TIDA-00572
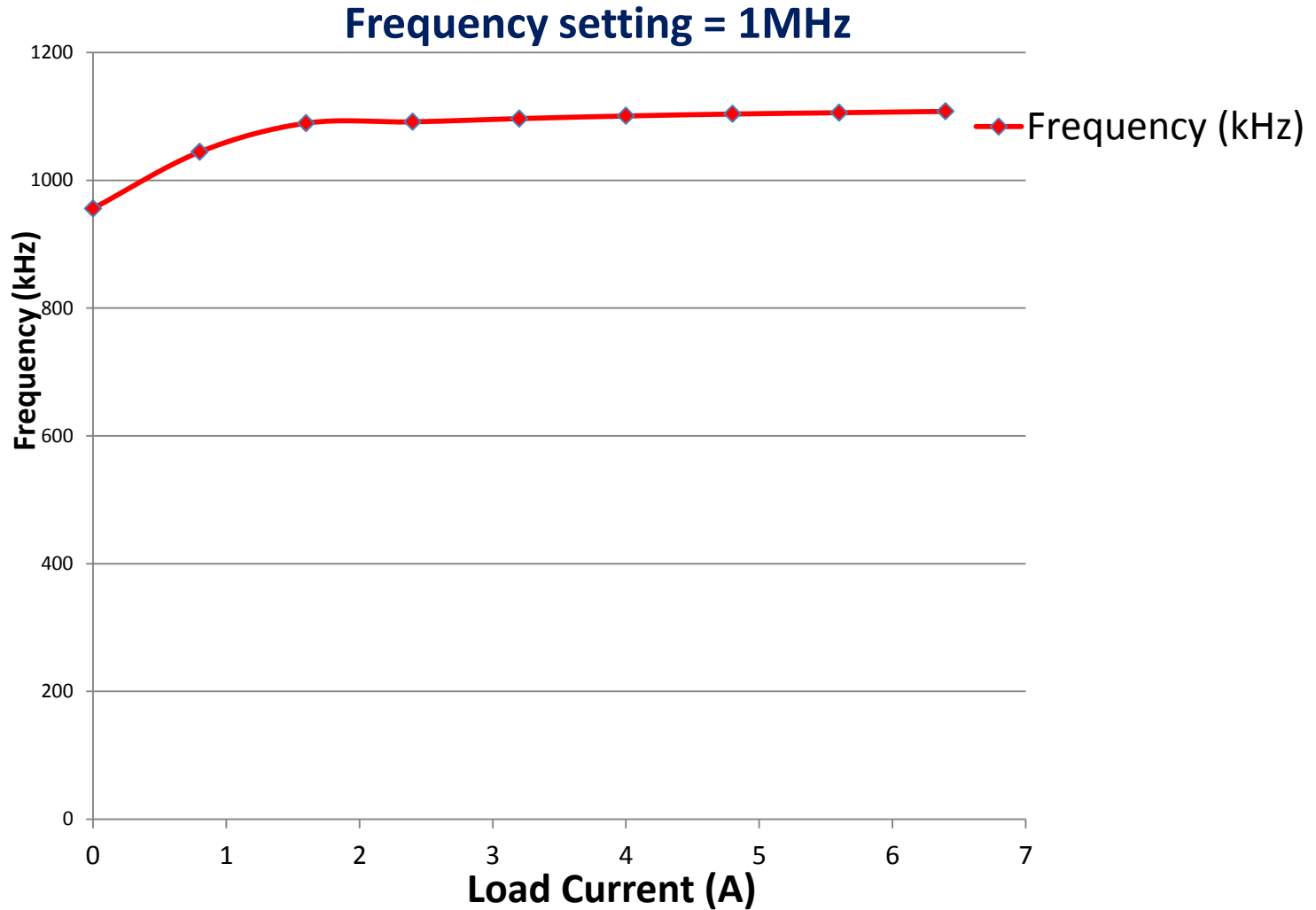# Test Report

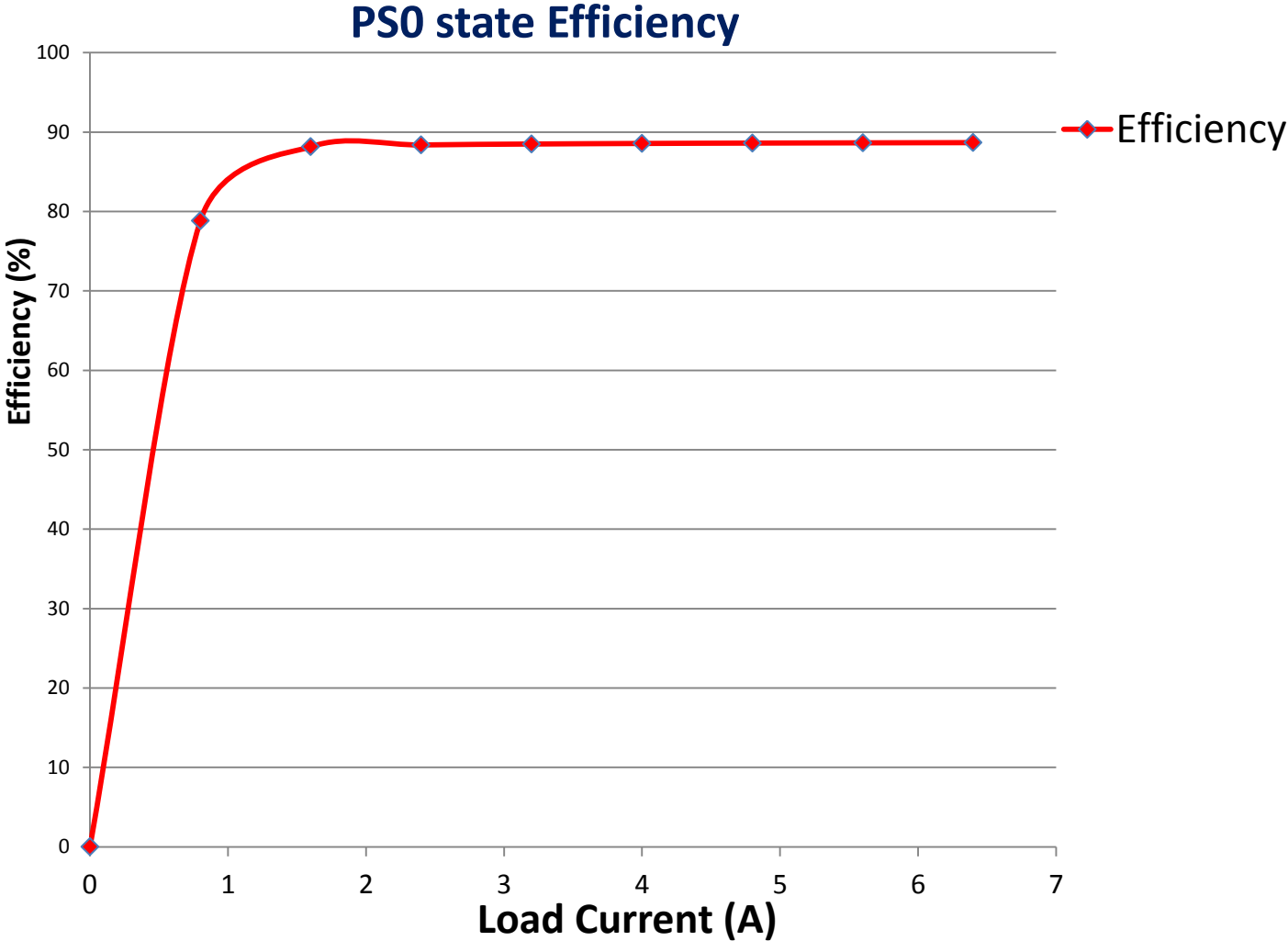TPS51623 Intel® Pentium™ N3700

VCC0+VCC1 rail design

PVCCP- Configuration

- 1-phase mode
- MOSFET: TI Power Stage: CSD97374Q4M
- Inductor: 0.67uH,3.6mohm
- Output Capacitor:
- ➢ Ceramic: 30x22uF
- Max VCC0+VCC1 Current: 6.4A
- Frequency: 1MHz
- Zero Load-line
- Ramp 100mV
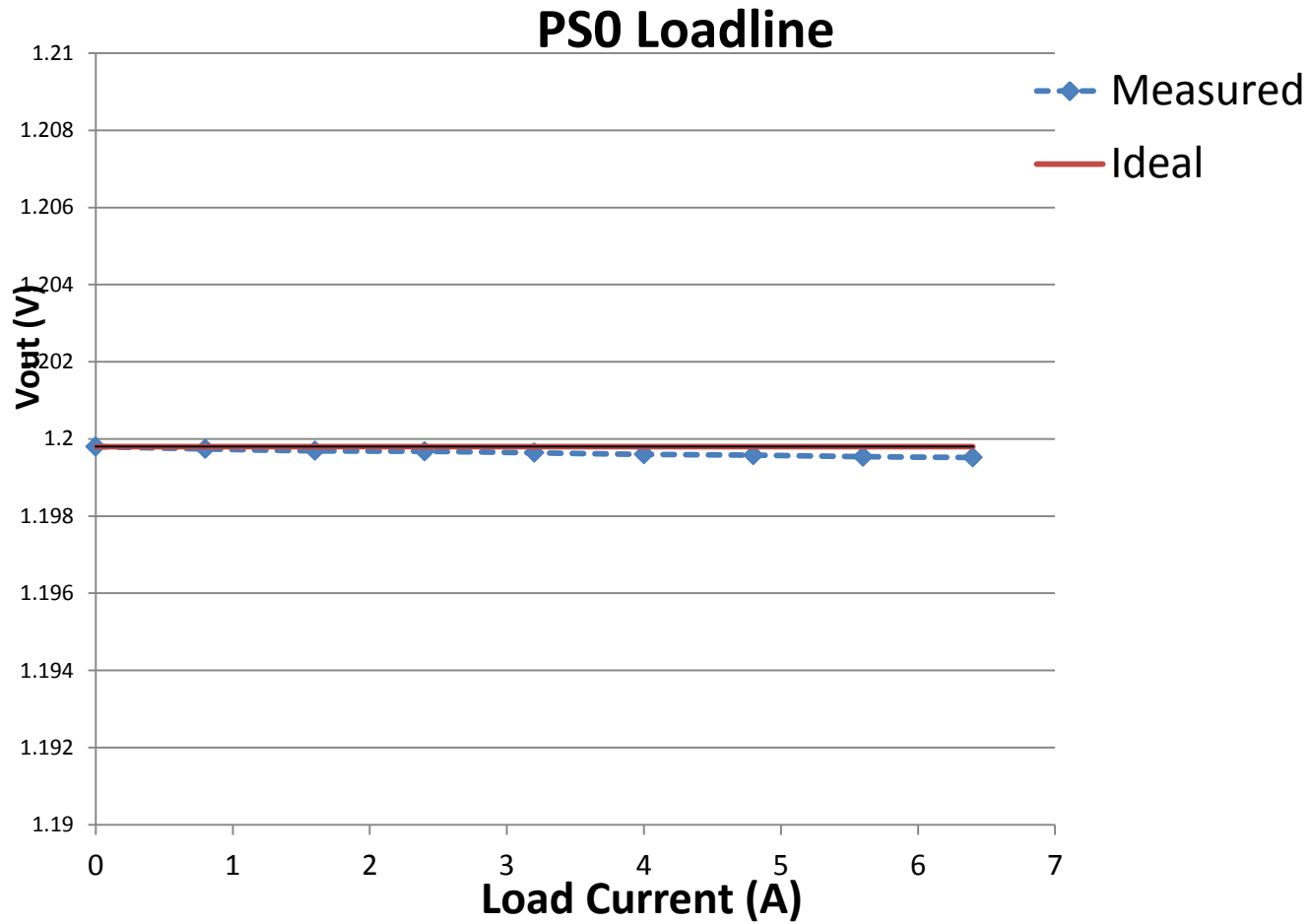- OSR disabled
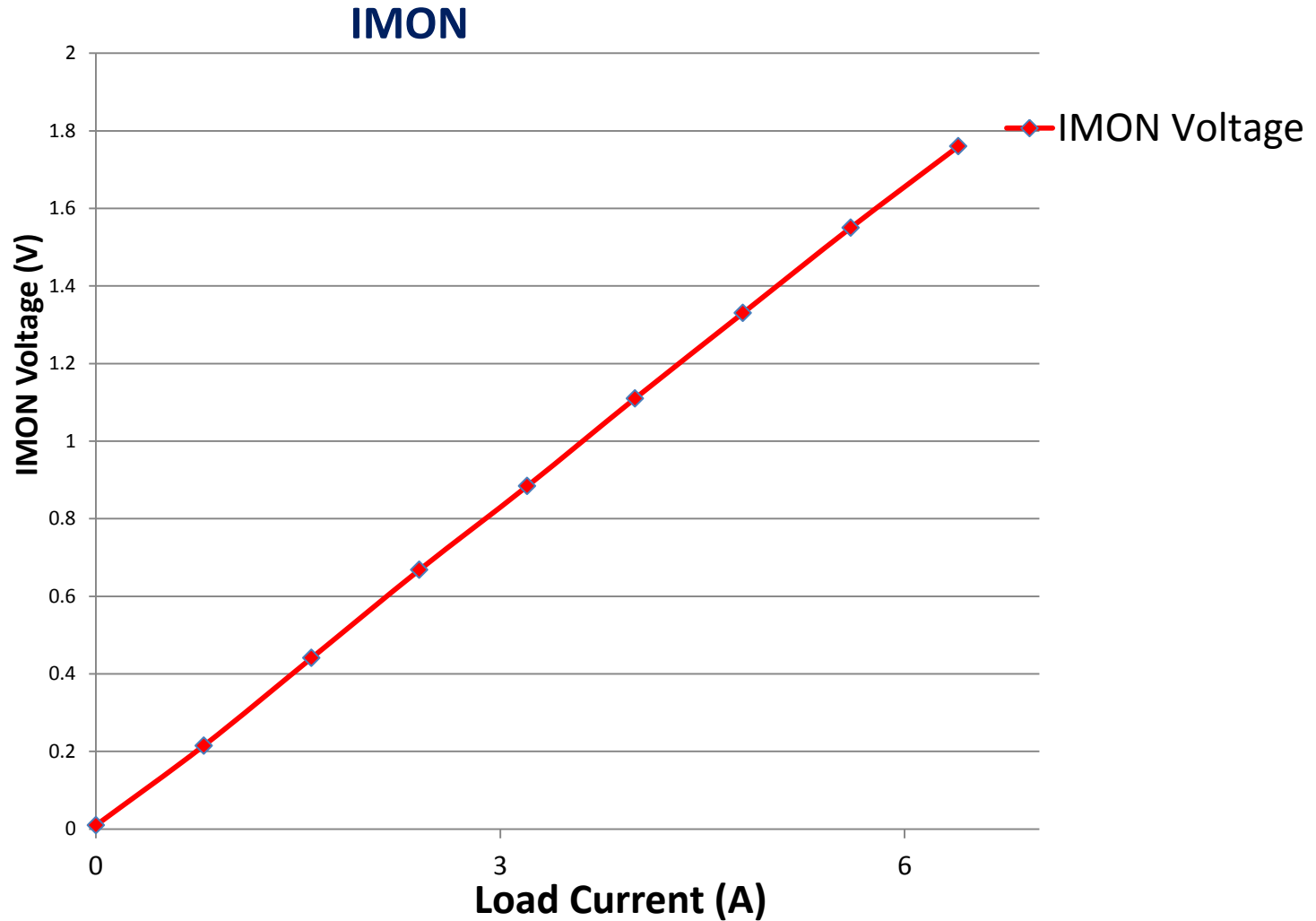- Slew Rate: 10mV/us

