

PMP9475 Test Report

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- 4) Load Regulation
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1) Block Diagram

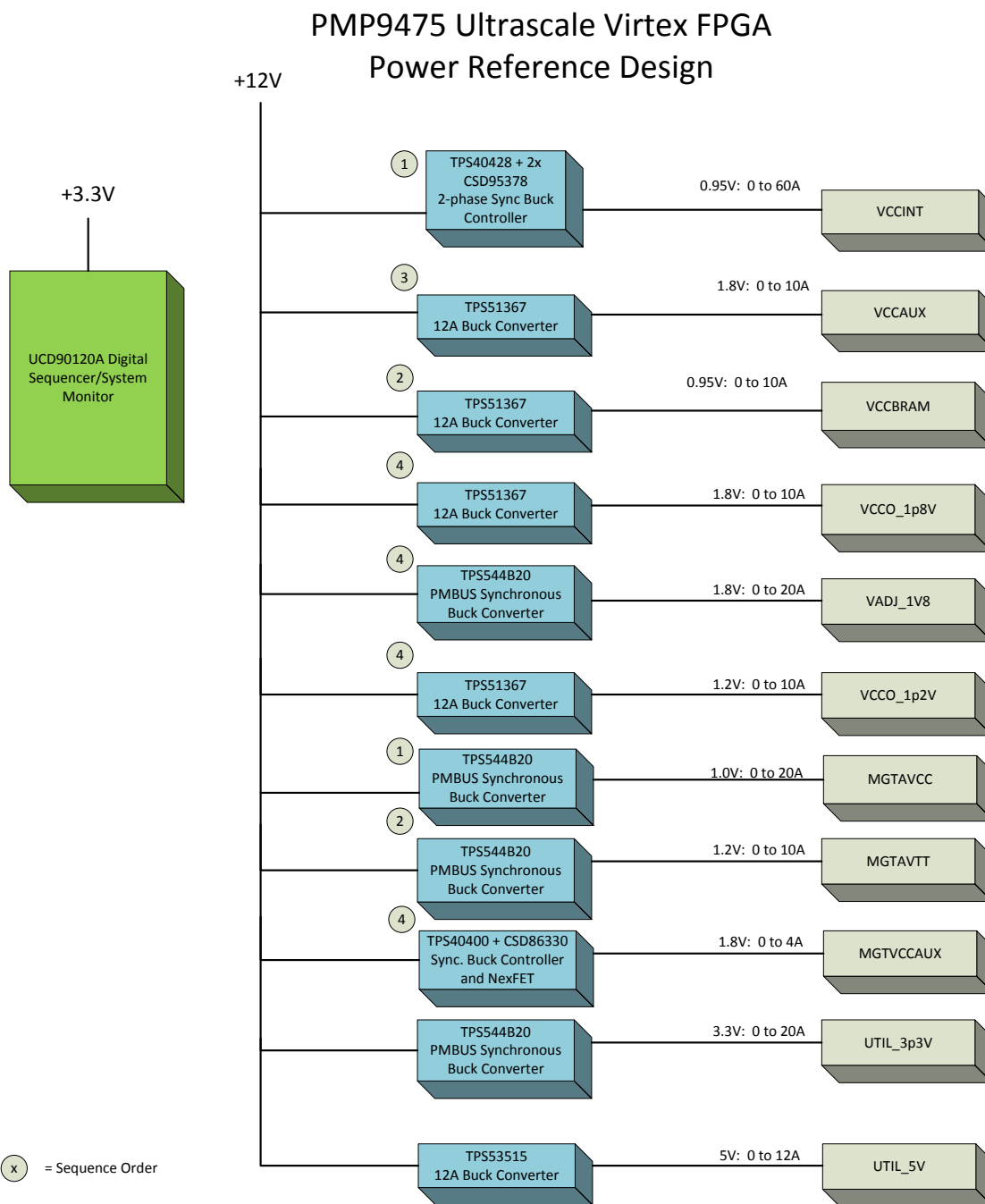


Figure 1. Block Diagram

2) Board Photos

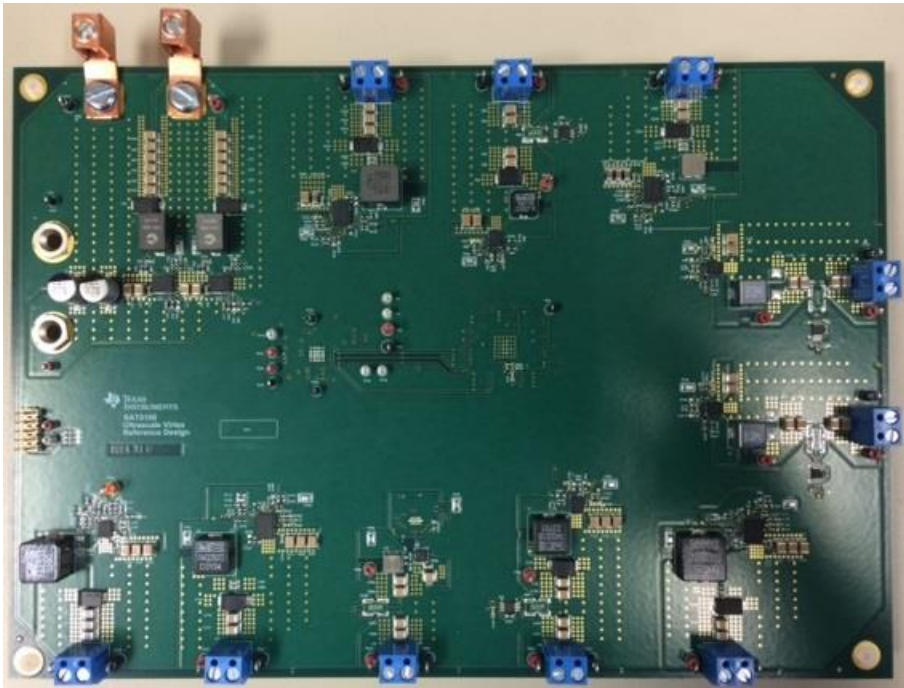


Figure 2. Board Photo Top

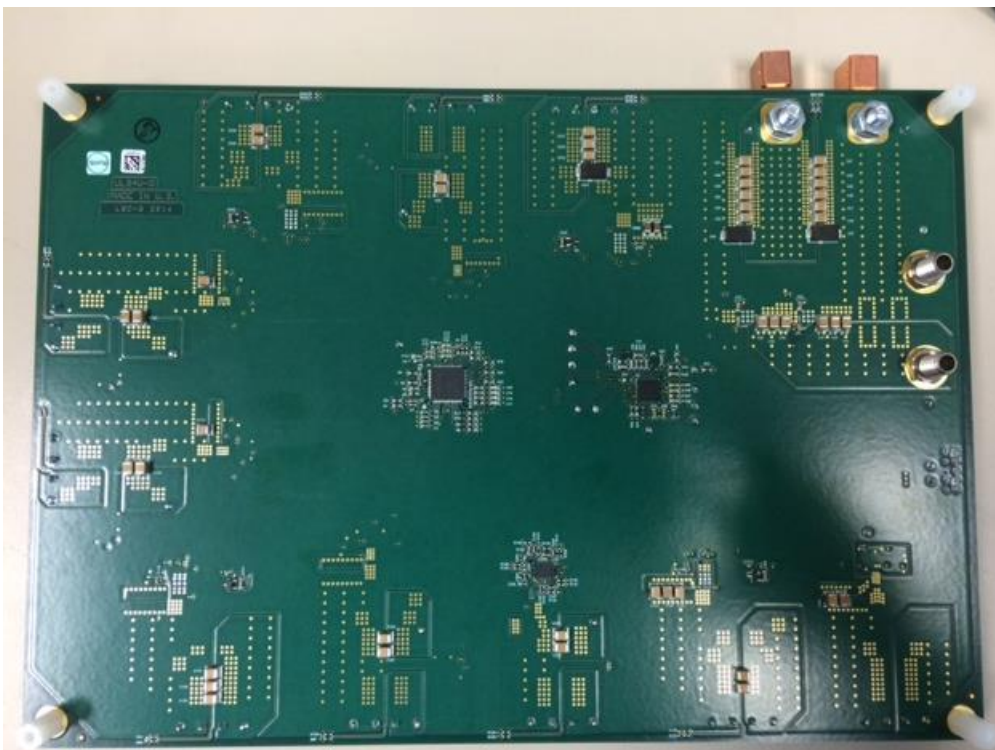


Figure 3. Board Photo Bottom

3) Efficiency

The efficiency of the converters is shown in the figures below. The input voltage is set to 12V.

