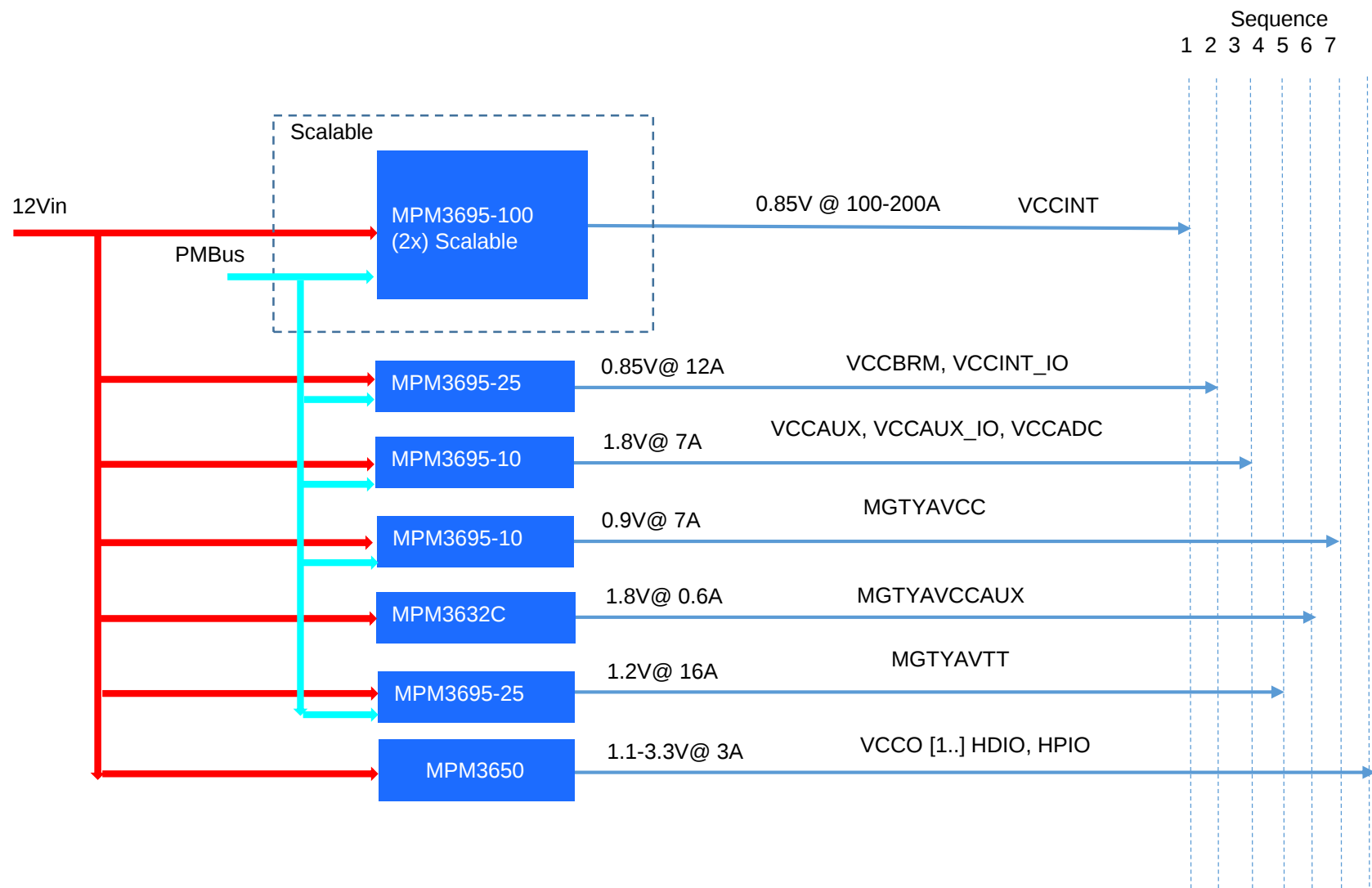


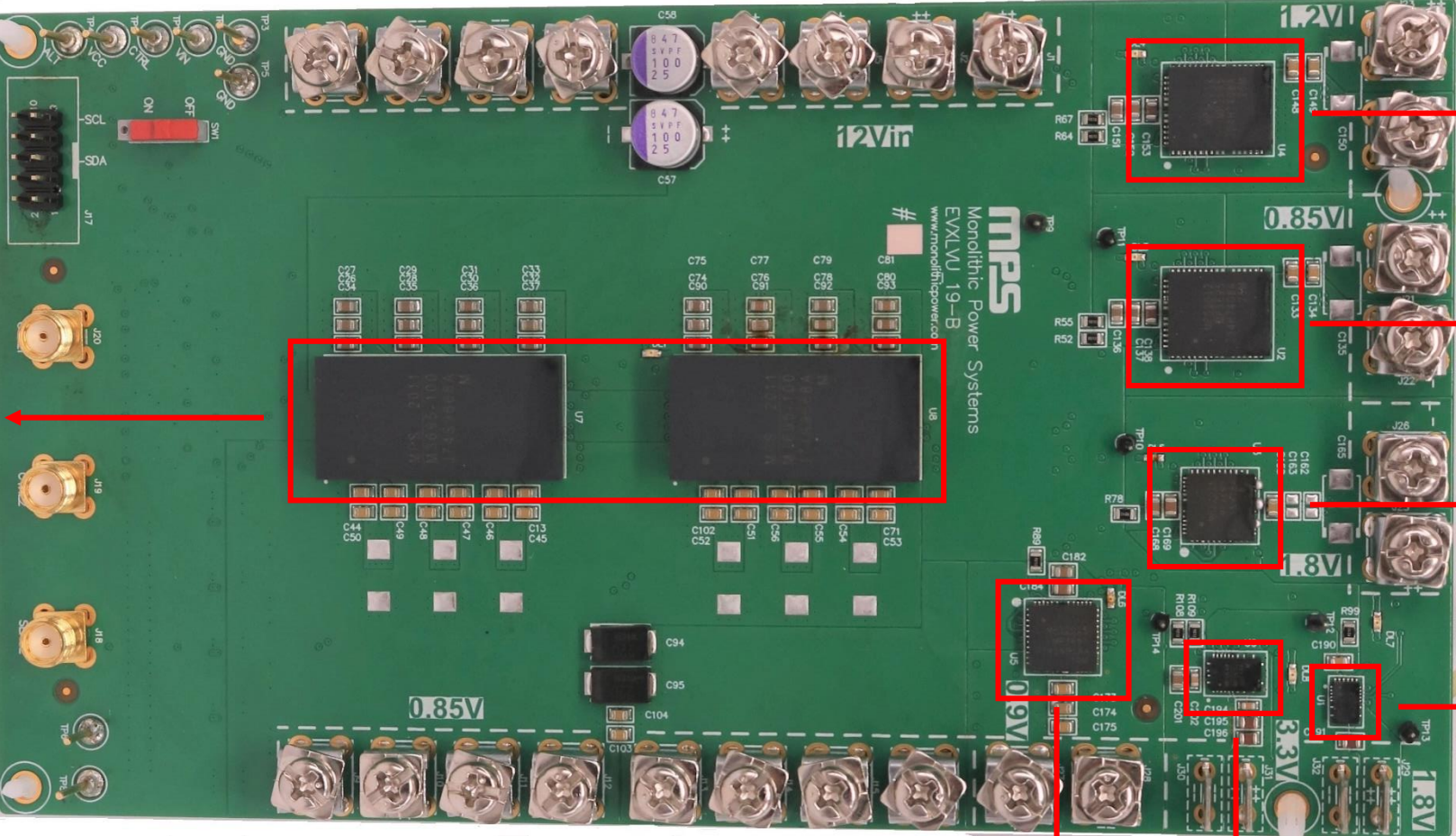
EVXLVU_19B Test Report

September 2020

EVXLVU_19B Power Tree



EVXLVU_19B Board



Rail1:
MPM3695-100x2

Rail4:
MPM3695-25

Rail2:
MPM3695-25

Rail3:
MPM3695-10

Rail5:
MPM3632C

Rail6:
MPM3695-10

Rail7:
MPM3650



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4. Power Sequence
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11. Rail 7 – Steady state and Transient performance

EVB Specification– EVXLVU_19B

Rail	Power Rail	Vin (V)	Nominal Vout (V)	Ripple* (%)	Load step	Max Load (A)	Slew rate	MPS part#	Power sequence
Rail1	VCCINT	12	0.85	+/-3%	25% 100A->150A	200A	100A/us	MPM3695-100(2x)	1
Rail2	VCCBRM, VCCINT-IO	12	0.85	+/-3%	40% 3A->8A	12A	10A/us	MPM3695-25	2
Rail3	VCCAUX, VCCAUX_IO, VCCADC	12	1.8	+/-3%	90% 0.7A->7A	7A	10A/us	MPM3695-10	3
Rail4	MGTYAVCC	12	0.9	+/-3% (10mVpp)	25% 3.5A->5.25A	7A	10A/us	MPM3695-10	6
Rail5	MGTYAVCCAUX	12	1.8	+/-3% (10mVpp)	25% 0.3A->0.475A	0.6A	10A/us	MPM3632C	5
Rail6	MGTYAVTT	12	1.2	+/-3% (10mVpp)	25% 8A->12A	16A	10A/us	MPM3695-25	4
Rail7	VCCO(HDIO), VCCO(HPIO)	12	3.3	+/-3%	90% 0.3A->3A	3A	10A/us	MPM3650	7

