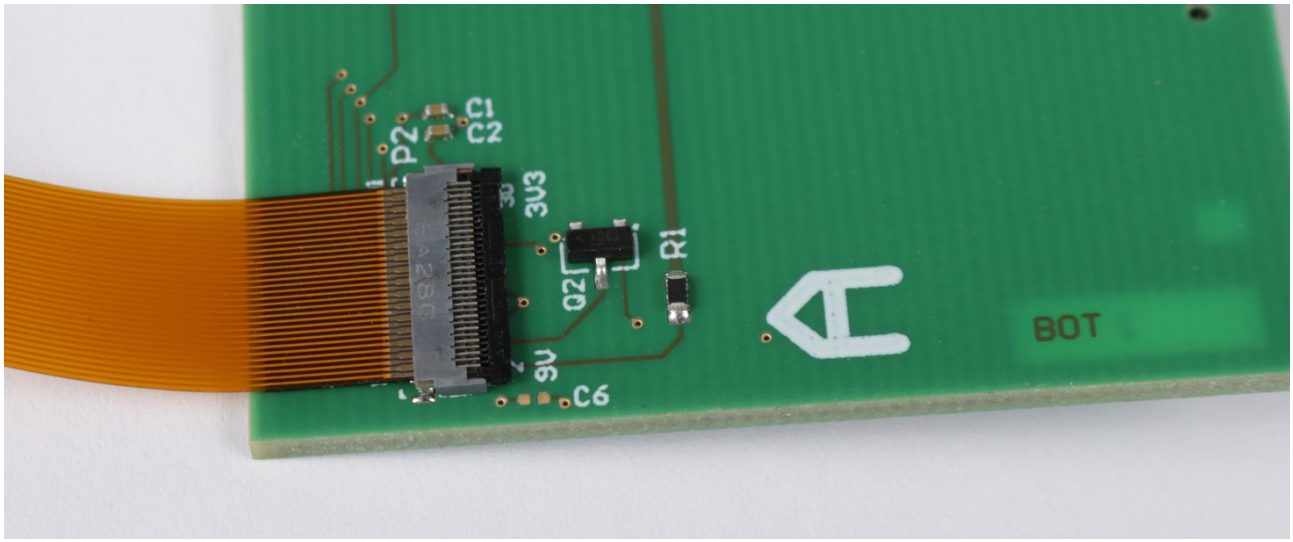

Fig. 1.4: Connector P2 (DSI) on the DSI adapter PCB

The narrow flat-flex cable is permanently connected to the display assembly, leaving only a single connector (the one for the wide cable). This connector is BOTTOM-CONTACT, the gold plated contacts on the flat-flex cable should be facing DOWN.

