F3 Wireless Schematic Review

MS01: EMI/EMC Review

EMI/EMC performance is easier to address the closer you are to the start of your project. A quick schematic review by an experienced RF Engineer can save you weeks or months of work later. Any digital device offered for sale legally must be compliant with government regulations regarding Unintentional Radiator, Radiated Spurious Emissions (RSE). Devices that are not compliant run the risk of a complaint leading to legal action or worse, customers experiencing the device interfering with their other products.

Customer Deliverables

The schematic review deliverable is a written list of specific feedback to minimize risk of RSE based on RF best practices. EMI/EMC schematic review is a service where one of the F3 Wireless RF Engineers reviews your schematics and provides feedback based on our extensive experience in dealing with unintentional RF spurious emissions. You will get a written list of specific feedback for each section of your schematic. This service is limited in scope to 1 PCB with up to 30 placements, but more complex devices can be accommodated as described in the service data sheet. With this knowledge, you will know what to look for and avoid being surprised late in the project by something you didn't know would be a problem.

Process & Requirements

- We can start on your microservice as soon as you send the required documentation
- We will need schematics to review in the form of a pdf (or native Altium files if possible) along with a bill of materials
- Once we have processed the service, we will deliver your schematics report (example below) within 7 business days

Some examples that cause problems:	**This service will help you:**
• CPU clocks and PLLs • Memory buses • Communication interfaces • Switching power supplies • AC control circuits	• Know your sources of risk before you build your first prototype • Have specific mitigations in place from the start to minimize what has to be fixed later • Have an unbiased source for assistance for your whole device, not just specific parts

F3 Wireless

MS01: EMI/EMC Review Report Example

Content

1. Introduction

Wireless has been commissioned to perform a schematic review. The review is based on RF best practices and years of experience deploying and certifying wireless devices.

2. References

Document Name	Description	Date
XXX.pdf	Schematic Rev 01	

3. System Description

Here the system is described. For example, large pieces of the block diagram, use cases and regions to be marketed.

4. Schematic Review

The schematics have been reviewed for RF best practices. Our recommendations are based on years of experience working with IoT devices and knowing what it takes to build a successful wireless product that will pass all certifications. It is strongly encouraged that all recommendations are followed.

Page 1 – Main Block Diagram

- No changes.

Page 2 – CAN Interface

- Add 47pF shunt capacitors to ground at J1_1 and U6_3.

Page 3 – System and Power Signals

- Add SMT shield over U6 and associated components.

Page 4 – JTAG and USB

- No changes

Page

5 -

Peripheral Signals

- No changes

Page 6 – System Boot Config

- No changes

Page 7 – eMMC Circuit

- No changes

Page 8 – WiFi Dual-Band I

- Update matching components to the following:
  - C88 – 12nH L-07C12NJV6T
  - C83 – 2.0pF 500R07S2R0BV4T
  - C87 – DNP
  - C89 – 0.5pF GRM0335C1HR50BA01D
  - L8 – 1.5pF 500R07S1R5BV4T
  - C93 – 2.2nH L-07C2N2SV6T
  - C91 – DNP
  - C81 – 2.0pF GRM0335C1E2R0CA01D
  - L9 – 1.5pF 500R07S1R5BV4T
  - C115 – 2.2nH L-07C2N2SV6T
  - C113 – DNP
  - C99 – 1.0pF GJM0335C1E1R0BB01D
  - C111 – 0.4pF GJM0335C1HR40WB01D
  - C102 – 0 ohm
  - C109 – 3.6pF 500R07S3R6BV4T
  - If not called out, do not change

Page 9 – WiFi Dual-Band II

- No changes

Page 10 – Interface Board

- No changes

5. Conclusion

In summary…