Frequency Variation

Frequency setting = 1MHz
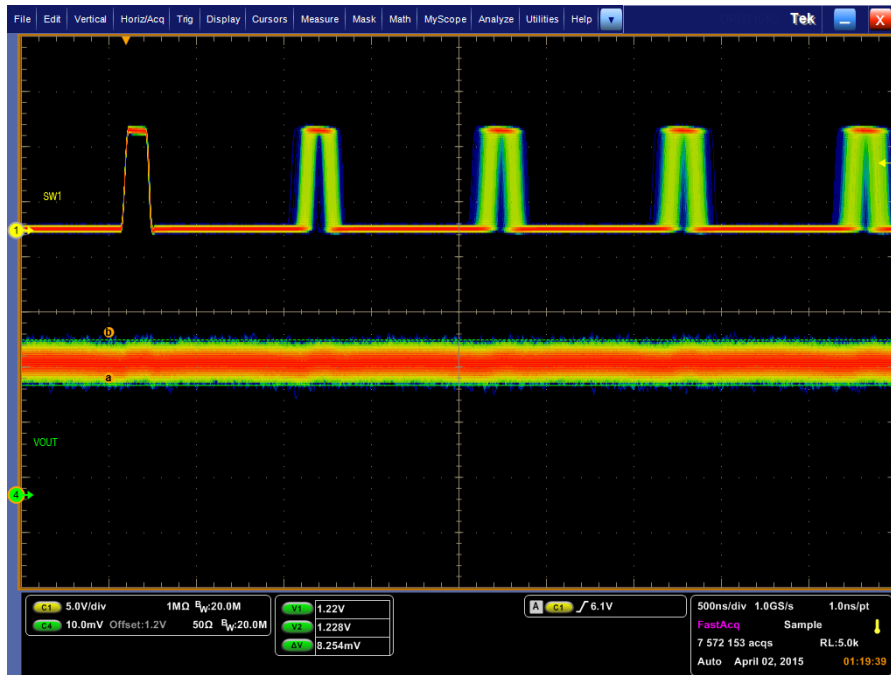
PS0 Efficiency

PS0 state Efficiency

Loadline

Analog Current Monitor Output (IMON)

Ripple and jitter (PS0 state, limit +/-10mV)
Vin 9V

Load 0A
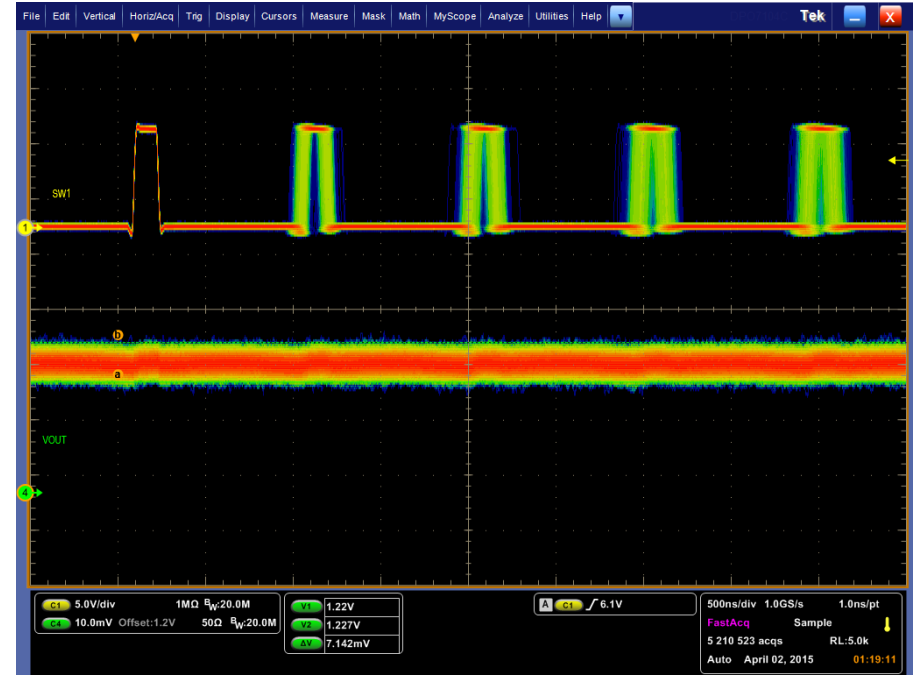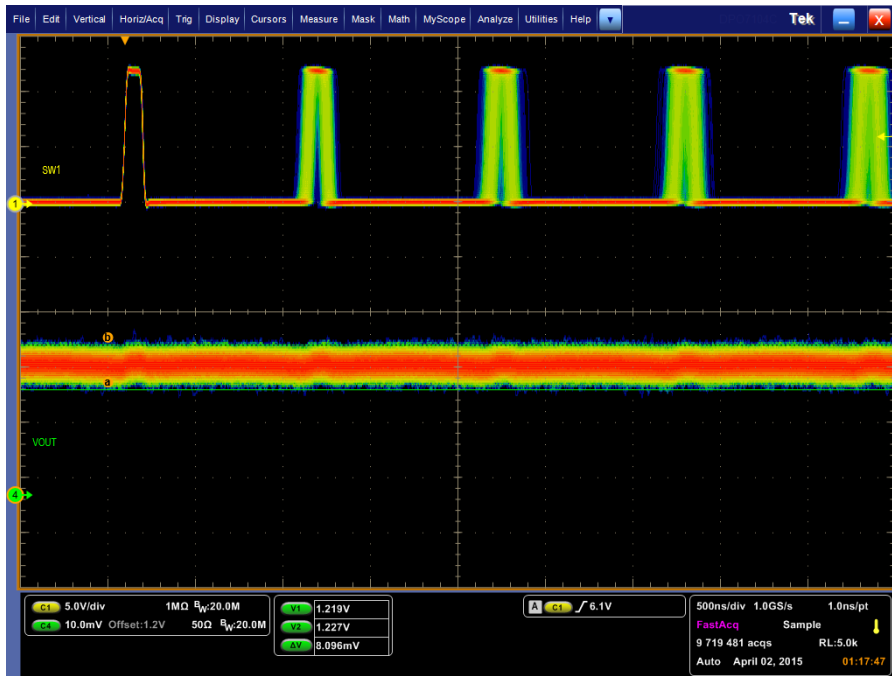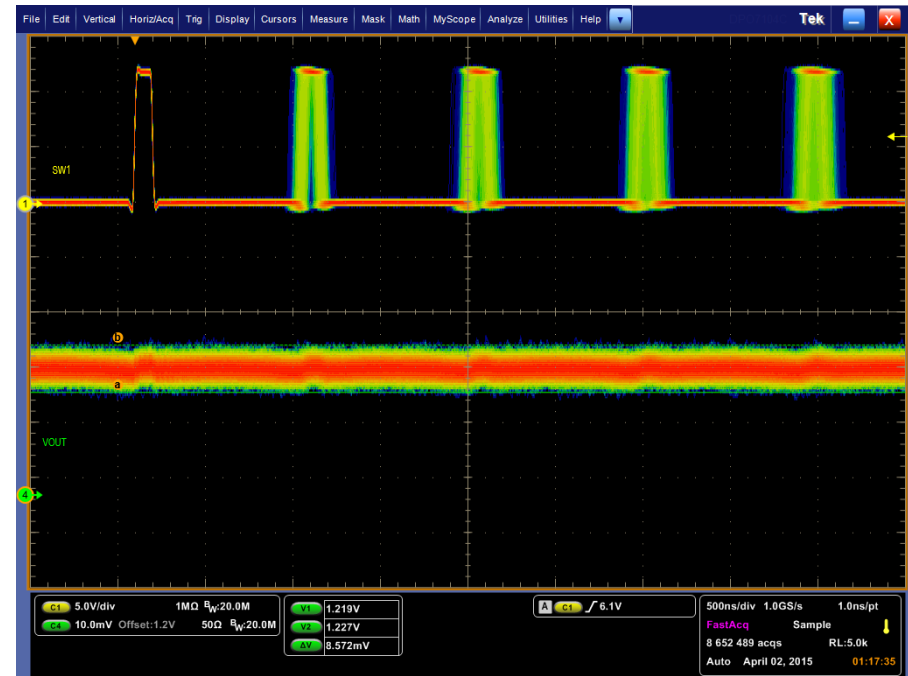**Ripple(pk-pk): 8mV**

Load 6A
Ripple(pk-pk): 7.1mV

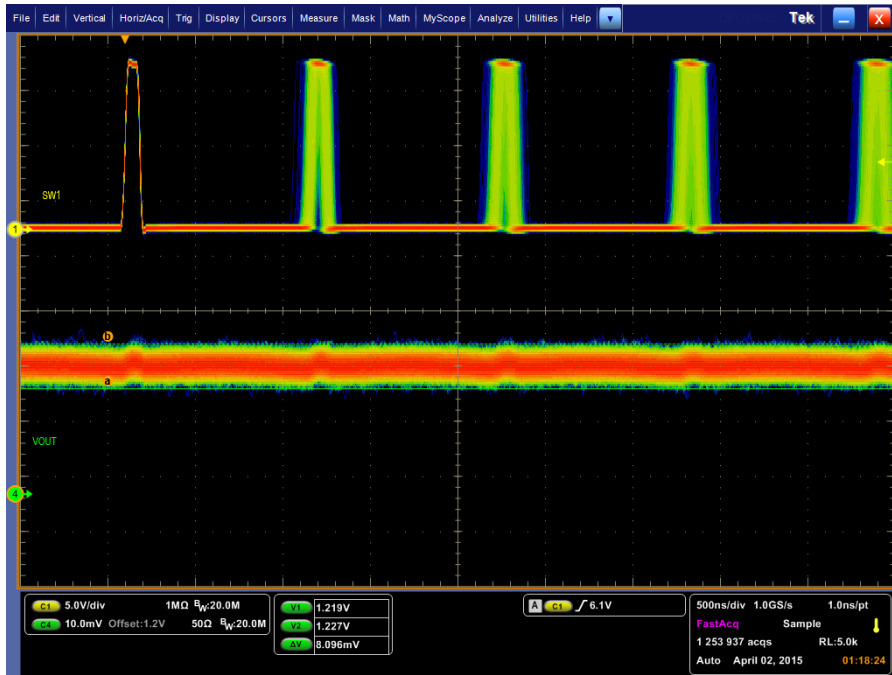# Ripple and jitter (PS0 state, limit: +/- 10mV)
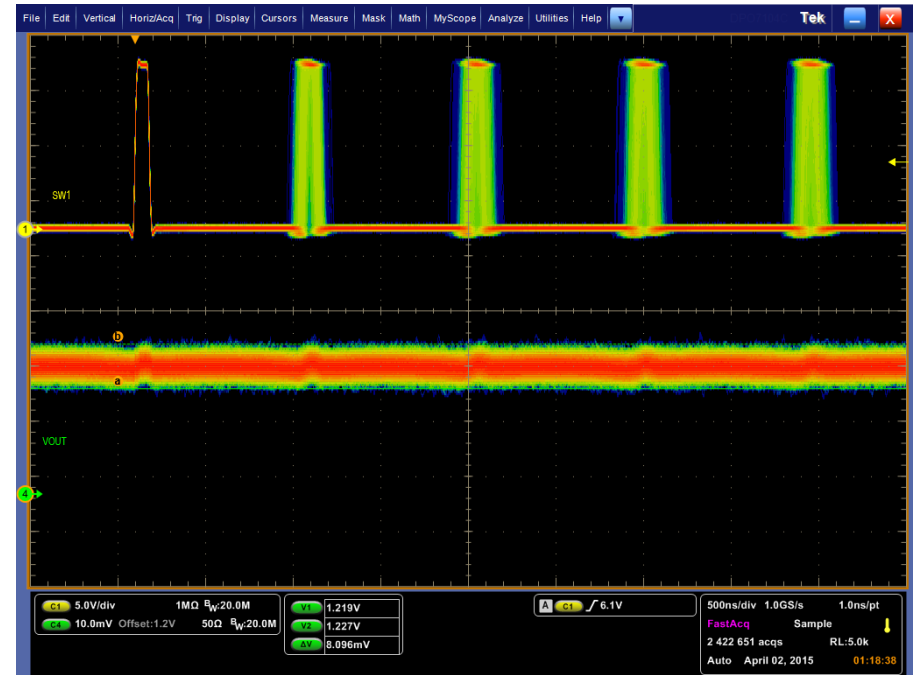# Vin 12V