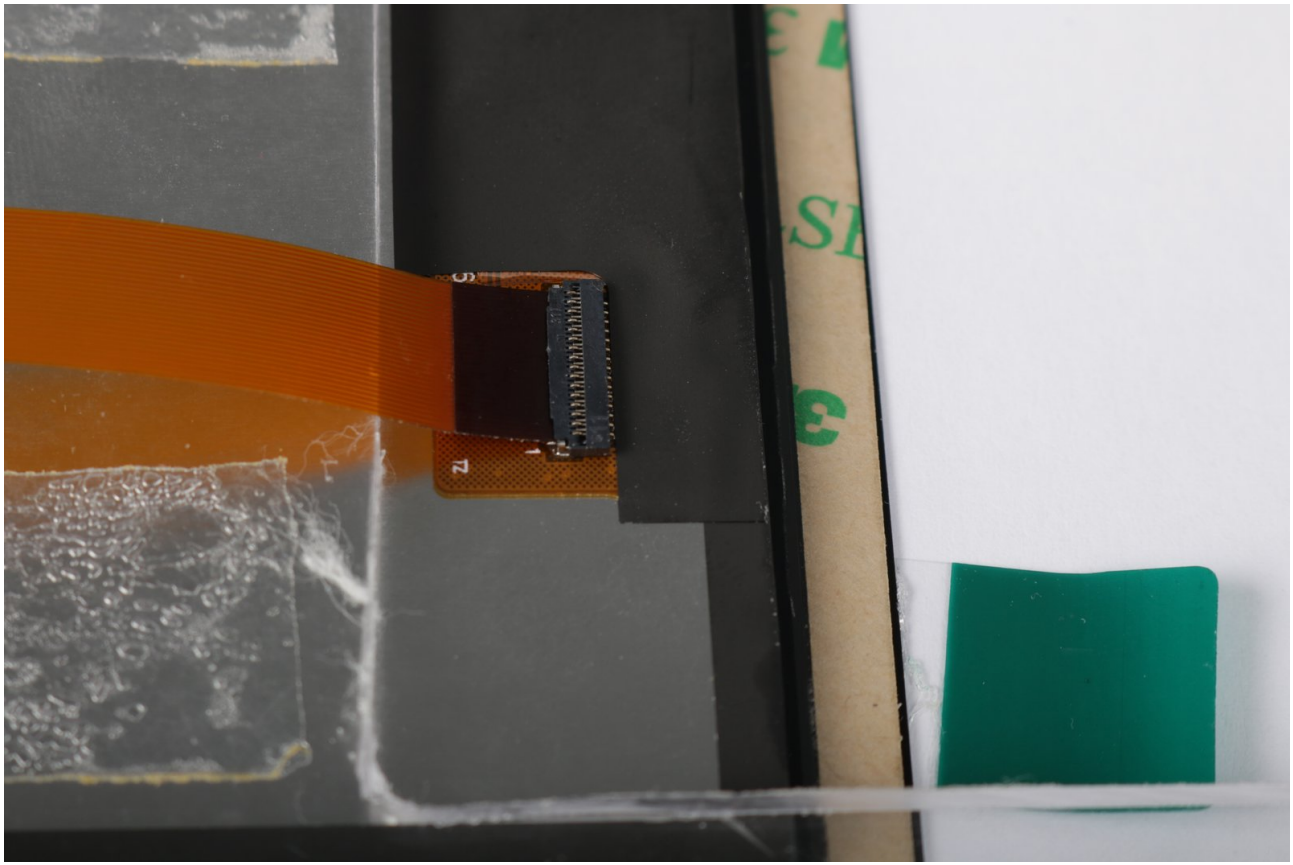

Fig. 1.5: DSI connector on the display assembly

Step 2: Mount the three hexagonal metal standoffs to the display assembly. The display assembly has three M3 threads sticking out of it. Screw the standoffs onto the threads without any force.

Step 3: Flip the display assembly face-up and hover it above the Haikou baseboard. Plug the DSI adapter PCB into the slot marked “Display connector” on the Haikou baseboard. Slide the threads of the three metal standoffs into the mounting holes of the Haikou baseboard.

Step 4: Flip the whole setup (display assembly and Hakikou baseboard) around to get access to the threads sticking through the mounting holes. Stick the one M3 screw through the unuccupied hole. Now screw on the four M3 nuts that will serve as feet.