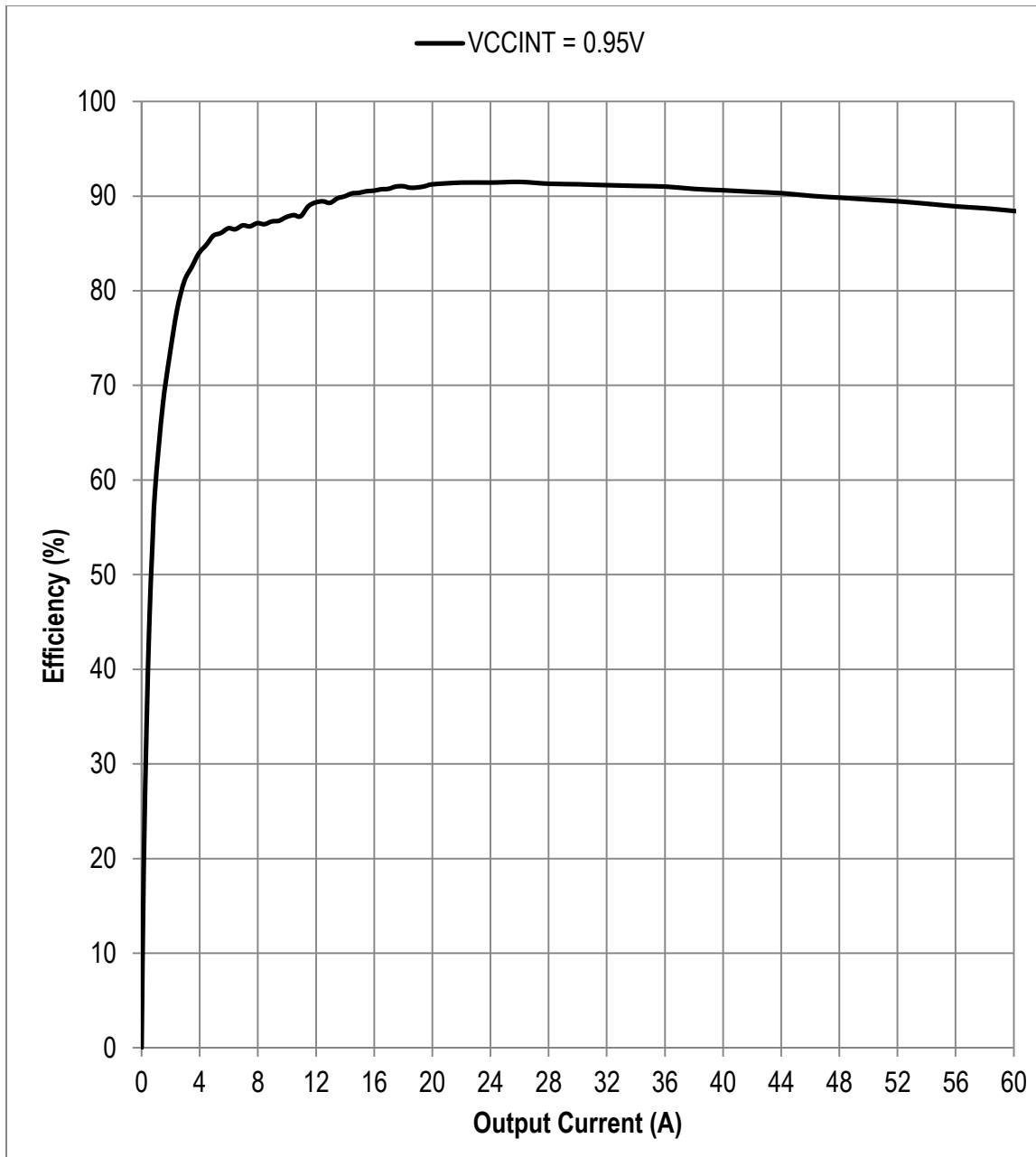


Figure 4. VIN = 12V, VCCINT Efficiency

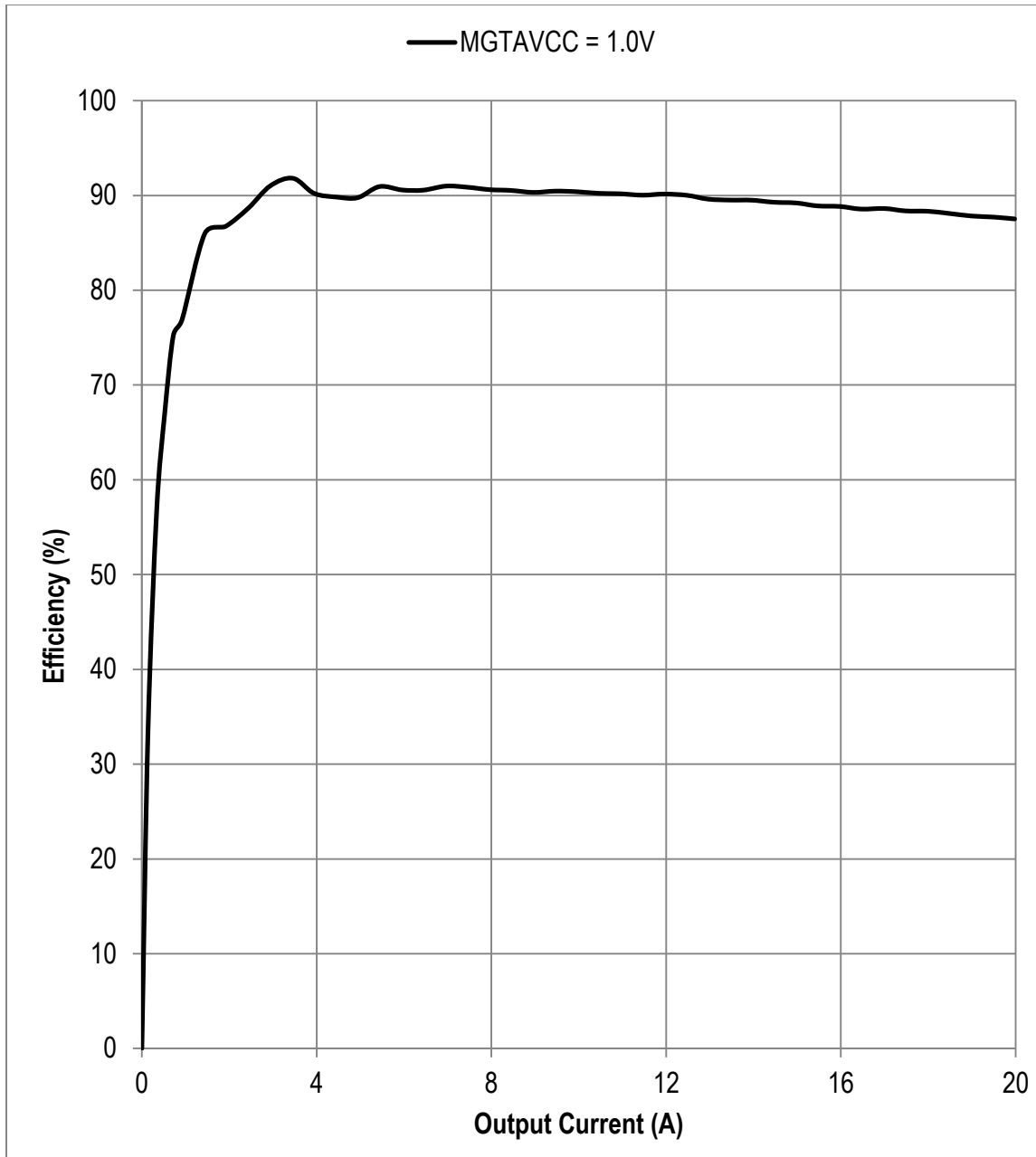


Figure 5. VIN = 12V, MGTA VCC Efficiency

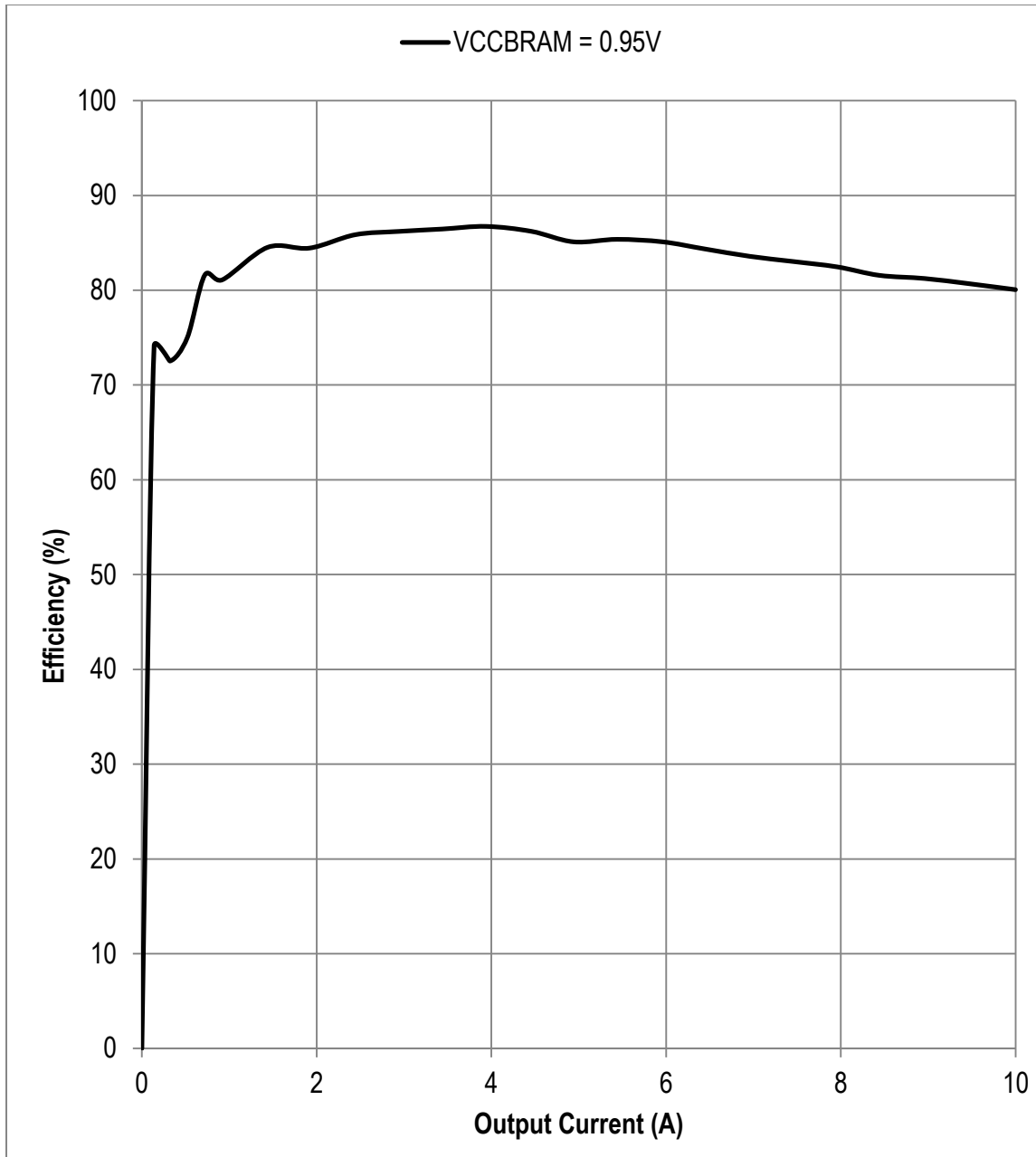


Figure 6. VIN = 12V, VCCBRAM Efficiency

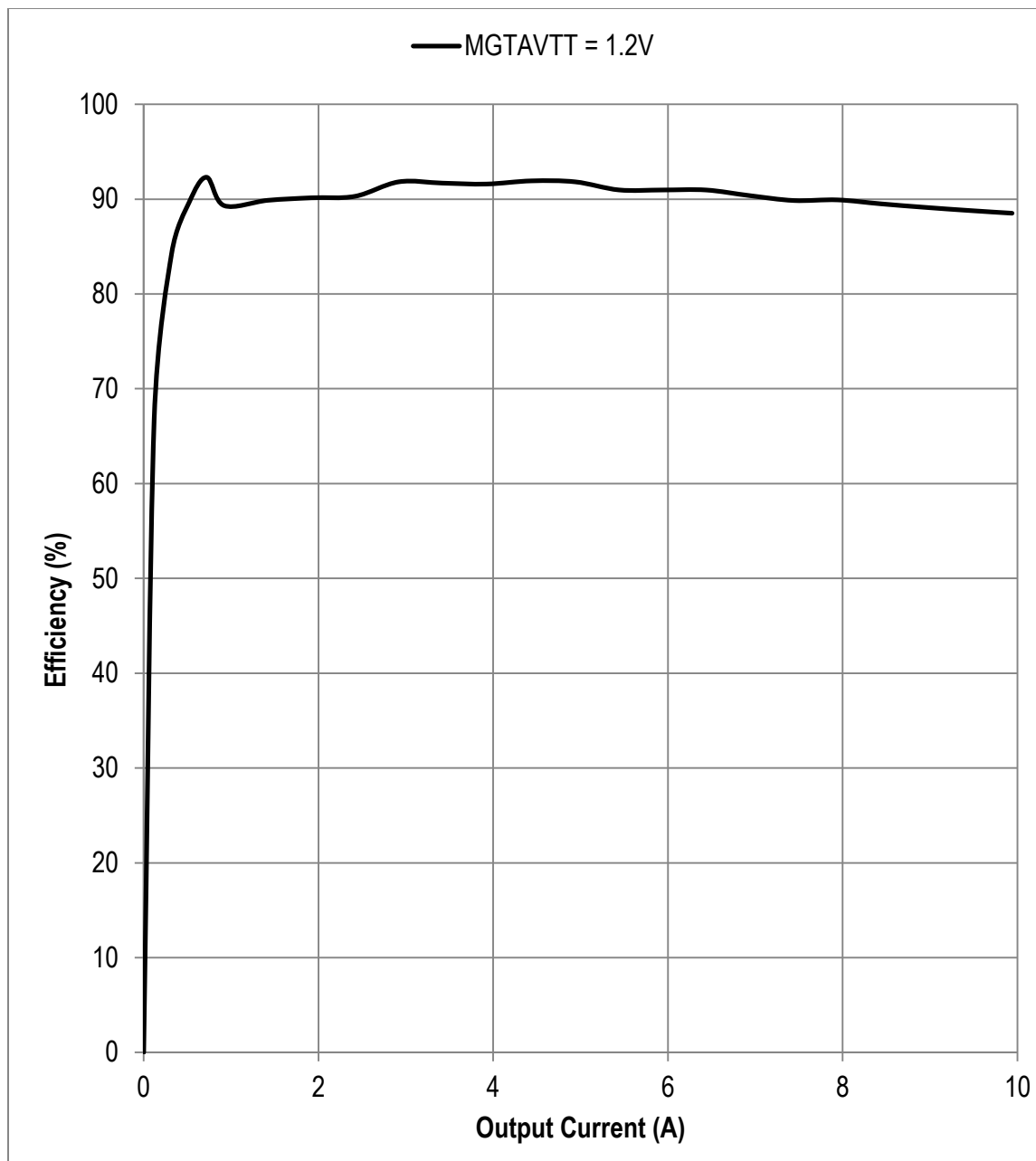


Figure 7. VIN = 12V, MGTAVTT Efficiency

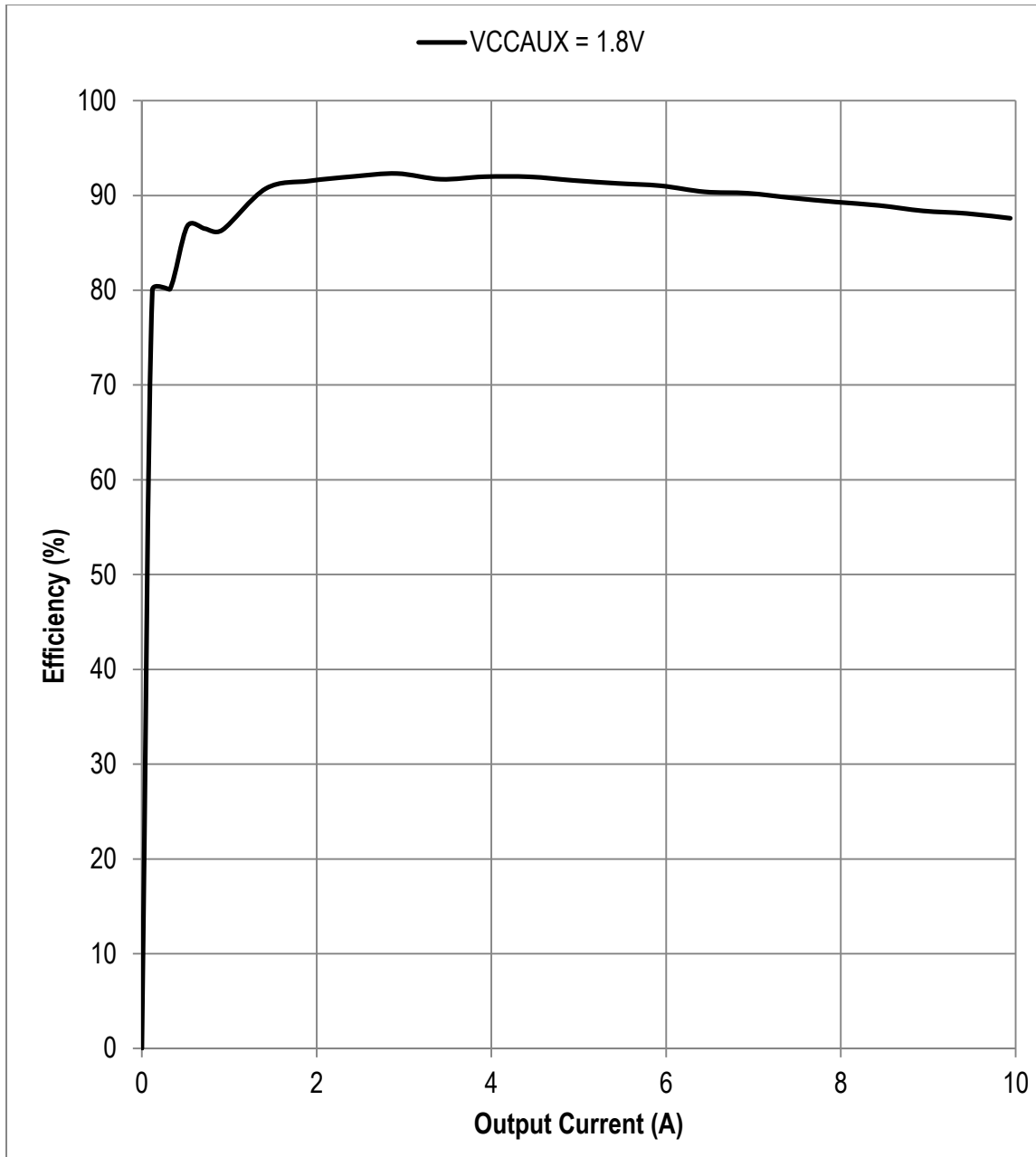


Figure 8. VIN = 12V, VCCAUX Efficiency

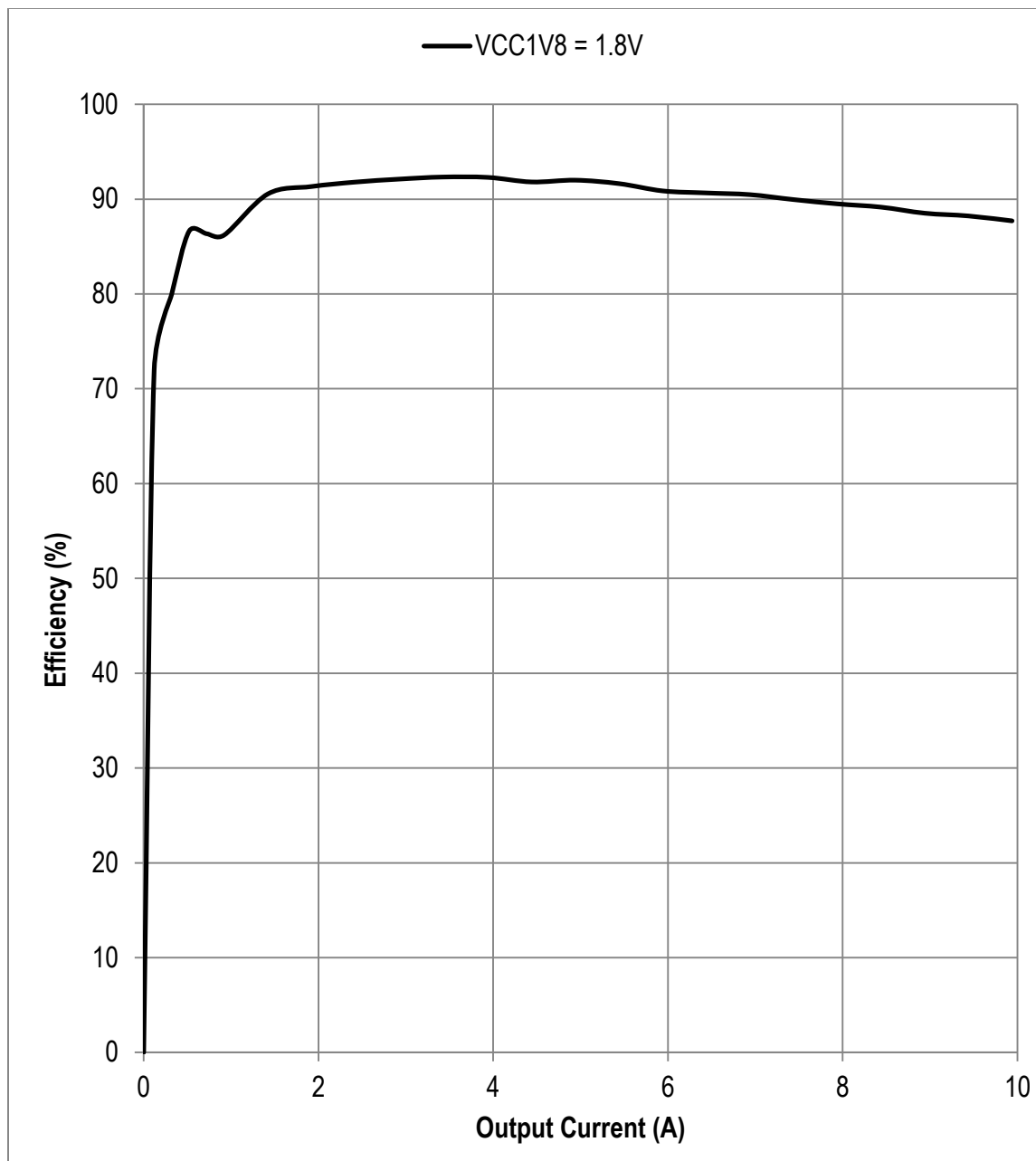


Figure 9. VIN = 12V, VCC1V8 Efficiency

