

Tetrakis(hydroxymethyl)glycoluril in N-methylenation reactions with arylamines

**Svetlana Yu. Panshina^{1,2*}, Oksana V. Ponomarenko³,
Abdigali A. Bakibayev¹, Victor S. Malkov¹**

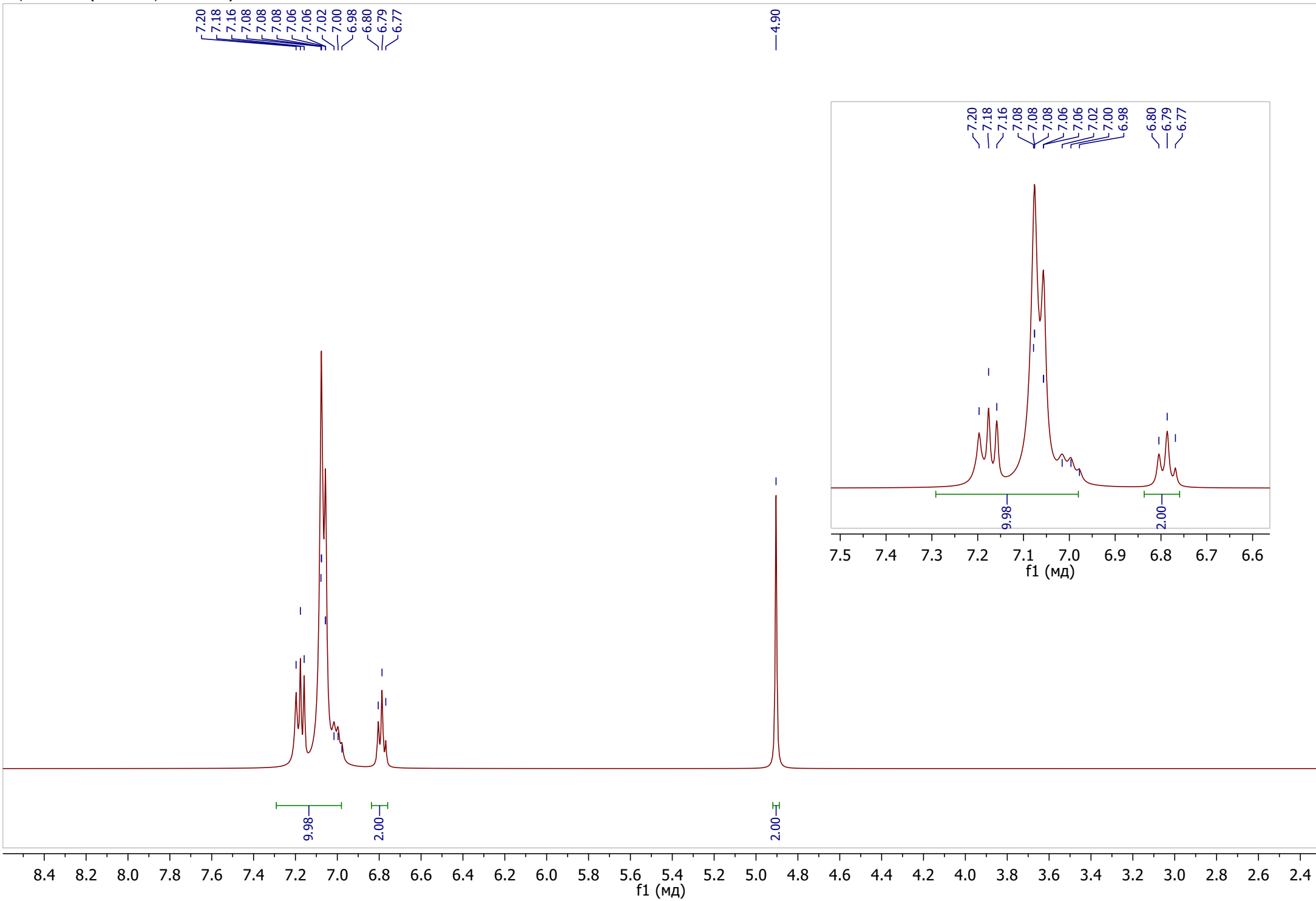
¹ *National Research Tomsk State University,
36 Lenina Ave., Tomsk 634050, Russia; e-mail: bakibaev@mail.ru*

² *National Research Tomsk Polytechnic University,
30 Lenina Ave., Tomsk 634050, Russia; e-mail: janim_svetatusik@mail.ru*

