

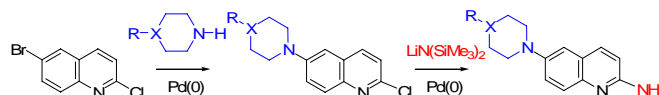
Sequential and Selective Buchwald-Hartwig Amination Reactions for the Controlled Functionalization of 6-Bromo-2-chloroquinoline: Synthesis of Ligands for the Tec SH3 Domain.

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SUPPORTING INFORMATION

TABLE OF CONTENTS

General Considerations

Page S2

NMR Spectra

Compound(s) [NMR]	Page	Compound(s) [NMR]	Page
5a [¹ H / ¹³ C]	S3	6g & 21 [mix; ¹ H / ¹³ C]	S24
5b [¹ H]	S4	6h & 7 [mix; ¹ H / ¹³ C]	S25
5c [¹ H / ¹³ C]	S5	6h [¹ H]	S26
5d [¹ H / ¹³ C]	S6	6i & 8i [mix; ¹ H / ¹³ C]	S27
5e [¹ H / ¹³ C]	S7	6i & 8i [mix; COSY/ROESY]	S28
5f [¹ H / ¹³ C]	S8	6i & 8i [mix; HMQC/HMBC]	S29
5h [¹ H / ¹³ C]	S9	6j [¹ H / ¹³ C]	S30
5i [¹ H / ¹³ C]	S10	6k & 8k [mix; ¹ H / ¹³ C]	S31
5j [¹ H]	S11	6k [¹ H]	S32
5k [¹ H / ¹³ C]	S12	6l [¹ H / ¹³ C]	S33
5l [¹ H]	S13	8a [¹ H]	S34
6a & 17a [mix; ¹ H / ¹³ C]	S14	8i [¹ H]	S35
6a & 17a [mix; COSY/ROESY]	S15	8j [¹ H / ¹³ C]	S36
6a & 17a [mix; HMQC/HMBC]	S16	8m [¹ H / ¹³ C]	S37
6a [¹ H]	S17	17i [¹ H]	S38
6b [¹ H]	S18	17k [¹ H]	S39
6c [¹ H / ¹³ C]	S19	17l [¹ H / ¹³ C]	S40
6d [¹ H / ¹³ C]	S20	18 [¹ H]	S41
6e [¹ H / ¹³ C]	S21	19 [¹ H]	S42
6f & 17f [mix; ¹ H / ¹³ C]	S22	20 [¹ H / ¹³ C]	S43
6f [¹ H]	S23	22 [¹ H]	S44

General Considerations. Unless otherwise specified all reagents were purchased from commercial suppliers and used without further purification. Toluene, trifluoromethylbenzene, DME and 1,4-dioxane were distilled and dried according to standard procedures.¹ Commercially available lithium bis(trimethylsilyl)amide (LHMDS) was used as a 1.0 M solution in THF. Reactions conducted under pressure were carried out in an ACE pressure tube purchased from Sigma-Aldrich (product number Z181064). Microwave reactions were carried out in either a CEM MARS multimode platform system or CEM Discover single mode system.

¹H & ¹³C NMR Signals for all new compounds were assigned using a combination of COSY, ROESY, heteronuclear multiple quantum coherence (HMQC) and heteronuclear multiple bond correlation (HMBC) spectral data. The evaluation of binding of compounds to the murine Tec IV SH3 domain using NMR chemical shift perturbation experiments were performed according to methods described previously.²

¹H and ¹³C NMR spectra are provided for all desired products **5** and **6**. In addition, spectroscopic data for by-products **8**, **17**, **18**, **19**, **20**, **21** and **22** is included where appropriate. In cases where a compound has been isolated as a mixture and as the pure compound NMR data is provided for both the mixture and the pure compound. For compounds obtained as a mixture, characterization was achieved using COSY, ROESY, HMQC and HMBC NMR data. A representative example of 2D data utilised for the characterization of **6** isolated as a mixture with **8** is provided with heterocycle **i**. Similarly, a representative example of 2D data utilised for the characterization of **6** isolated as a mixture with **16** is provided with heterocycle **a**.

- (1) Perrin, D. D.; Armarego, W. L. F. *Purification of Laboratory Chemicals*; 3rd ed.; Pergamon Press: Oxford, England, 1988.
- (2) Inglis, S. R.; Stojkoski, C.; Branson, K. M.; Cawthray, J. F.; Fritz, D.; Wiadrowski, E.; Pyke, S. M.; Booker, G. W. *J. Med. Chem.* **2004**, *47*, 5405-5417.

Figure S1: 600 MHz ^1H NMR and 150 MHz ^{13}C NMR spectra (CDCl_3) of 5a obtained using General Procedure 5.

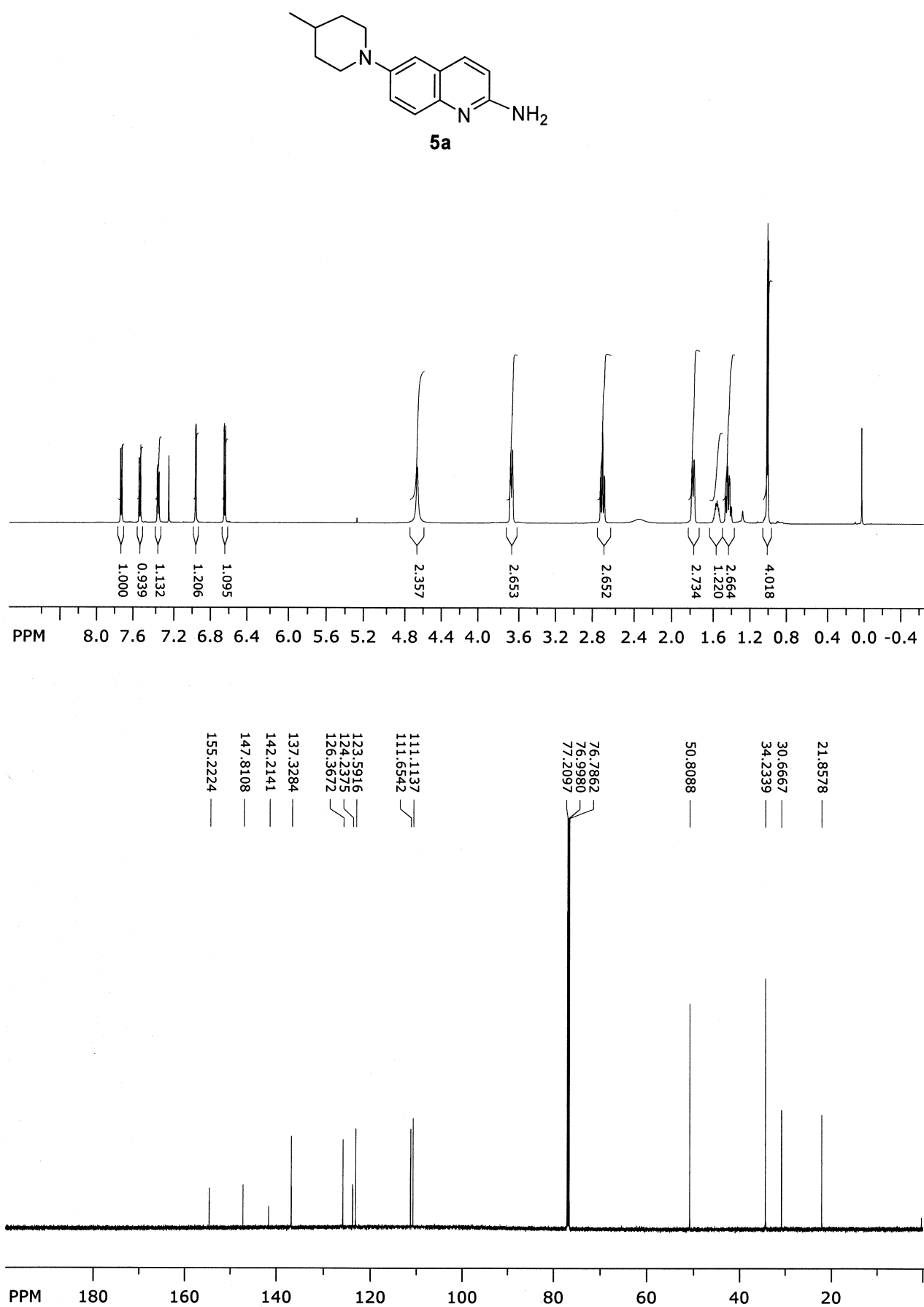


Figure S2: 300 MHz ^1H NMR spectrum (CDCl_3) of 5b obtained using General Procedure 5.

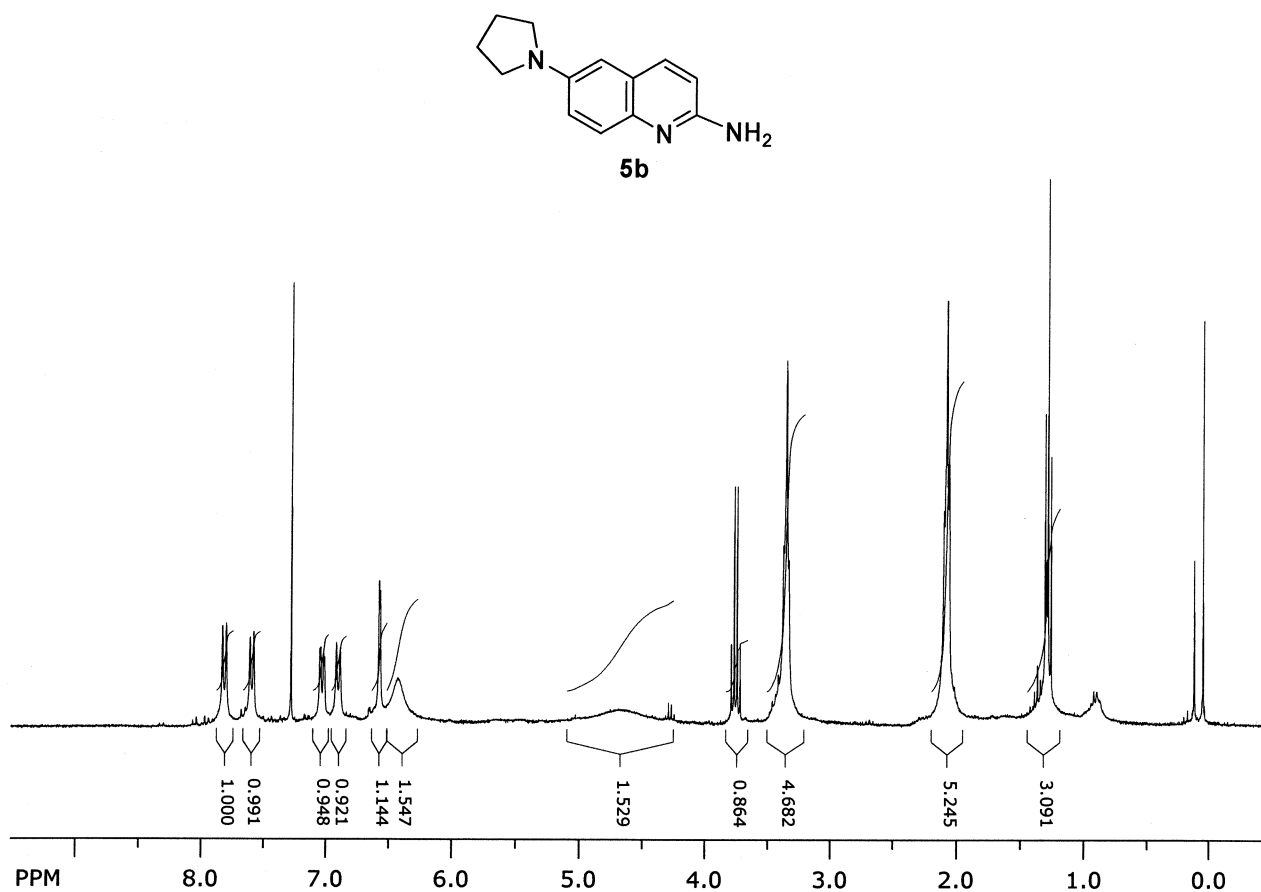


Figure S3: 600 MHz ^1H NMR and 150 MHz ^{13}C NMR spectra (CDCl_3) of **5c** obtained using General Procedure 5.

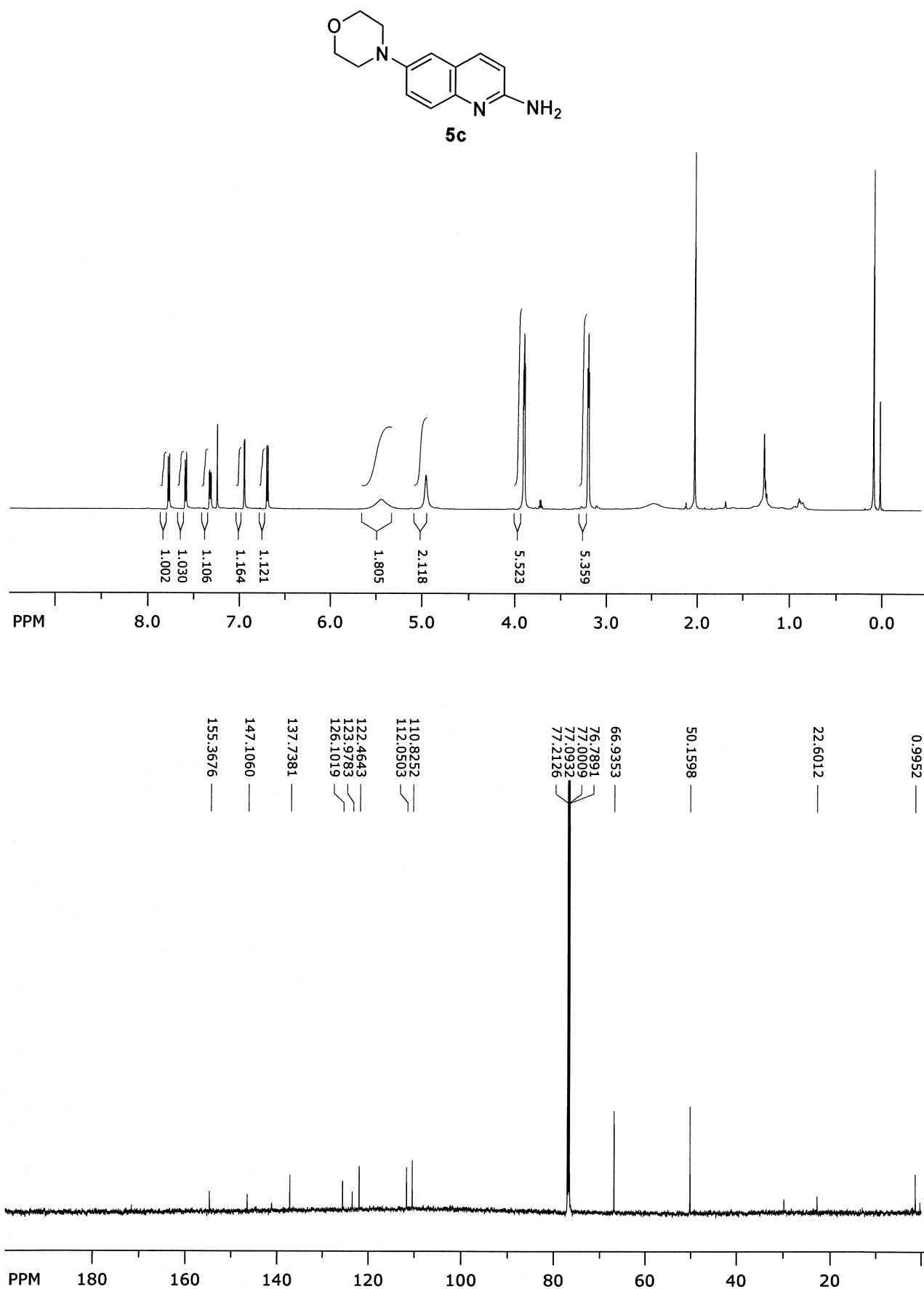


Figure S4: 300 MHz ^1H NMR and 150 MHz ^{13}C NMR spectra (CDCl_3) of 5d obtained using General Procedure 5.

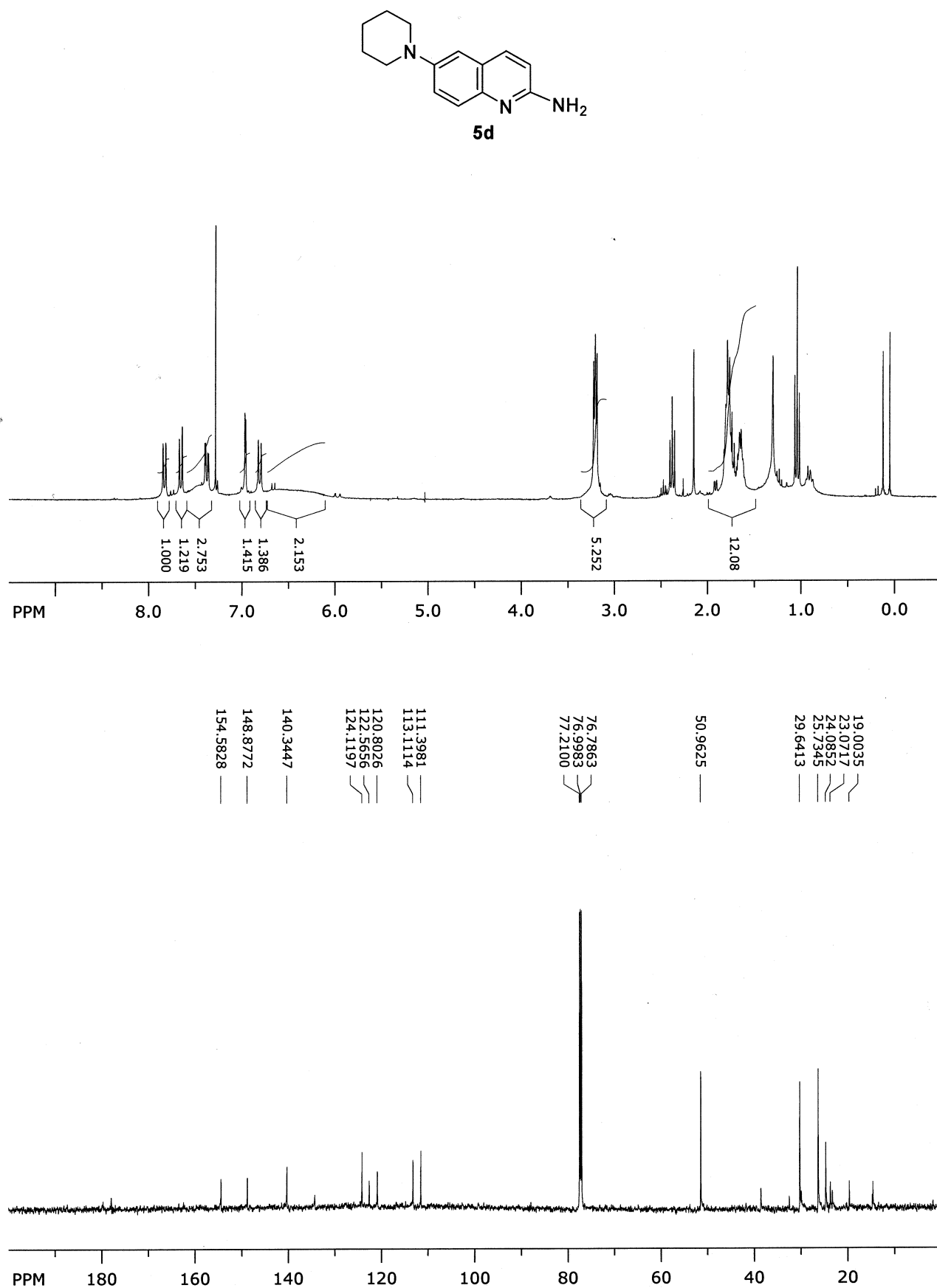


Figure S5: 600 MHz ^1H NMR and 150 MHz ^{13}C NMR spectra (CDCl_3) of 5e obtained using General Procedure 5.