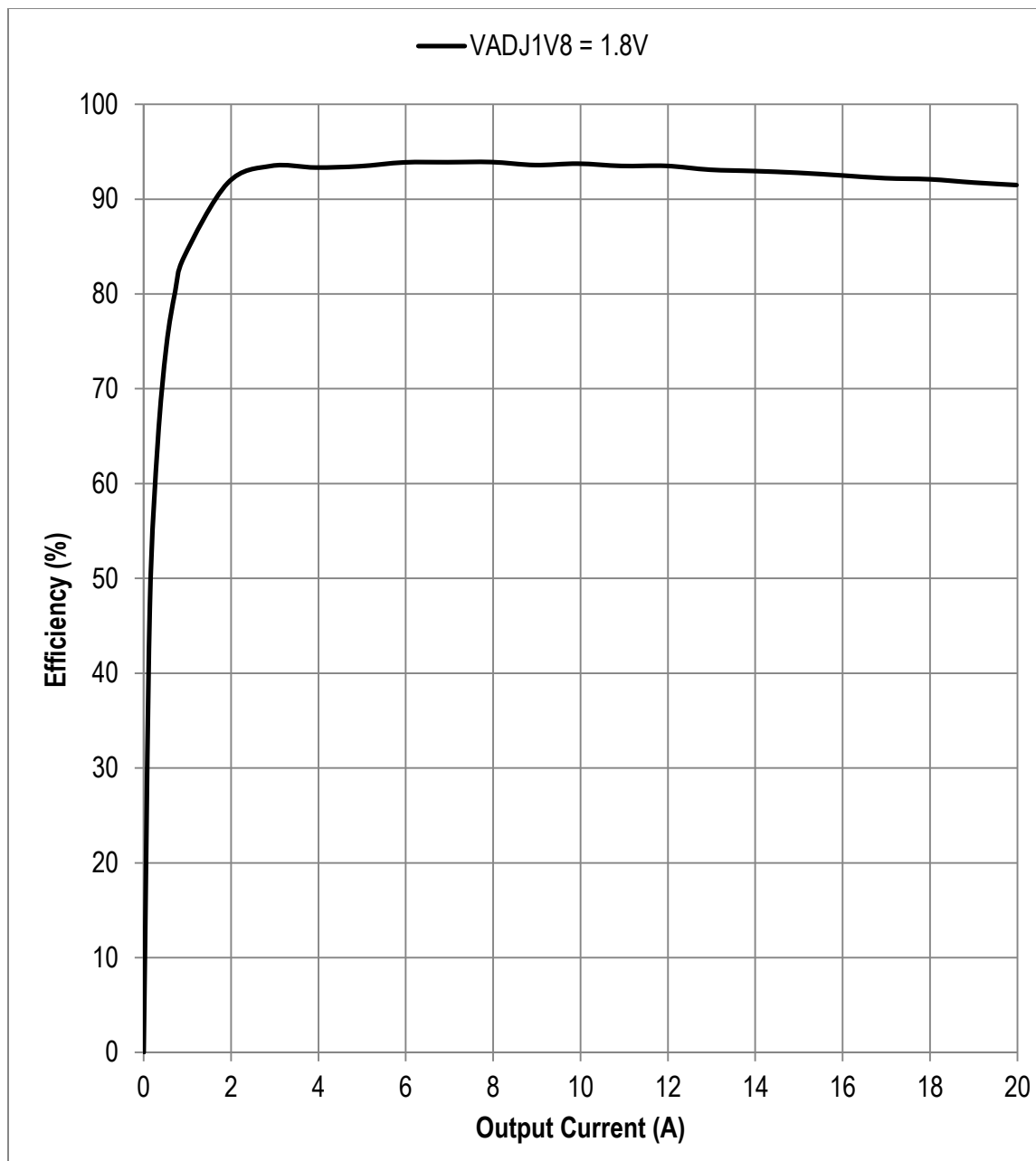


Figure 10. VIN = 12V, VADJ1V8 Efficiency

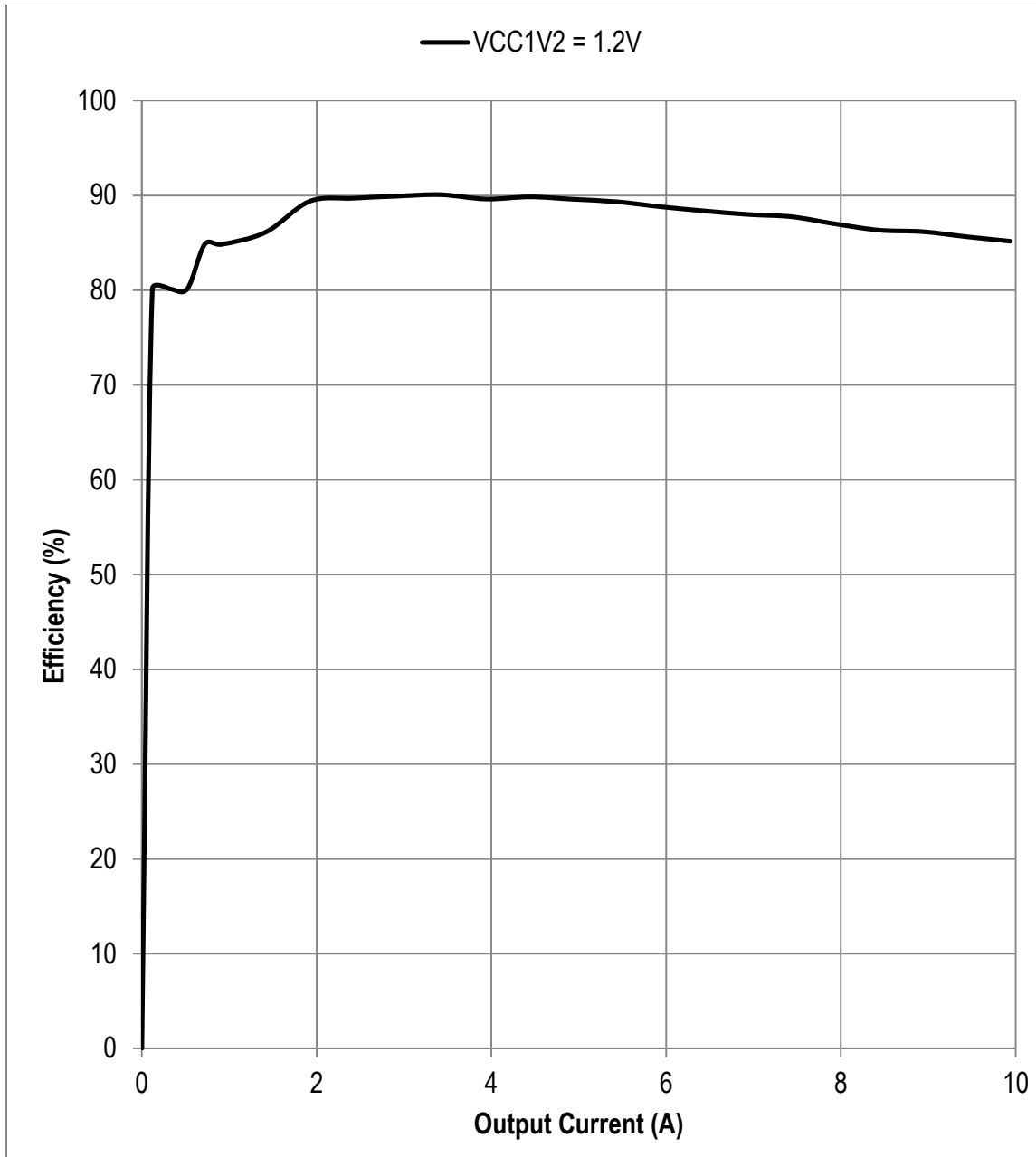


Figure 11. VIN = 12V, VCC1V2 Efficiency

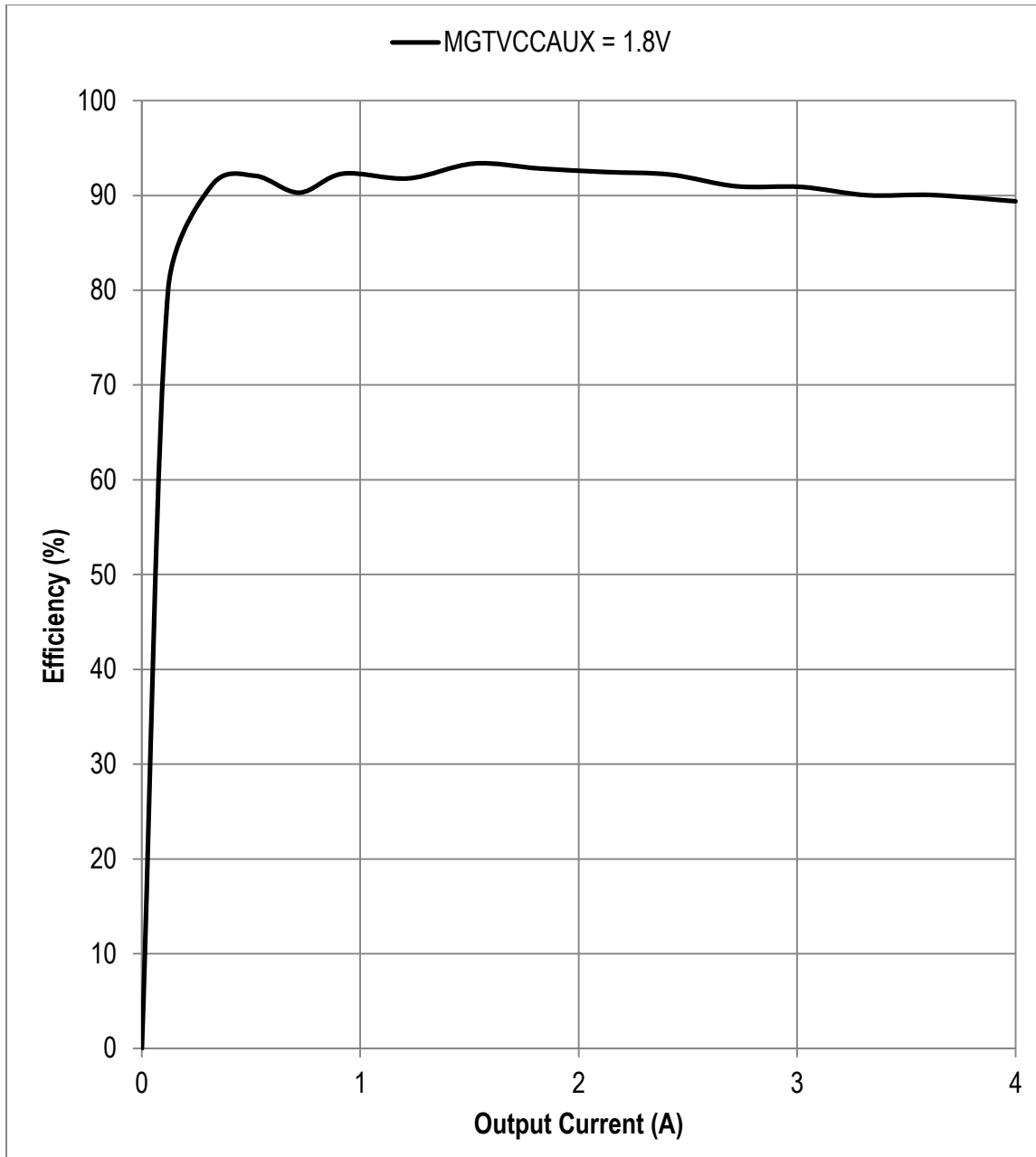


Figure 12. VIN = 12V, MGTVCCAUX Efficiency

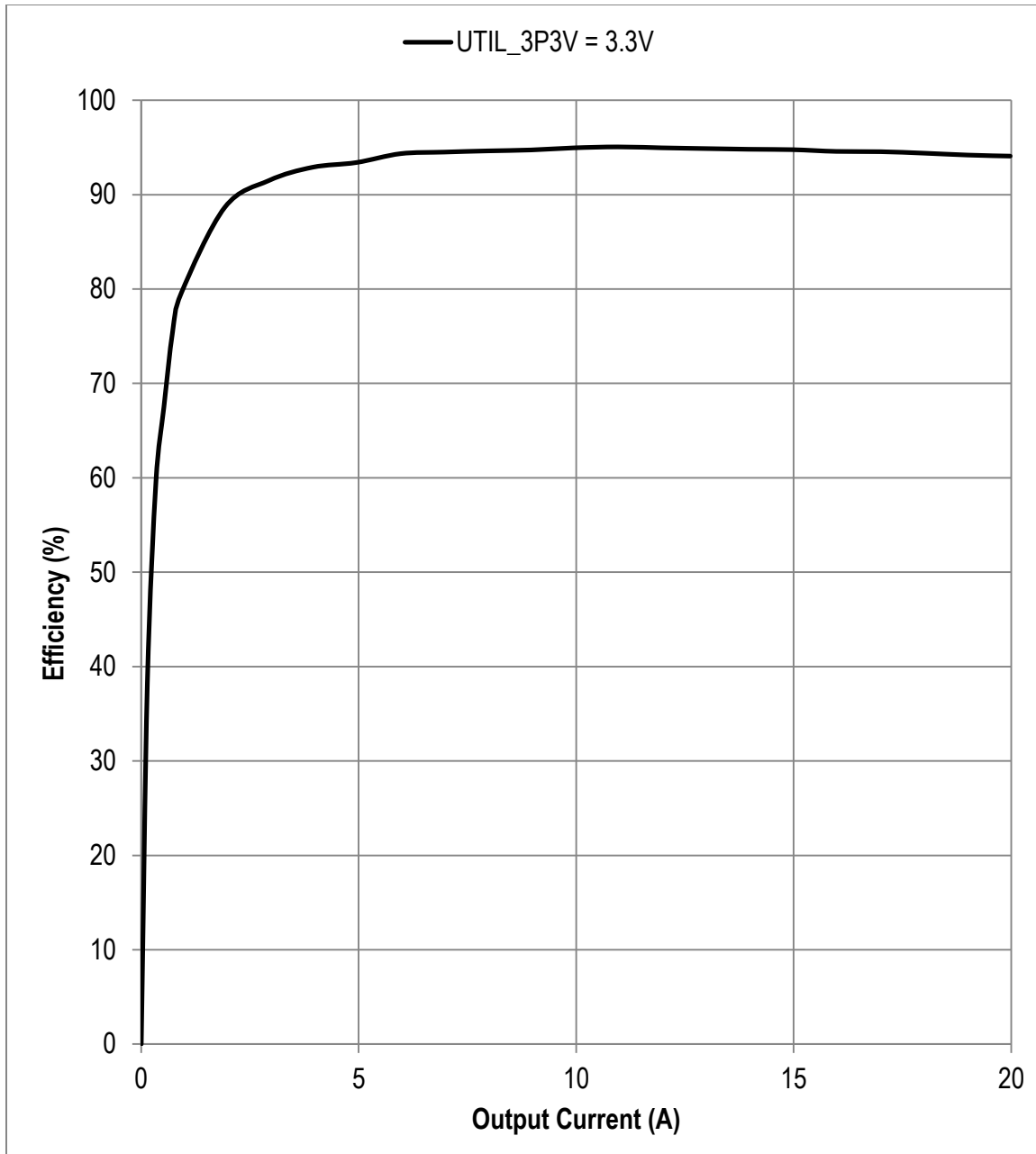


Figure 13. VIN = 12V, UTIL_3P3V Efficiency

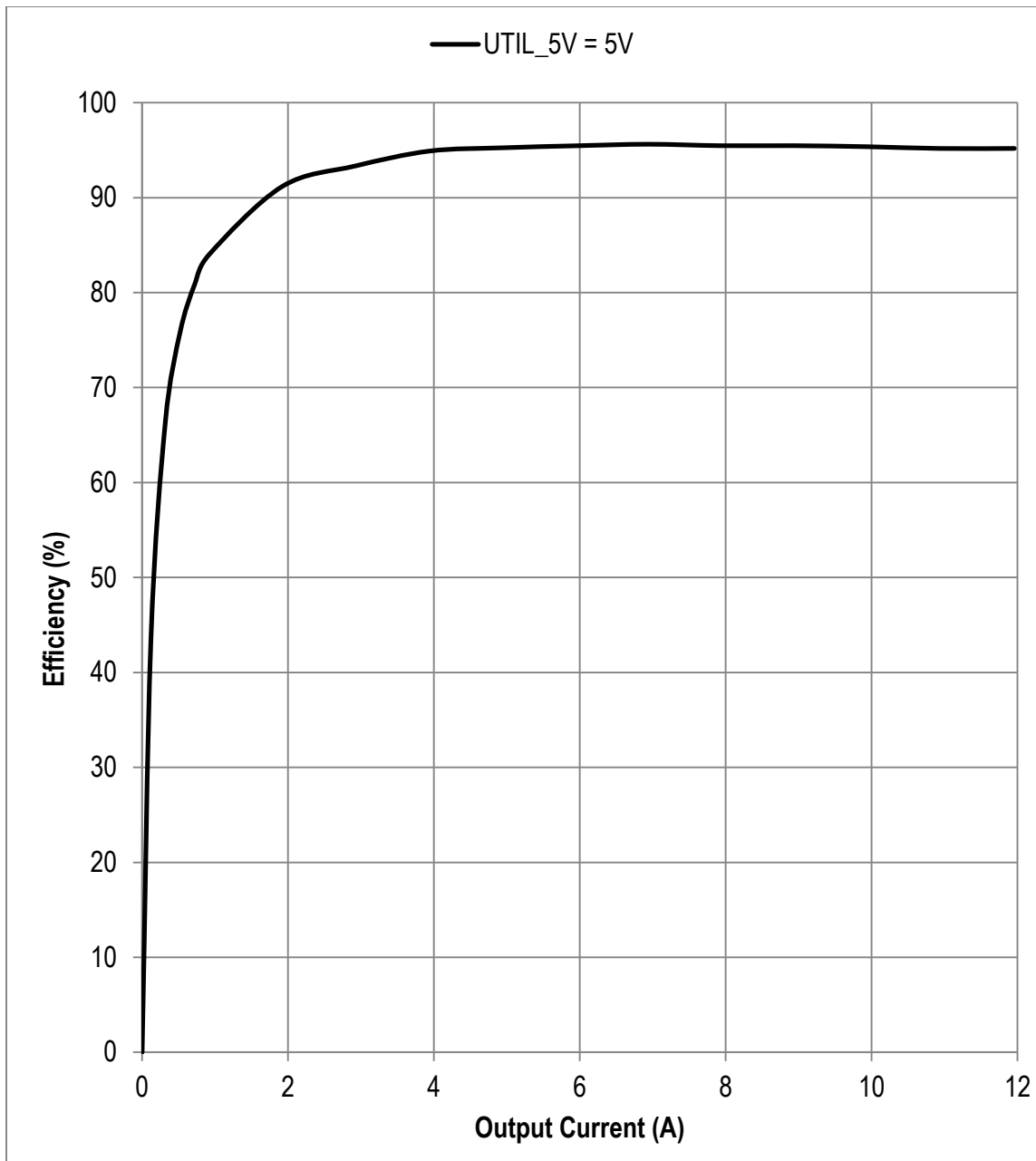


Figure 14. VIN = 12V, UTIL_12V Efficiency

4) Load Regulation

The images below show the output load regulation. The input voltage is 12V.

