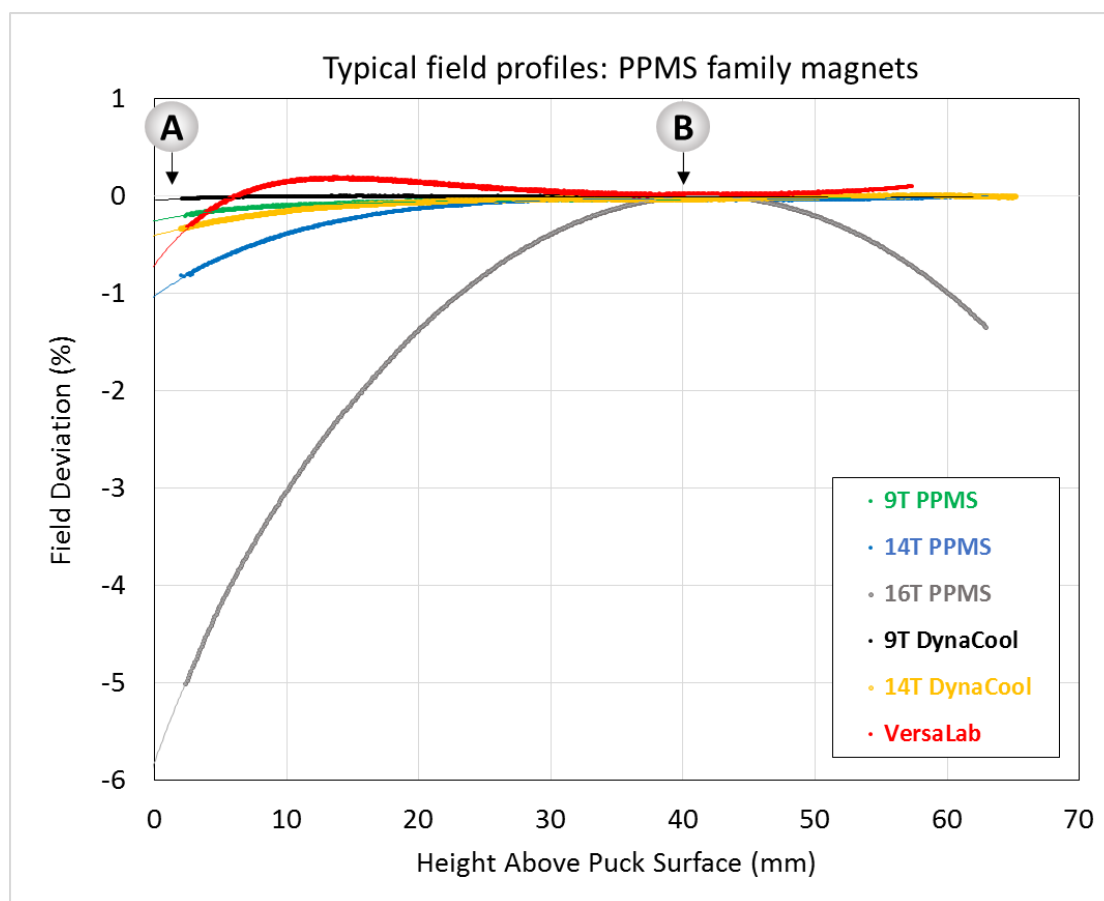




Tech Note 1084-312

Magnetic Field Uniformity in PPMS, DynaCool and VersaLab systems

The superconducting magnets in Quantum Design systems are designed and positioned to give the best uniformity for the sensitive measurements that are performed in these instruments. The plot below summarizes typical magnetic field profiles of various magnets used in PPMS, DynaCool and VersaLab systems, showing the relative change in field between the puck surface (A) and the center of the magnet (B).



Because magnetometry measurements like VSM, torque and ACMS are most sensitive to magnetic field variations, they are positioned near the magnet center (B).

How to put your measurement at the magnet center

Option	Comments
ETO Resistivity AC Transport	use Vertical Puck or Rotator option
Heat Capacity	use Vertical Puck
VSM	<i>standard</i>
ACMS	sample measures at 36mm and 73mm above the puck
ACMS-II	<i>standard</i> (sample measures at 30mm and 50mm above the puck)
Torque	<i>standard</i> (mounts on rotator)
Helium-3 Fridge	<i>standard</i>
Dil. Fridge	<i>standard</i>

In the above table, we see that many of the options are already centered in the magnet (*standard*), and the Vertical Puck P111 is available to bring heat capacity measurements to the field center (this App Note describes the Vertical Puck: <http://www.qdusa.com/sitedocs/appNotes/ppms/1085-156.pdf>). One omission from the table is Thermal Transport Option, in which the user is able to mount the sample between about 10mm and 30mm above the puck surface (typically near 10mm).

Note that the field profile for a particular magnet will depart slightly from these curves, so please contact your Quantum Design representative if you require more detailed knowledge about the profile of the magnet in your system.