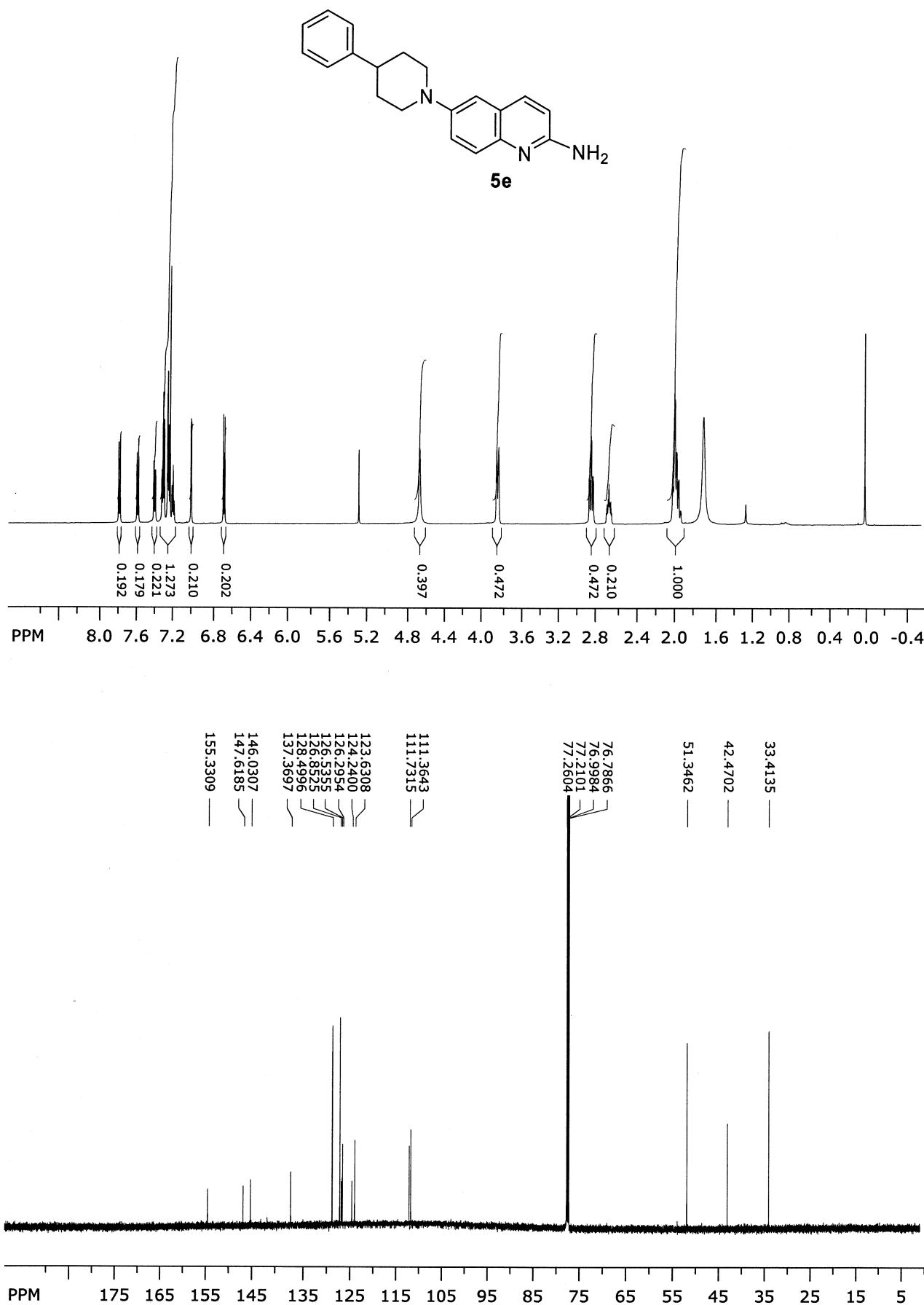


Figure S6: 600 MHz ^1H NMR and 150 MHz ^{13}C NMR spectra (CDCl_3) of **5f** obtained using General Procedure 5.

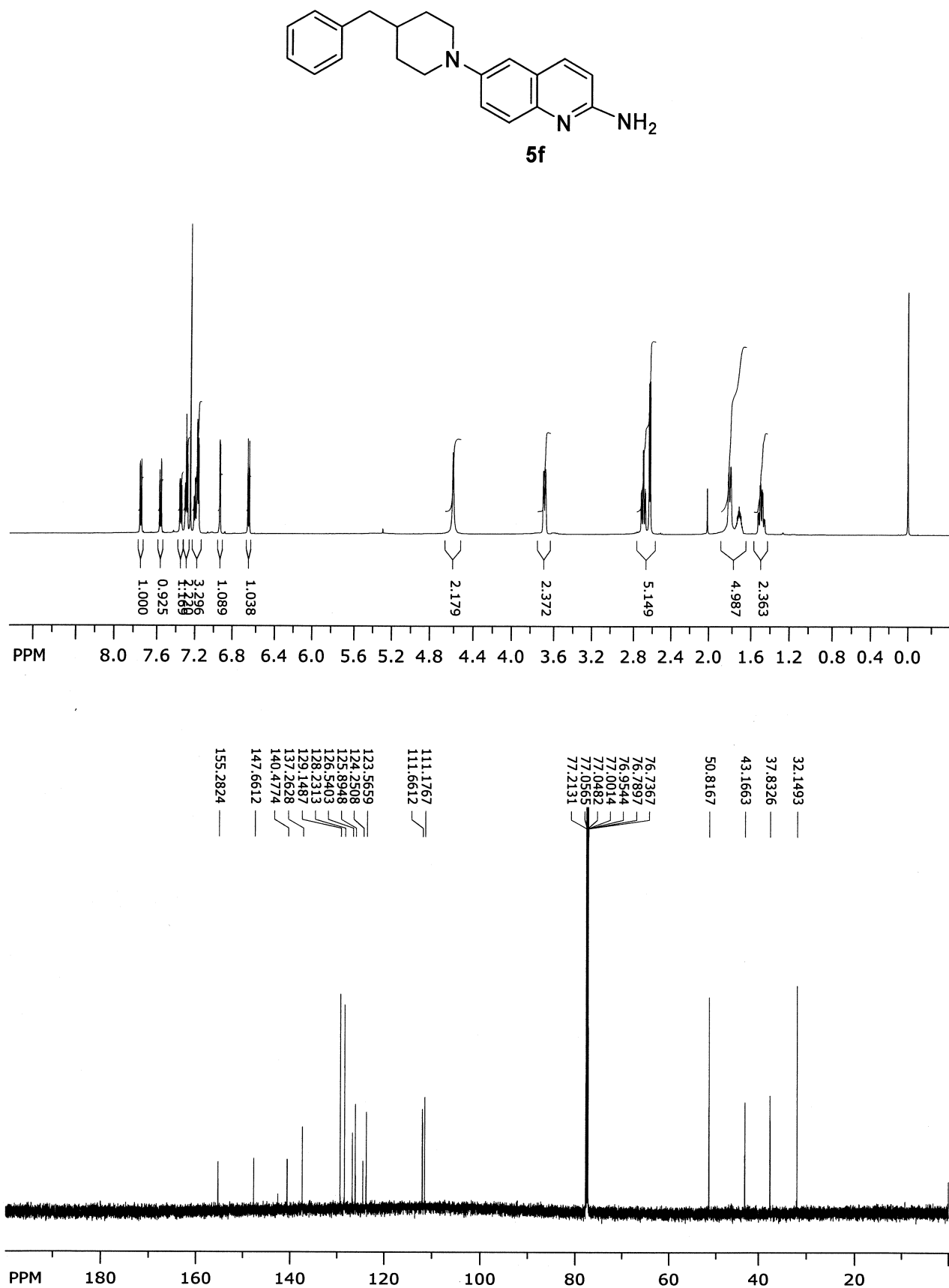


Figure S7: 200 MHz ^1H NMR and 150 MHz ^{13}C NMR spectra (CDCl_3) of 5h obtained using General Procedure 5.

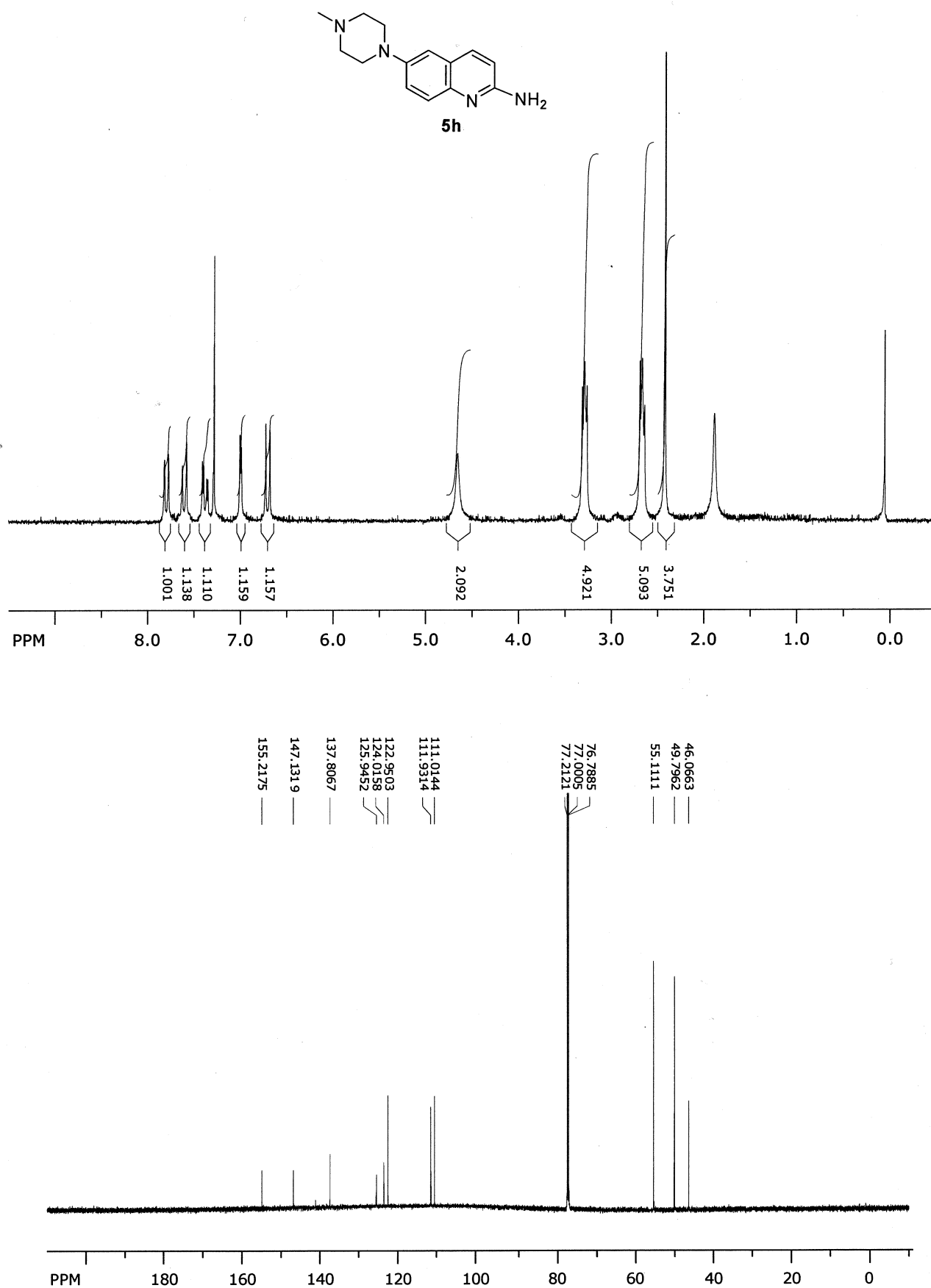


Figure S8: 600 MHz ^1H NMR and 150 MHz ^{13}C NMR spectra (CDCl_3) of **5i** obtained using General Procedure 5.

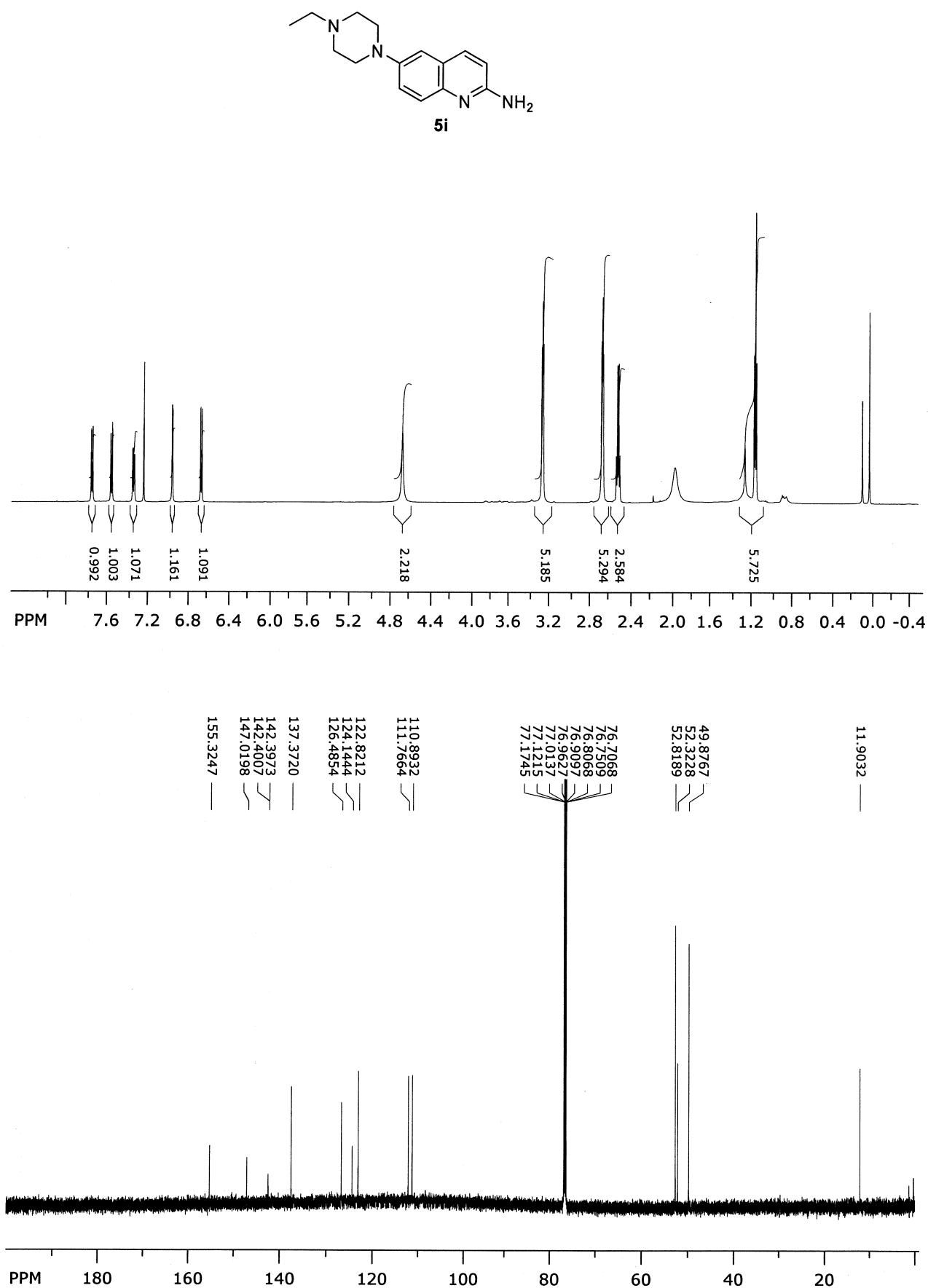


Figure S9: 300 MHz ^1H NMR spectra (CDCl_3) of **5j obtained using General Procedure 5.**

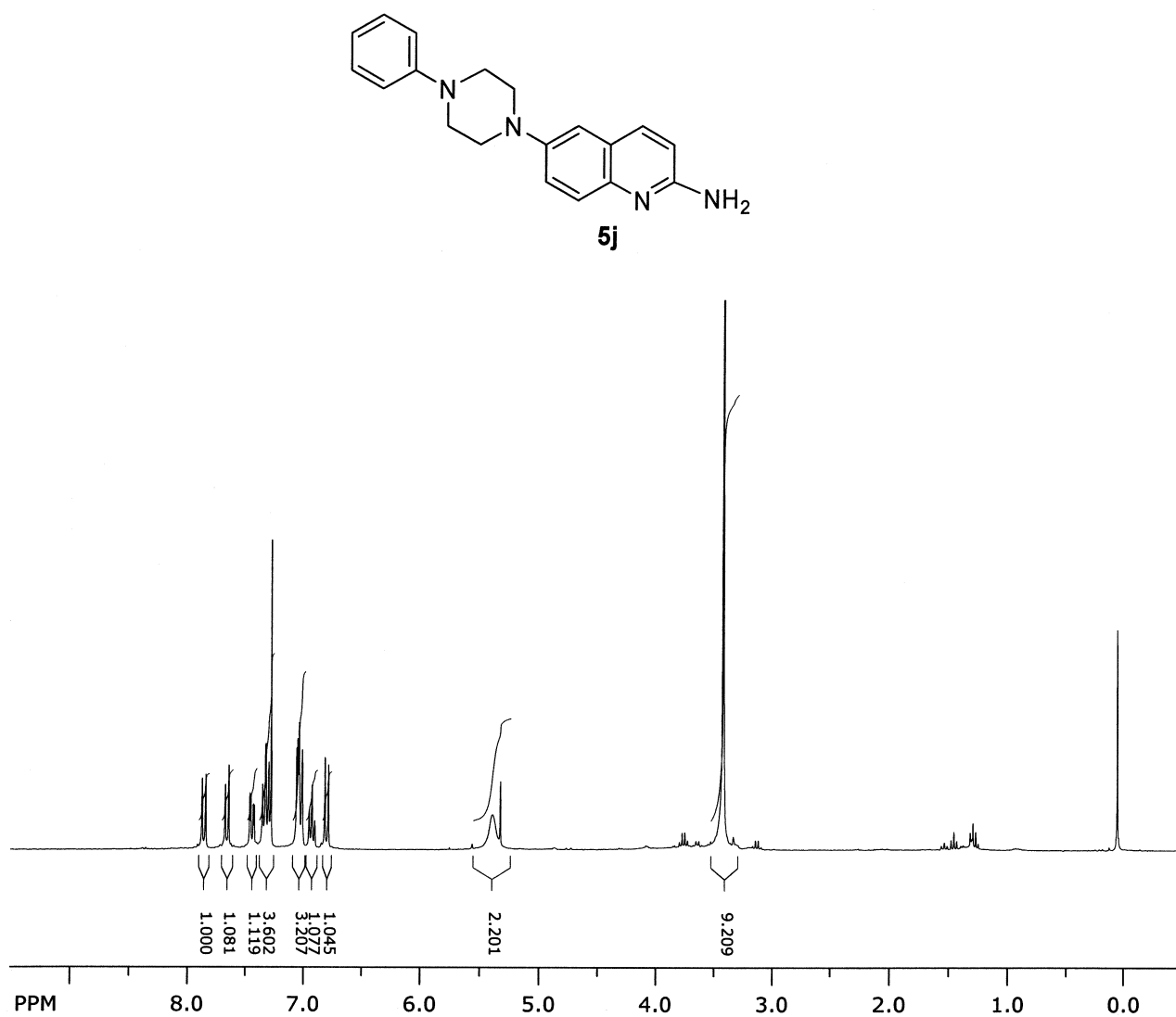


Figure S10: 200 MHz ^1H NMR and 150 MHz ^{13}C NMR spectra (CDCl_3) of **5k** obtained using General Procedure 5.

