

IEEE 802.3af DTE Power via MDI

Audio Interference

AD HOC A.I. 3.1

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Test objectives

- Testing Audio noise and other effects on PD performance due to ac disconnect detection signal
- To confirm theoretical and simulated predictions
(described in “PD power supply vout to vin noise rejection ratio - AD HOC item 5_4)



Test setup

- PSE system connected to a PD through 0m, 100m, 120m CAT5 cable
- AC disconnect signal parameters:
 - Frequency: 50Hz to 500Hz
 - Amplitude: 4.4Vpp at full frequency range measured across the port for open port
- Spectrum Analyzer was connected to PD power supply output and to Audio output device.
- Repeat test for PSE port with 500mVpp/500Hz ripple superimposed on 48Vdc source.



Test Results – AC disconnect signal

- AC voltage at PD input when connected to PSE = 2mV
- AC voltage at PD power supply output= close to zero
 - Min 40dB-50dB output/input rejection is typical value at 100Hz for a 48V to 5V DC/DC converter.
- No audio noise detected.
- LCD stays without changes (Visual inspection)



Test Results – PSE power supply ripple

- AC voltage at PD input = 500mV/500Hz
- AC voltage at PD power supply output = 1.5mVpp
 - Min 30dB-40dB output/input rejection is typical value at 500Hz for a 48V to 5V DC/DC converter.

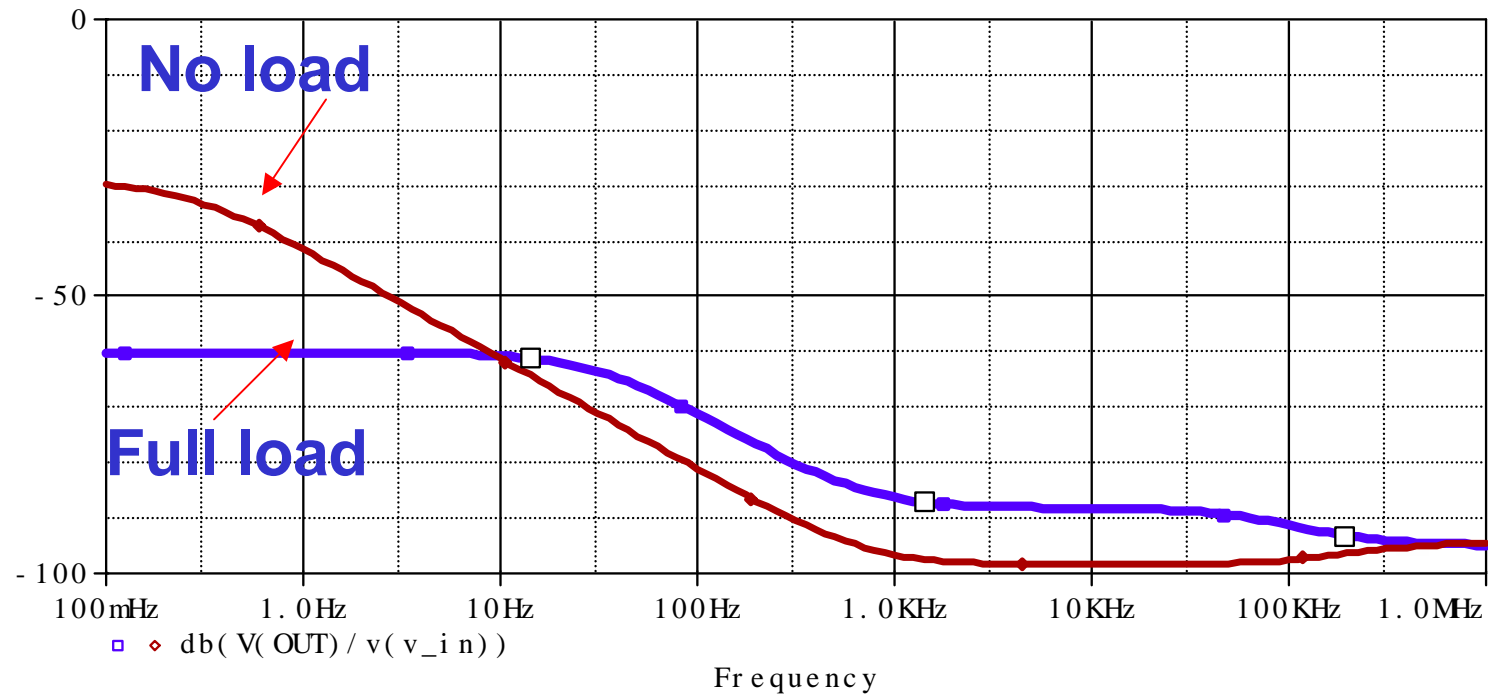


Summary and Conclusions

- Audio interference
 - No issue for ac disconnect probing signal at frequencies up to 500Hz
 - No issue for PSE power supply output ripple at 500mV/500Hz



Annex A: PD Power supply Vout/Vin ripple rejection Flyback, Current Mode type



Annex B: PD power supply ripple rejection ratio -Flyback, Voltage Mode type

