

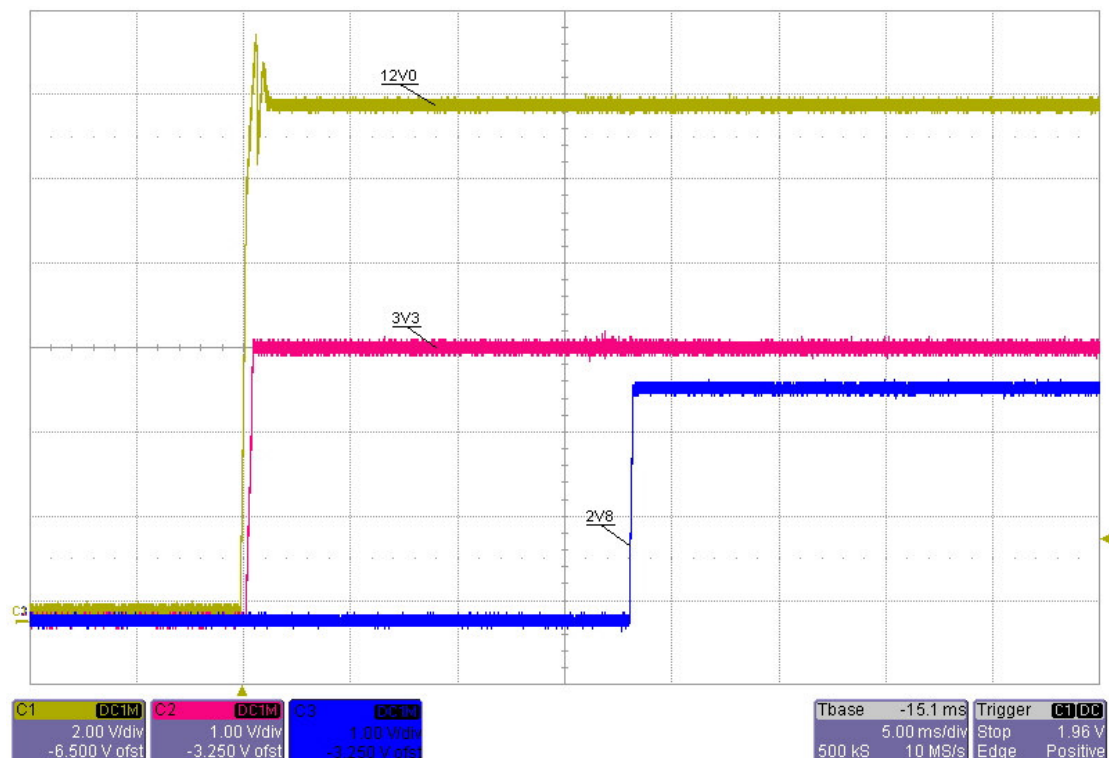
PoE interface with battery charger and uC-supply

- PoE interface: TPS23757PW
- Battery charger: BQ24753
- uC-Supply: TPS62110, TPS76928, TPS62231, TPS62232, TPS62290
- Sequencer/voltage supervisor: TPS386000
- PoE input voltage: 35 ... 57V → output 12V @ 1.08A
- Ext. adapter: 12V → output 12V @ 0.6A
- Ext. adapter: 24V → output 12V @ 1.08A
- Built on PMP4745RevB

1 Startup

The startup waveform is shown below. The input voltage is set at 24.0V (external adapter), with no load on the outputs.