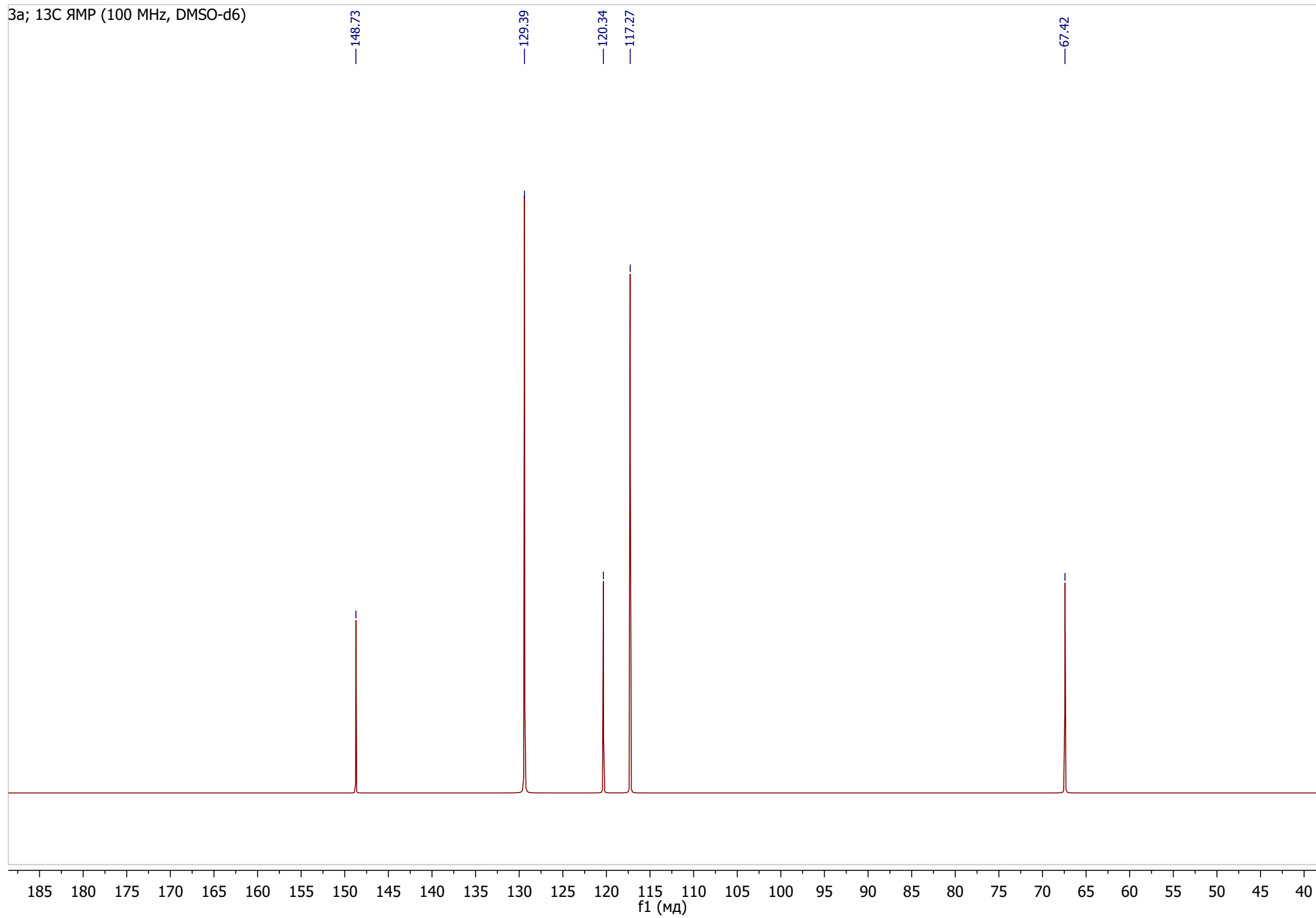
³ *L. N. Gumilyov Eurasian National University,
2 Sambaeva St., Nur-Sultan 010000, Kazakhstan; e-mail: oksana.ponomarenko.88@mail.ru*

SUPPLEMENTARY INFORMATION

3a; 1H ЯМР (400 MHz, DMSO-d6)



3a; ¹³C ЯМР (100 MHz, DMSO-d₆)

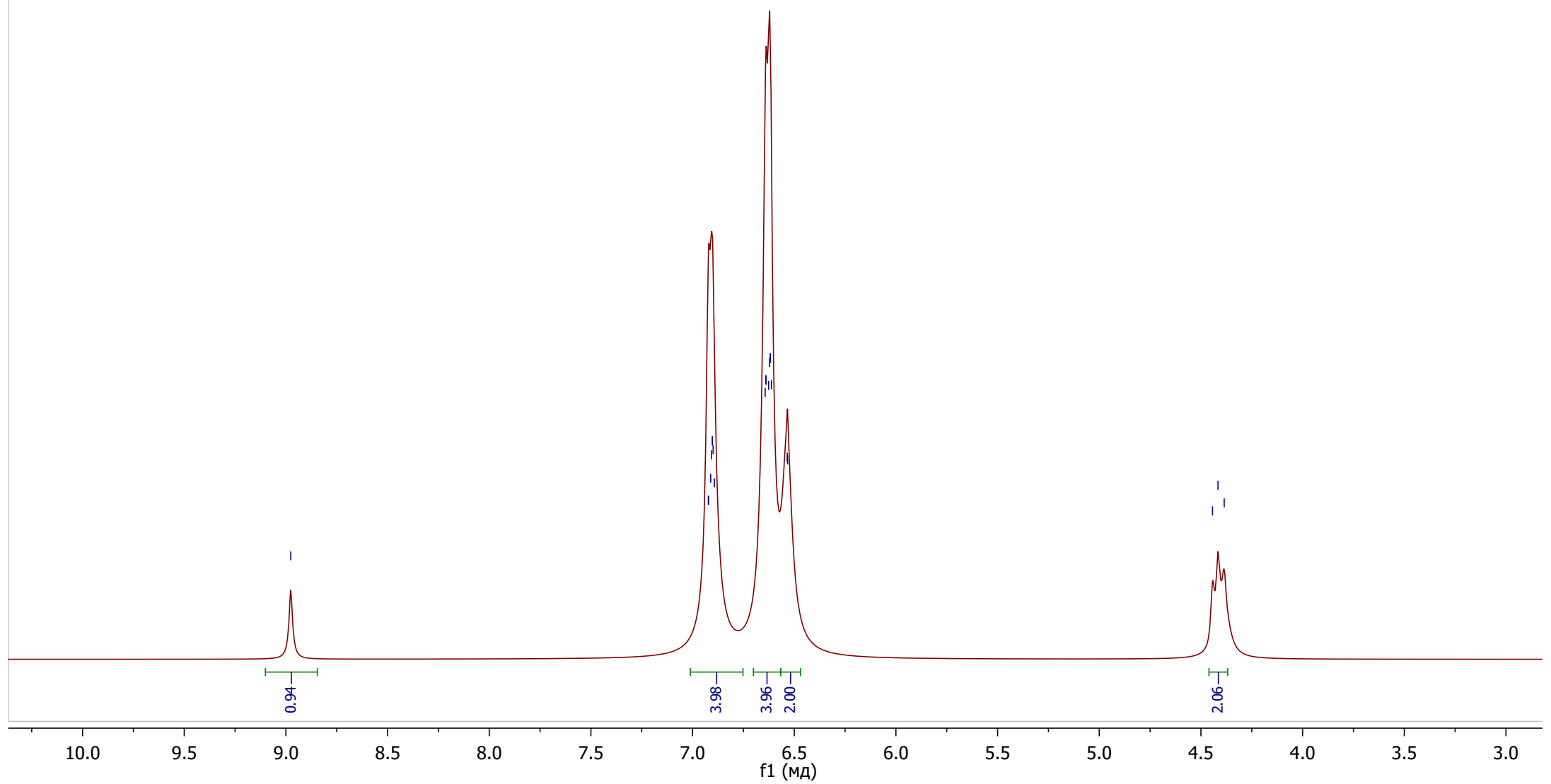


3b; 1H NMR (400 MHz, DMSO-d6)