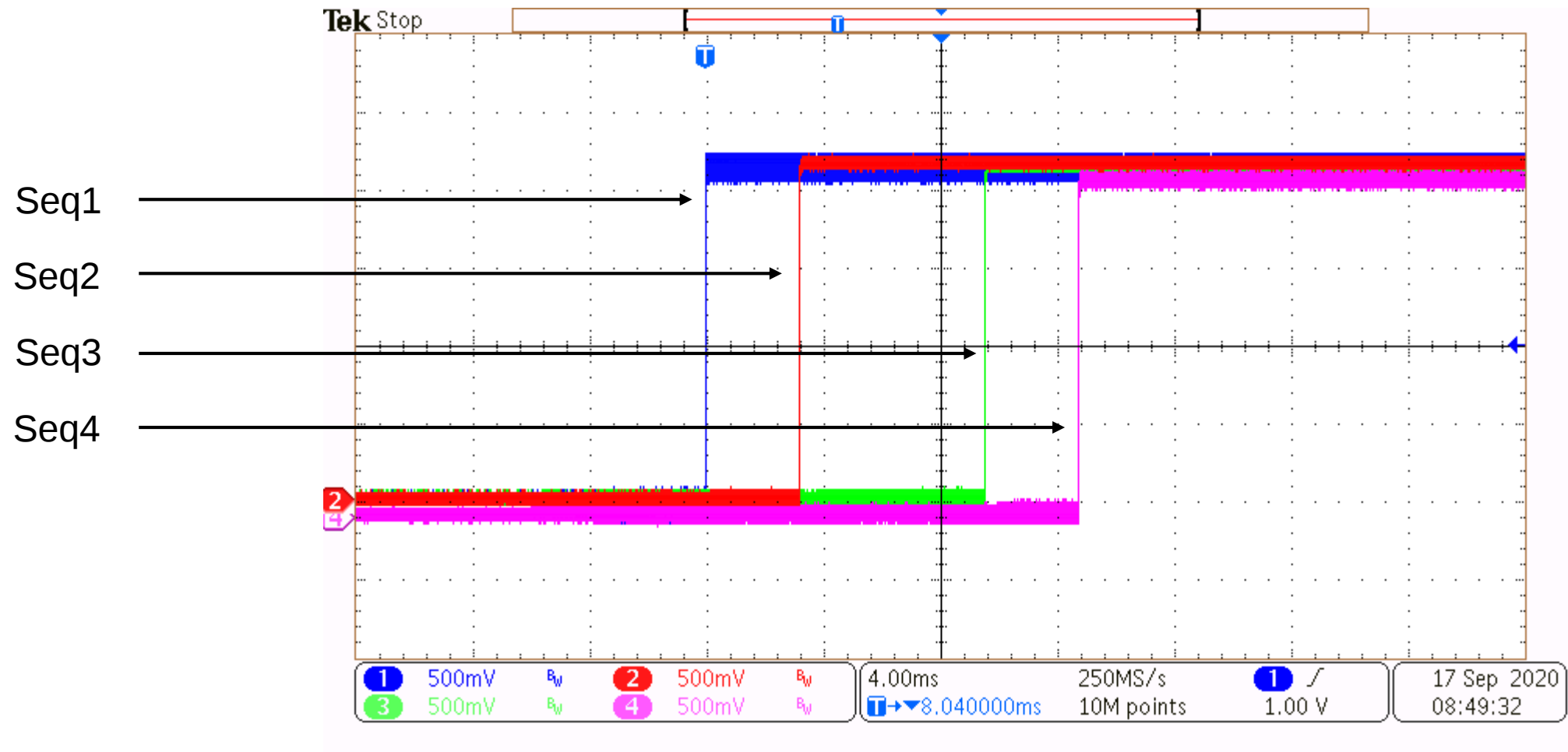
* +/-% from nominal voltage

DC Voltage Accuracy-- EVXLVU_19B

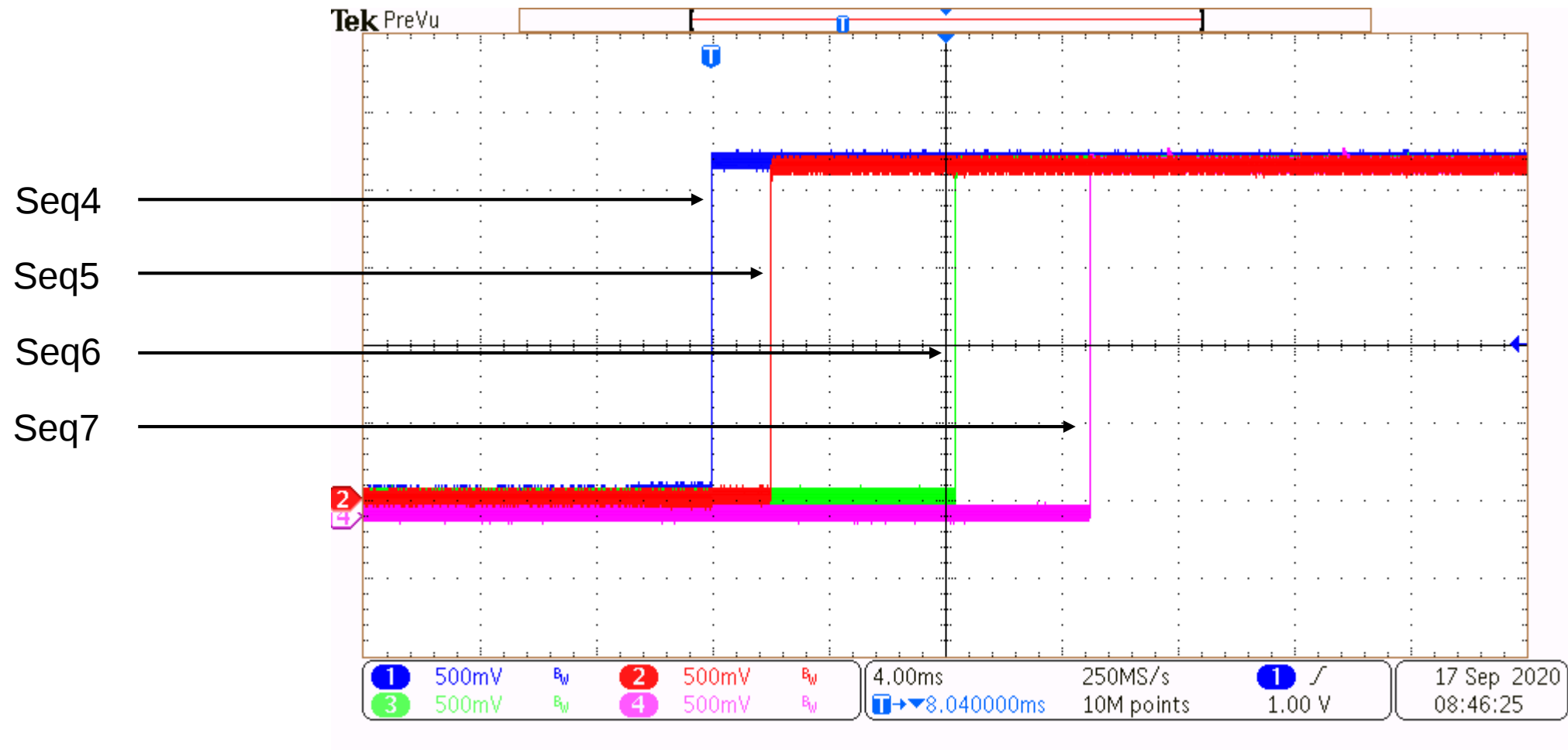
Rail	Power Rail	Nominal Vout (V)	Vout No Load (%)	Vout Typ Load (%)	Vout Max Load (%)	Max Error (%)	MPS part#	Power sequence
Rail1	VCCINT	0.85	0.848573	0.848255	0.847746	0.265	MPM3695-100(2x)	1
Rail2	VCCBRM, VCCINT-IO	0.85	0.851439	0.851087	0.848882	0.169	MPM3695-25	2
Rail3	VCCAUX, VCCAUX_IO, VCCADC	1.8	1.79735	1.79690	1.79481	0.147	MPM3695-10	3
Rail4	MGTYAVCC	0.9	0.895622	0.895241	0.89500	0.486	MPM3695-10	6
Rail5	MGTYAVCCAUX	1.8	1.81136	1.81039	1.81009	0.631	MPM3632C	5
Rail6	MGTYAVTT	1.2	1.20248	1.20182	1.20080	0.206	MPM3695-25	4
Rail7	VCCO(HDIO), VCCO(HPIO)	3.3	3.3207	3.30916	3.29887	0.627	MPM3650	7

* +/-% from nominal voltage

Power ON Sequence



Power ON Sequence



Rail 1: MPM3695-100 – Steady State Ripple

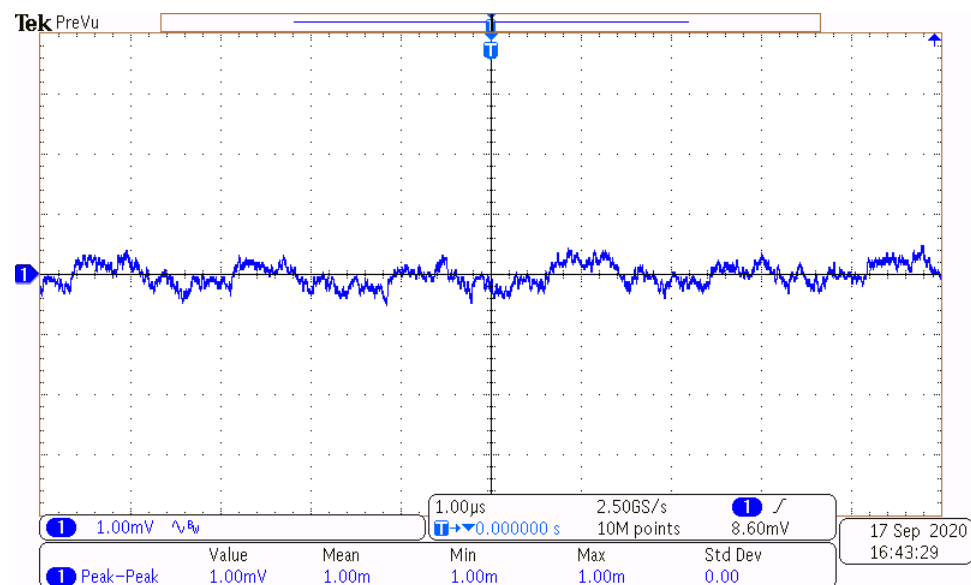
Test condition: $V_{in}=12V$, $V_o=0.85V$, $F=600kHz$, $C_{out}=47\mu F*59 \text{ MLCC}+220\mu F*10 \text{ POSCAP}$