Load 0A
Ripple(pk-pk): 8mV

Load 6A
Ripple(pk-pk): 8mV
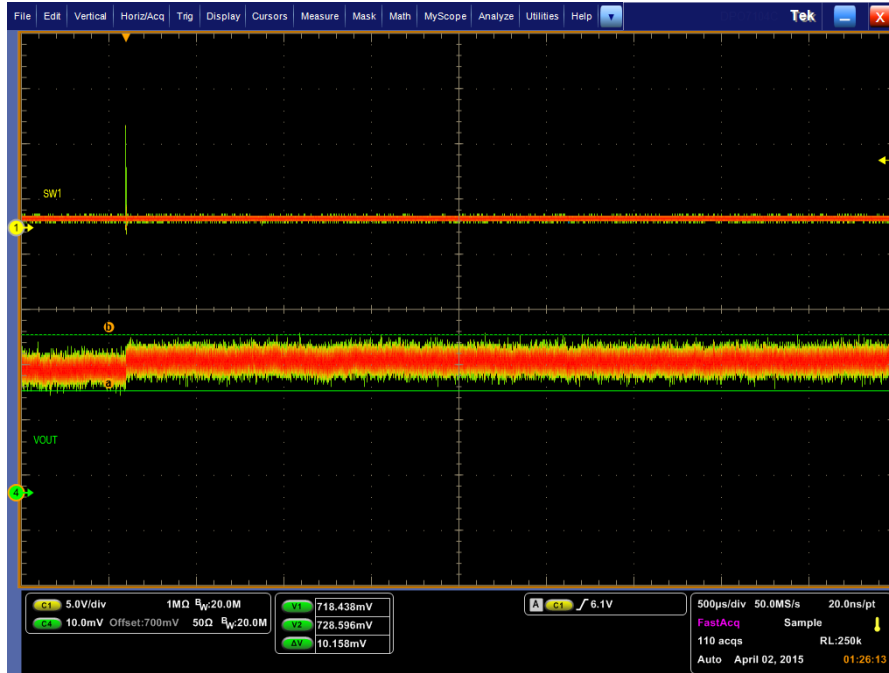
Ripple and jitter (PS0 state, limit: +/- 10mV)
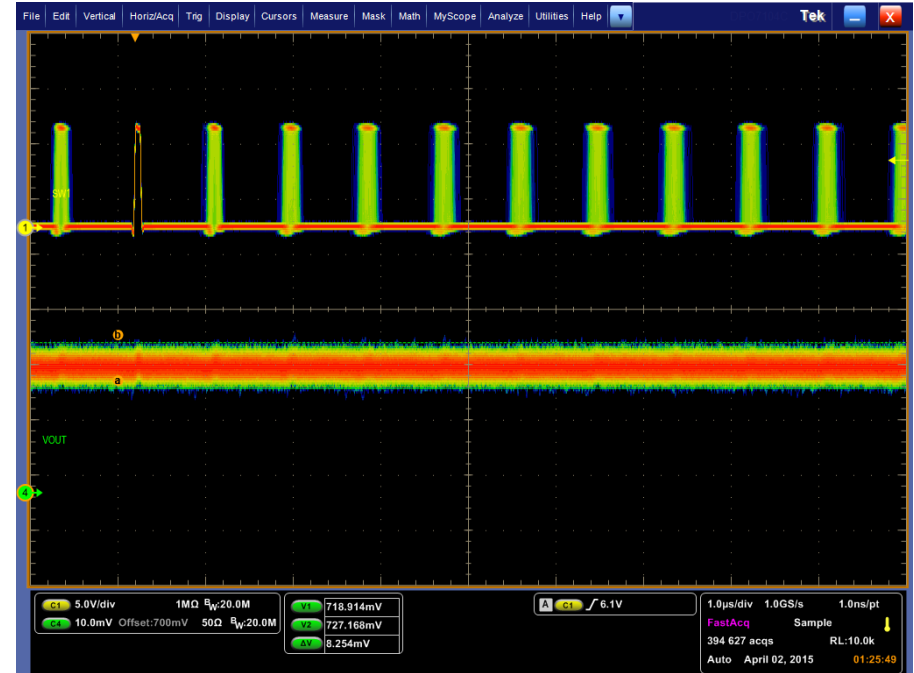## Vin 15V

Load 0A
Ripple(pk-pk): 8mV

Load 6A
Ripple(pk-pk): 8mV

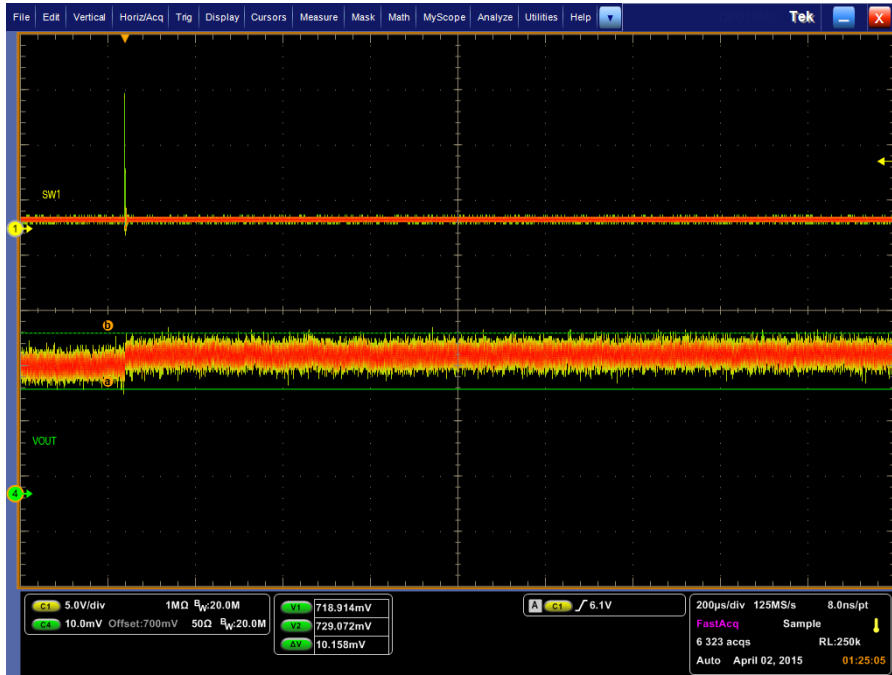# Ripple and jitter (PS2 state, limit: +30/-20 mV)
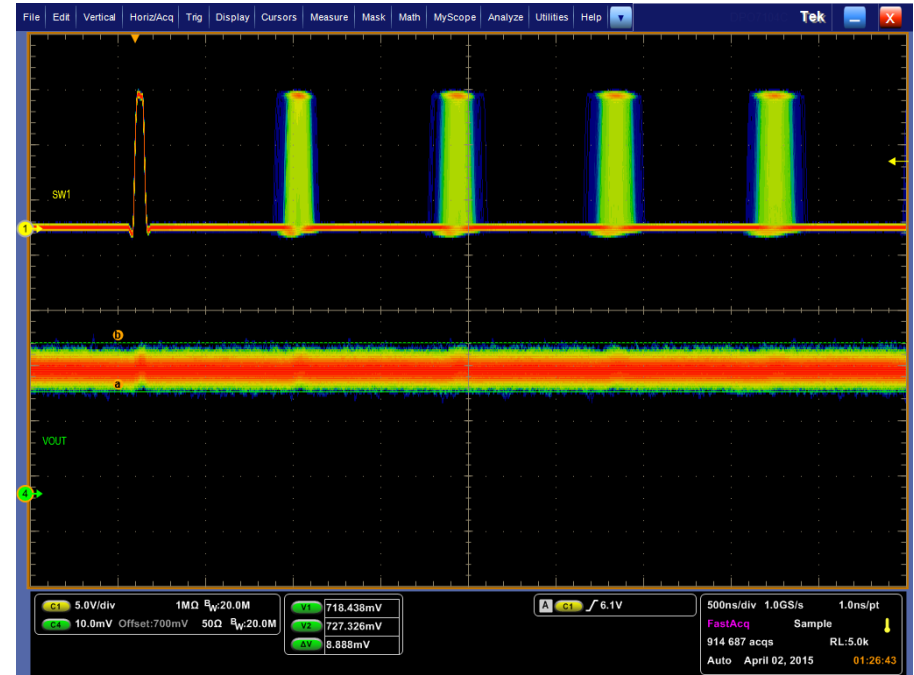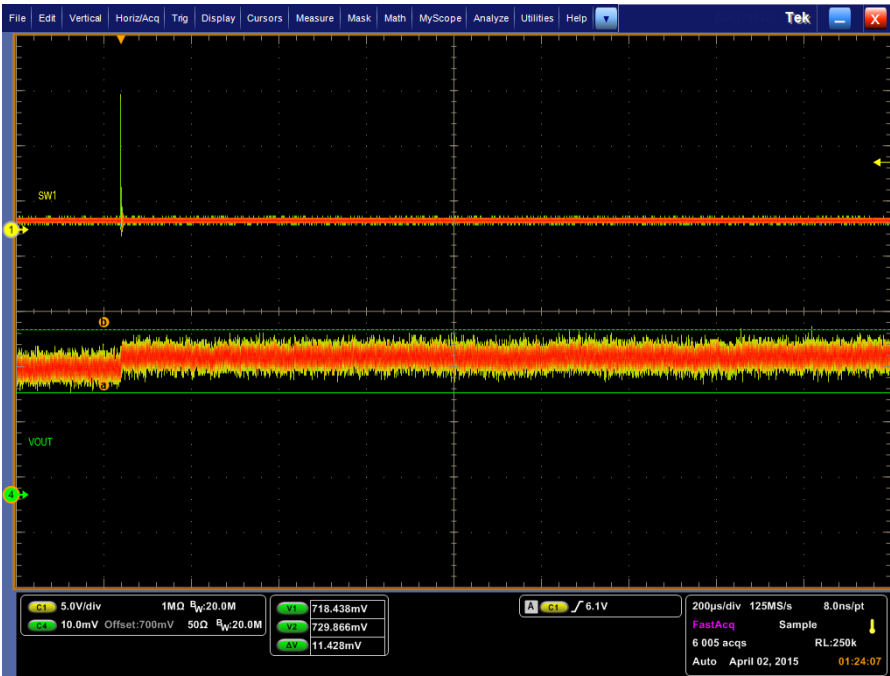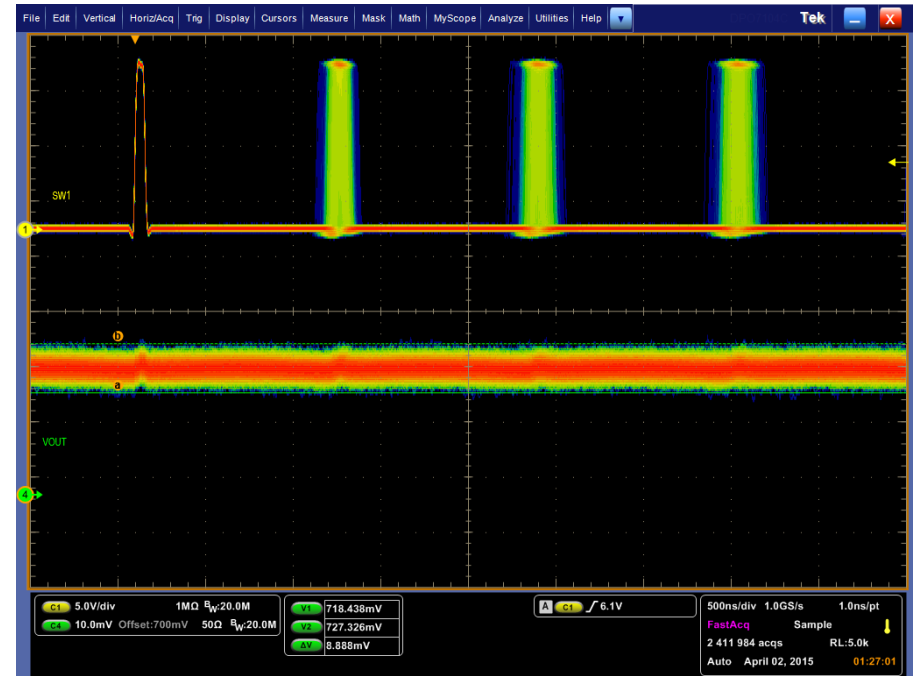# Vin 9V

Load 0A
Ripple(pk-pk): 10mV

Load 3A
Ripple (pk-pk): 8.3mV

Ripple and jitter (PS2 state, limit: +30/-20 mV)
Vin 12V

Load 0A
Ripple(pk-pk): 10mV

Load 3A
Ripple (pk-pk): 9mV

Ripple and jitter (PS2 state, limit: +30/-20 mV)
Vin 15V

Load 0A
Ripple(pk-pk): 11mV

Load 3A
Ripple (pk-pk): 9mV

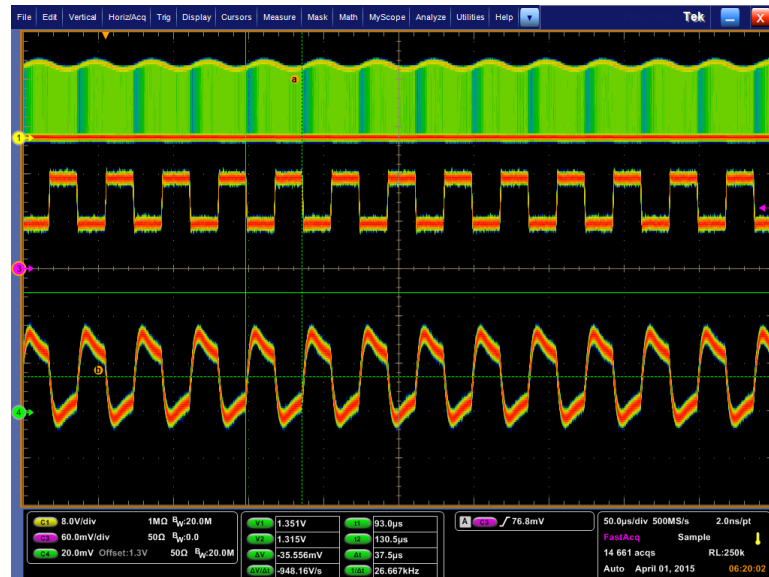# Load Transient Performance 2A to 6A(Varying load frequency) (PS0 state)- 50% duty cycle

