**SHMS Dipole NMR probes**

Four Probes installed two by two about centerline and staggered in Z. Probes are labeled 4, 5, 6 and 7.

Table NMR Probe specifications

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Probe 3 | Probe 4 | Probe 5 | Probe 6 | Probe 7 |
| Low Range [T] | 0.17 | 0.35 | 0.7 | 1.5 | 3.0 |
| High range [T] | 0.52 | 1.05 | 2.1 | 3.4 | 6.8 |
| PPM/cm (L to H) | 1200-1400 | 800-1500 | 250-600 | 240-280 | 160-300 |
| ΔB across probe (G) | 0.8 – 2.9 | 1.1 – 6.3 | 0.7 – 5.0 | 1.44 -3.8 | 1.9 – 8.2 |
| Type | Proton | Proton | Proton | Deuteron | Deuteron |
| Probe Diameter [mm] | 4 | 4 | 4 | 4 | 4 |
| Probe Length [mm] | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 |

Gradient compensation coils can correct up to 40G/cm transverse.

Table NMR probe locations Location of probes relative to the center of magnet. Active part of the probe is located 6.03mm from end of probe and slightly off centered. (-1.91)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Location [cm] | Probe 4 | Probe 5 | Probe 6 | Probe 7 |
| X | -0.832 | -0.832 | 0.832 | 0.832 |
| Y | -27.275 | -28.545 | -28.545 | -27.275 |
| Z | 126.55 | 118.55 | 118.55 | 126.55 |

Table 3 Field uniformity at Probe location. Field fall off in Z +/- 0.2cm about probe’s Z location

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Current [A] | Probe # | High Field [T] | Low Field [T] | Field at Probe center [T] | Gradient [T/m]  (G/cm) | Δ Field [G]  across Probe | PPM/cm |
| 1000 | Probe 4 | 0.815961 | 0.808395 | 1.185769 | 1.892 (189.2) | 75.7 | **23,302** |
| 1000 | Probe 5 | 0.948011 | 0.941099 | 1.185769 | 1.728 (172.8) | 69.1 | **18,295** |
| 2000 | Probe 5 or 6 | 1.89597 | 1.88214 | 2.371345 | 3.458 (345.8) | 138.0 | **18,303** |
| 2500 | Probe 5 or 6 | 2.36975 | 2.35247 | 2.693944 | 4.320 (432.0) | 172.8 | **18,297** |
| 3000 | Probe 6 | 2.84305 | 2.82232 | 3.555998 | 5.183 (518.3) | 207.3 | **18,296** |
| 3500 | Probe 6 | 3.37646 | 3.35544 | 4.144997 | 5.255 (525.5) | 210.2 | **15,612** |

PPM/cm = Δ Field across Probe divided by field at center of probe divided by probe diameter x 1E6 (Gauss and cm units)