Load (A)	Ripple p-p(mV)
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No Load (0A)	1
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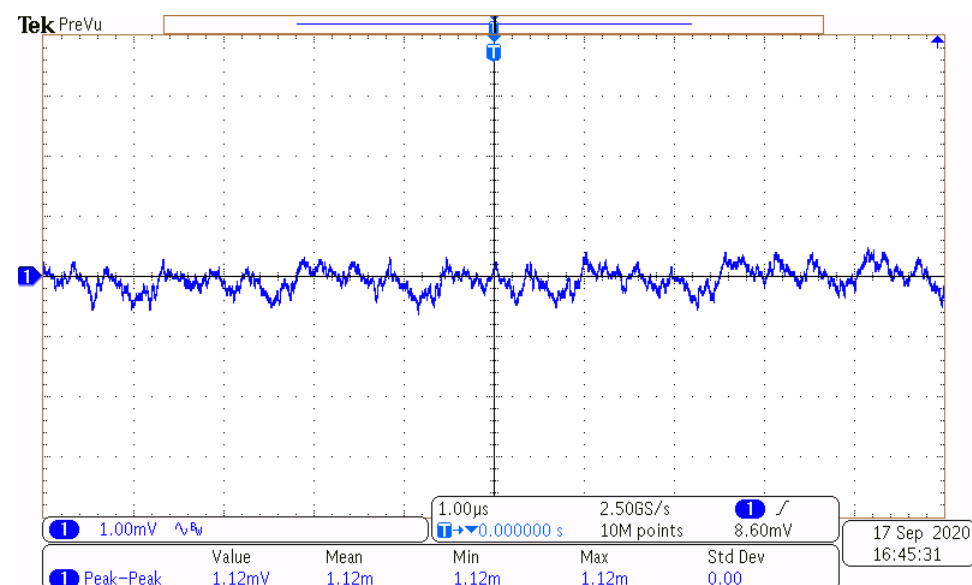
Max Load (200A)	1.12
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IOUT=0A



VOUT/AC

IOUT=200A



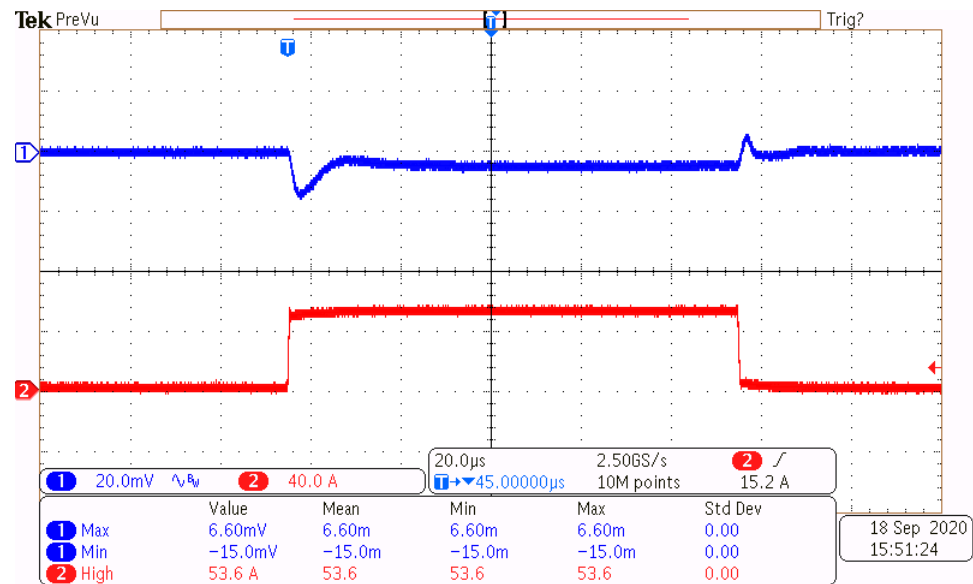
VOUT/AC

Rail 1: MPM3695-100 – Transient test

Test condition: Vin=12V, Vo=0.85V, F=600kHz, Cout=47uF*66 MLCC+220uF*10 POSCAP, Slew rate=100A/uS

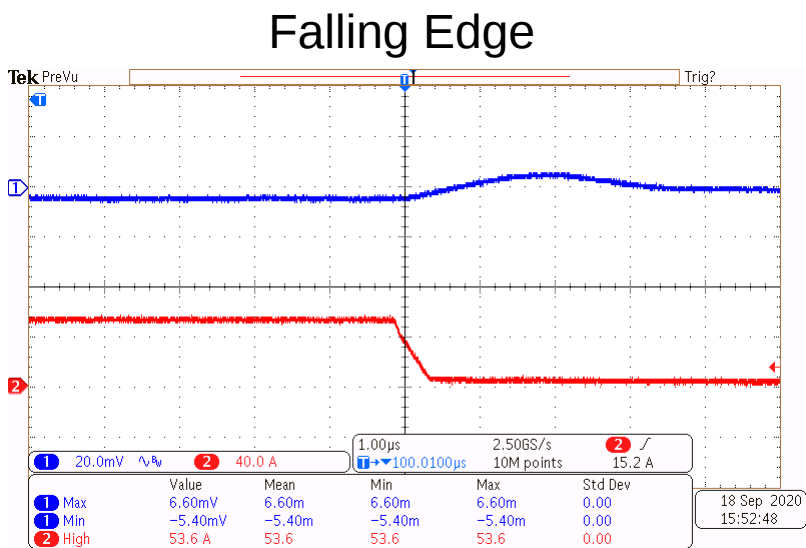
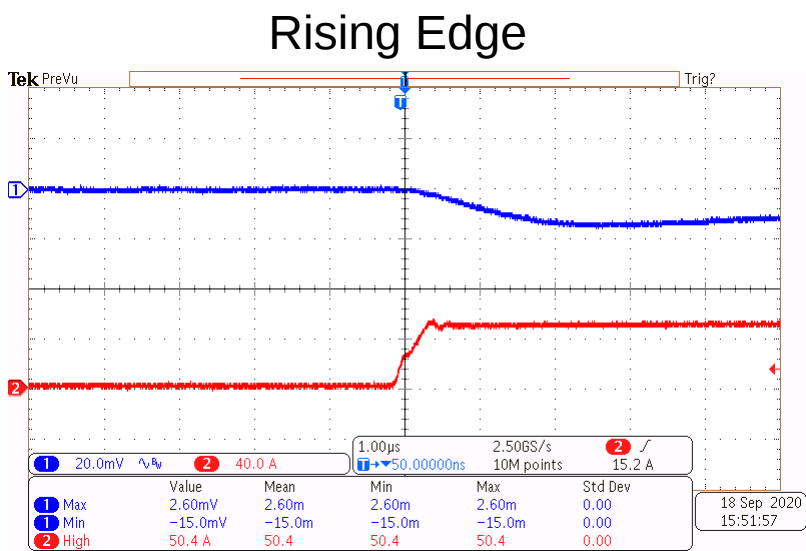
Parameter	Value(mV)	AC Accuracy(%)
Undershoot	-15	-1.76
Overshoot	6.6	0.78

IOUT=100A-150A-100A



VOUT/AC ITRAN

Note: 50A transient load is provided by MOSFET; 100A load is provide by E-load(Chroma 63600)



Rail 2: MPM3695-25 – Steady State Ripple

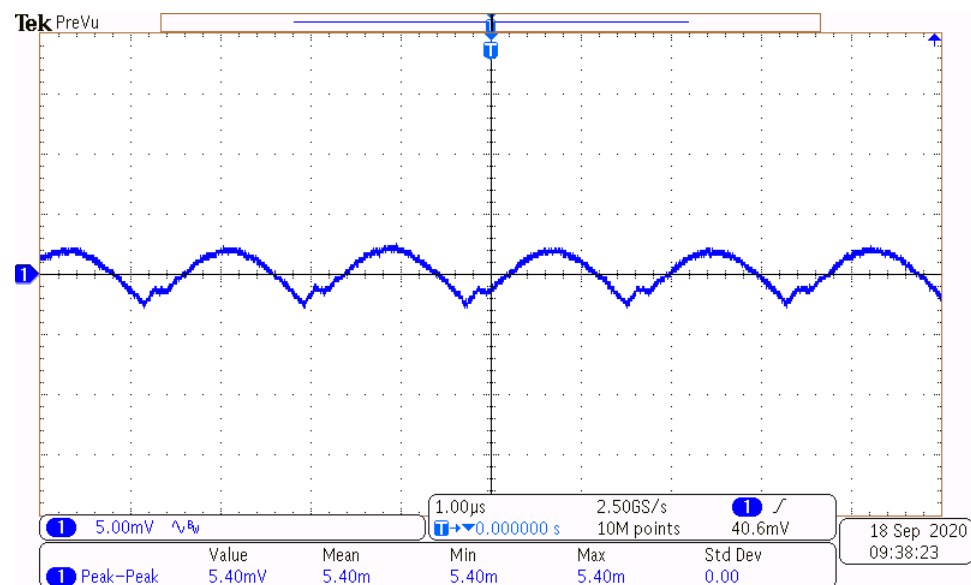
Test condition: $V_{in}=12V$, $V_o=0.85V$, $F=600kHz$, $C_{out}=47\mu F*6$ MLCC+ $220\mu F*1$ POSCAP

Load (A)	Ripple p-p(mV)
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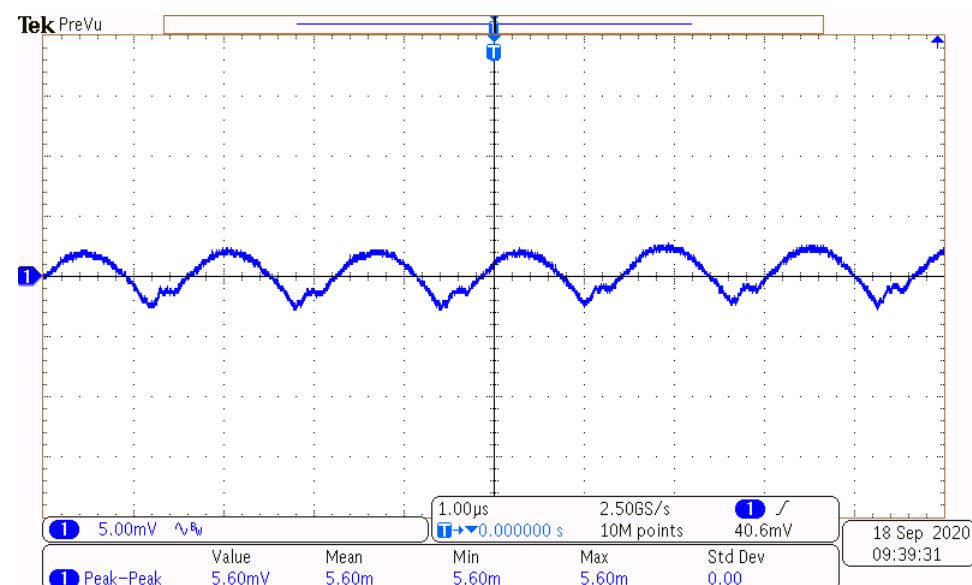
No Load (0A)	5.4
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Max Load (12A)	5.6
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IOUT=0A