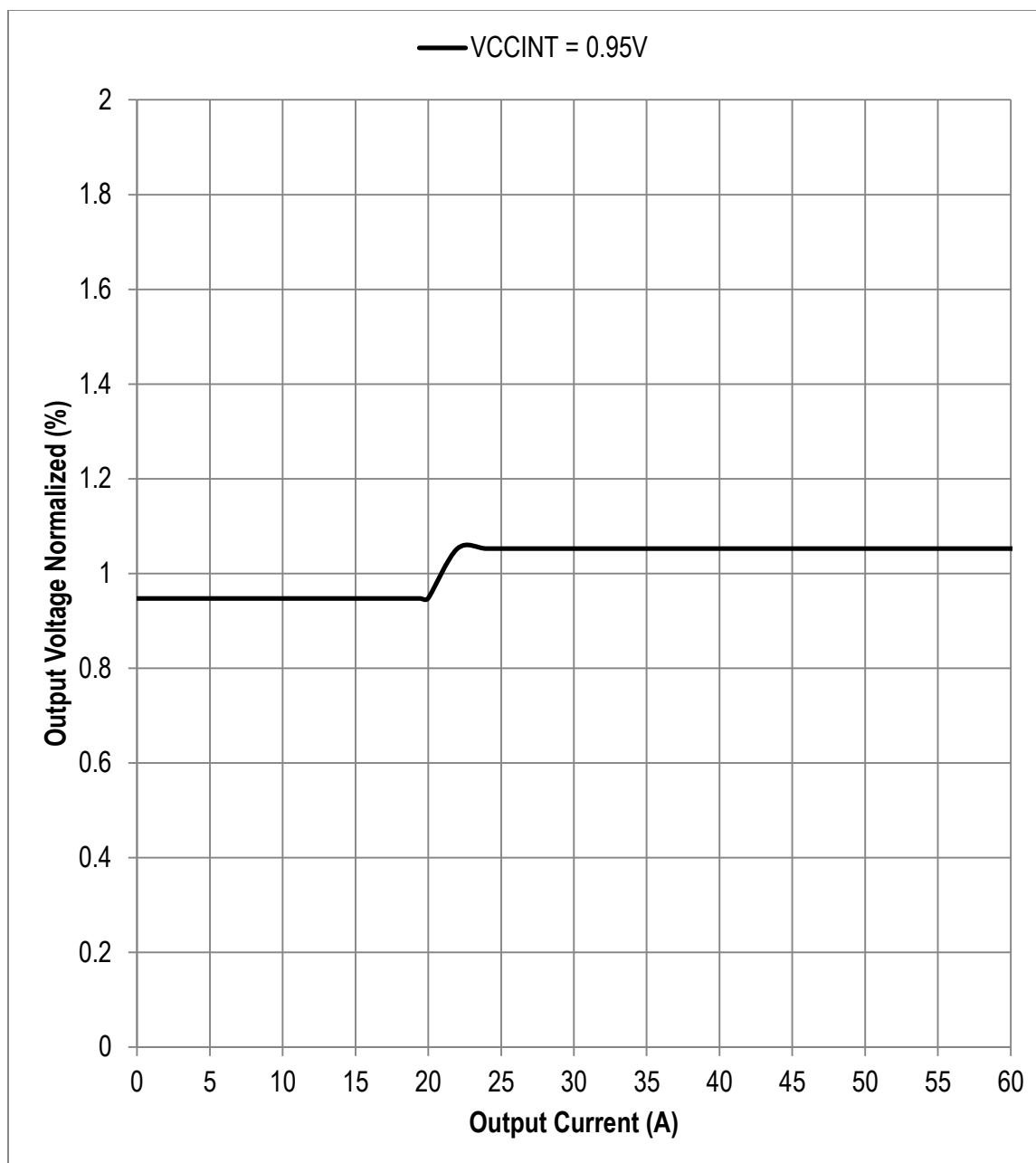


Figure 15. VIN = 12V, VCCINT Load Regulation

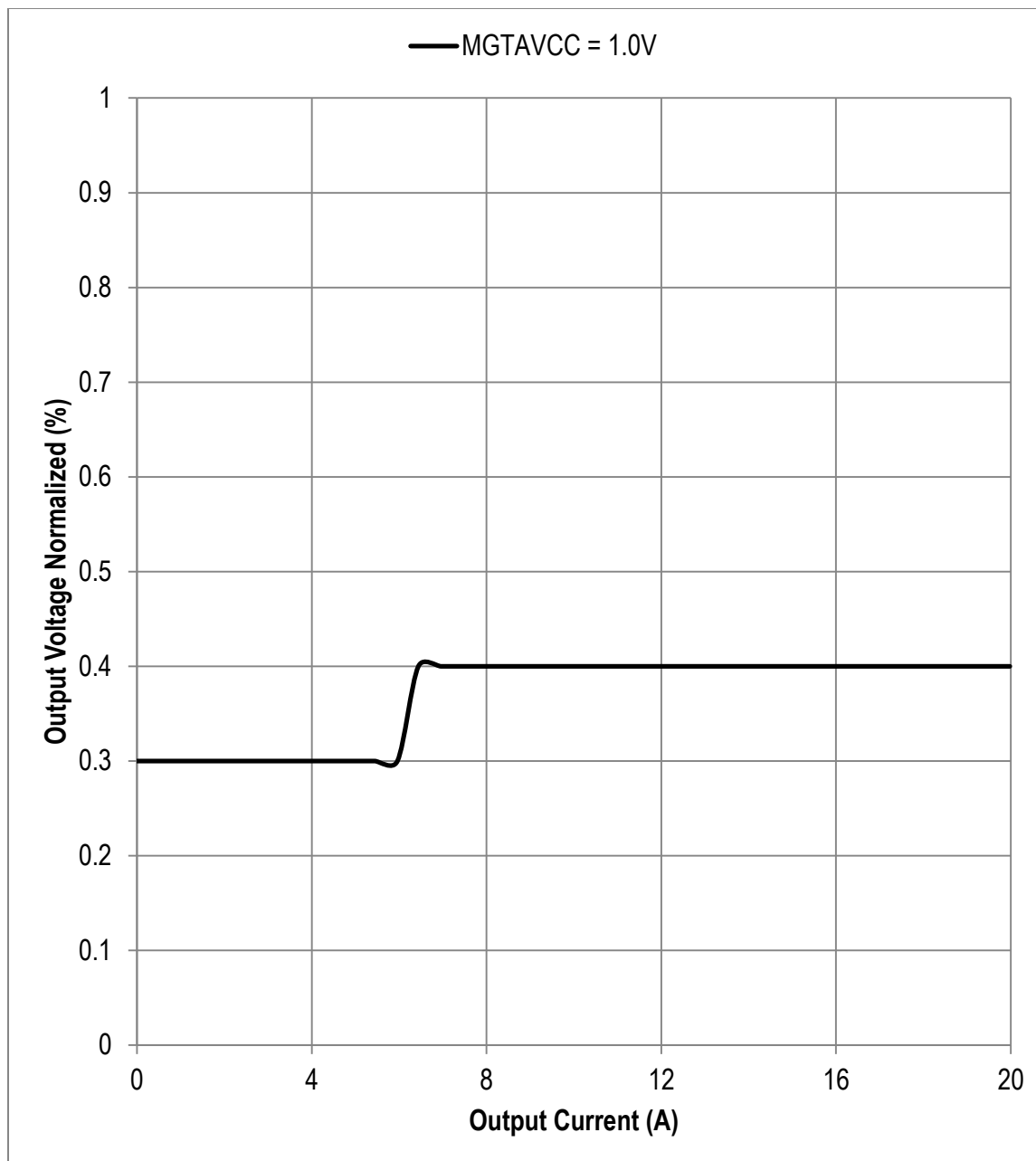


Figure 16. VIN = 12V, MGTAVCC Load Regulation

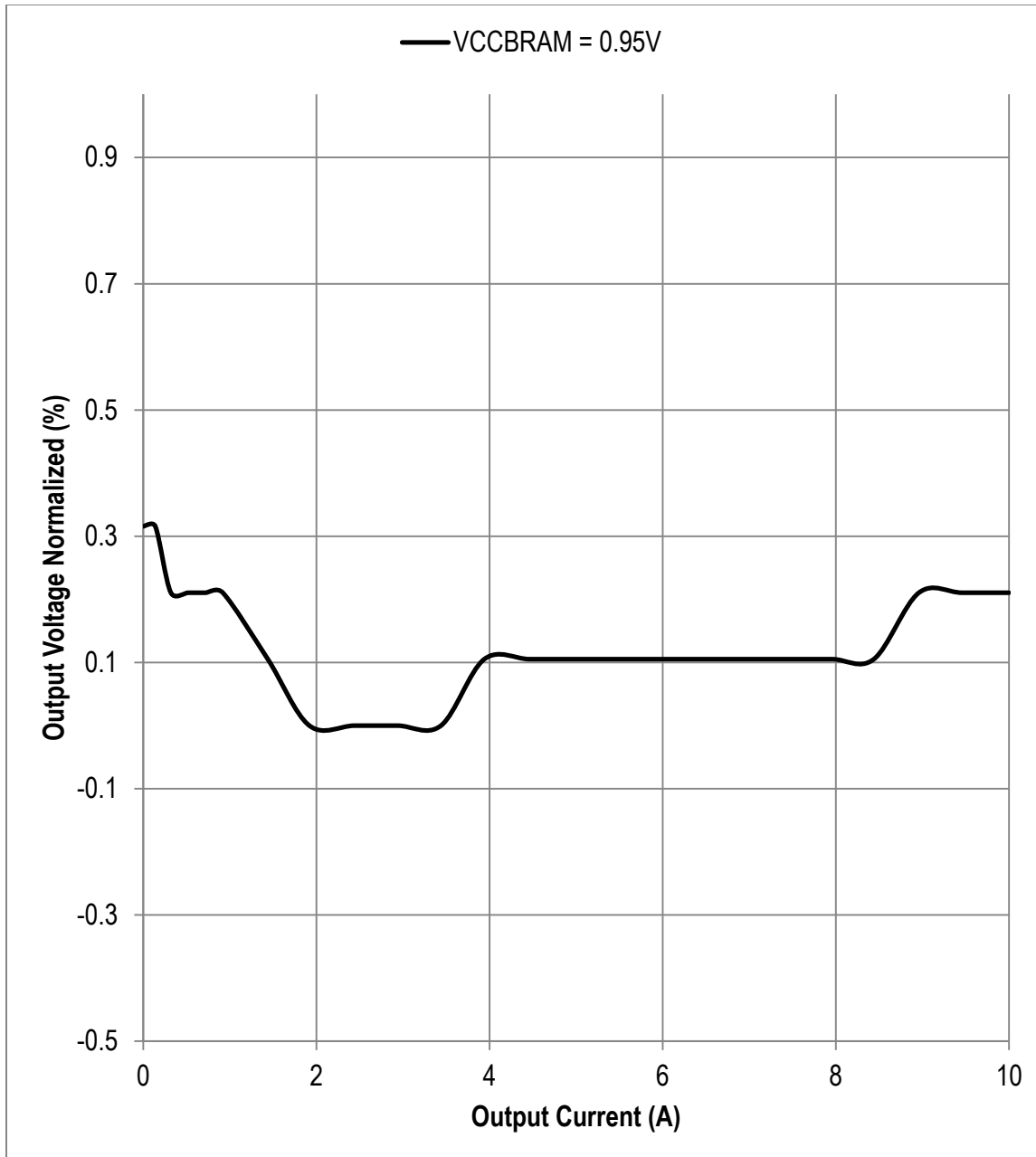


Figure 17. VIN = 12V, VCCBRAM Load Regulation

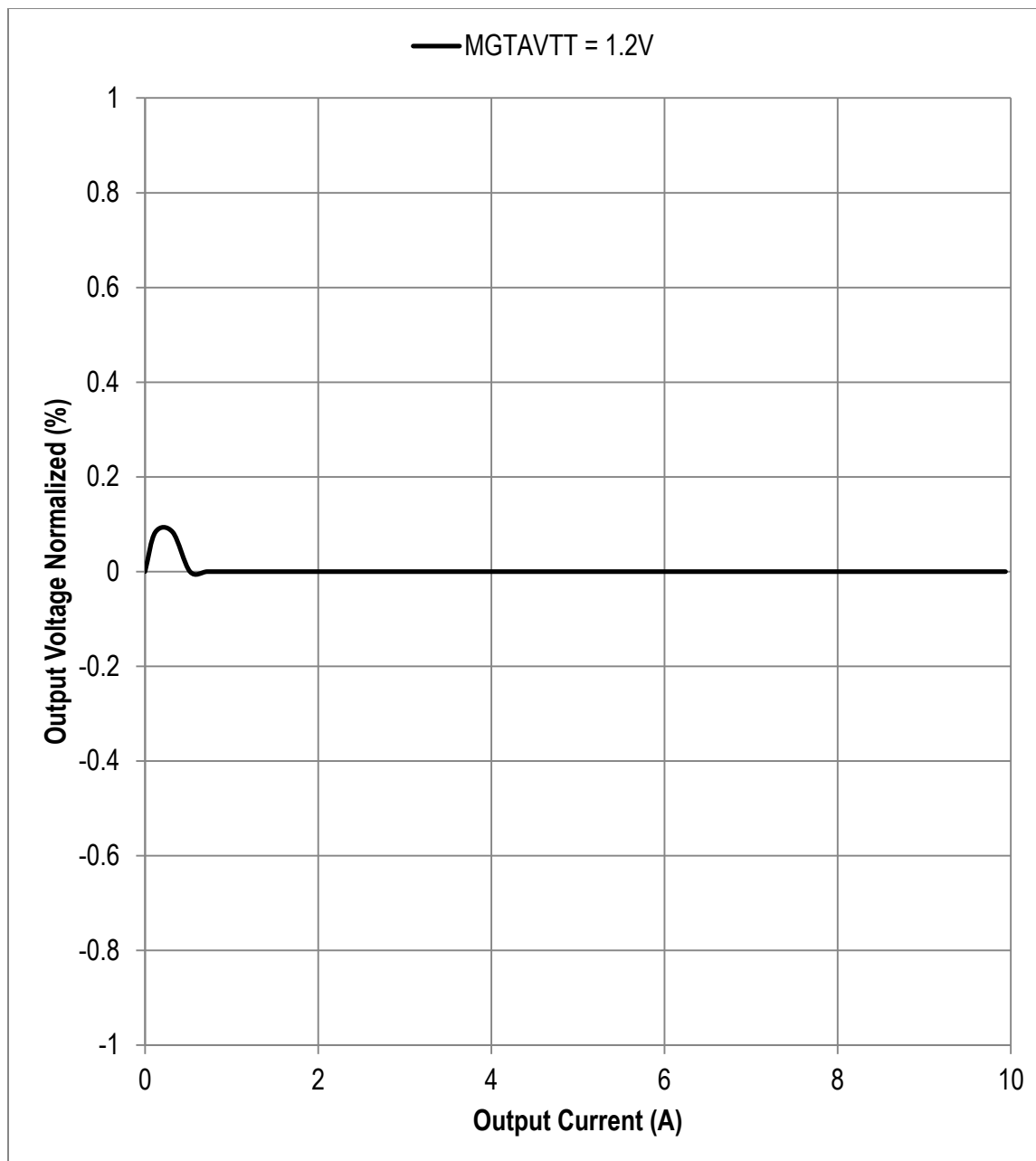


Figure 18. VIN = 12V, MGTAVTT Load Regulation

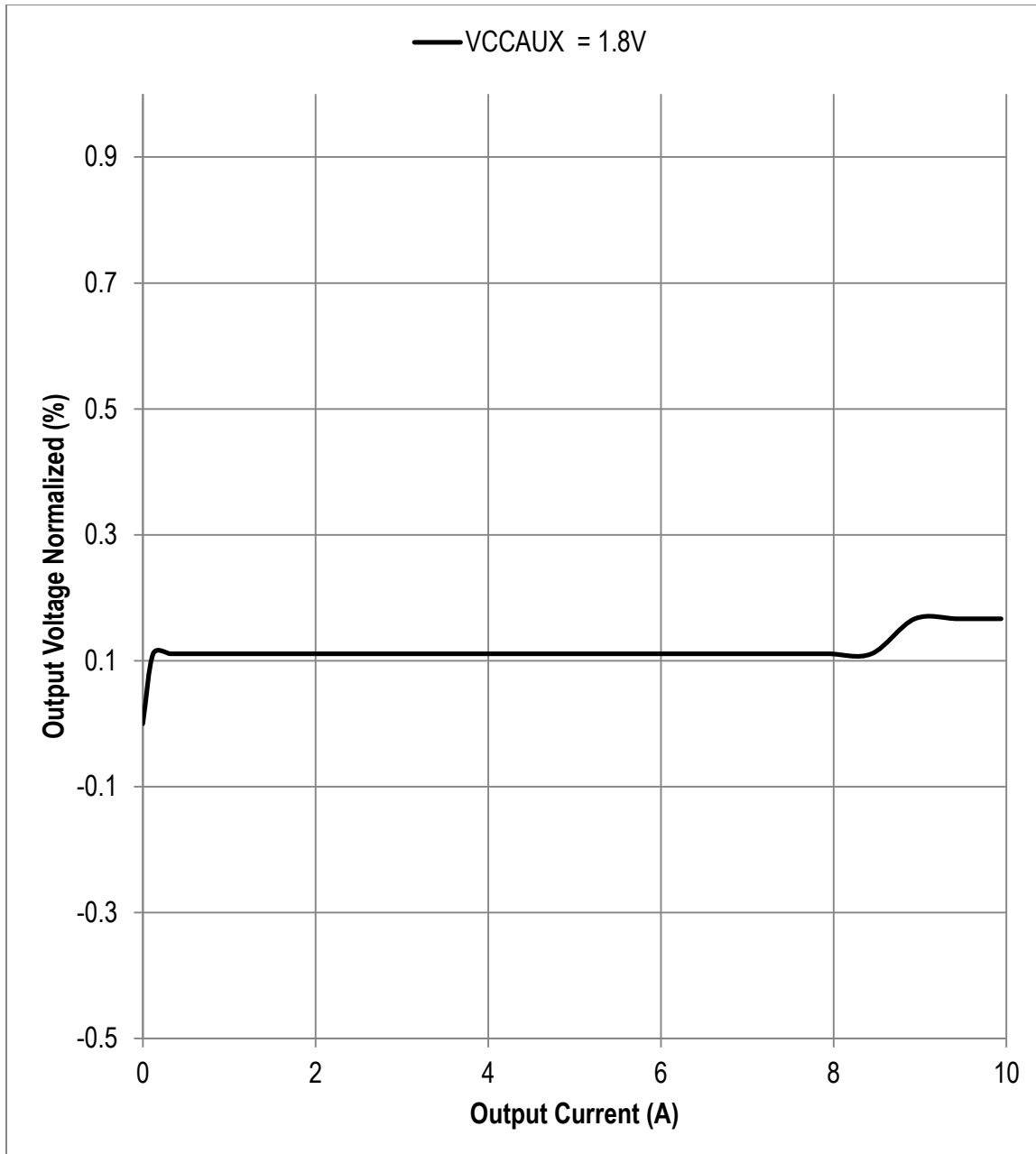


Figure 19. VIN = 12V, VCCAUX Load Regulation

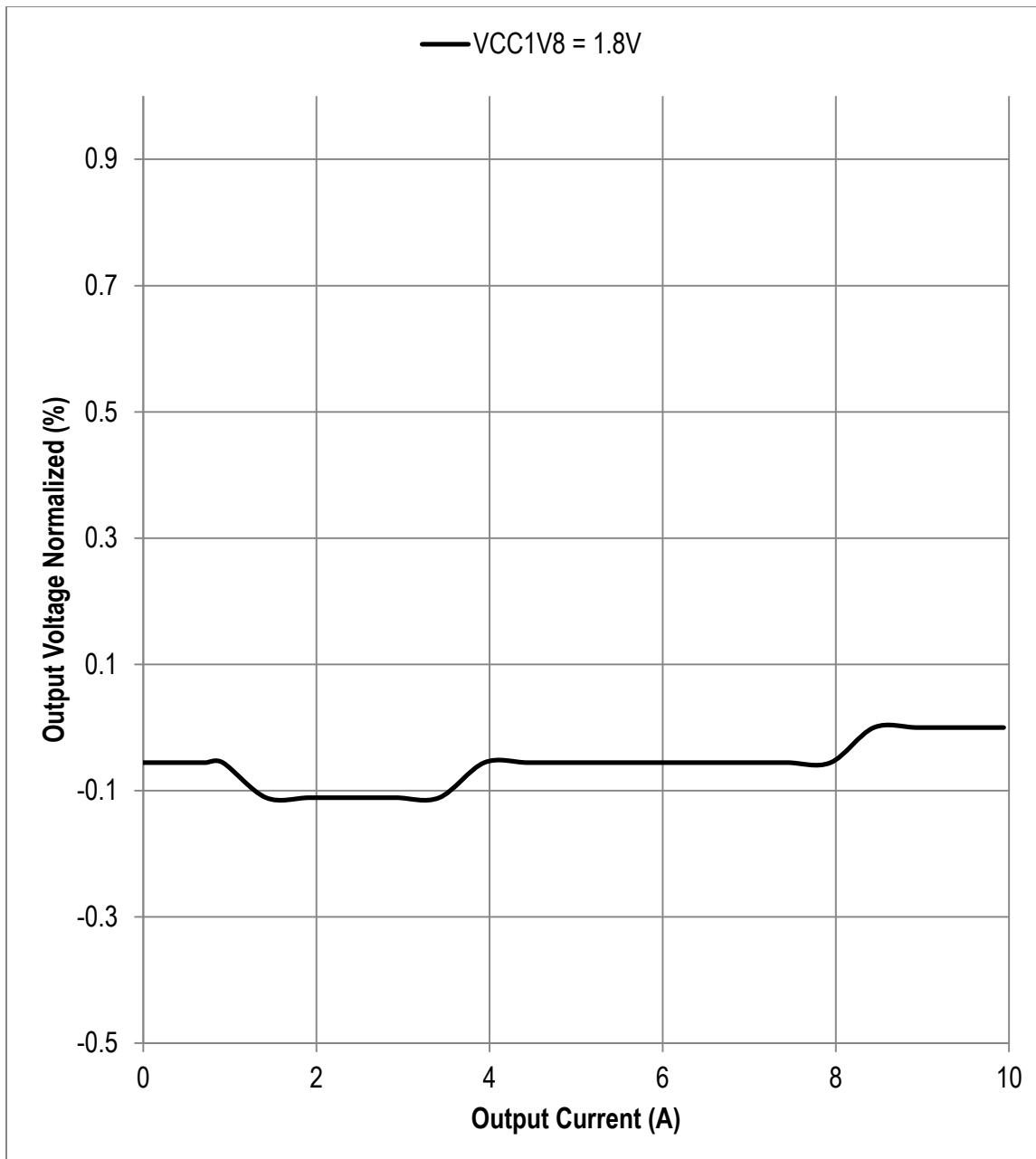


Figure 20. VIN = 12V, VCC1V8 Load Regulation

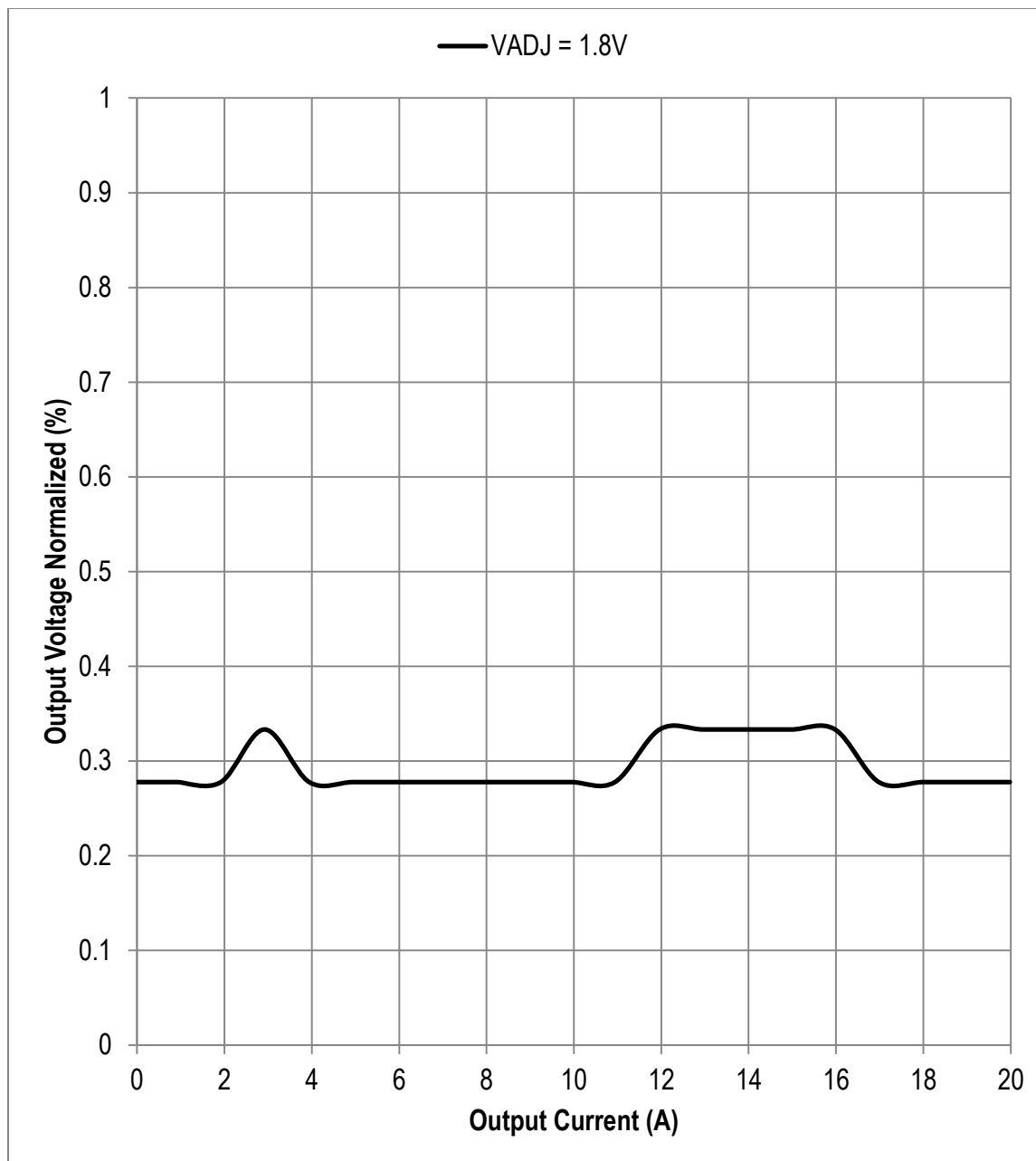


