



ENGINEERING NOTE	20230721
Subject:	Secure Compute Module, Motherboard, USB Power
Date:	21 July 2023
Author:	EB
Applies to:	Motherboard Z800-01-001-X2, A1

1. Zymbit Motherboard USB Design

The Zymbit motherboard (PN: Z800-01-000) is designed to operate with high powered USB devices, even those higher than the USB specification. One tradeoff of this design decision is limited spike (inrush current) protection. Therefore, users should be cautious to avoid 'hot plugging' devices with high inrush current, or non-USB-compliant, while the motherboard is powered on, otherwise this can result in a reboot in the controlling device.

2. Reboot Cases

- Plugging in high powered devices while the motherboard (Z800-01-000) with a Zymbit Secure Compute module is powered on. (E.g. SSD drives, NVMe to USB devices etc.)
- Plugging in USB-C devices (require 5V 3A by specification) while the motherboard (Z800-01-000) with a Zymbit Secure Compute module is powered on.
- Devices not within the USB specification might experience a reboot.
- Establishing connections between devices with different grounding reference points – such as high power equipment.

3. Short Term Mitigation Steps

- Plug in USB devices while motherboard (Z800-01-000) and controlling device are powered off.
- Use an externally powered USB hub.
- Do not 'hot plug in' high inrush current devices.
- Do not 'hot plug in' USB-C devices.

4. Long Term Mitigation Plan

Future Zymbit hardware has been designed to address this issue while maintaining the ability to operate with high inrush current USB devices.

5. END