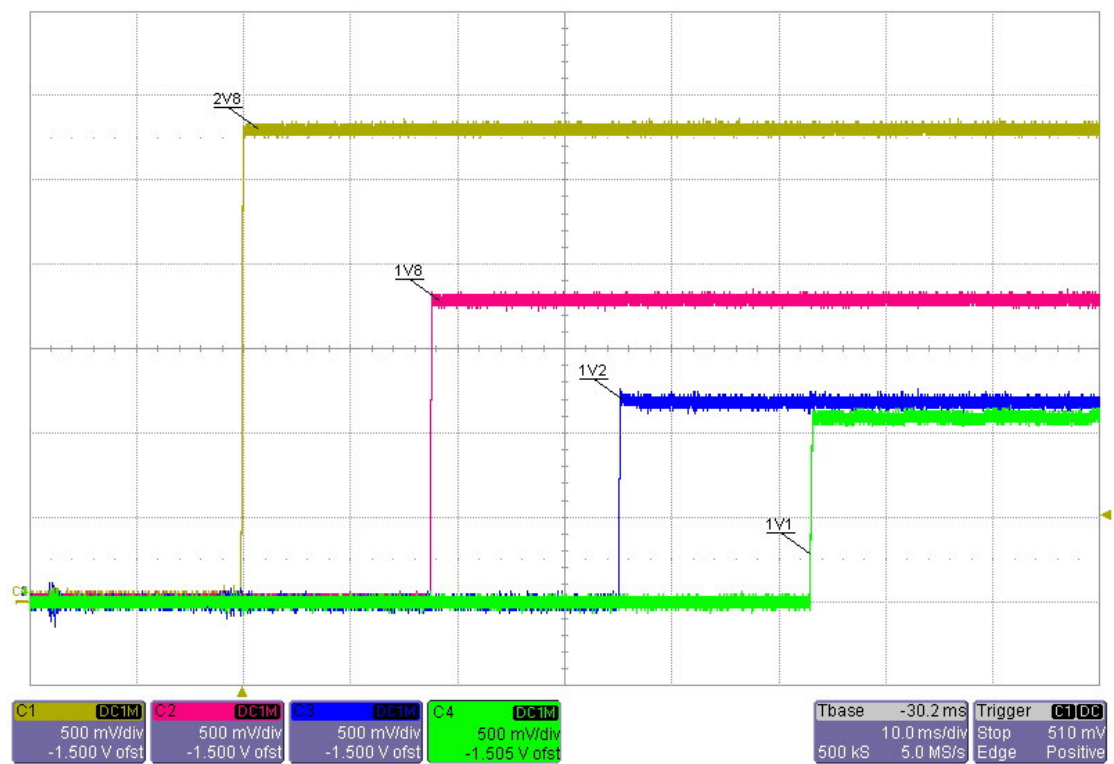
- Channel C1: **output voltage, 12.0V**
2V/div, 5ms/div
- Channel C2: **output voltage, 3.3V**
1V/div, 5ms/div
- Channel C3: **output voltage, 2.8V**
1V/div, 5ms/div



2 Sequencing

The sequencing is shown below.

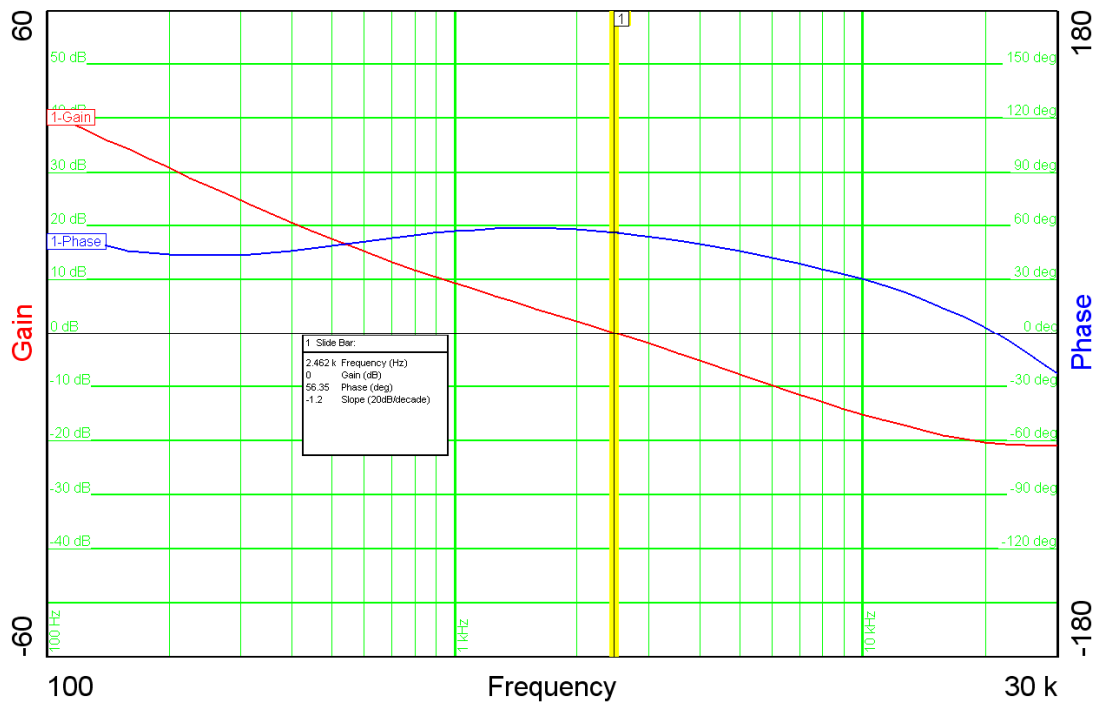
- Channel C1: **output voltage, 2.8V**
500mV/div, 10ms/div
- Channel C2: **output voltage, 1.8V**
500mV/div, 10ms/div
- Channel C3: **output voltage, 1.2V**
500mV/div, 10ms/div
- Channel C4: **output voltage, 1.1V**
500mV/div, 10ms/div