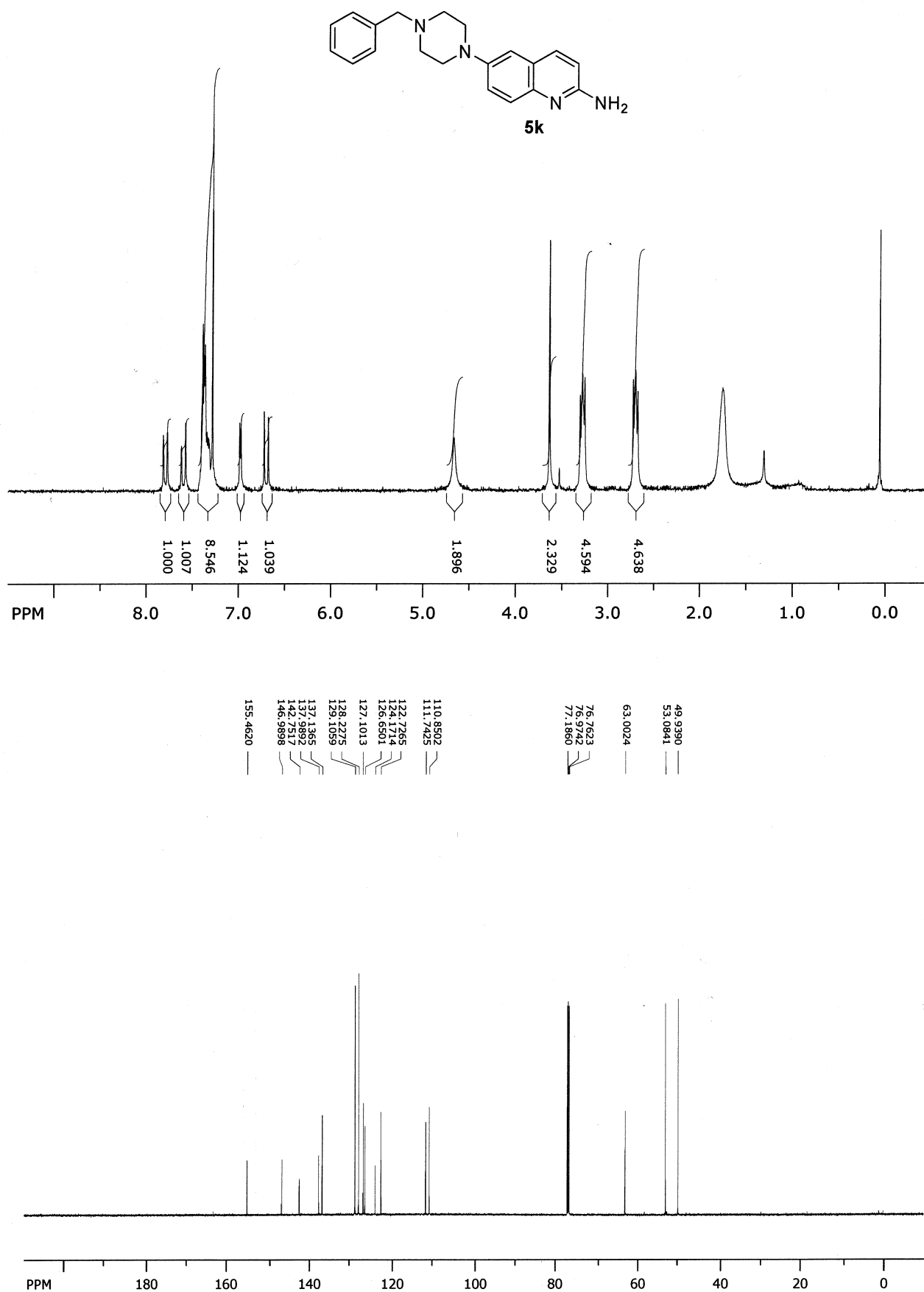


Figure S11: 600 MHz ^1H NMR spectrum (CDCl_3) of **5l** obtained using General Procedure 5.

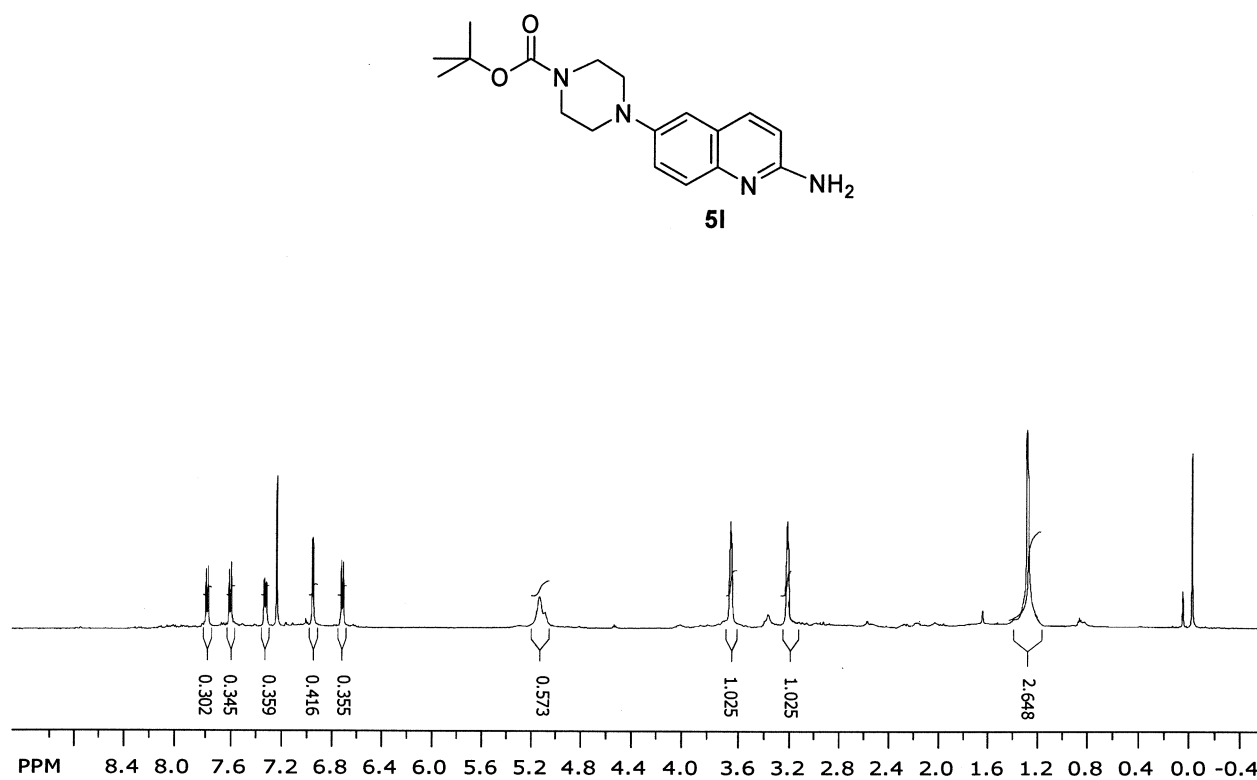


Figure S12: 600 MHz ^1H , 150 MHz ^{13}C NMR spectra respectively (CDCl_3) of 6a and 17a mixture obtained using General Procedure 1.

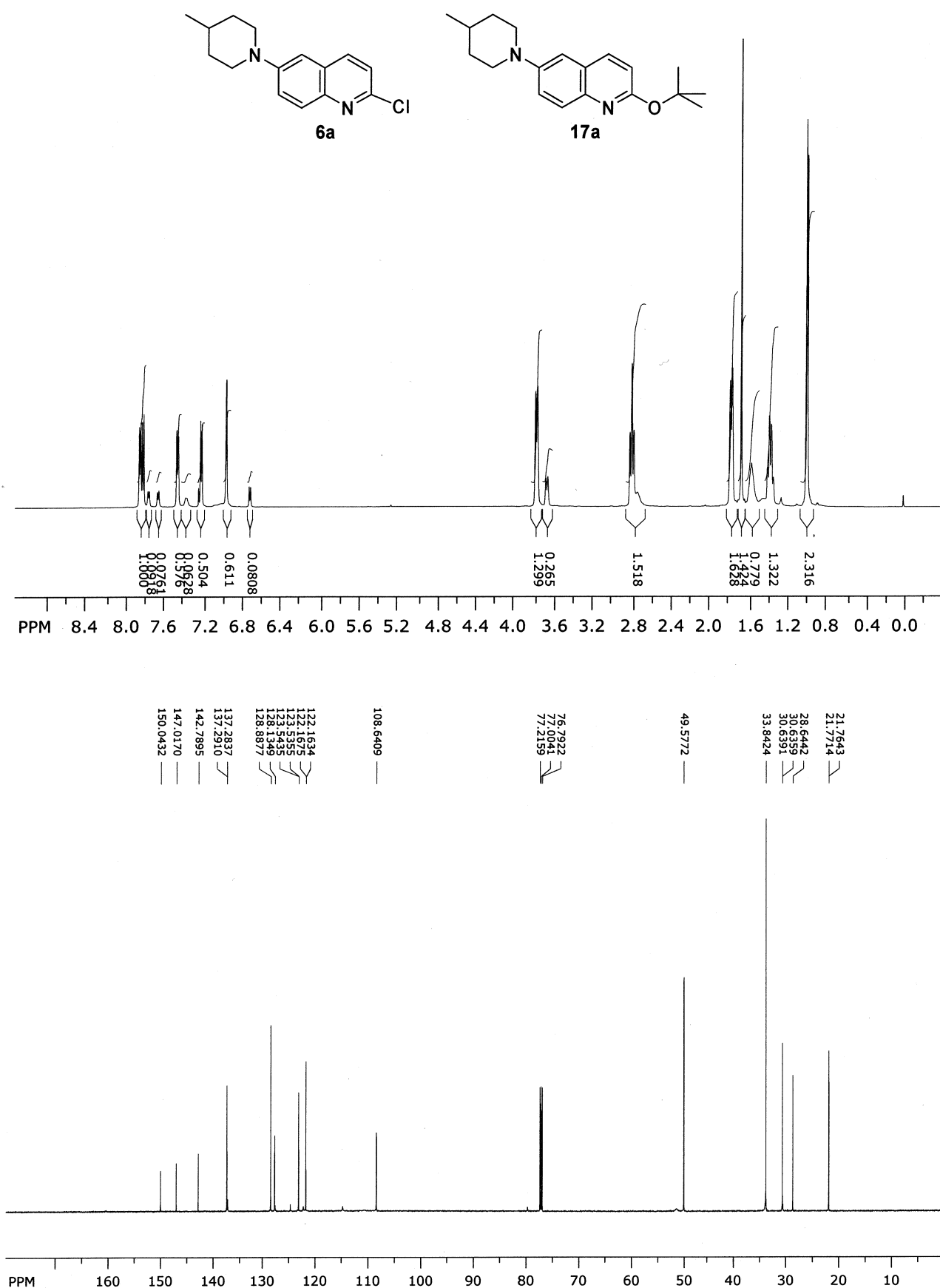


Figure S13: COSY and ROESY spectra (CDCl₃) respectively of 6a and 16a mixture obtained using General Procedure 1.

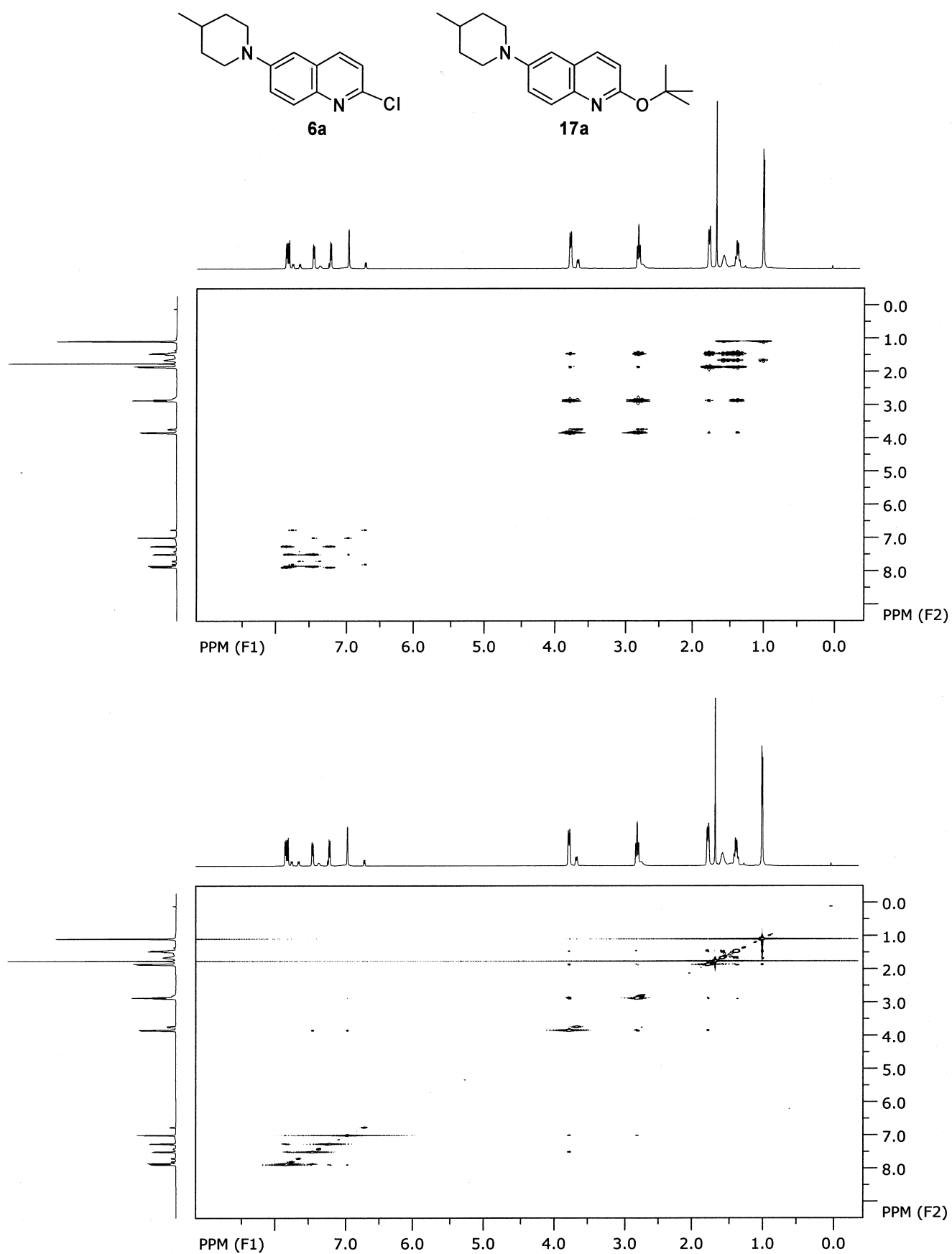


Figure S14: HMQC and HMBC spectra (CDCl₃) respectively of 6a and 16a mixture obtained using General Procedure 1.

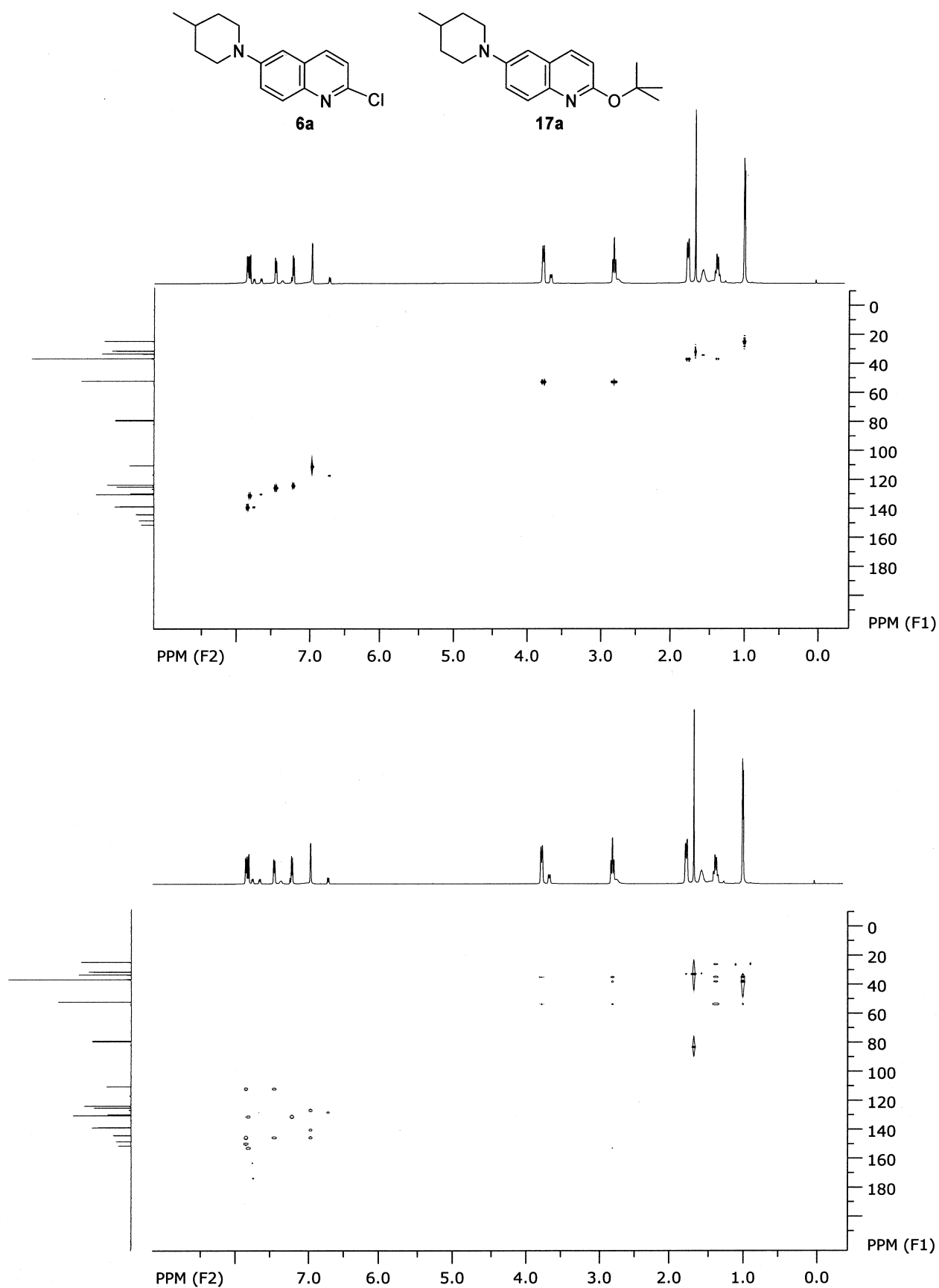


Figure S15: 300 MHz ^1H NMR spectrum (CDCl_3) of 6a obtained using General Procedure 2.

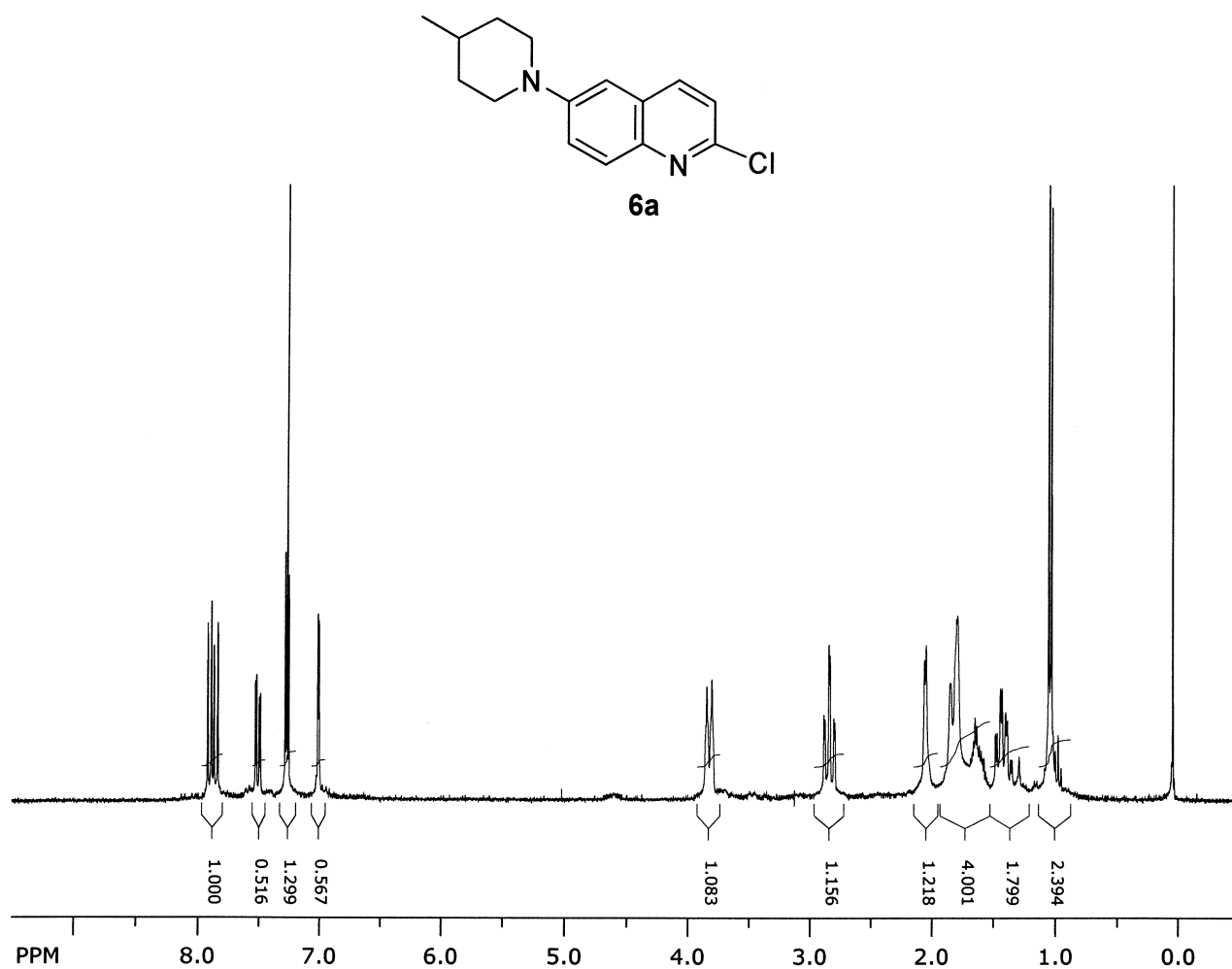


Figure S16: 300 MHz ^1H NMR spectrum (CDCl_3) of 6b obtained using General Procedure 1.