Figure 21. $V_{IN} = 12V$, $V_{ADJ}1V8$ Load Regulation

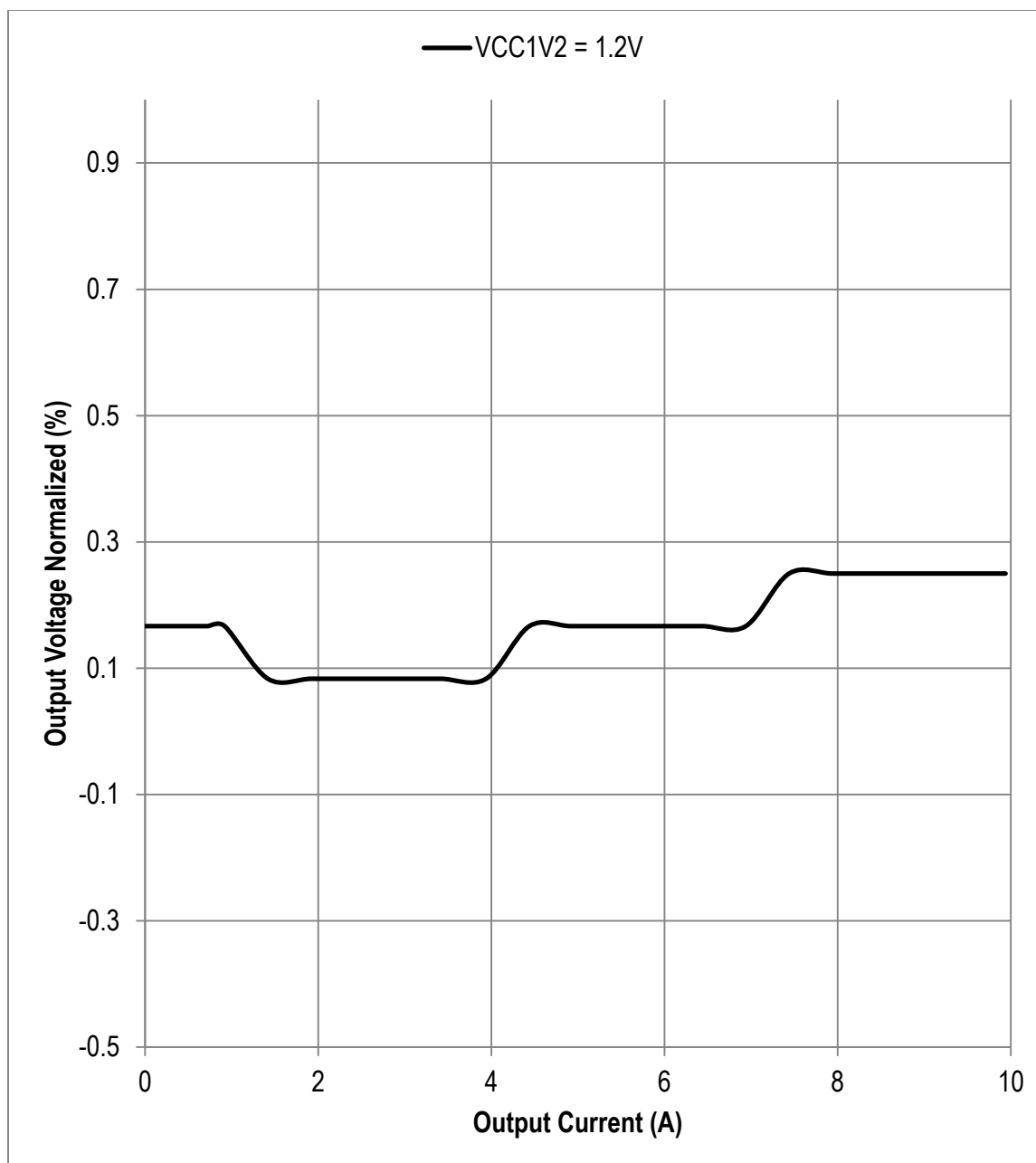


Figure 22. VIN = 12V, VCC1V2 Load Regulation

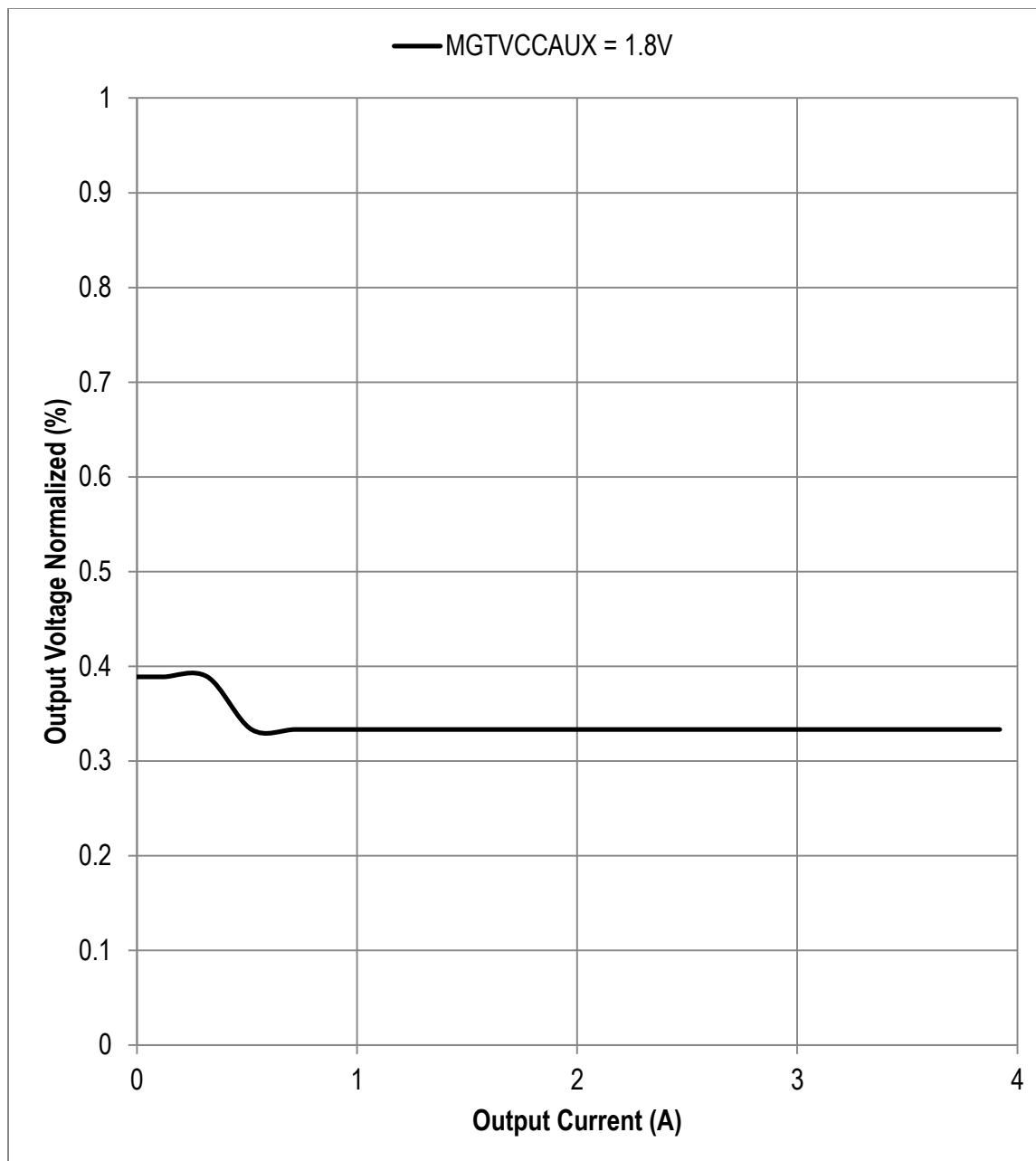


Figure 23. VIN = 12V, MGTVCCAUX Load Regulation

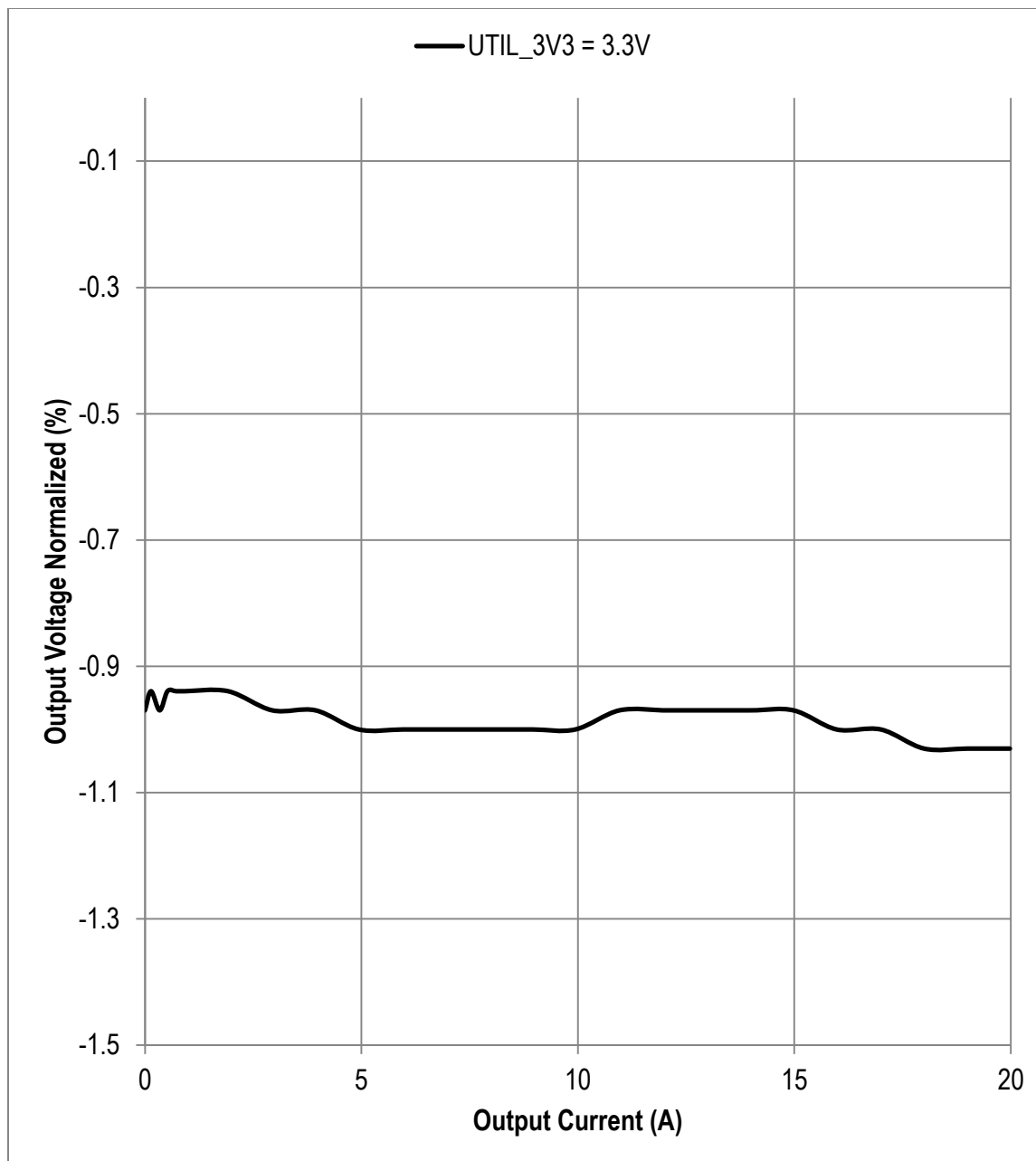


Figure 24. VIN = 12V, UTIL_3P3V Load Regulation

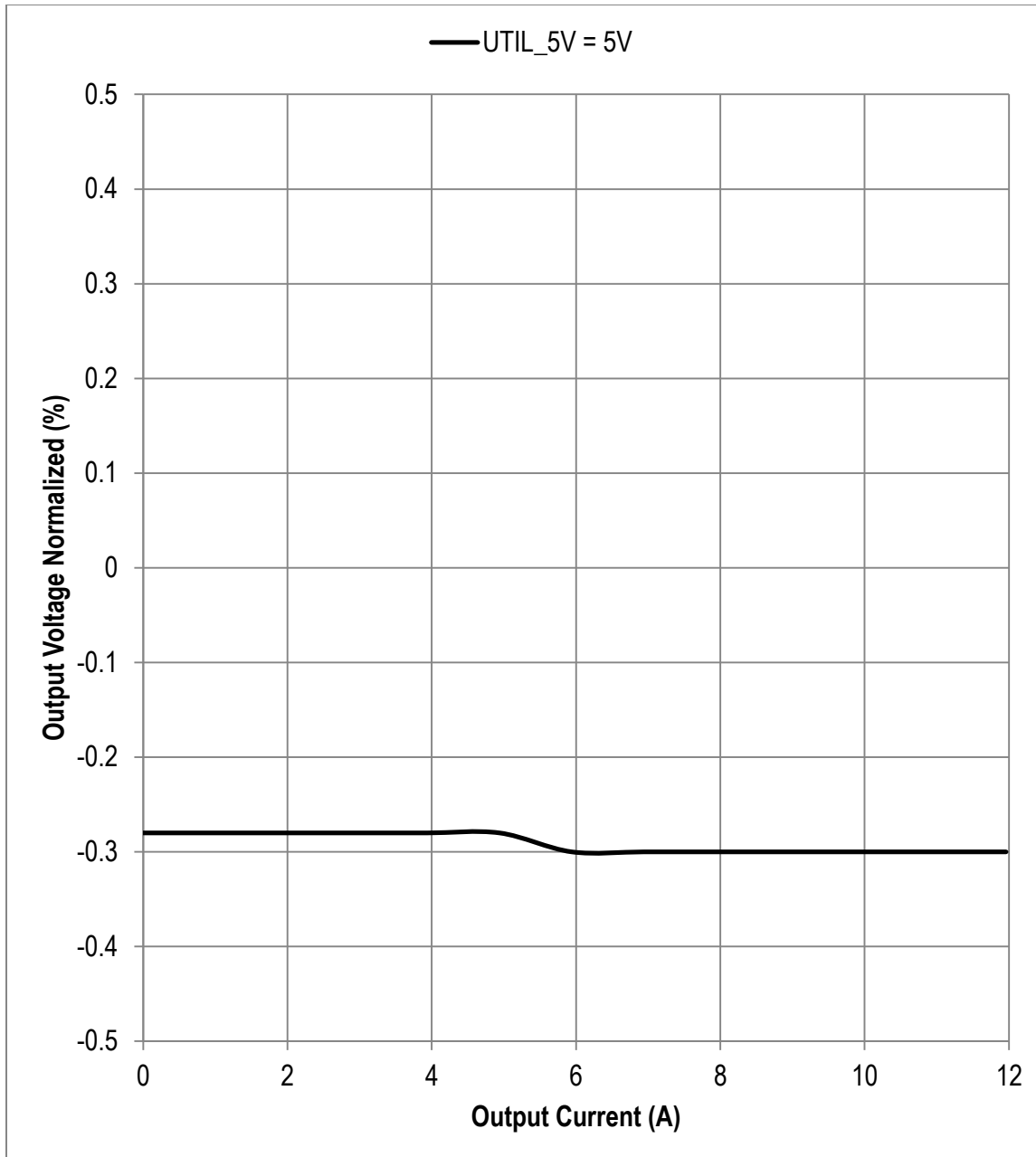


Figure 25. VIN = 12V, UTIL_12V Load Regulation

5) Output Voltage Ripple

The images below shows the output voltage ripple when load is fully applied. The input voltage is 12V.

