

Supporting Information

Enantioselective Organocatalytic Aza-Ene-Type Domino Reaction Leading to 1,4- Dihydropyridines

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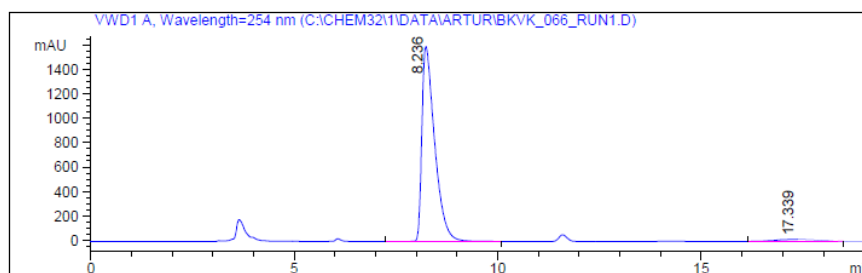
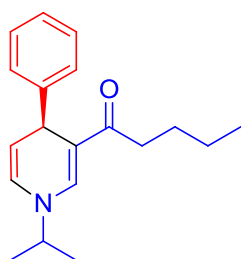
Table of Contents

Chromatograms of 1,4-DHPs	S3
(S)-1-(1-isopropyl-4-phenyl-1,4-dihydropyridin-3-yl)pentan-1-one 3a (Table 2, entry 1)...	S3
(S)-1-(1-isopropyl-4-(4-nitrophenyl)-1,4-dihydropyridin-3-yl)pentan-1-one 3b (Table 2, entry 2).	S3
(S)-1-(1-isopropyl-4-(4-methoxyphenyl)-1,4-dihydropyridin-3-yl)pentan-1-one 3c (Table 2, entry 3).	S4
(S)-1-(4-(4-bromophenyl)-1-isopropyl-1,4-dihydropyridin-3-yl)pentan-1-one 3d (Table 2, entry 4).	S4
(S)-1-(1-isopropyl-4-(naphthalen-2-yl)-1,4-dihydropyridin-3-yl)pentan-1-one 3e (Table 2 entry 5).	S5
(R)-1-(4-ethyl-1-isopropyl-1,4-dihydropyridin-3-yl)pentan-1-one 3f (Table 2, entry 6).	S5
(R)-1-(4-butyl-1-isopropyl-1,4-dihydropyridin-3-yl)pentan-1-one 3g (Table 2, entry 7).....	S6
(R)-1-(4-((benzyloxy)methyl)-1-isopropyl-1,4-dihydropyridin-3-yl)pentan-1-one 3h (Table 2, entry 8)	S6
(S)-1-(1-cyclohexyl-4-phenyl-1,4-dihydropyridin-3-yl)pentan-1-one 3i (Table 3, entry 1)..	S7
(S)-1-(1-benzyl-4-phenyl-1,4-dihydropyridin-3-yl)pentan-1-one 3j (Table 3, entry 2).....	S7
(S)-1-(1-(tert-butyl)-4-phenyl-1,4-dihydropyridin-3-yl)pentan-1-one 3k (Table 3, entry 3). S8	
(S)-1-isopropyl-4-phenyl-4,6,7,8-tetrahydroquinolin-5(1H)-one 3l (Table 3, entry 4).	S8
(S)-ethyl-1-isopropyl-2-methyl-4-(4-nitrophenyl)-1,4-dihydropyridine-3-carboxylate 3m (Table 3, entry 5).	S9
(S)-ethyl-1-benzyl-2-methyl-4-(4-nitrophenyl)-1,4-dihydropyridine-3-carboxylate 3n (Table 3, entry 6).	S9
(R)-ethyl-1-benzyl-4-butyl-2-methyl-1,4-dihydropyridine-3-carboxylate 3p (Table 3, entry 7).....	S10
¹ H (E)-1-chlorohept-1-en-3-one	S11
¹³ C (E)-1-chlorohept-1-en-3-one	S12
¹ H (Z)-1-(isopropylamino)hept-1-en-3-one (2a)	S13

¹³ C (Z)-1-(isopropylamino)hept-1-en-3-one (2a)	S14
¹ H (Z)-1-(cyclohexylamino)hept-1-en-3-one (2b).....	S15
¹³ C (Z)-1-(cyclohexylamino)hept-1-en-3-one (2b)	S16
¹ H (Z)-1-(benzylamino)hept-1-en-3-one (2c).....	S17
¹ H (Z)-1-(benzylamino)hept-1-en-3-one (2c).....	S18
¹ H (Z)-1-(tert-butylamino)hept-1-en-3-one (2d)	S19
¹³ C (Z)-1-(tert-butylamino)hept-1-en-3-one (2d)	S20
¹ H 3a (Table 2, entry 1)	S21
¹³ C 3a (Table 2, entry 1)	S22
¹ H 3b (Table 2, entry 2).....	S23
¹³ C 3b (Table 2, entry 2).....	S24
¹ H 3c (Table 2, entry 3)	S25
¹³ C 3c (Table 2, entry 3)	S26
¹ H 3d (Table 2, entry 4).....	S27
¹³ C 3d (Table 2, entry 4).....	S28
¹ H 3e (Table 2, entry 5)	S29
¹³ C 3e (Table 2, entry 5)	S30
¹ H 3f (Table 2, entry 6)	S31
¹³ C 3f (Table 2, entry 6)	S32
¹ H 3g (Table 2, entry 7).....	S33
¹³ C 3g (Table 2, entry 7).....	S34
¹ H 3h (Table 2, entry 8).....	S35
¹³ C 3h (Table 2, entry 8).....	S36
¹ H 3i (Table 3, entry 1).....	S37
¹³ C 3i (Table 3, entry 1)	S38
¹ H 3j (Table 3, entry 2).....	S39
¹³ C 3j (Table 3, entry 2)	S40
¹ H 3k (Table 3, entry 3).....	S41
¹³ C 3k (Table 3, entry 3).....	S42
¹ H 3l (Table 3, entry 4).....	S43
¹³ C 3l (Table 3, entry 4)	S44
¹ H 3m (Table 3, entry 5).....	S45
¹³ C 3m (Table 3, entry 5)	S46
¹ H 3n (Table 3, entry 6).....	S47
¹³ C 3n (Table 3, entry 6).....	S48
¹ H 3p (Table 3, entry 7).....	S49
¹³ C 3p (Table 3, entry 7).....	S50

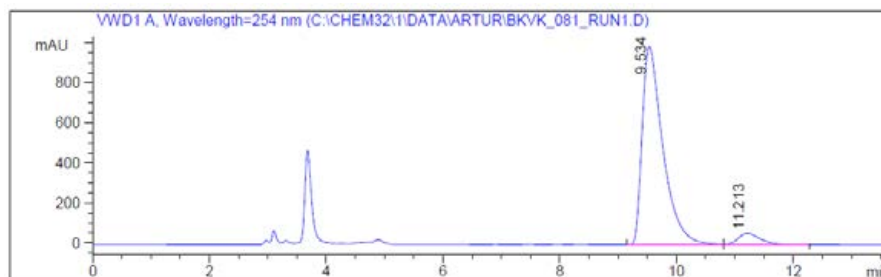
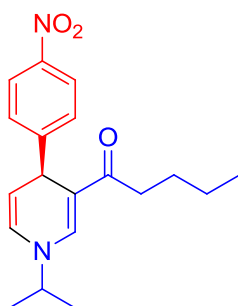
Chromatograms of 1,4-DHPs

(S)-1-(1-isopropyl-4-phenyl-1,4-dihydropyridin-3-yl)pentan-1-one 3a (Table 2, entry 1).



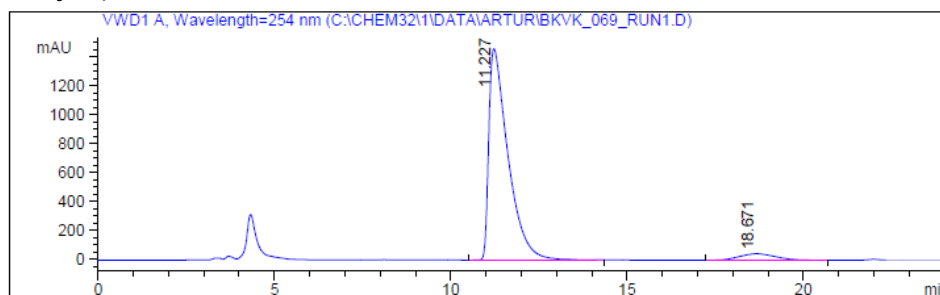
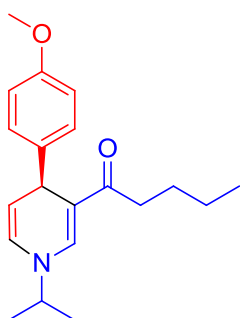
Signaal 1 VWD1 A, Wavelength=254 nm						
Piigi nr	RT [min]	Tüüp	Laius [min]	Pindala	Pindala %	Nimi
1	8.236	BB	0.325	3.493e4	96.425	
2	17.339	MM	1.191	1294.862	3.575	

(S)-1-(1-isopropyl-4-(4-nitrophenyl)-1,4-dihydropyridin-3-yl)pentan-1-one 3b (Table 2, entry 2).



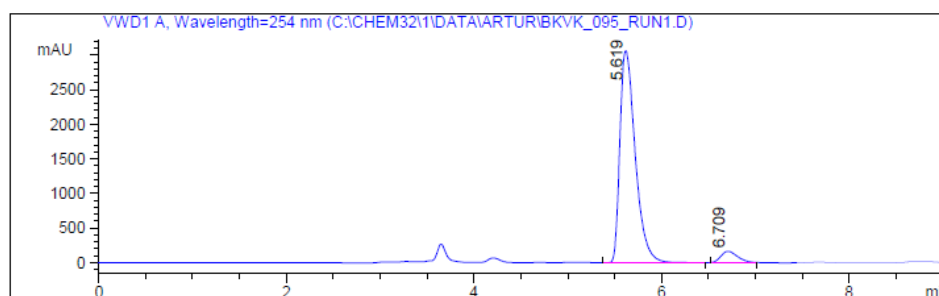
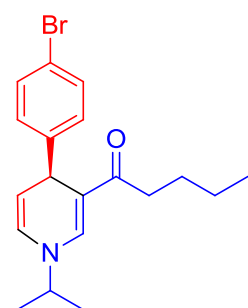
Signaal 1 VWD1 A, Wavelength=254 nm						
Piigi nr	RT [min]	Tüüp	Laius [min]	Pindala	Pindala %	Nimi
1	9.534	VV	0.367	2.424e4	94.441	
2	11.213	VB	0.395	1426.642	5.559	

(S)-1-(1-isopropyl-4-(4-methoxyphenyl)-1,4-dihydropyridin-3-yl)pentan-1-one 3c (Table 2, entry 3).



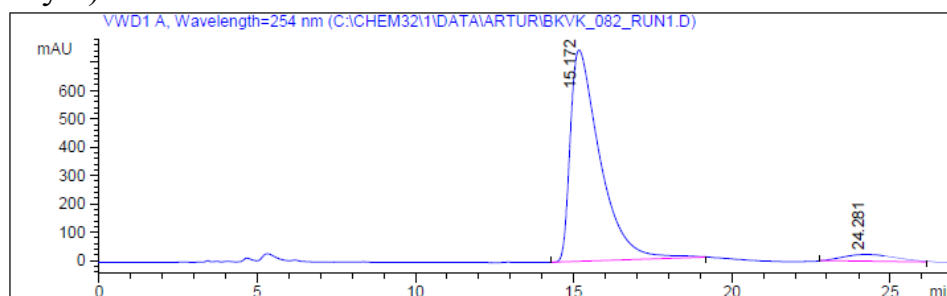
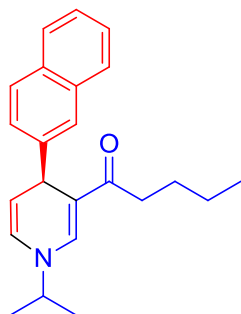
Signaal 1 VWD1 A, Wavelength=254 nm						
Piigi nr	RT [min]	Tüüp	Laius [min]	Pindala	Pindala %	Nimi
1	11.227	VB	0.555	5.539e4	94.409	
2	18.671	BB	1.130	3280.401	5.591	

(S)-1-(4-(4-bromophenyl)-1-isopropyl-1,4-dihydropyridin-3-yl)pentan-1-one 3d (Table 2, entry 4).



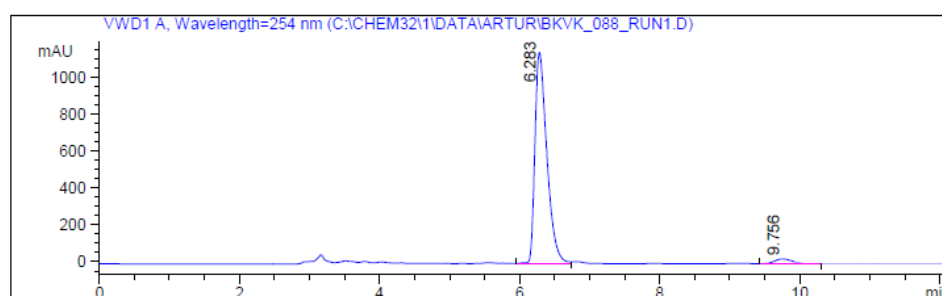
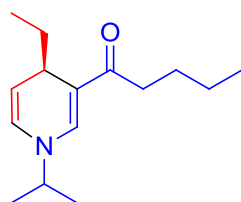
Signaal 1 VWD1 A, Wavelength=254 nm						
Piigi nr	RT [min]	Tüüp	Laius [min]	Pindala	Pindala %	Nimi
1	5.619	VV	0.176	3.505e4	94.497	
2	6.709	MM	0.208	2040.864	5.503	

(S)-1-(1-isopropyl-4-(naphthalen-2-yl)-1,4-dihydropyridin-3-yl)pentan-1-one 3e (Table 2 entry 5).



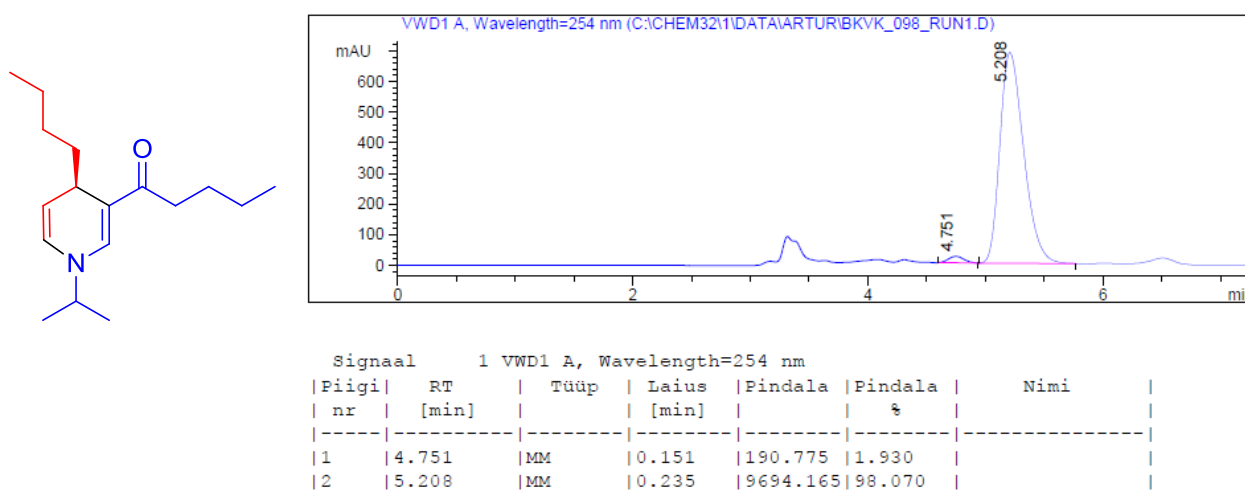
Signaal 1 VWD1 A, Wavelength=254 nm						
Piigi nr	RT [min]	Tüüp	Laius [min]	Pindala	Pindala %	Nimi
1	15.172	MM	1.086	4.859e4	94.693	
2	24.281	MM	1.897	2722.767	5.307	

(R)-1-(4-ethyl-1-isopropyl-1,4-dihydropyridin-3-yl)pentan-1-one 3f (Table 2, entry 6).

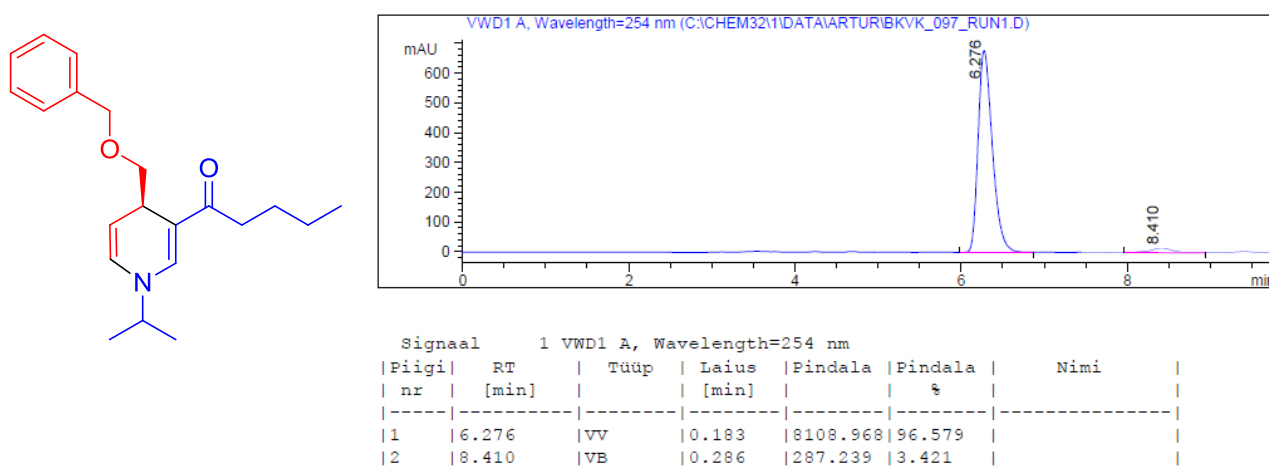


Signaal 1 VWD1 A, Wavelength=254 nm						
Piigi nr	RT [min]	Tüüp	Laius [min]	Pindala	Pindala %	Nimi
1	6.283	VV	0.181	1.361e4	96.629	
2	9.756	VB	0.279	474.716	3.371	

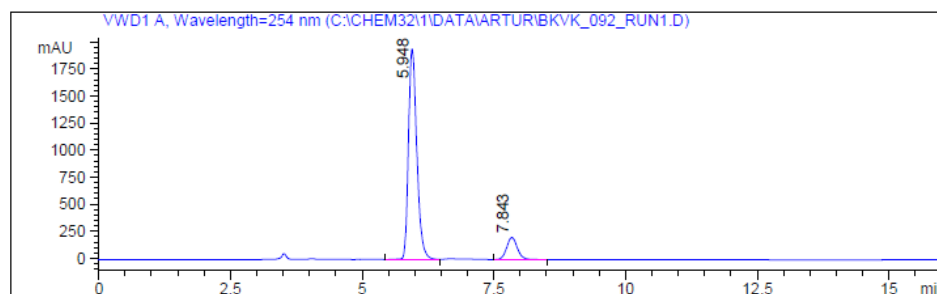
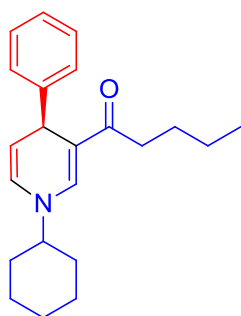
(R)-1-(4-butyl-1-isopropyl-1,4-dihydropyridin-3-yl)pentan-1-one 3g (Table 2, entry 7).



(R)-1-(4-((benzyloxy)methyl)-1-isopropyl-1,4-dihydropyridin-3-yl)pentan-1-one 3h (Table 2, entry 8)

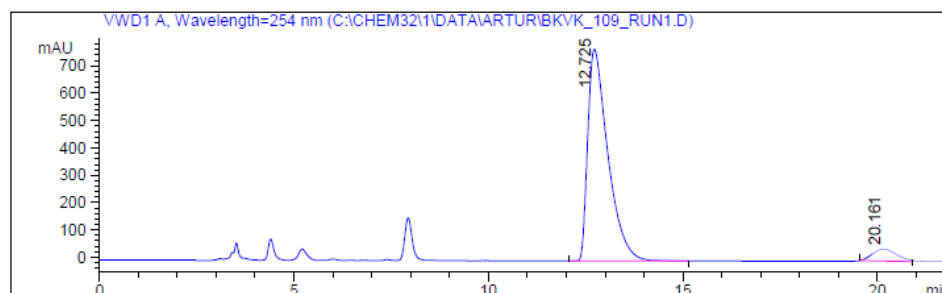
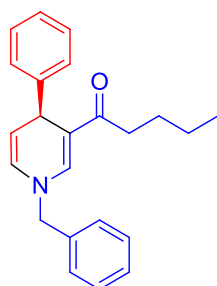


(S)-1-(1-cyclohexyl-4-phenyl-1,4-dihydropyridin-3-yl)pentan-1-one 3i (Table 3, entry 1).



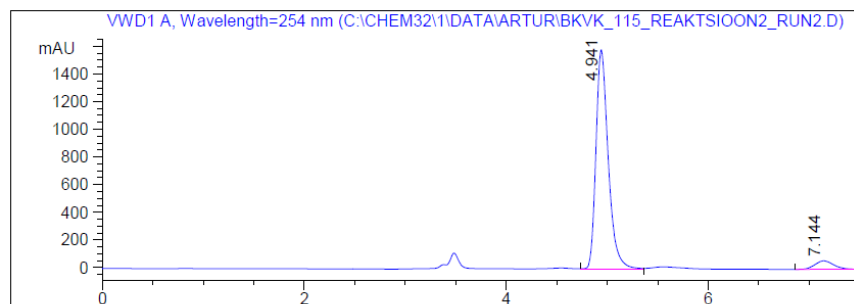
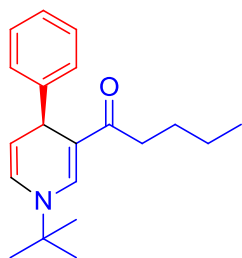
Signaal 1 VWD1 A, Wavelength=254 nm						
Piigi nr	RT [min]	Tüüp	Laius [min]	Pindala	Pindala %	Nimi
1	5.948	VV	0.170	2.160e4	87.915	
2	7.843	VB	0.220	2968.546	12.085	

(S)-1-(1-benzyl-4-phenyl-1,4-dihydropyridin-3-yl)pentan-1-one 3j (Table 3, entry 2).