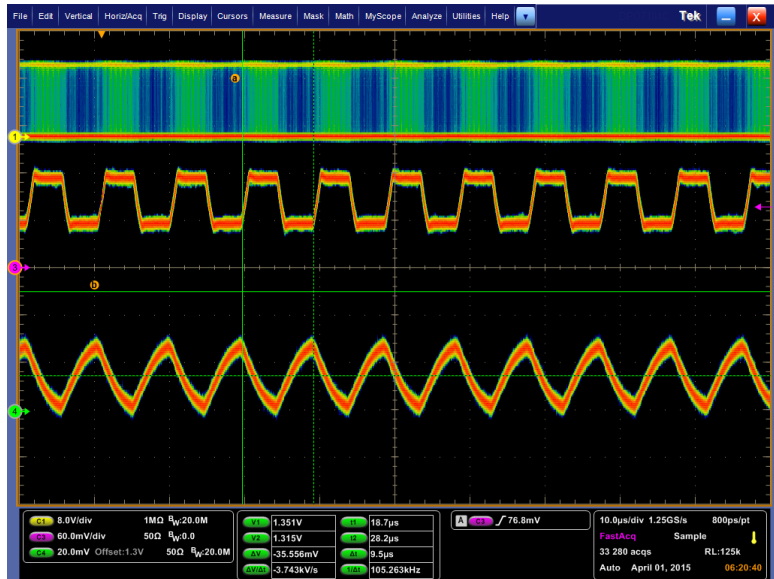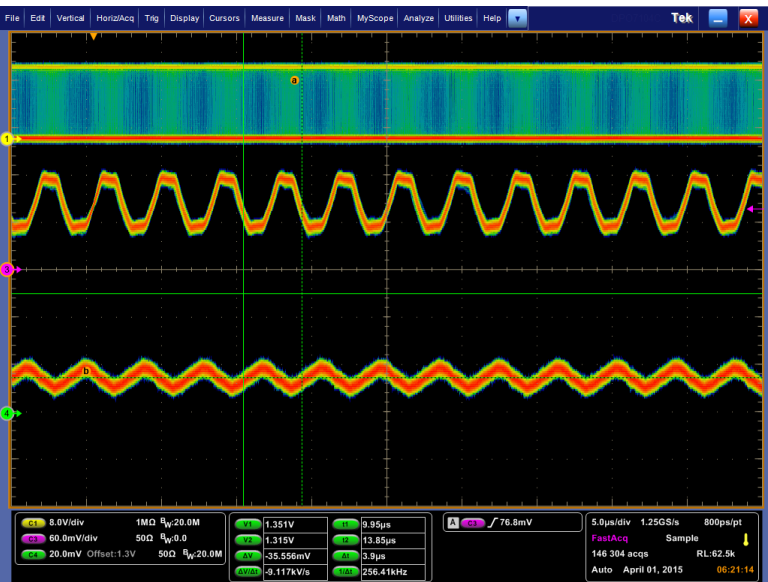## DC and AC ripple guideline: +/-35mV

Freq: 1.2kHz
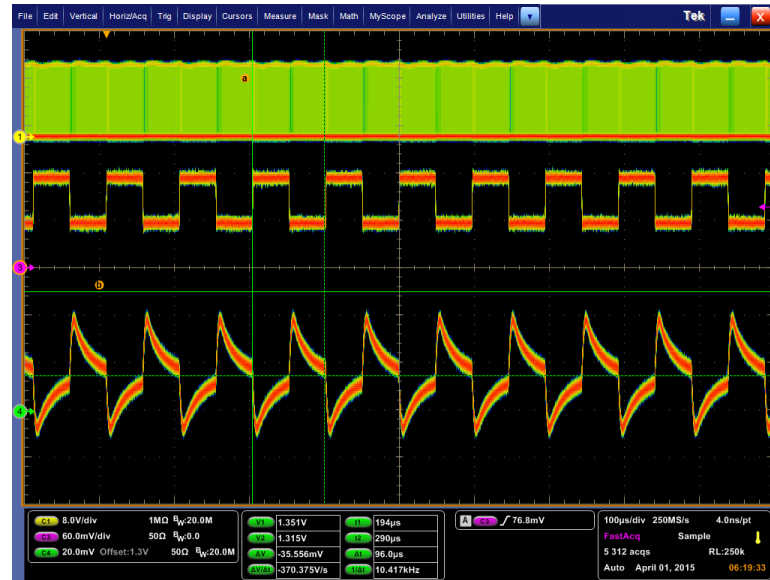
Freq: 10kHz

Freq: 26kHz
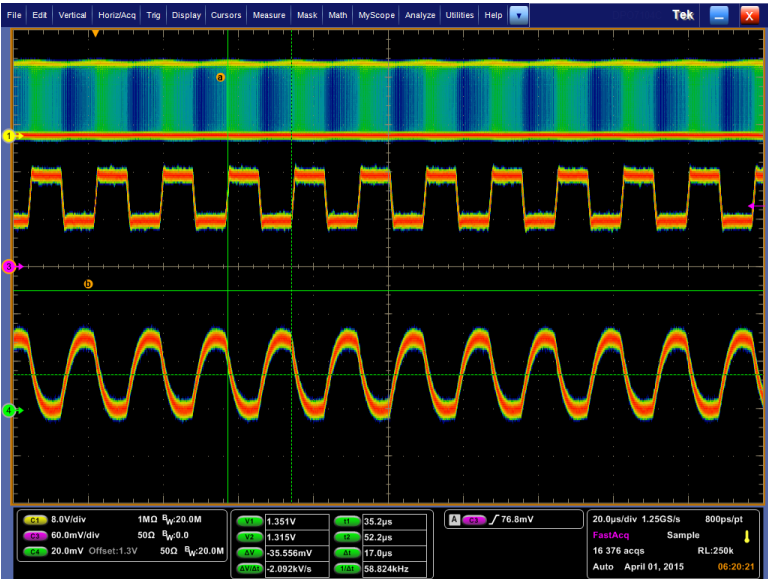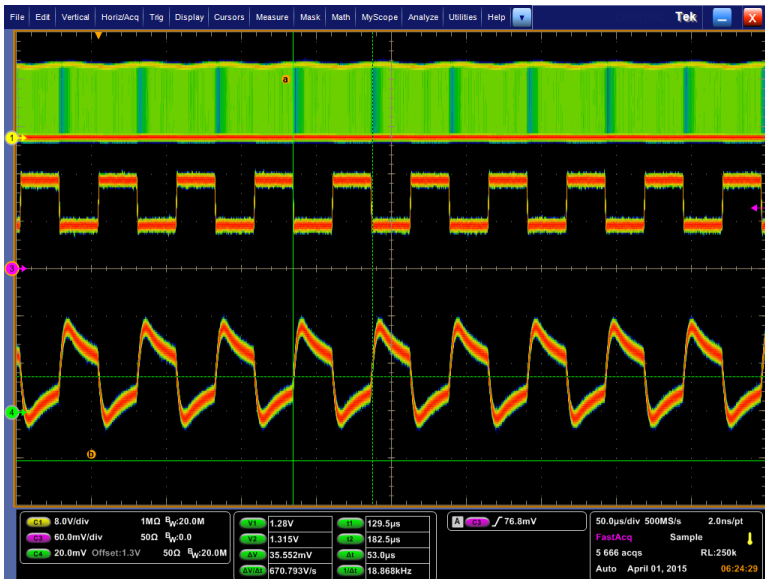
Freq: 58kHz

Freq: 105kHz

Freq: 256kHz

Freq: 450kHz

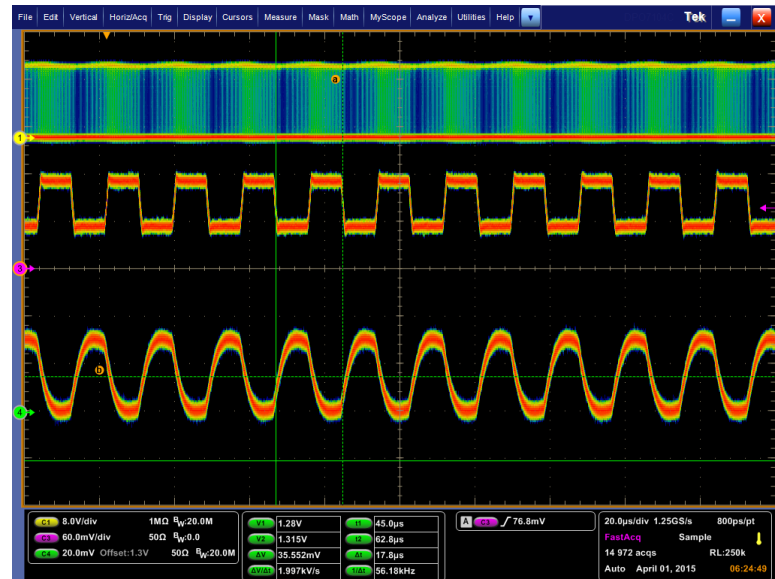Result: Output Voltage waveform well within the +35 mV line at all frequencies
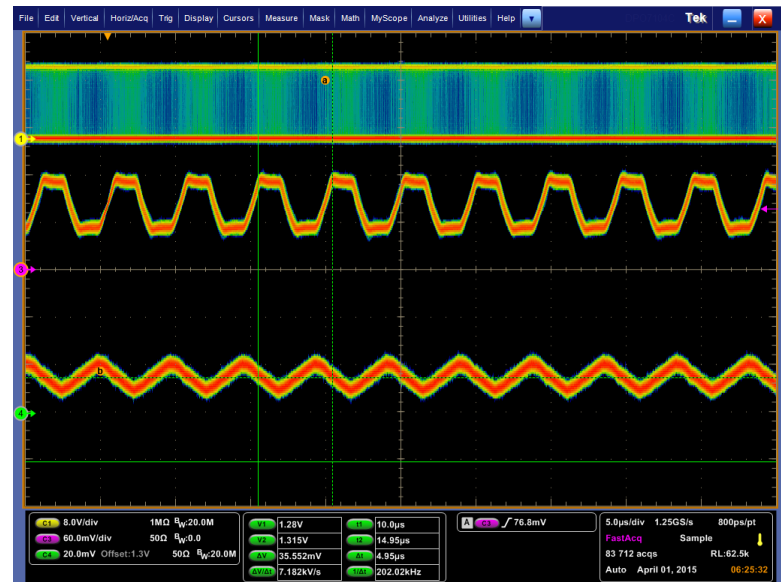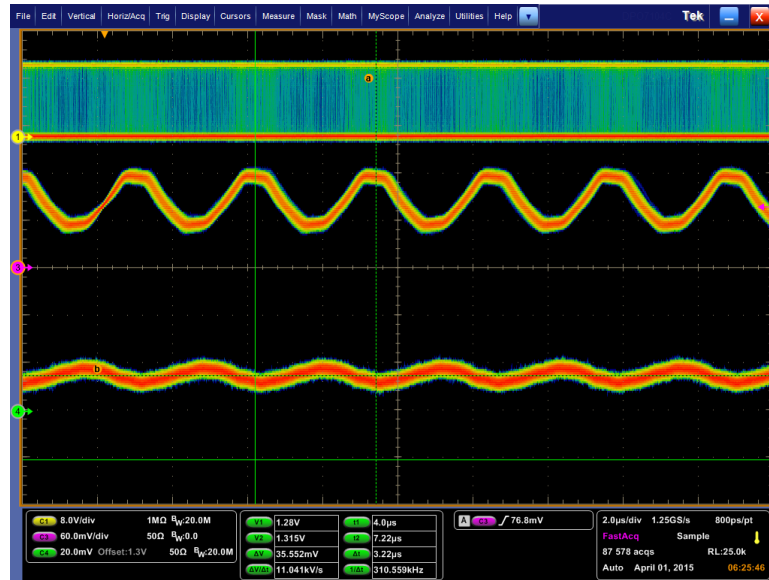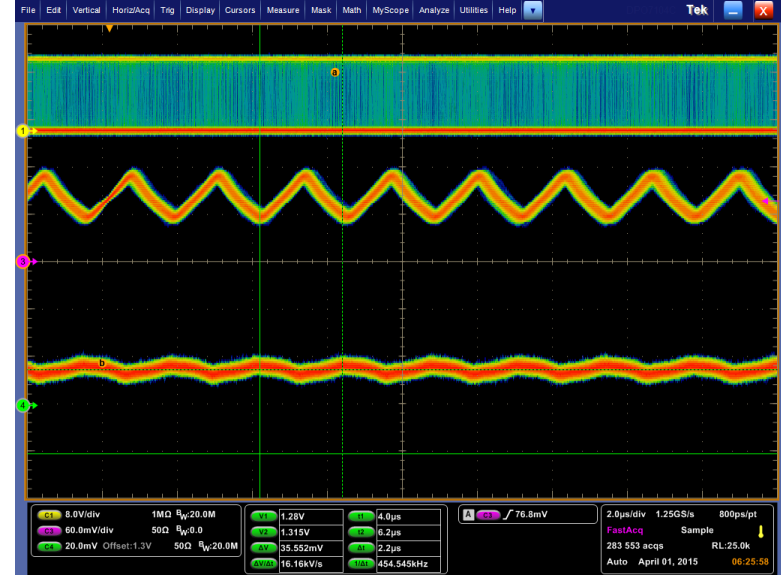
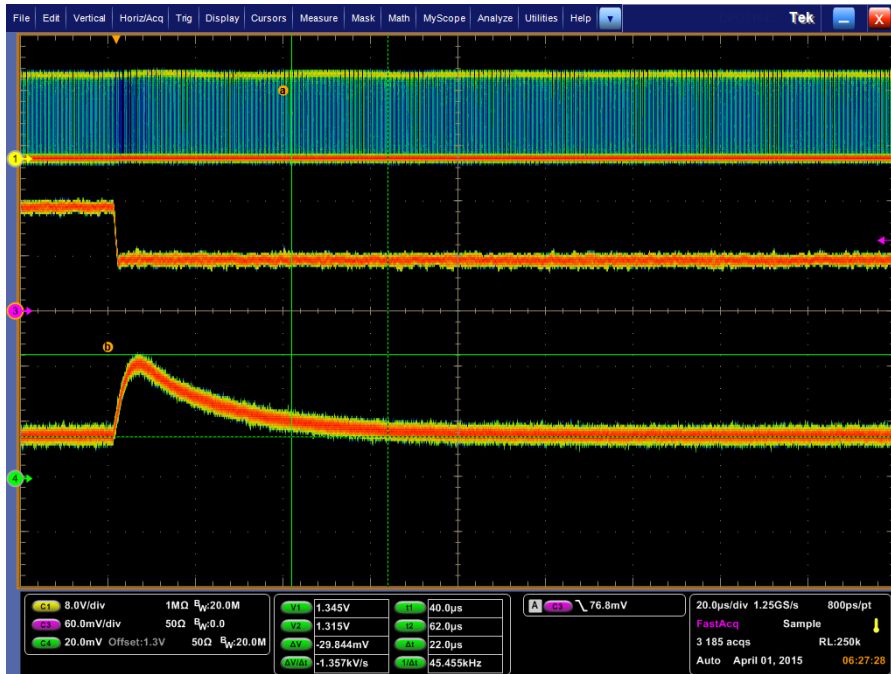Freq: 507Hz
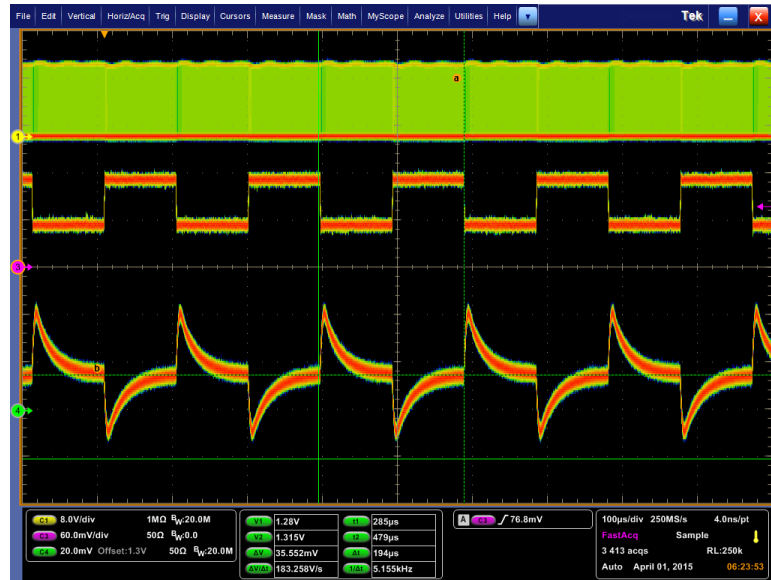
Freq: 5.1kHz