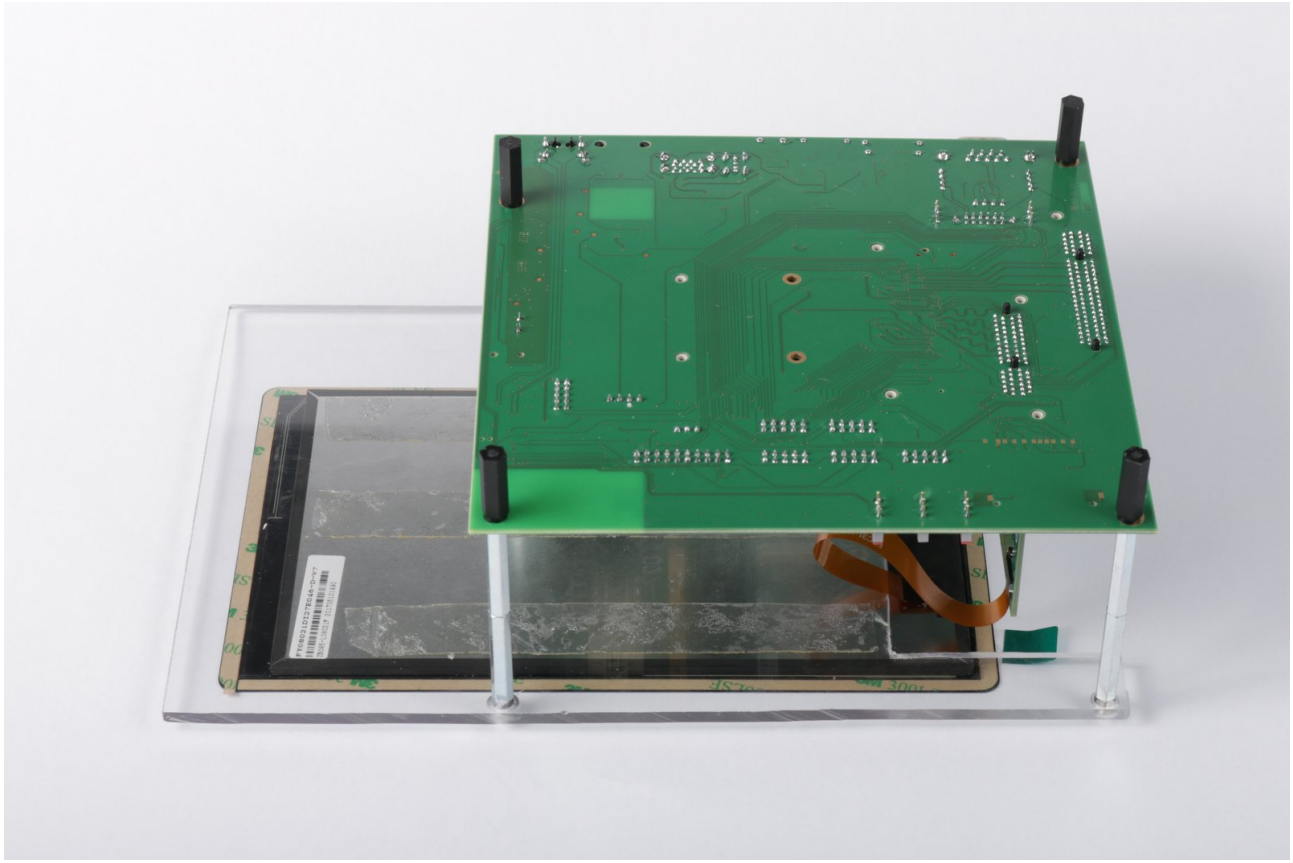

Fig. 1.6: M3 nuts that serve as feet for the Haikou baseboard

Step 5: Flip the setup around again. The result should look as seen in the photo.