IOUT=12A

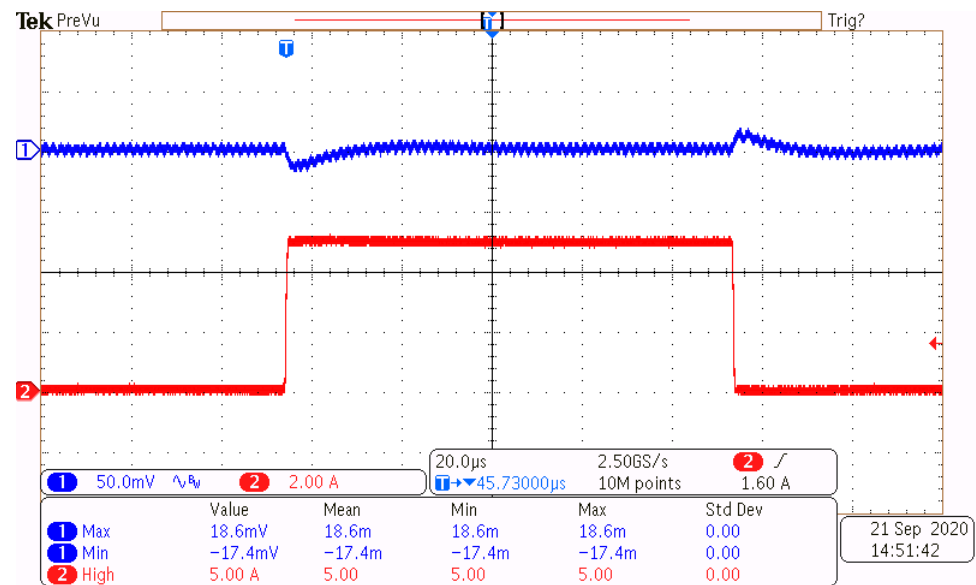


Rail 2: MPM3695-25 – Transient test

Test condition: Vin=12V, Vo=0.85V, F=600kHz, Cout=47uF*6 MLCC+220uF*1 POSCAP, Slew rate=10A/uS

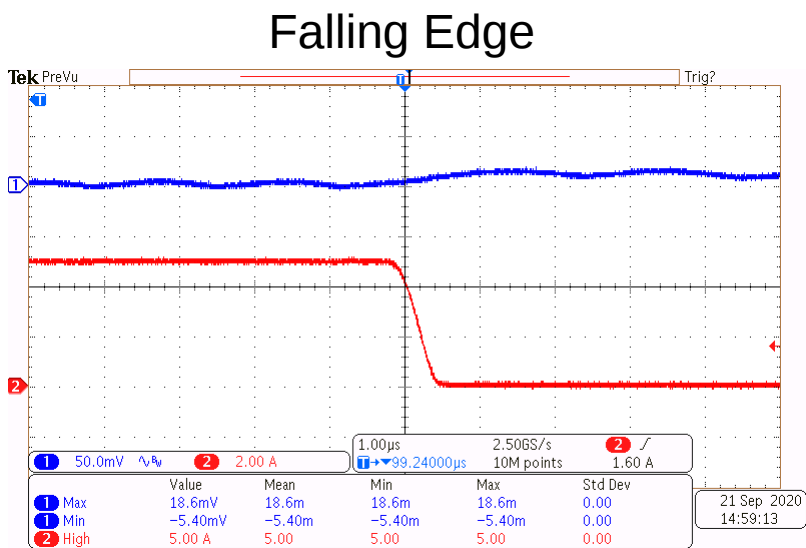
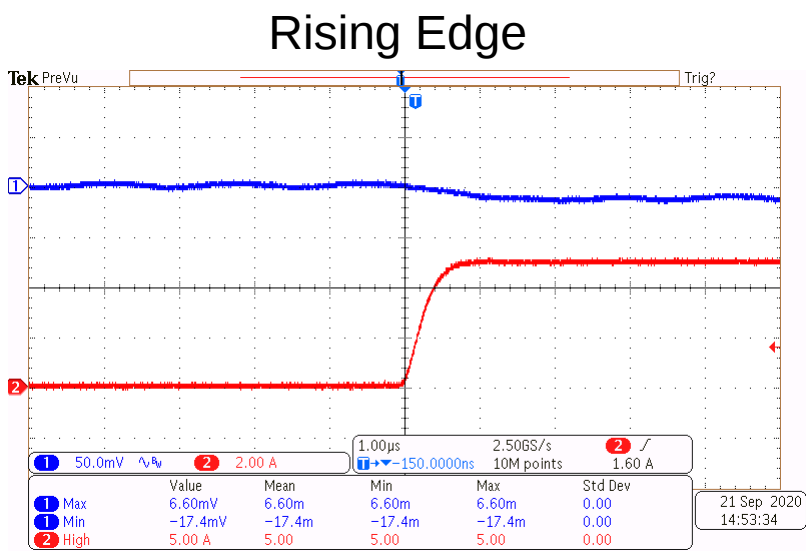
Parameter	Value(mV)	AC Accuracy(%)
Undershoot	-17.4	-2.05
Overshoot	18.6	2.19

IOUT=3A-8A-3A



VOUT/AC ITRAN

Note: 5A transient load is provided by MOSFET; 3A load is provide by E-load(Chroma 63600)

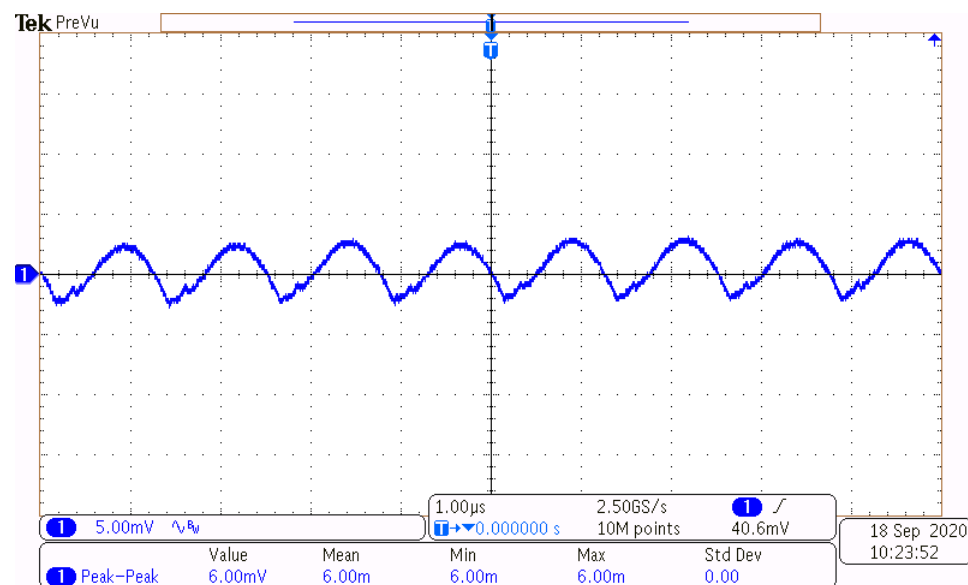


Rail 3: MPM3695-10 – Steady State Ripple

Test condition: $V_{in}=12V$, $V_o=1.8V$, $F=800kHz$, $C_{out}=47\mu F \cdot 6 \text{ MLCC} + 220 \cdot 1 \text{ POSCAP}$

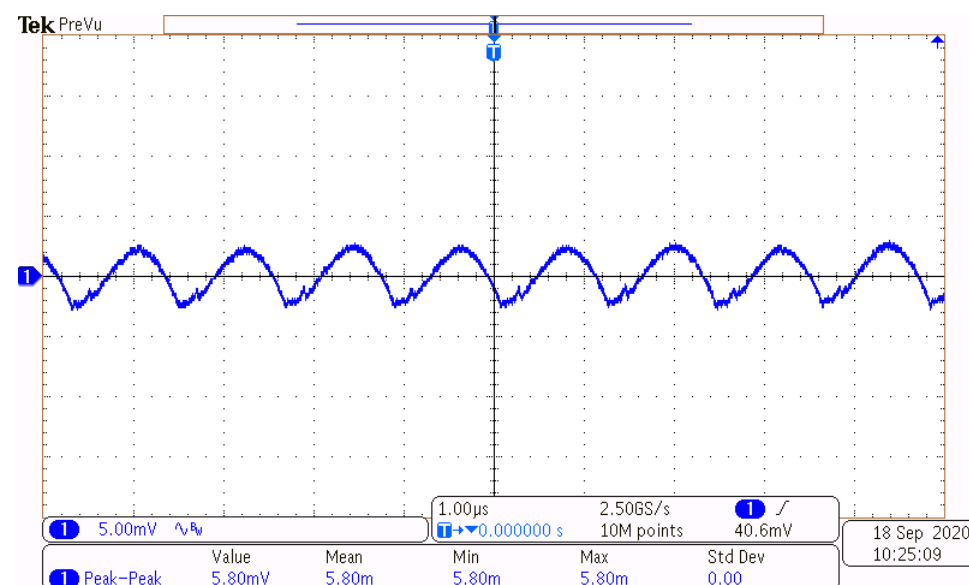
Load (A)	Ripple p-p(mV)
No Load (0A)	6
Max Load (7A)	5.8