3 Loop regulation – PoE interface (Flyback)

The loop regulation of the PoE interface is shown below.

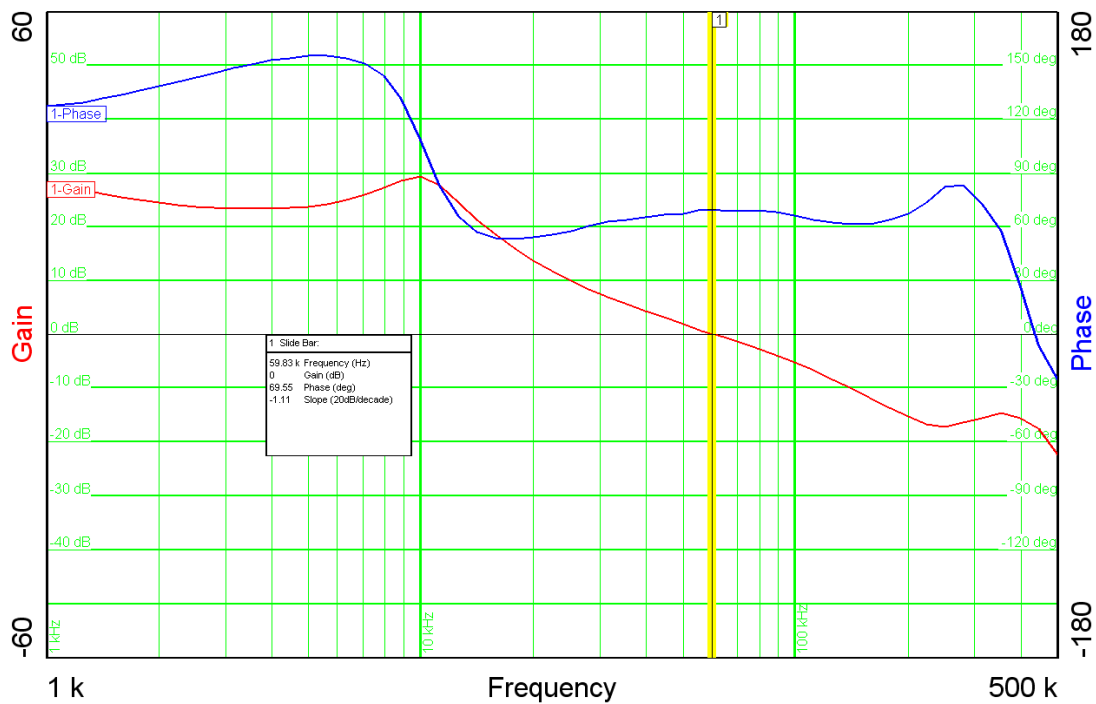
- Input voltage: 24V via external adapter
- Load: 1.0A
- Crossover frequency: 2.46 kHz
- Phase margin: 56 deg



4 Loop regulation – 3.3V buck converter

The load regulation of the 3.3V buck converter is shown below.