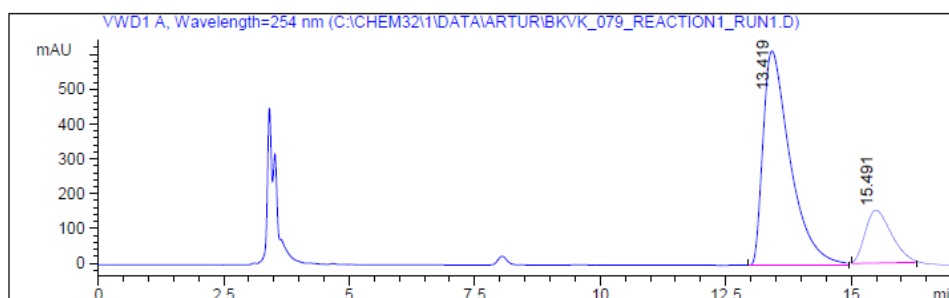
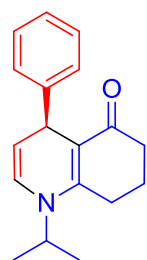
Signaal 1 VWD1 A, Wavelength=254 nm						
Piigi nr	RT [min]	Tüüp	Laius [min]	Pindala	Pindala %	Nimi
1	12.725	BB	0.541	2.785e4	93.690	
2	20.161	MM	0.717	1875.589	6.310	

(S)-1-(1-(tert-butyl)-4-phenyl-1,4-dihydropyridin-3-yl)pentan-1-one **3k**
(Table 3, entry 3).



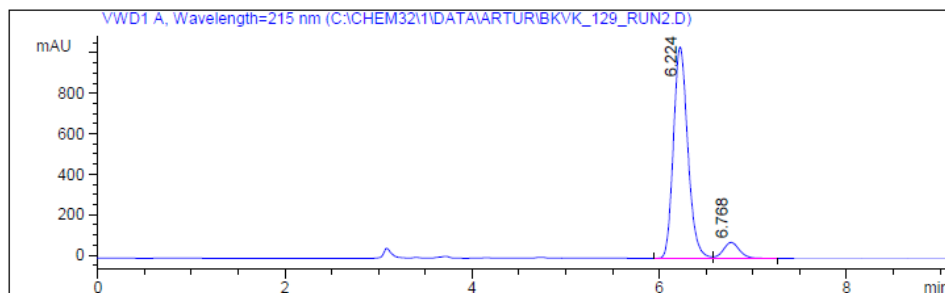
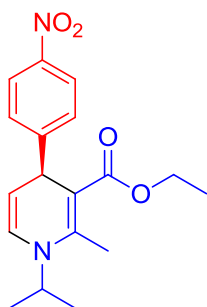
Signaal 1 VWD1 A, Wavelength=254 nm						
Piigi nr	RT [min]	Tüüp	Laius [min]	Pindala	Pindala %	Nimi
1	4.941	VV	0.129	1.343e4	94.538	
2	7.144	BV	0.200	776.121	5.462	

(S)-1-isopropyl-4-phenyl-4,6,7,8-tetrahydroquinolin-5(1H)-one **3l** (Table 3, entry 4).



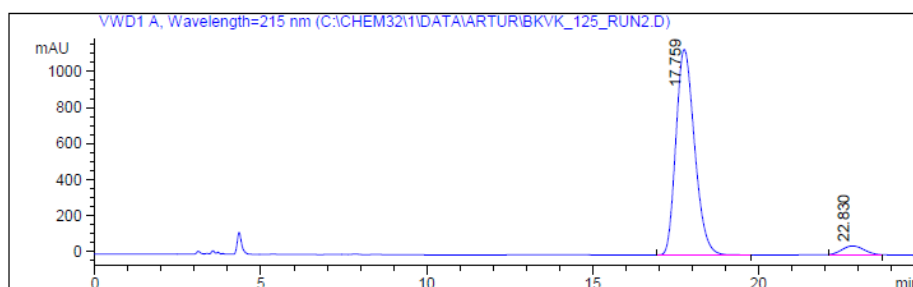
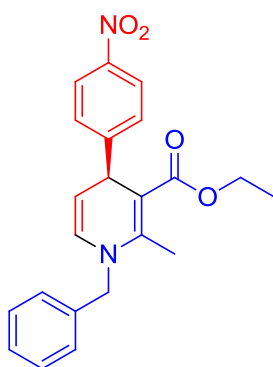
Signaal 1 VWD1 A, Wavelength=254 nm						
Piigi nr	RT [min]	Tüüp	Laius [min]	Pindala	Pindala %	Nimi
1	13.419	VV	0.564	2.314e4	80.748	
2	15.491	MM	0.606	5517.313	19.252	

(S)-ethyl-1-isopropyl-2-methyl-4-(4-nitrophenyl)-1,4-dihydropyridine-3-carboxylate 3m (Table 3, entry 5).



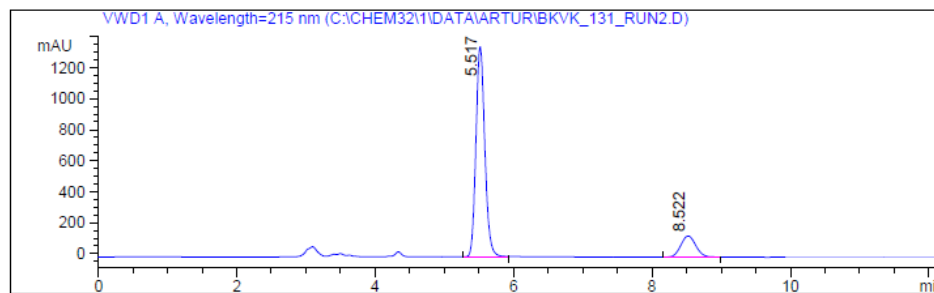
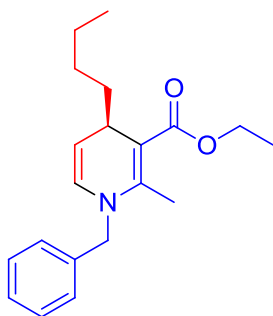
Signaal 1 VWD1 A, Wavelength=215 nm						
Piigi nr	RT [min]	Tüüp	Laius [min]	Pindala	Pindala %	Nimi
1	6.224	VV	0.164	1.118e4	91.959	
2	6.768	VB	0.187	977.661	8.041	

(S)-ethyl-1-benzyl-2-methyl-4-(4-nitrophenyl)-1,4-dihydropyridine-3-carboxylate 3n (Table 3, entry 6).



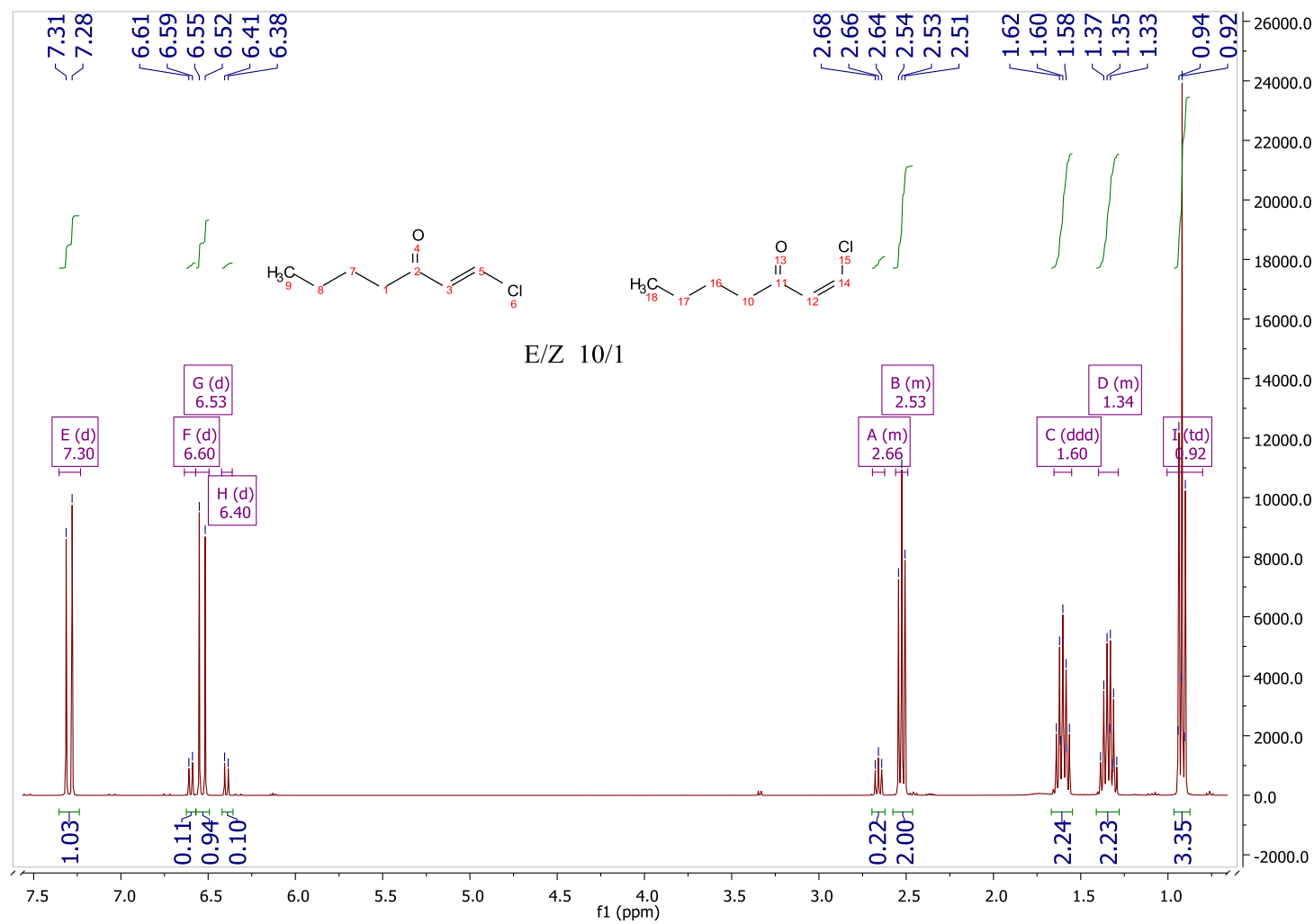
Signaal 1 VWD1 A, Wavelength=215 nm						
Piigi nr	RT [min]	Tüüp	Laius [min]	Pindala	Pindala %	Nimi
1	17.759	BB	0.609	4.468e4	94.326	
2	22.830	MM	0.835	2687.567	5.674	

(R)-ethyl-1-benzyl-4-butyl-2-methyl-1,4-dihydropyridine-3-carboxylate 3p
(Table 3, entry 7).



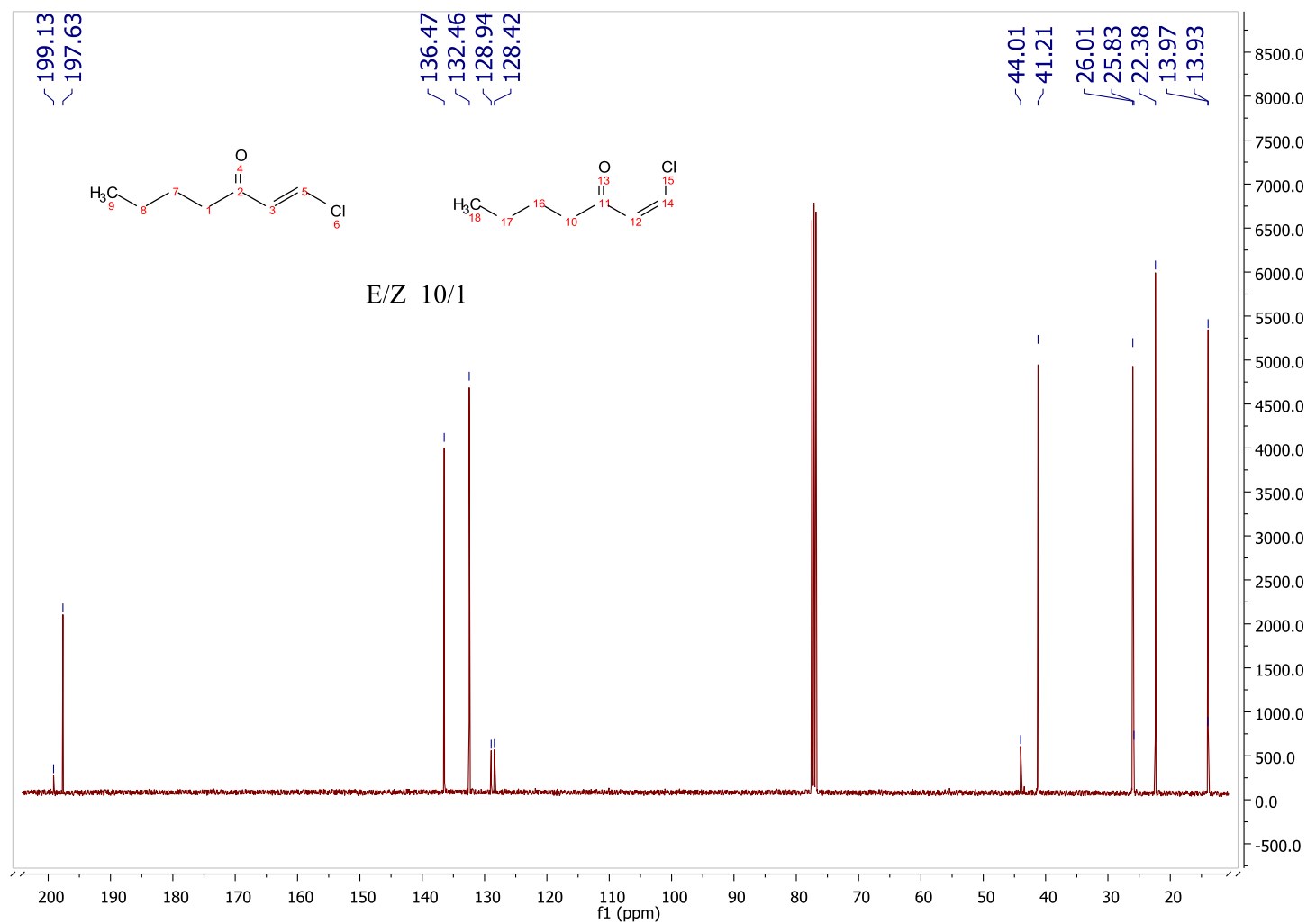
Signaal 1 VWD1 A, Wavelength=215 nm						
Piigi nr	RT [min]	Tüüp	Laius [min]	Pindala	Pindala %	Nimi
1	5.517	VV	0.139	1.212e4	85.401	
2	8.522	VB	0.238	2071.239	14.599	

¹H (E)-1-chlorohept-1-en-3-one



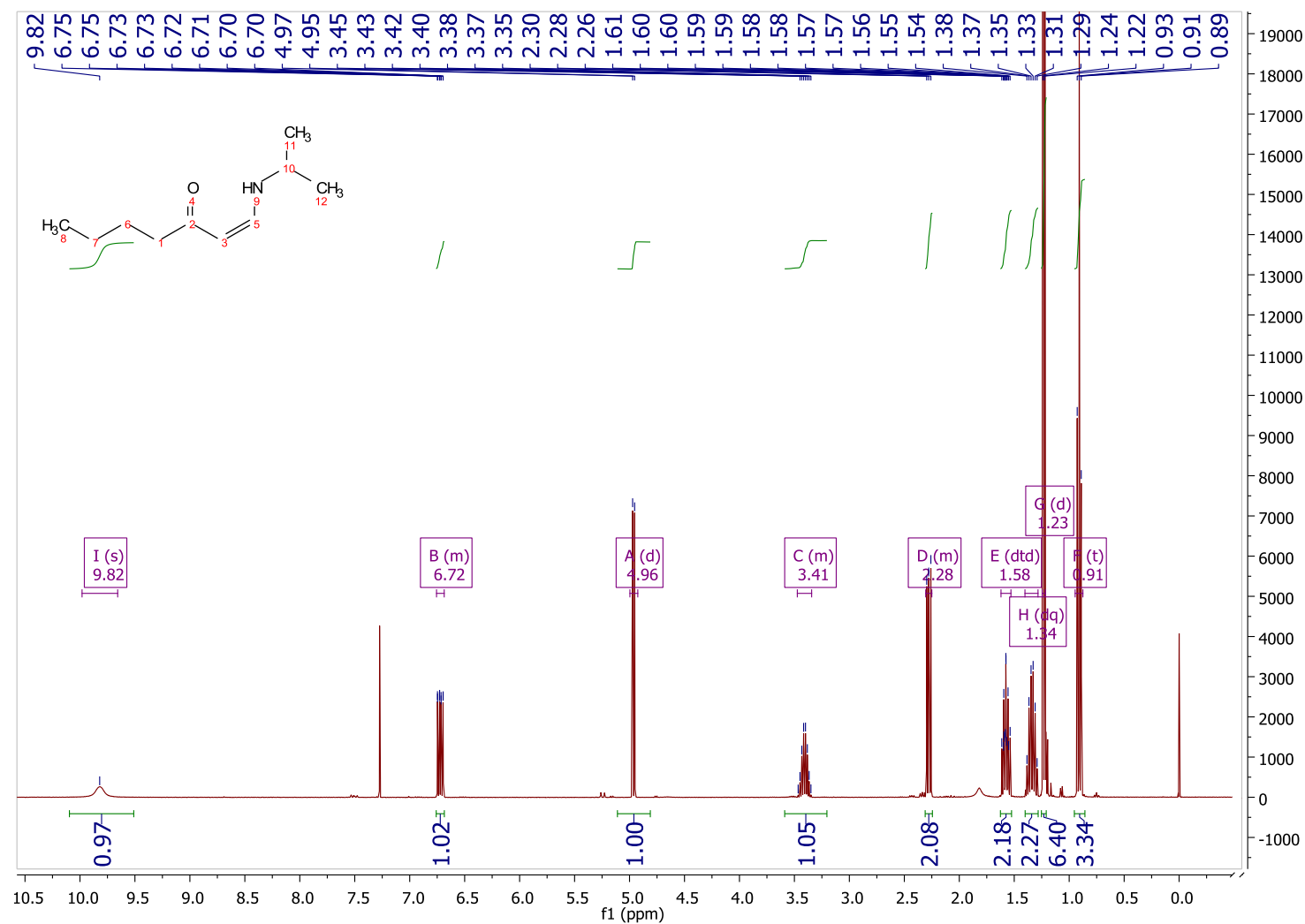
Measured in CDCl₃.

¹³C (*E*)-1-chlorohept-1-en-3-one



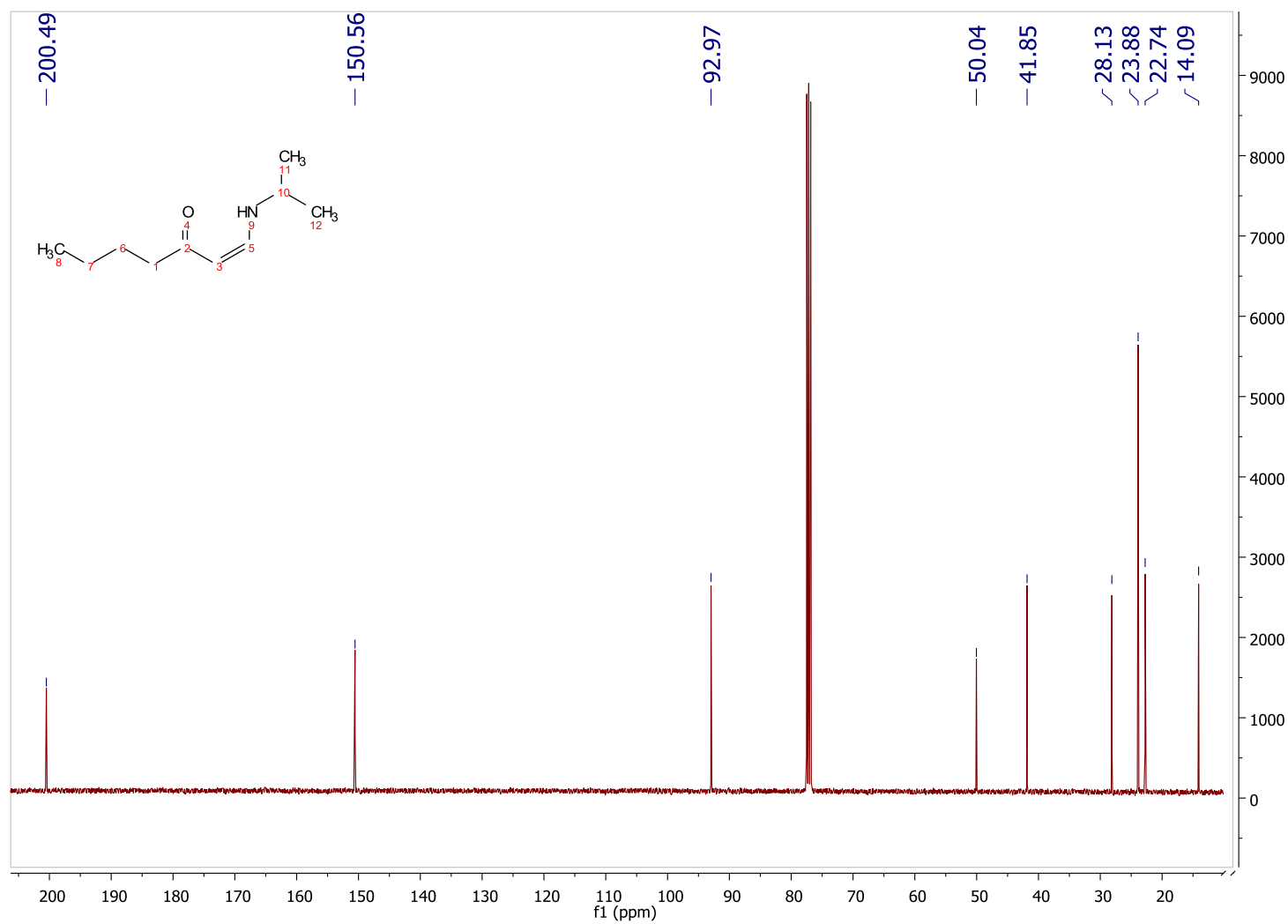
Measured in CDCl₃.

