

NMR Probe Specifications

Model	JEOL Resonance 5mm 400MHz broadband Z-gradient high resolution ROYAL HFX NMR probe (NM-80008HFXS)																																																										
Applicable Instrument	JNM-ECZ 400MHz NMR systems, for other models, please contact JEOL Resonance.																																																										
Description	Broadband high resolution NMR probe for both direct and indirect detection fitted with an actively shielded Z-axis gradient for 5mm sample tubes on 400MHz standard bore magnets. The LF coil can be tuned to observe any nucleus from ^{31}P to ^{15}N , plus ^{39}K and ^{109}Ag . The HF coil may be tuned to ^1H or ^{19}F and simultaneously tuned to ^1H and ^{19}F §. The probe is fitted with a ^2H lock. The probe is compatible with the JEOL Autotune accessory units (NM-61160ATZ-s and NM-61360ATEXT). The probe includes one (1) variable temperature compatible sample spinner.																																																										
Specifications	Signal-to-Noise <table> <tr> <td>^1H sensitivity–Single Tune</td><td>$\geq 500:1$</td><td>0.1% Ethyl Benzene[†]</td></tr> <tr> <td>–Dual Tune</td><td>$\geq 250:1$</td><td>‡</td></tr> <tr> <td>^{19}F sensitivity–Single Tune</td><td>$\geq 550:1$</td><td>0.05% TFT^{†§}</td></tr> <tr> <td>–Dual Tune</td><td>$\geq 380:1$</td><td>‡</td></tr> <tr> <td>^{13}C sensitivity</td><td>$\geq 180:1$</td><td>ASTM[†]</td></tr> <tr> <td>^{13}C sensitivity</td><td>$\geq 200:1$</td><td>10% Ethyl Benzene[†]</td></tr> <tr> <td>^{31}P sensitivity</td><td>$\geq 100:1$</td><td>0.0485M TPP</td></tr> <tr> <td>^{15}N sensitivity</td><td>$\geq 30:1$</td><td>90% Formamide w/o NOE</td></tr> </table> Pulse Widths <table> <tr> <td>^1H pulse width–Single Tune</td><td>$\leq 7 \mu\text{s}$</td><td>@30W</td></tr> <tr> <td>–Dual Tune</td><td>$\leq 14 \mu\text{s}$</td><td>‡</td></tr> <tr> <td>^{19}F pulse width–Single Tune</td><td>$\leq 9 \mu\text{s}$</td><td>@26W</td></tr> <tr> <td>–Dual Tune</td><td>$\leq 13 \mu\text{s}$</td><td>‡</td></tr> <tr> <td>^{13}C pulse width</td><td>$\leq 12 \mu\text{s}$</td><td>@80W</td></tr> <tr> <td>^{31}P pulse width</td><td>$\leq 18 \mu\text{s}$</td><td>@50W</td></tr> <tr> <td>^{15}N pulse width</td><td>$\leq 18 \mu\text{s}$</td><td>@150W</td></tr> </table> Lineshape <table> <tr> <td>^1H spinning lineshape</td><td>$\leq 6/12 \text{ Hz}$</td><td>1% chloroform (0.55%/0.11%)</td></tr> <tr> <td>^1H Non-spin lineshape</td><td>$\leq 8/16 \text{ Hz}$</td><td>1% chloroform (0.55%/0.11%)</td></tr> </table> Spinning Sidebands (SSB) $\leq 1\%$ Resolution <table> <tr> <td>^1H resolution, spinning</td><td>$\leq 0.5 \text{ Hz}$</td><td>1% chloroform (FWHM)</td></tr> <tr> <td>^1H resolution, non-spin</td><td>$\leq 0.8 \text{ Hz}$</td><td>1% chloroform (FWHM)</td></tr> </table> Z-gradient The probe is fitted with an actively shielded single Z-axis gradient coil capable of 30G/cm with 10A current. Variable Temperature Variable temperature range is -100°C to $+150^\circ\text{C}$		^1H sensitivity–Single Tune	$\geq 500:1$	0.1% Ethyl Benzene [†]	–Dual Tune	$\geq 250:1$	‡	^{19}F sensitivity–Single Tune	$\geq 550:1$	0.05% TFT ^{†§}	–Dual Tune	$\geq 380:1$	‡	^{13}C sensitivity	$\geq 180:1$	ASTM [†]	^{13}C sensitivity	$\geq 200:1$	10% Ethyl Benzene [†]	^{31}P sensitivity	$\geq 100:1$	0.0485M TPP	^{15}N sensitivity	$\geq 30:1$	90% Formamide w/o NOE	^1H pulse width–Single Tune	$\leq 7 \mu\text{s}$	@30W	–Dual Tune	$\leq 14 \mu\text{s}$	‡	^{19}F pulse width–Single Tune	$\leq 9 \mu\text{s}$	@26W	–Dual Tune	$\leq 13 \mu\text{s}$	‡	^{13}C pulse width	$\leq 12 \mu\text{s}$	@80W	^{31}P pulse width	$\leq 18 \mu\text{s}$	@50W	^{15}N pulse width	$\leq 18 \mu\text{s}$	@150W	^1H spinning lineshape	$\leq 6/12 \text{ Hz}$	1% chloroform (0.55%/0.11%)	^1H Non-spin lineshape	$\leq 8/16 \text{ Hz}$	1% chloroform (0.55%/0.11%)	^1H resolution, spinning	$\leq 0.5 \text{ Hz}$	1% chloroform (FWHM)	^1H resolution, non-spin	$\leq 0.8 \text{ Hz}$	1% chloroform (FWHM)
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[†] Thin wall NMR sample tube, 0.24mm, standard wall sample(0.38mm) tube S/N values are ~12% lower.

[‡] The ^1H or ^{19}F performance may be affected by $^1\text{H}\{^{19}\text{F}\}$ or $^{19}\text{F}\{^1\text{H}\}$ decoupling or additional filters and diplexers.

§ The probe may have a ^{19}F background when observing ^{19}F .