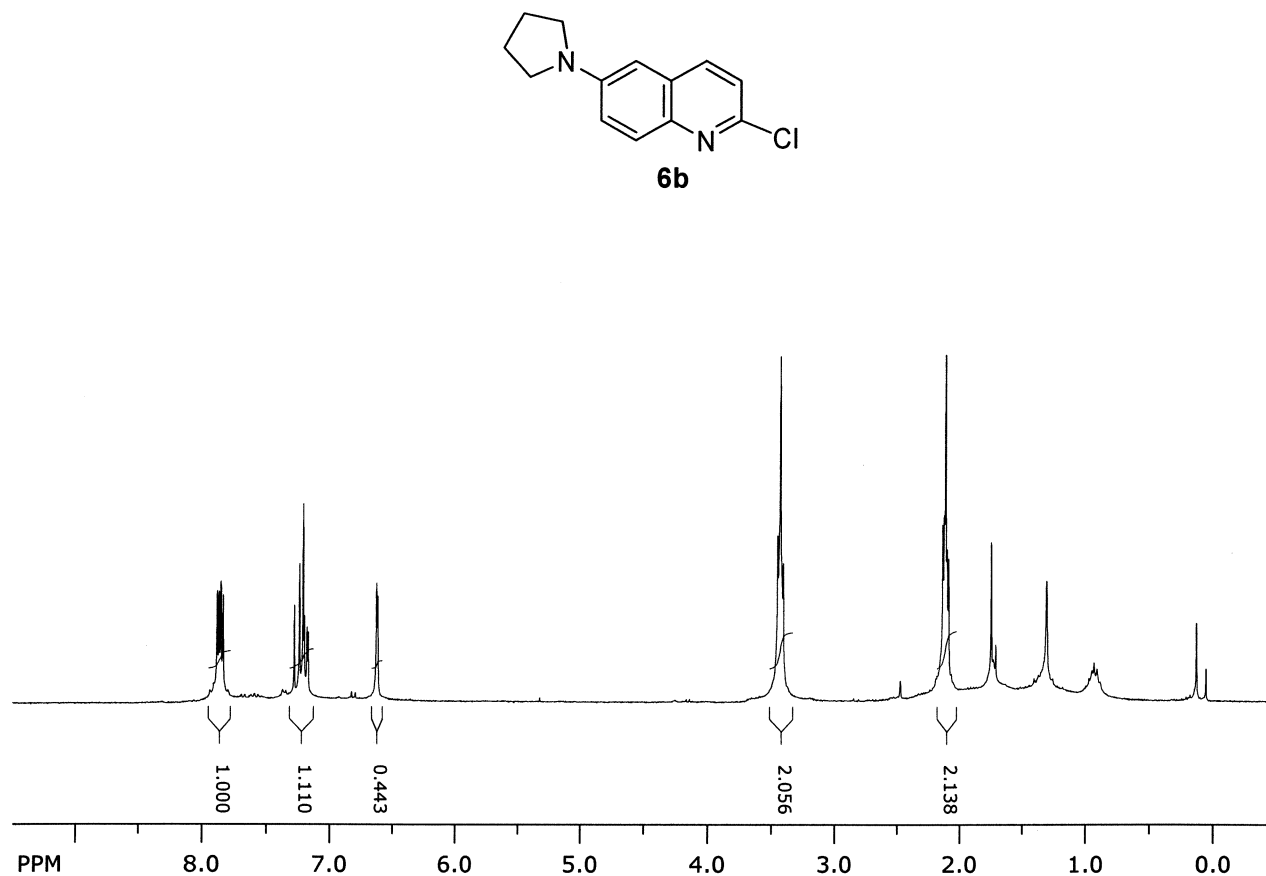


Figure S17: 300 MHz ^1H and 150 MHz ^{13}C NMR spectra (CDCl_3) of **6c** obtained using General Procedure 1.

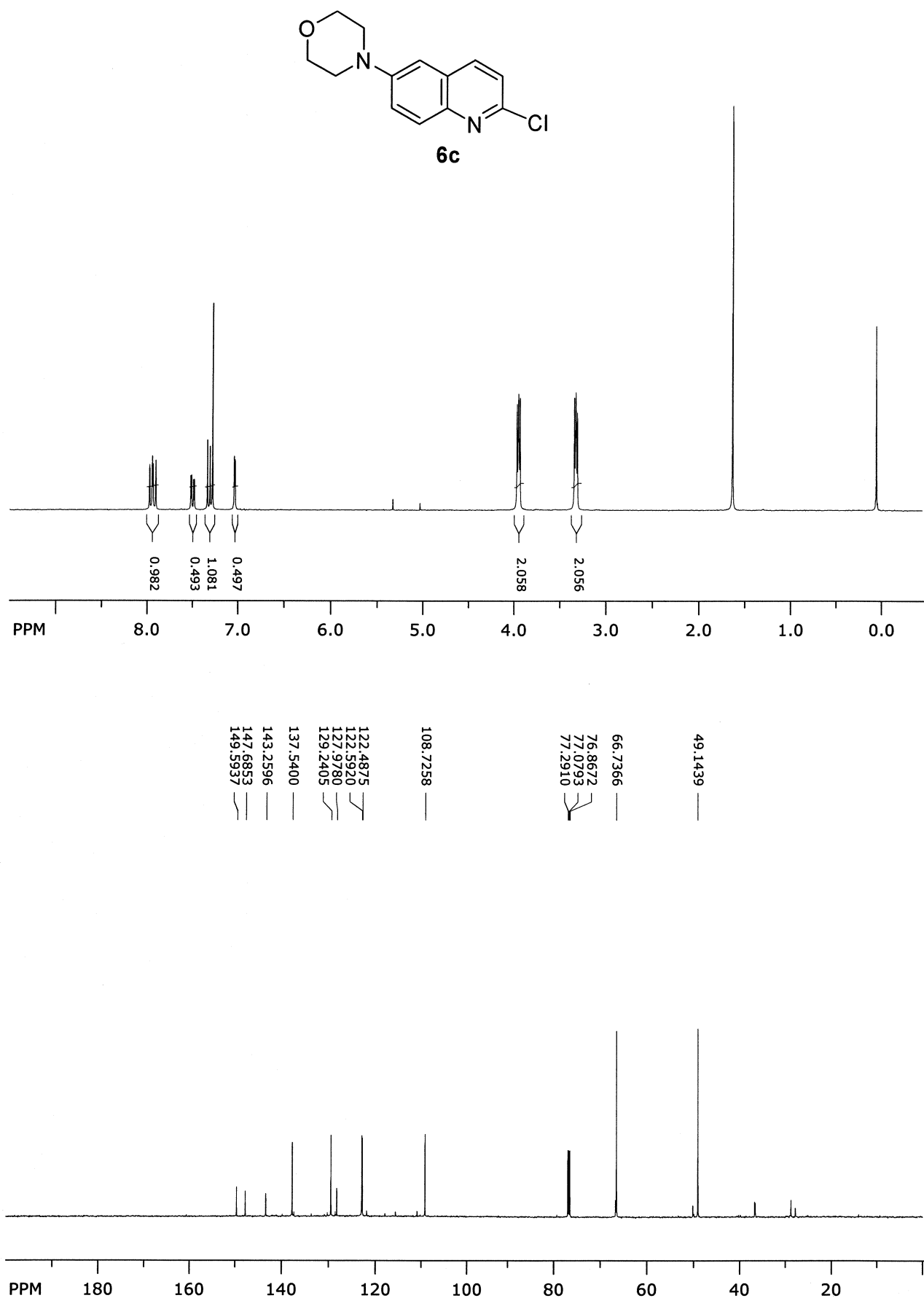


Figure S18: 300 MHz ^1H and 75 MHz ^{13}C NMR spectra (CDCl_3) of 6d obtained using General Procedure 1.

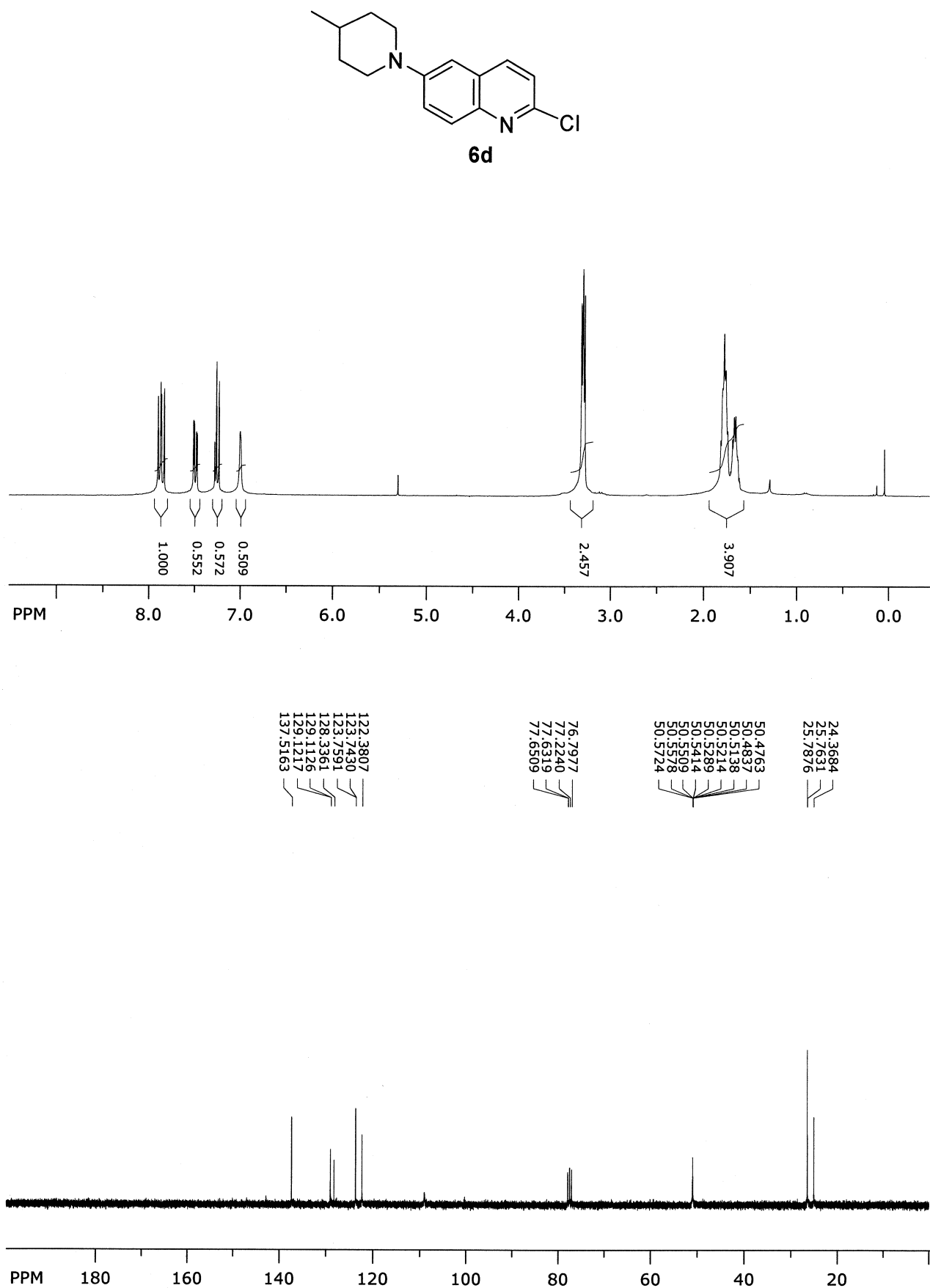


Figure S19: 300 MHz ^1H and 75 MHz ^{13}C NMR spectra (CDCl_3) of **6e** obtained using General Procedure 1.

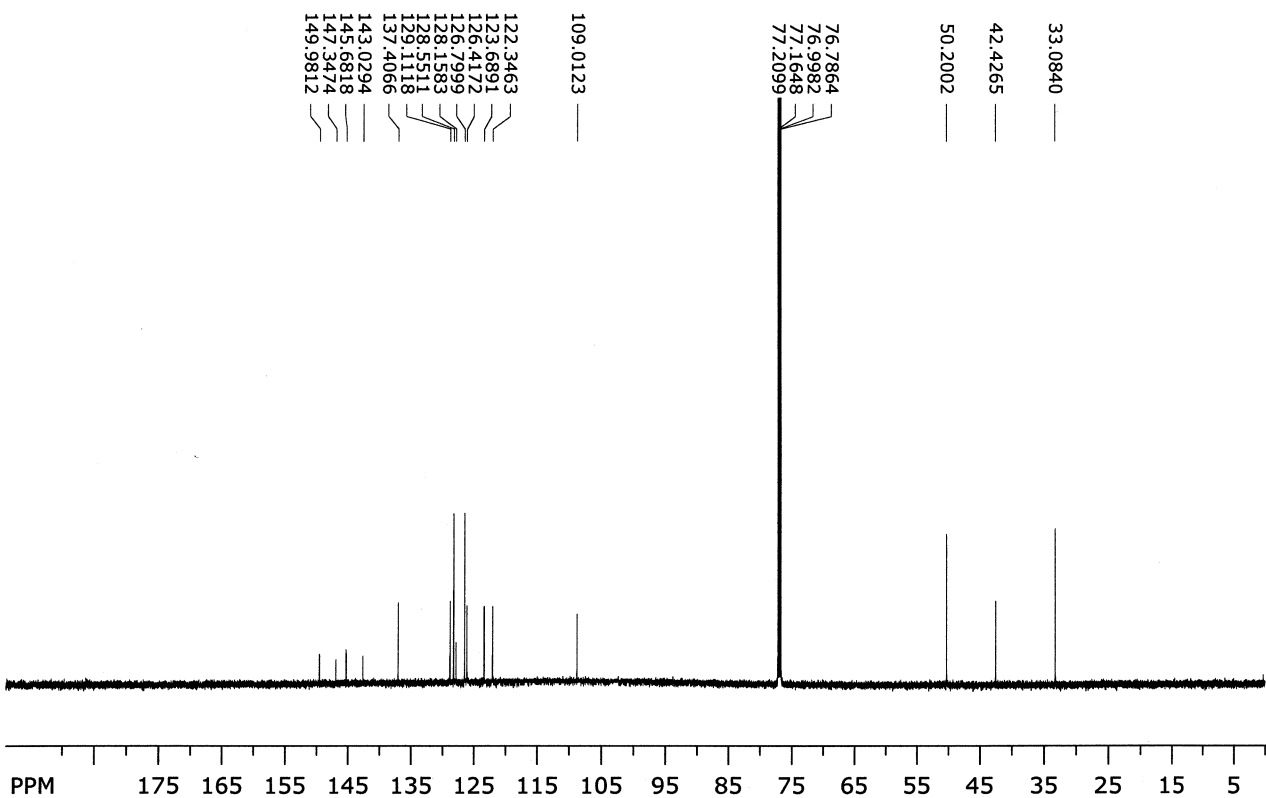
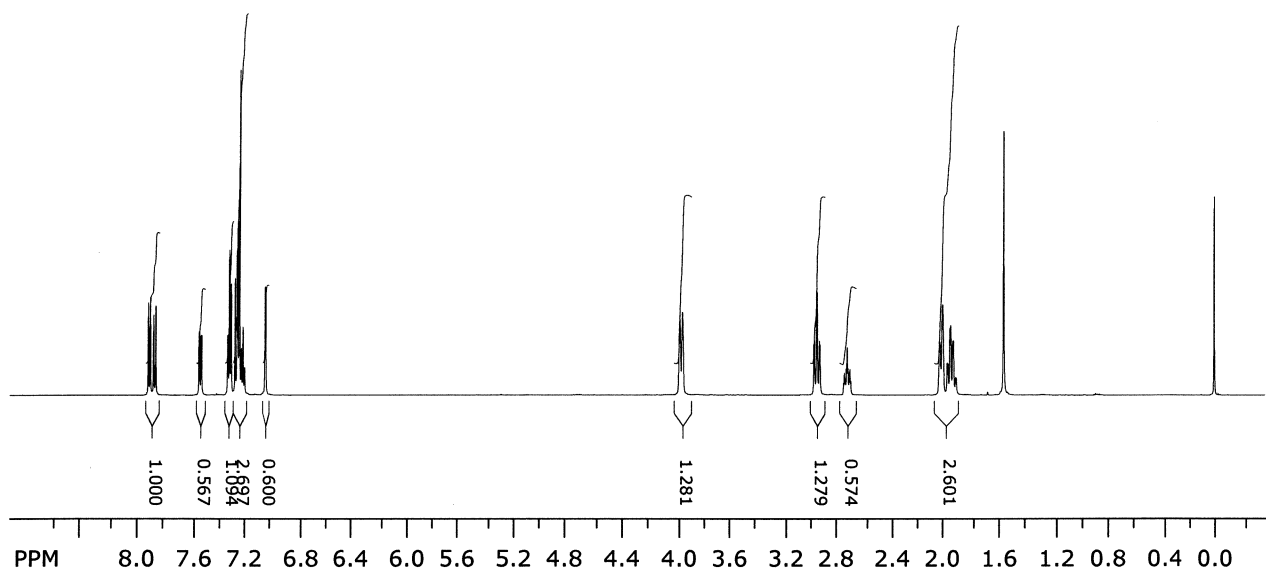
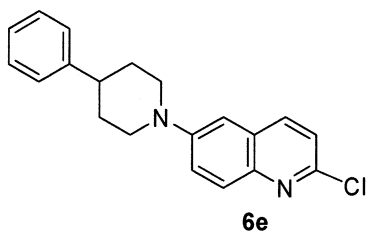


Figure S20: 600 MHz ^1H and 150 MHz ^{13}C NMR spectra (CDCl_3) of 6f and 16f mixture obtained using General Procedure 1.

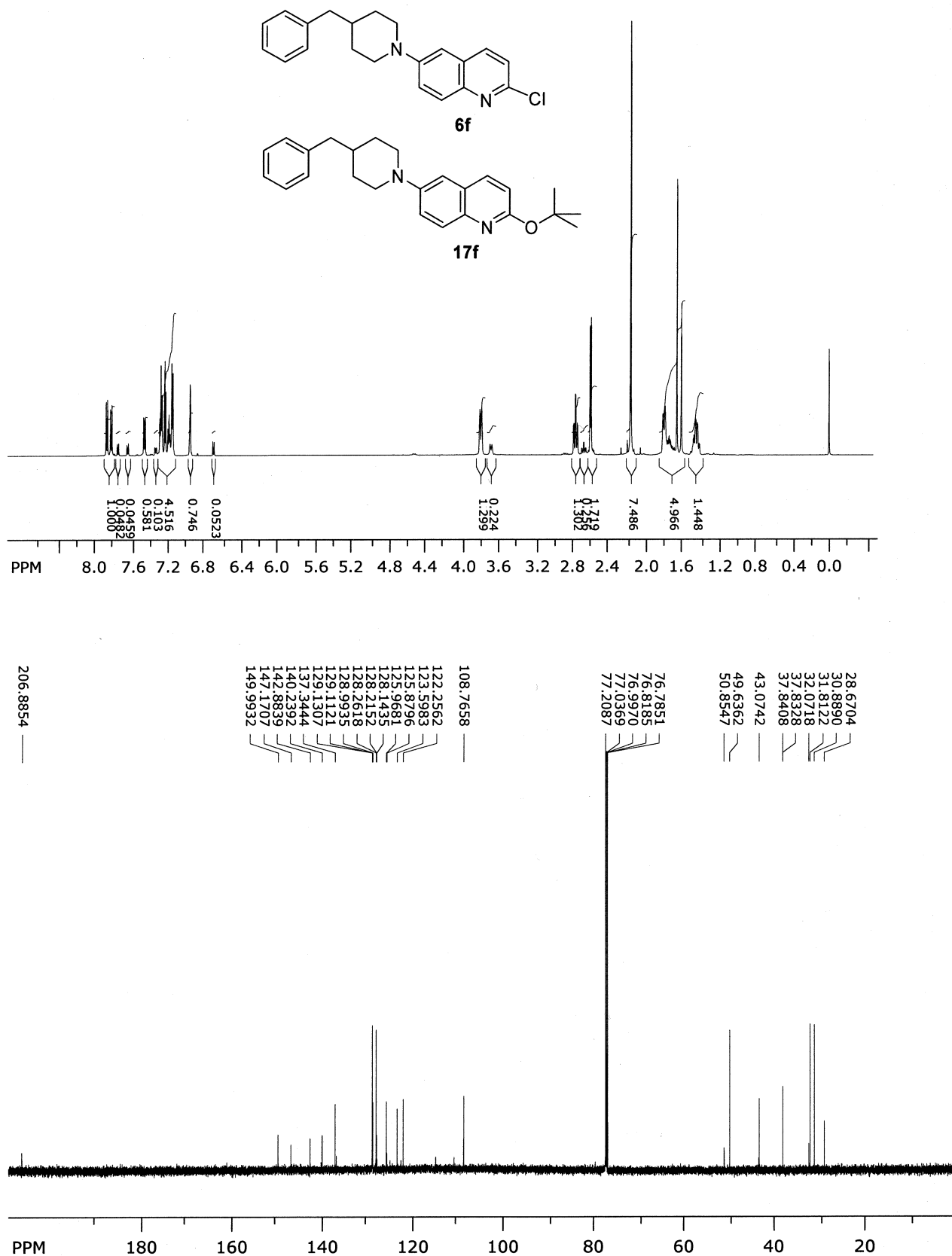


Figure S21: 600 MHz ^1H NMR spectra (CDCl_3) of **6f** obtained using General Procedure 1.