Freq: 19kHz

Freq: 56kHz

Freq: 100kHz

Freq: 200kHz

Freq: 310kHz

Freq: 450kHz

Result: Output Voltage waveform well above the -35 mV line at all frequencies
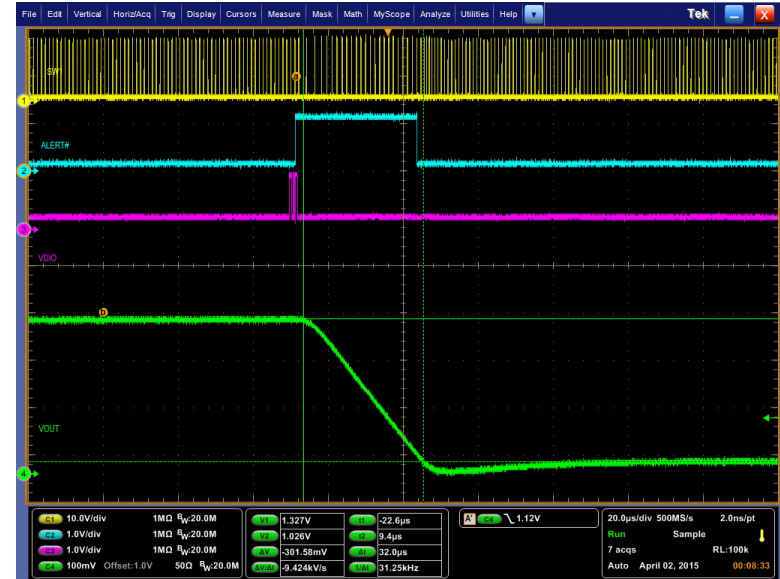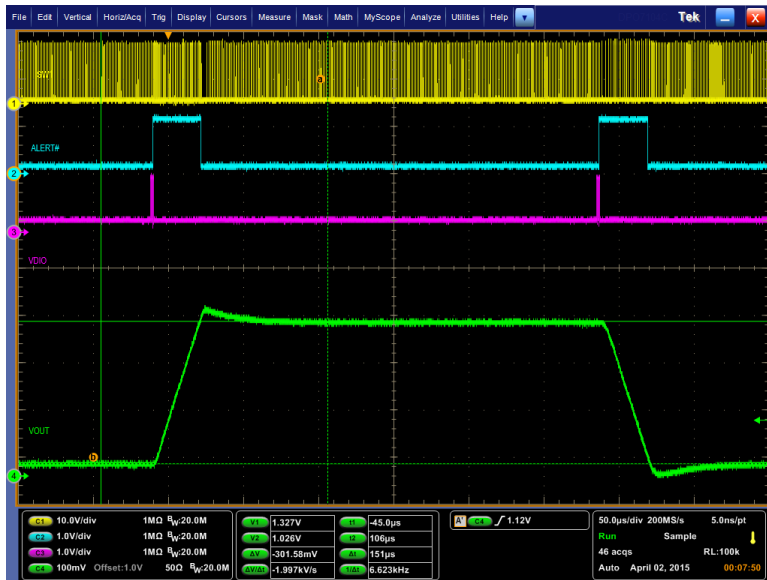
Load transient continued…

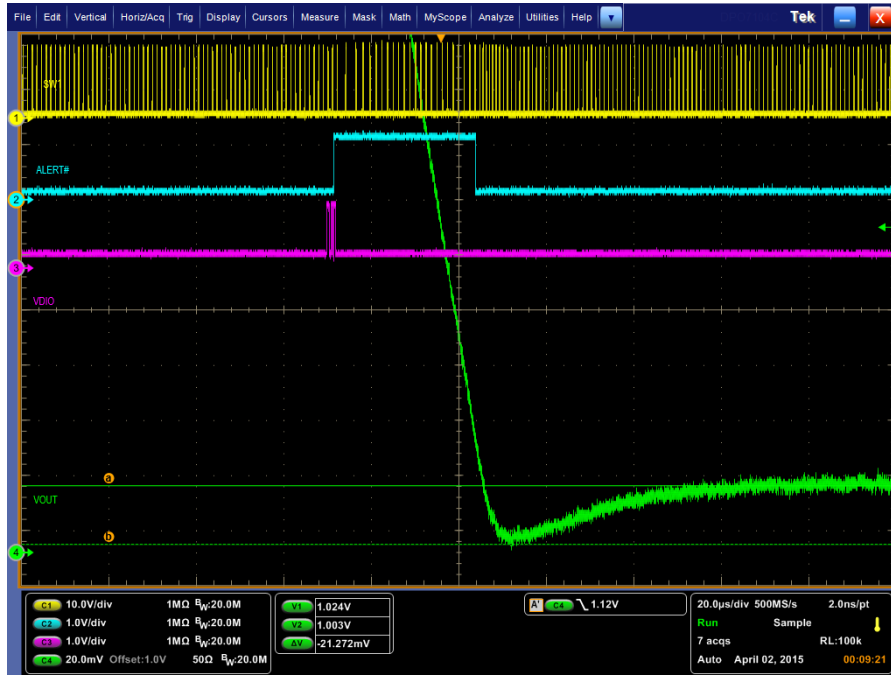Overshoot waveform
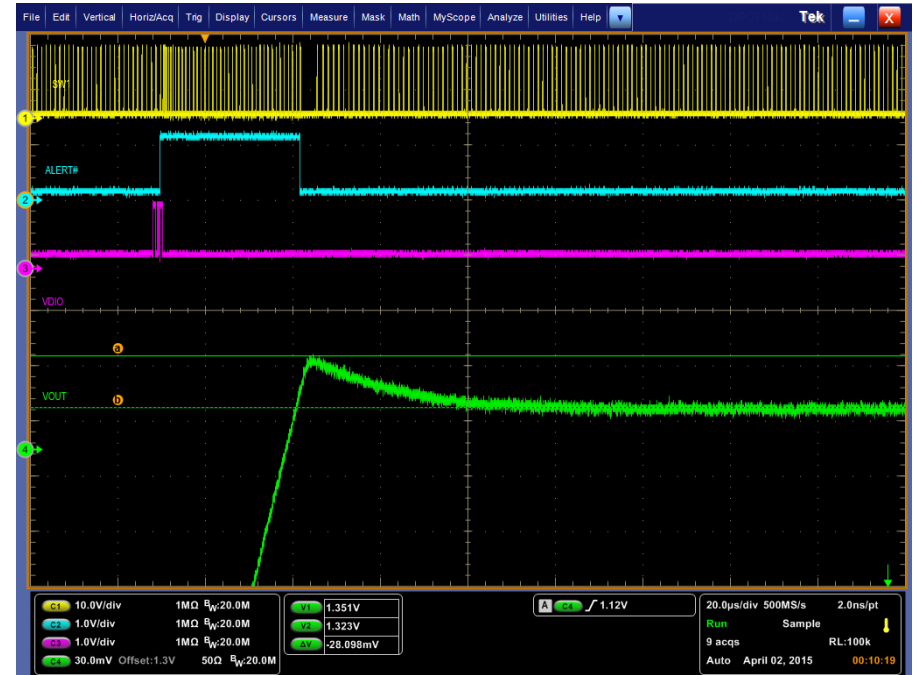
Undershoot waveform