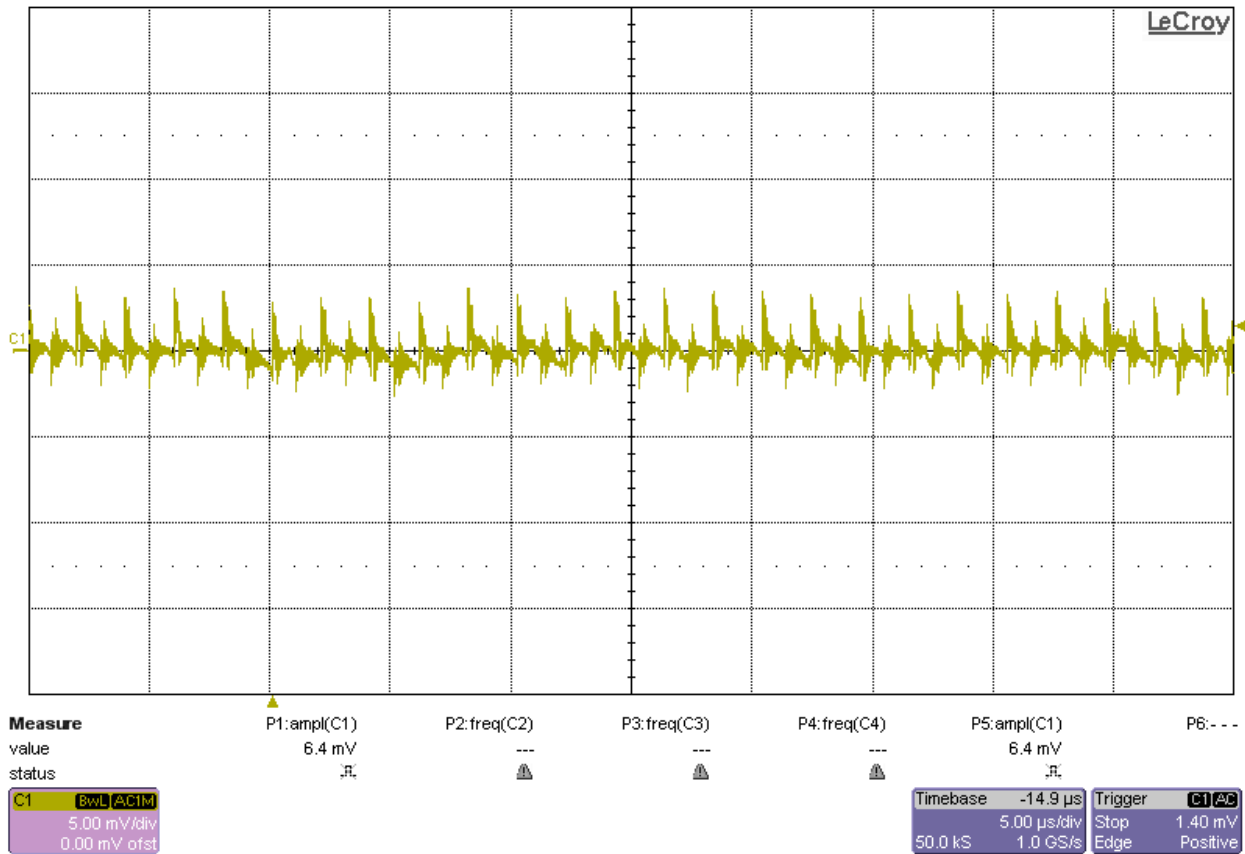


Figure 26. VIN = 12V, VCCINT Output Ripple @ IOOUT = 60A

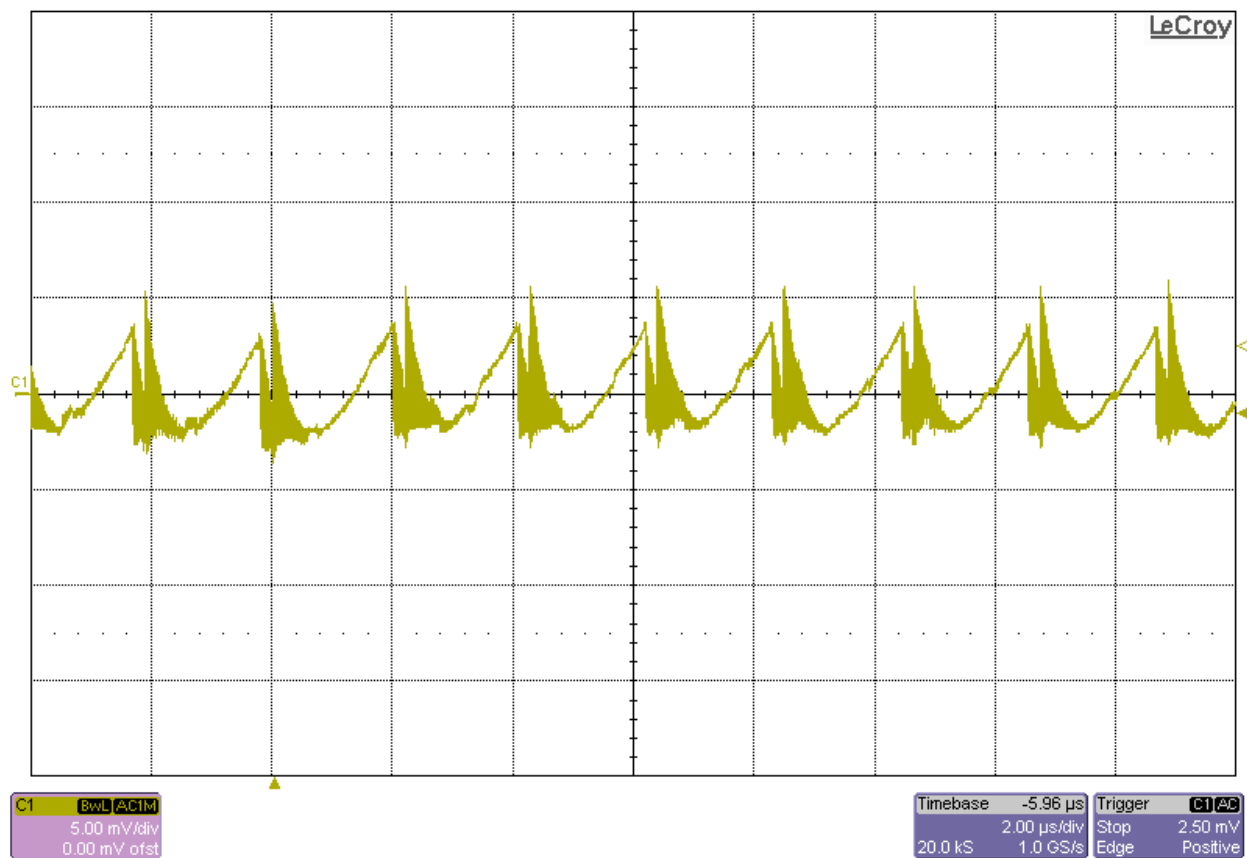


Figure 27. VIN = 12V, MGTAVCC Output Ripple @ IO_{UT} = 20A

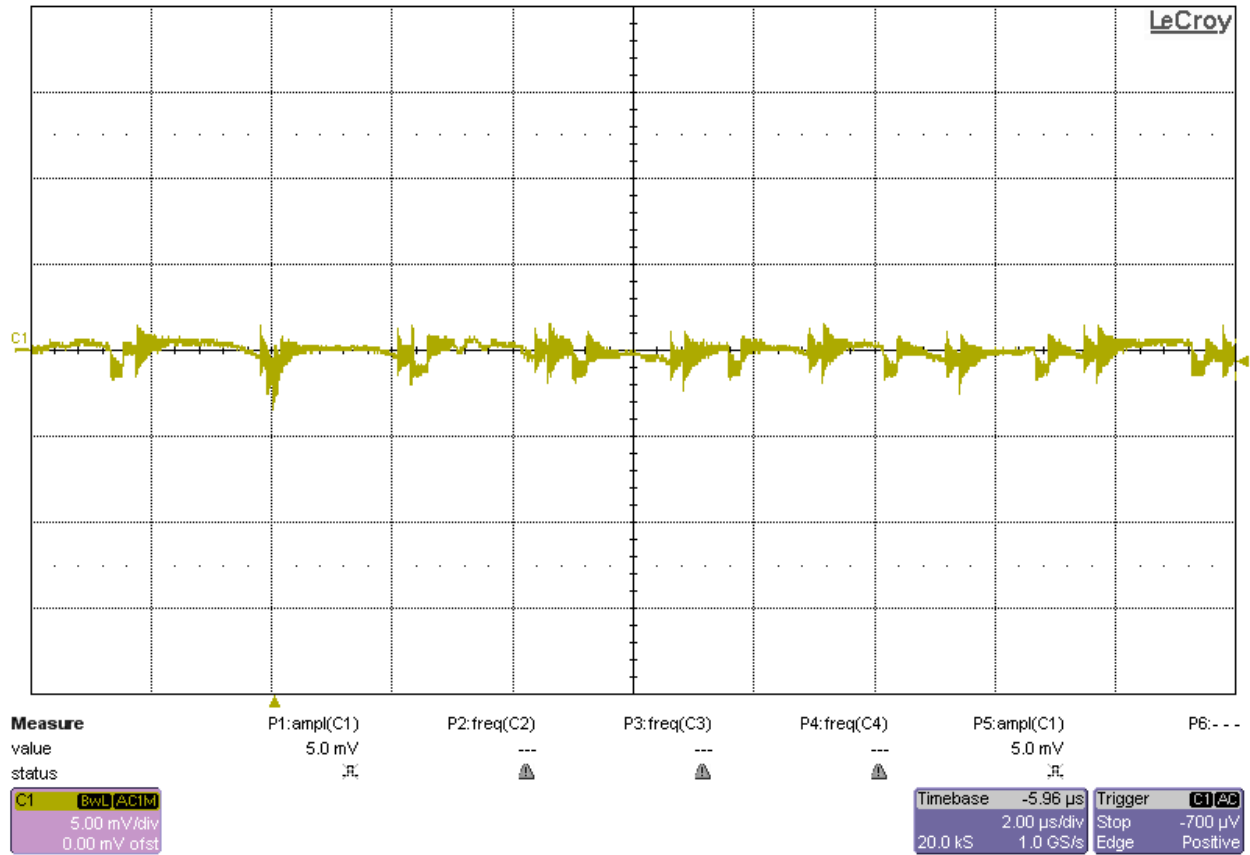


Figure 28. VIN = 12V, VCCBRAM Output Ripple @ IO_{UT} = 10A

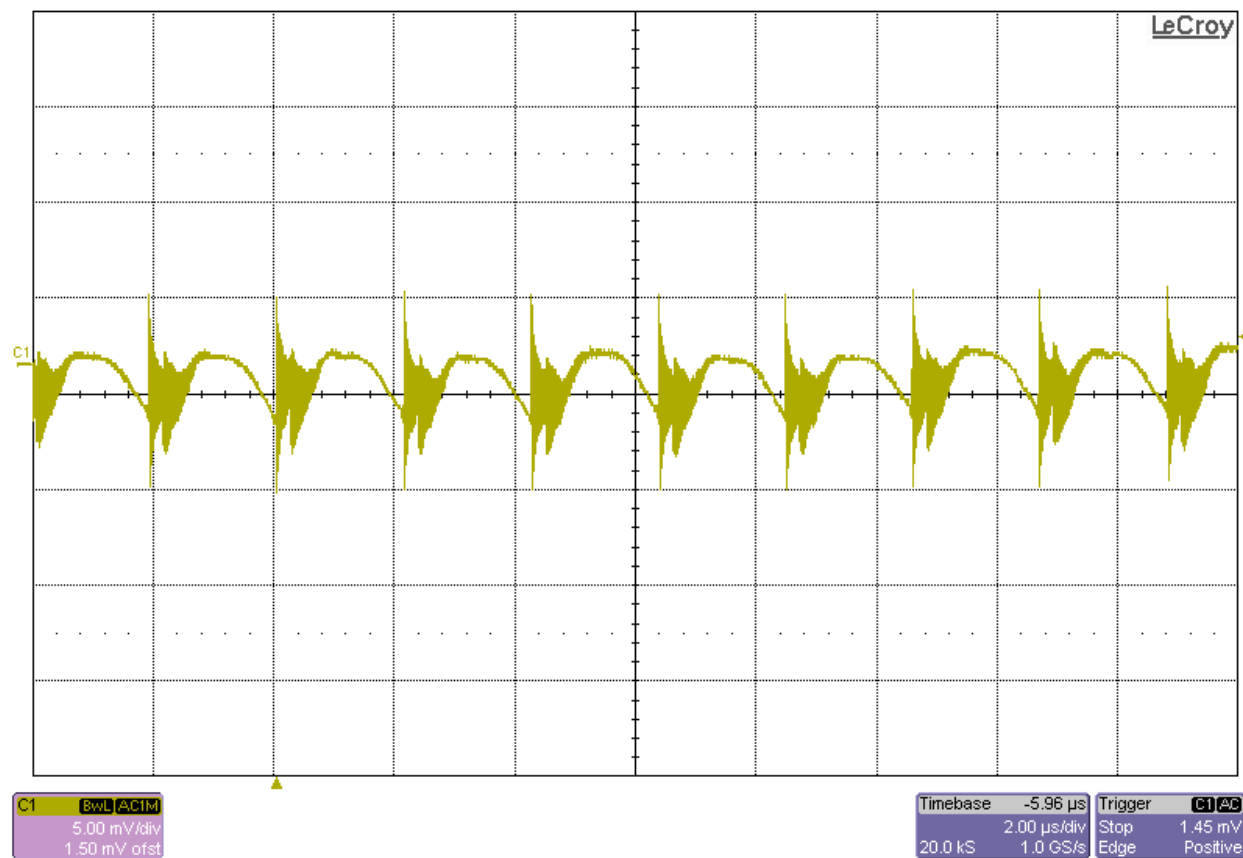


Figure 29. VIN = 12V, MGTAVTT Output Ripple @ IOUT = 10A

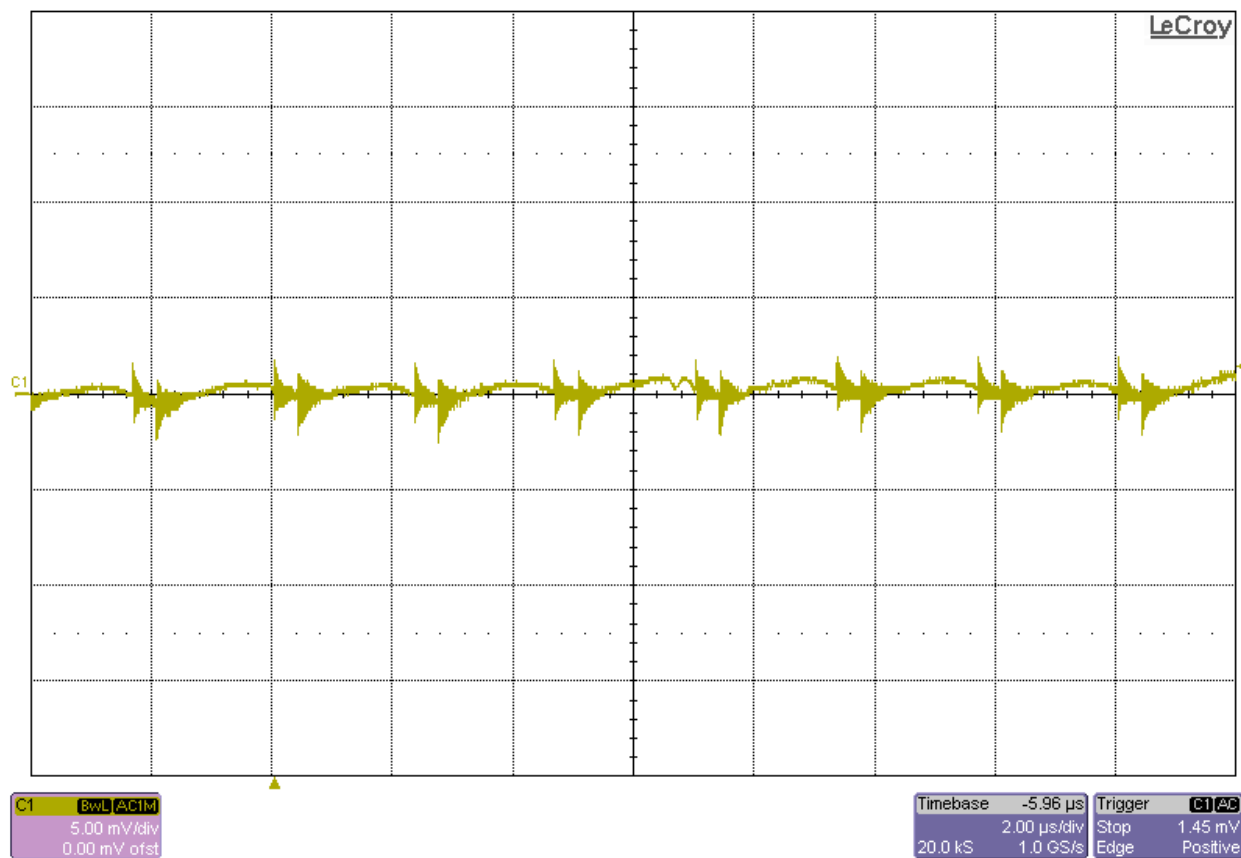


Figure 30. VIN = 12V, VCCAUX Output Ripple @ IO_{UT} = 10A

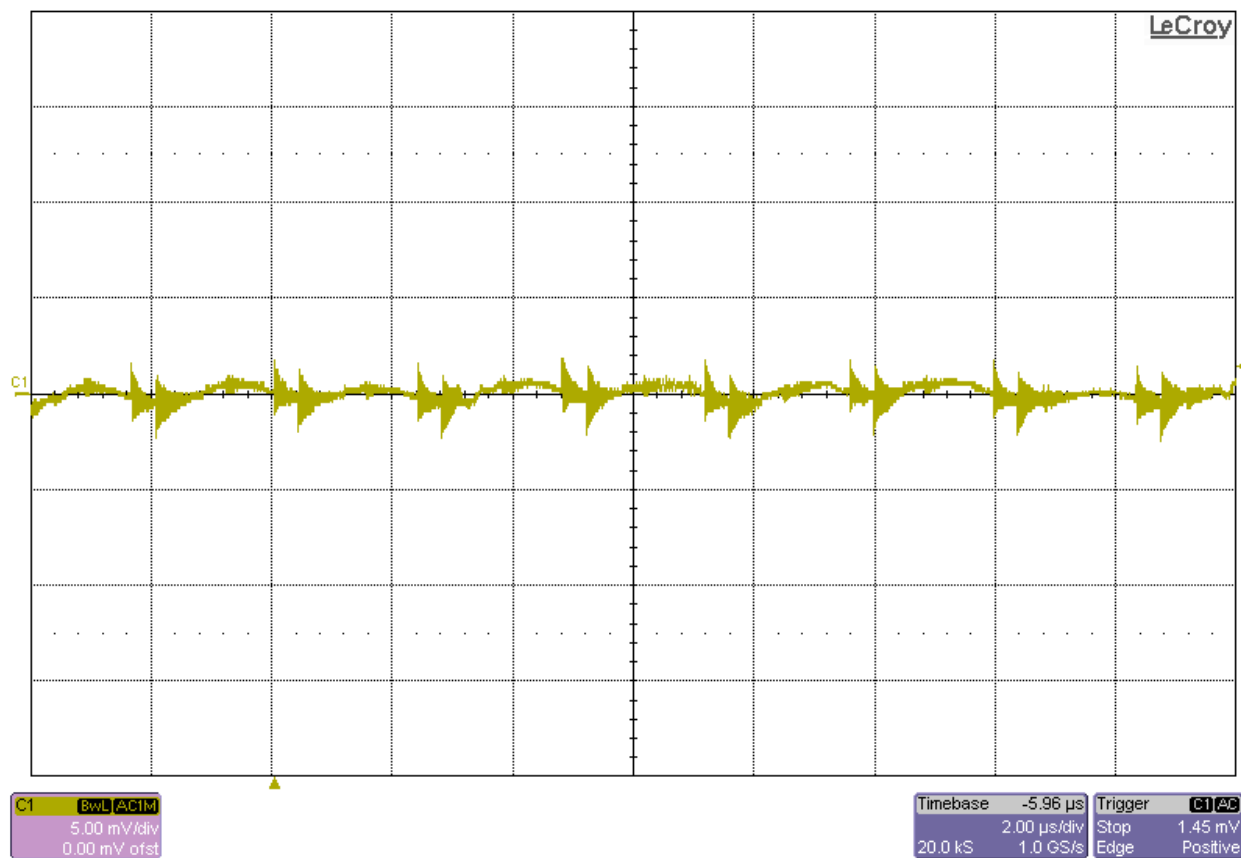


Figure 31. VIN = 12V, VCC1V8 Output Ripple @ IO_{UT} = 1=A

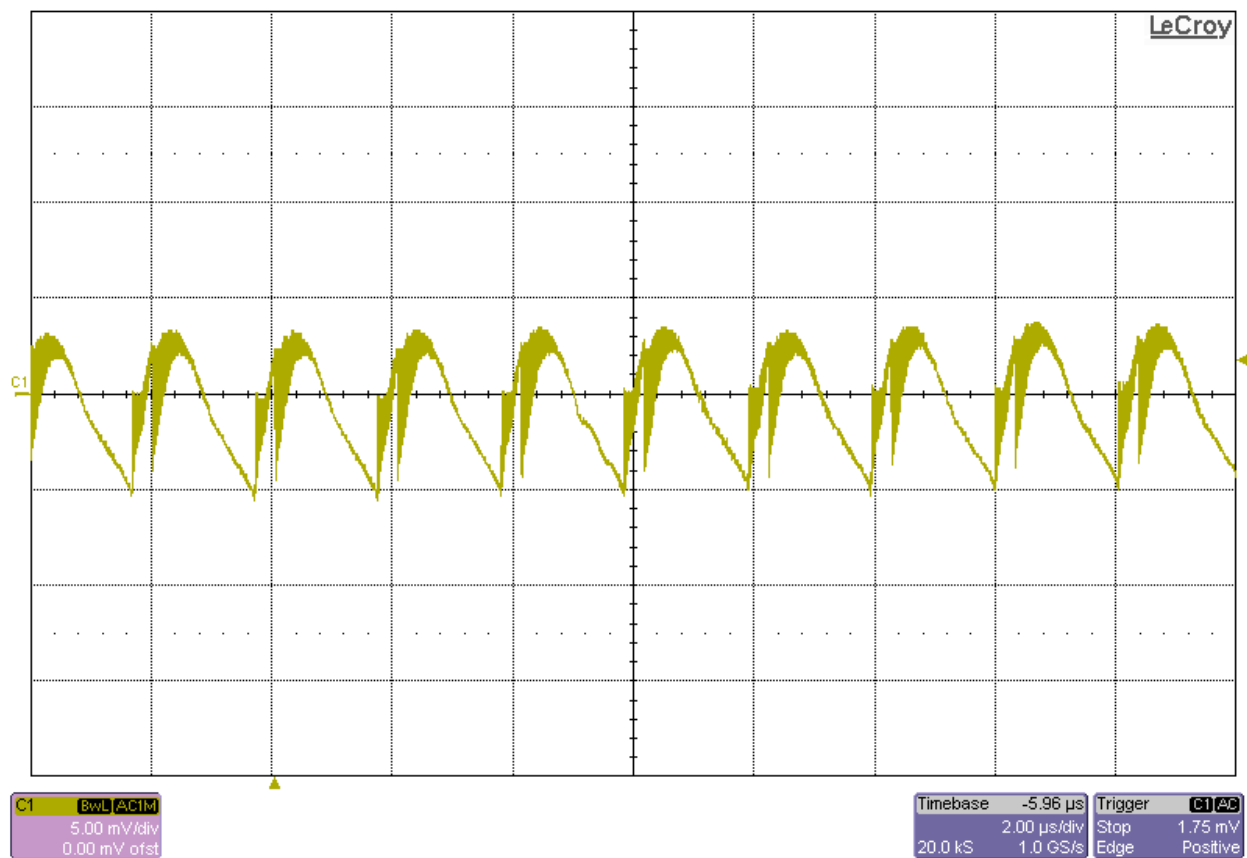


Figure 32. VIN = 12V, VADJ1V8 Output Ripple @ IOOUT = 20A

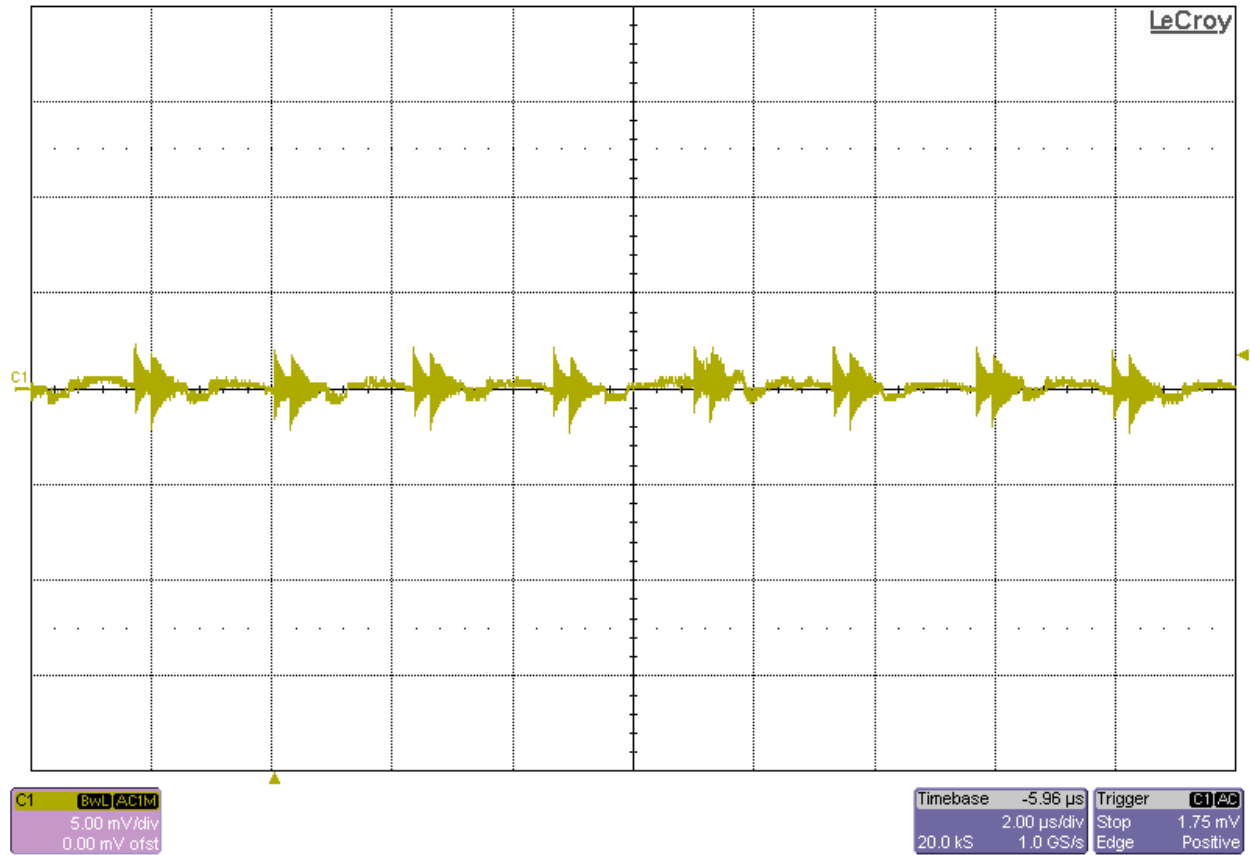


Figure 33. VIN = 12V, VCC1V2 Output Ripple @ IOU = 10A

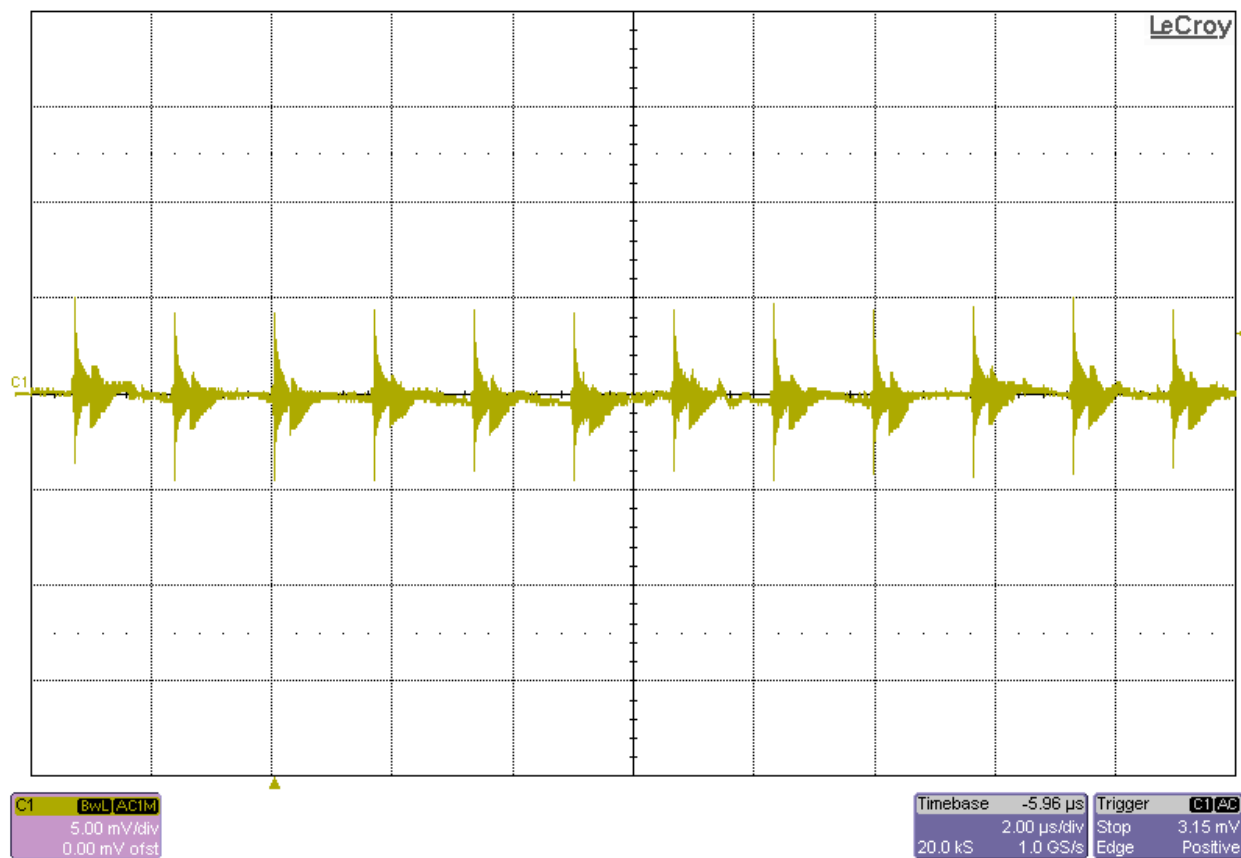


Figure 34. VIN = 12V, MGTVCCAUX Output Ripple @ IOOUT = 4A

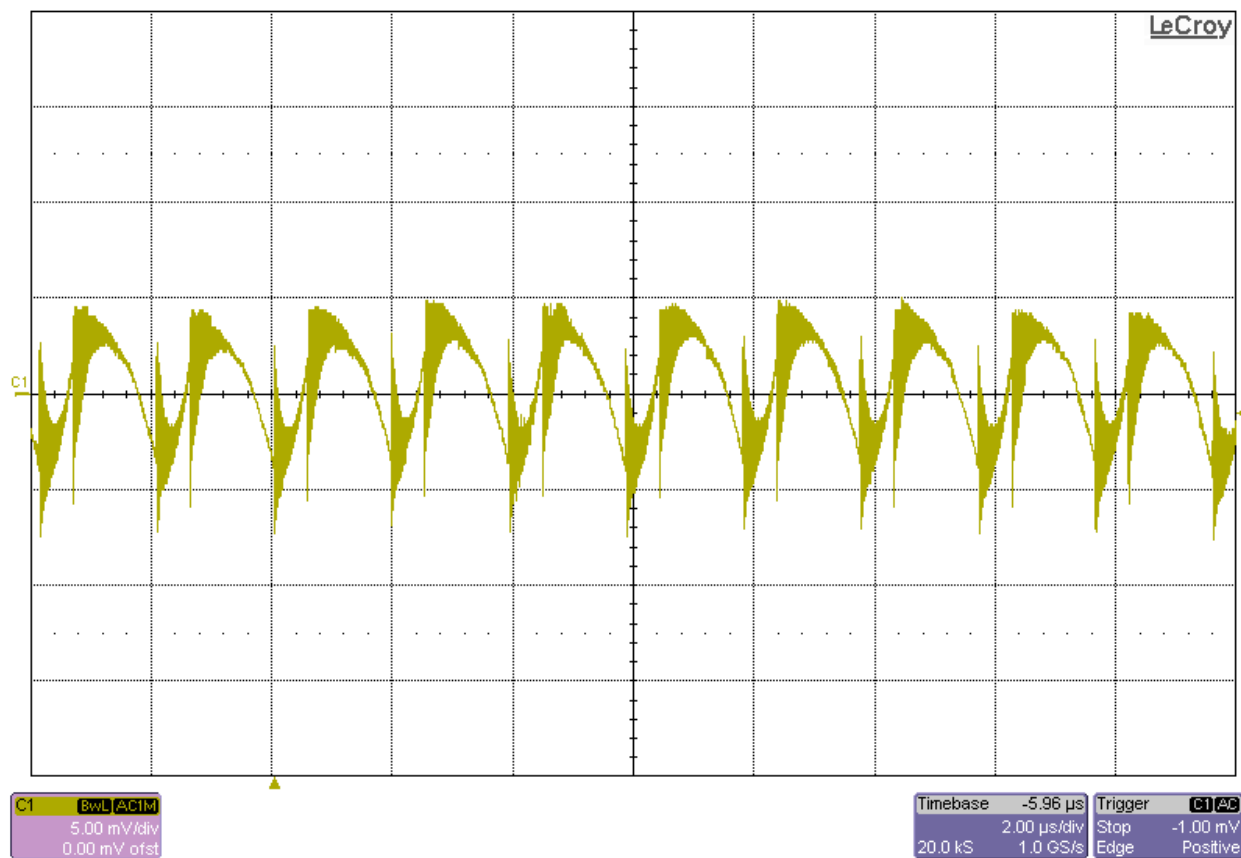


Figure 35. VIN = 12V, UTIL_3P3V Output Ripple @ IOU = 20A

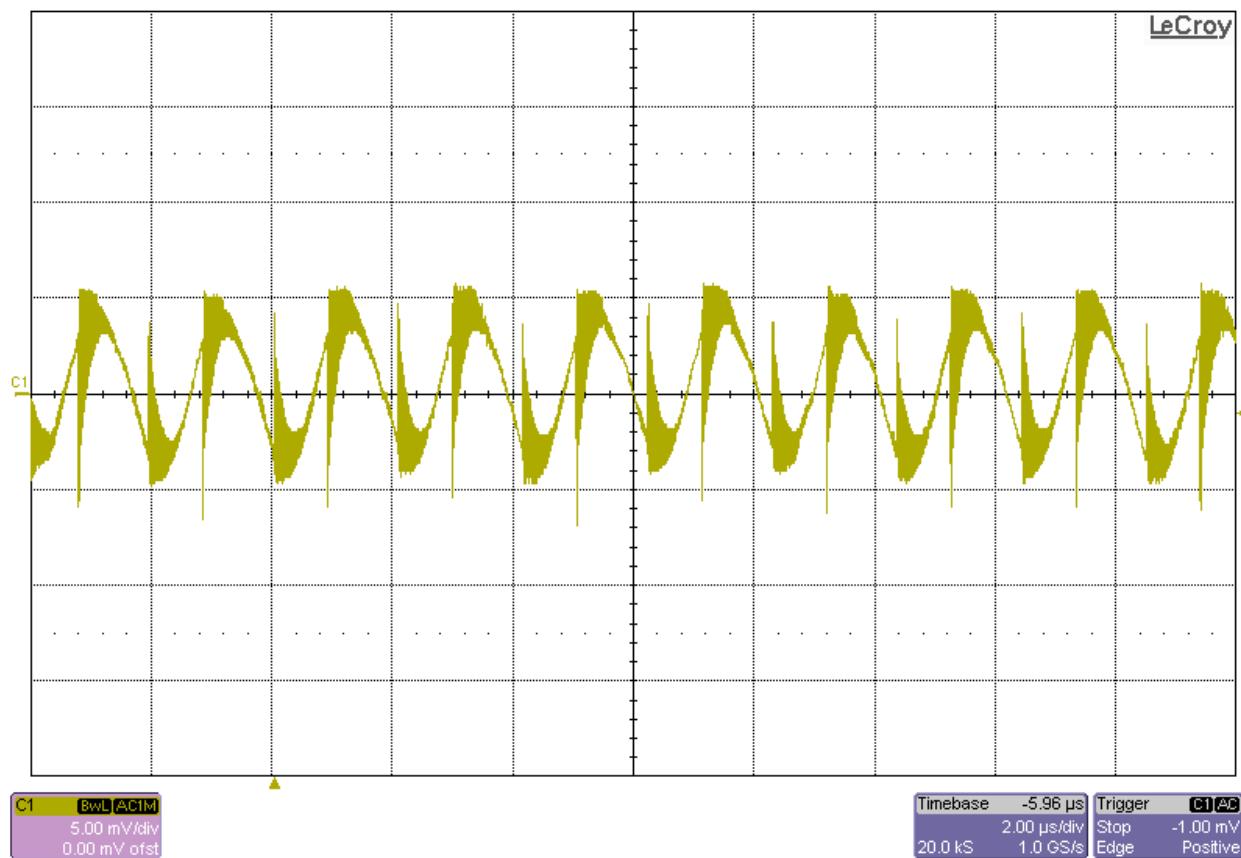


Figure 36. VIN = 12V, UTIL_12V Output Ripple @ IOU = 12A

6) Load Transients

The transient response of the converters is shown below. The input voltage is 12V. The output current is pulsed from 50% load to full load.