¹H (Z)-1-(isopropylamino)hept-1-en-3-one (2a)



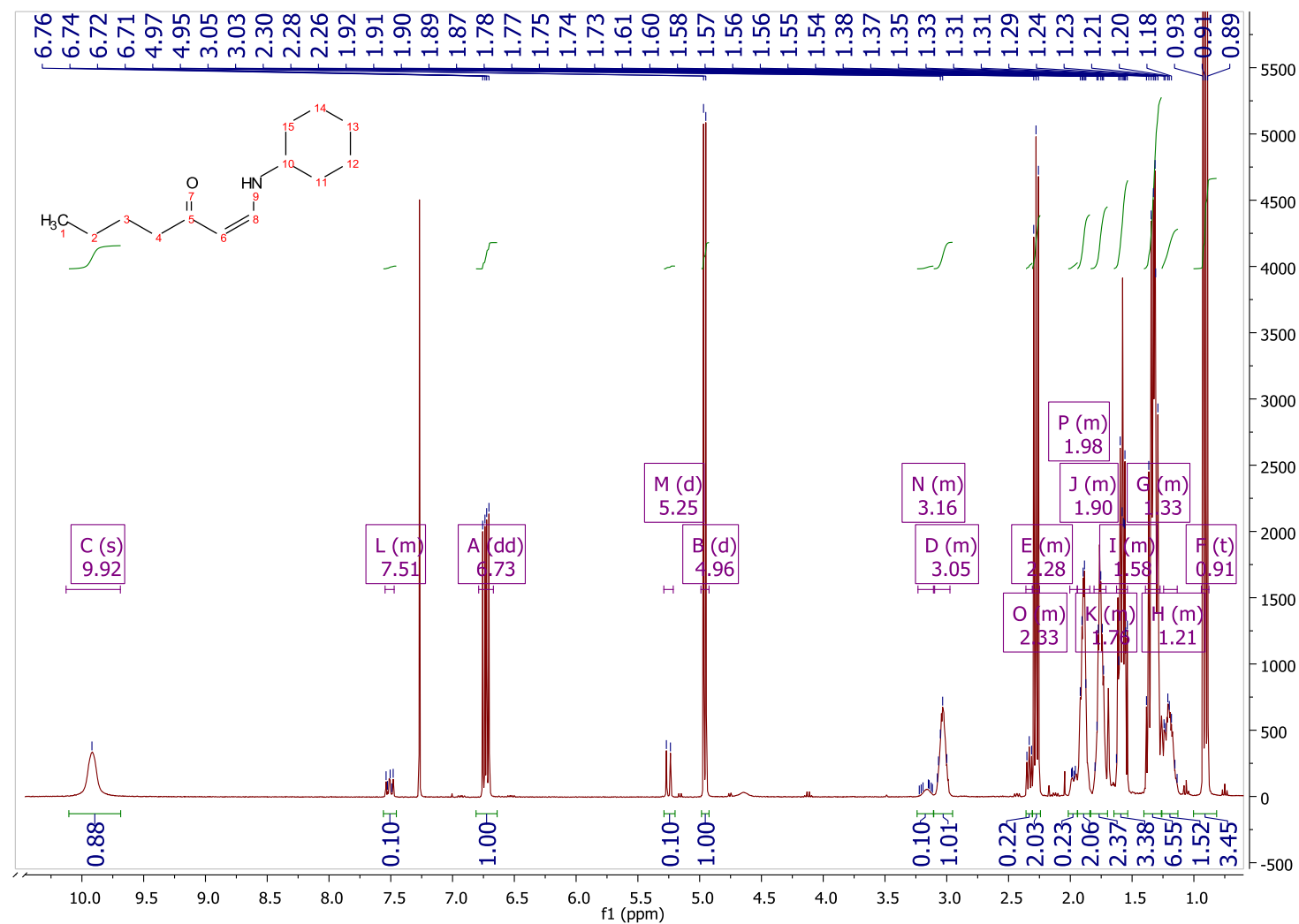
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^{13}C (Z)-1-(isopropylamino)hept-1-en-3-one (2a)



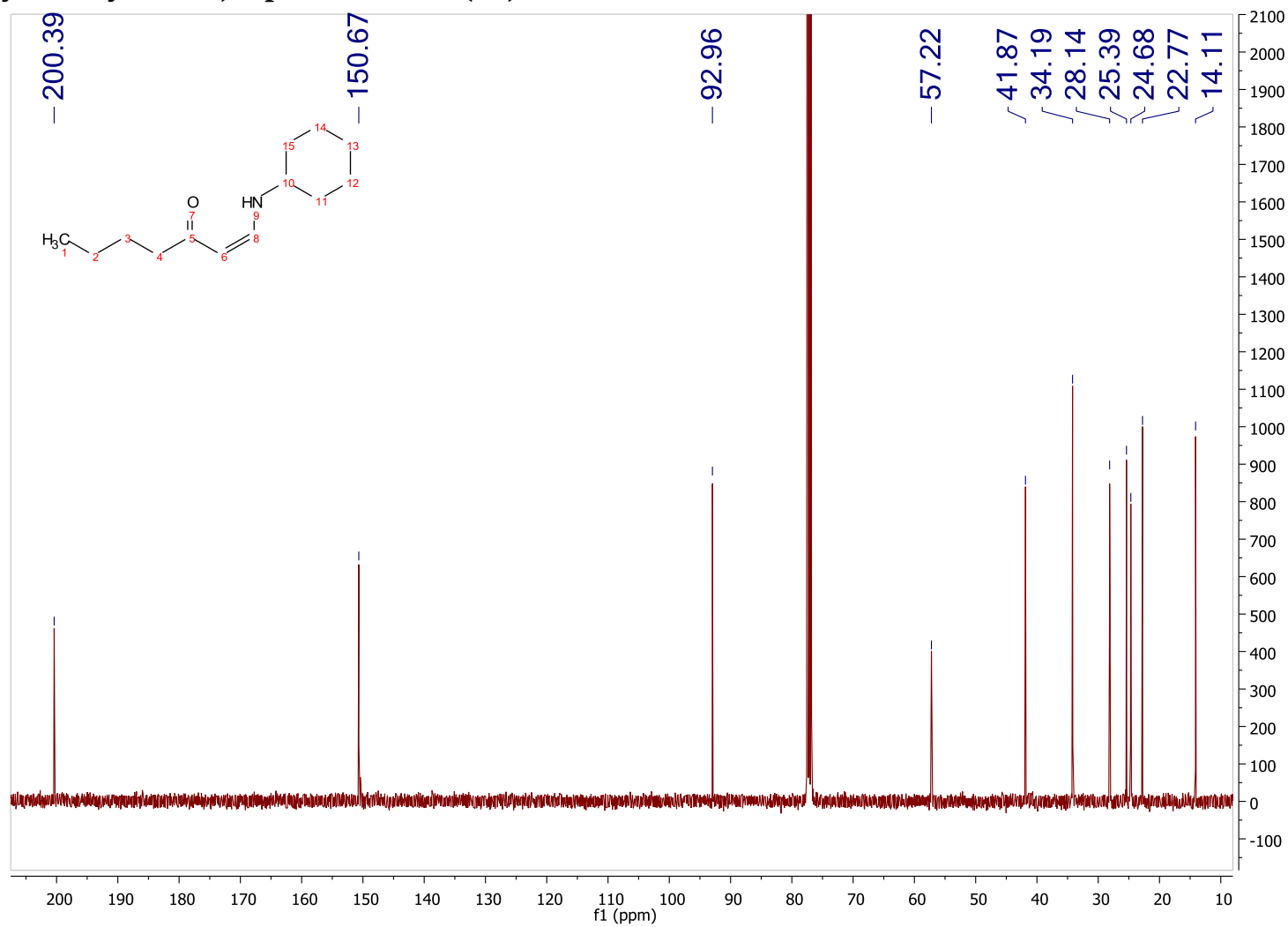
Measured in CDCl_3 .

¹H (Z)-1-(cyclohexylamino)hept-1-en-3-one (2b)



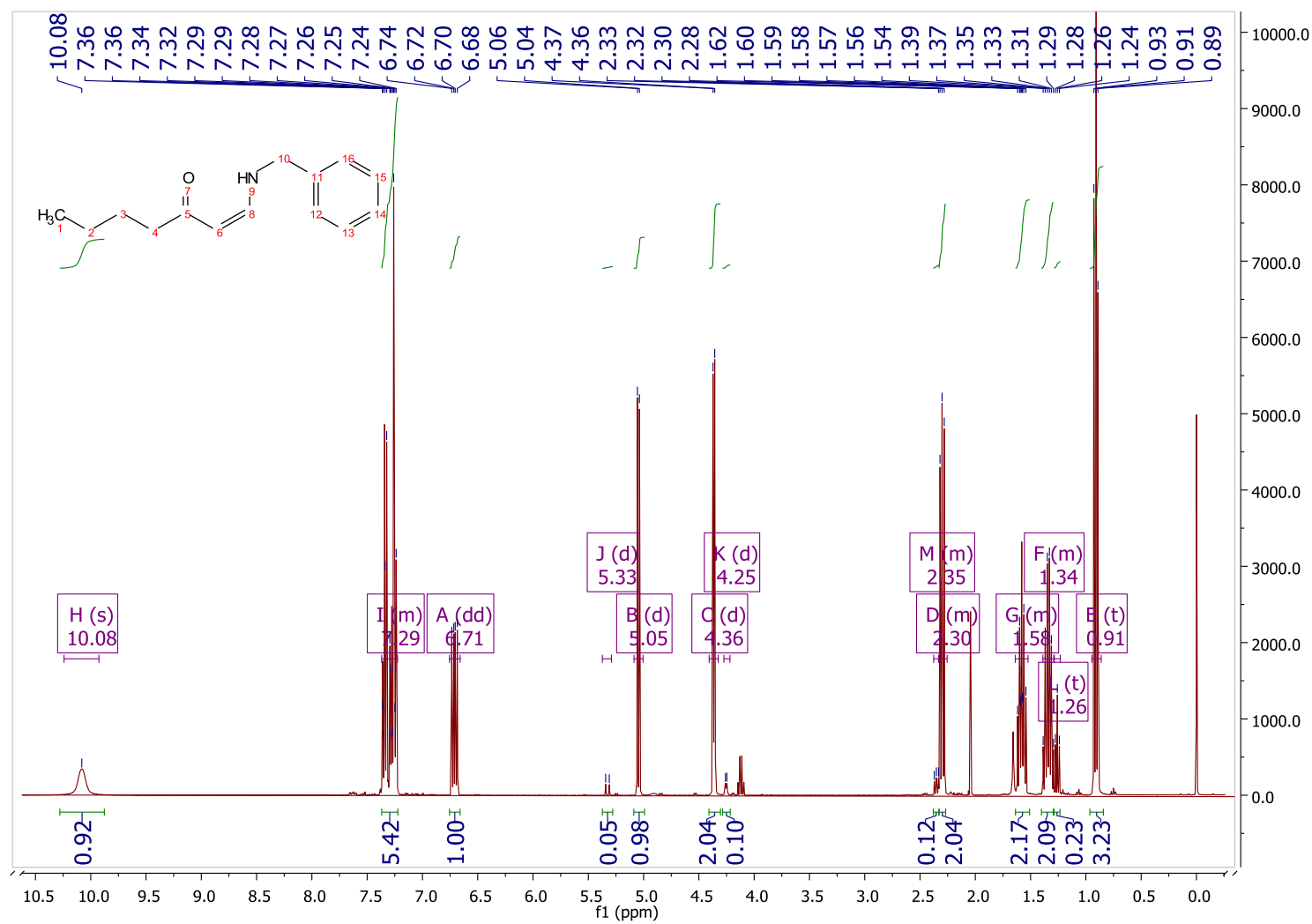
Measured in CDCl₃.

^{13}C (Z)-1-(cyclohexylamino)hept-1-en-3-one (2b)



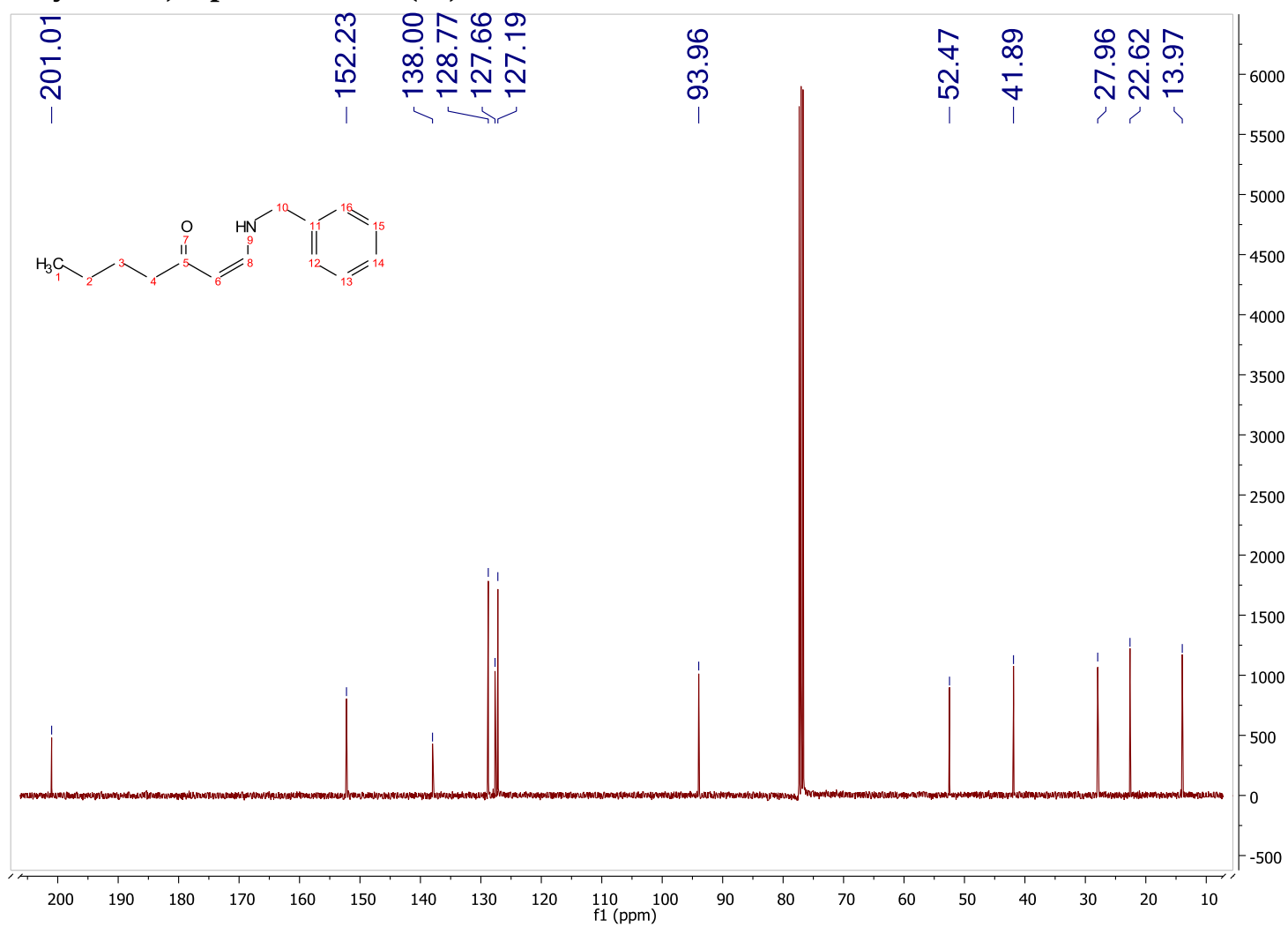
Measured in CDCl₃.

¹H (Z)-1-(benzylamino)hept-1-en-3-one (2c)



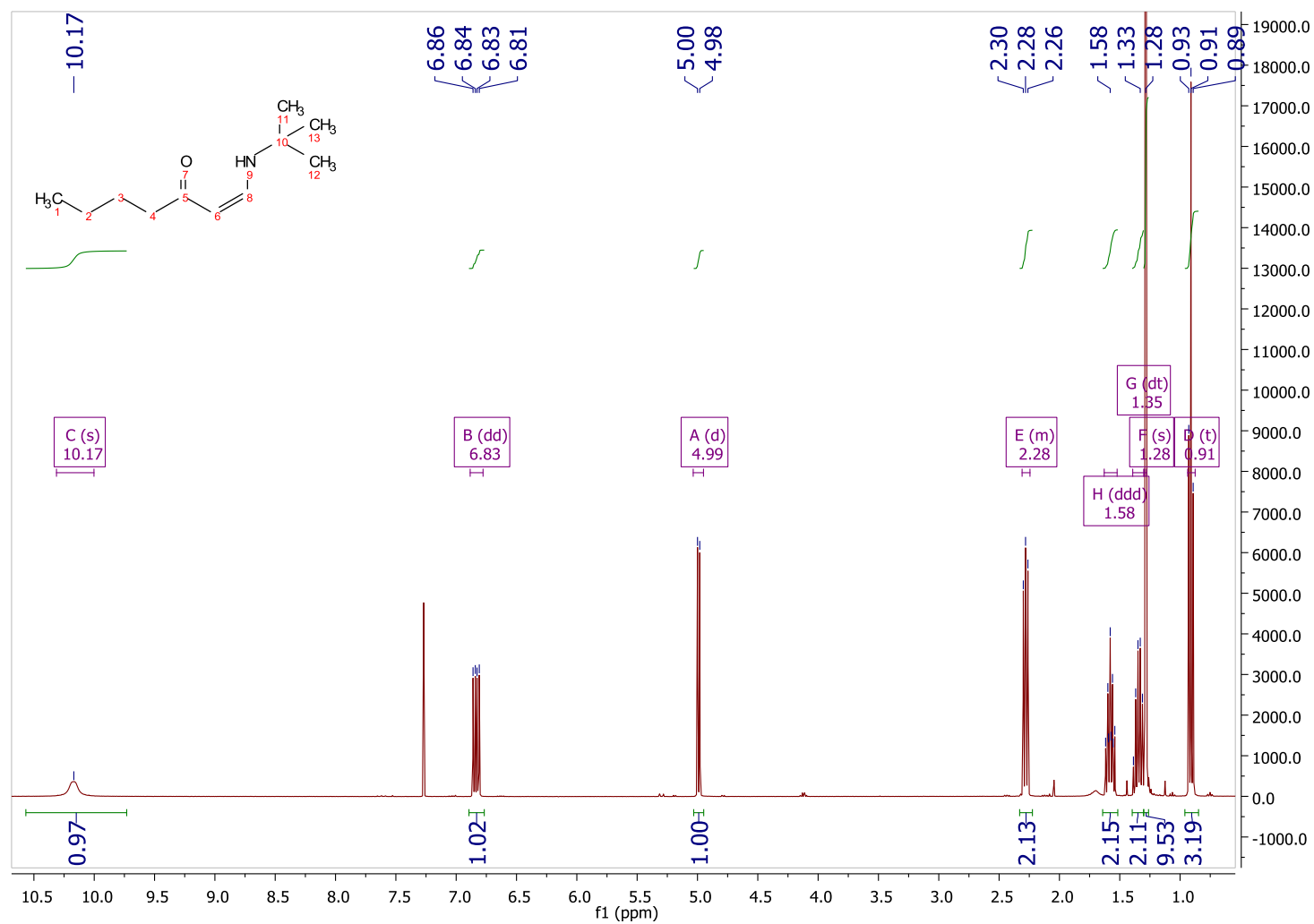
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^{13}C (Z)-1-(benzylamino)hept-1-en-3-one (2c)



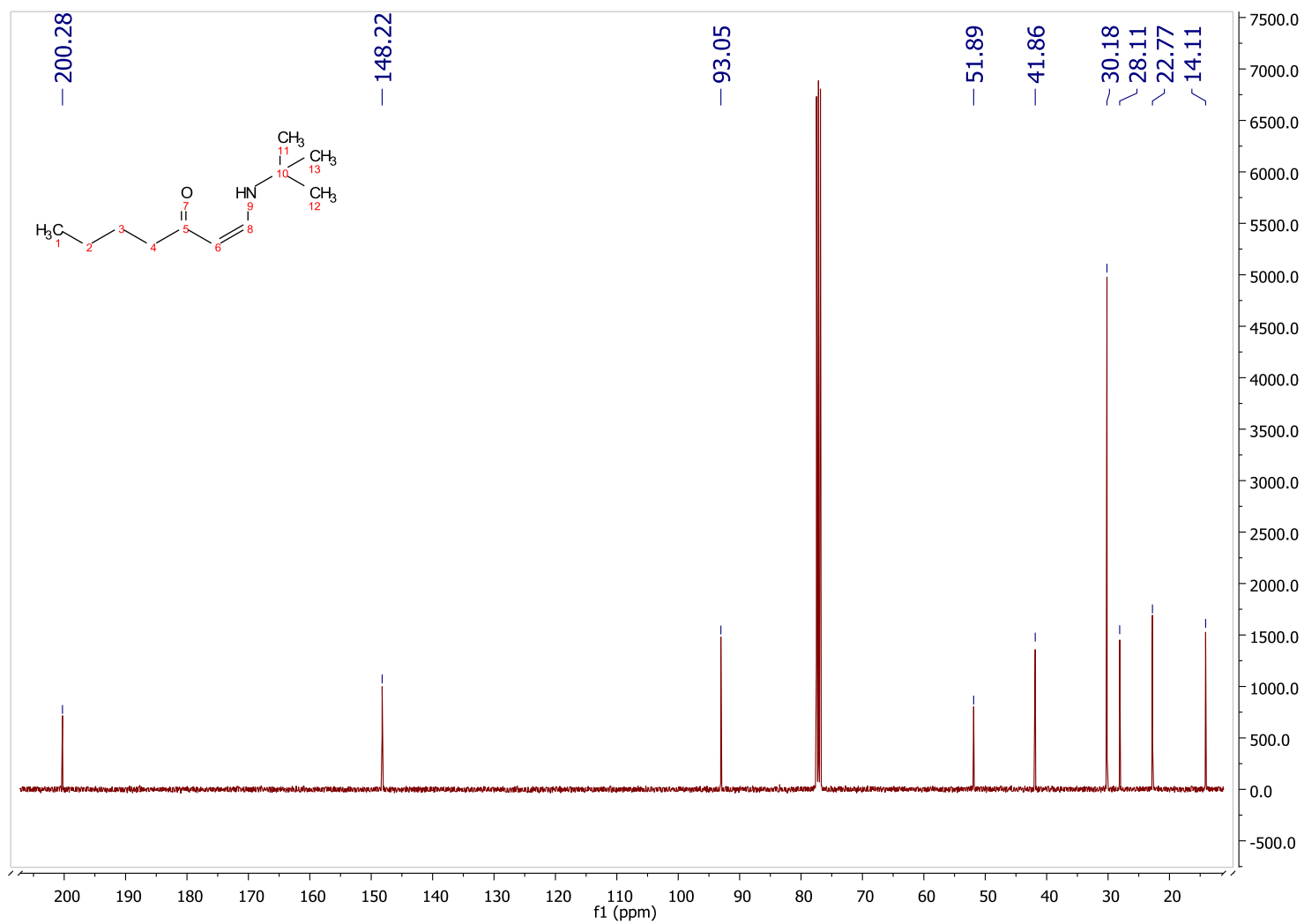
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¹H (Z)-1-(tert-butylamino)hept-1-en-3-one (2d)