Dynamic VID
1V-1.3V Fast-Fast 2A load
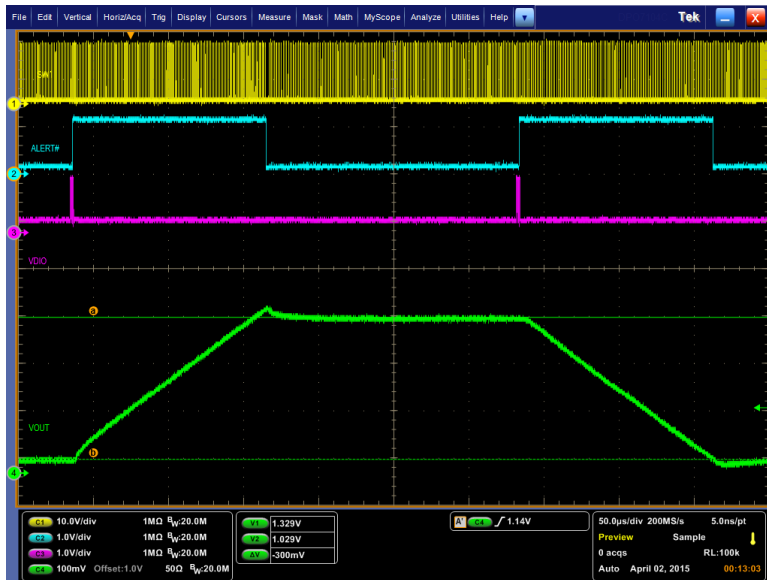

Fall Slew rate: 9.42mV/us

Rise Slew rate: 9.98 mV/us

Droop: 21 mV
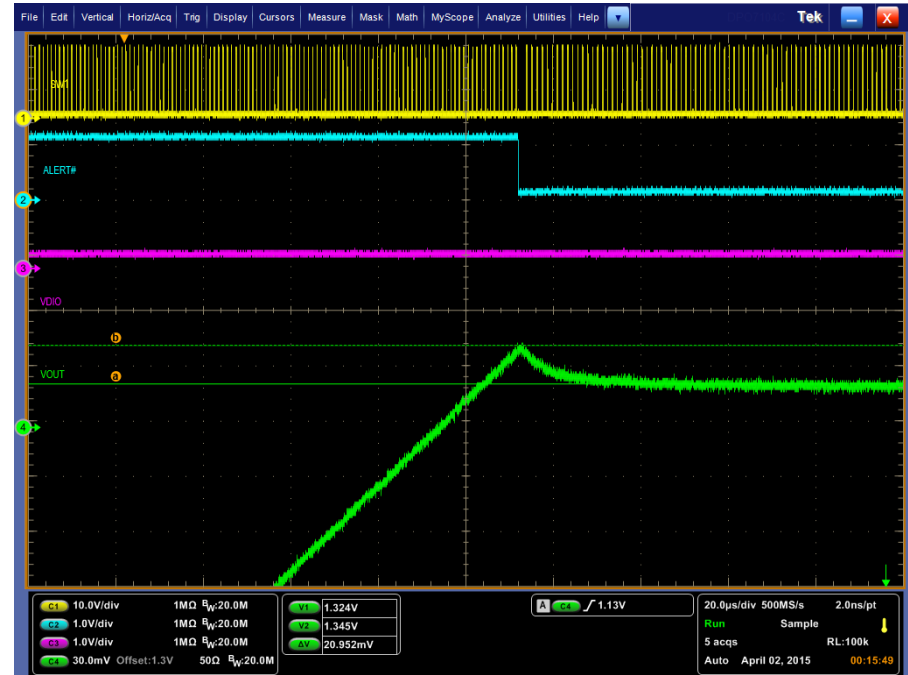
Overshoot: 28mV

Dynamic VID
1.0V-1.3V Slow-Slow 2A load

Fall Slew rate: 2.44 mV/us
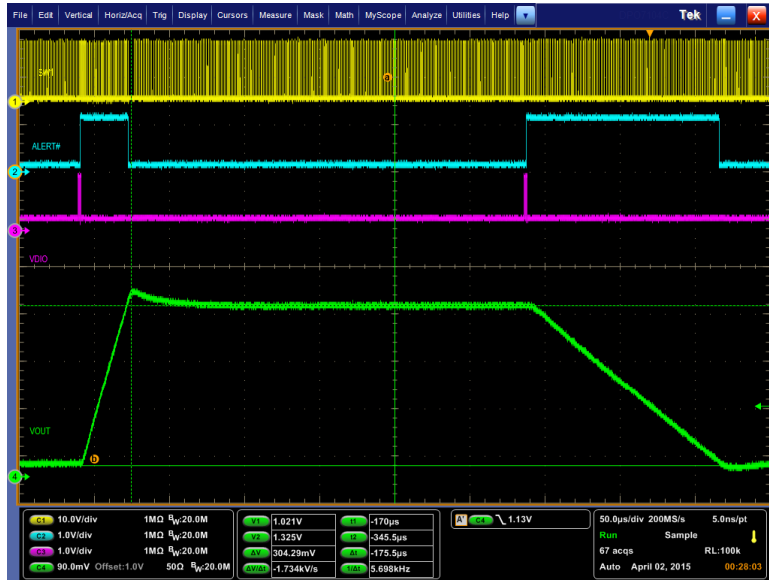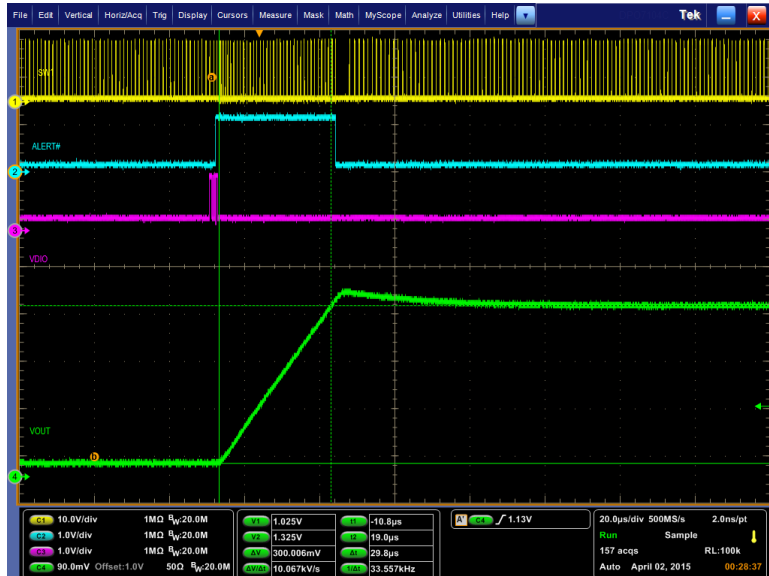
Rise Slew rate: 2.49 mV/us
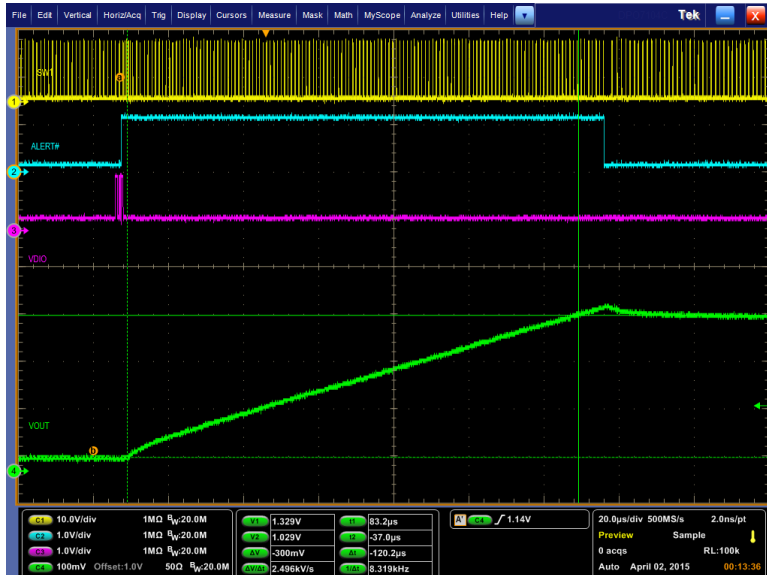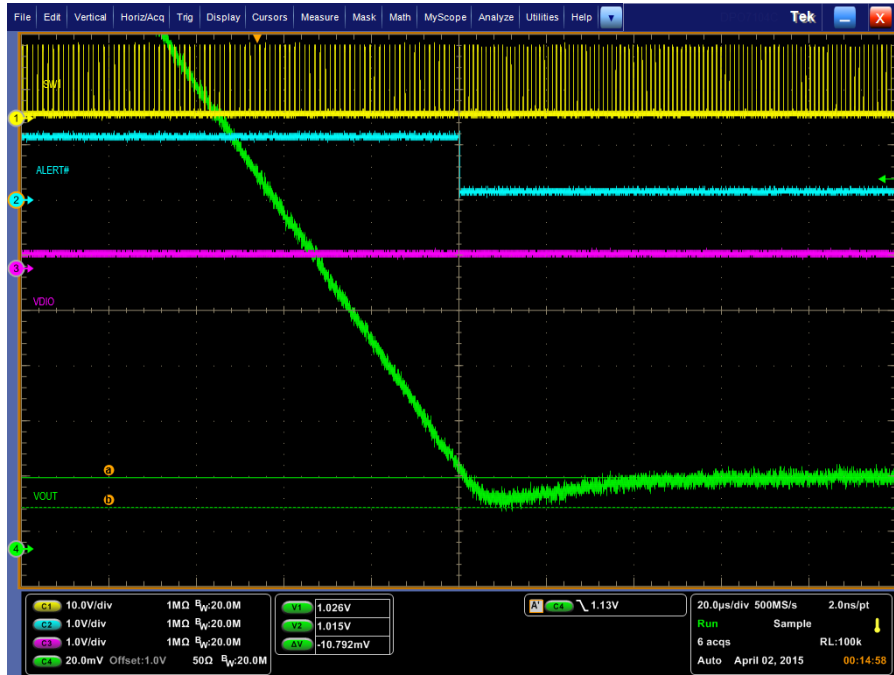
Droop: 10.8mV

Overshoot: 21mV
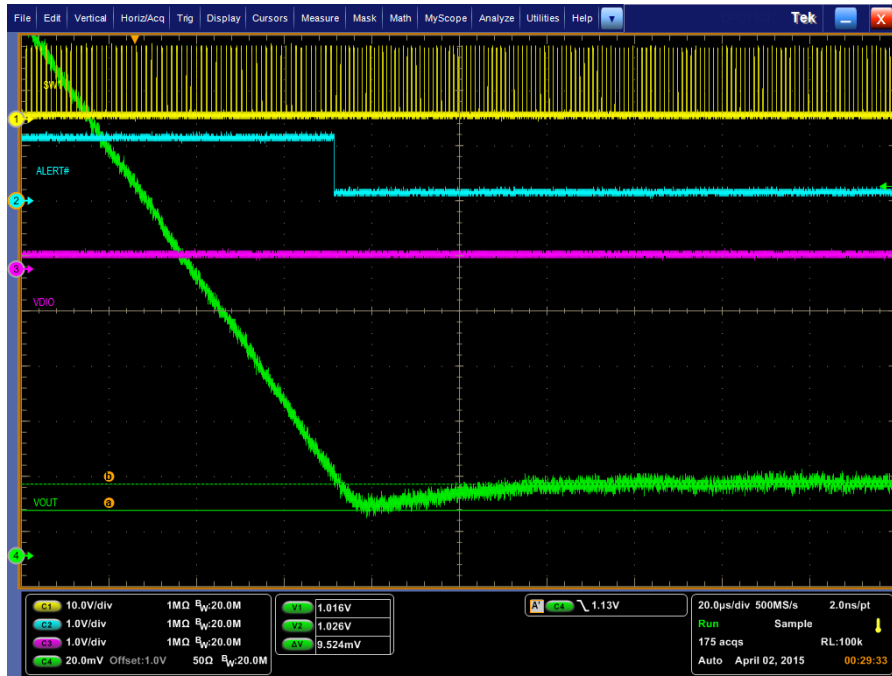
Dynamic VID
1.0V-1.3V Fast-Slow 2A load
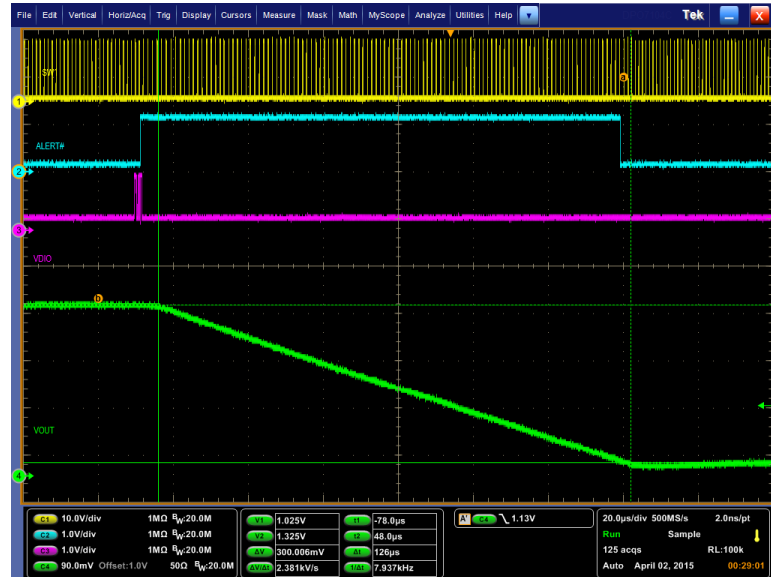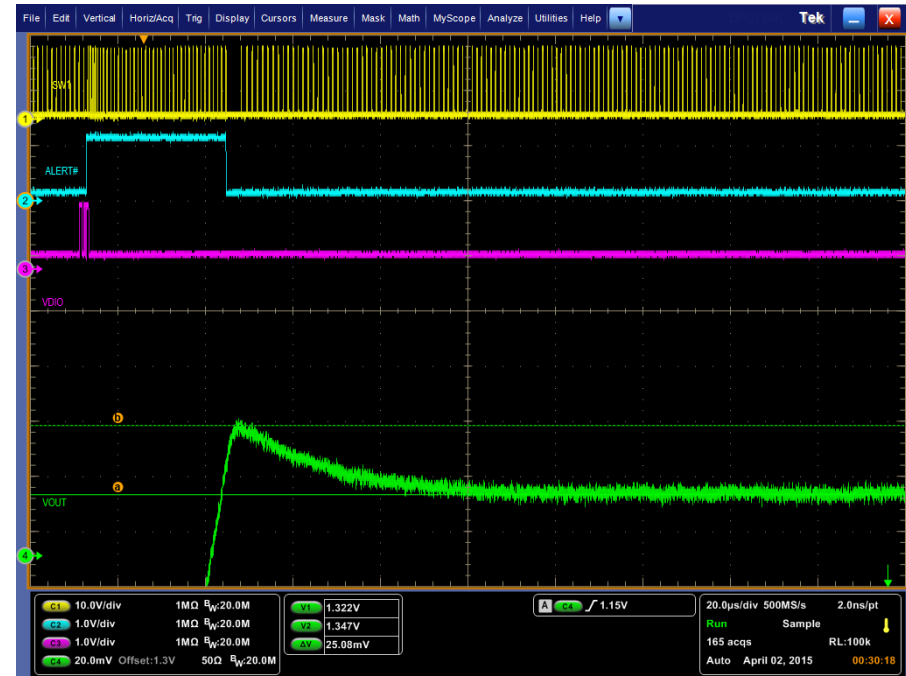

Fall Slew rate: 2.38 mV/us

Rise Slew rate: 10.06 mV/us
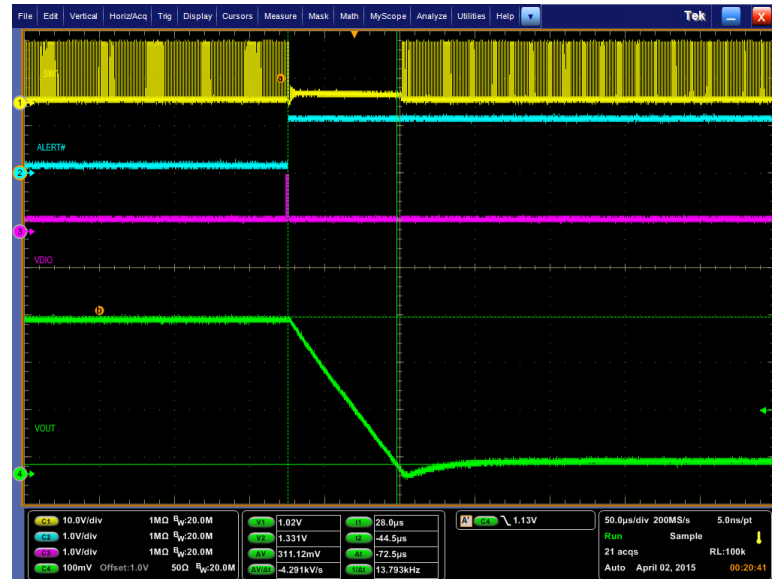
Dynamic VID
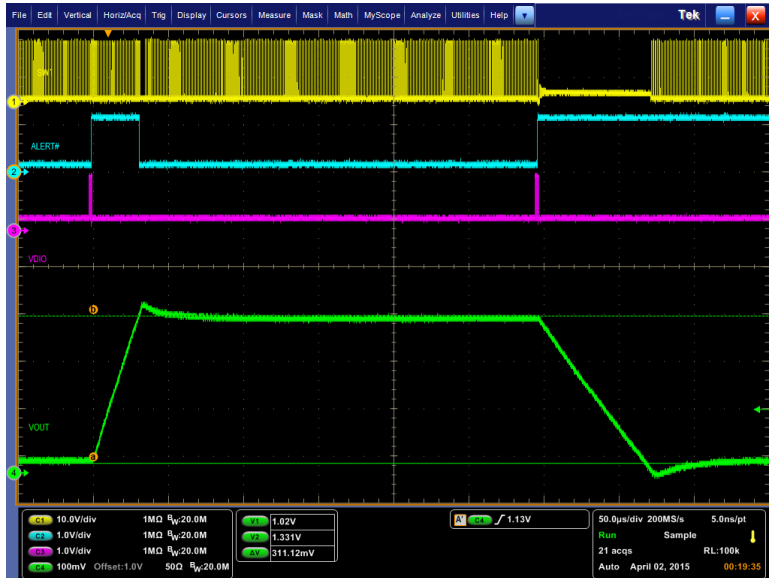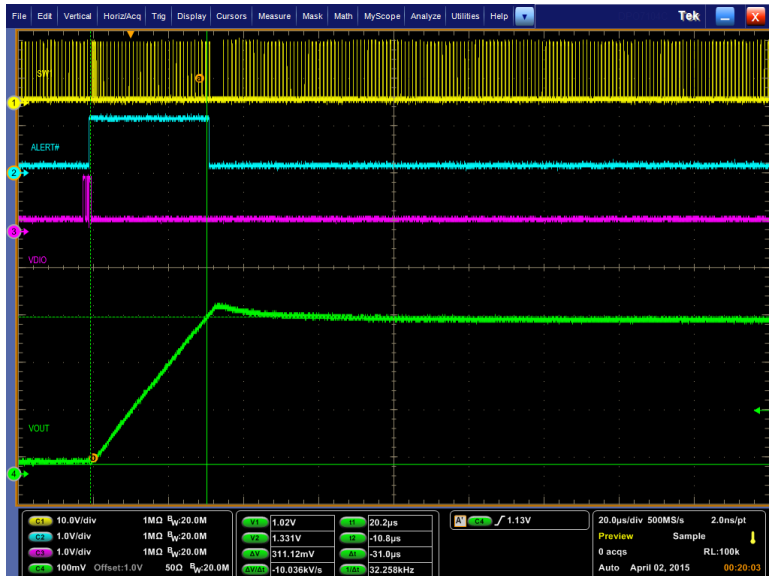**1.0V-1.3V Fast-Slow 2A load**