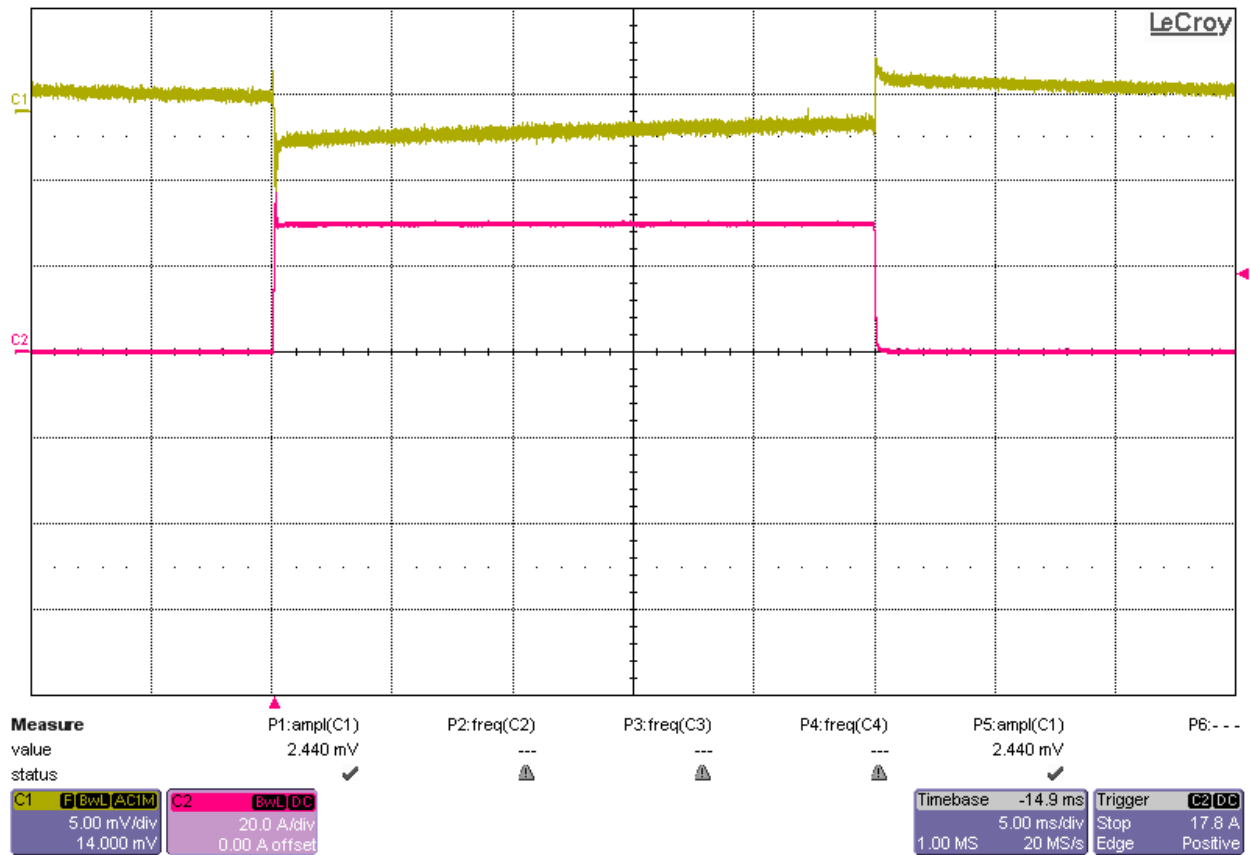


Figure 37. VIN = 12V, VCCINT Load Transient

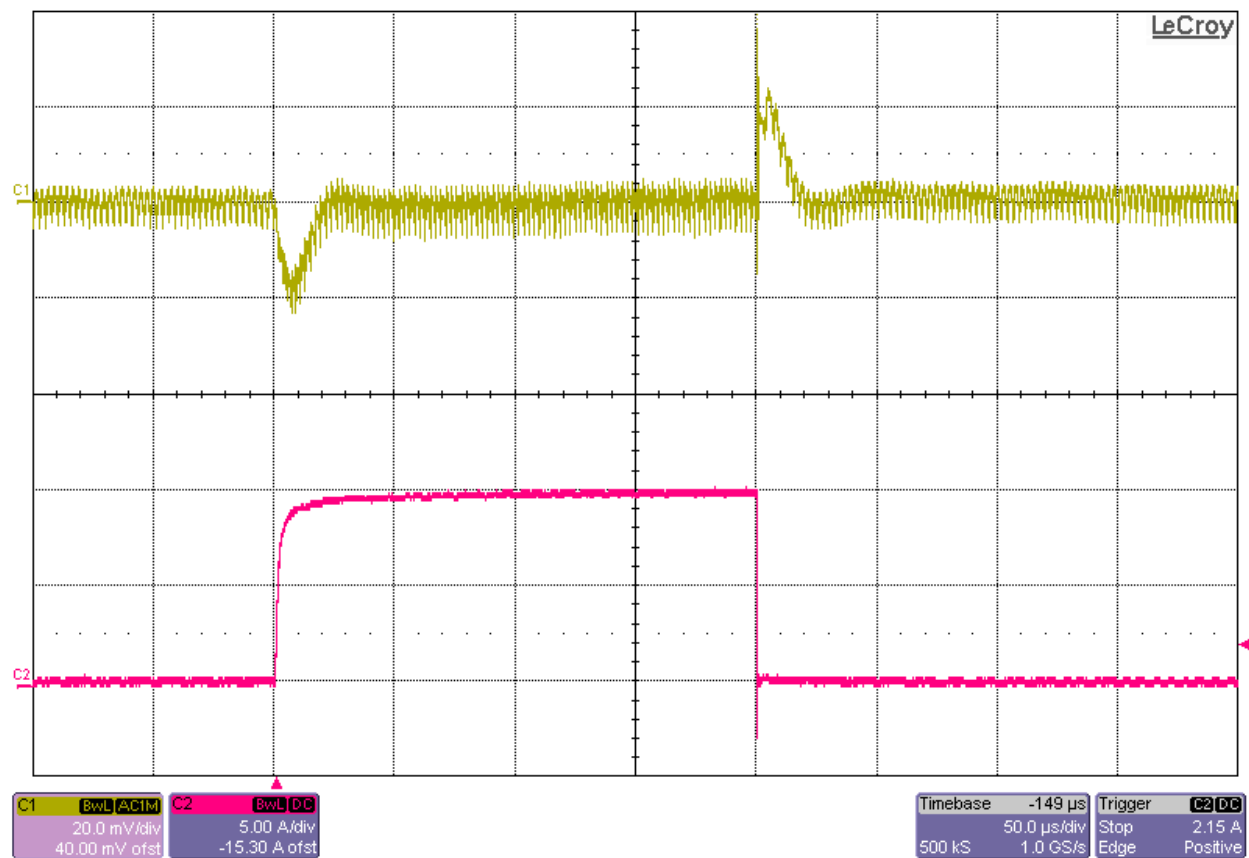


Figure 38. VIN = 12V, MGTAVCC Load Transient

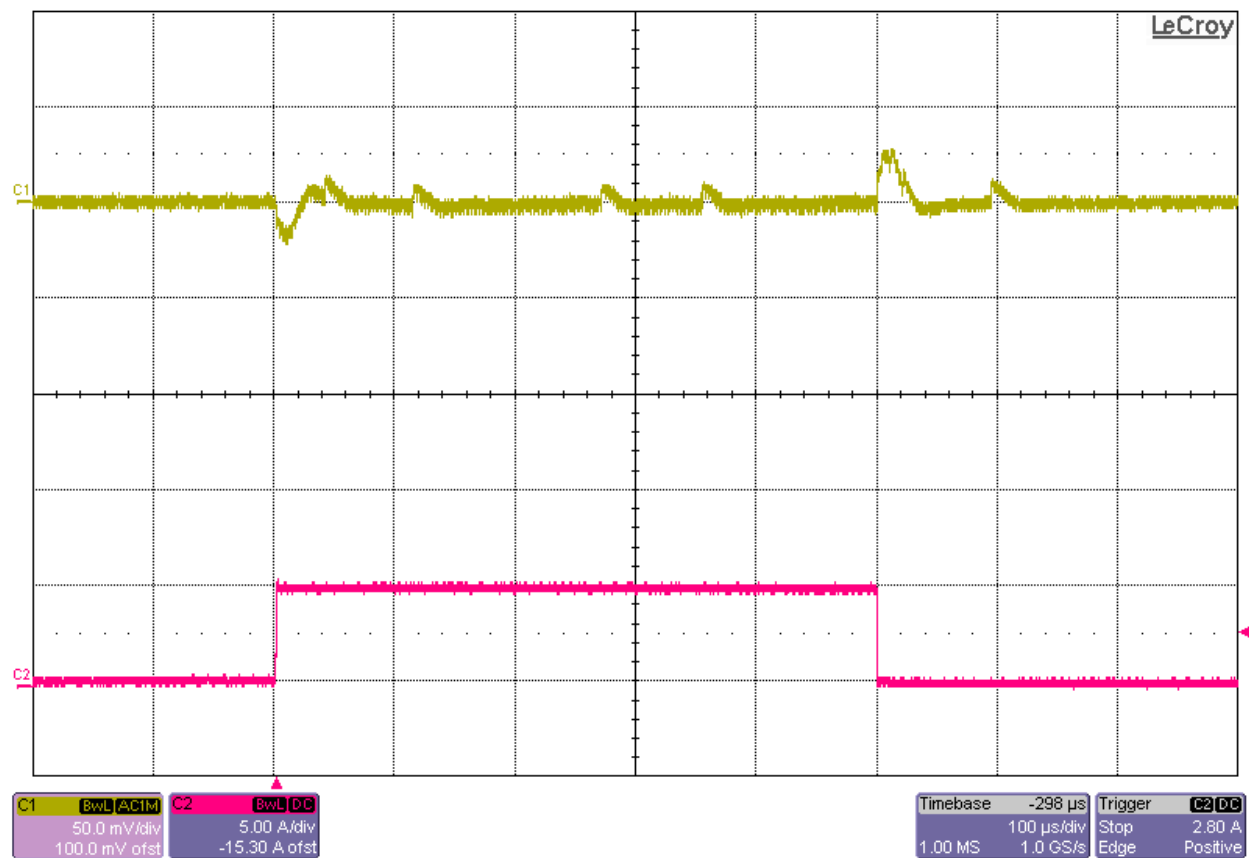


Figure 39. VIN = 12V, MGTAVTT Load Transient

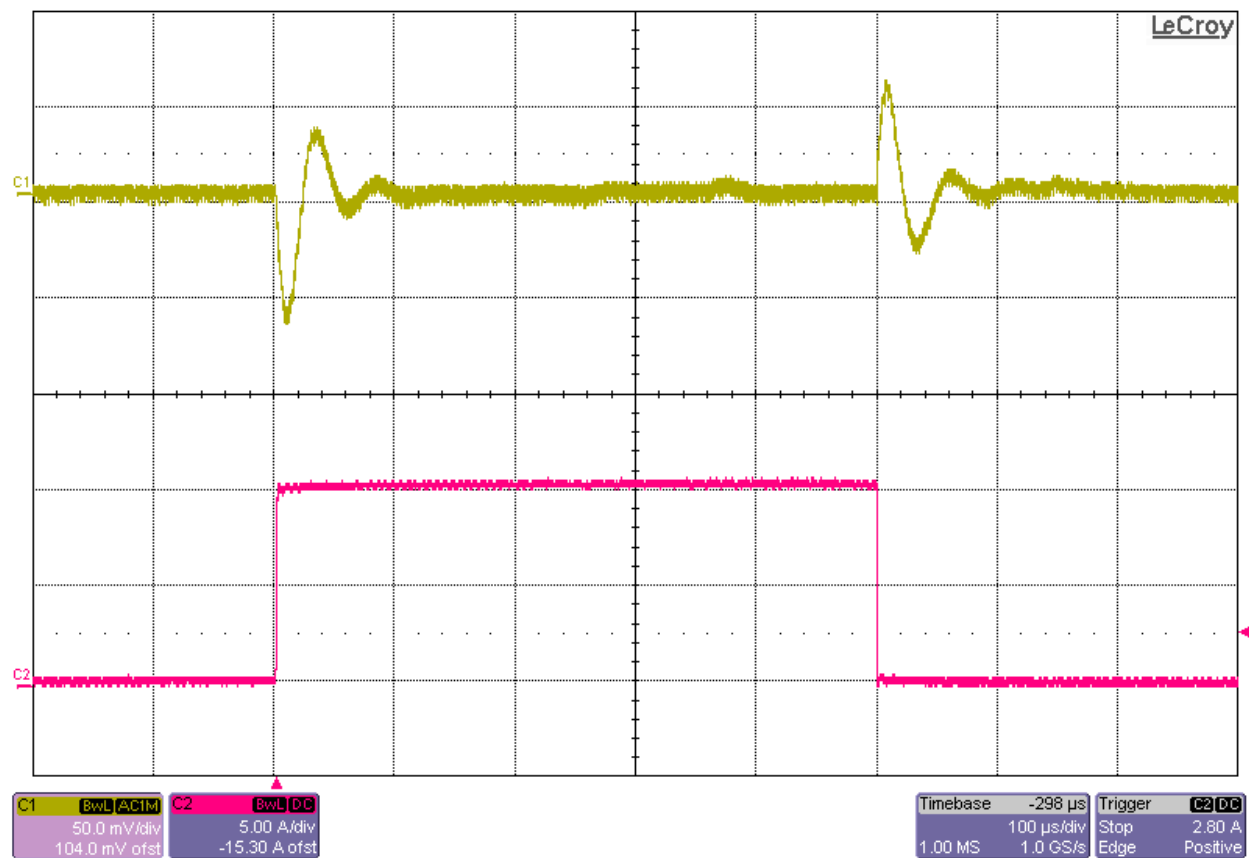


Figure 40. VIN = 12V, VADJ1V8 Load Transient

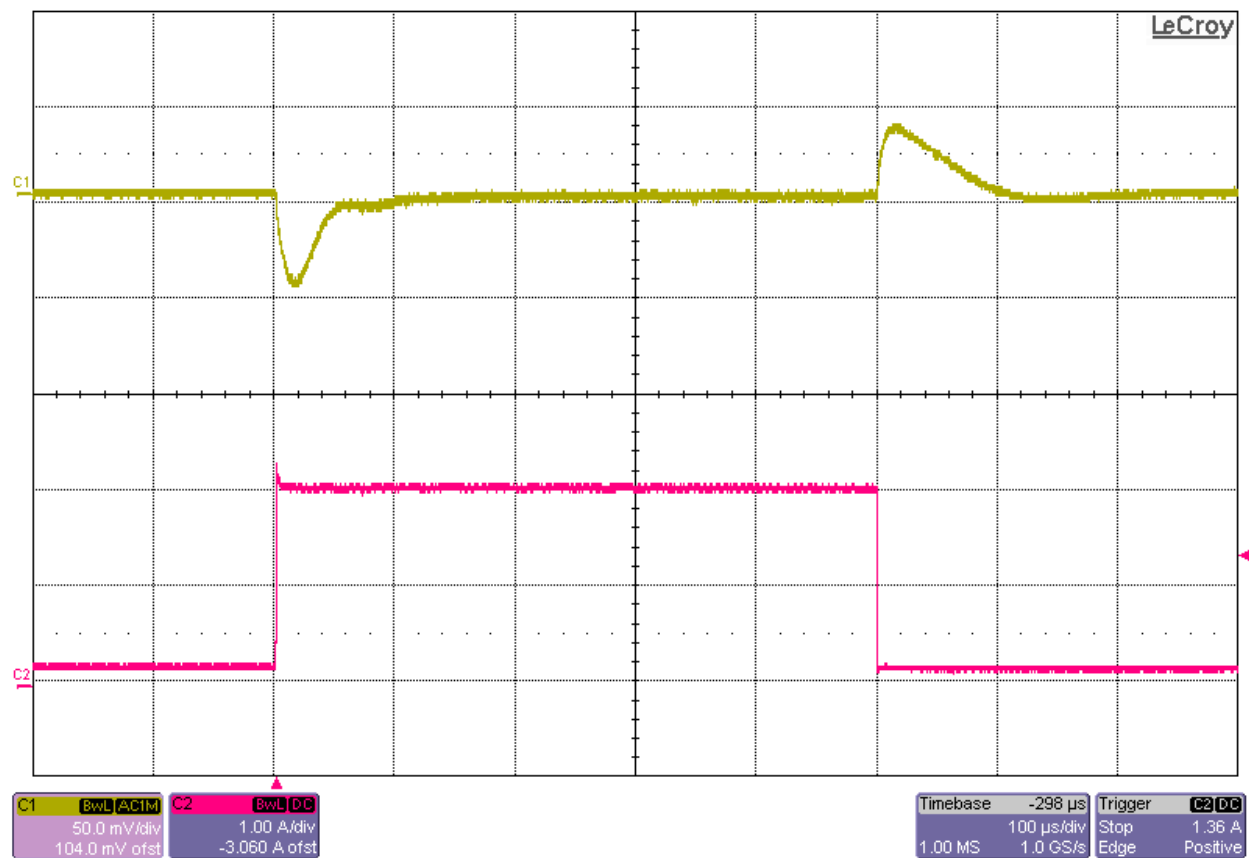


Figure 41. VIN = 12V, MGTVCCAUX Load Transient

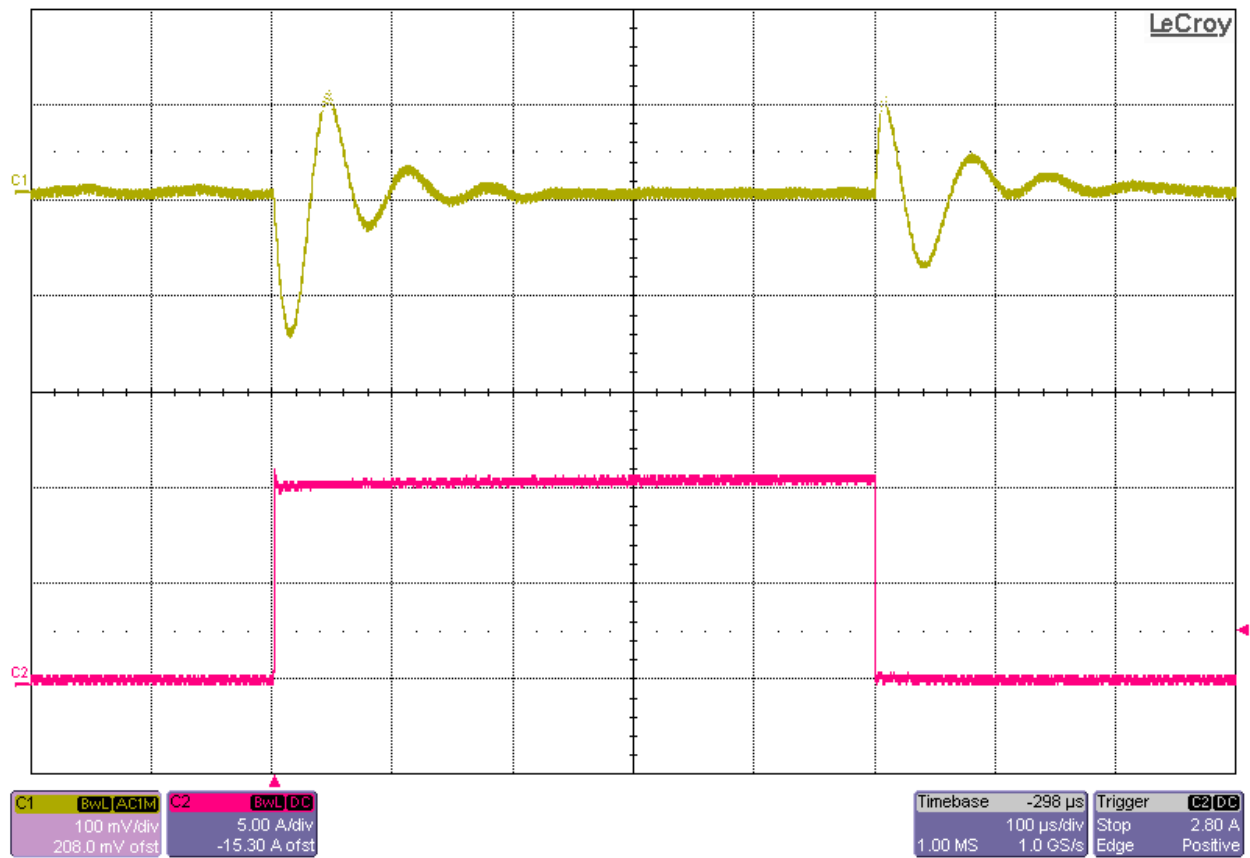


Figure 42. VIN = 12V, UTIL_3P3V Load Transient

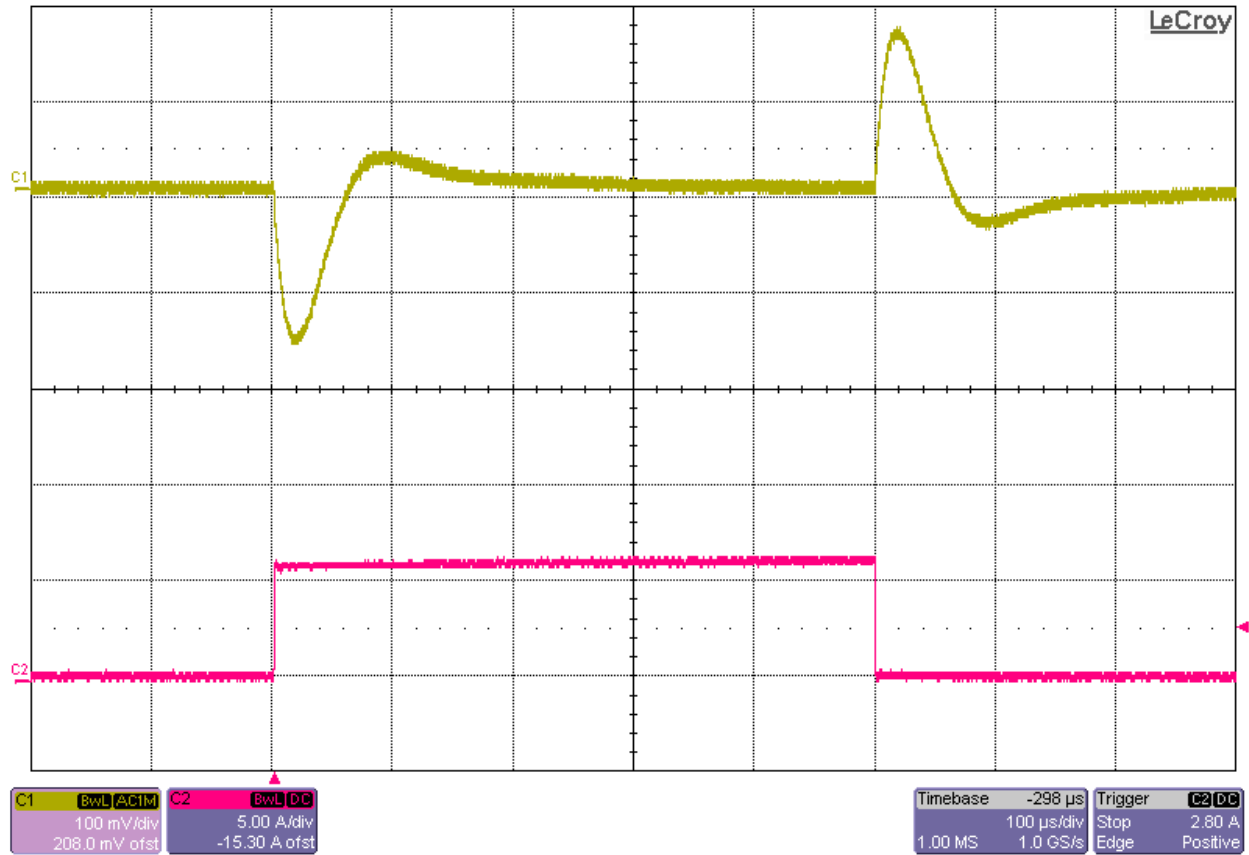


Figure 43. VIN = 12V, UTIL_12V Load Transient

7) Bode Plots

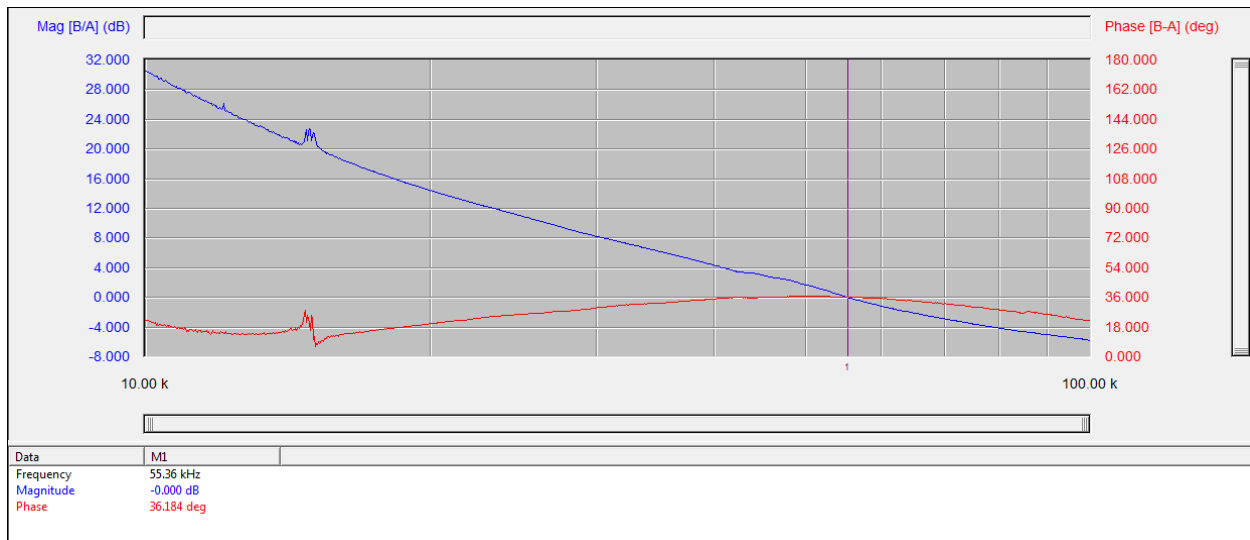


Figure 44. VIN = 12V, VCCINT Bode Plot

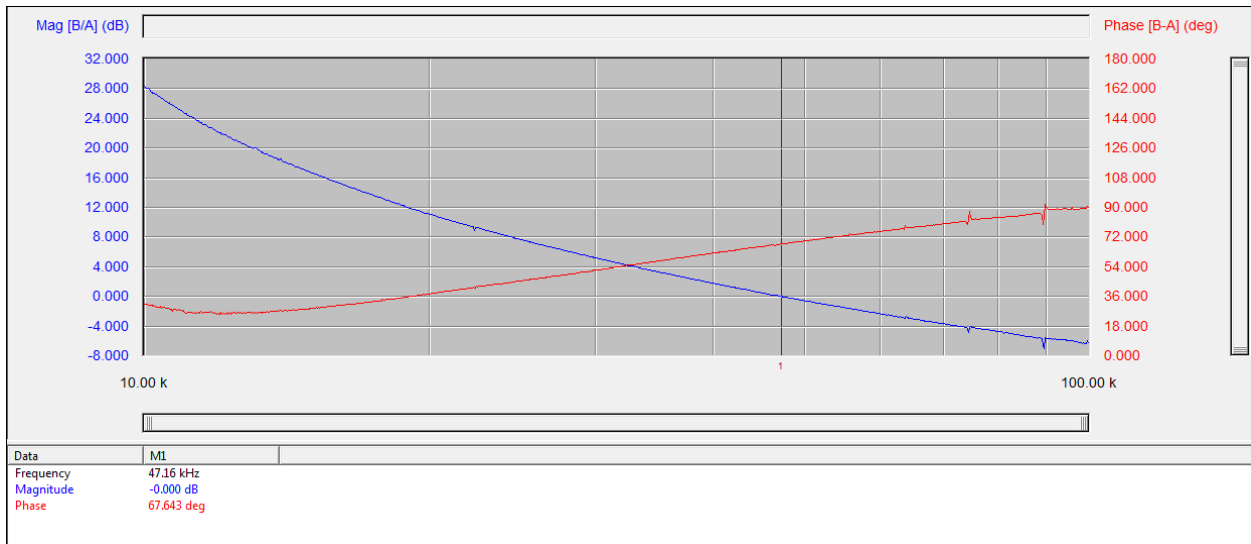


Figure 45. VIN = 12V, MGTAVCC Bode Plot

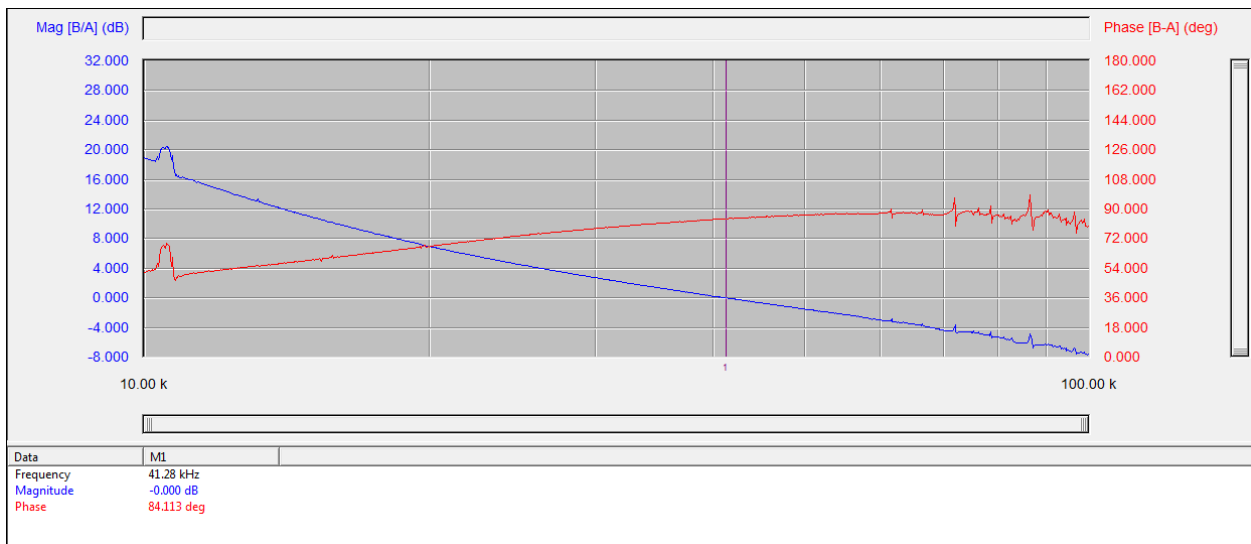


Figure 46. VIN = 12V, VCCBRAM Bode Plot

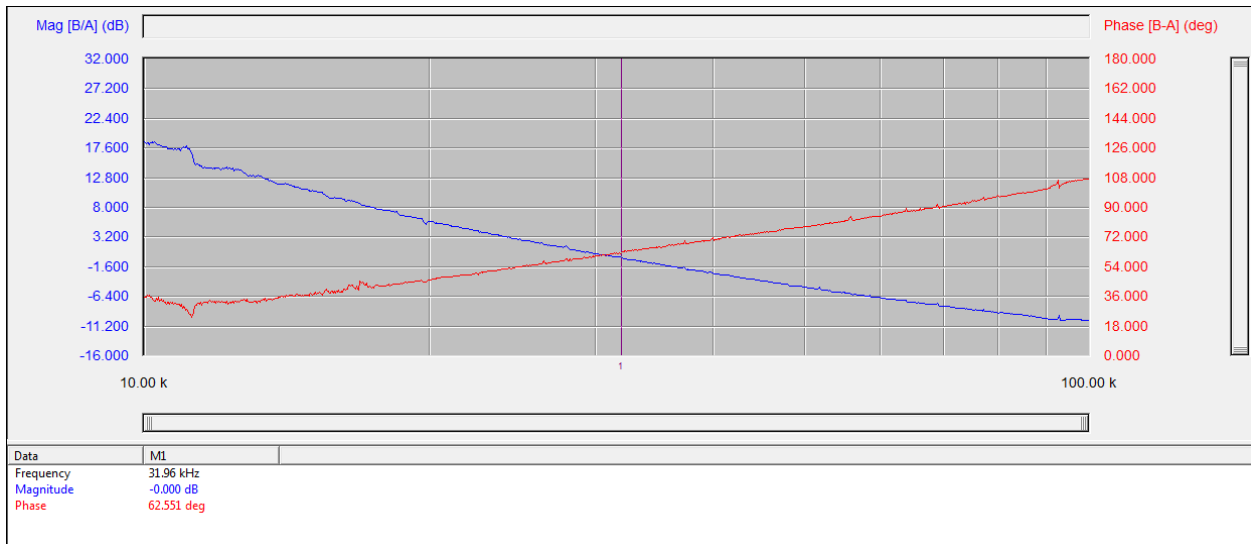