IOUT=0A



VOUT/AC

IOUT=7A



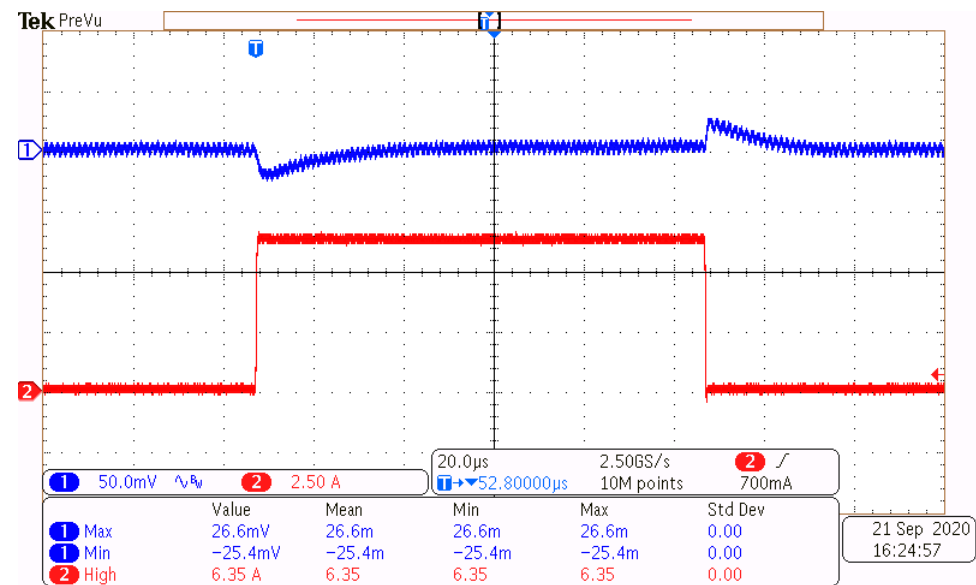
VOUT/AC

Rail 3: MPM3695-10 – Transient test

Test condition: Vin=12V, Vo=1.8V, F=600kHz, Cout=47uF*6 MLCC+220uF*1 POSCAP, Slew rate=10A/uS

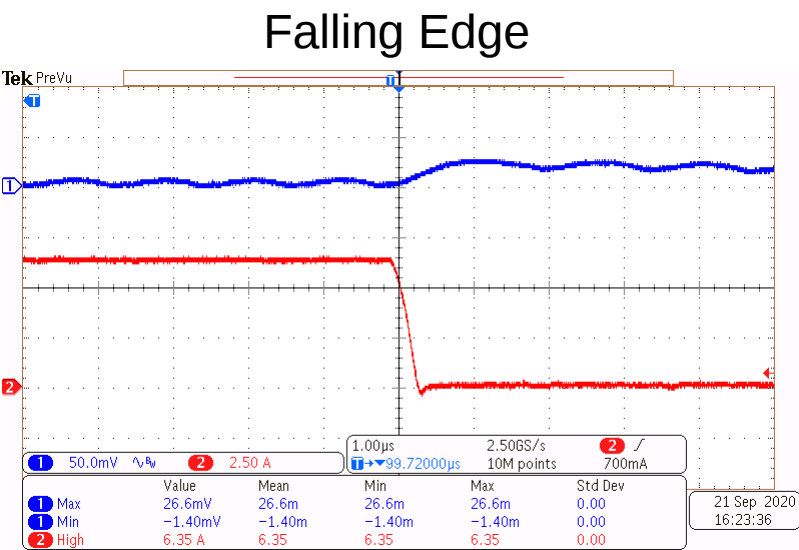
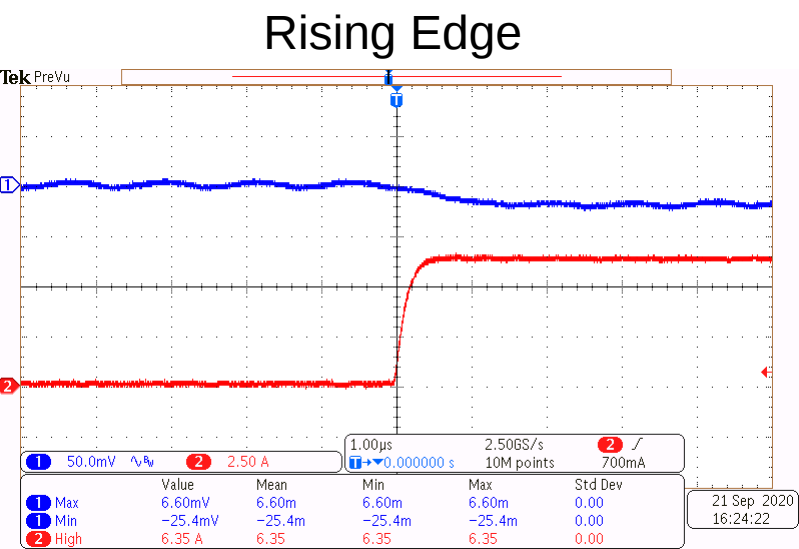
Parameter	Value(mV)	AC Accuracy(%)
Undershoot	-25.4	-1.41
Overshoot	26.6	1.48

IOUT=0.7A-7A-0.7A



VOUT/AC ITRAN

Note: 6.3A transient load is provided by MOSFET; 0.7A load is provide by E-load(Chroma 63600)



Rail 4: MPM3695-10 – Steady State Ripple

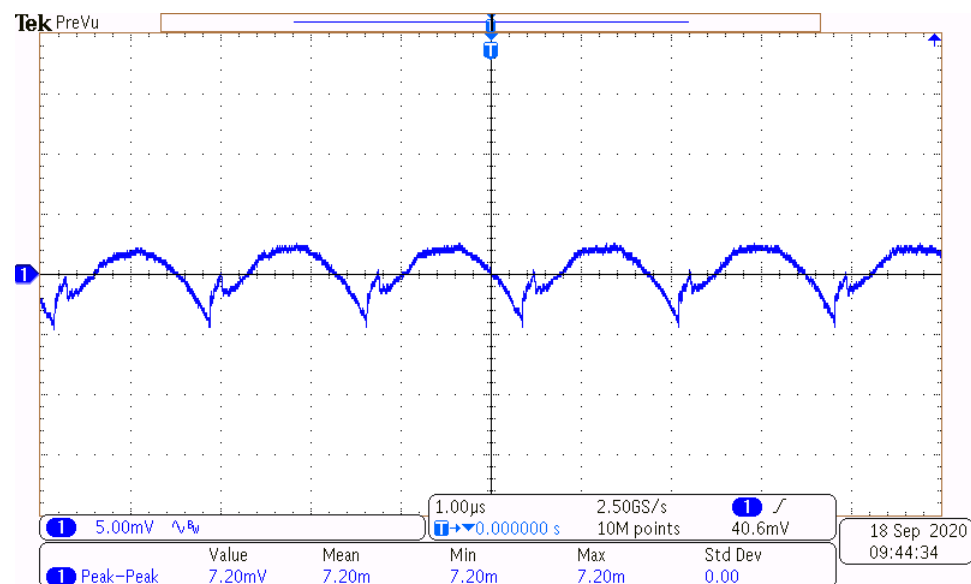
Test condition: $V_{in}=12V$, $V_o=0.9V$, $F=600kHz$, $C_{out}=47\mu F \times 4$ MLCC

Load (A)	Ripple p-p(mV)
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No Load (0A)	7.2
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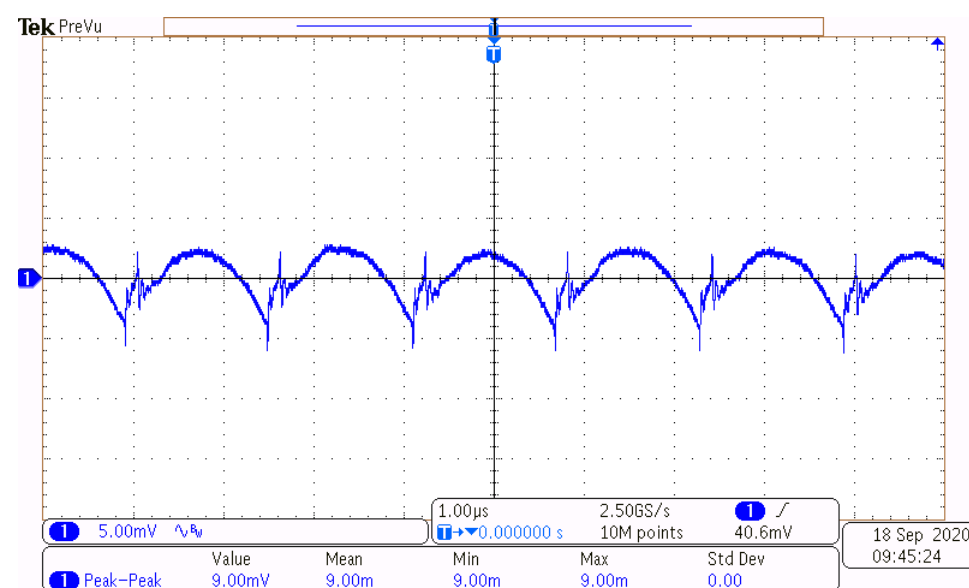
Max Load (7A)	9
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IOUT=0A



