AEM30940 RF 915 MHz
Quick Start Guide EVK

FEATURES

Connectors
• 1 SMA connector for input power below -10dBm [LOW]
• 1 SMA connector for input power above -10dBm [HIGH]
• 1 screw connector + 1 JST connector for the Storage Element
• 1 screw connector for Primary Battery
• 1 screw connector for HVOUT LDO output (80mA @ 1.8 – 4.2 V)
• 1 screw connector for LVOU LDO output (20mA @ 1.2 or 1.8 V)

Configuration
• 2 jumpers SELMMP[x] to define the MPPT ratio linked to the harvester technology
• 3 Jumpers CFG[x] to define the storage element protection levels
• 6 resistors footprint related to the custom mode (CFG[2:0]=000)
• 2 jumpers to enable/disable the internal LDOs
• 2 jumpers to define the primary battery minimum level
• 1 jumper to set the dual cell supercapacitor BAL feature
• 1 resistors footprint to use the ZMPP feature (constant impedance)

Size
• 79mm x 49mm
• 4 x M2.5 Mounting holes

SUPPORT PCB

BOM around the AEM30940

Matching network and RF rectifier schematic under NDA signature

Footprint & Symbol: Available on the web product page
**STEP 1: AEM30940 Configuration**

- **MPPT ratio**: SELMPP[0] – SELMPP[1]
  

- **BAL option**: Select “ToCn” for dual-cells supercapacitor and “GND” for any other storage

- **PRIM option**: Connect both jumpers “NoPRIM” or remove them if a primary battery is connected. Define the lower limit voltage on the primary battery using R7 and R8 (2.2V by default with the jumper and OR R7 mounted)
  
  - $100 \, \text{k}\Omega \leq RP \leq 500 \, \text{k}\Omega$
  
  - $R7 = \left( \frac{V_{prim\_min}}{4} \right) \times RP / 2.2 \, \text{V}$
  
  - $R9 = RP - R7$

- **ZMPP resistor footprint**

- **LDOs Outputs Voltages**: ENHV (HVOUT) – ENLV (LVOUT)

- **MATCHING NETWORK + RF RECTIFIER**: one matching for LOW input power (< -10 dBm) and another matching for HIGH input power (< +20 dBm)

**STEP 2**: Connect the Storage Element (and the Primary Battery)

**STEP 3**: Connect the Load(s) to HVOUT / LVOUT

**STEP 4**: Connect the antenna to the SMA connector

- Overall efficiency from the antenna to the storage element:

**STEP 5**: Check the Status

<table>
<thead>
<tr>
<th>Status pins</th>
<th>Description</th>
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<tbody>
<tr>
<td>STATUS[1]</td>
<td>20 Logic output. Asserted if the battery voltage falls below Vodis or if the AEM is taking energy from the primary battery.</td>
</tr>
<tr>
<td>STATUS[0]</td>
<td>21 Logic output. Asserted when the LDOs can be enabled.</td>
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