Droop: 9.5mV

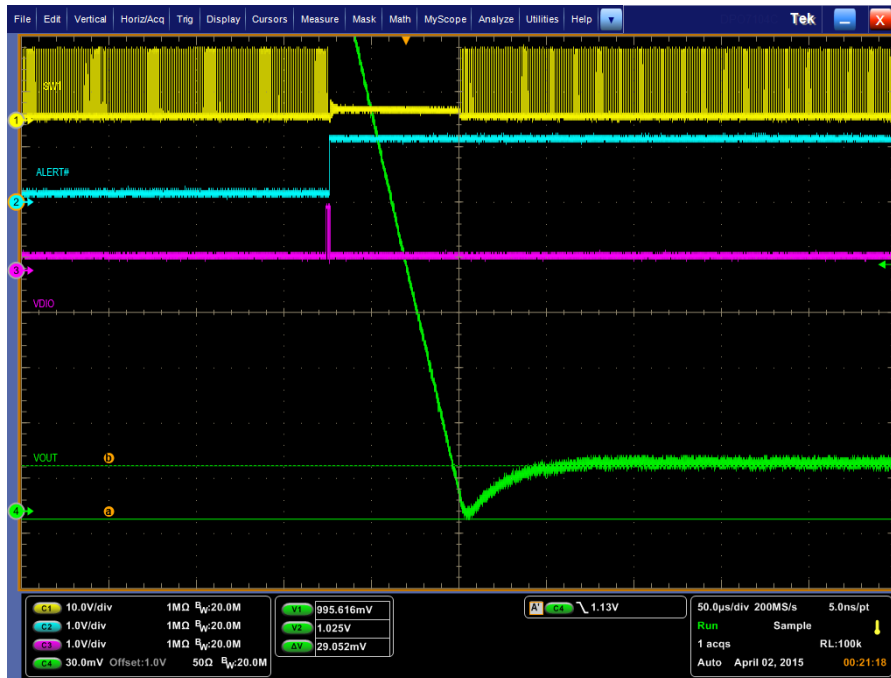Overshoot: 25 mV

Dynamic VID
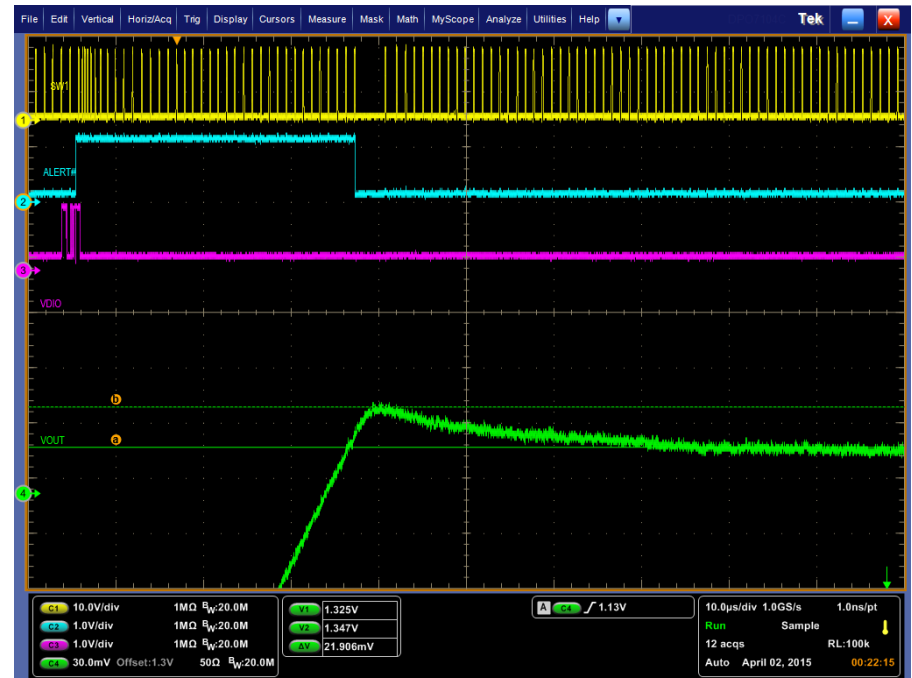# 1.0V-1.3V Fast-Decay 2A load

Decay Fall Slew rate: 4 mV/us

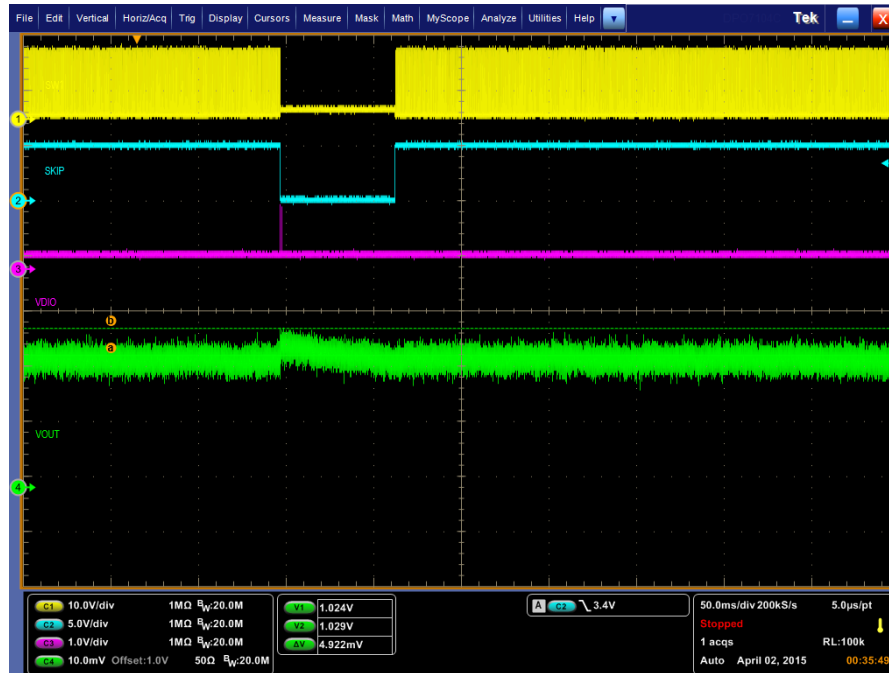Rise Slew rate: 10.04 mV/us

Dynamic VID
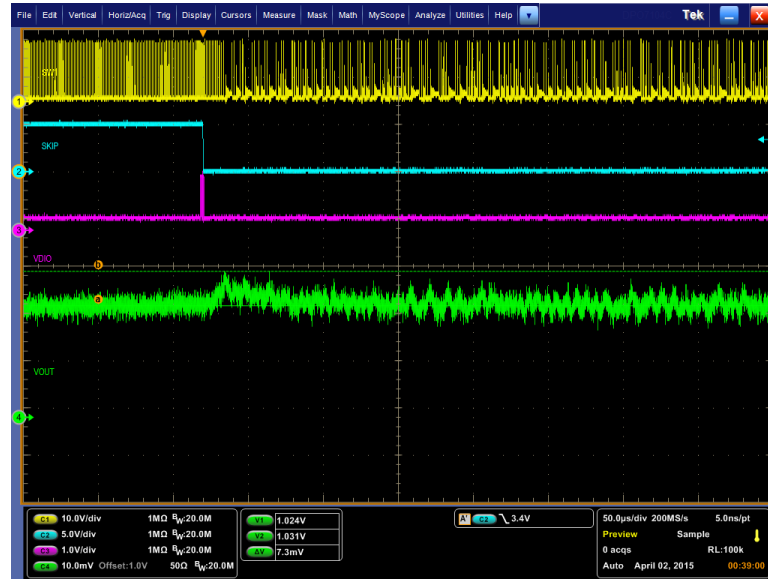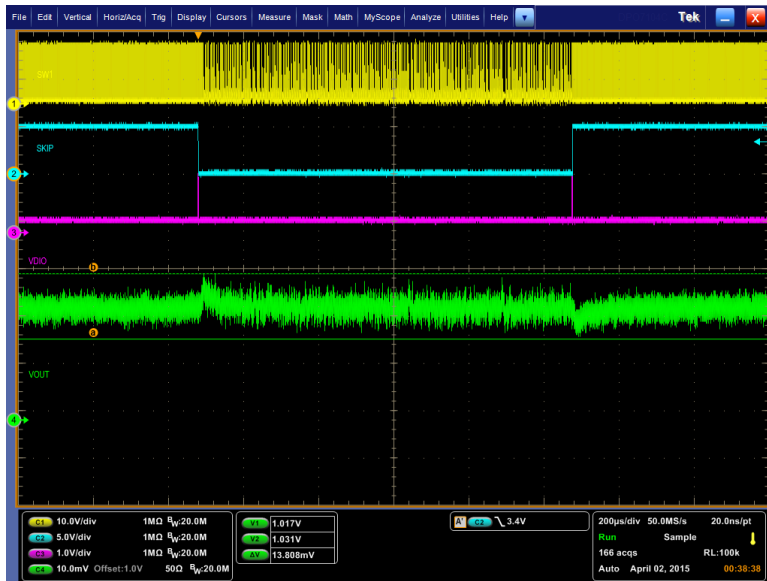# 1.0V-1.3V Fast-Decay 2A load

Droop: 29mV
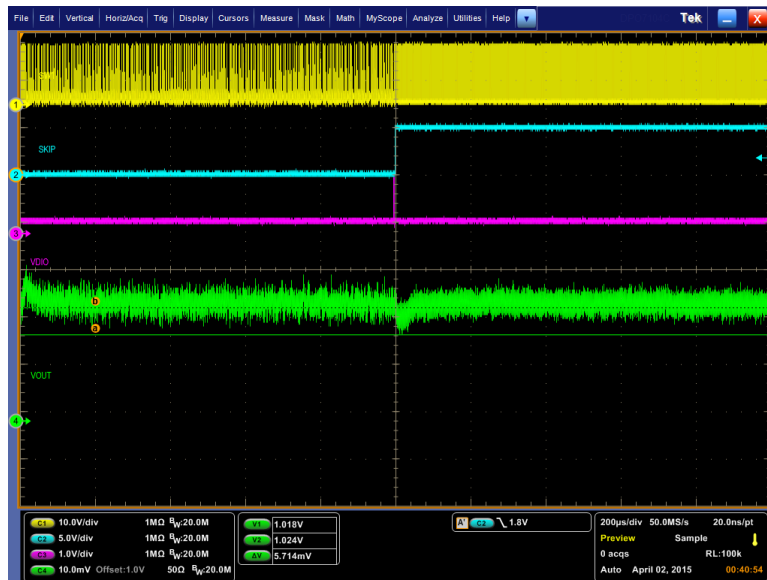
Overshoot: 22mV

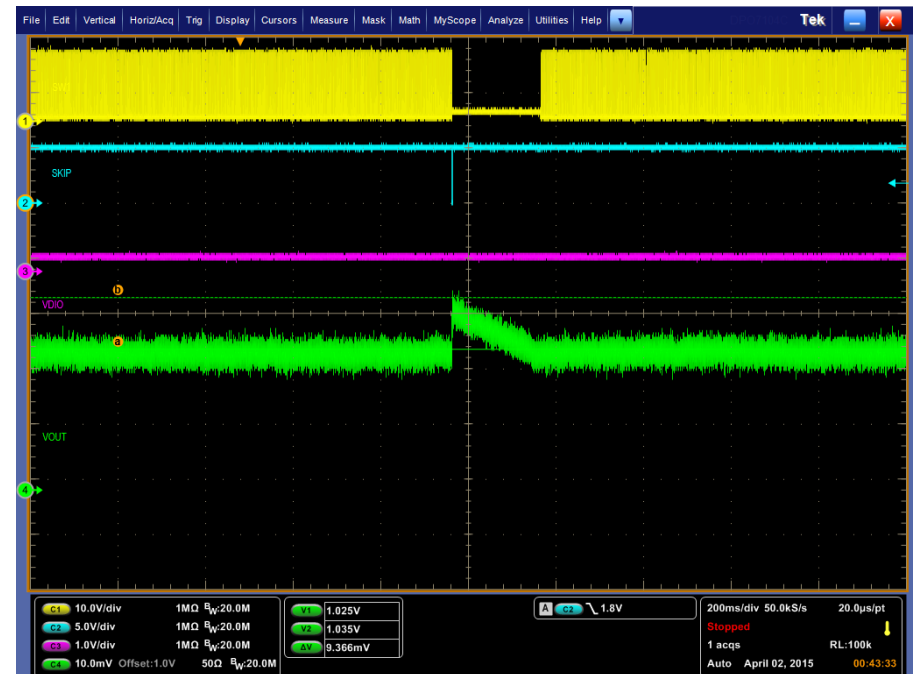# PS transition
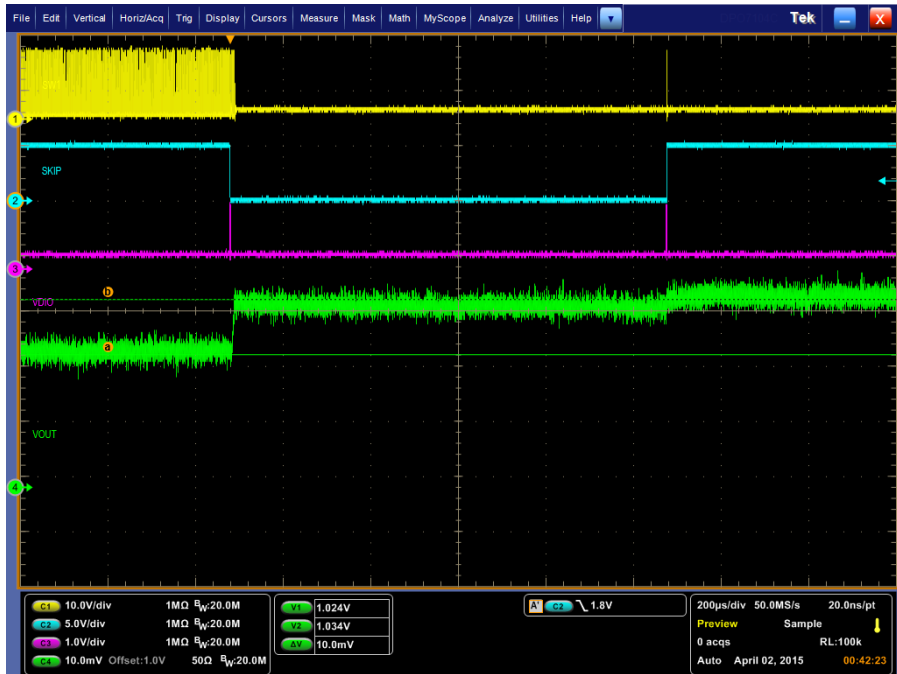# PS0-PS2 0A load