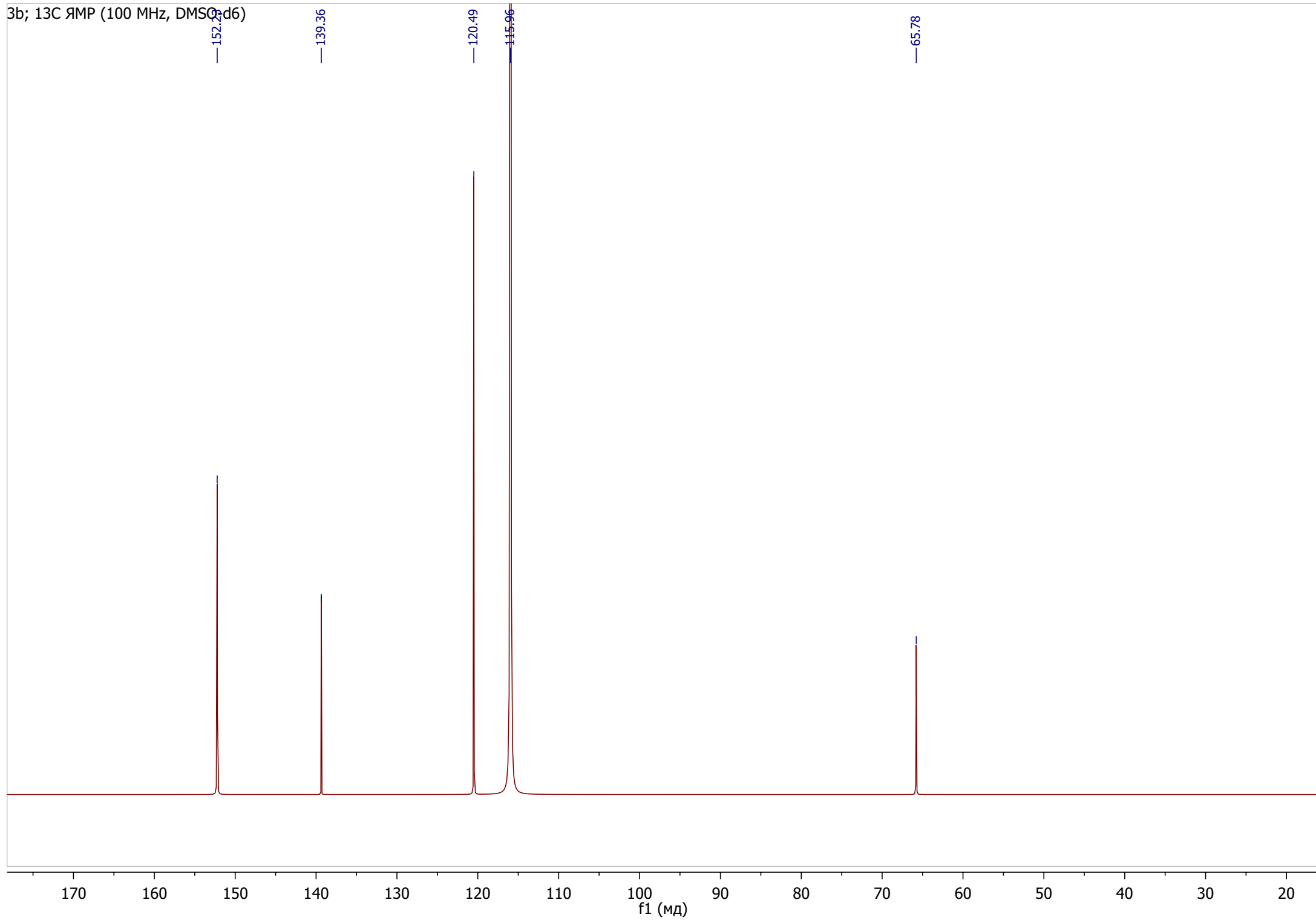
8.98

6.92
6.92
6.91
6.91
6.90
6.90
6.89
6.64
6.64
6.64
6.63
6.62
6.62
6.61
6.53