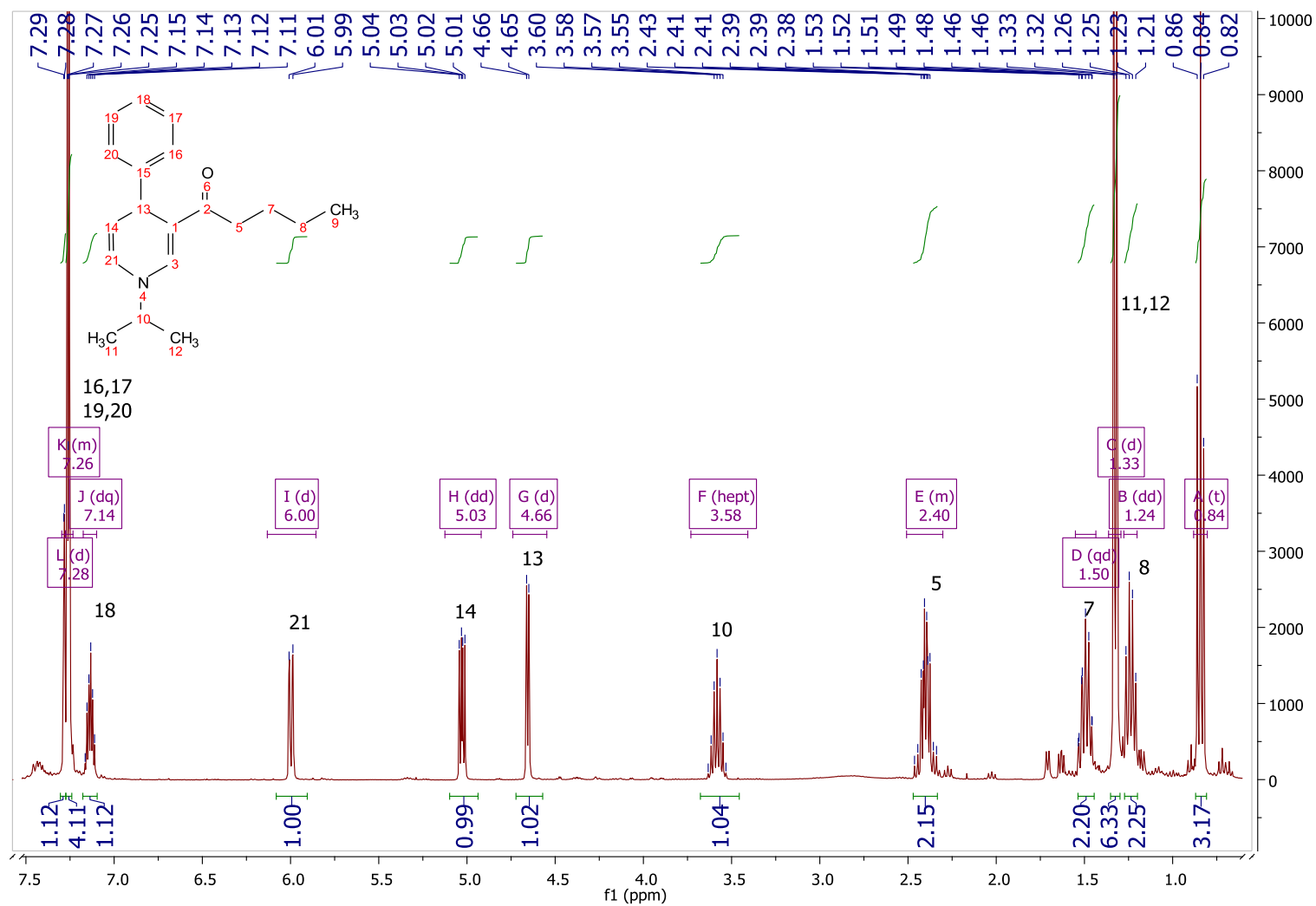
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^{13}C (Z)-1-(tert-butylamino)hept-1-en-3-one (2d)



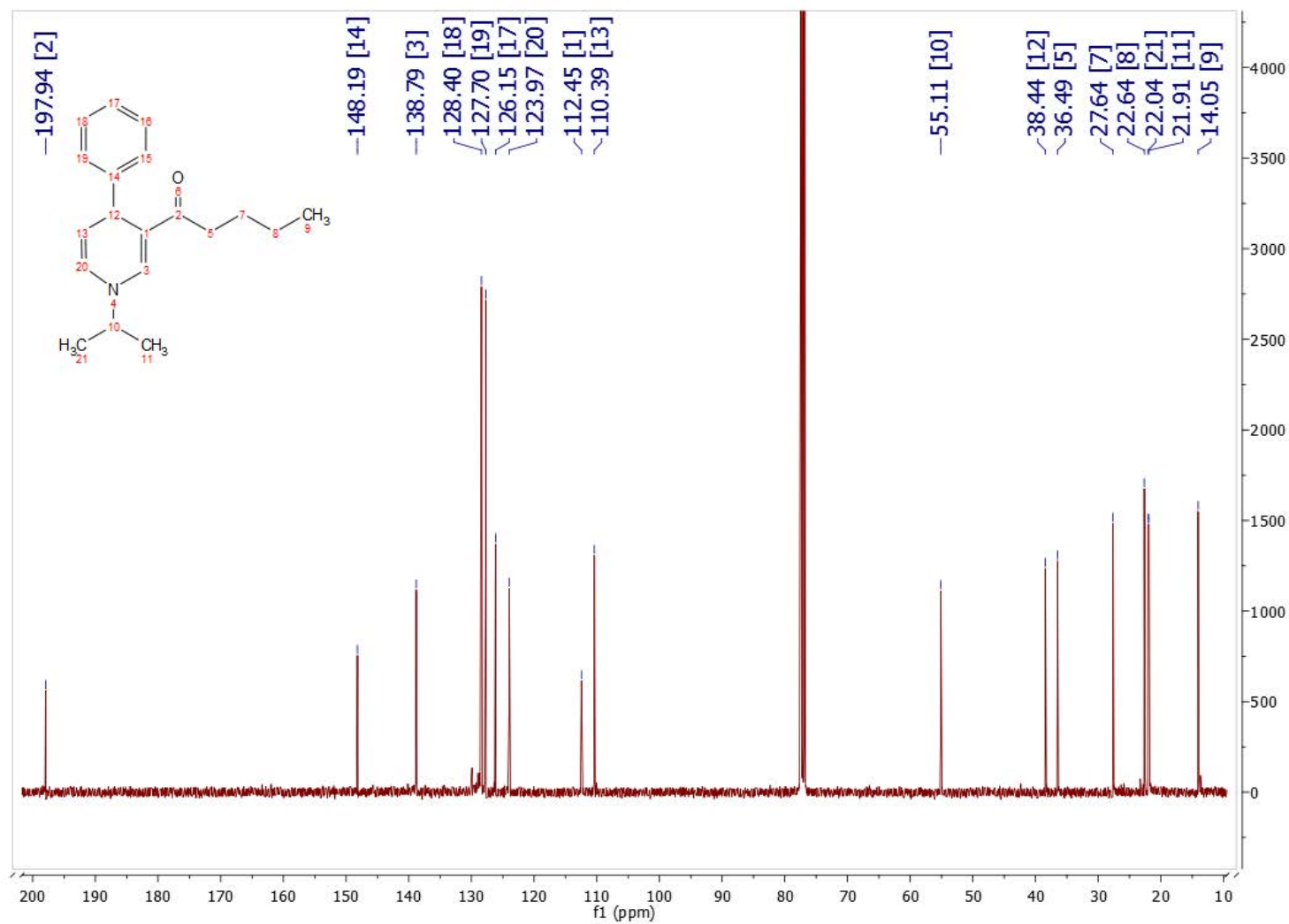
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¹H 3a (Table 2, entry 1)



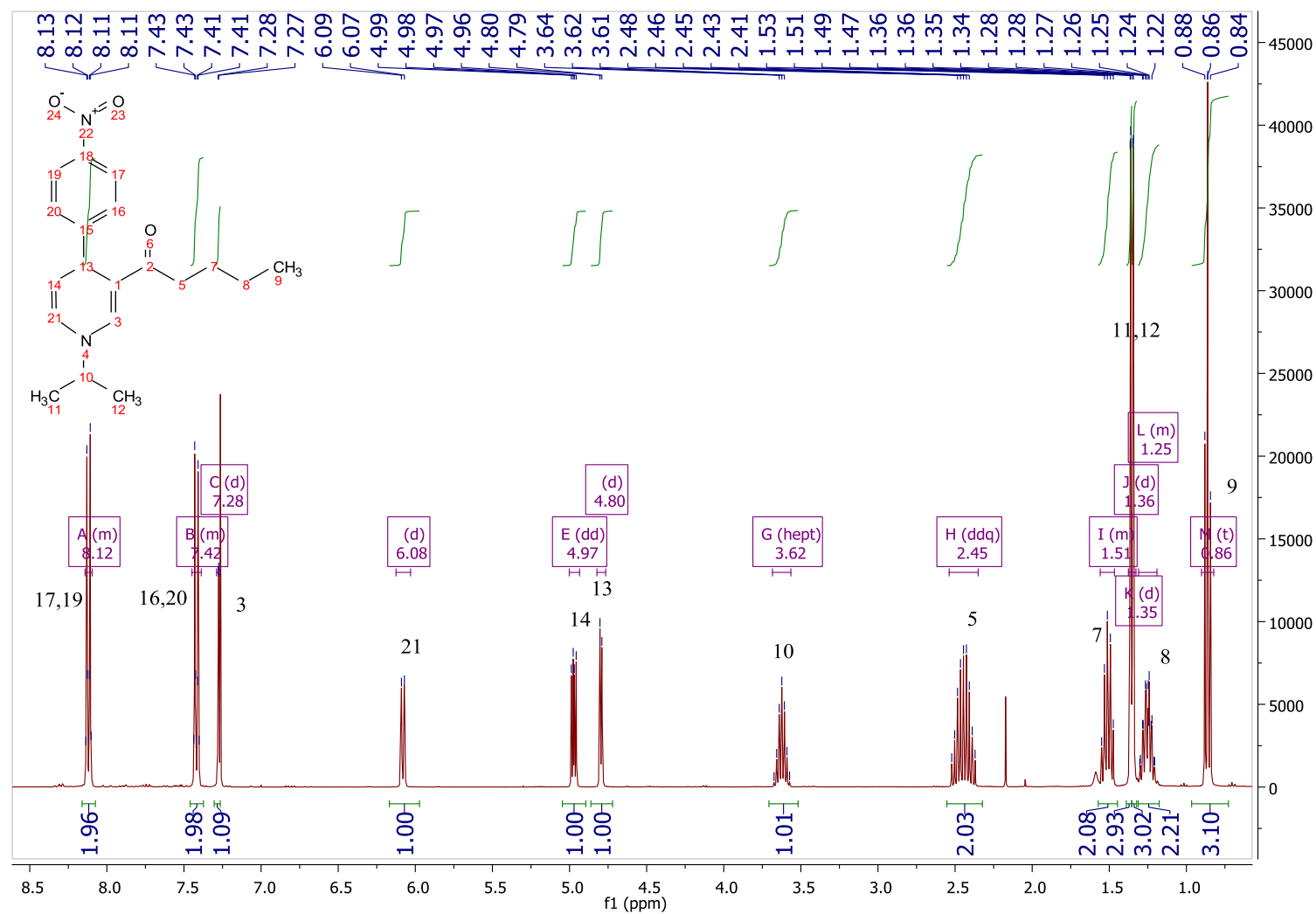
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¹³C 3a (Table 2, entry 1)



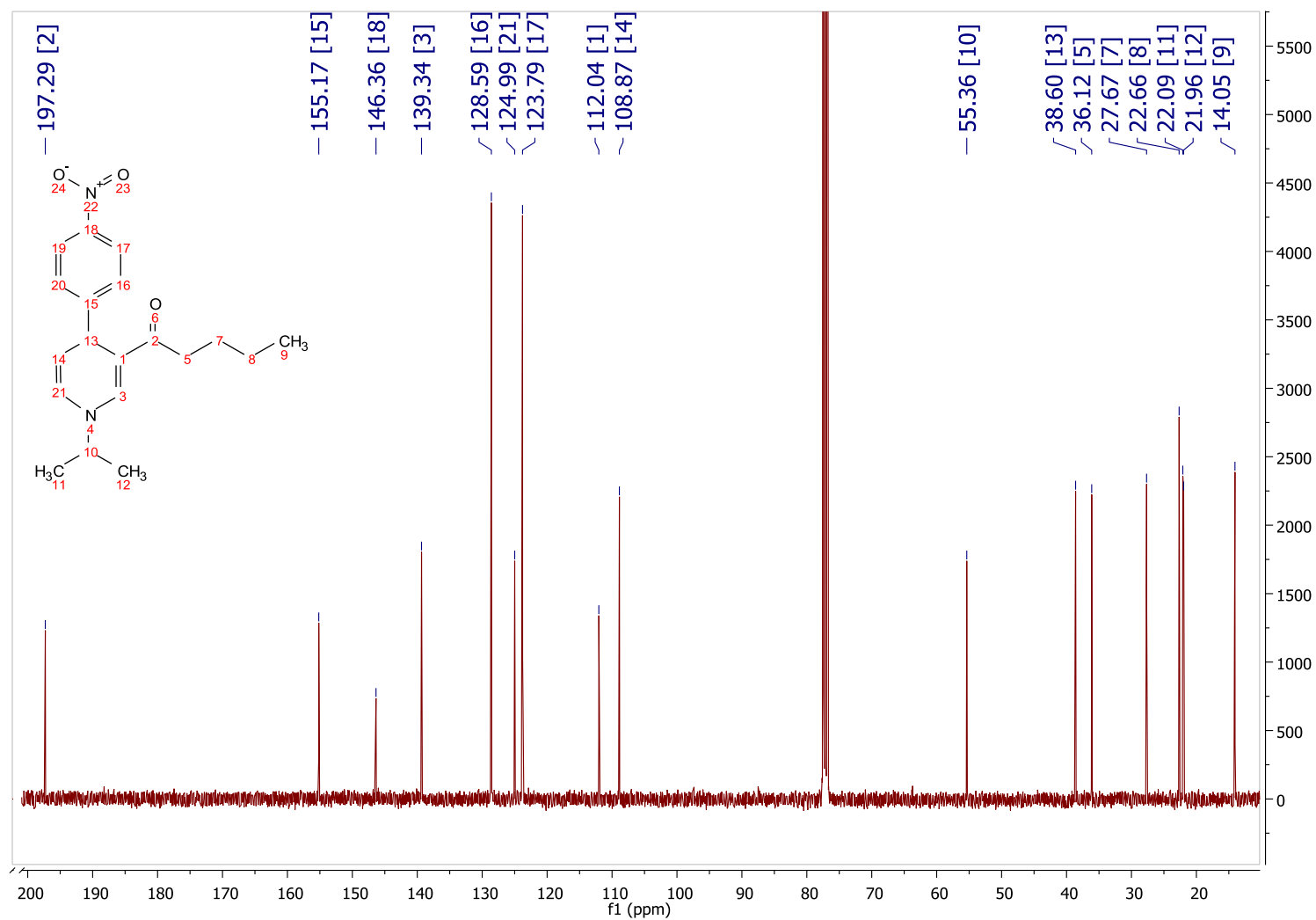
Measured in CDCl₃.

¹H 3b (Table 2, entry 2)



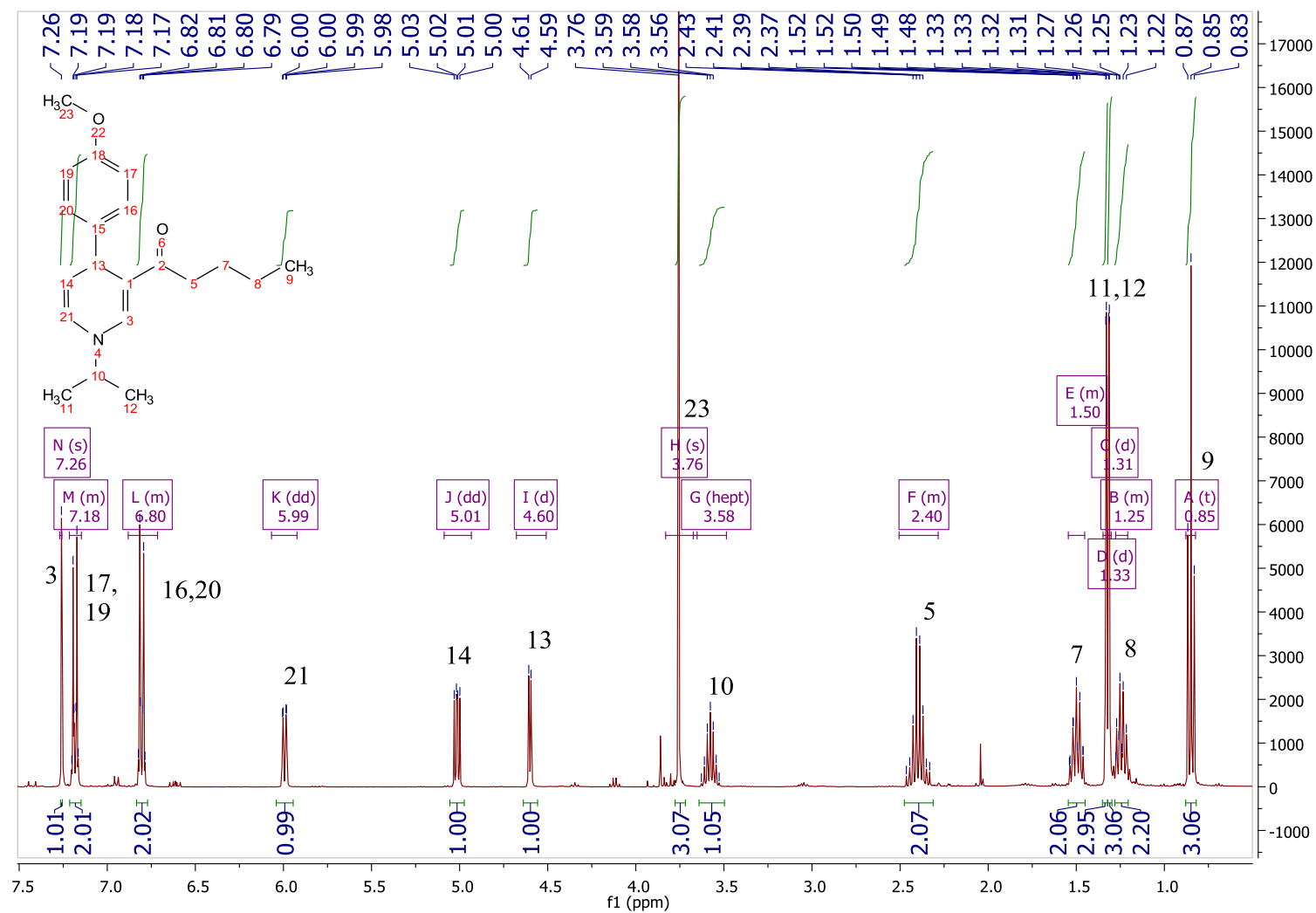
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¹³C 3b (Table 2, entry 2)



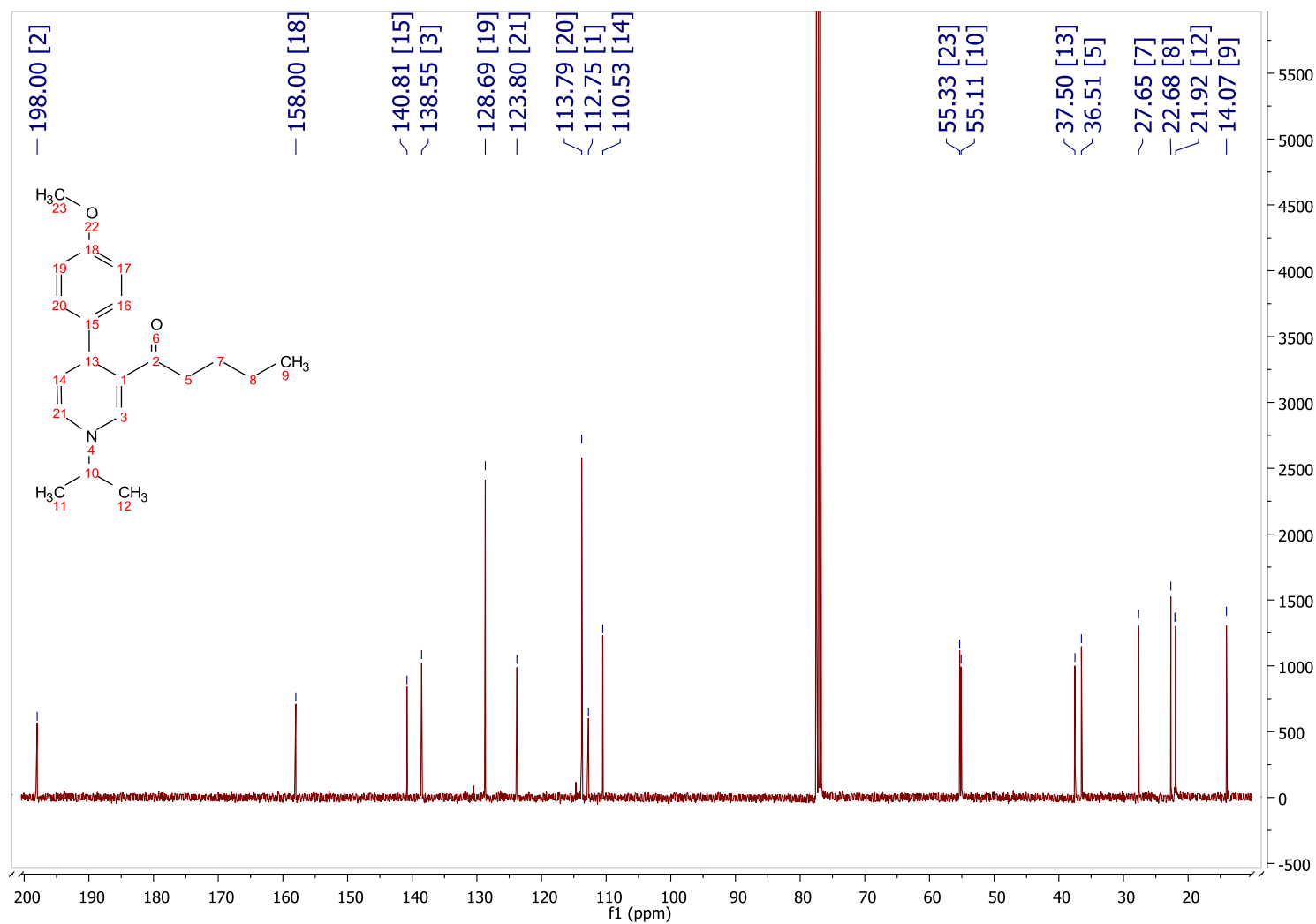
Measured in CDCl₃.