VOUT/AC

IOUT=7A



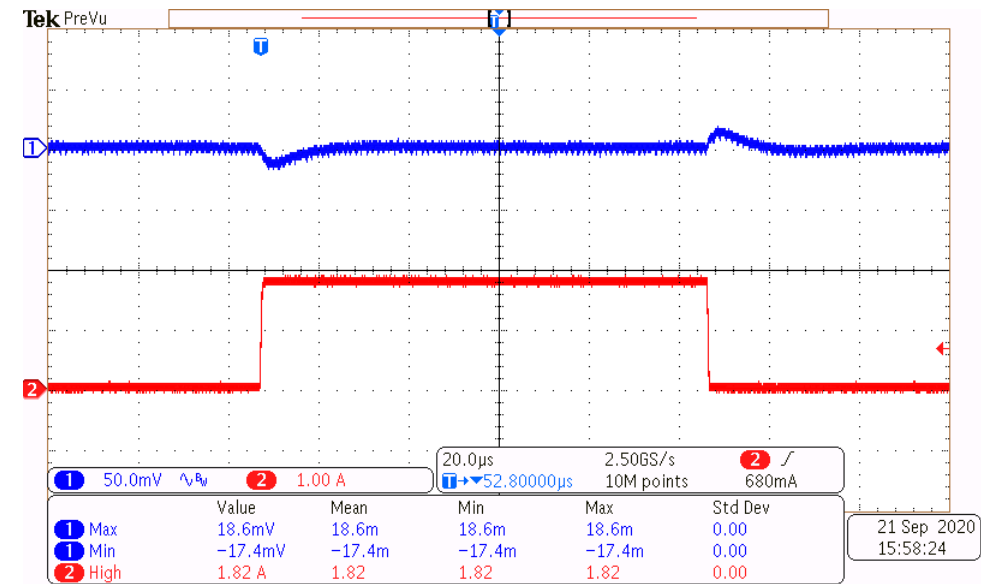
VOUT/AC

Rail 4: MPM3695-10 – Transient test

Test condition: Vin=12V, Vo=0.9V, F=600kHz, Cout=47uF*4 MLCC, Slew rate=10A/uS

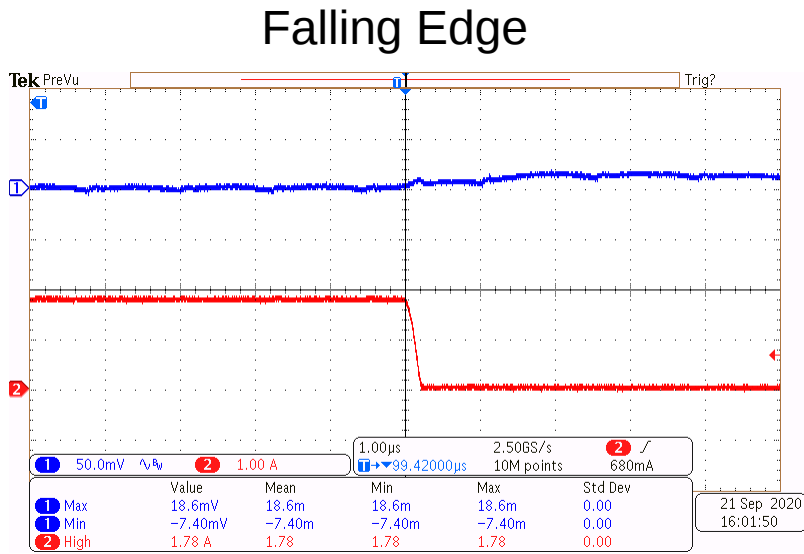
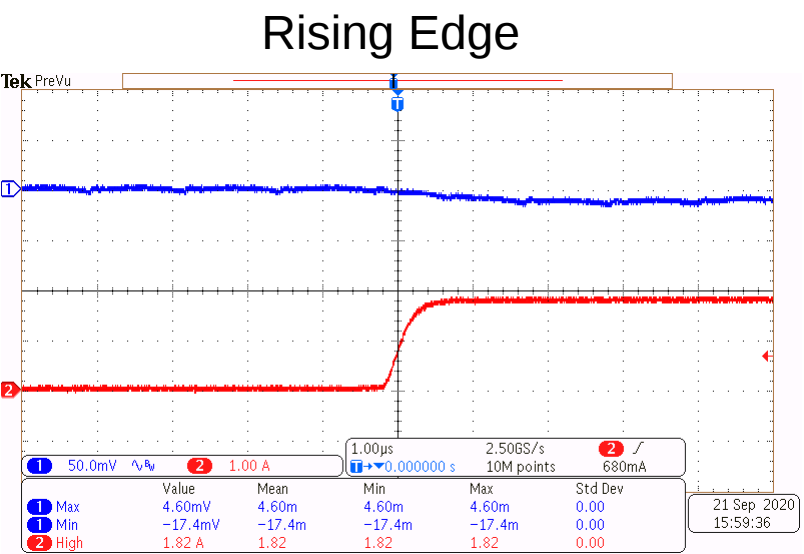
Parameter	Value(mV)	AC Accuracy(%)
Undershoot	-17.4	-1.93
Overshoot	18.6	2.07

IOUT=3.5A-5.25A-3.5A



VOUT/AC ITRAN

Note: 1.75A transient load is provided by MOSFET; 3.5A load is provide by E-load(Chroma 63600)



Rail 5: MPM3632C – Steady State Ripple

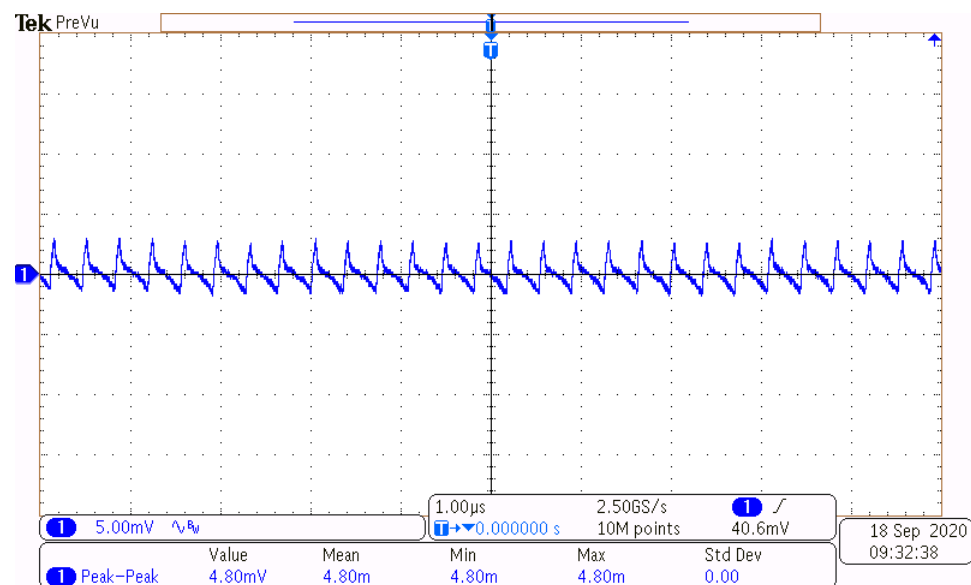
Test condition: $V_{in}=12V$, $V_o=1.8V$, $F=3000kHz$, $C_{out}=47\mu F \times 2$ MLCC

Load (A)	Ripple p-p(mV)
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No Load (0A)	4.8
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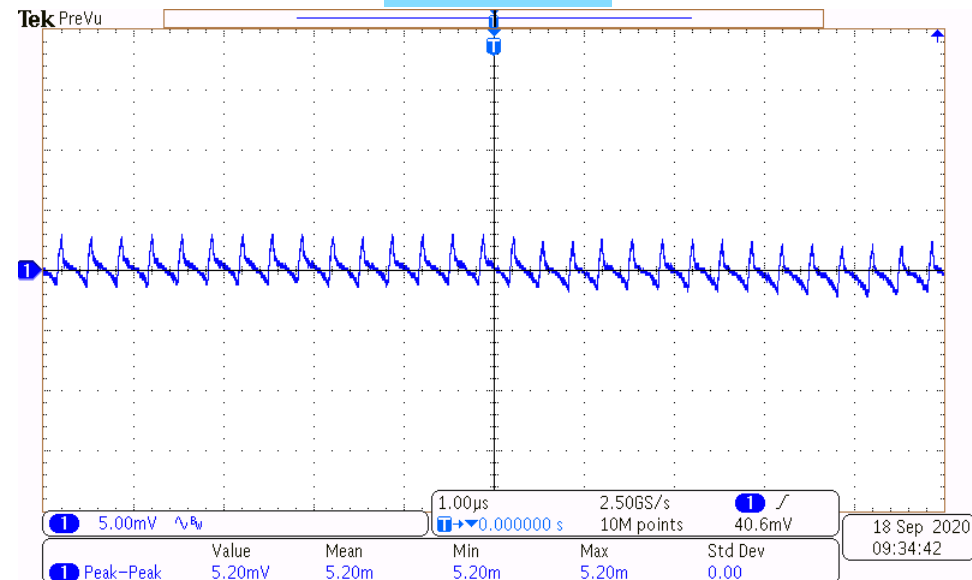
Max Load (0.6A)	5.2
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IOUT=0A



VOUT/AC

IOUT=0.6A



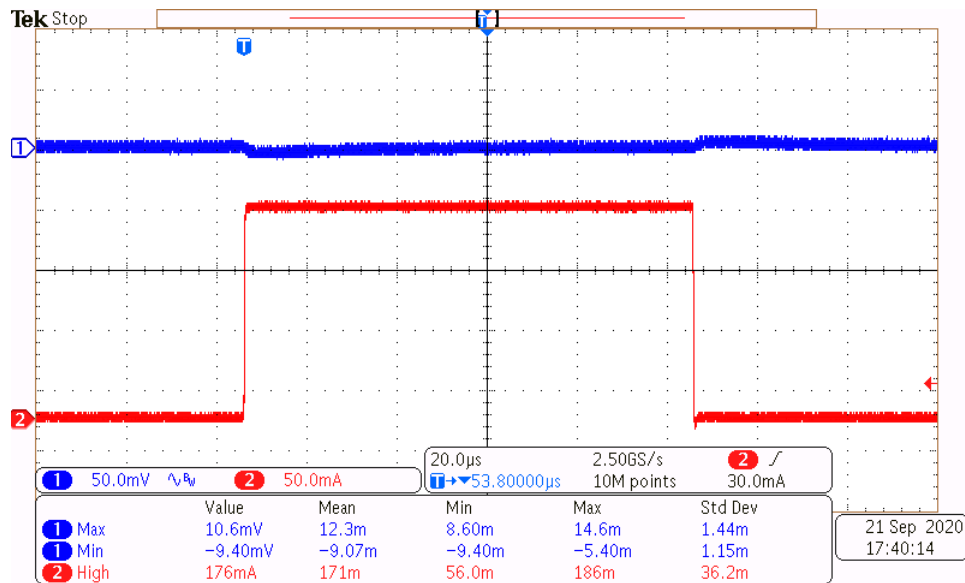
VOUT/AC

Rail 5: MPM3632C – Transient test

Test condition: $V_{in}=12V$, $V_o=1.8V$, $F=3000kHz$, $C_{out}=47\mu F \times 2$ MLCC, Slew rate= $10A/\mu S$