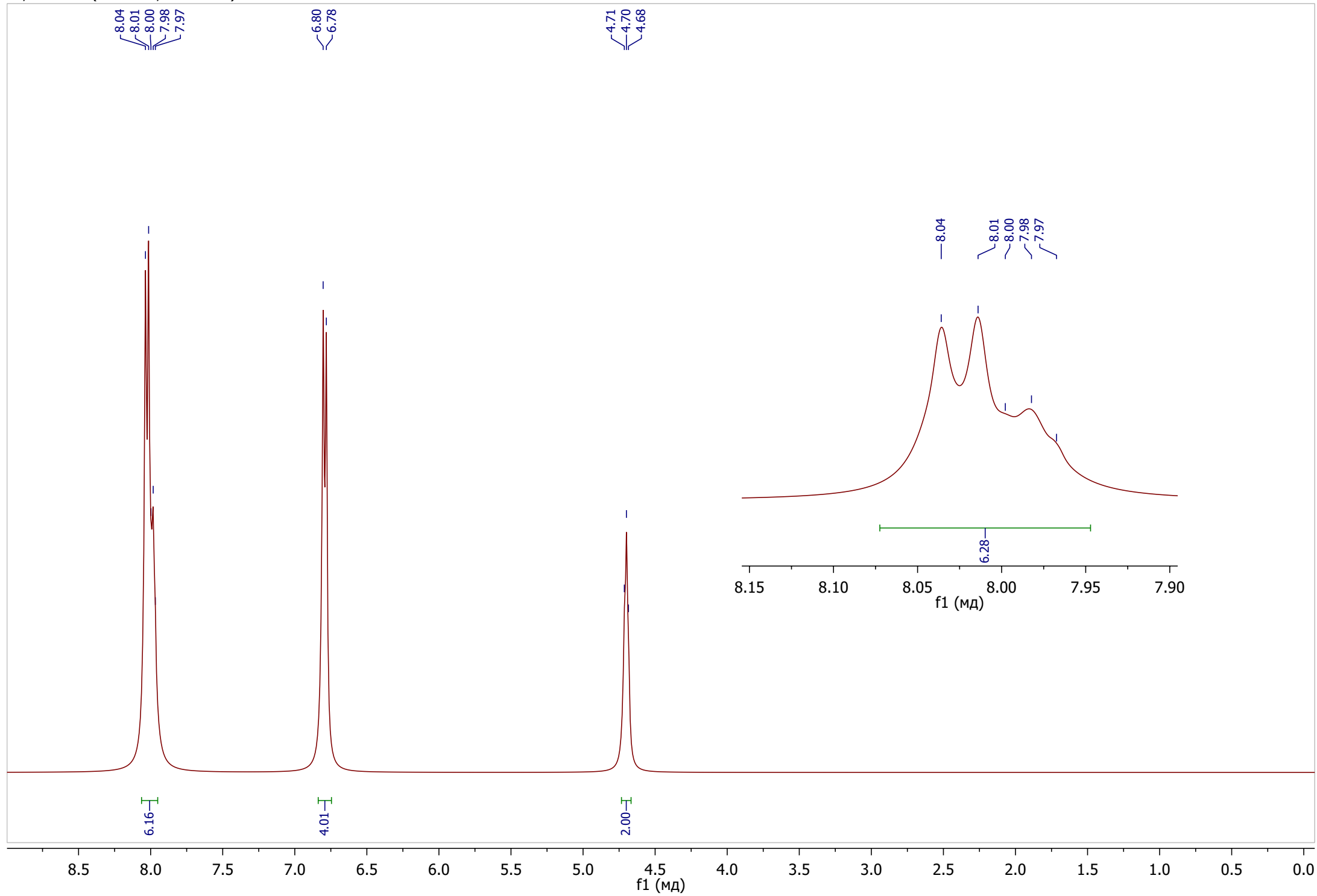
4.44
4.42
4.39



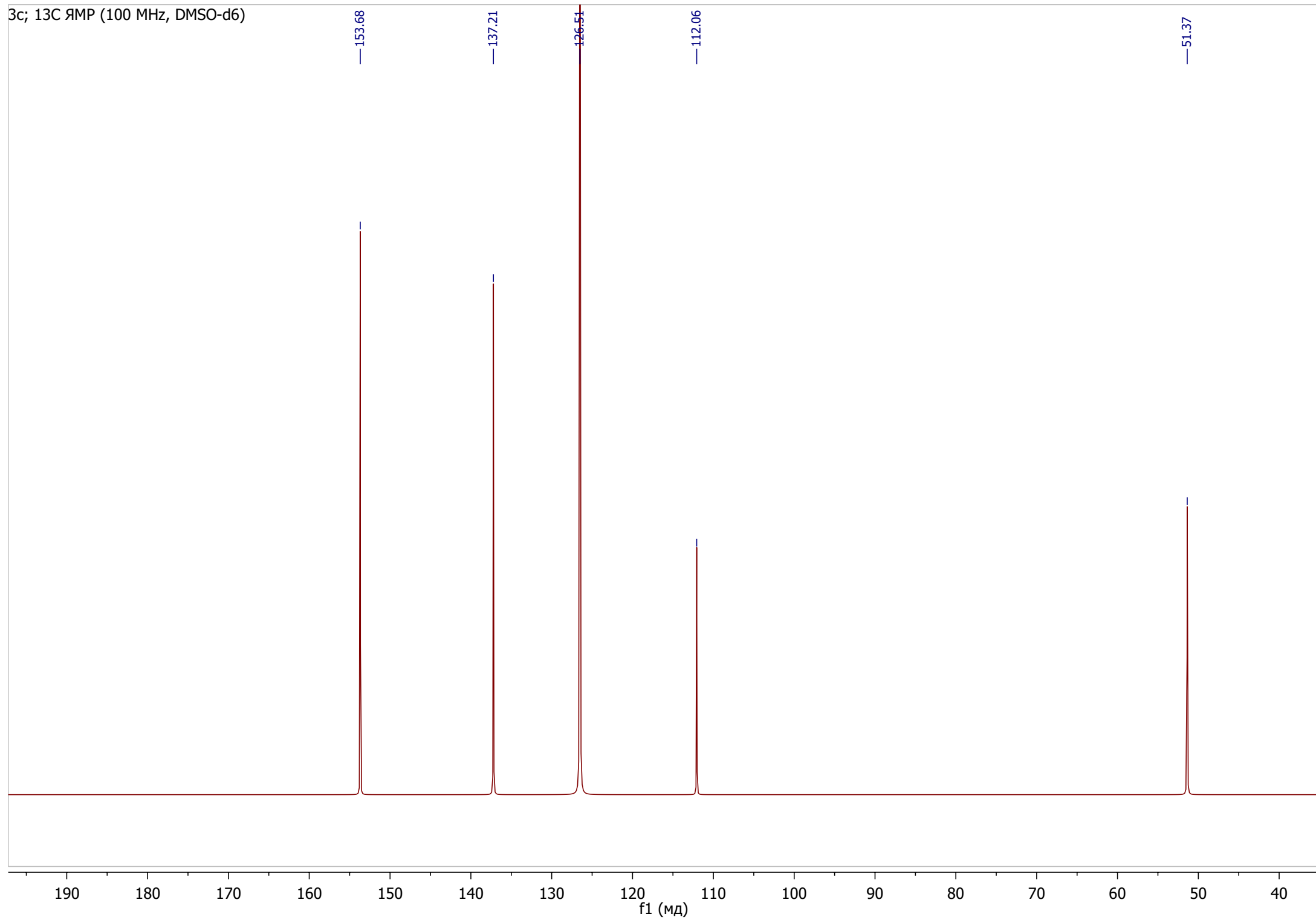
3b; ¹³C ЯМР (100 MHz, DMSO-d6)