¹H 3c (Table 2, entry 3)



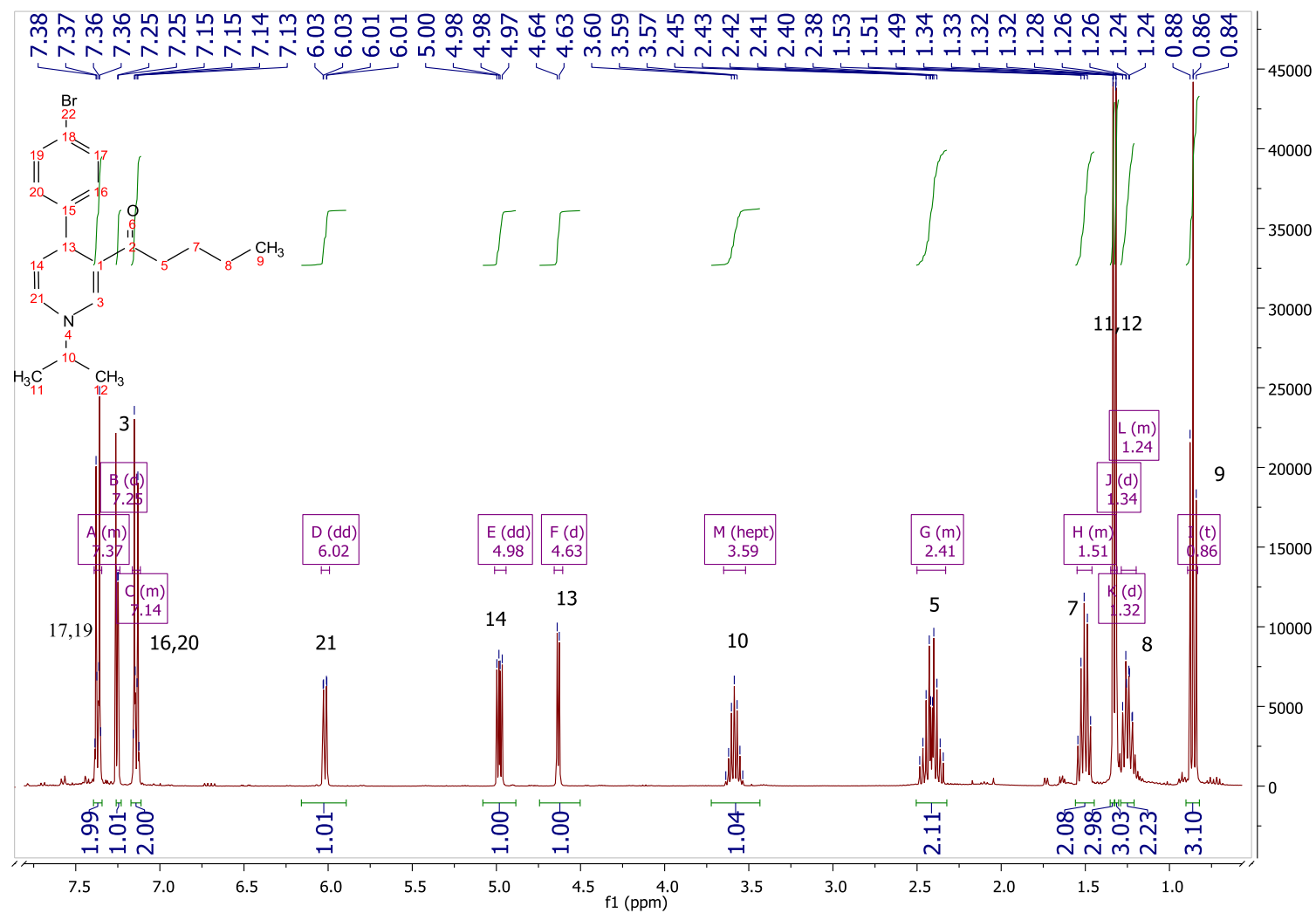
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¹³C 3c (Table 2, entry 3)



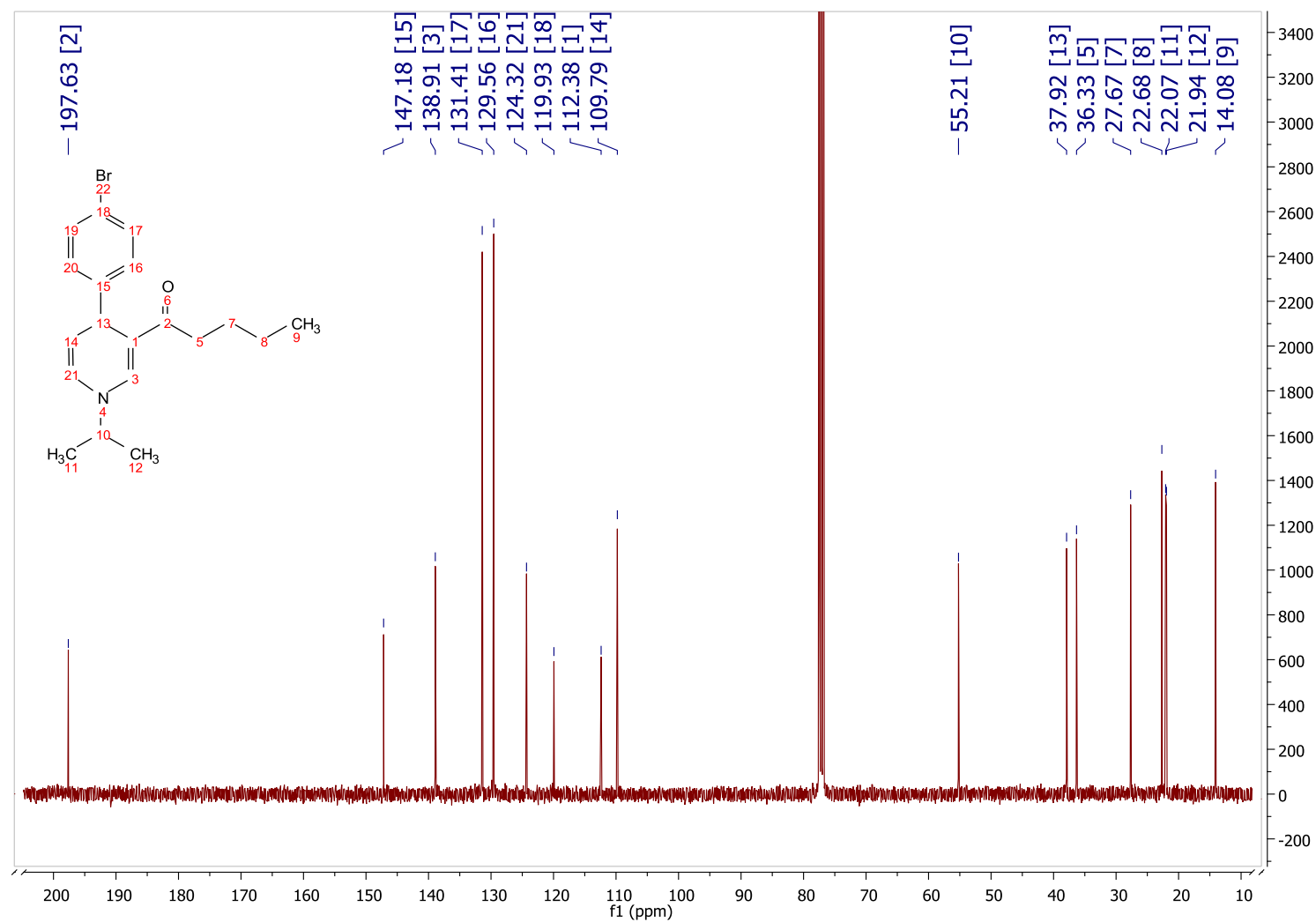
Measured in CDCl₃.

¹H 3d (Table 2, entry 4)



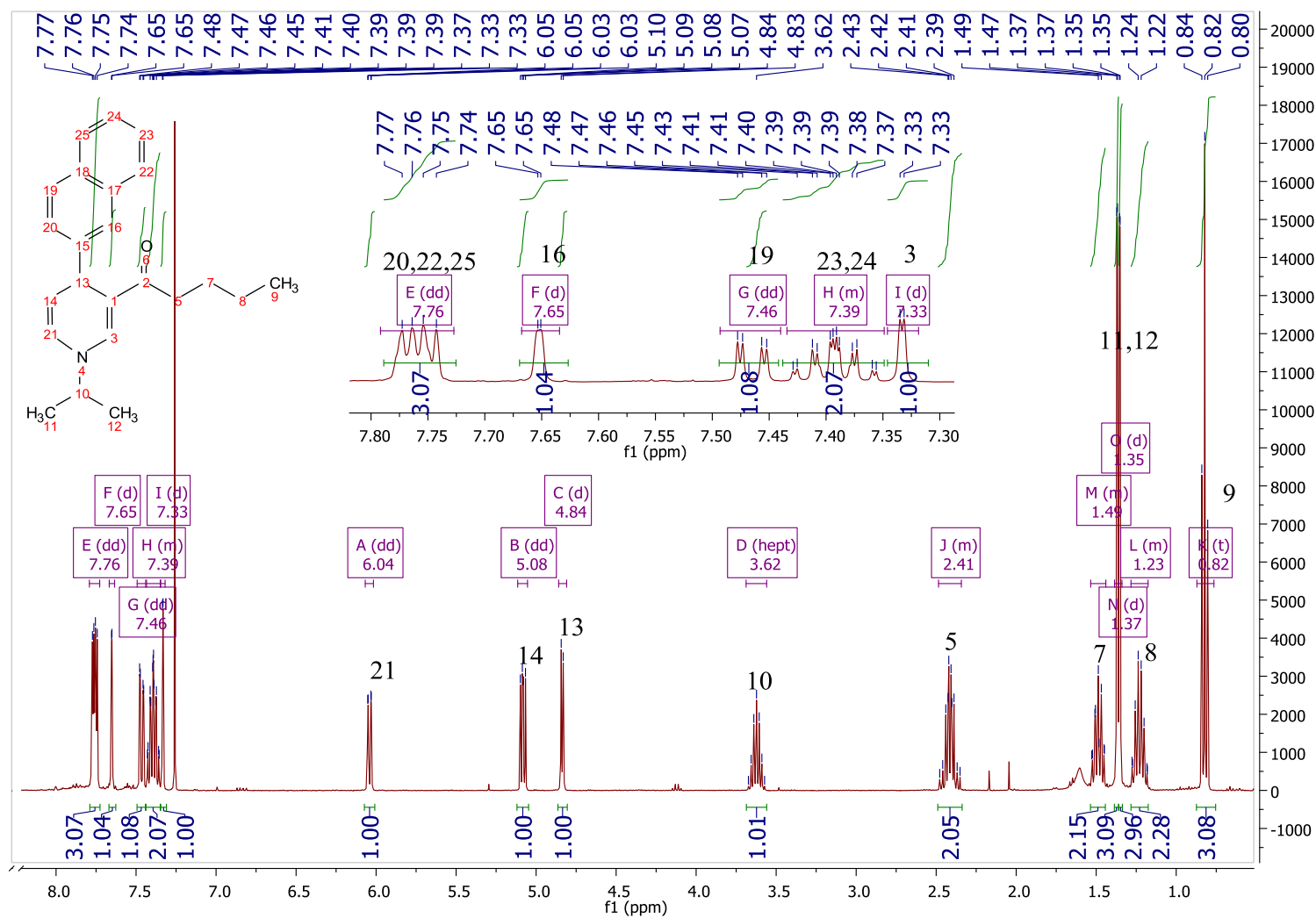
Measured in CDCl₃.

¹³C 3d (Table 2, entry 4)



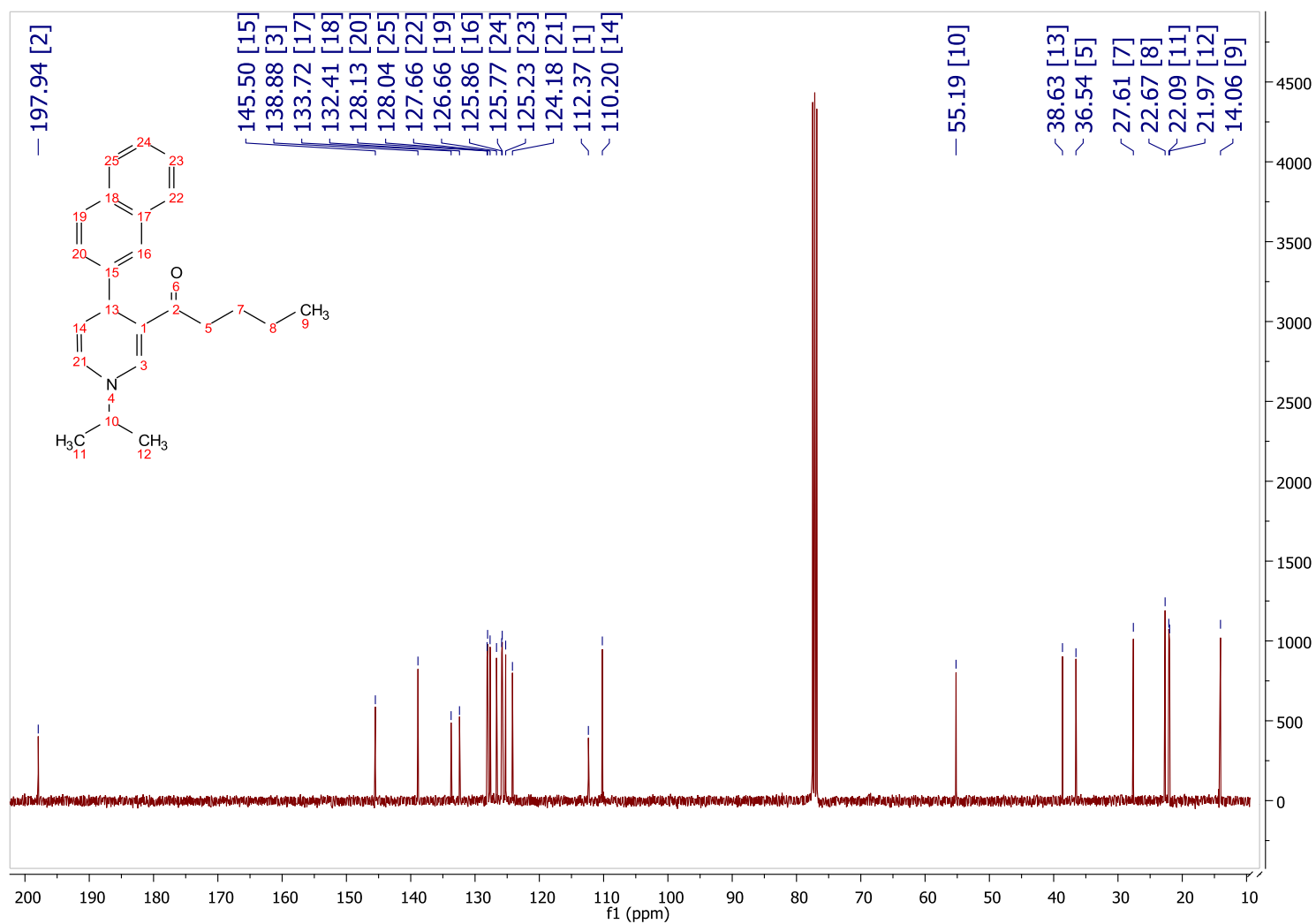
Measured in CDCl₃.

¹H 3e (Table 2, entry 5)



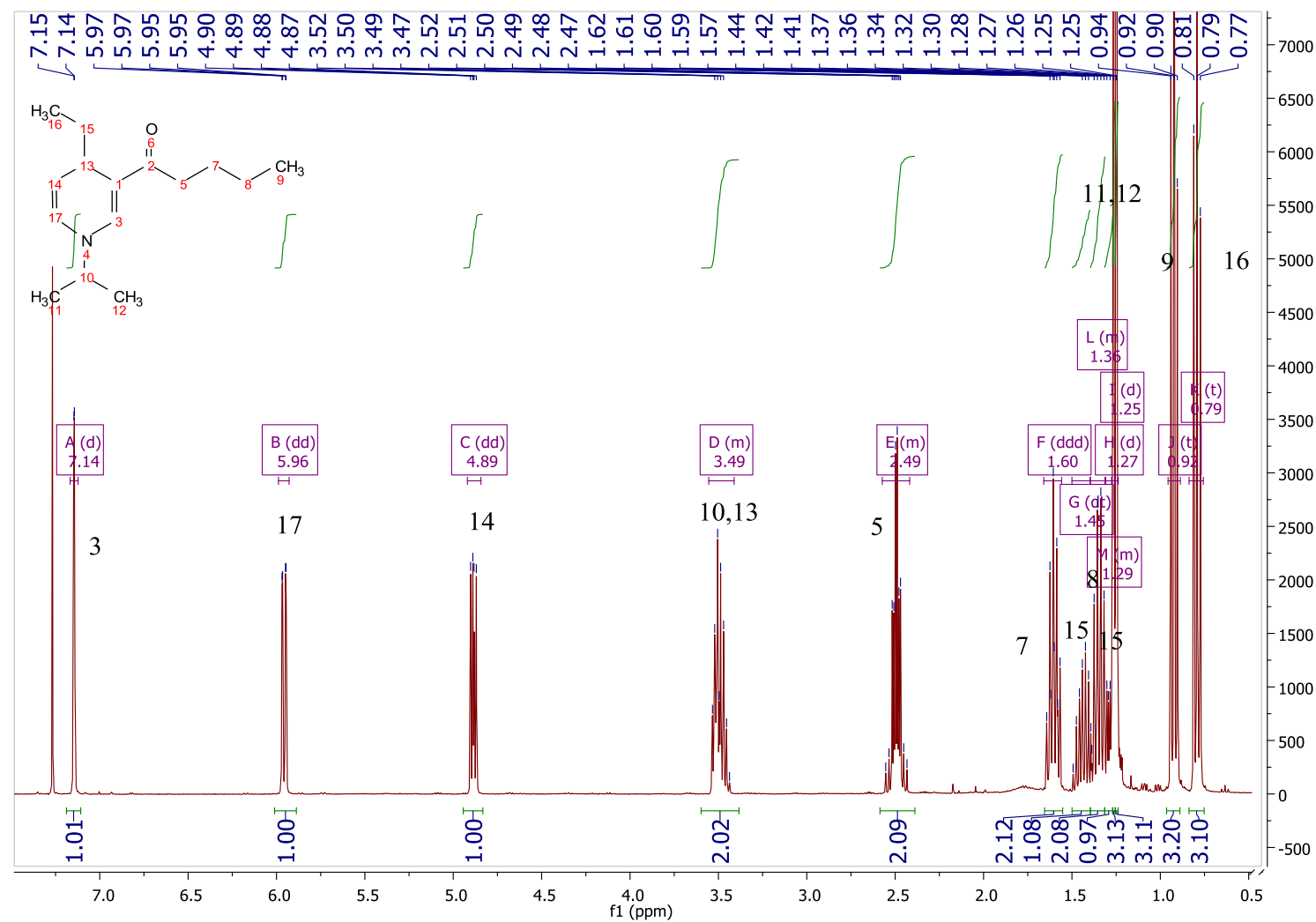
Measured in CDCl₃.

¹³C 3e (Table 2, entry 5)



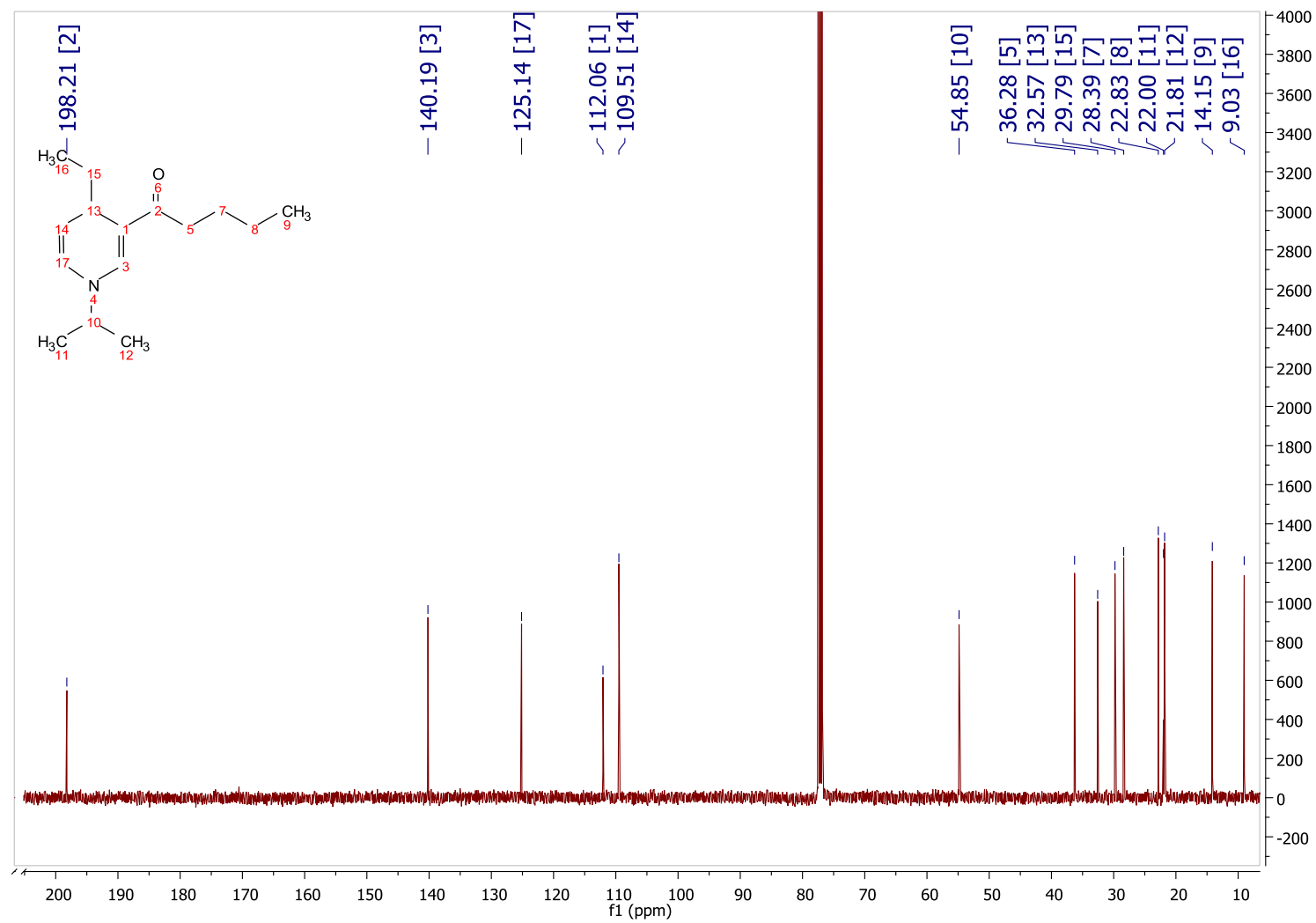
Measured in CDCl₃.