PS transition
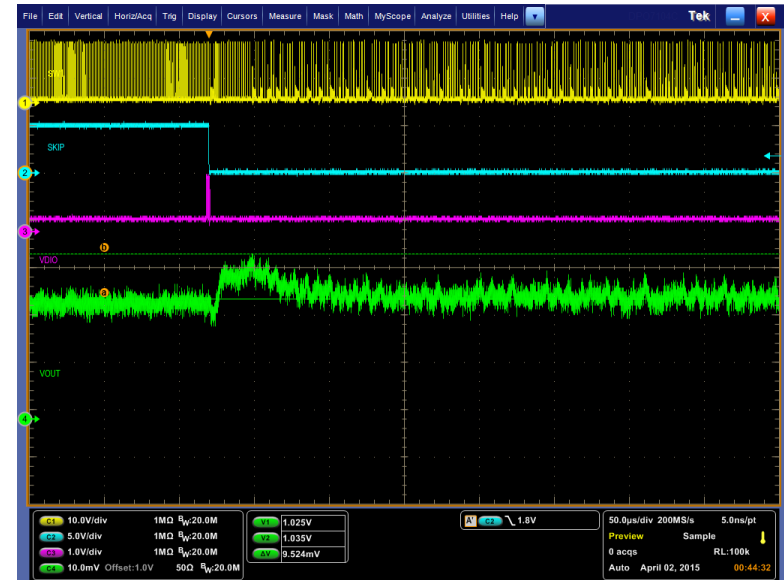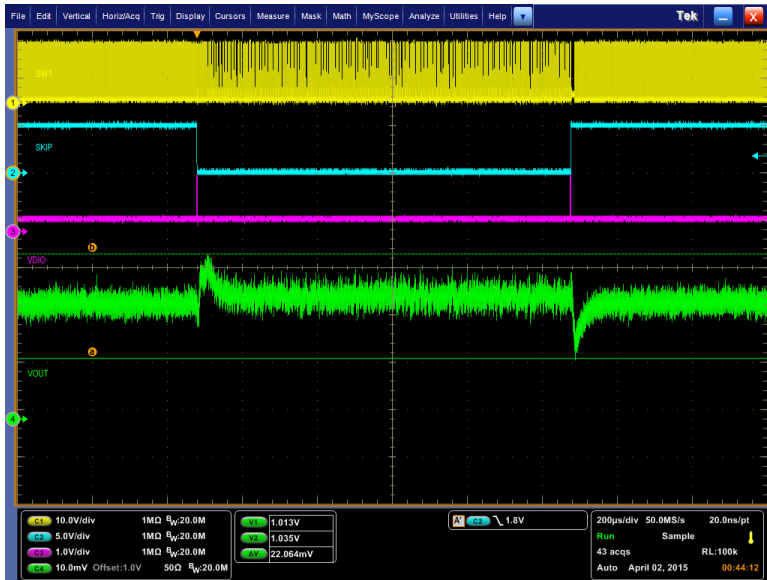# PS0-PS2 0.5A load

PS0 to PS2 voltage change: 7.3mV

PS2 to PS0 voltage change: 5.7mV
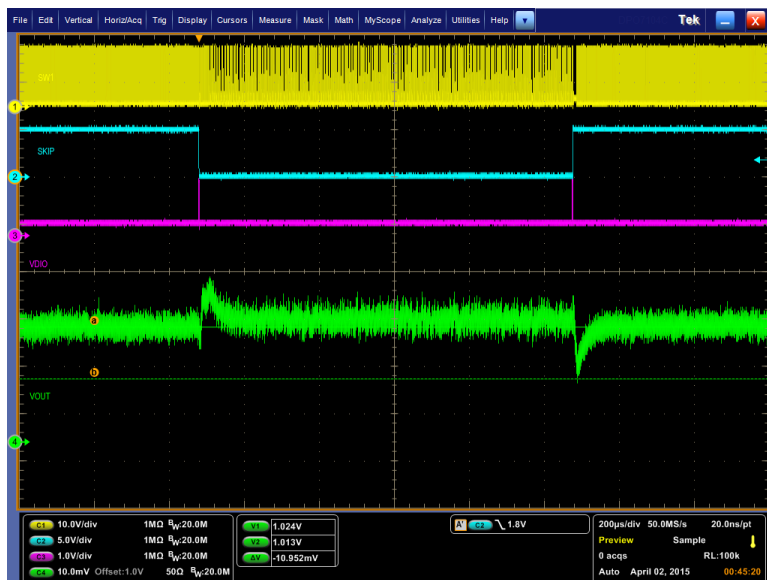
PS transition
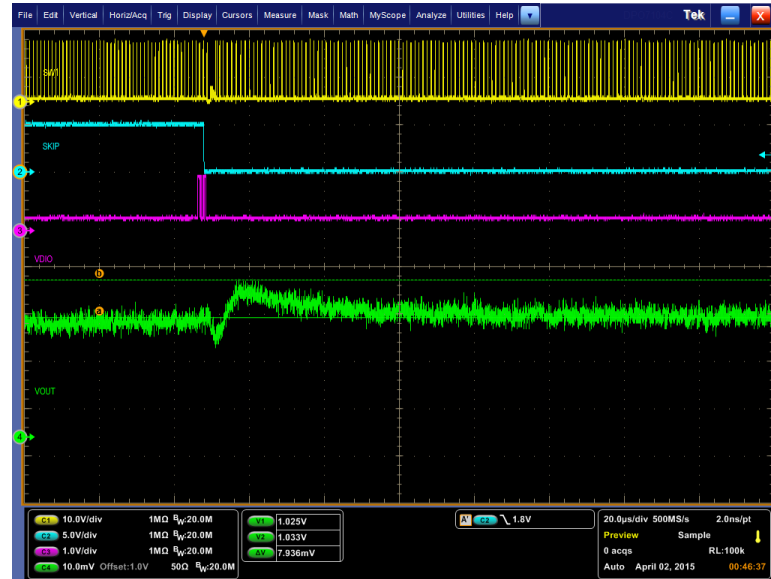# PS0-PS3 0A load

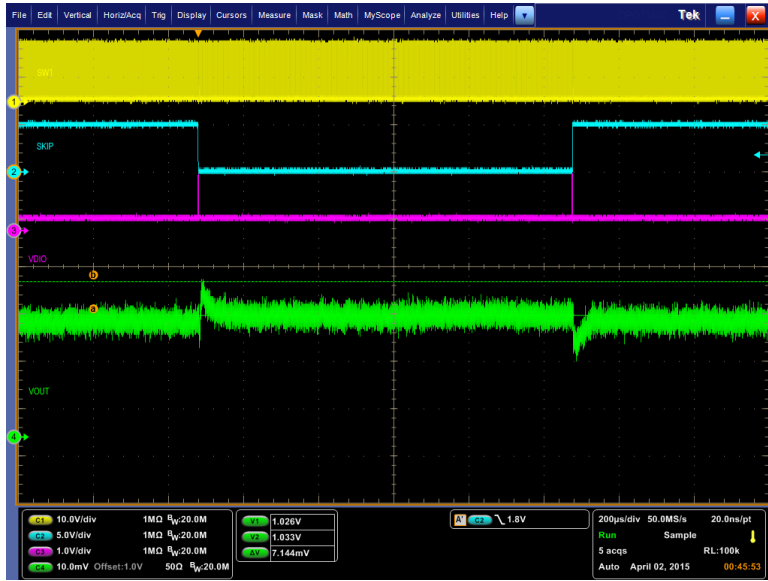# PS transition
PS0-PS3 0.5A load
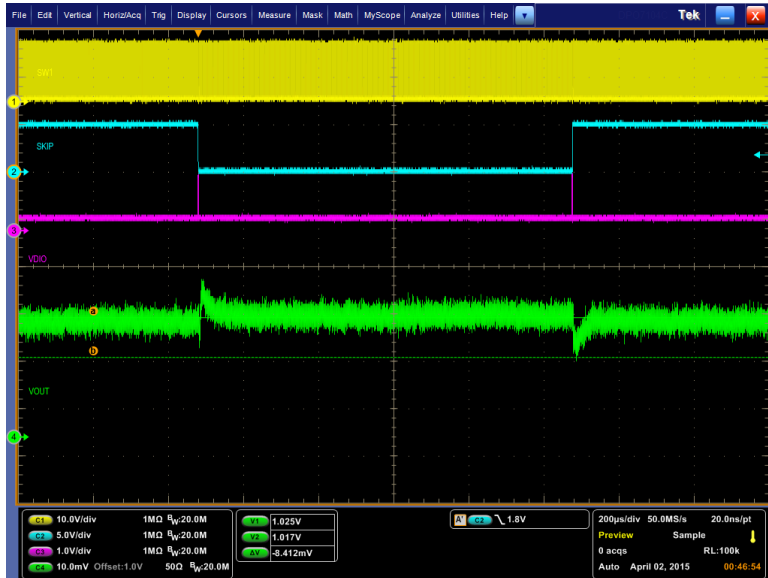

PS0 to PS3 voltage change: 9.5mV

PS3 to PS0 voltage change: 11mV
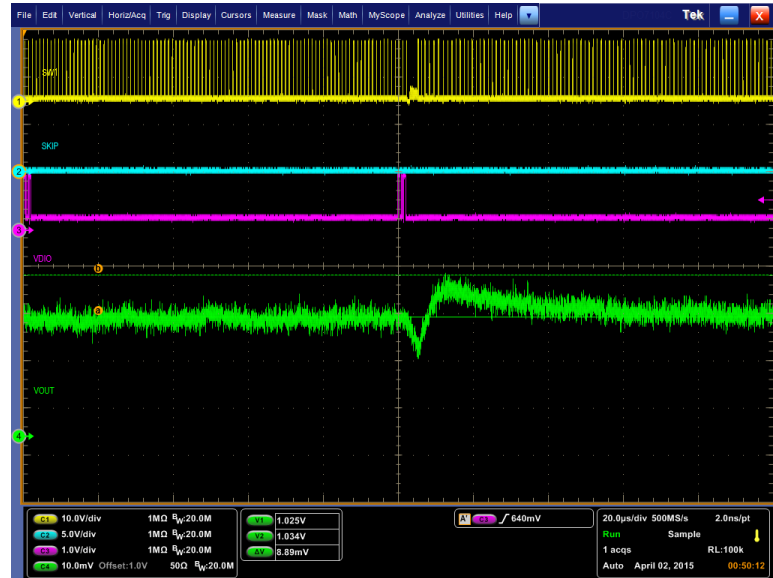
PS transition
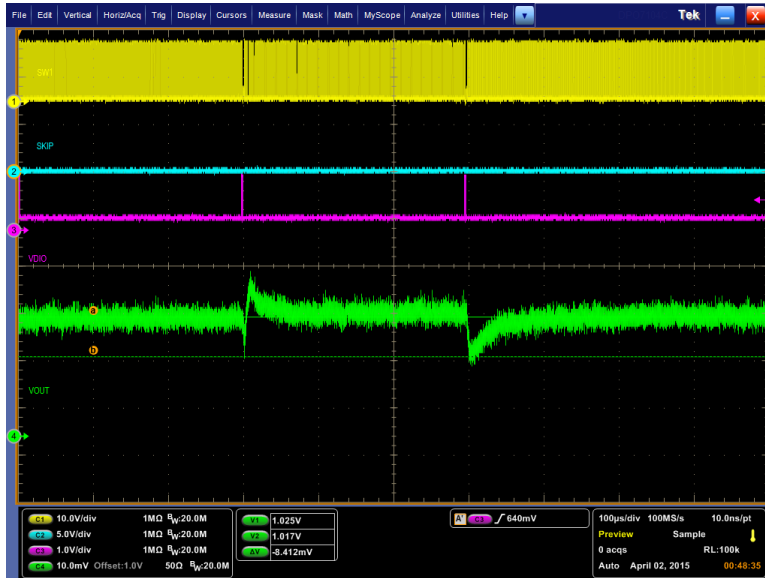# PS0-PS3 1A load

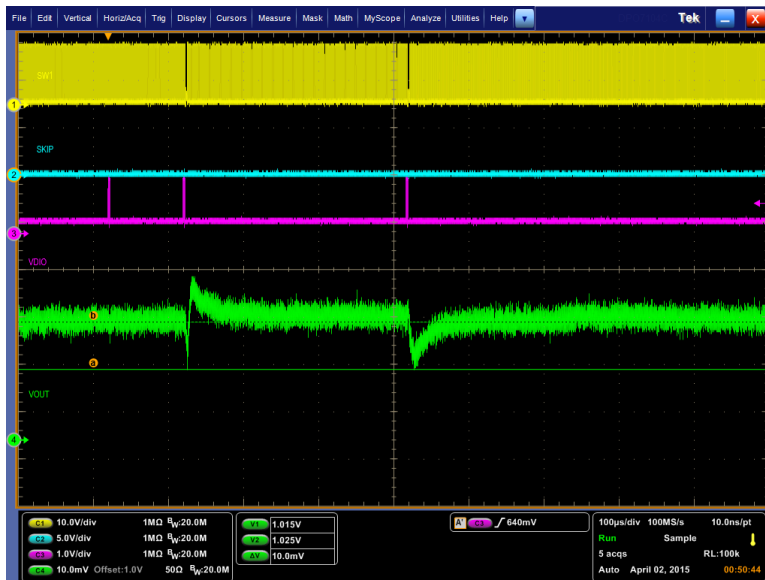PS0 to PS3 voltage change: 7.93mV

PS3 to PS0 voltage change: 8.4mV

PS transition
PS2-PS3 1A load

PS2 to PS3 voltage change: 8.9mV

PS3 to PS2 voltage change: 10mV

IMPORTANT NOTICE AND DISCLAIMER