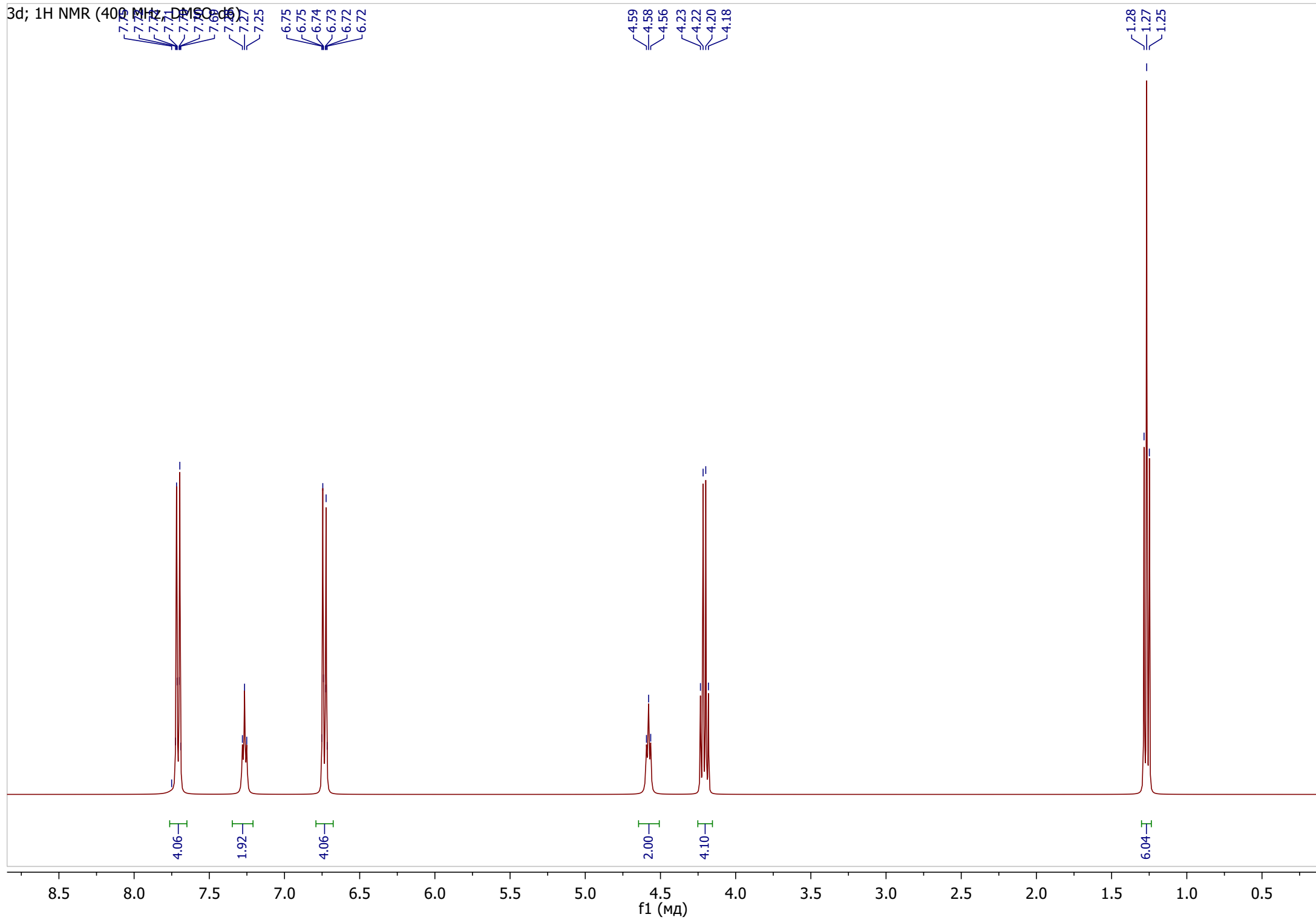
3c; 1H ЯМР (400 MHz, DMSO-d6)