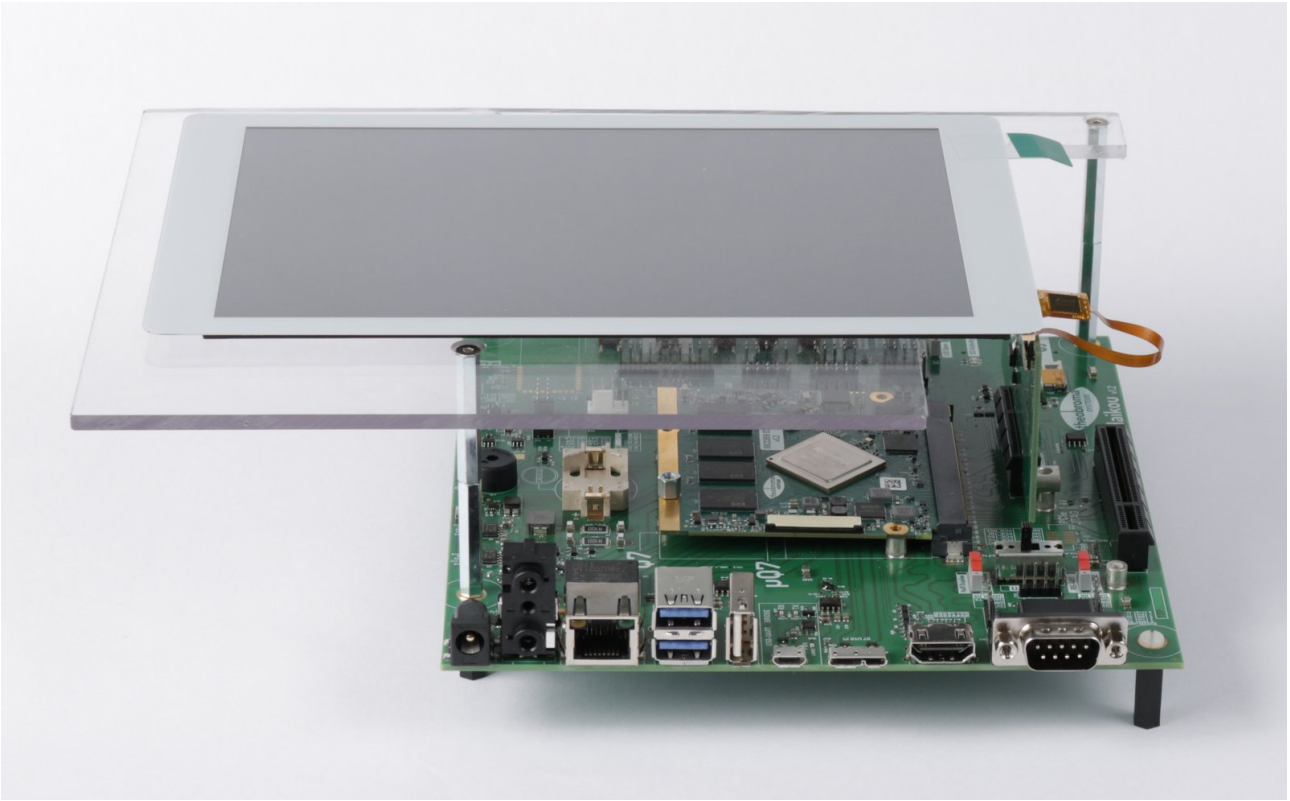

Fig. 1.7: Complete setup

1.3 Kernel Configuration

To enable display output to the DSI display, the correct DTB file must be used by Linux. The used file can be configured through the file `/boot/puma_rk3399/userEnv.txt`.

On the RK3399-Q7, open the file with an editor (for example, nano):

```
sudo nano /boot/puma_rk3399/userEnv.txt
```

Replace the linue:

```
fdtfile=rk3399-puma.dtb
```

with the line:

```
fdtfile=rk3399-puma-mipidsi.dtb
```

Save the file and exit the editor.

1.4 Touchscreen Firmware

A firmware file is loaded into the touchscreen controller at every power-up. The correct firmware file is called `ec080.fw` with the sha256 checksum shown below:

```
2e73bd80118fc6bea7b5fea941b06facb66e1f0338632775483c8fc6e16c1ea0  ec080.fw
```

You can obtain the firmware file by requesting it via email. Save it on the RK3399-Q7 under the following path:

```
/lib/firmware/silead/ec080.fw
```

1.5 Xorg Configuration

The touchscreen stays inactive unless enabled in `/etc/X11/xorg.conf.d/touchscreen.conf`.

On the RK3399-Q7, open the file with an editor (for example, nano):

```
sudo nano /etc/X11/xorg.conf.d/touchscreen.conf
```

and paste the text below:

```
Section "InputClass"
       Identifier      "touchscreen"
       MatchProduct    "silead_ts"
       Option "TransformationMatrix" "1.5 0 0 0 0.7 0 0 0 1"
EndSection
```

Save the file and exit the editor.

1.6 Reboot & Test

Reboot the RK3399-Q7 using:

```
reboot
```

Once the kernel has initialized the display controller (about 10 seconds into the boot), you should see the kernel boot messages on the display. The display manager starts a few seconds laters and you will be greeted by the familiar desktop environment.

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- Поставка образцов и прототипов;
- Техническая поддержка проекта;
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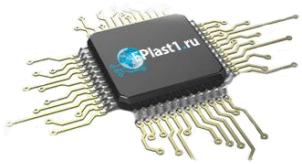

Как с нами связаться

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