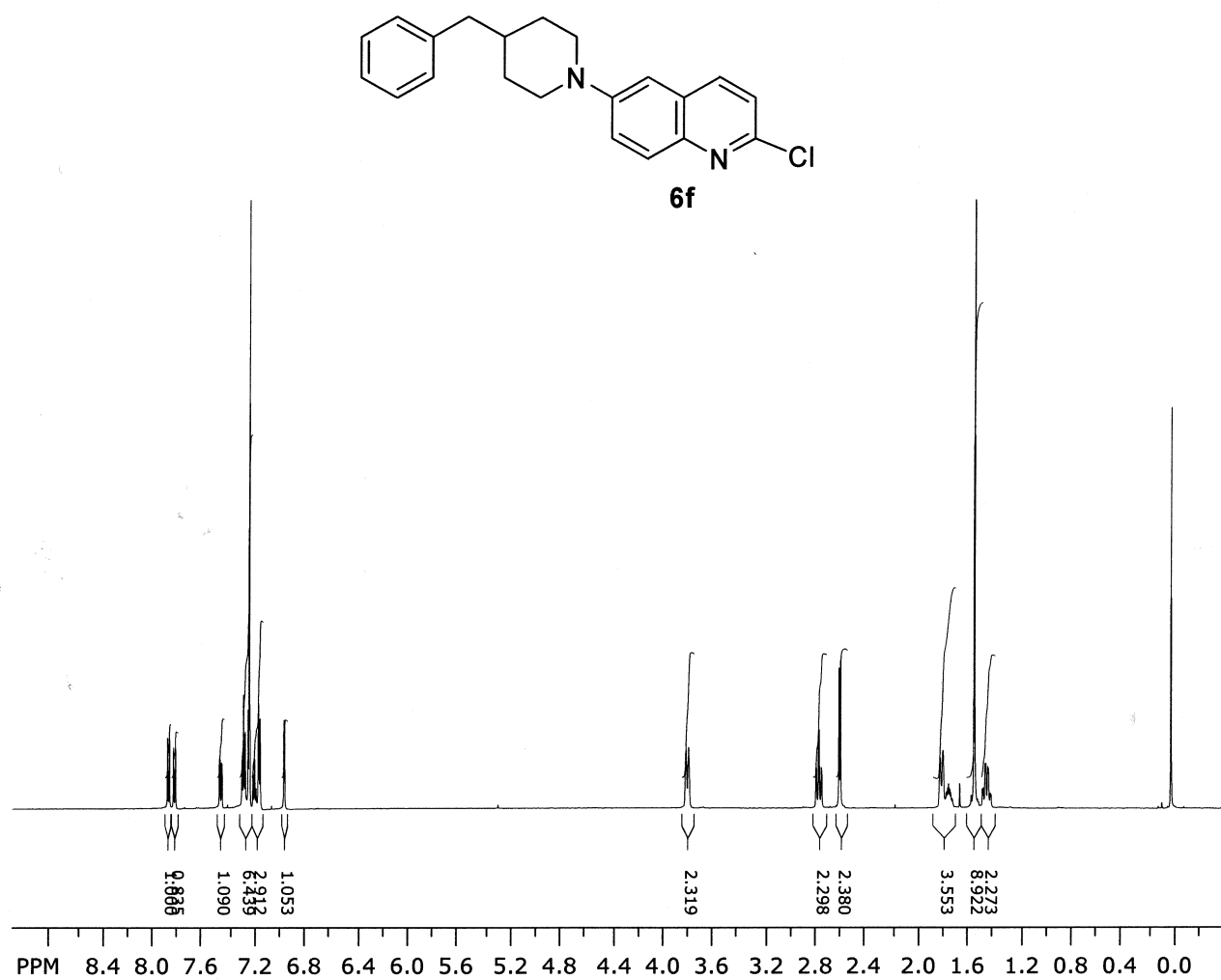


Figure S22: 600 MHz ^1H and 150 MHz ^{13}C NMR spectra (CDCl_3) of 6g and 20 mixture obtained using General Procedure 1.

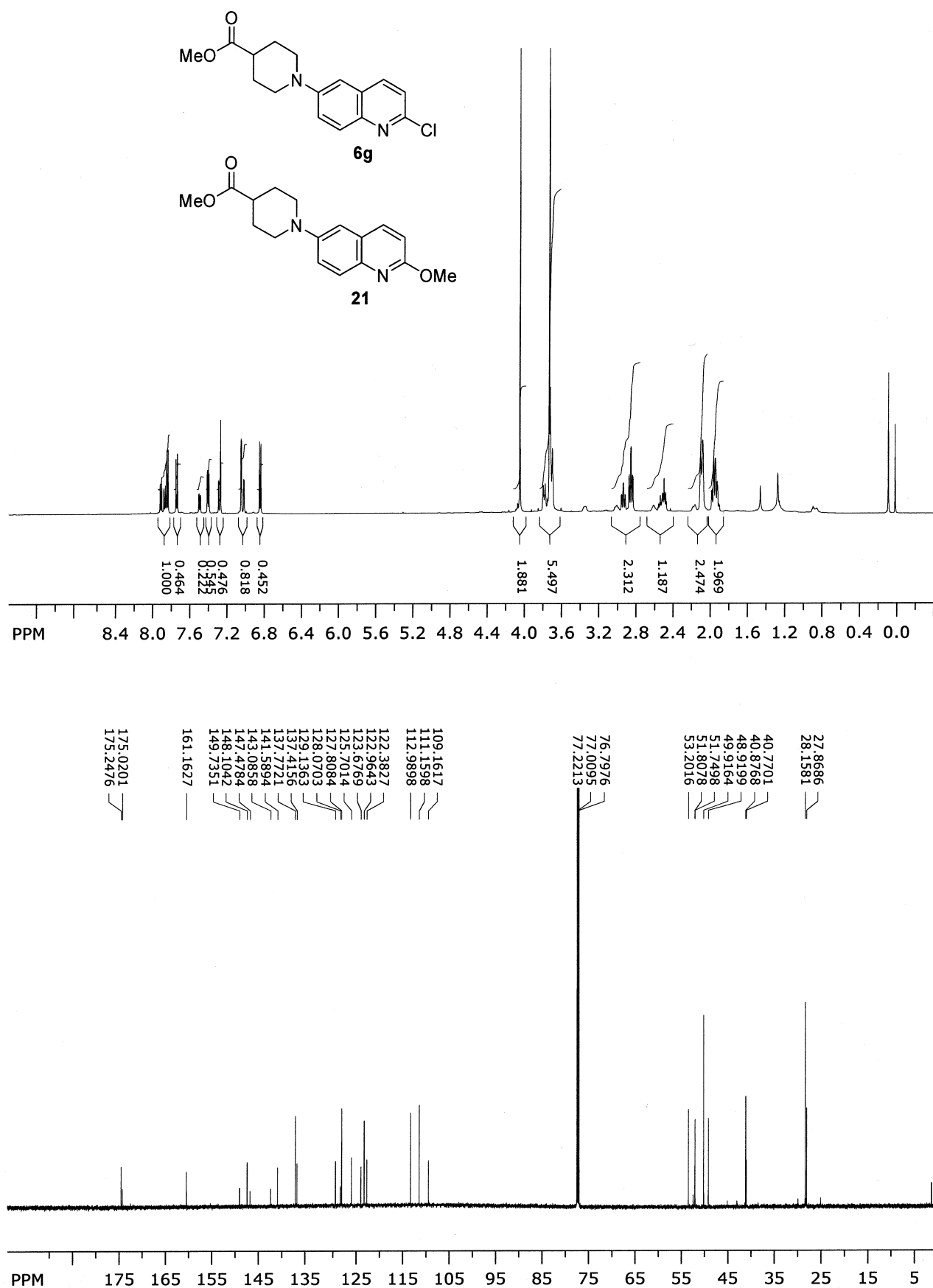


Figure S23: 600 MHz ^1H and 150 MHz ^{13}C NMR spectra (CDCl_3) of 6h and 7 mixture obtained using General Procedure 1.

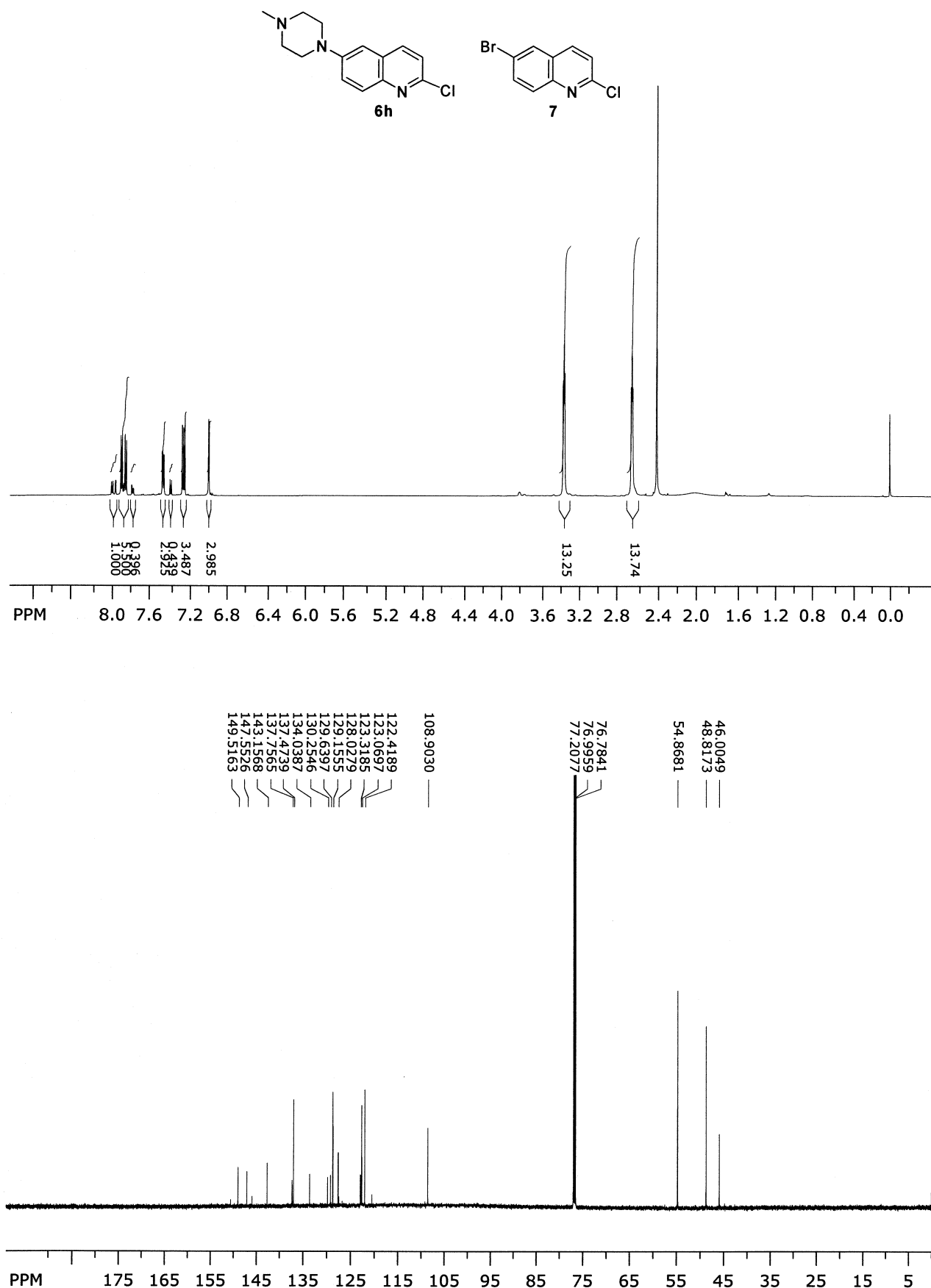


Figure S24: 600 MHz ^1H NMR spectrum (CDCl_3) of **6h** obtained using General Procedure 3.

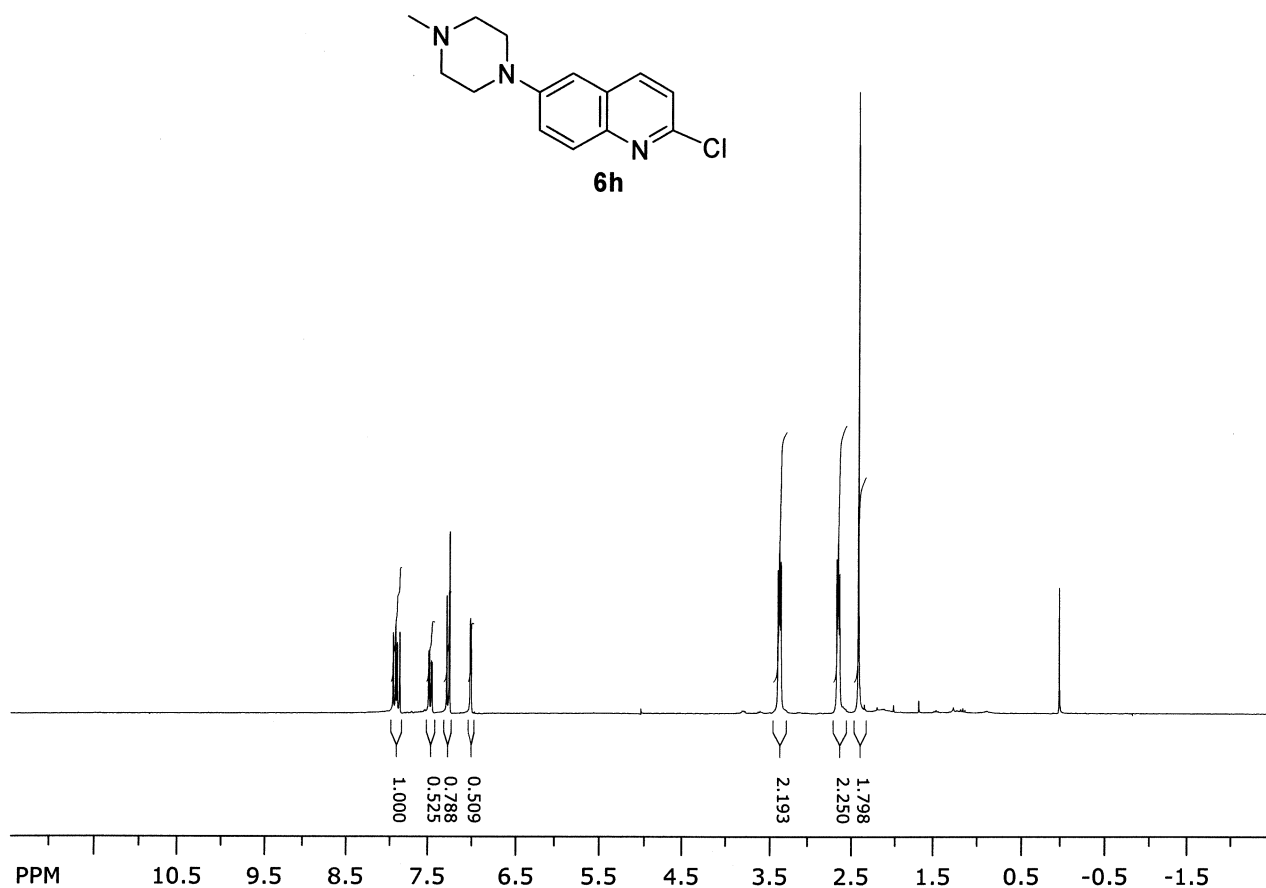


Figure S25: 600 MHz ^1H and 150 MHz ^{13}C NMR spectra respectively (CDCl_3) of 6i and 8i mixture obtained using General Procedure 1.

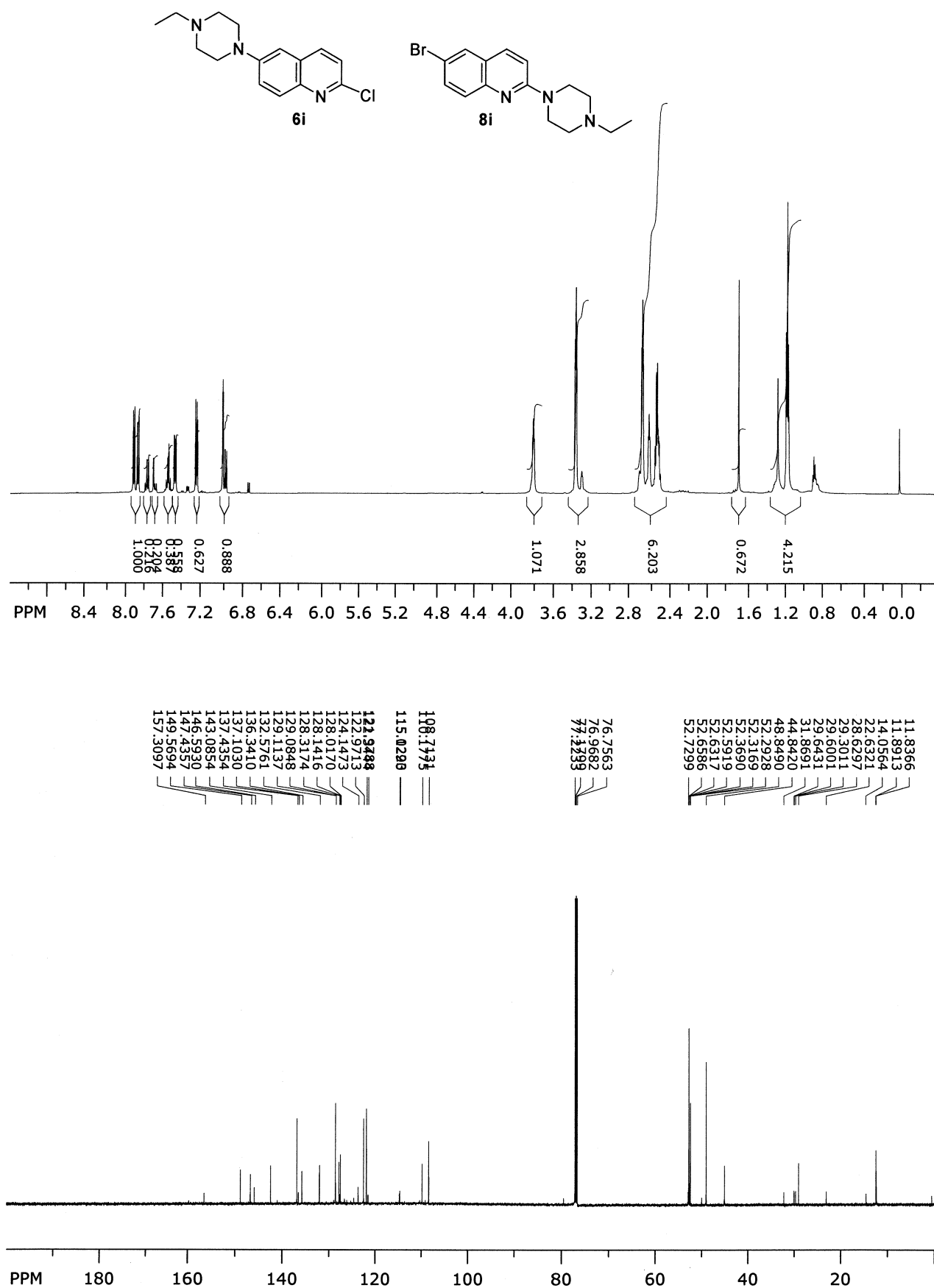


Figure S26: COSY and ROESY NMR spectra respectively (CDCl₃) of 6i and 8i mixture obtained using General Procedure 1.