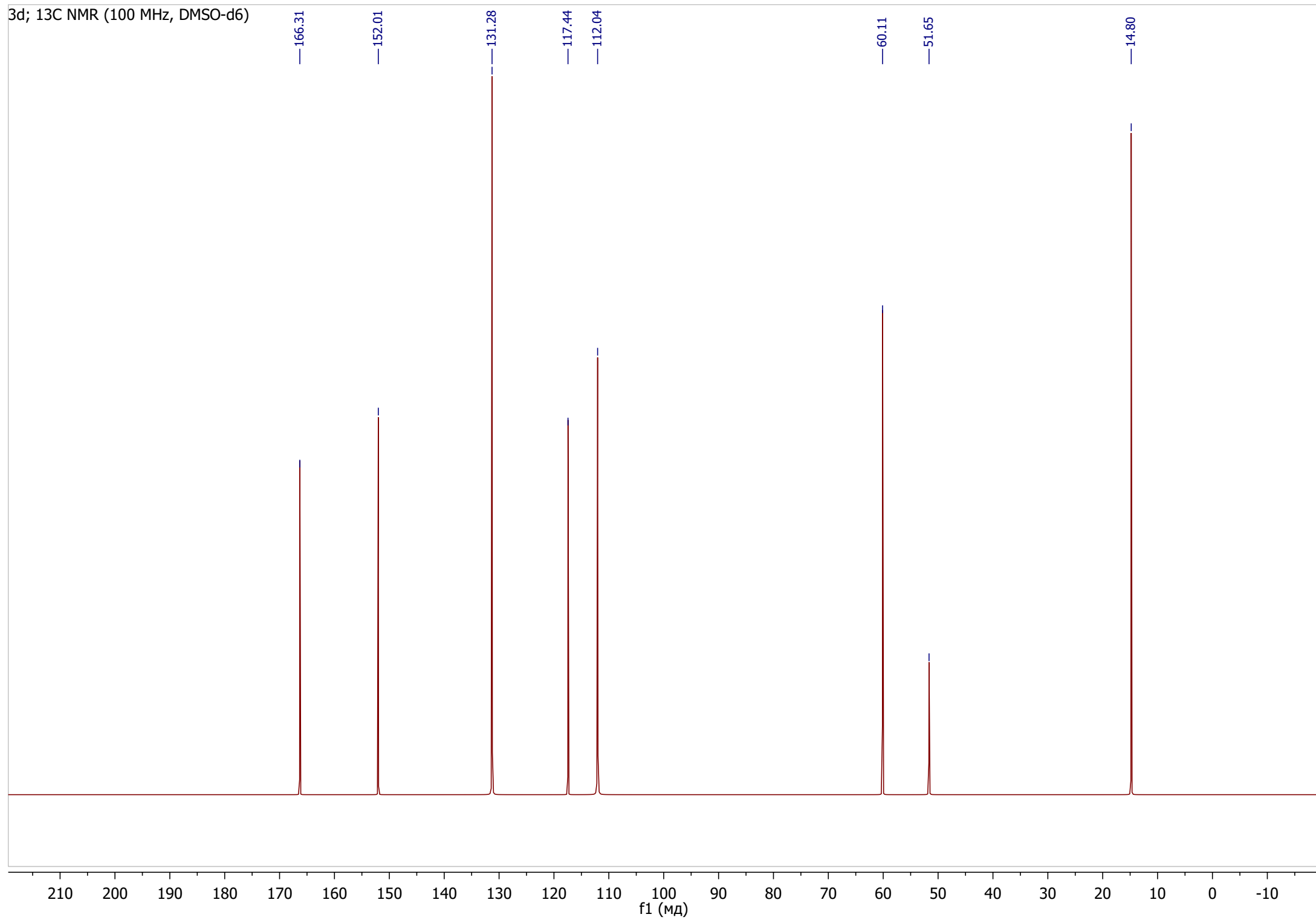
3c; ¹³C ЯМР (100 MHz, DMSO-d₆)



3d; 1H NMR (400 MHz, DMSO-d6)



3d; ¹³C NMR (100 MHz, DMSO-d₆)

