## Post-design engineering review

This review is done to ensure the quality of our services. It is performed by a third engineer not part of the PCB design, in an effort to reduce the failure probability.

**Disclaimer:**

All the expertise & knowledge of our team will be available at the client's request aimed to create the right device required by the client. Although we will do our best, fail is part of life and of product manufacturing too. Thus in case of any design failure, our responsibility will not cover the design charges, neither include the cost of components, manufacturing nor other damages related to the design.

**Schematics review:**

- Capable microcontroller. Checked

- Clock selection. Not Apply

- Correct values for clock capacitors. Not Apply

- Microcontroller power supply levels, bypass capacitors. Checked

- Communication interface. Checked

- Correct connections for communication pins (I2C, I2S, UART, CANBUS, RS485, etc.). Enable pins for selected communication protocol. Checked

- Power supply voltage, fuses, protection, ESD and type. Checked

- Diodes polarities, electrolytic caps polarity. Checked

- Transistor polarity, voltage/current capability. Checked

- Work voltage range for ICs. Checked

- Work voltage range for all other components. Checked

- Pin assignment for ICs. Checked

- Check voltage dividers calculations. Not Apply

-*Input devices*, buttons, switches, potentiometers, encoders, card readers, touch sensors, keyboard, pointers, any kind of sensors, etc. Not Apply

- supply for sensors. Not Apply

-*Output devices*, LEDs, speakers, sounds, actuators, screens (OLED, LCD, GLCD, 7-segments…), motors, heaters, etc. Checked

- Supply for output devices *power supply type and capability.*  Not Apply

-Batteries, (alkaline, Li-Po, LIo2Cl, Li-Ion, Lead acid) 1.5V, 6V, 9V, 12V... Not Apply

-DC adapter (voltage and current capacity). Checked

-AC (110Vac, 120Vac, 220Vac…) over-voltage protection. Not Apply

-Charging circuit. Not Apply

-*Communications* (Wi-Fi, Bluetooth, BLE, RF, IR), links to external sensors or interaction with other devices. Working range. Checked

- Shield connectors with RC filter (USB, RJ45, HDMI, etc.). Checked

-*Working levels*, voltages, Power. (3V3, 5V). Checked

**PCB review:**

- The PCB design meets the capabilities of the manufacturers (JLCPCB, PCBWay, AllPCB, NextPCB, etc.). Checked

- BOM review correct field filling. Checked

- Datasheet and component matching, Part number matching footprint. Checked.

- Second revision of the BOM, the footprints coincide with the Mfg PN, the prices are correct, there is enough stock, etc. Checked

- BOM correct values to PN Checked

- Footprint verification against Datasheet. Measurement on PCB. Check pads distances, Thermal pads, pin assignment. Checked

- No Pocket tracks. Checked

- Correct track width according to current. Checked

- Correct track space according to the voltage. Checked

- Correct via diameter according to current. Checked

- Correct use of fill zones for power lines. Not Apply

- Connectors for the right use. Checked

- Differential Pair routing for data pins to USB interface and connector. Checked

- Impedance calculation for transmission lines (antennas). Not Apply

- Antennas routed according to the "PCB Layout" section of the data sheet. Checked

- DRC run again. Checked

- Space for heat-sinks. Not Apply

- Correct position of the logo or logos. If no logo client must approve it. Checked

- Correct labels located on the silkscreen, indicate polarities, function of each pin in the connectors, name of each connector, voltages, current, sizes >1mm, etc. Checked

**Mechanical review:**

- PCB size and quantity. Checked

- Retention notches or holes. Checked

- Screw holes, screw type. Checked

- Retention nails etc. Checked Not requested

- Inputs and output connectors with drill or media communications connectors. Checked

**Firmware requirements:**

- Schematic is approved for firmware functions.

- Interrupt routines to enabled pin. Checked

- PWM devices to PWM enabled pins. Not Apply

- Microcontroller as per client reference. Checked

- Each microcontroller pin fulfills its assigned function. Checked

- Correct clock speed according to VCC. Not Apply

- Verify ram uses below 70%. Checked Not requested

Done By

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06/06/2021