Parameter	Value(mV)	AC Accuracy(%)
Undershoot	-9.4	-0.52
Overshoot	10.6	0.59

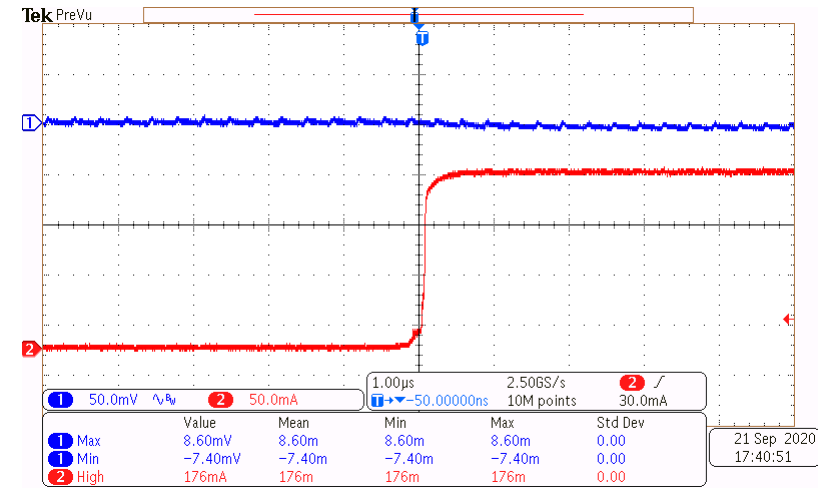
IOUT=0.3A-0.475A-0.3A



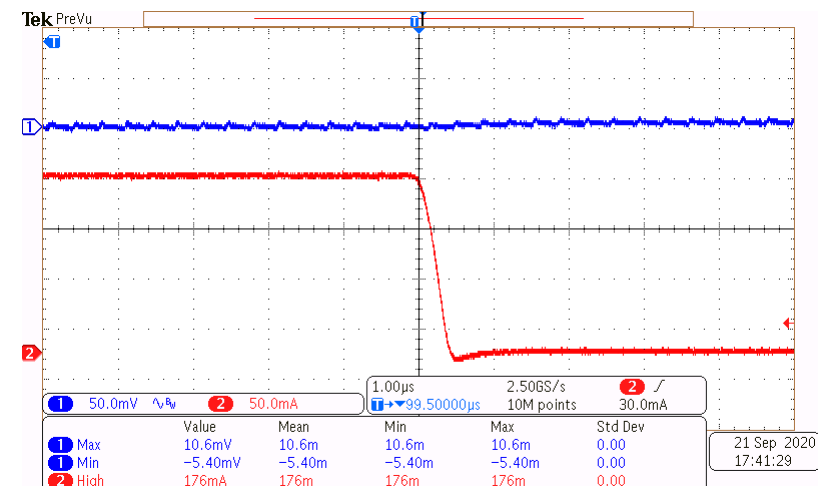
VOUT/AC ITRAN

Note: 0.175A transient load is provided by MOSFET; 0.3A load is provide by E-load(Chroma 63600)

Rising Edge



Falling Edge



Rail 6: MPM3695-25 – Steady State Ripple

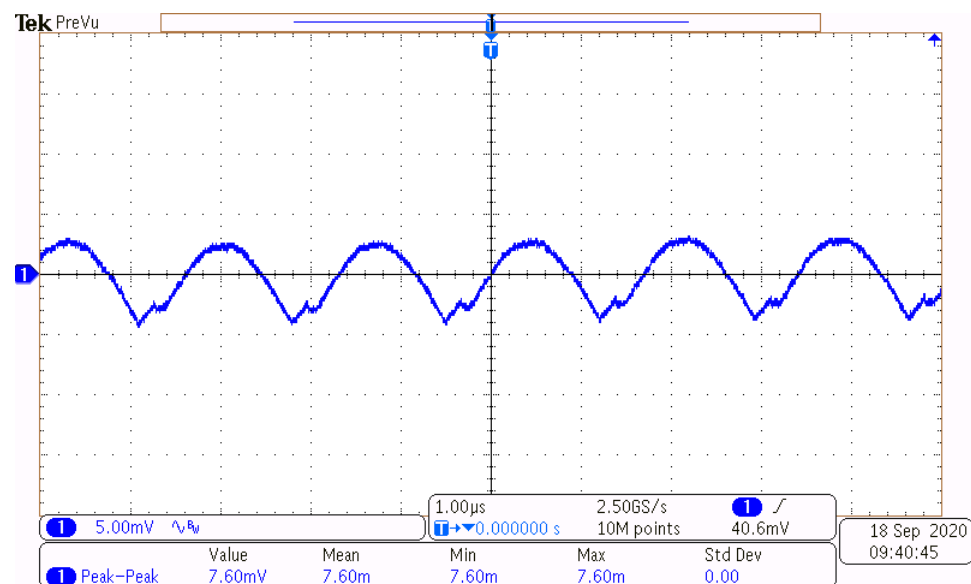
Test condition: $V_{in}=12V$, $V_o=1.2V$, $F=600kHz$, $C_{out}=47\mu F \times 6$ MLCC + $220\mu F \times 1$ POSCAP

Load (A)	Ripple p-p(mV)
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No Load (0A)	7.6
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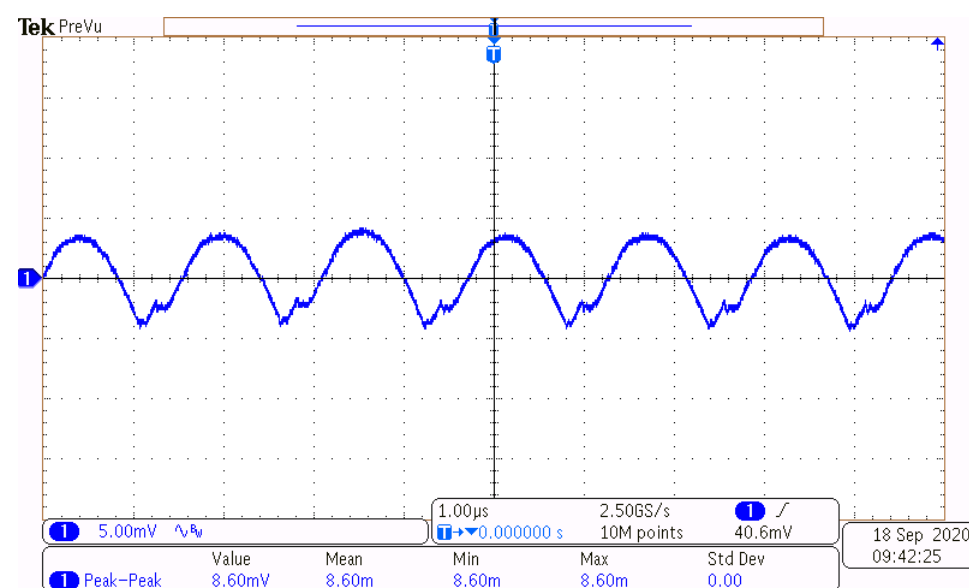
Max Load (16A)	8.6
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IOUT=0A



VOUT/AC

IOUT=16A



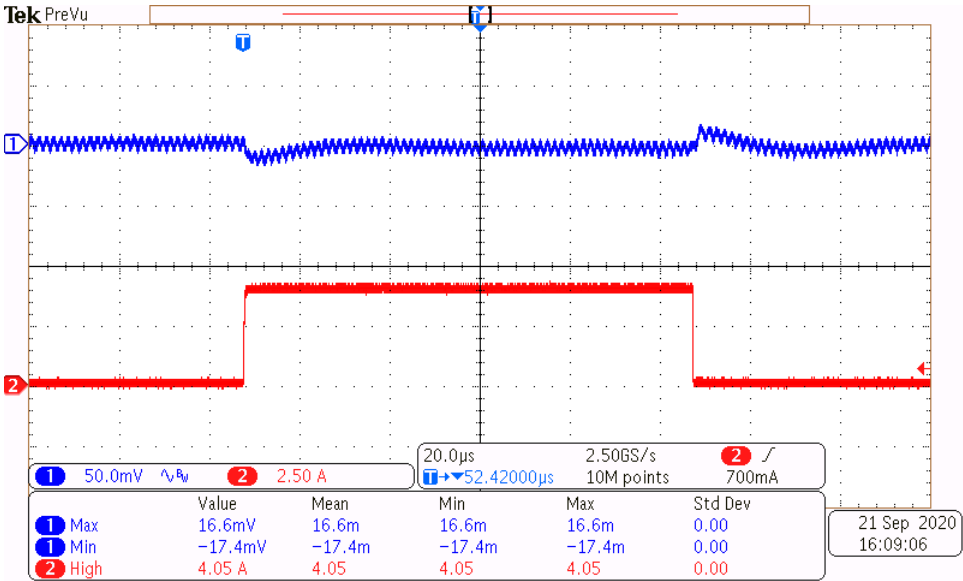
VOUT/AC

Rail 6: MPM3695-25 – Transient test

Test condition: Vin=12V, Vo=1.2V, F=600kHz, Cout=47uF*6 MLCC+220uF*1 POSCAP, Slew rate=10A/uS

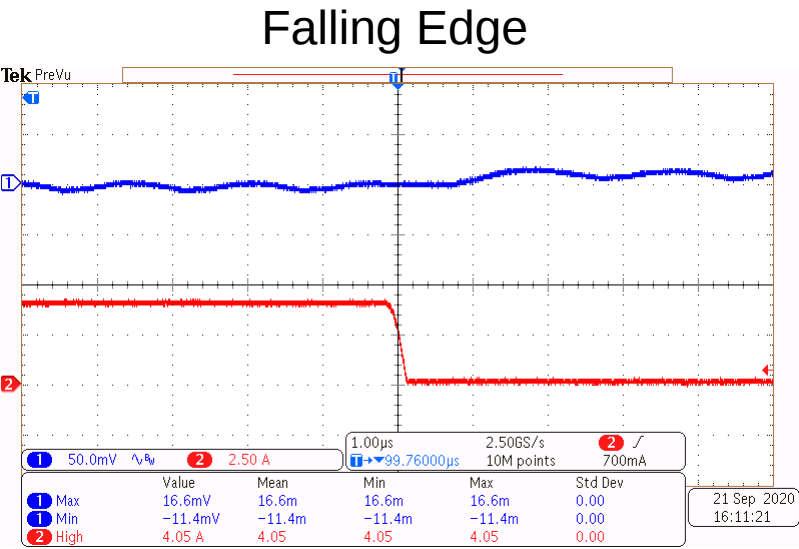
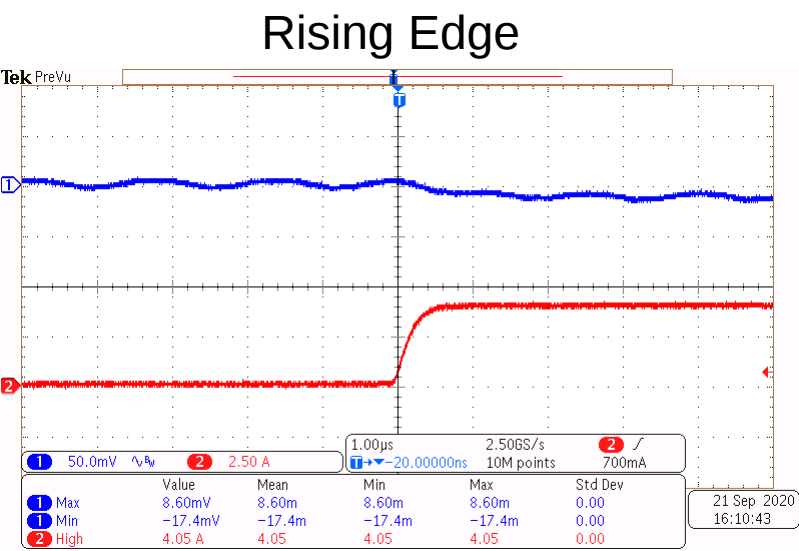
Parameter	Value(mV)	AC Accuracy(%)
Undershoot	-17.4	-1.45
Overshoot	16.6	1.38