¹H 3f (Table 2, entry 6)



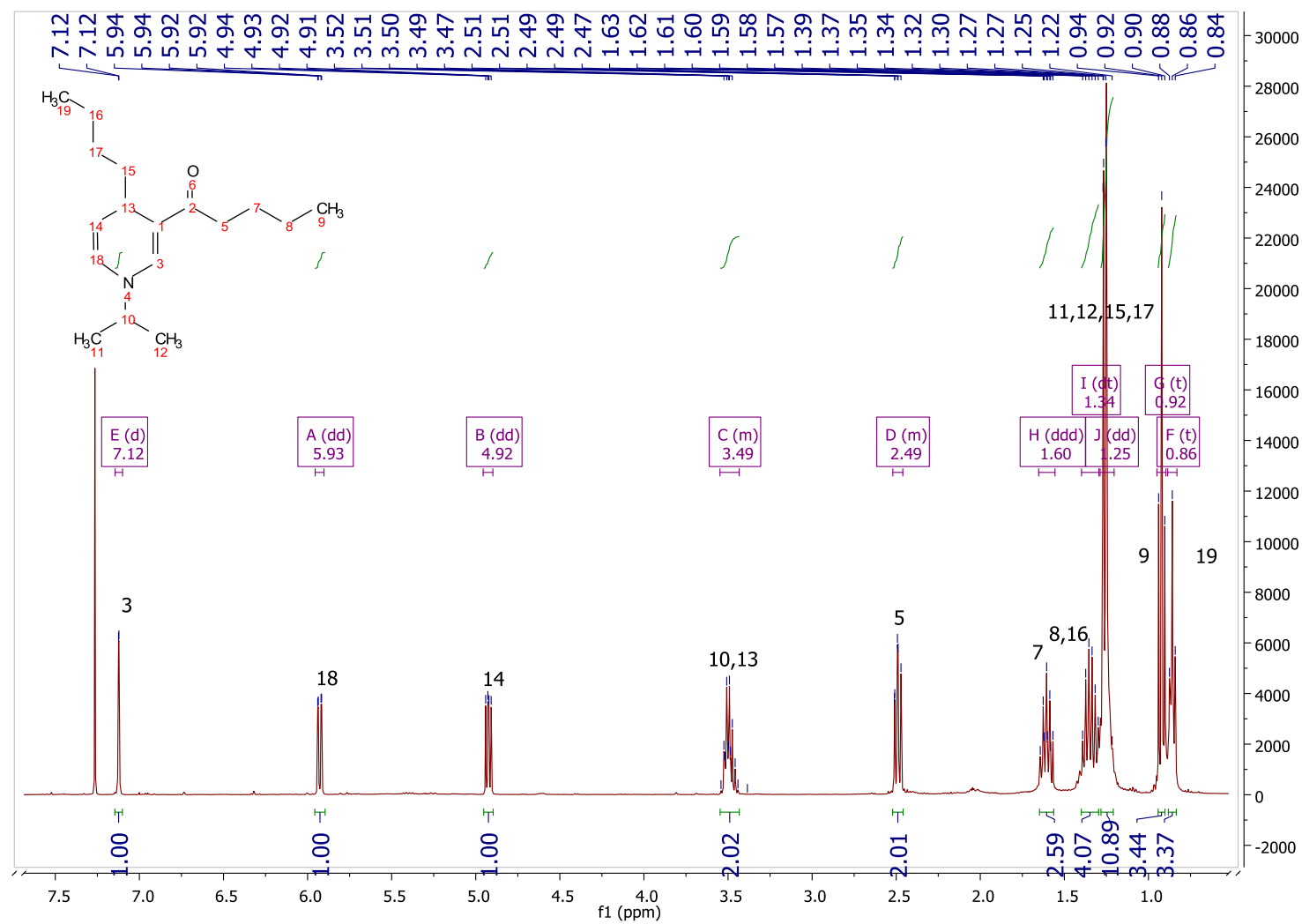
Measured in CDCl₃.

^{13}C 3f (Table 2, entry 6)



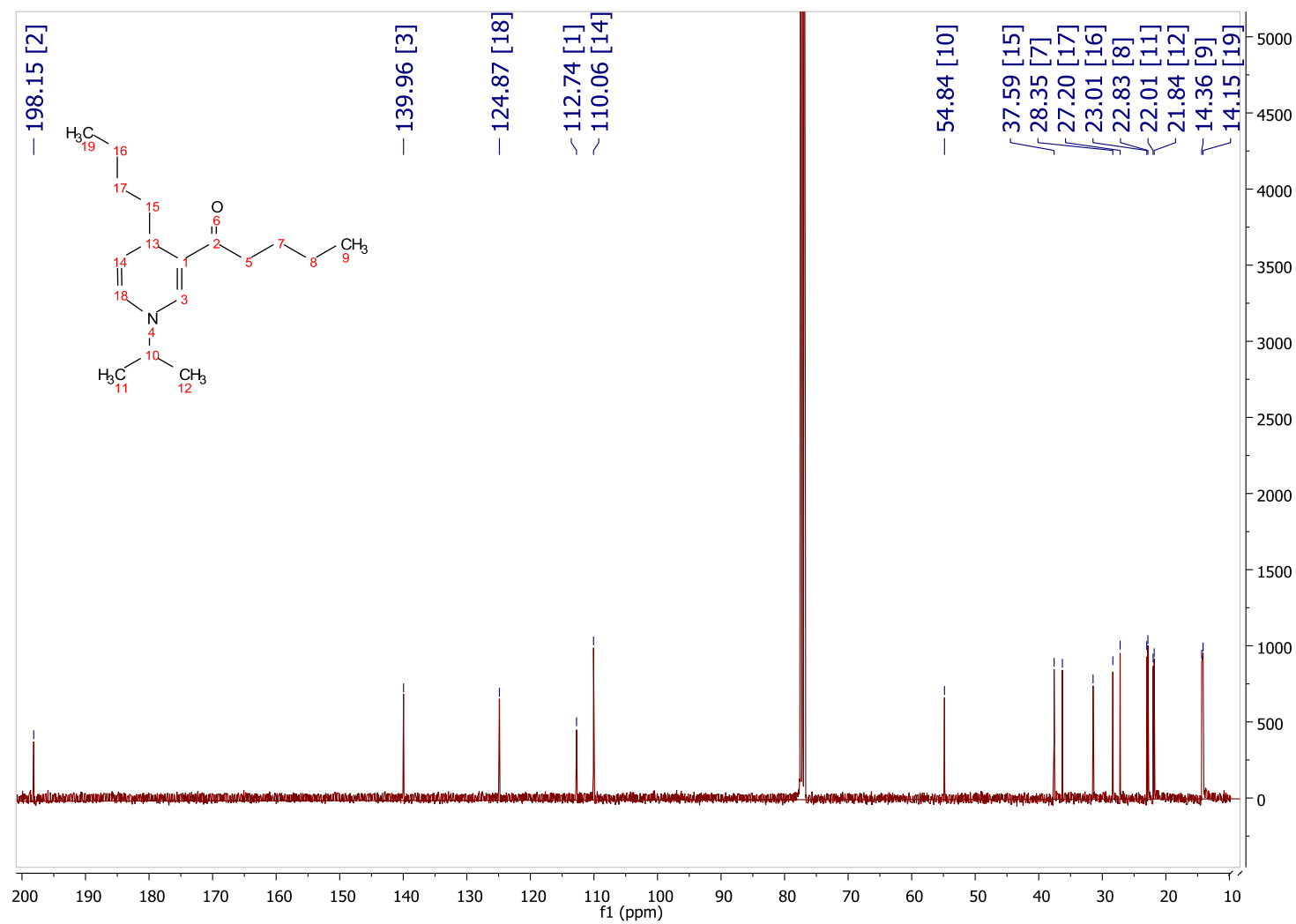
Measured in CDCl₃.

¹H 3g (Table 2, entry 7)



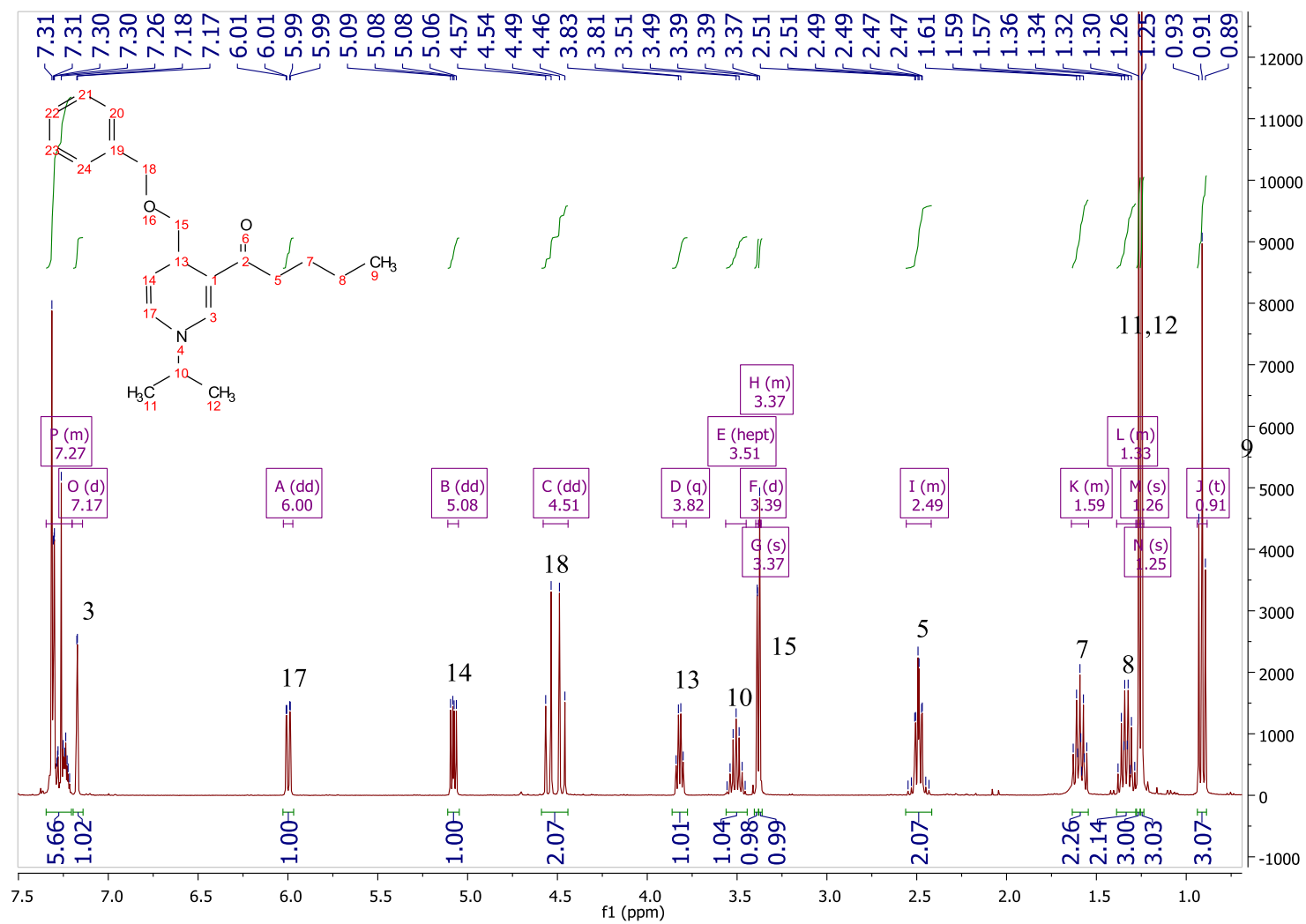
Measured in CDCl₃.

^{13}C 3g (Table 2, entry 7)



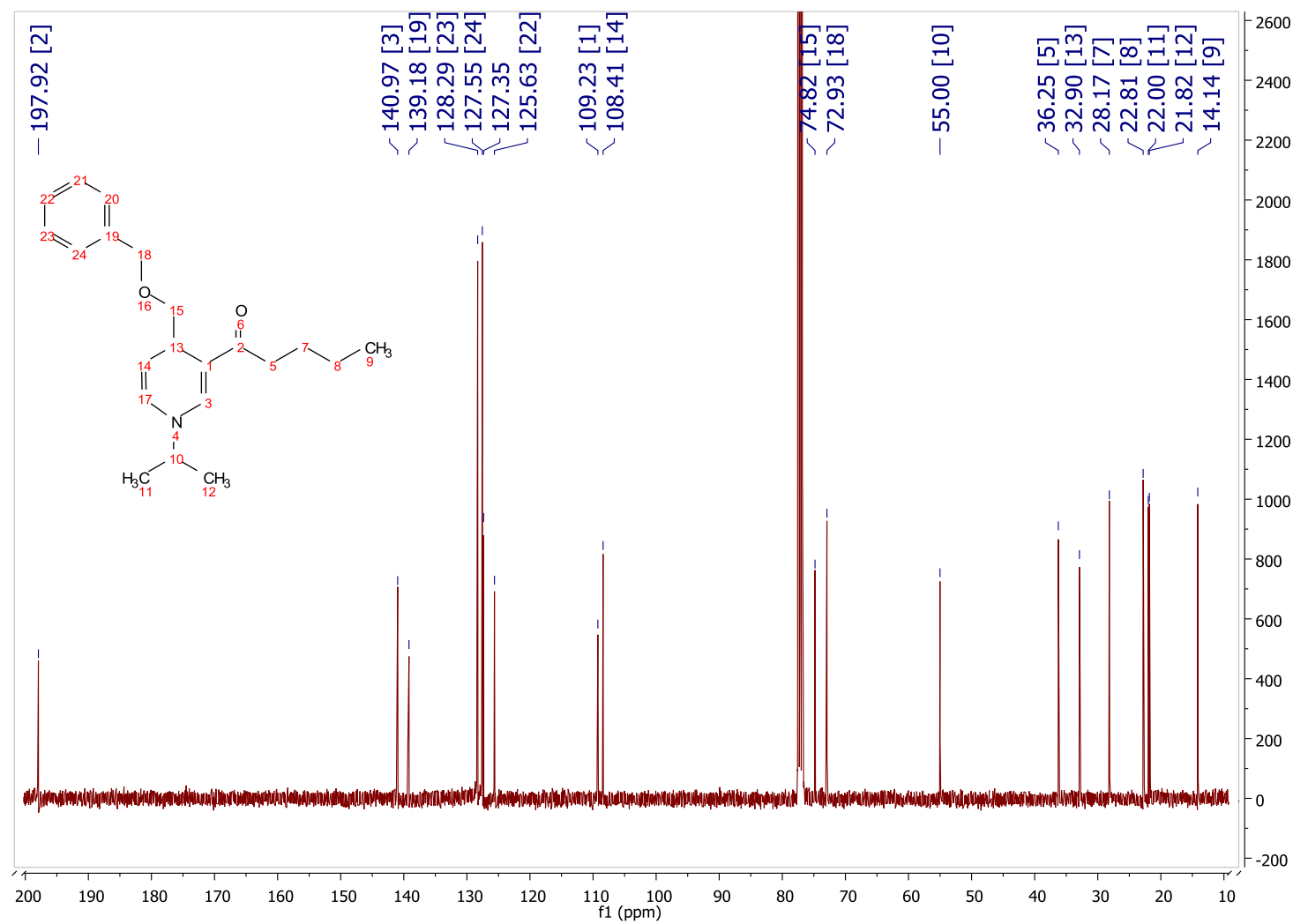
Measured in CDCl₃.

¹H 3h (Table 2, entry 8)



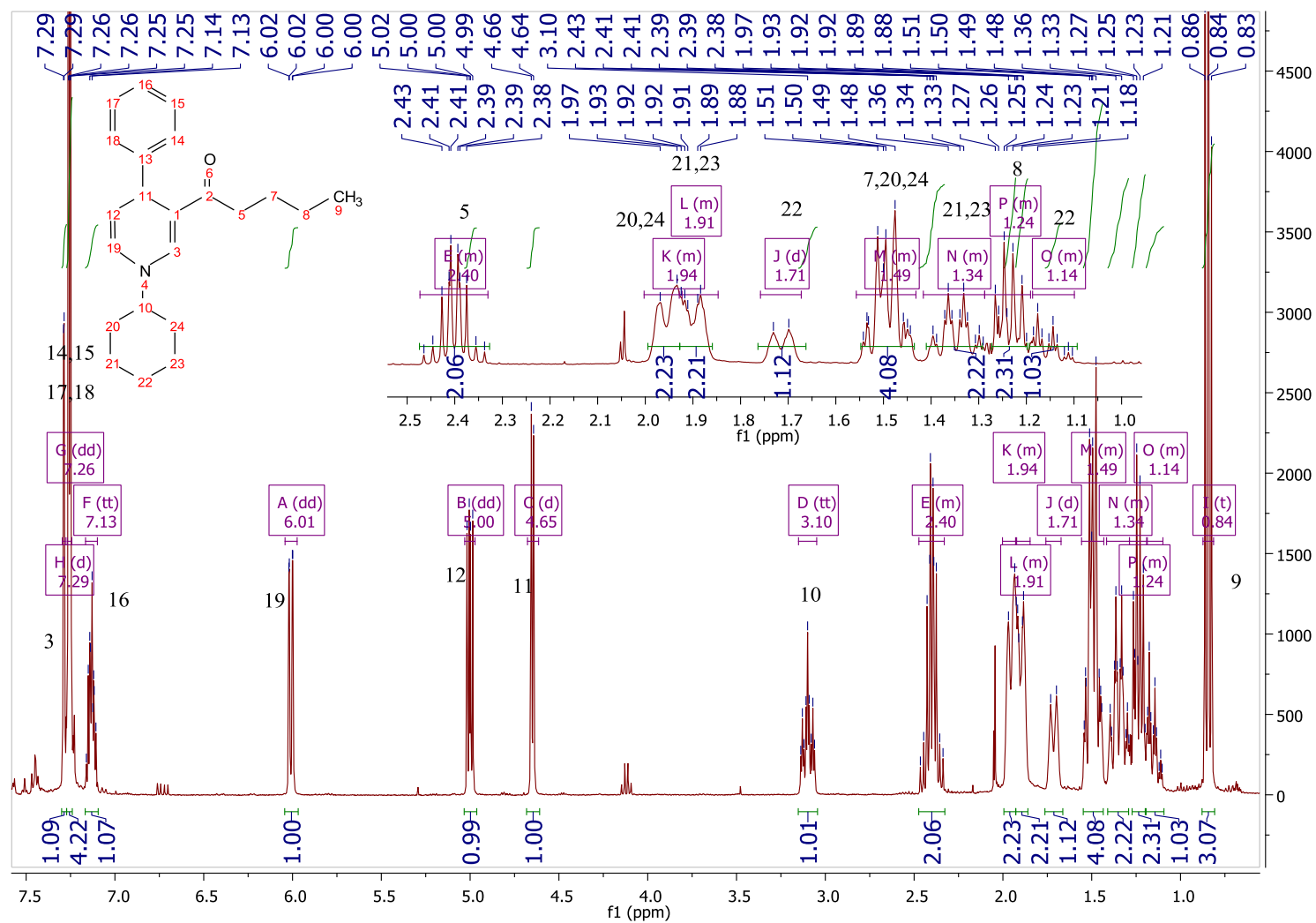
Measured in CDCl₃.

¹³C 3h (Table 2, entry 8)



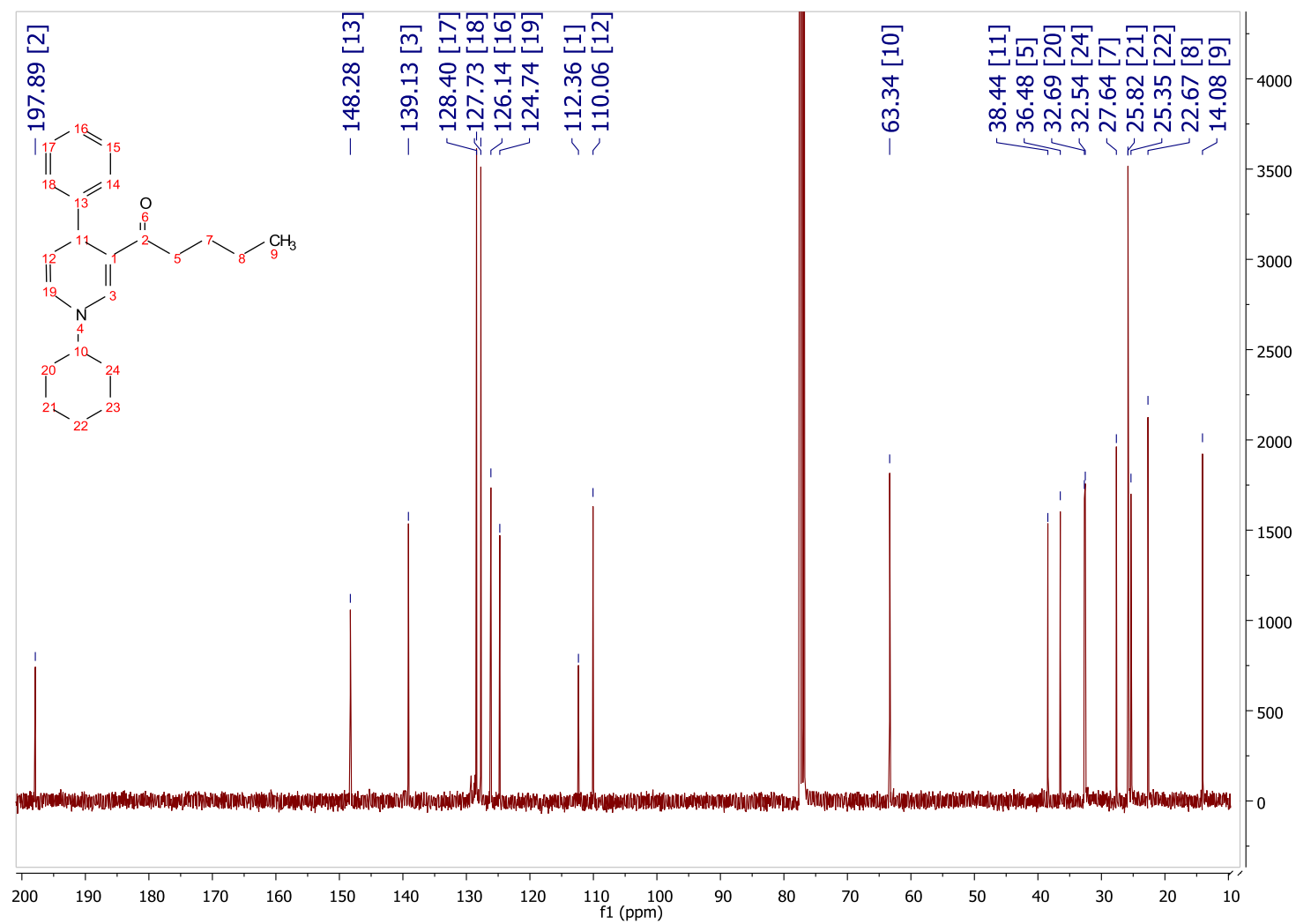
Measured in CDCl₃.