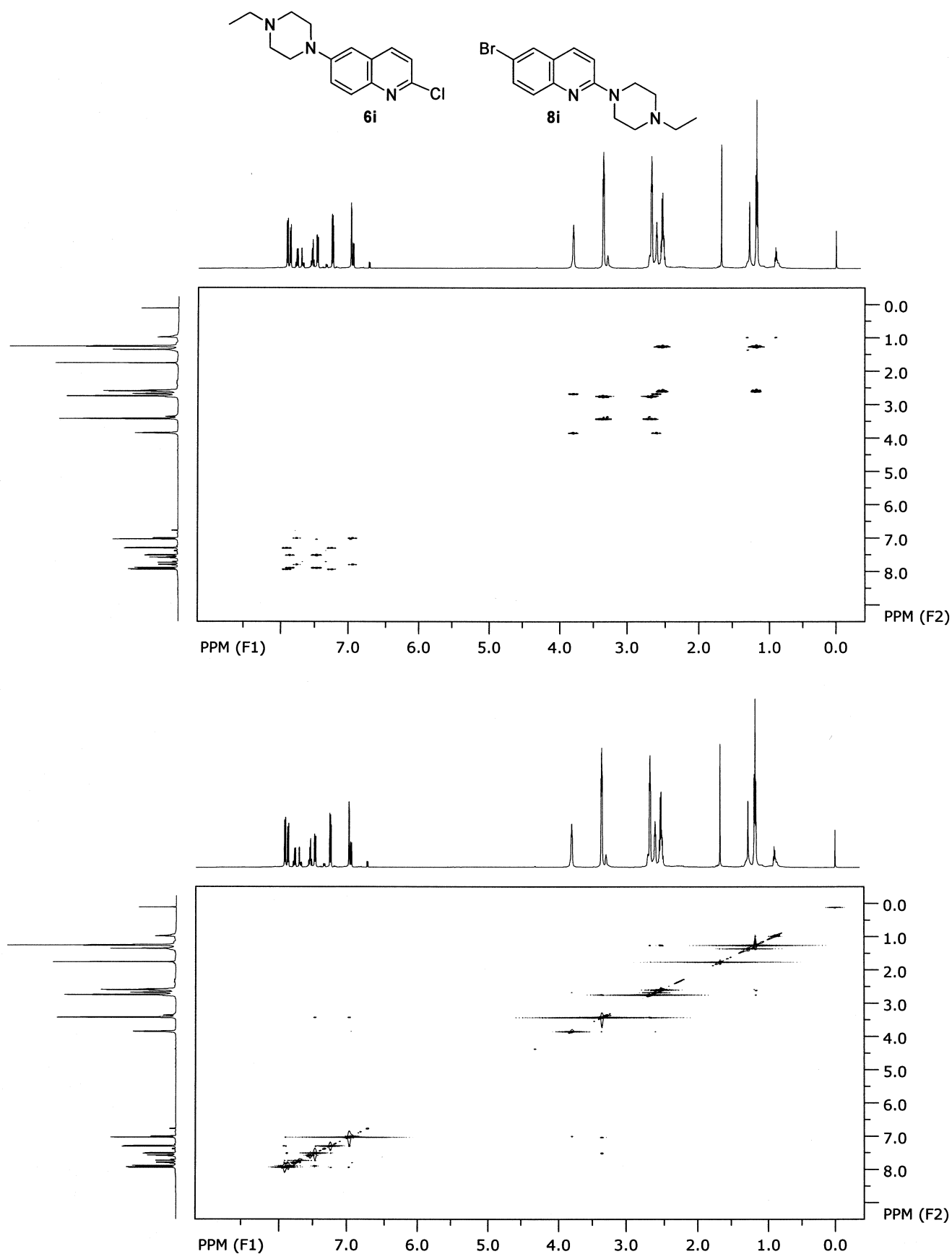


Figure S27: HMQC and HMBC NMR spectra respectively (CDCl₃) of 6i and 8i mixture obtained using General Procedure 1.

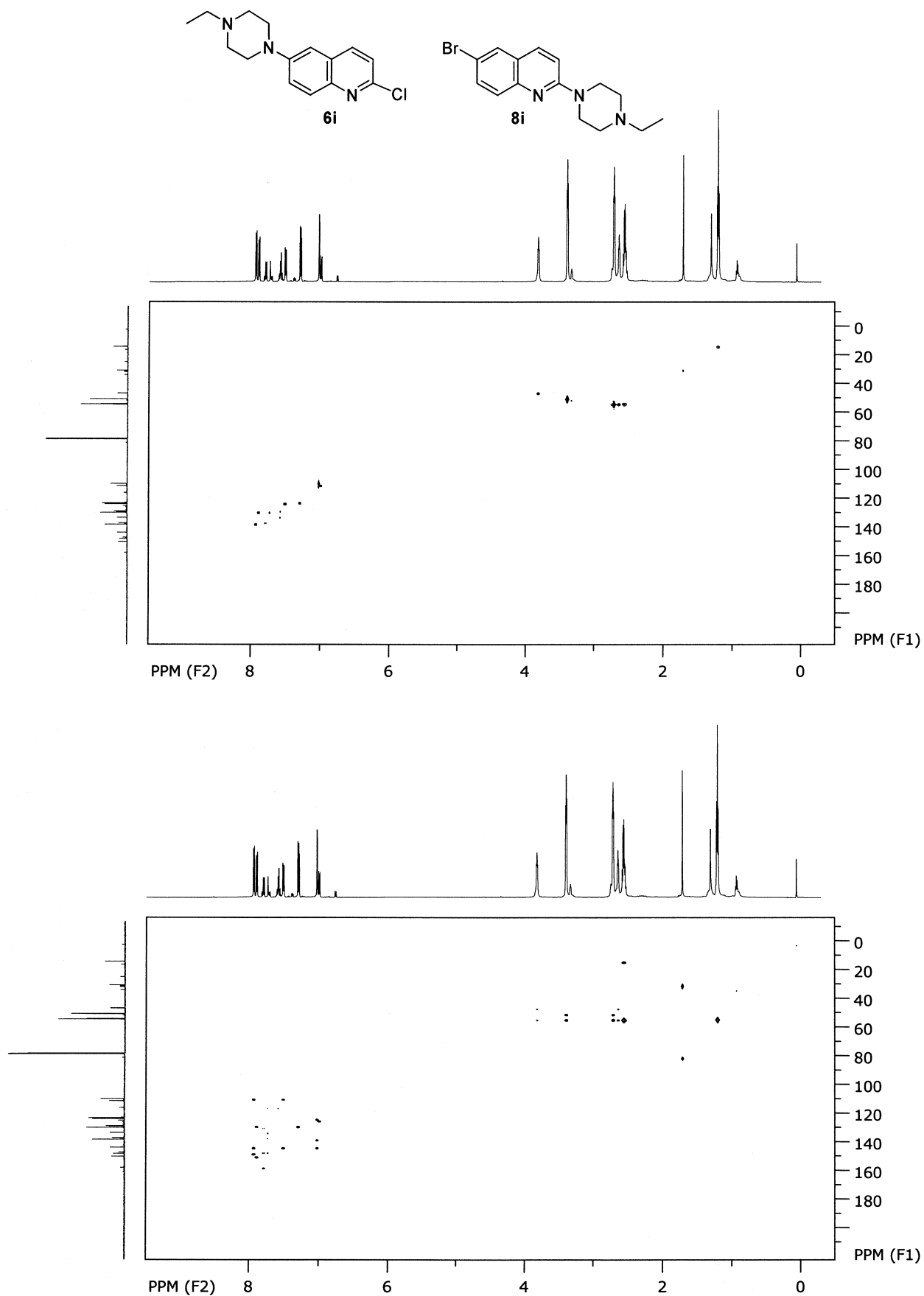


Figure S28: 300 MHz ^1H and 150 MHz ^{13}C NMR spectra (CDCl_3) of 6j obtained using General Procedure 1.

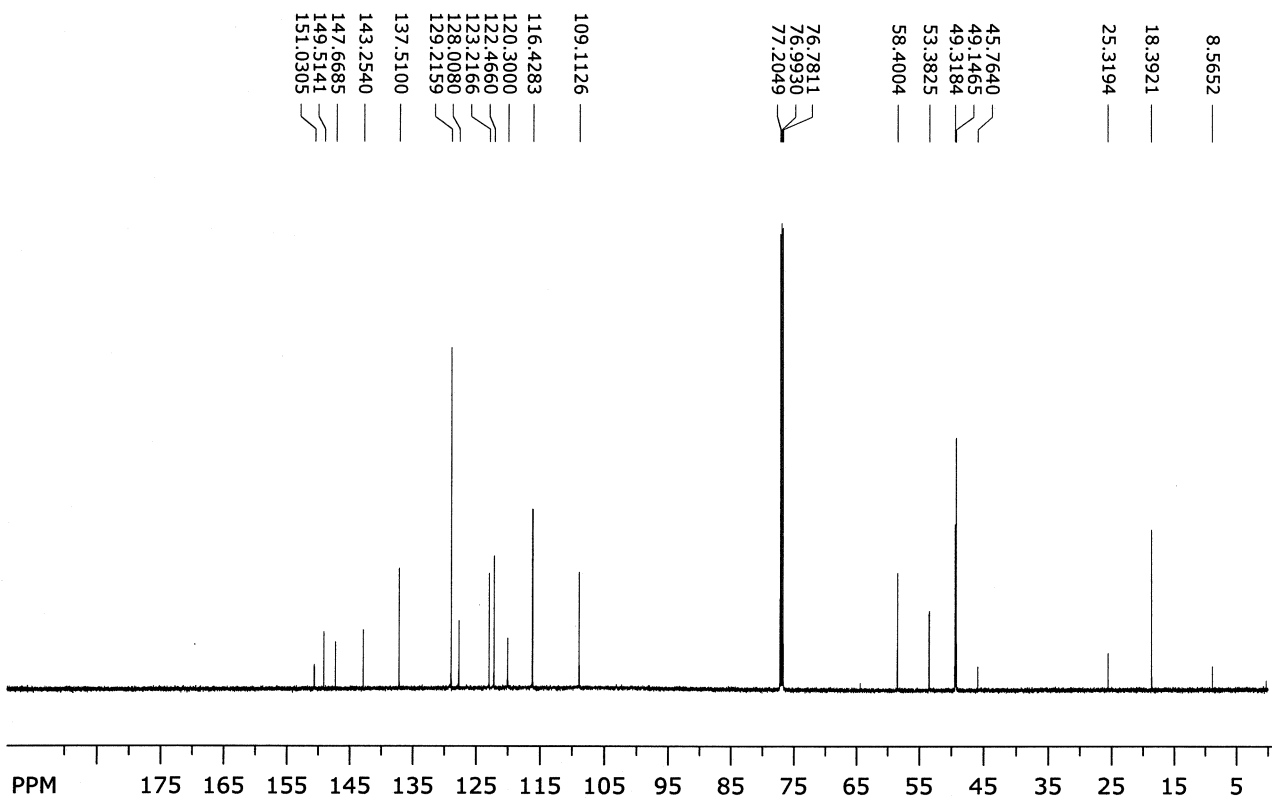
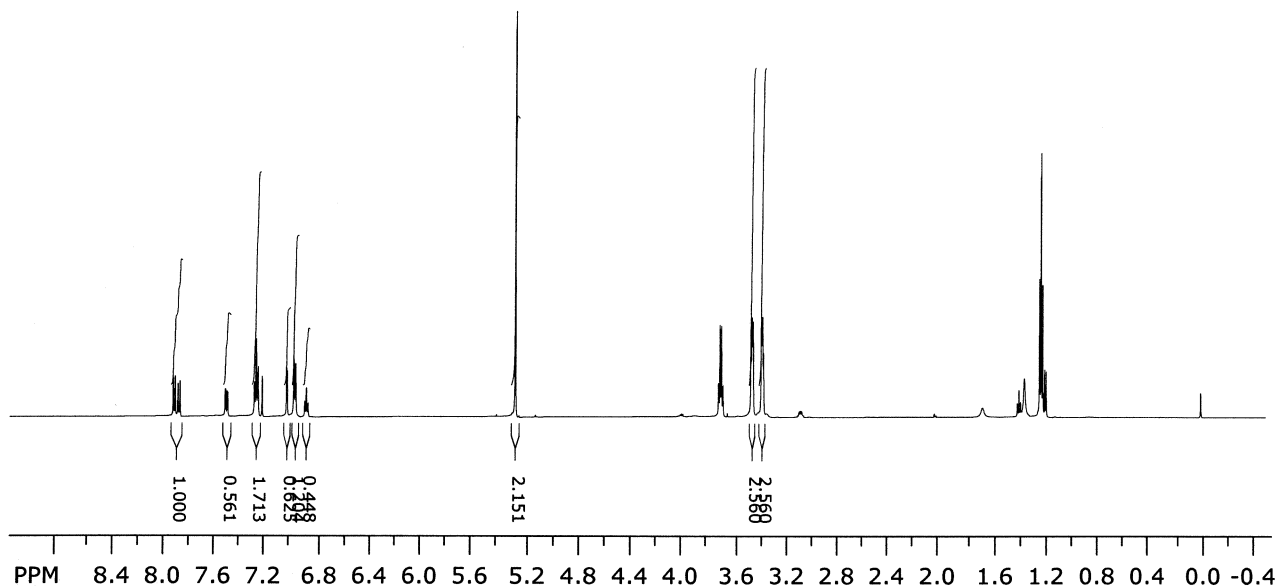
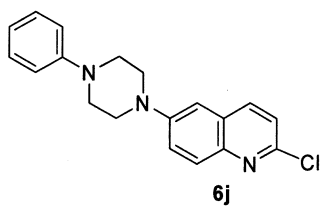


Figure S29: 600 MHz ^1H and 150 MHz ^{13}C NMR spectra (CDCl_3) of 6k and 8k mixture obtained using General Procedure 1.

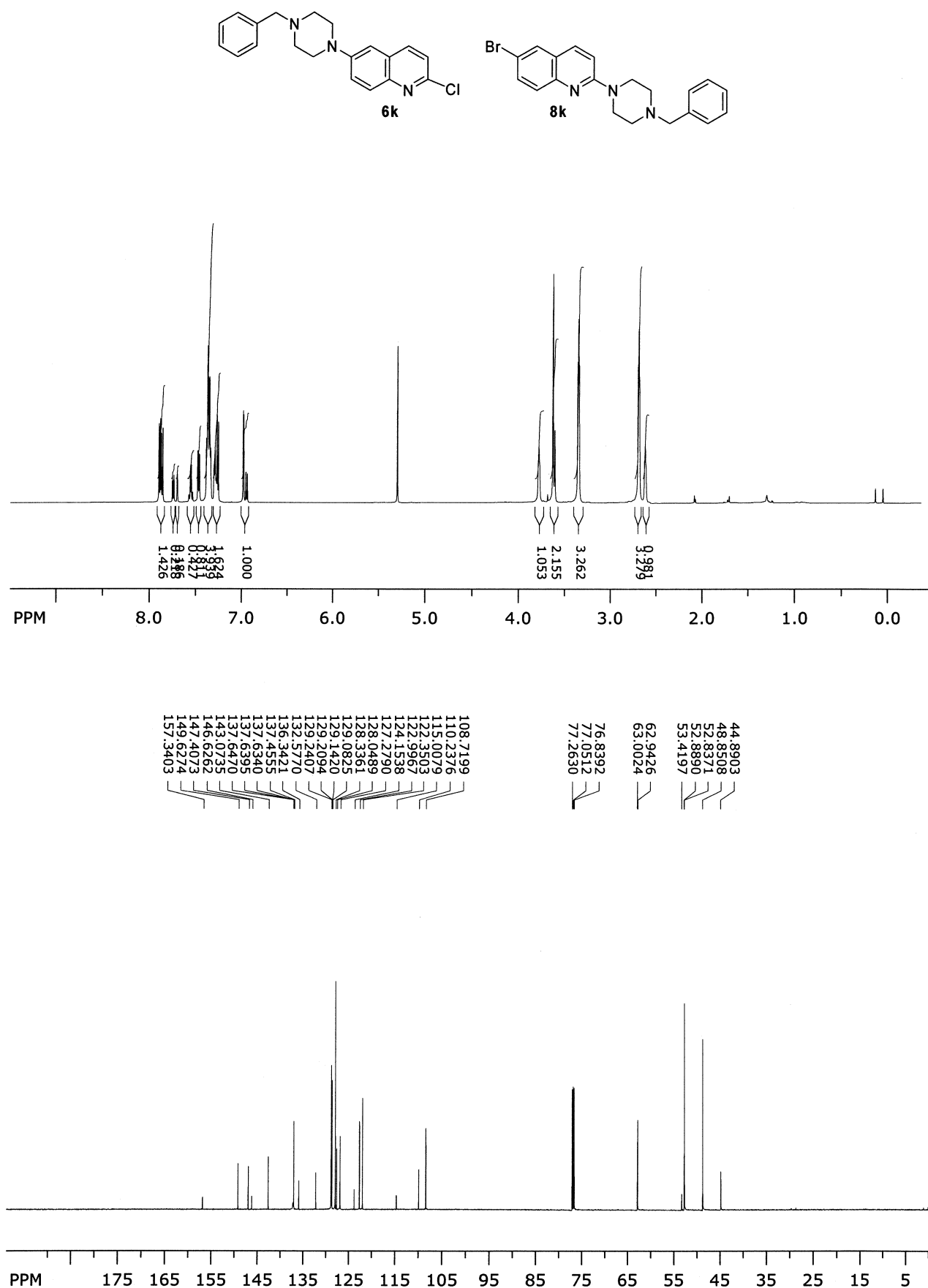


Figure S30: 300 MHz ^1H NMR spectrum (CDCl_3) of 6k obtained using General Procedure 2.

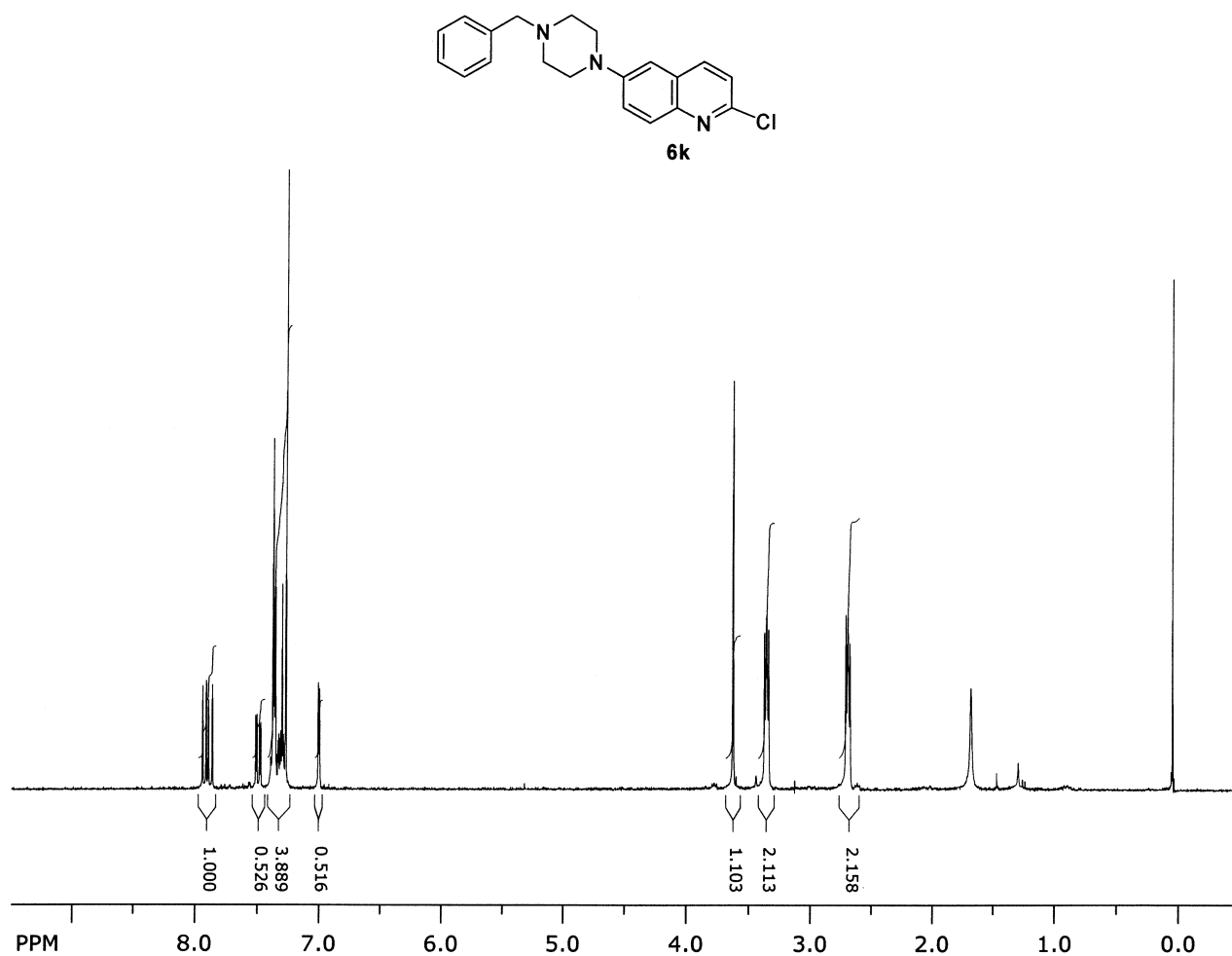


Figure S31: 600 MHz ^1H and 150 MHz ^{13}C NMR spectra (CDCl_3) of **6l** obtained using General Procedure 1.

