Visual & Electrical Inspection

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1 Visual Inspection:

The first inspection to perform is to check that the PCB fulfil the IPC-610 Class-2 regulation. This verification is complementary to the one realized by the PCB's assembler. If the person in charge of realizing the inspection, is not qualified in IPC regulations, we strongly recommended the use of the official IPC manual.

The following is a resume of the different points recommended to check:

1. General Clean Status
    - Flux Residues
    - Particulate Matter
    - White Residues
    - Surface Appearance
2. Soldering Anomalies:
    - Free solder balls
    - Excess Solder
    - Fractured Solder
3. Component Mounting
    - Orientation
    - THT Connectors
4. Supported Holes
    - THT pins length (<2.5mm)
5. Rectangular or Square Passive Components
    - Side Overhang
    - End Overhang
    - Fillet Height
    - End Overlap
    - Billboarding
    - Tombstoning
    - Mounting Upside Down
6. Rectangular or Square SMD Chips
    - Side Overhang
    - End Joint Width
    - Side Joint Length
    - Hell Fillet Height
7. PCB
    - Gold Surface Contact Area
    - Laminate Conditions
8. QSS Samtec connector pins

2 Functional Tests:

2.1 Short-circuit on main power supplies:

Before to plug the board to an external source, it is recommended to check the presence of short-circuit in the internal power supplies, especially the ones connected to the BGA chips. The test consist of a simple short-circuit check on the following decoupling capacitors:

1. +2V5 (C259)
2. +1V8 (C289)
3. +1V0 (C428)
4. +1V5 (C290)
5. +1V2_GTX (C247)
6. +1V0_GTX (C311)
7. +3V3 (C283)

Too quickly find these capacitors, a schema of the board has been included with the respective numbering.

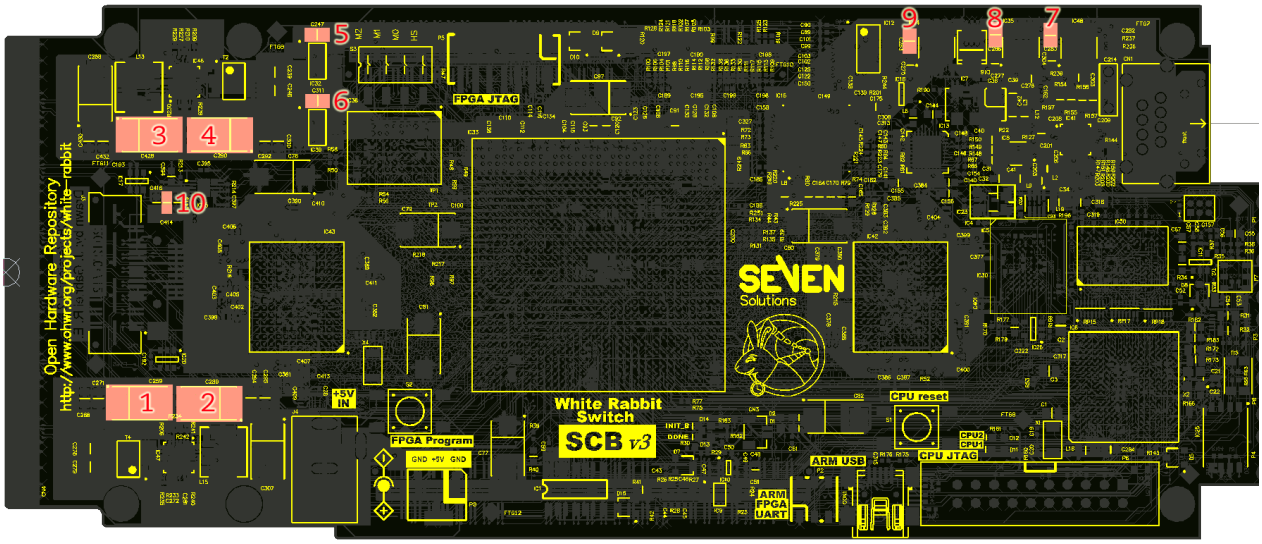

Figure 1: Voltage to check on various capacitors

2.2 Supply Current at 12V:

Once the short-circuit check has been executed, the board can be connected to the external power supply. The first thing to compare is the supply current which is normally of good indicator of initial problems. The supply current measured should be around `0.4A ±20%` including the miniBackplane consumption.

2.3 Power Supply Voltages:

Finally, it is necessary to check the internal power supply and to make sure that they are in their functional limits (±10%). The voltages that must be checked can be measured on the capacitors numbered in the previous figure and correspond to:

1. +2V5 (C259) => `2.5V±10%`
2. +1V8 (C289) => `1.8V±10%`
3. +1V0 (C428) => `1.0V±10%`
4. +1V5 (C290) => `1.5V±10%`
5. +1V2_GTX (C247) => `1.2V±10%`
6. +1V0_GTX C311) => `1.0V±10%`
7. +3V3 (C283) => `3.3V±10%`
8. +3V3_PLL (C266) => `3.3V±10%`
9. +2V5_PLL (C263) => `2.5V±10%`
10. QDRII_VTT (C414) => `0.9V±10%`