¹H 3i (Table 3, entry 1)



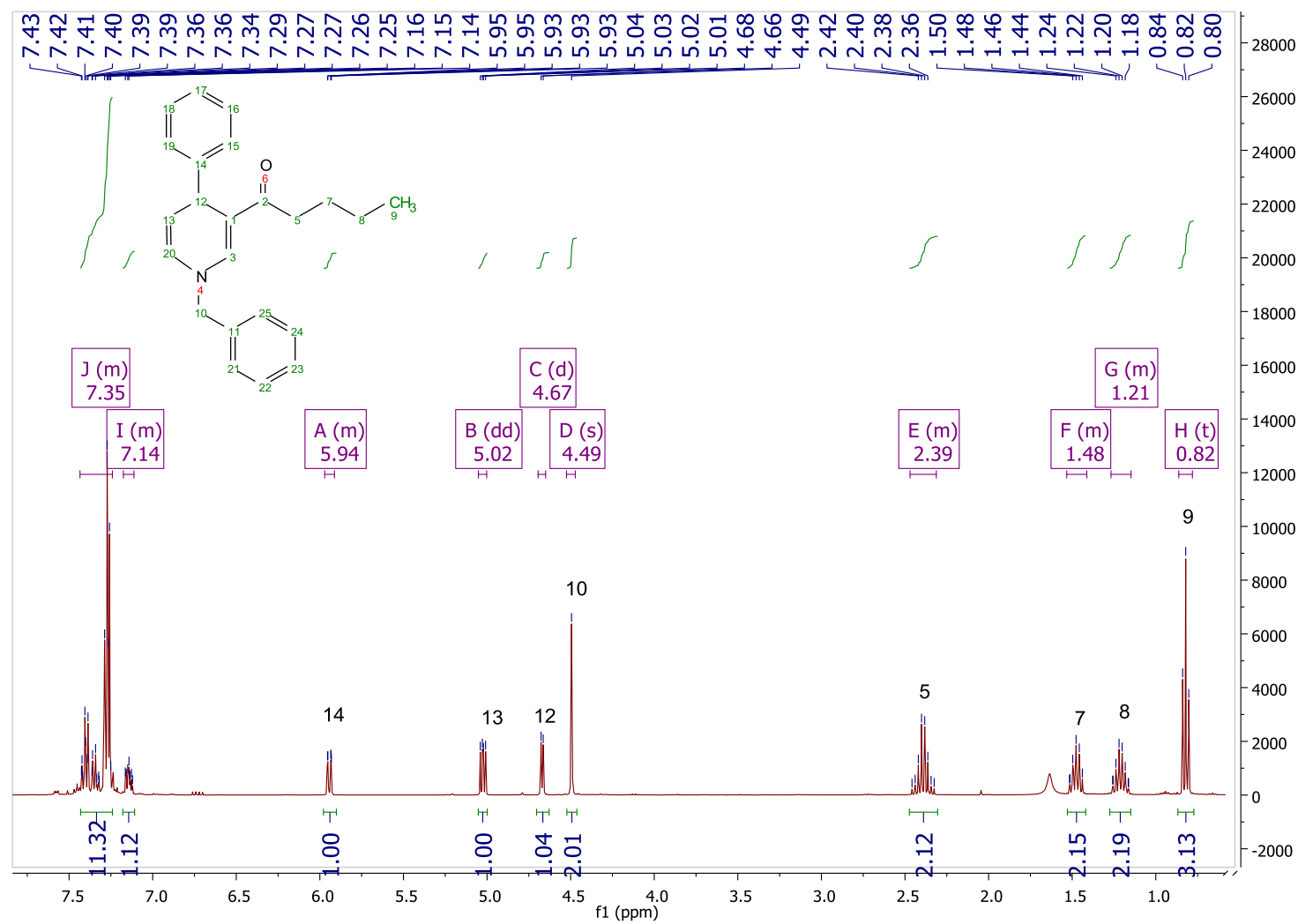
Measured in CDCl₃.

¹³C 3i (Table 3, entry 1)



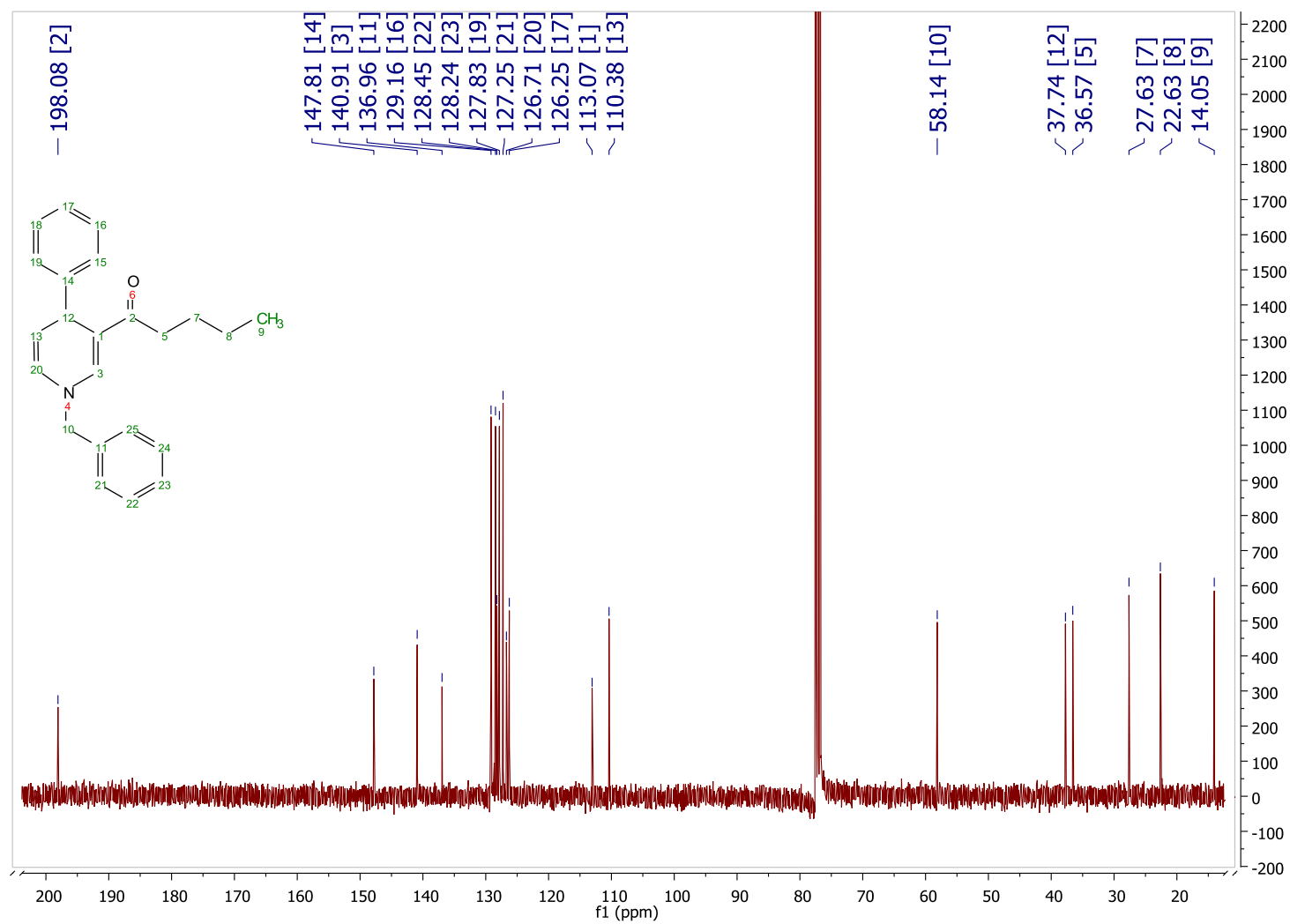
Measured in CDCl₃.

¹H 3j (Table 3, entry 2)



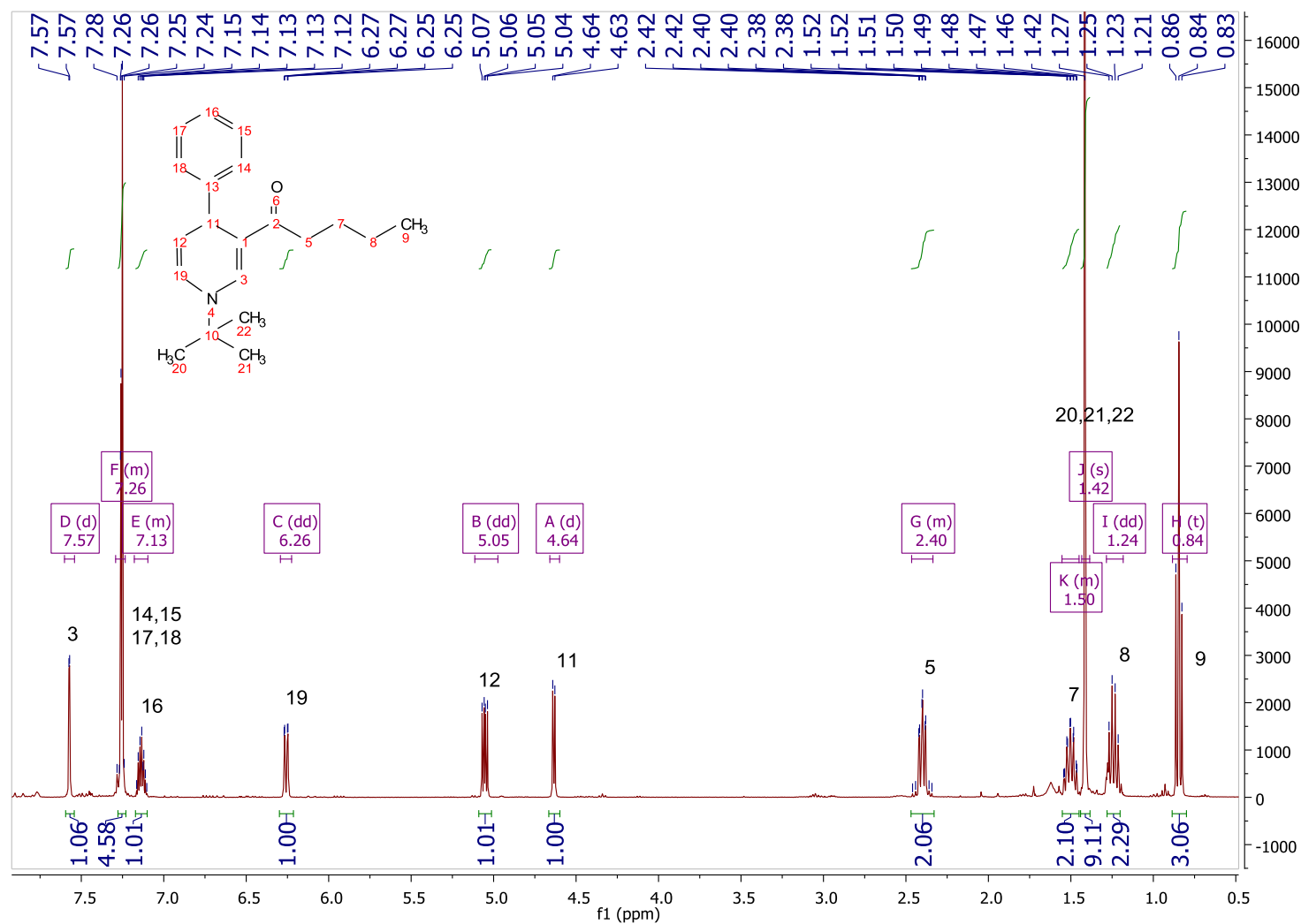
Measured in CDCl₃

¹³C 3j (Table 3, entry 2)



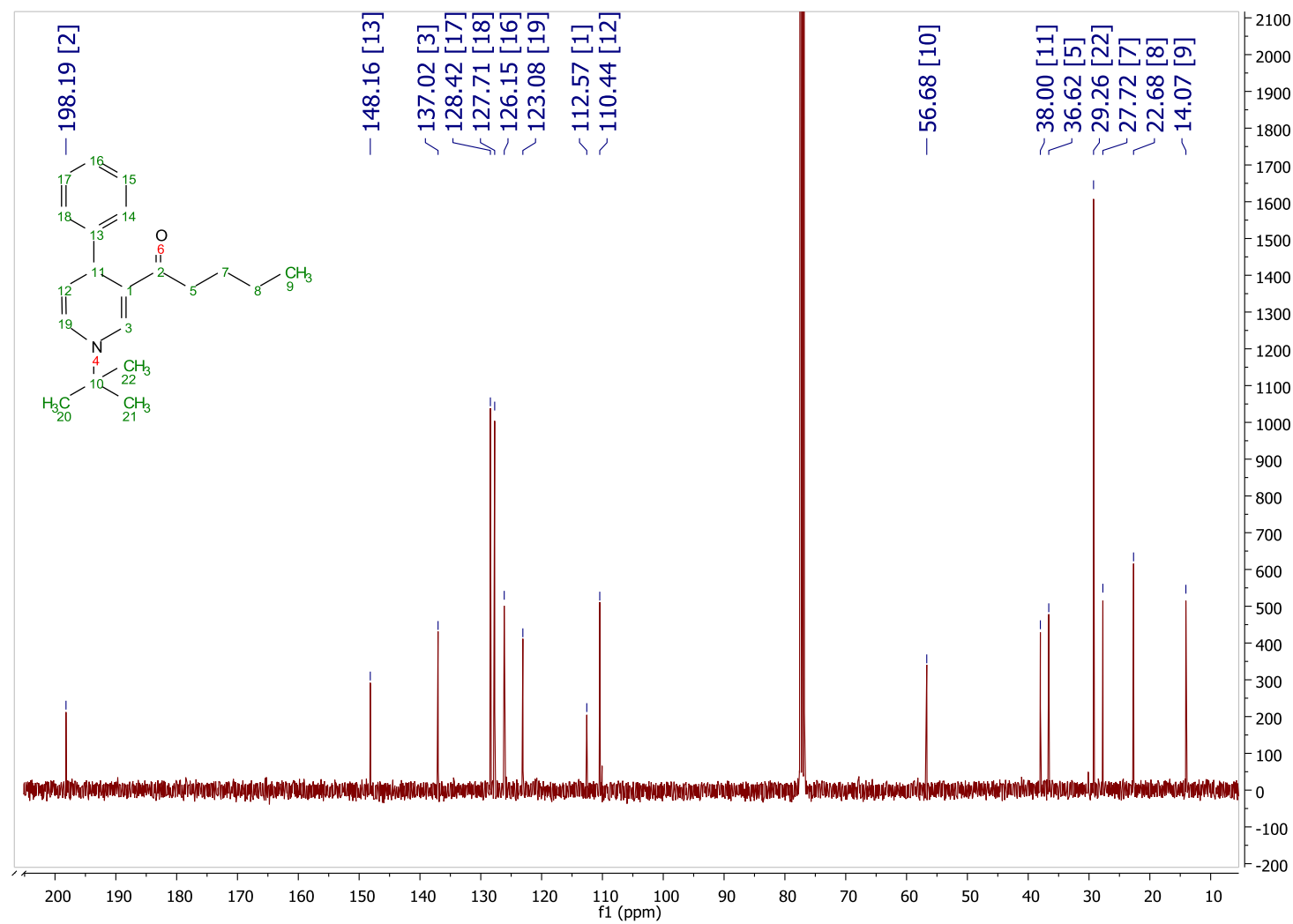
Measured in CDCl₃.

¹H 3k (Table 3, entry 3)



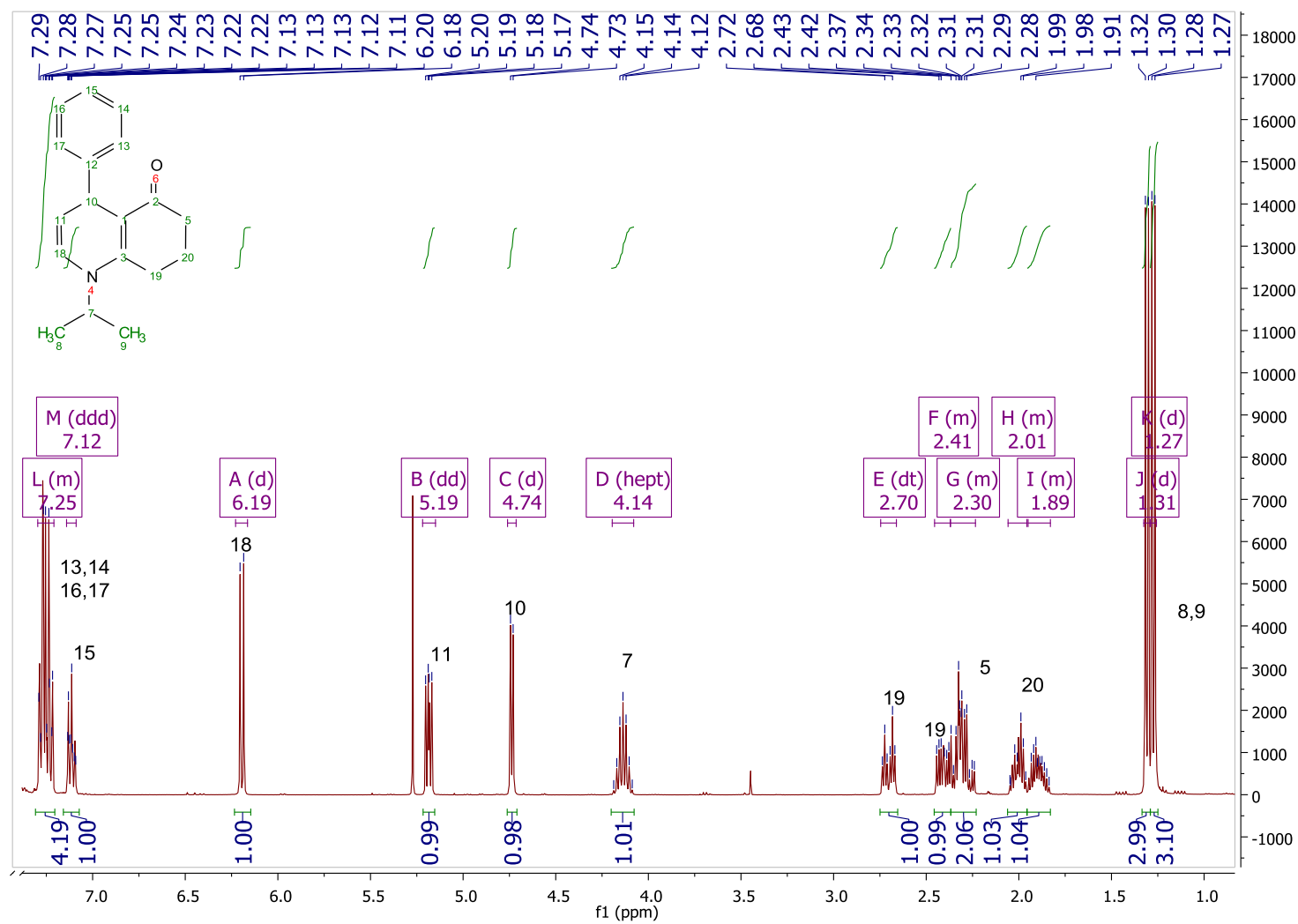
Measured in CDCl₃.

¹³C 3k (Table 3, entry 3)



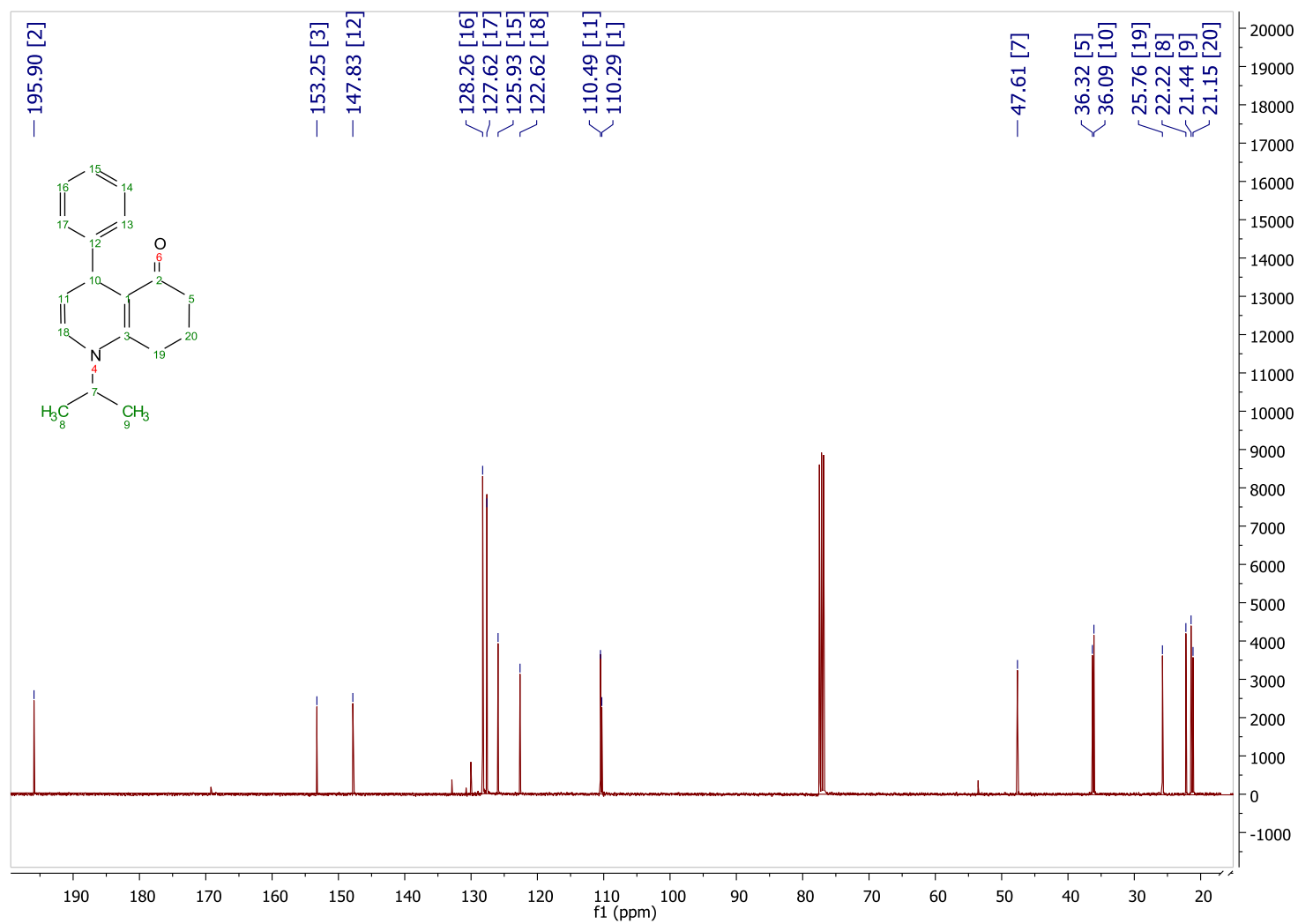
Measured in CDCl₃.