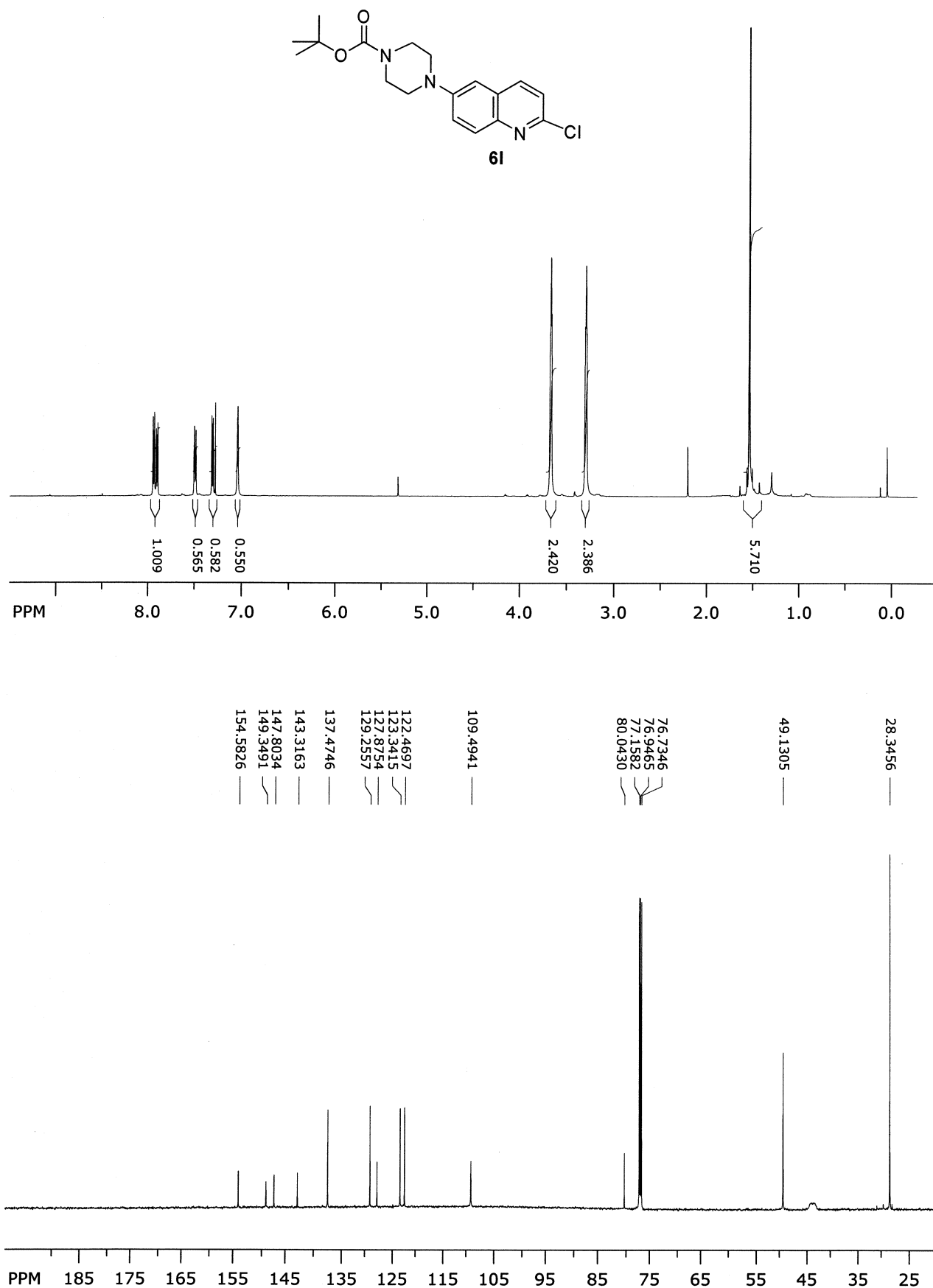


Figure S32: 300 MHz ^1H NMR spectrum (CDCl_3) of **8a** obtained using General Procedure 1.

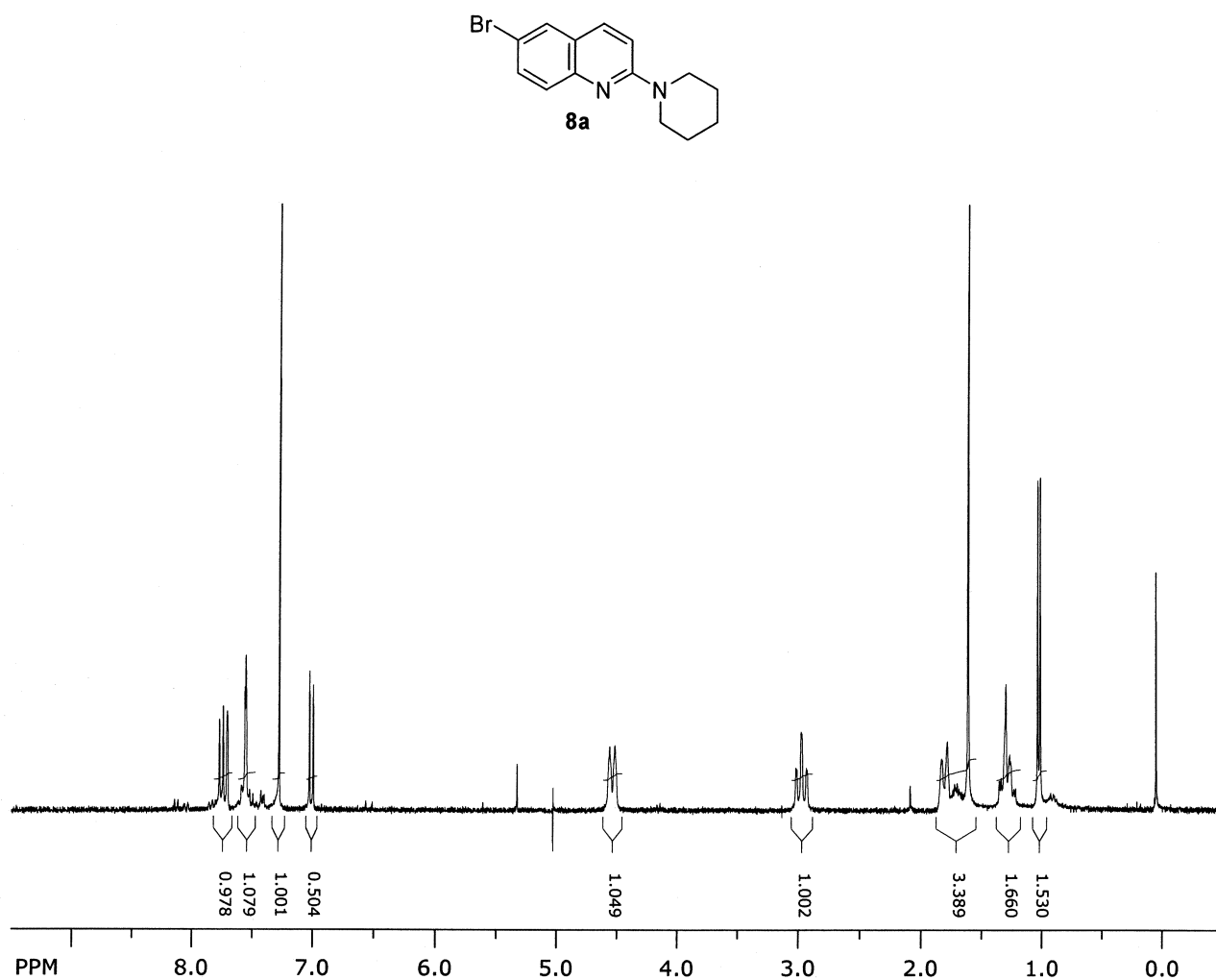


Figure S33: 600 MHz ^1H NMR spectrum (CDCl_3) of 8i obtained using General Procedure 1.

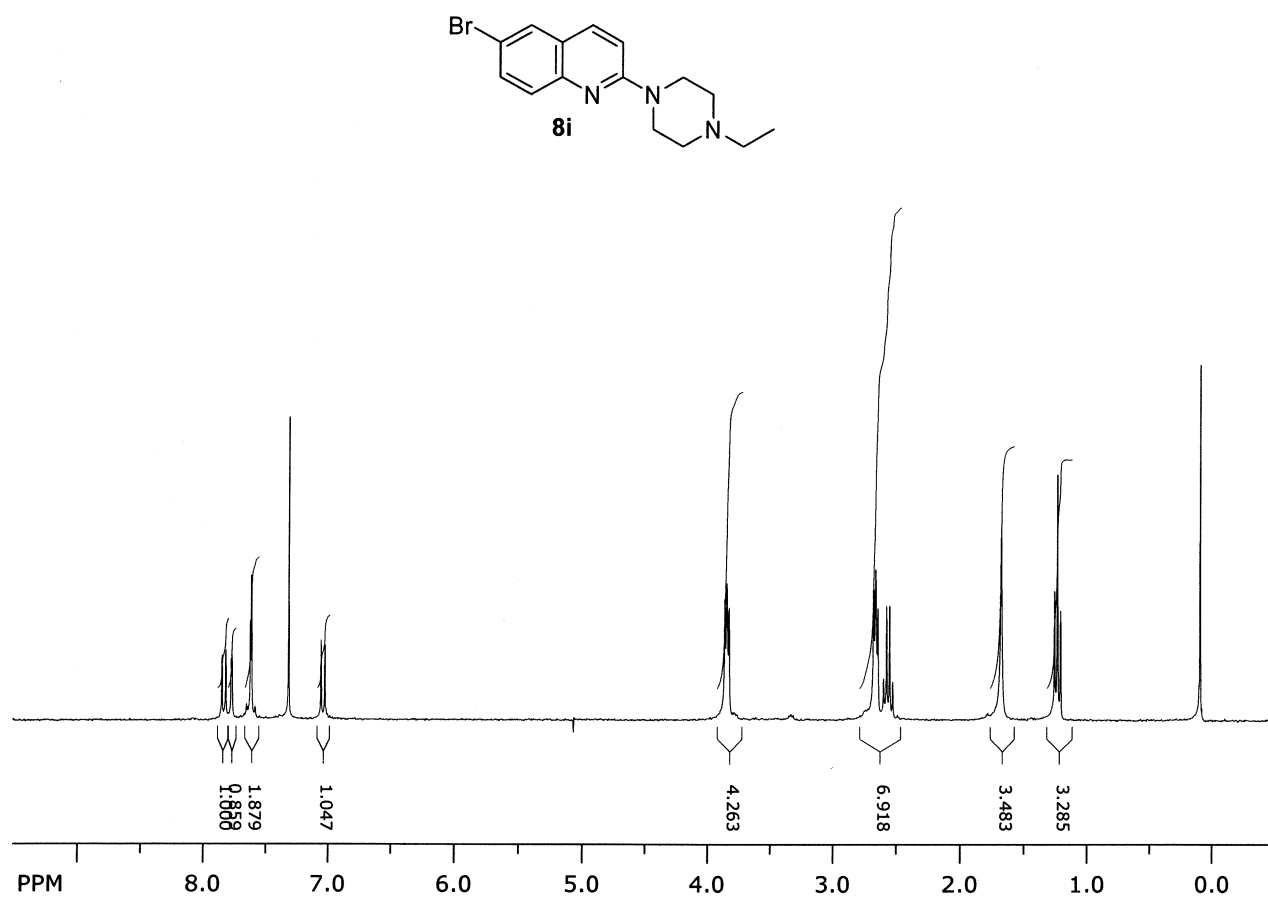


Figure S34: 300 MHz ^1H and 75 MHz ^{13}C NMR spectra (CDCl_3) of **8j** obtained using General Procedure 1.

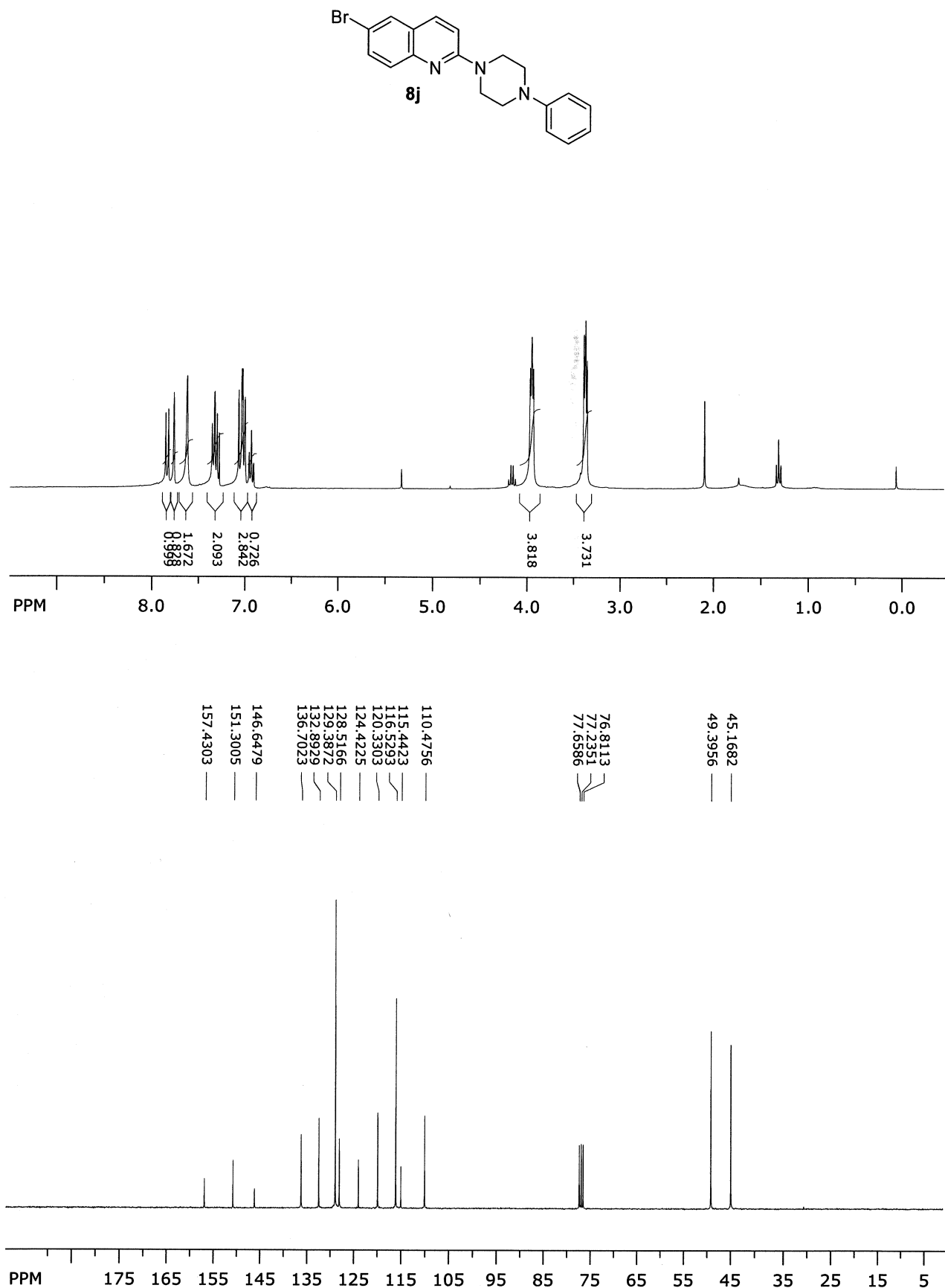


Figure S35: 300 MHz ^1H NMR and 75 MHz ^{13}C NMR spectra (CDCl_3) of 8m obtained using General Procedure 1.

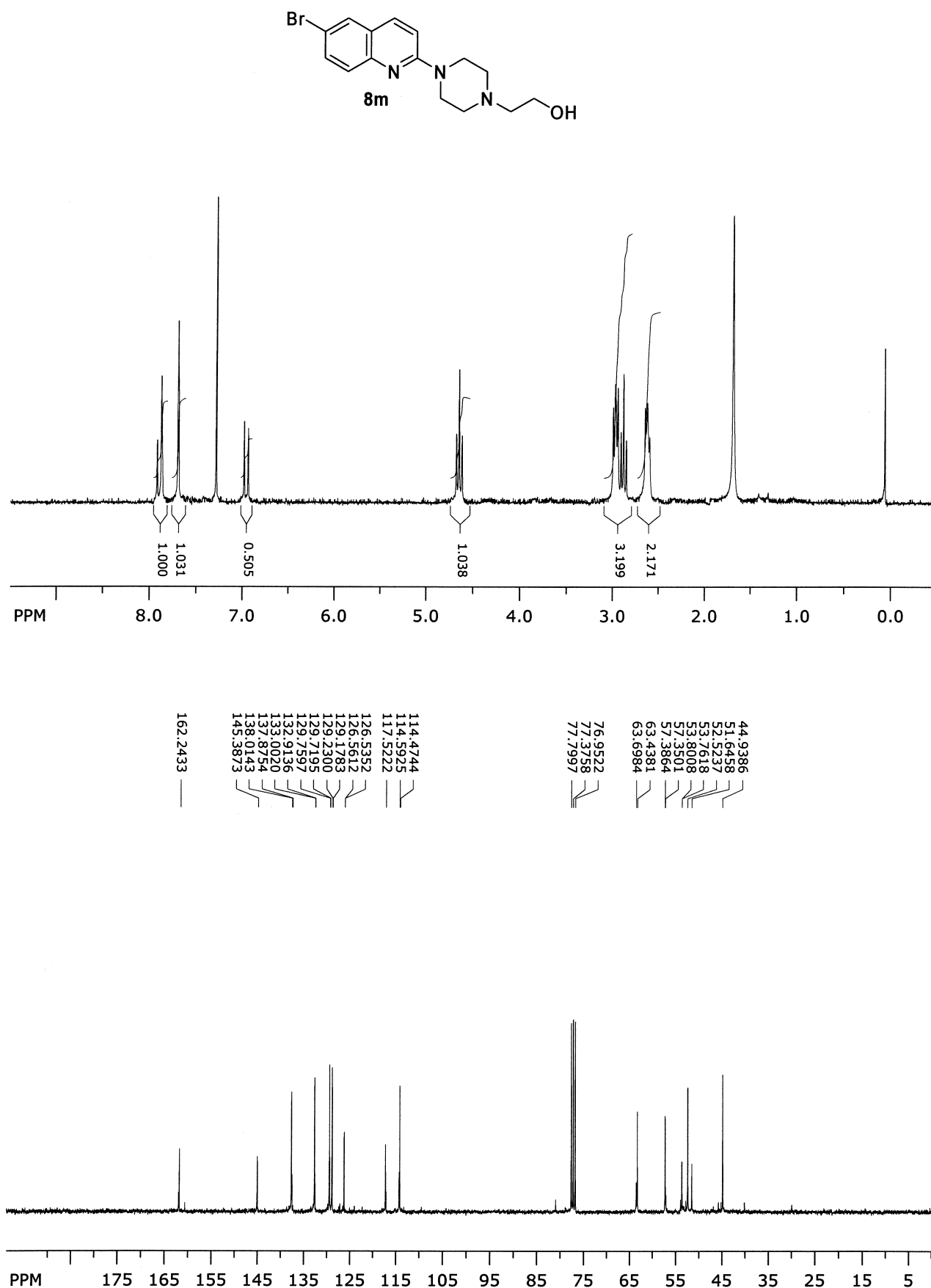


Figure S36: 600 MHz ^1H NMR spectrum (CDCl_3) of 16i obtained using General Procedure 1.