IOUT=8A-12A-8A



VOUT/AC ITRAN

Note: 4A transient load is provided by MOSFET; 8A load is provide by E-load(Chroma 63600)

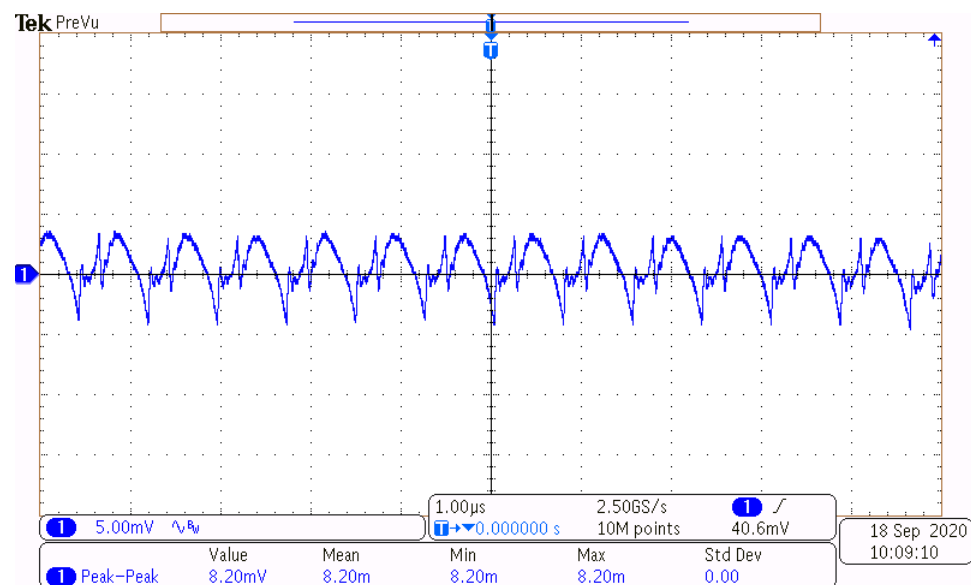


Rail 7: MPM3650 – Steady State Ripple

Test condition: $V_{in}=12V$, $V_o=3.3V$, $F=1200kHz$, $C_{out}=22\mu F \times 4$ MLCC

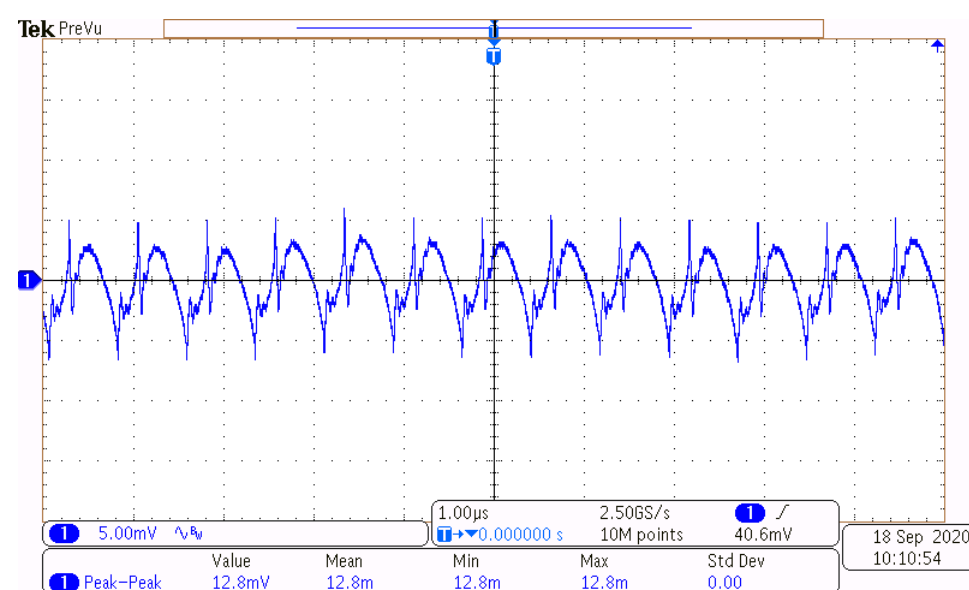
Load (A)	Ripple p-p(mV)
No Load (0A)	8.2
Max Load (3A)	12.8

IOUT=0A



VOUT/AC

IOUT=3A



VOUT/AC

Rail 7: MPM3650 – Transient test

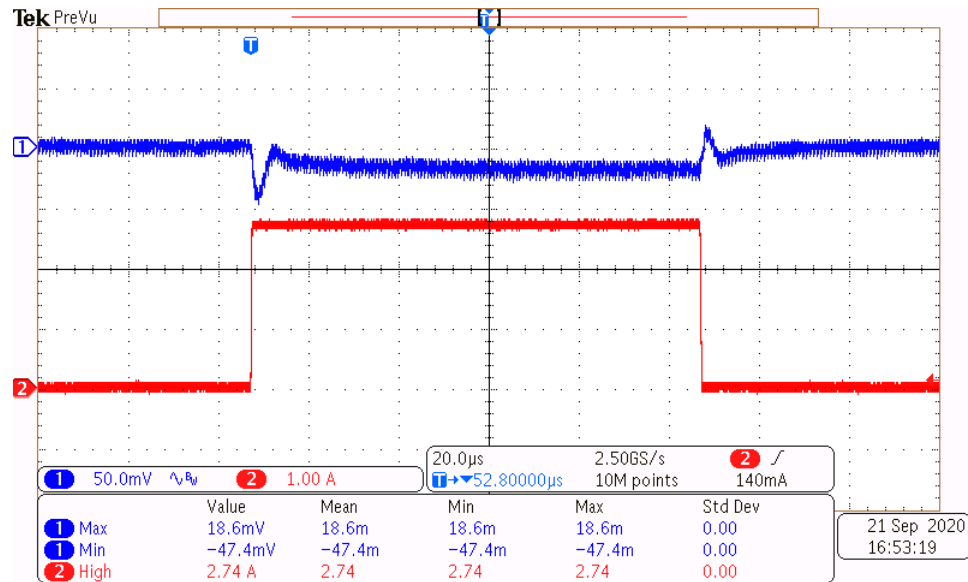
Test condition: $V_{in}=12V$, $V_o=3.3V$, $F=1200kHz$, $C_{out}=22\mu F \times 4$ MLCC, Slew rate= $10A/\mu s$

Parameter	Value(mV)	AC Accuracy(%)
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Undershoot	-47.4	-1.44
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Overshoot	18.6	0.56
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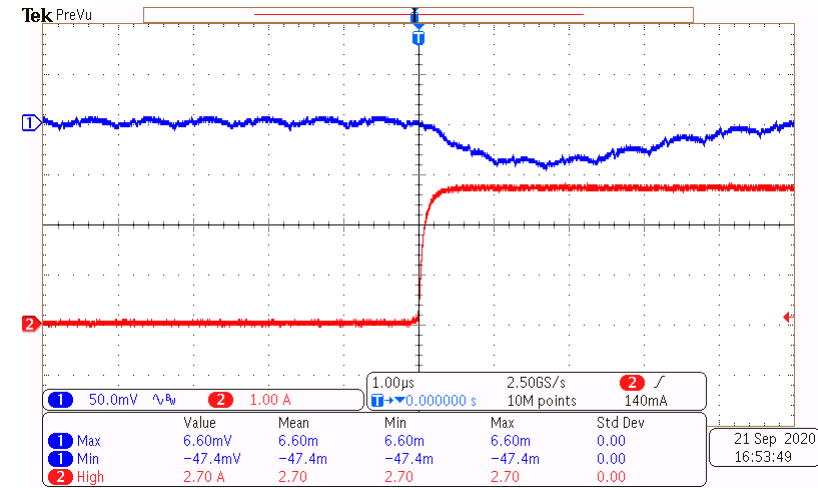
$I_{OUT}=0.3A-3A-0.3A$



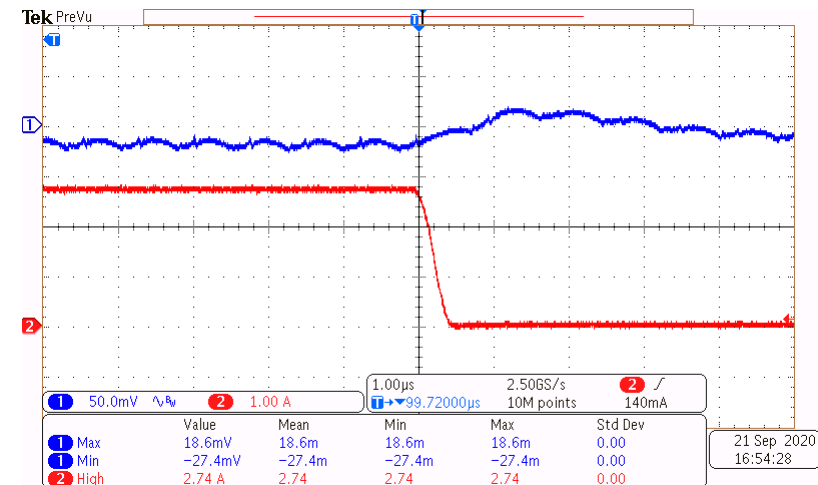
VOUT/AC ITRAN

Note: 2.7A transient load is provided by MOSFET; 0.3A load is provide by E-load(Chroma 63600)

Rising Edge



Falling Edge



Thank you