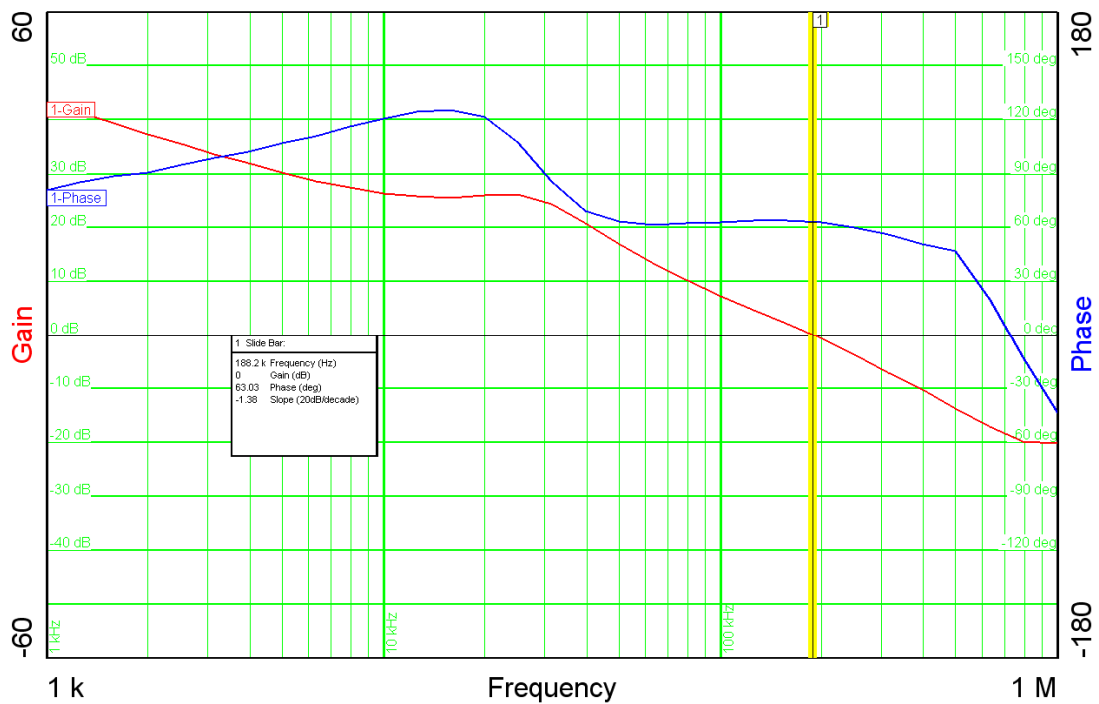
- Load: 0.36A
- Crossover frequency: 59.8 kHz
- Phase margin: 70 deg



5 Loop regulation – 1.8V buck converter

The load regulation of the 1.8V buck converter is shown below.

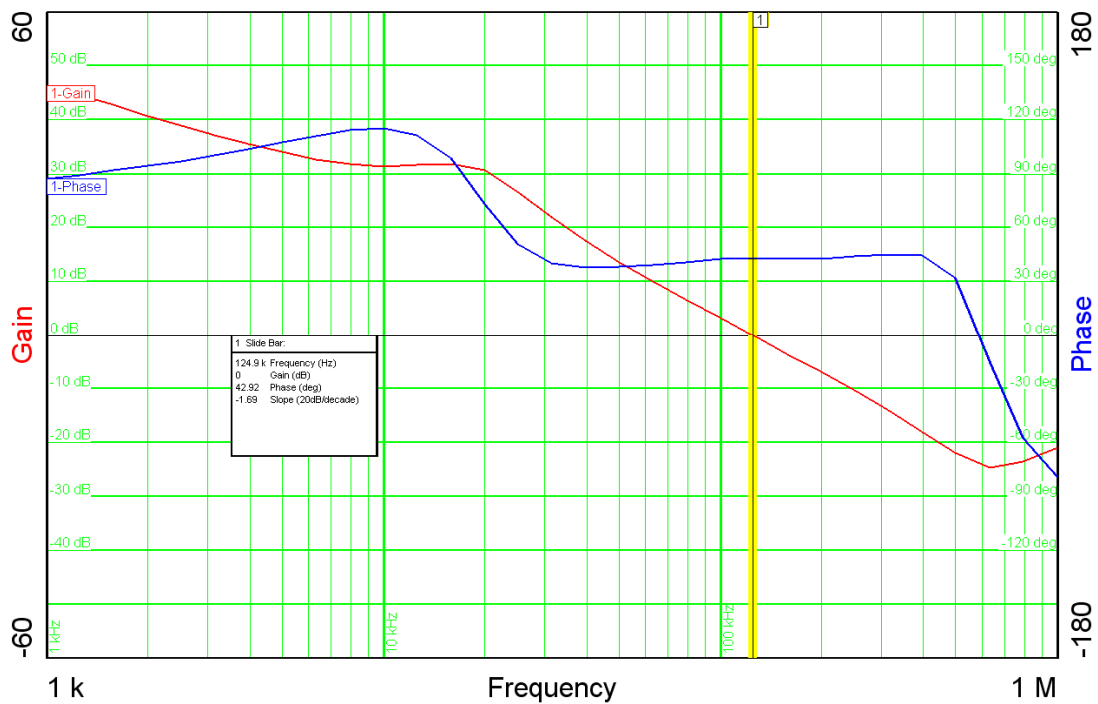
- Load: 0.3A
- Crossover frequency: 188.2 kHz
- Phase margin: 63 deg