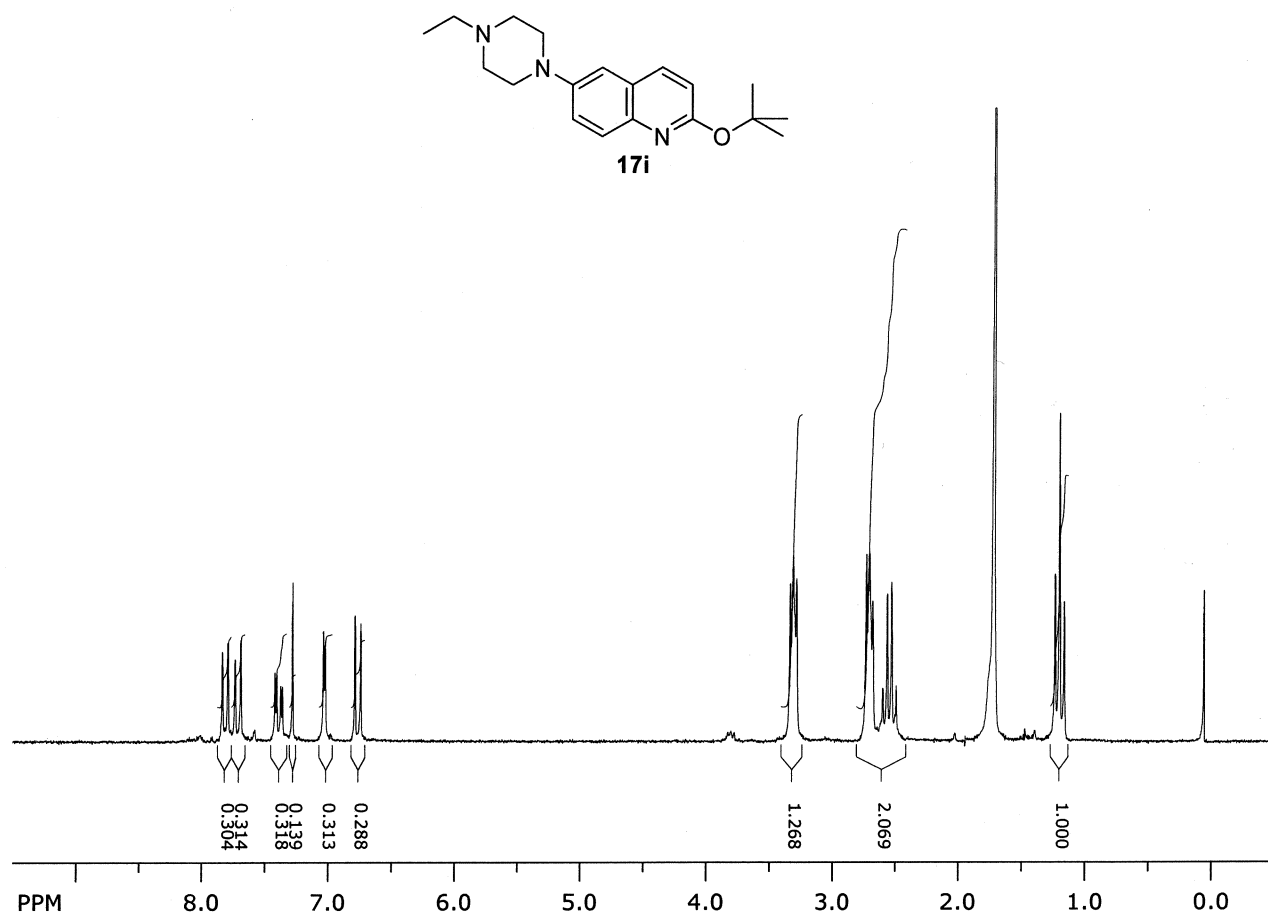


Figure S37: 300 MHz ^1H NMR spectrum (CDCl_3) of 16k obtained using General Procedure 2.

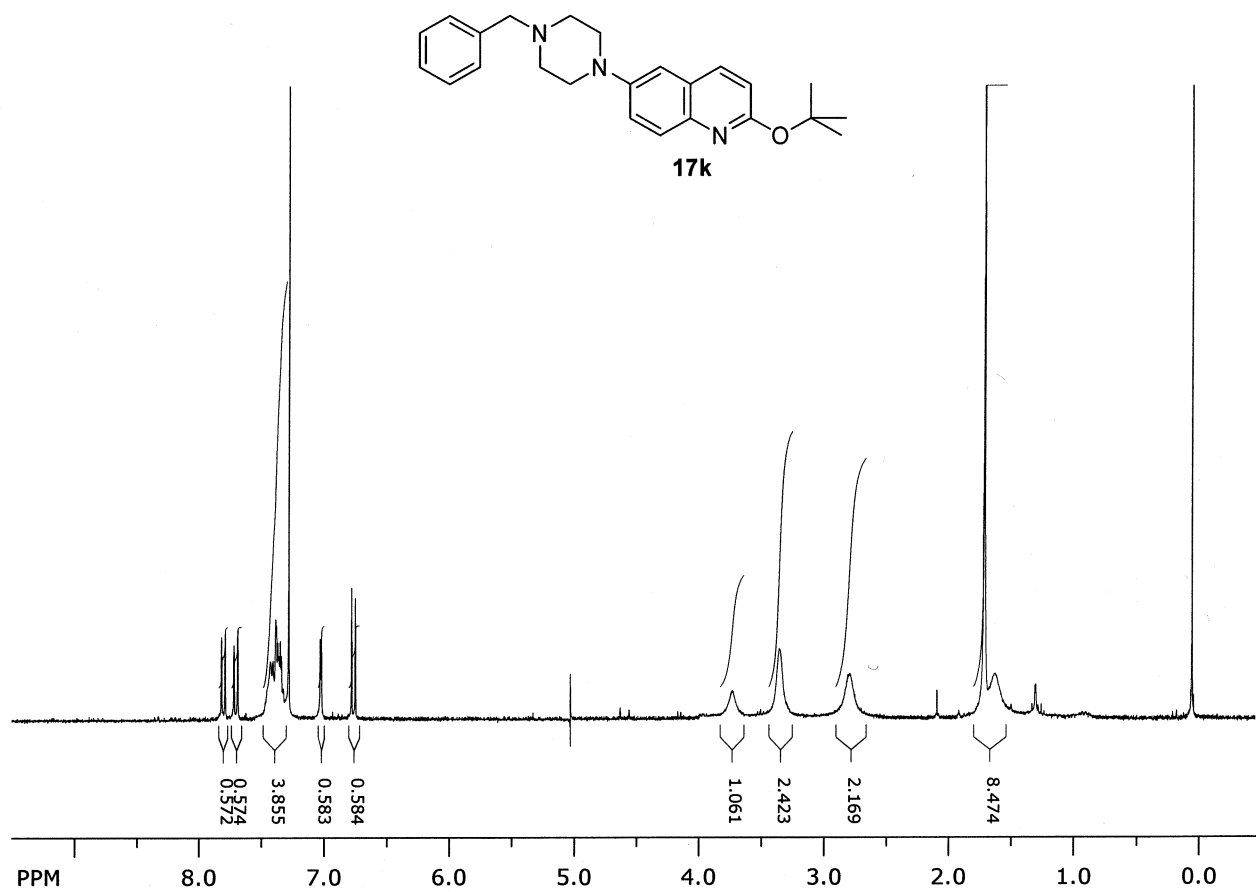


Figure S38: 600 MHz ^1H and 150 MHz ^{13}C NMR spectra (CDCl_3) of 16l obtained using General Procedure 1.

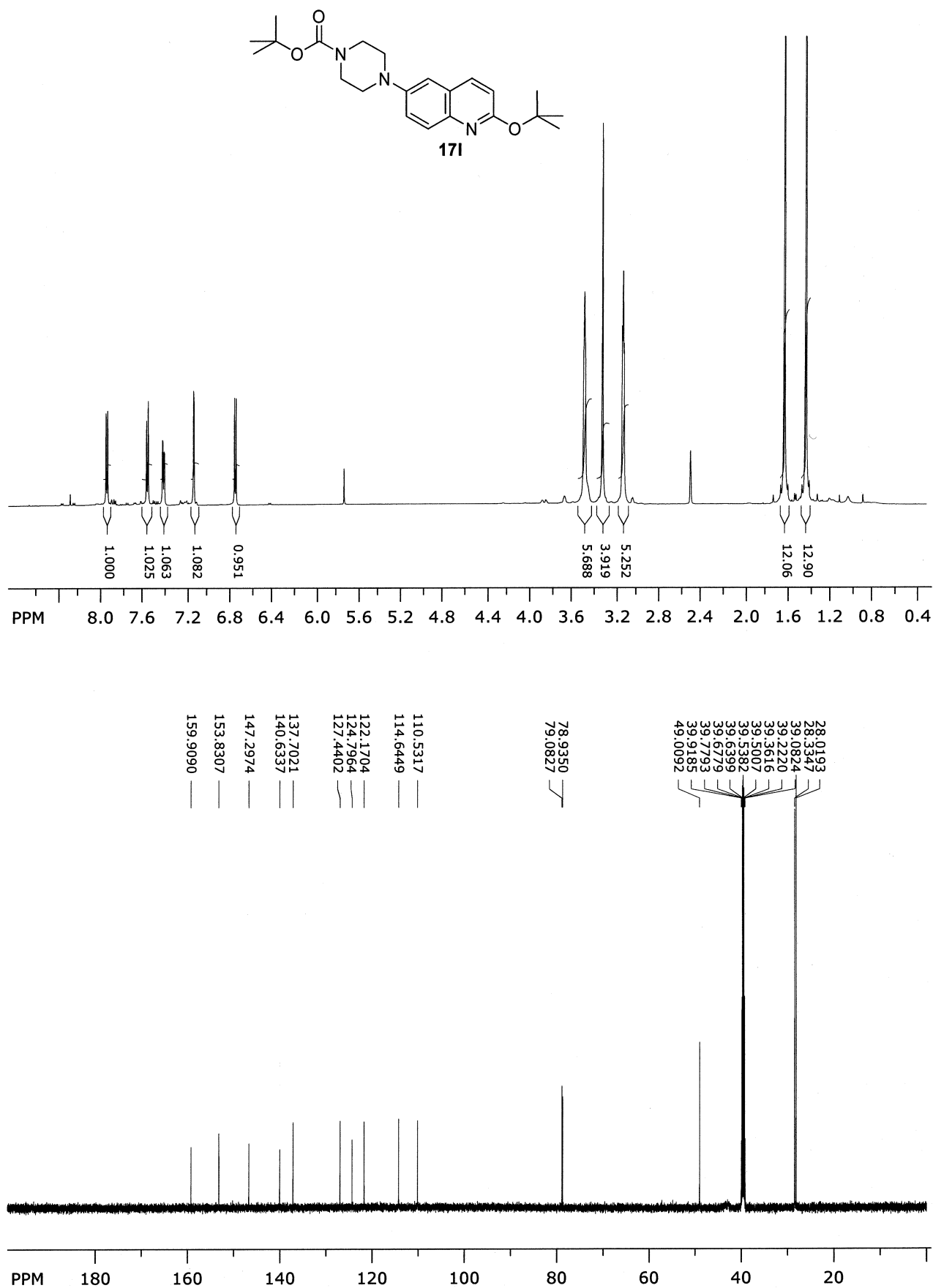


Figure S39: 300 MHz ^1H NMR spectrum (CDCl_3) of 17 obtained using General Procedure 1.

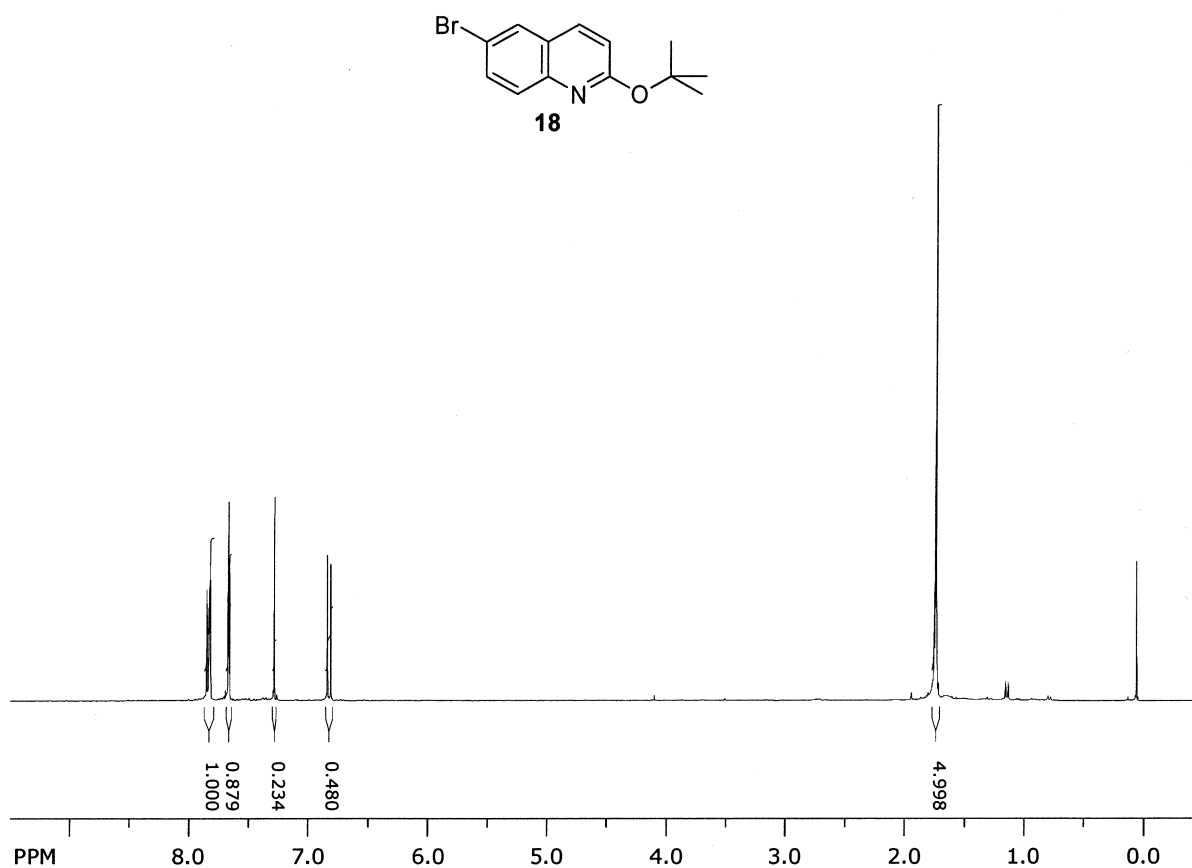


Figure S40: 300 MHz ^1H NMR spectrum (CDCl_3) of 18 obtained using General Procedure 1.

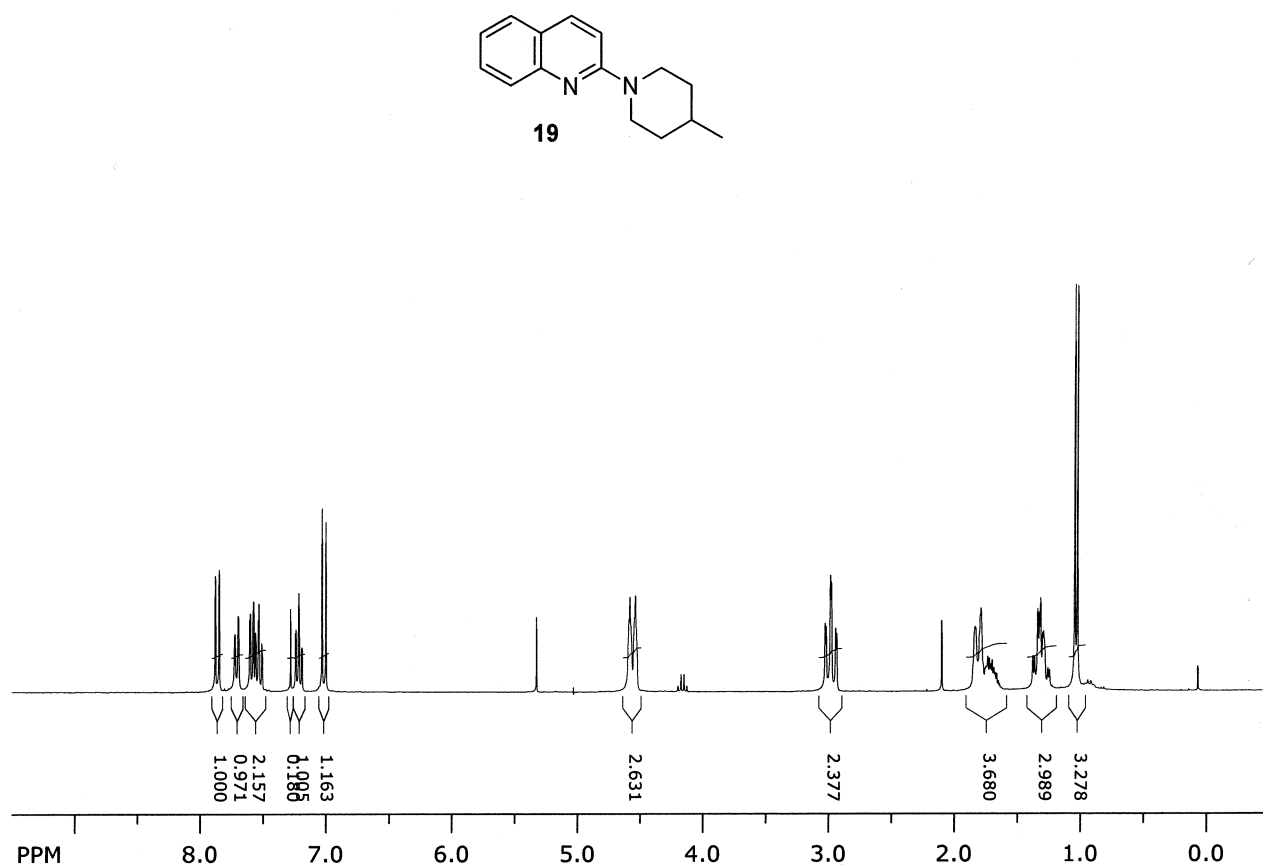


Figure S41: 600 MHz ^1H and 150 MHz ^{13}C NMR spectra (CDCl_3) of 19 obtained using General Procedure 1.

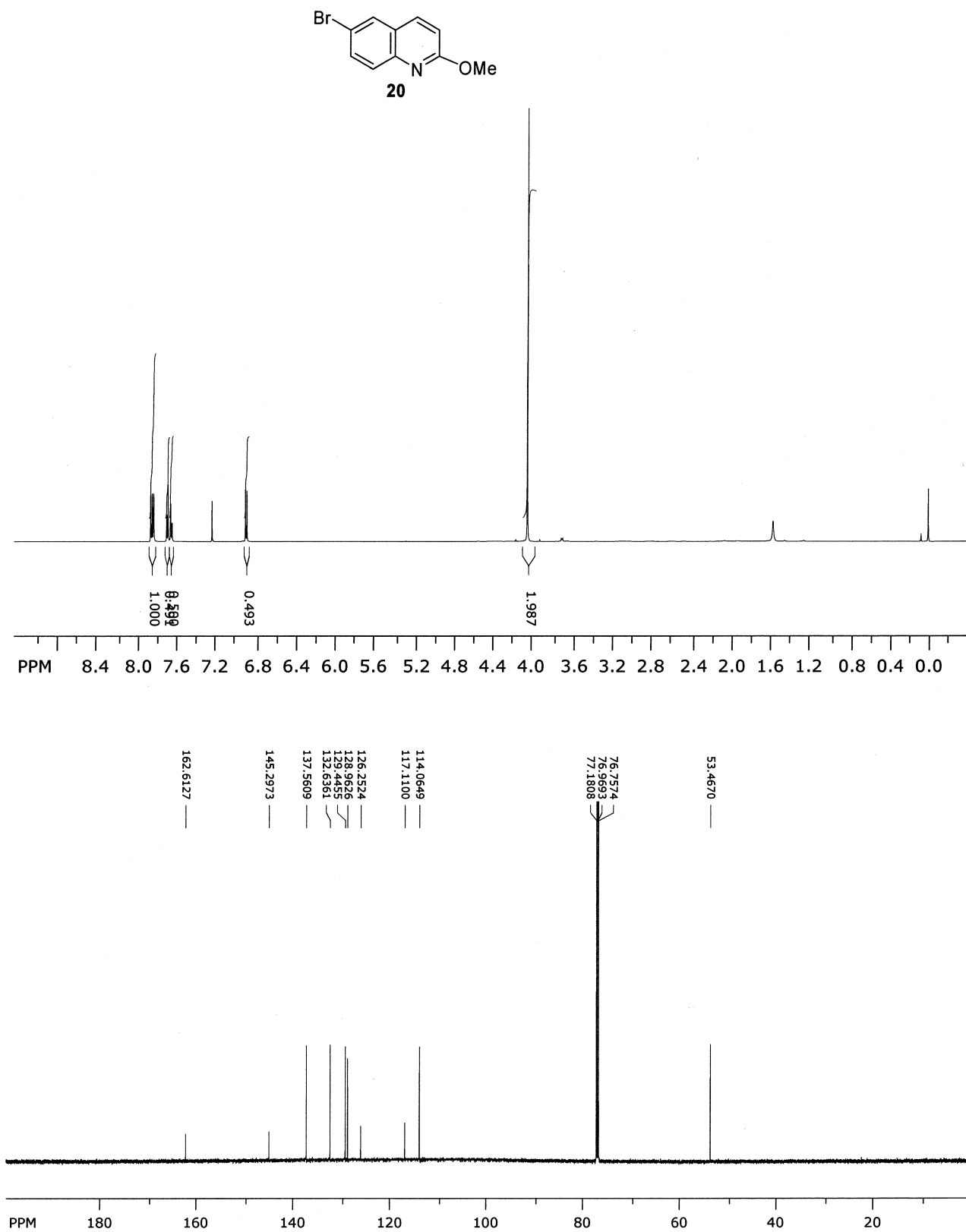


Figure S42: 300 MHz ^1H NMR spectrum (CDCl_3) of 22 obtained using General Procedure 1.