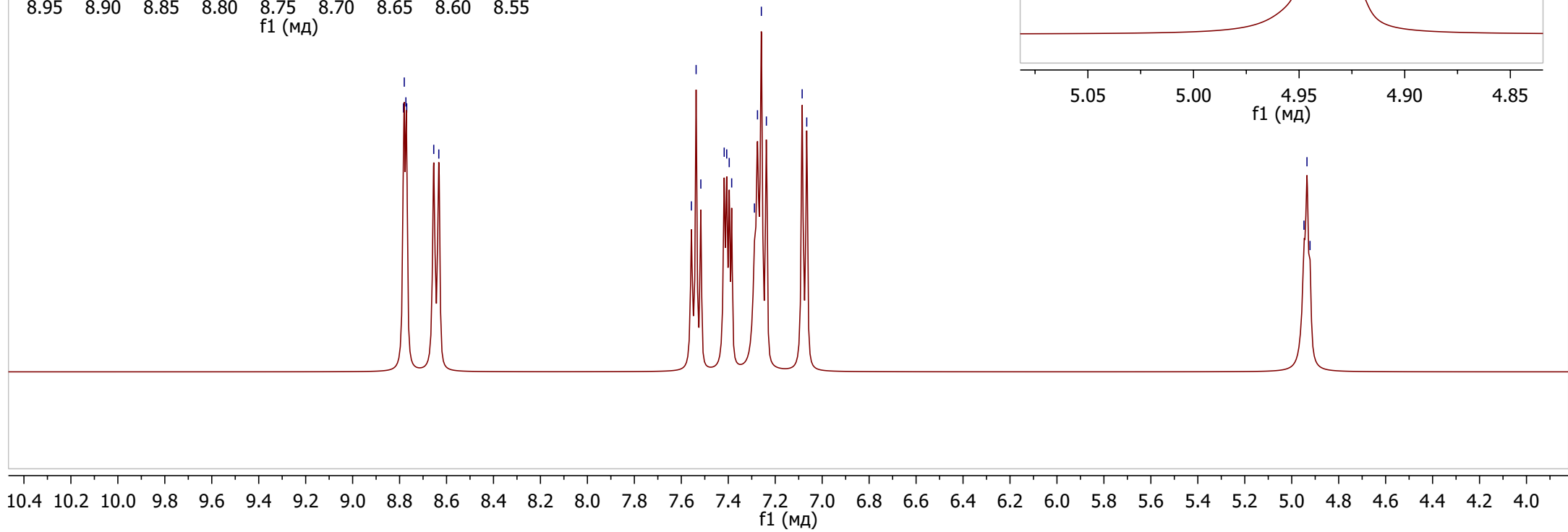
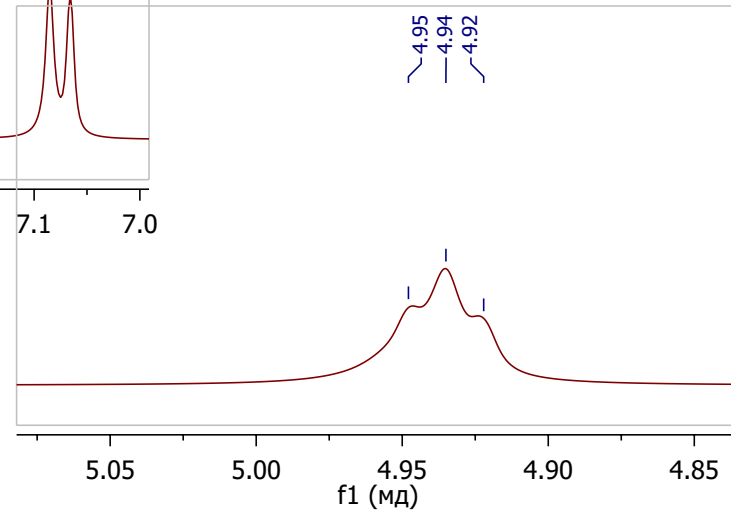
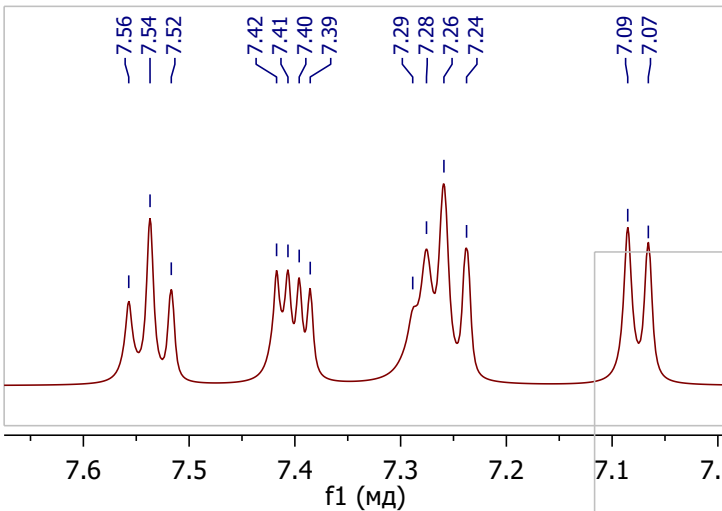
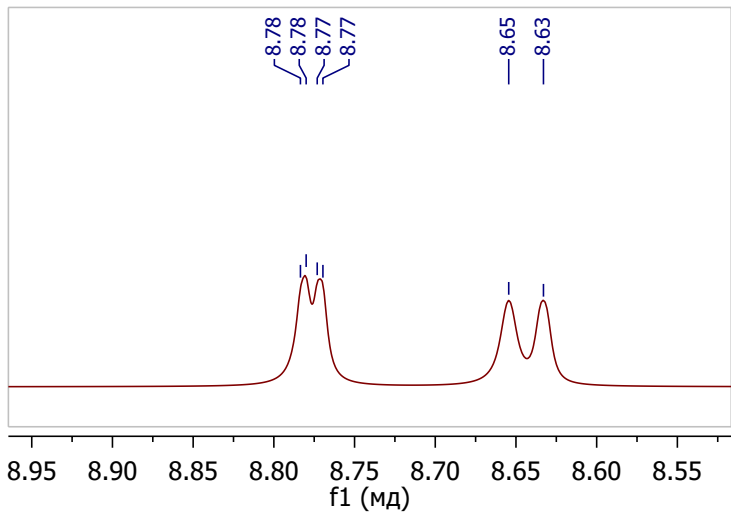


3e; 1H ЯМР (400 MHz, DMSO-d6)