Figure 47. VIN = 12V, MGTAVTT Bode Plot

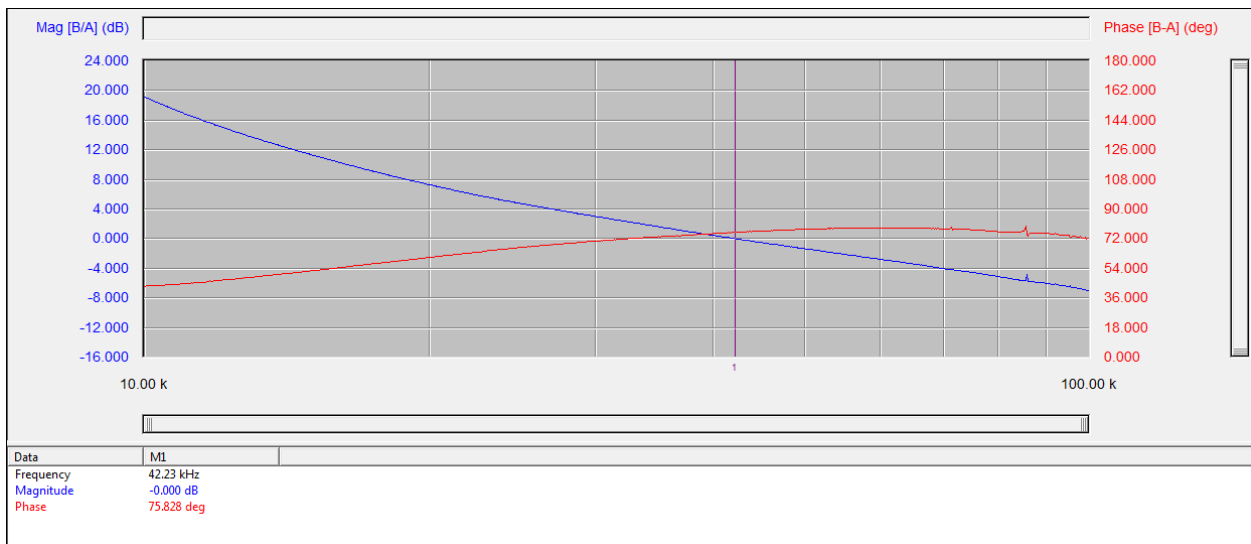


Figure 48. VIN = 12V, VCCAUX Bode Plot

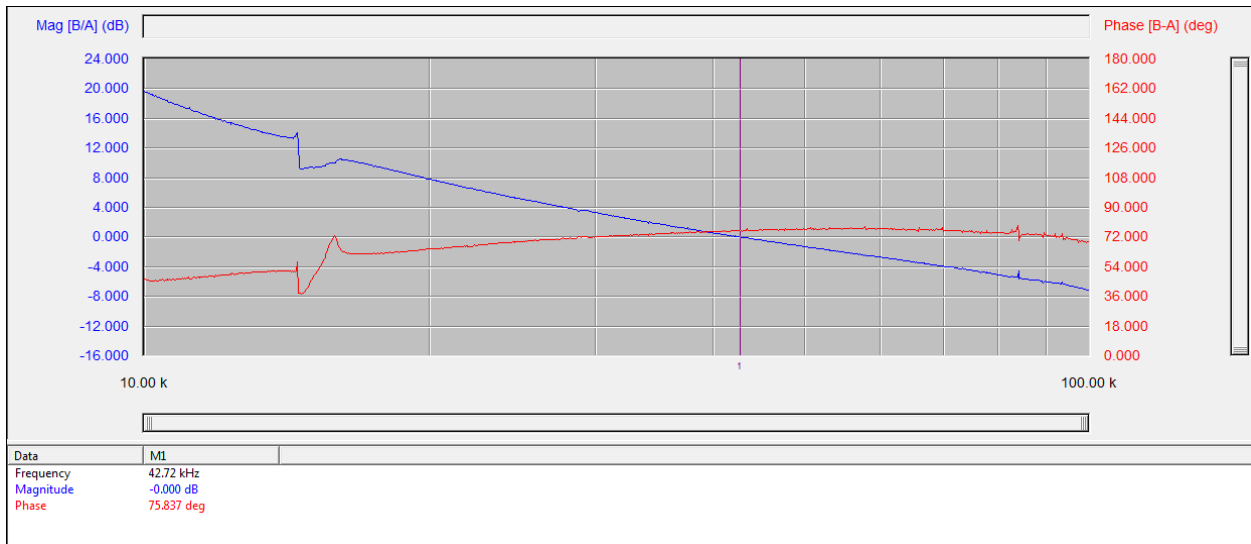


Figure 49. VIN = 12V, VCC1V8 Bode Plot

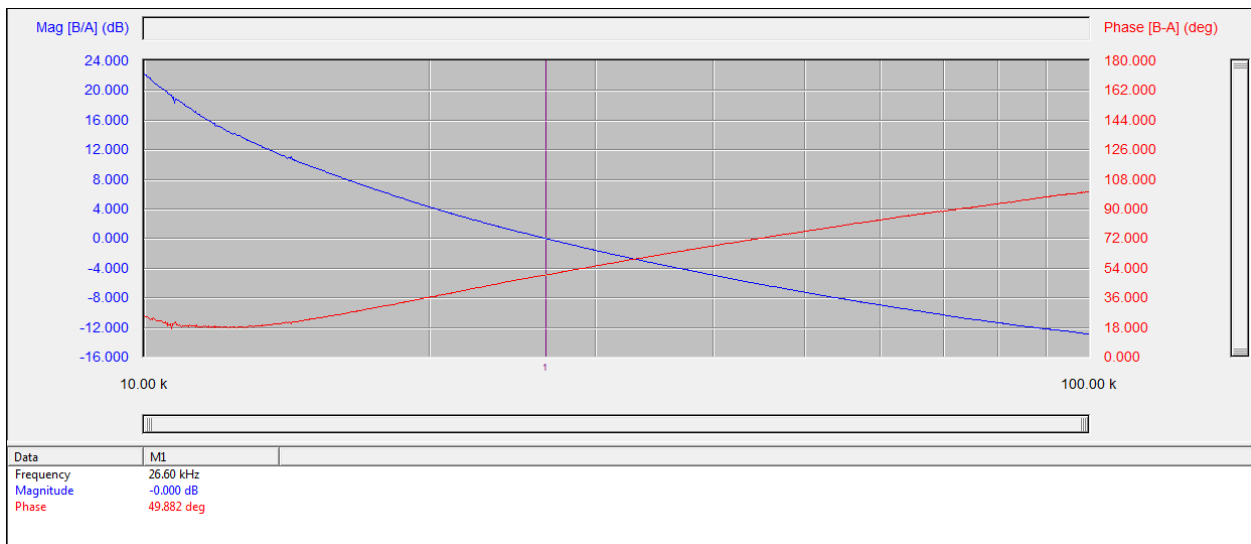


Figure 50. VIN = 12V, VADJ1V8 Bode Plot

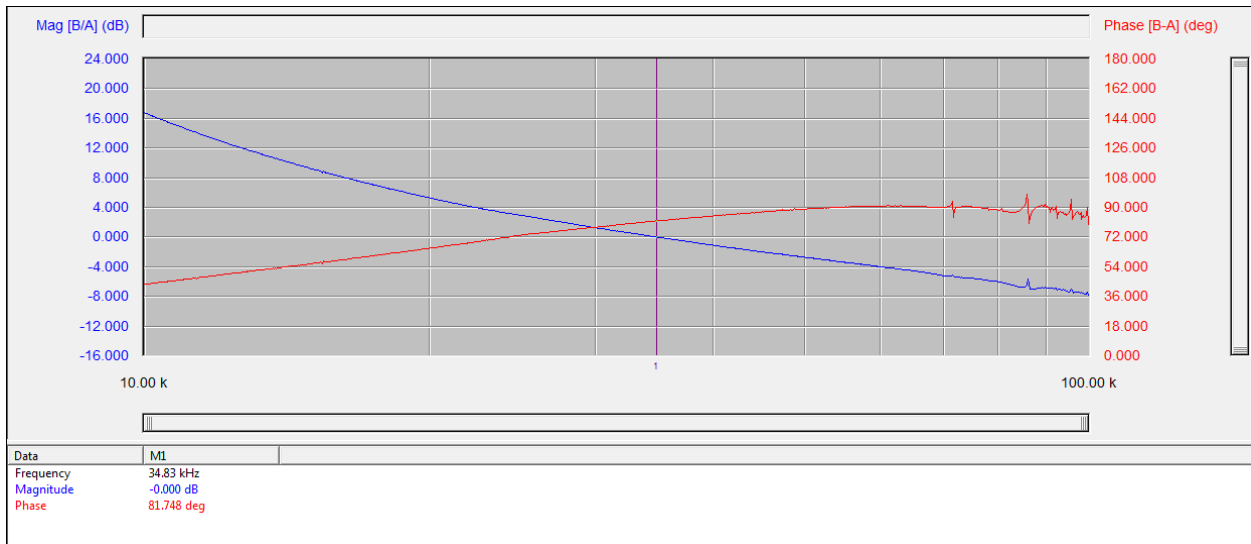


Figure 51. VIN = 12V, VCC1V2 Bode Plot

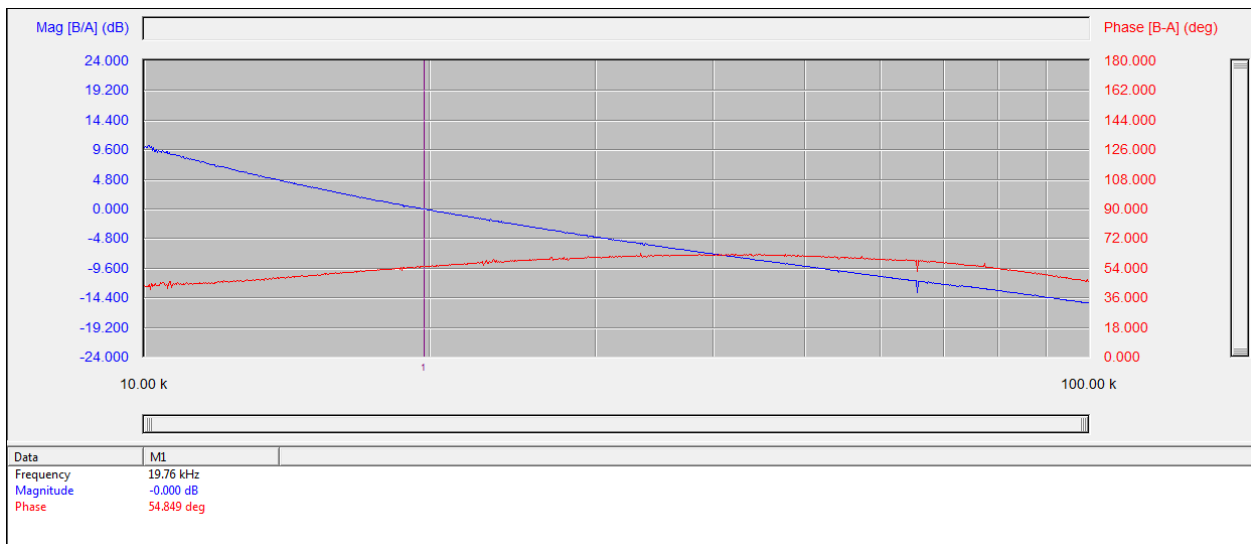


Figure 52. VIN = 12V, MGTVCCAUX Bode Plot

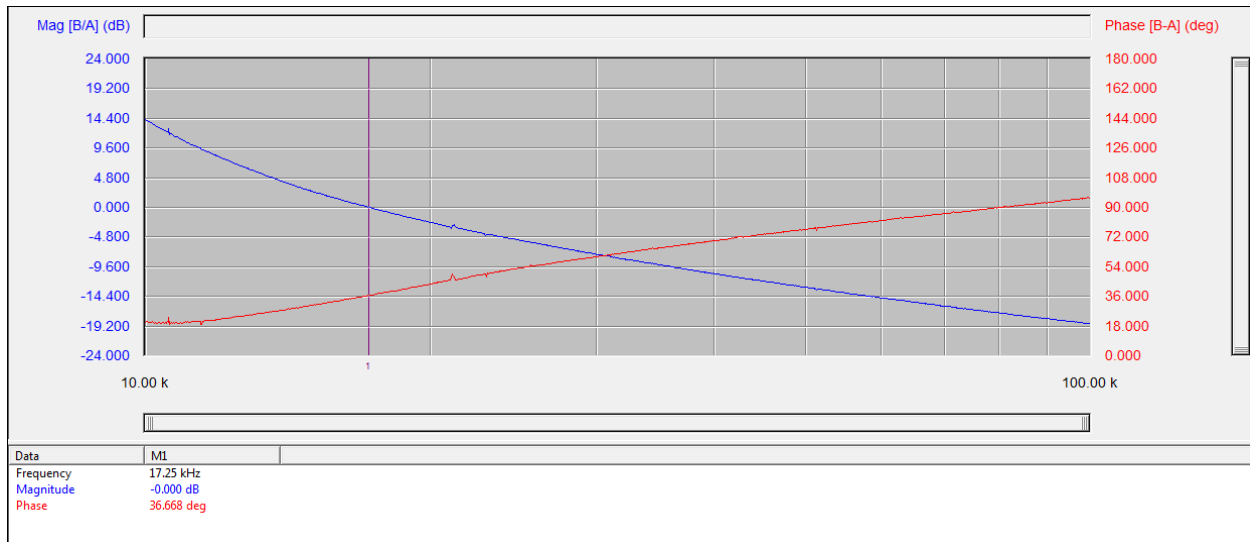


Figure 53. VIN = 12V, UTIL_3P3V Bode Plot

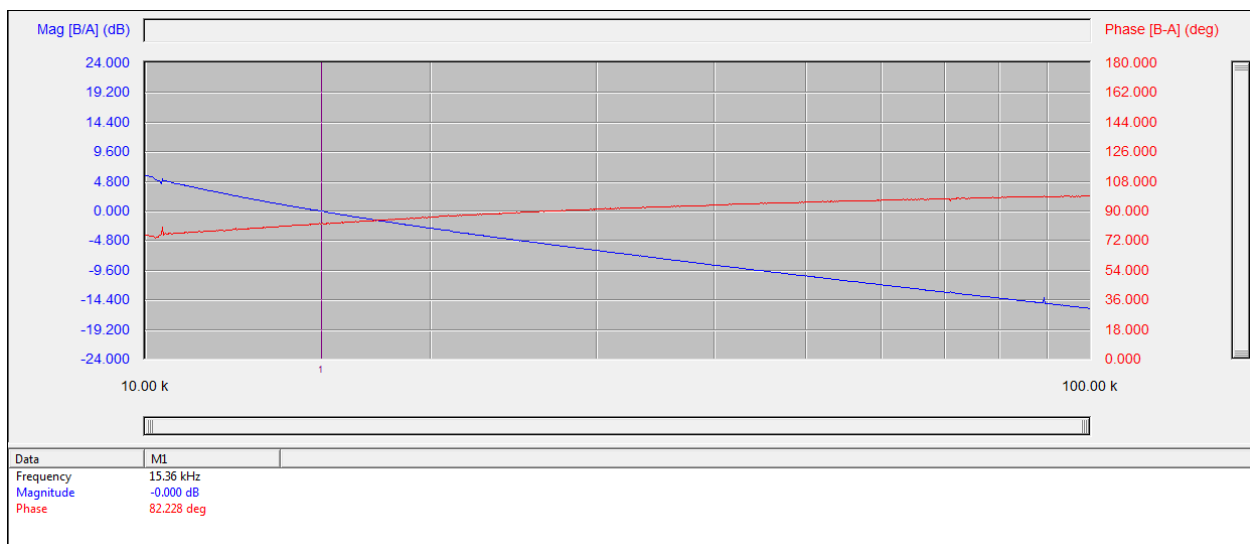


Figure 54. VIN = 12V, UTIL_12V Bode Plot

8) Thermal Image

A thermal image of the core voltage, VCCINT, is shown below at a full 60A load current. The input voltage is 12V.

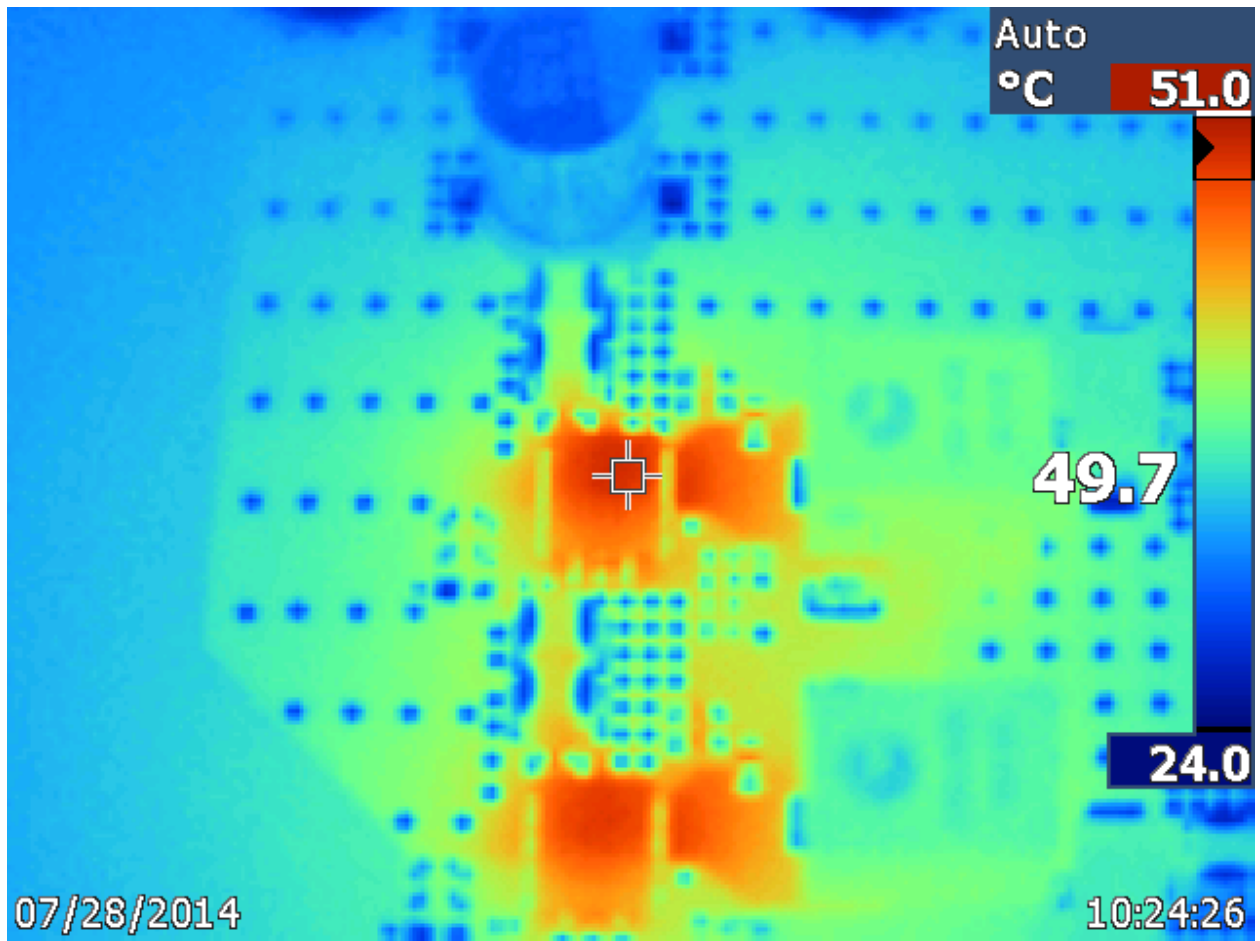


Figure 55. VIN = 12V, VCCINT Thermal Image @ Full Load

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