¹H 3l (Table 3, entry 4)



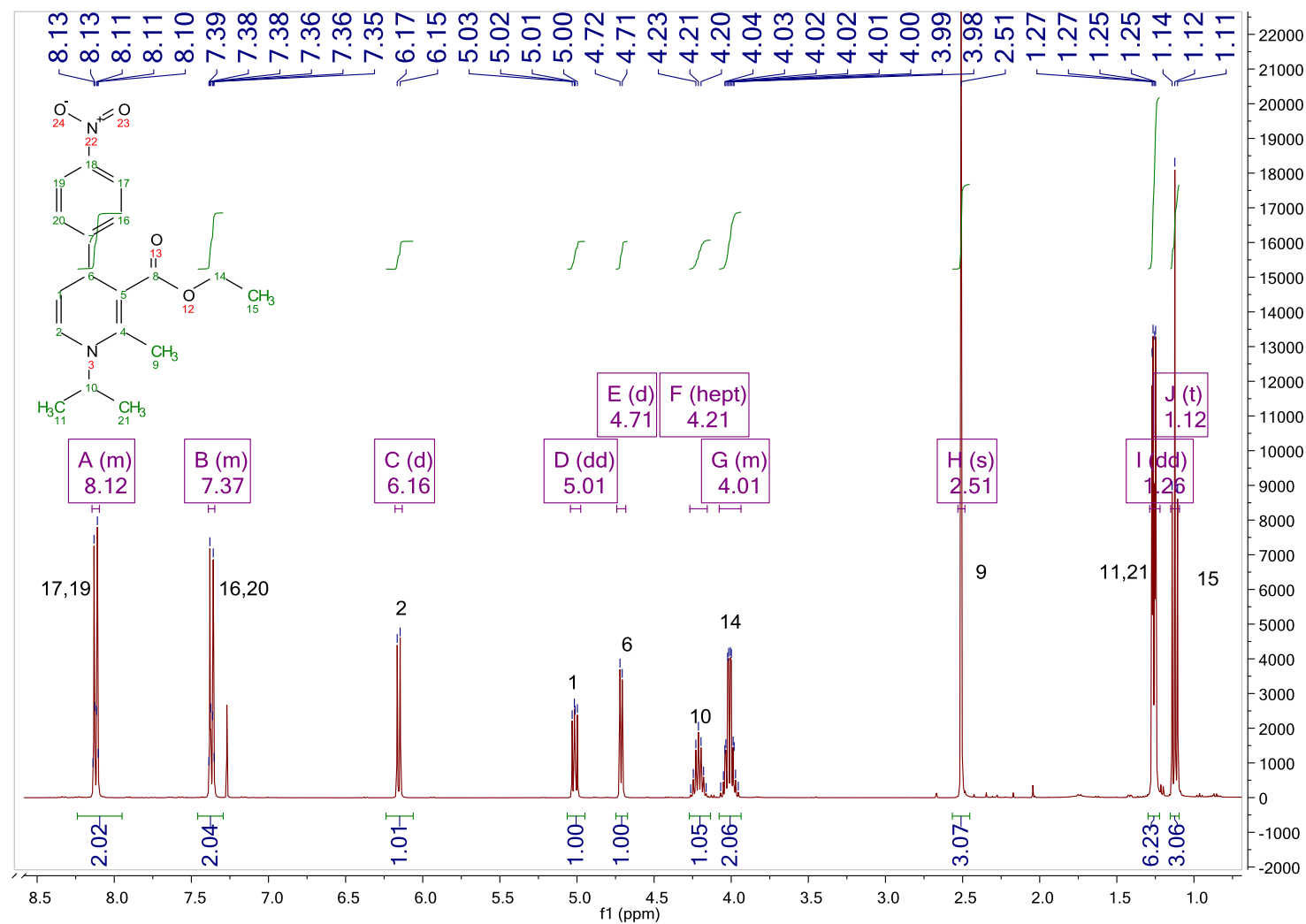
Measured in CDCl₃.

^{13}C 3l (Table 3, entry 4)



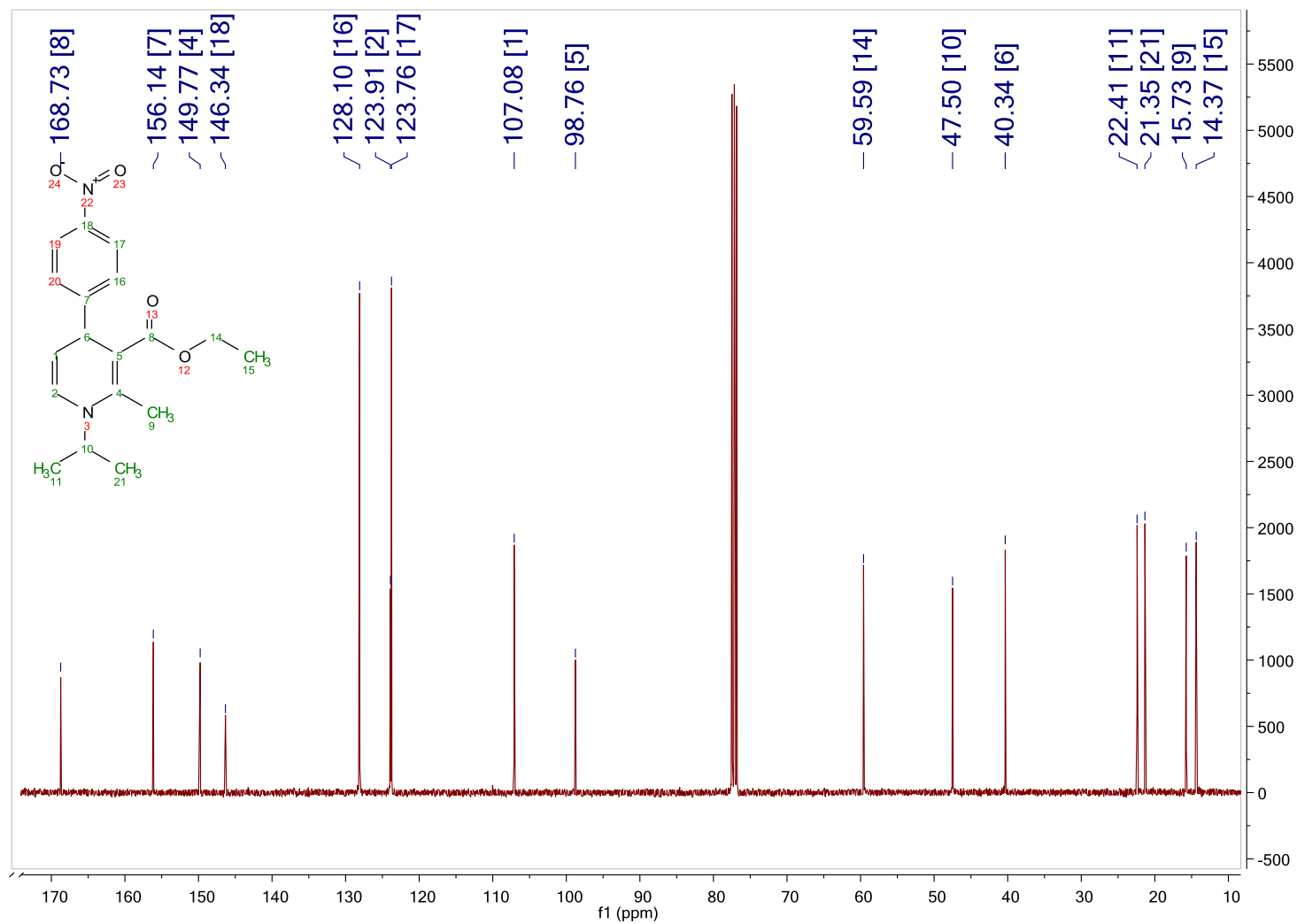
Measured in CDCl_3 .

¹H 3m (Table 3, entry 5)



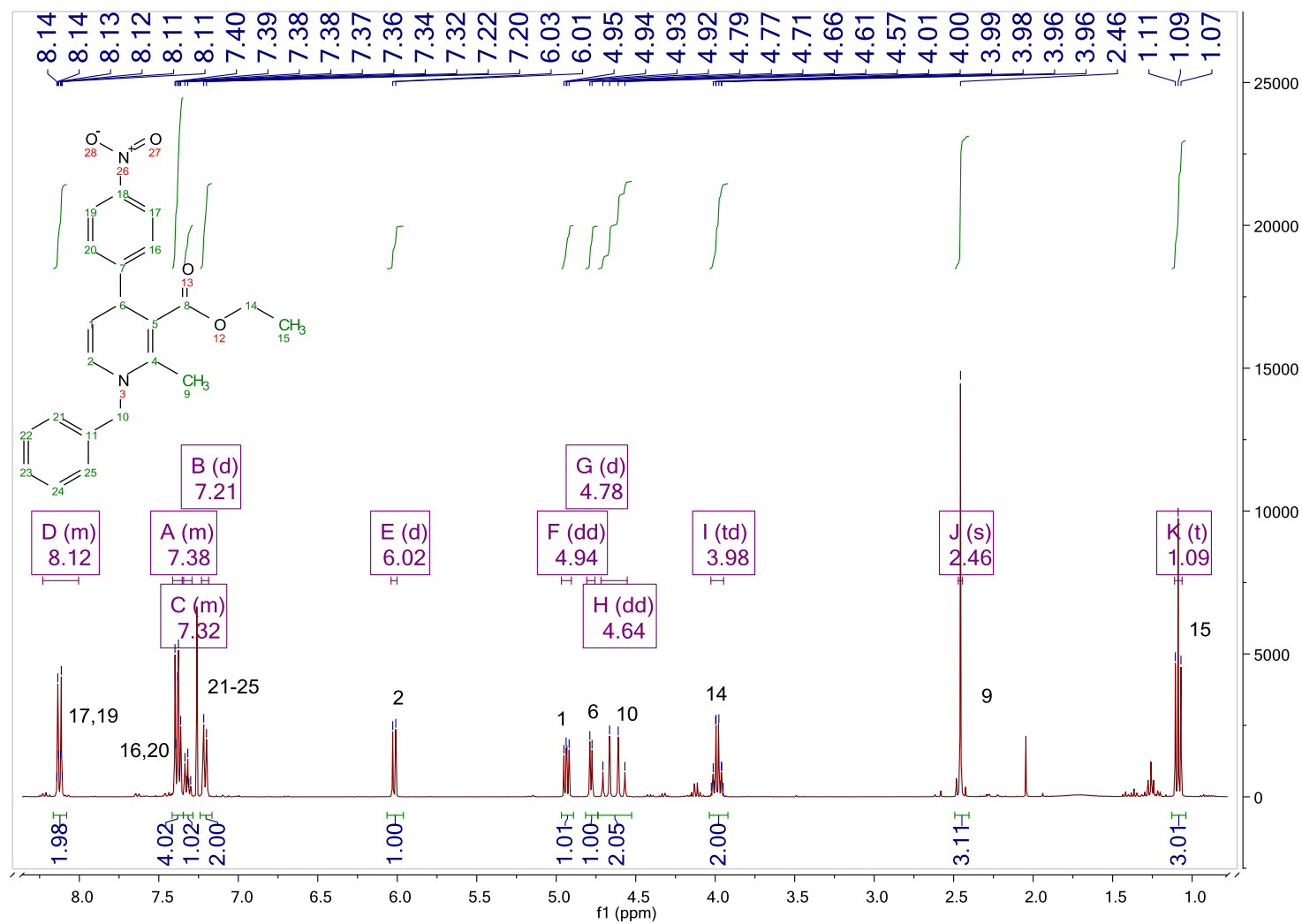
Measured in CDCl₃.

^{13}C 3m (Table 3, entry 5)



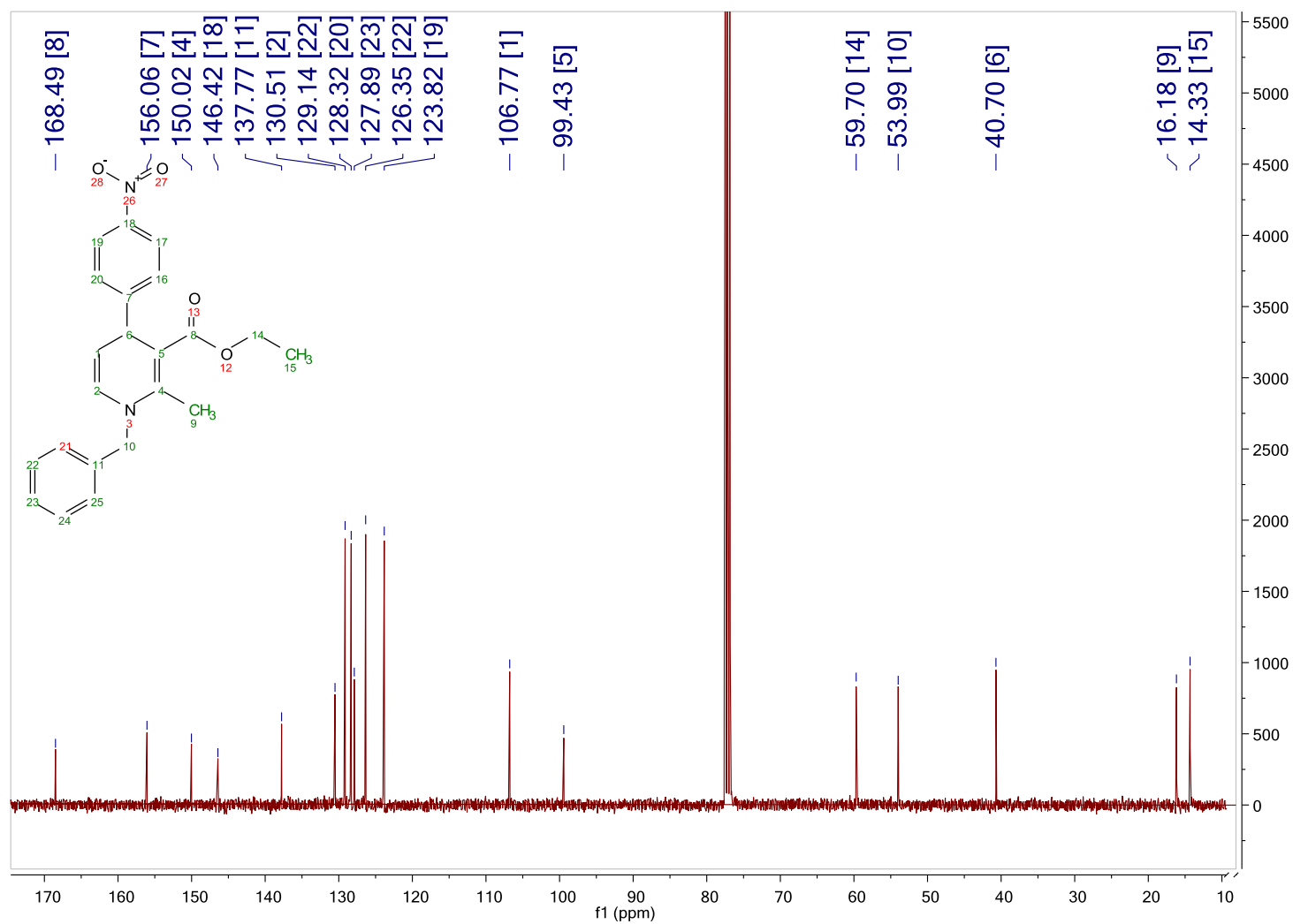
Measured in CDCl₃.

¹H 3n (Table 3, entry 6)



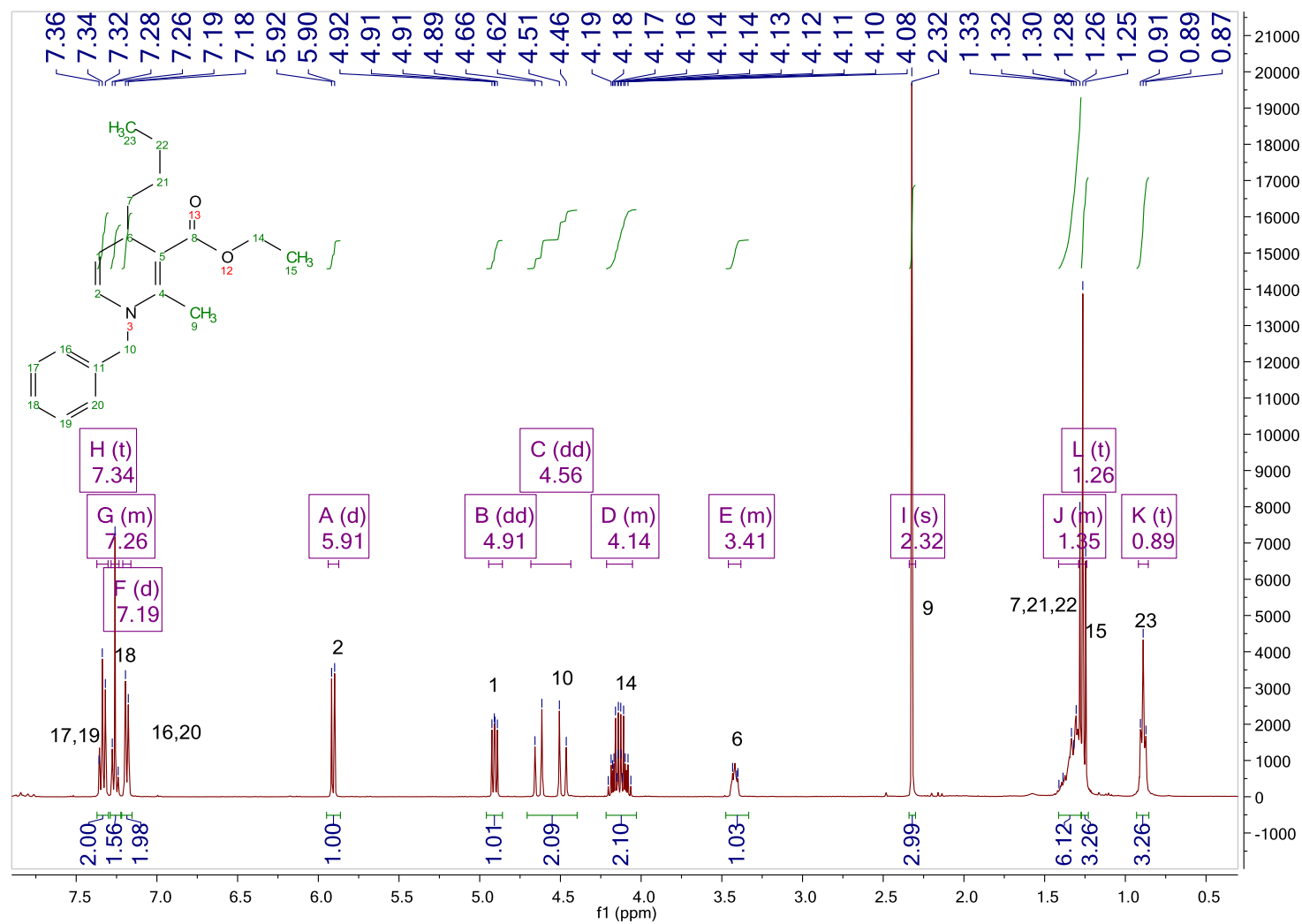
Measured in CDCl₃.

¹³C 3n (Table 3, entry 6)



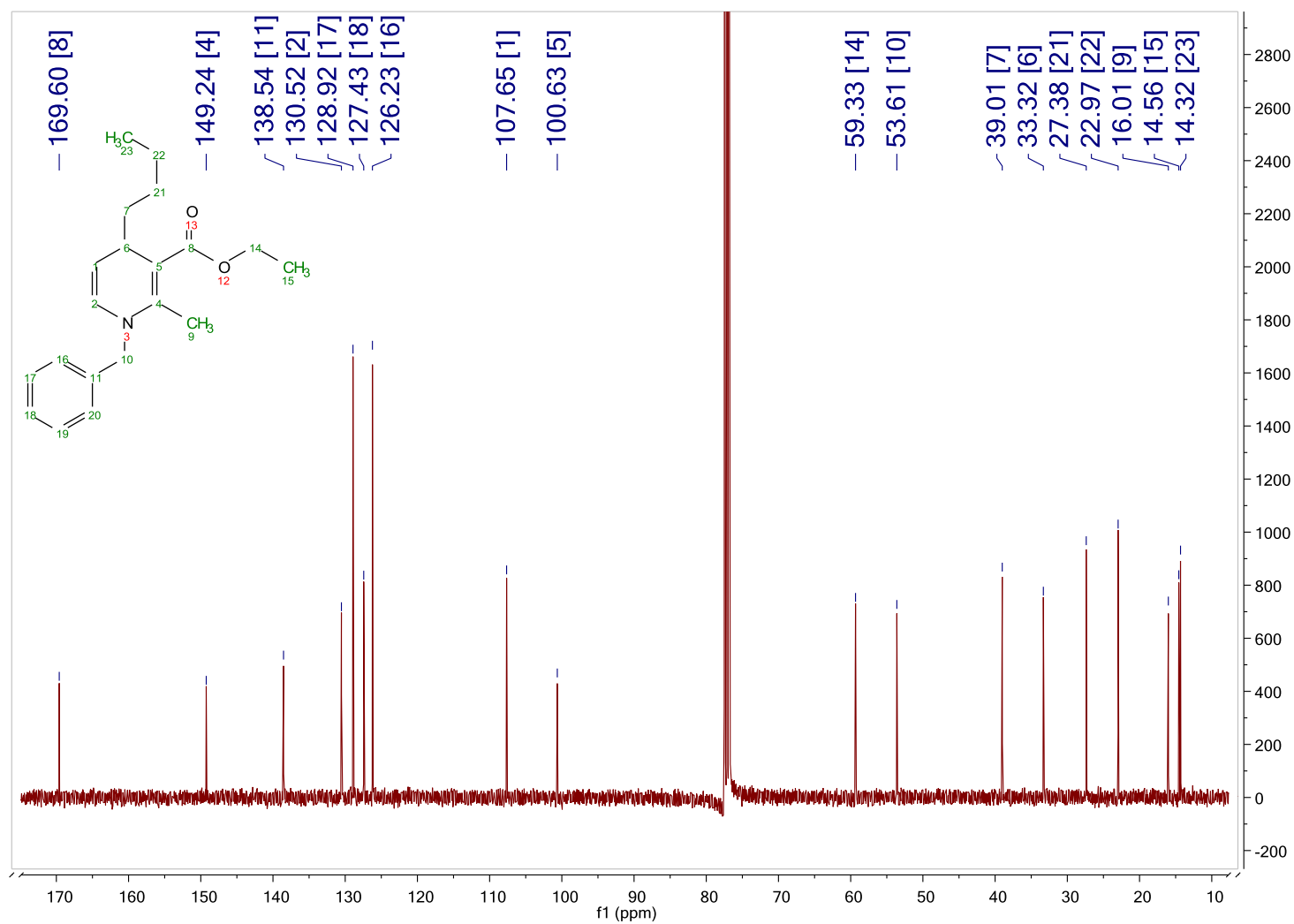
Measured in CDCl₃.

¹H 3p (Table 3, entry 7)



Measured in CDCl₃.

¹³C 3p (Table 3, entry 7)



Measured in CDCl₃.