6 Loop regulation – 1.2V buck converter

The load regulation of the 1.2V buck converter is shown below.

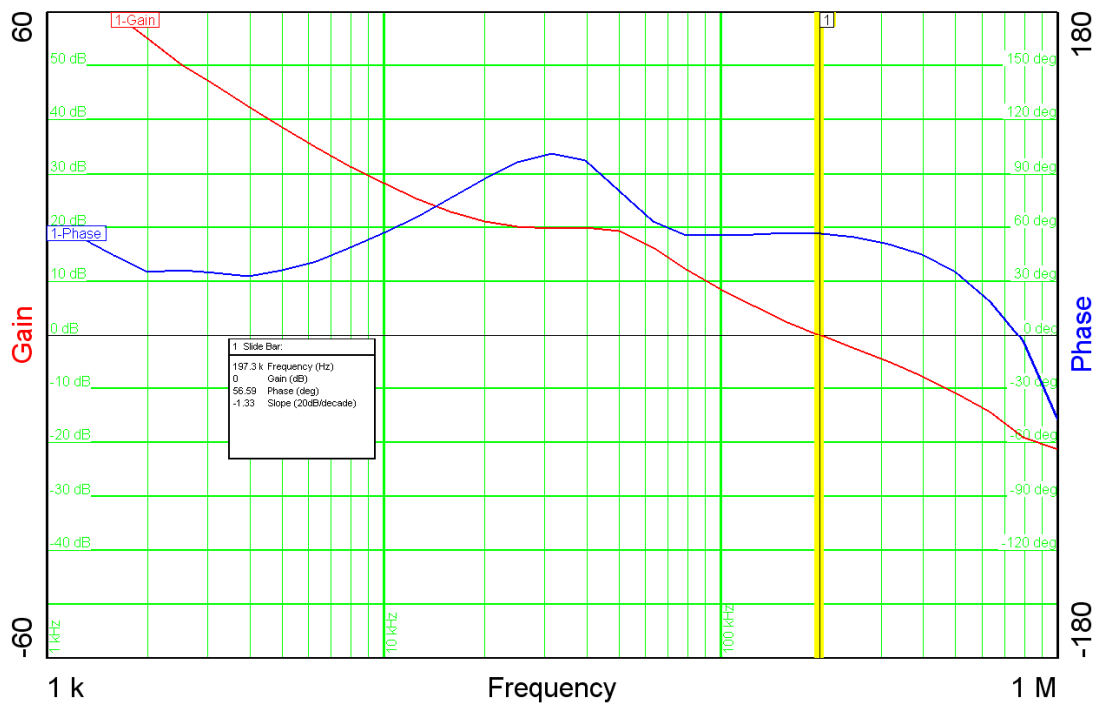
- Load: 0.2A
- Crossover frequency: 124.9 kHz
- Phase margin: 50 deg



7 Loop regulation – 1.1V buck converter

The load regulation of the 1.1V buck converter is shown below.

- Load: 0.6A
- Crossover frequency: 197.3 kHz
- Phase margin: 57 deg



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