This document describes how to use the DP141RLJ EVM. Throughout this user’s guide, the abbreviation EVM and the term evaluation module are synonymous with the DP141RLJ EVM, unless otherwise noted.

Contents

1 What is the DP141RLJ DFP EVM? ................................................................. 1
2 DP141RLJ EVM Features ........................................................................................................ 3
  2.1 Power .................................................................................................................. 3
  2.2 Connectors ........................................................................................................ 3
  2.3 EQ/Gain Test Config Headers ............................................................................ 4

List of Figures

1 DP141RLJ Block Diagram .............................................................................................. 2
2 DP141RLJ EVM ........................................................................................................ 2
3 DP141RLJ EVM Between Notebook and DP Monitor ....................................................... 3
4 DP141RLJ Between Dock and DP Monitor ................................................................. 3

1 What is the DP141RLJ DFP EVM?

The DP141RLJ EVM is designed to evaluate the DP141RLJ device at a system level using a standard DisplayPort connection. The EVM provides standard DP connectors which can be utilized to connect to a DisplayPort source or sink systems to evaluate DP141RLJ settings. PCB design files can be provided, upon request, to aid PCB design with the DP141RLJ. The layout files can be used as a guideline to implement the DP141RLJ with illustrations of the routing and placement rules. Note that the EVM design may include test components for evaluation purposes but not applicable for production.
What is the DP141RLJ DFP EVM?

Figure 1 illustrates the EVM block diagram.

The EVM can be configured to operate either in GPIO or I²C mode. In GPIO mode, test headers are provided to configure the input pins for EQ gain and VOD settings. In I²C mode, the I²C can be accessed through a 2 × 5 test header pinned out to match the Total Phase™ Aardvark™ I²C programming module.
2 DP141RLJ EVM Features

2.1 Power

2.1.1 Board Power

The EVM operates from the 5 V VBUS from Micro AB USB connection (J13). If using a non-USB external power supply is desired, either 5 V or 3.3 V can be provided via test headers provided on board: 5 V via TP3, 3.3 V via J11. It is important that only one power source is used, do not connect multiple sources at the same time.

2.1.2 DP PWR

The DP power can be passed through from the DP input connected via J9 or tied directly to 3P3V on the board. See Table 1 for DP PWR configuration via J12.

Table 1. Board Power Configuration

<table>
<thead>
<tr>
<th>Ref #</th>
<th>Name</th>
<th>Default Config</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>J11</td>
<td>3P3V</td>
<td>Open</td>
<td>Provided in case power is to be provided externally</td>
</tr>
<tr>
<td>J12</td>
<td>DP_PWR</td>
<td>Pin 2-3</td>
<td>Configures source for DP_PWR. Default is to use the DP_PWR input from J9.</td>
</tr>
</tbody>
</table>

2.2 Connectors

The EVM has two standard DisplayPort connectors: J9 and J10. J9 is intended to be connected to a DP source, J10 to a DP sink. Example configurations are illustrated in Figure 3 and Figure 4.

Note that the connection between DP Source and DP Branch/Dock does not have to be through a DisplayPort cable but other cable connections such as USB Type-C™.

Figure 3. DP141RLJ EVM Between Notebook and DP Monitor

Figure 4. DP141RLJ Between Dock and DP Monitor
2.3 **EQ/Gain Test Config Headers**

The DP141RLJ settings are configurable through the test configuration headers provided on the board. Table 2 summarizes the configuration setting. Refer to the SN65DP141 datasheet (SLLSES6) for the details on the device operation in different settings.

**Table 2. EQ/Gain Configuration**

<table>
<thead>
<tr>
<th>Ref #</th>
<th>Signal Name</th>
<th>Default Config</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>J1</td>
<td>DRV_PK#</td>
<td>Low - Enable DRV</td>
<td>Disable/Enable Driver peaking</td>
</tr>
<tr>
<td>J2</td>
<td>I2C_EN</td>
<td>Open - GPIO Mode</td>
<td>Configures device to operate in I²C or GPIO mode</td>
</tr>
<tr>
<td>J3</td>
<td>VOD</td>
<td>High - High VOD</td>
<td>Configures VOD mode - High or Low</td>
</tr>
<tr>
<td>J4</td>
<td>EQ0</td>
<td>Configurable</td>
<td>See datasheet for details</td>
</tr>
<tr>
<td>J5</td>
<td>EQ1</td>
<td>Configurable</td>
<td>See datasheet for details</td>
</tr>
<tr>
<td>J6</td>
<td>EQ_MODE</td>
<td>Open - Cable mode</td>
<td>Configures device to operate in Cable or Trace mode</td>
</tr>
<tr>
<td>J7</td>
<td>GAIN</td>
<td>Low or Open- See data sheet</td>
<td>Work with EQ0 and EQ1 to set total EQ gain</td>
</tr>
</tbody>
</table>
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This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

3.2 Canada

3.2.1 For EVMs issued with an Industry Canada Certificate of Conformance to RSS-210

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This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

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Concerning EVMs Including Detachable Antennas:

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication. This radio transmitter has been approved by Industry Canada to operate with the antenna types listed in the user guide with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Concernant les EVMs avec antennes détachables

Conformément à la réglementation d’Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d’un type et d’un gain maximal (ou inférieur) approuvé pour l’émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioc électrique à l’intention des autres utilisateurs, il faut choisir le type d’antenne et son gain de sorte que la puissance isotro percevant (p.i.r.e.) ne dépasse pas l’intensité nécessaire à l’établissement d’une communication satisfaisante. Le présent émetteur radio a été approuvé par Industrie Canada pour fonctionner avec les types d’antenne énumérés dans le manuel d’usage et ayant un gain admissible maximal et l’impédance requise pour chaque type d’antenne. Les types d’antenne non inclus dans cette liste, ou dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l’exploitation de l’émetteur.

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2. Use EVMs only after User obtains the license of Test Radio Station as provided in Radio Law of Japan with respect to EVMs, or

3. Use of EVMs only after User obtains the Technical Regulations Conformity Certification as provided in Radio Law of Japan with respect to EVMs. Also, do not transfer EVMs, unless User gives the same notice above to the transferee. Please note that if User does not follow the instructions above, User will be subject to penalties of Radio Law of Japan.
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<table>
<thead>
<tr>
<th>Audio</th>
<th>Amplifiers</th>
<th>Data Converters</th>
<th>DLP® Products</th>
<th>DSP</th>
<th>Clocks and Timers</th>
<th>Interface</th>
<th>Logic</th>
<th>Power Mgmt</th>
<th>Microcontrollers</th>
<th>RFID</th>
<th>OMAP Applications Processors</th>
<th>Wireless Connectivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applications</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Automotive and Transportation</td>
<td>Communications and Telecom</td>
<td>Computers and Peripherals</td>
<td>Consumer Electronics</td>
<td>Energy and Lighting</td>
<td>Industrial</td>
<td>Medical</td>
<td>Security</td>
<td>Space, Avionics and Defense</td>
<td>Video and Imaging</td>
<td>TI E2E Community</td>
<td>e2e.ti.com</td>
<td></td>
</tr>
</tbody>
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