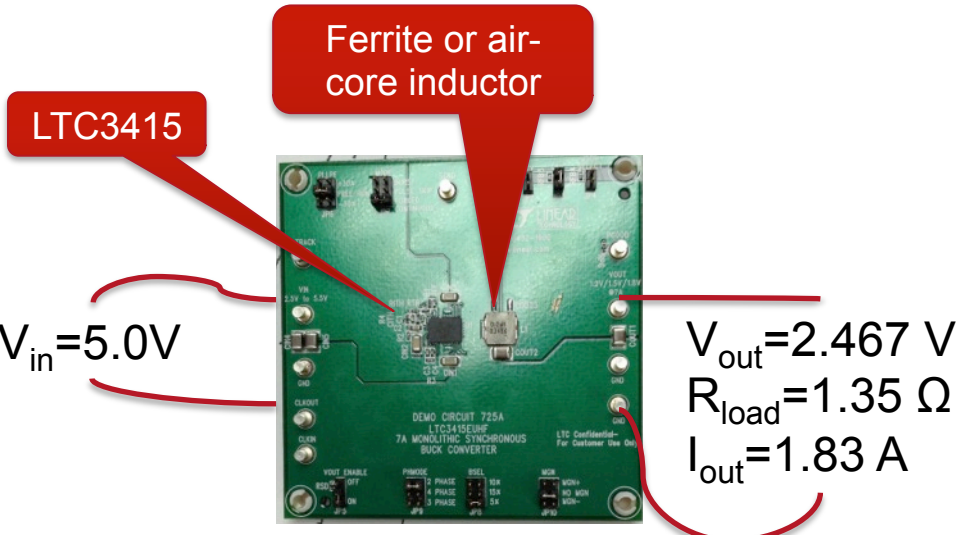
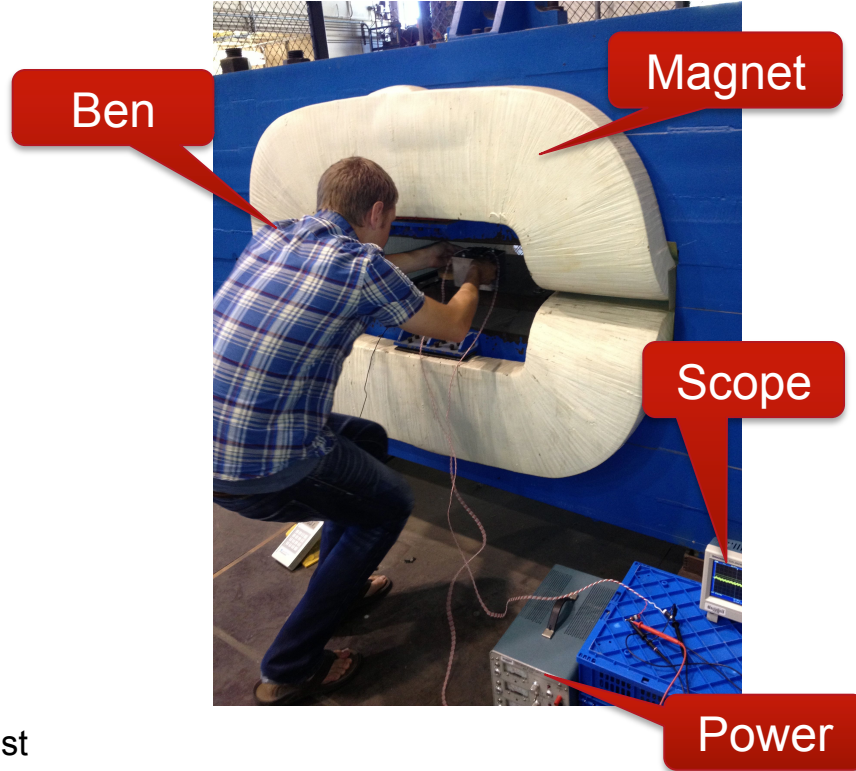


# Magnetic field test: LTC3415 Switching Regulator

## FE board switching regulator

- Create 1.0, 1.2, and 2.5 V digital power to FPGA, 1.6 and 2.9 V intermediate power for Hybrid.
- Requires ~200 nH inductor.
- Expect between 1-3 Amps.
- 8 regulators / FE board, 12 inductors.
- Analog and all Hybrid power uses linear regulators (cleaner but more power loss/heat)



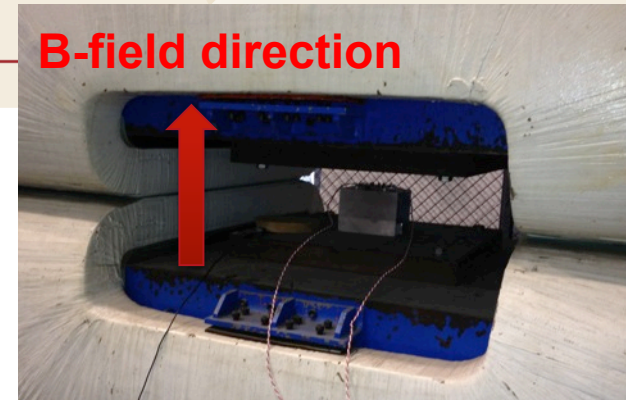
## Test

- Measure inductor's ability to keep steady DC output voltage between 0-1T field
- Three orientations in field
- Use scope to look at output voltage ripple
- Ferrite core saturates at ~3-4T (?); expect some effect at 1T

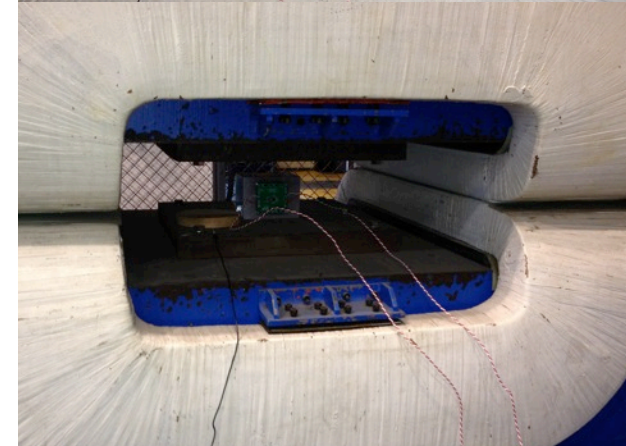
# Test Results

Orientation	B-field (T)	Ferrite core ripple (p-p, mV)	Air core ripple (p-p, mV)
1	0	28	20
1	0.5	40	
1	0.7	100	
1	1.05	90	No change
2	1.05	93	No change
3	1.05	90	No change

1



2



3



# Ground Noise Problems

- Unexpected signal observed whenever magnet was turned on.
- Observed even outside of magnet.
- Observed even when scope probes detached (floating).
- Assumed to be noise from magnet power supply coupling into the scope somehow.
- Can be ignored.