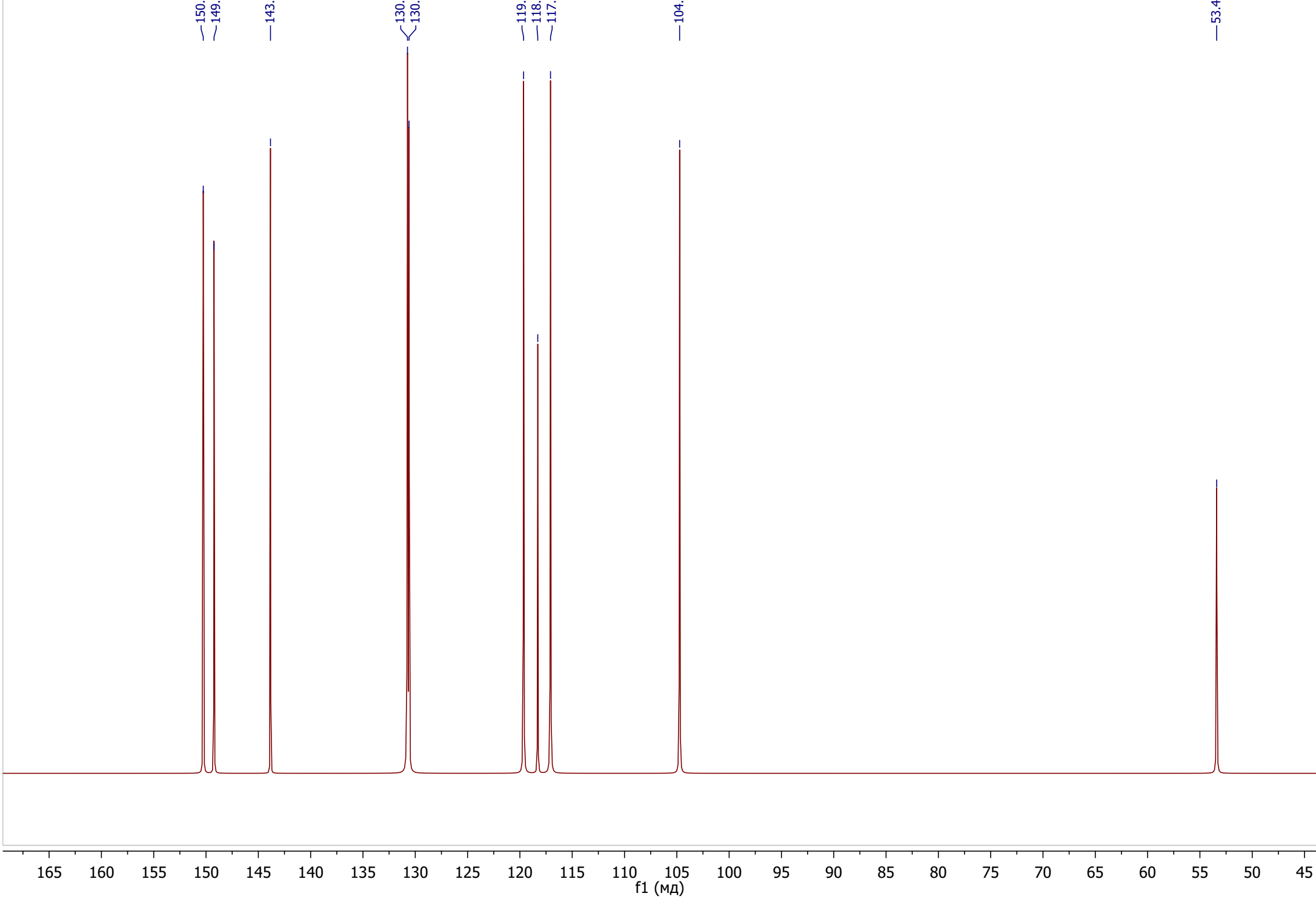
8.78
8.78
8.77
8.77
8.65
8.63

7.56
7.54
7.52
7.42
7.41
7.40
7.39
7.29
7.28
7.26
7.24
7.09
7.07

4.95
4.94
4.92



3e; 13C ЯМР (100 MHz, DMSO-d6)



3f; 1H NMR (400 MHz, DMSO-d6)

7.50
7.49

7.32
7.30
7.29

6.75
6.74
6.74
6.73
6.72

4.59
4.57
4.56

4.21
4.19
4.18
4.16

2.72
2.70
2.69
2.69
2.54
2.52
2.51
2.49

0.97
0.95
0.93

3.78

2.08

3.43

1.72

4.19

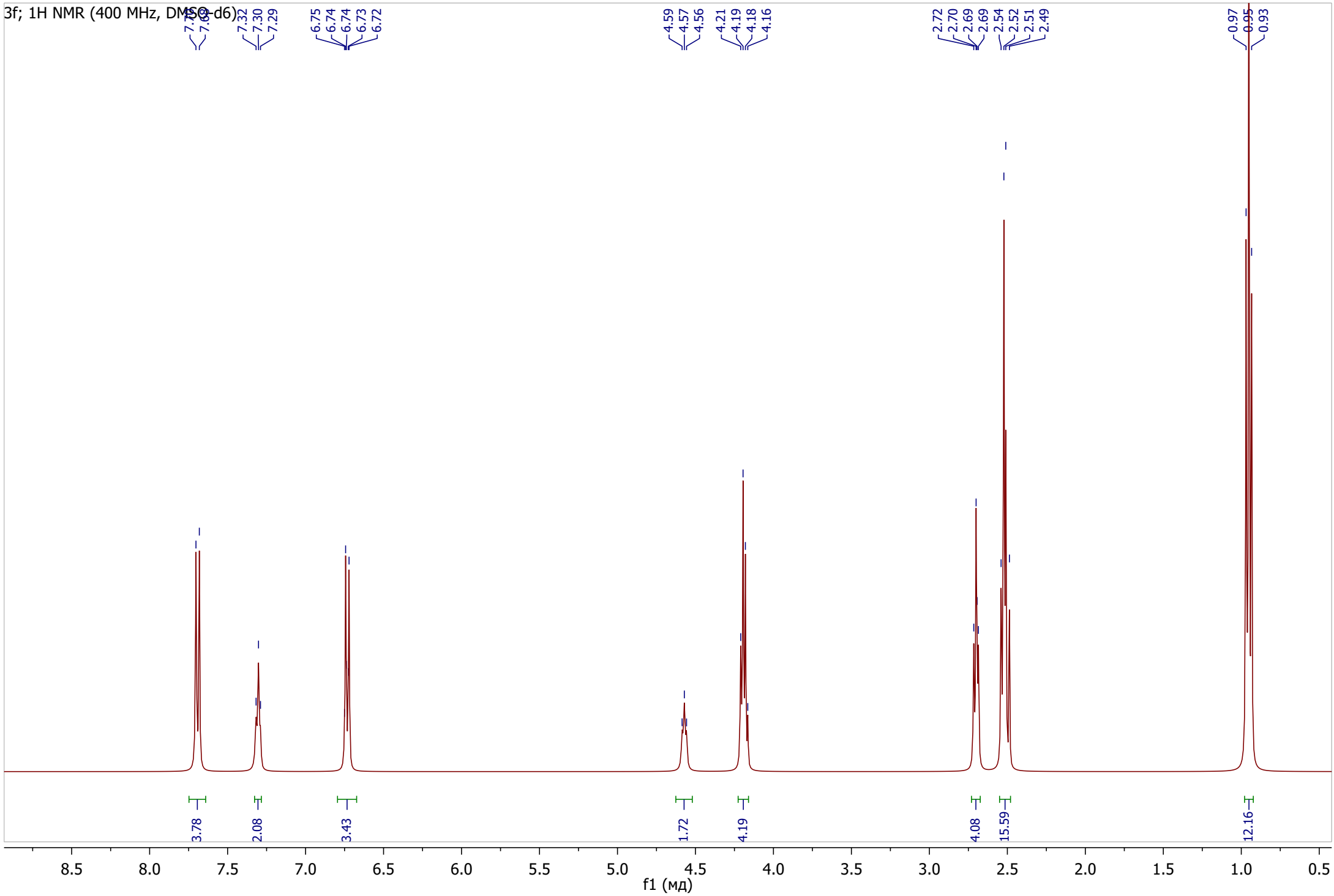
4.08

15.59

12.16

8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5

f1 (MД)



3f; ¹³C NMR (100 MHz, DMSO-d₆)

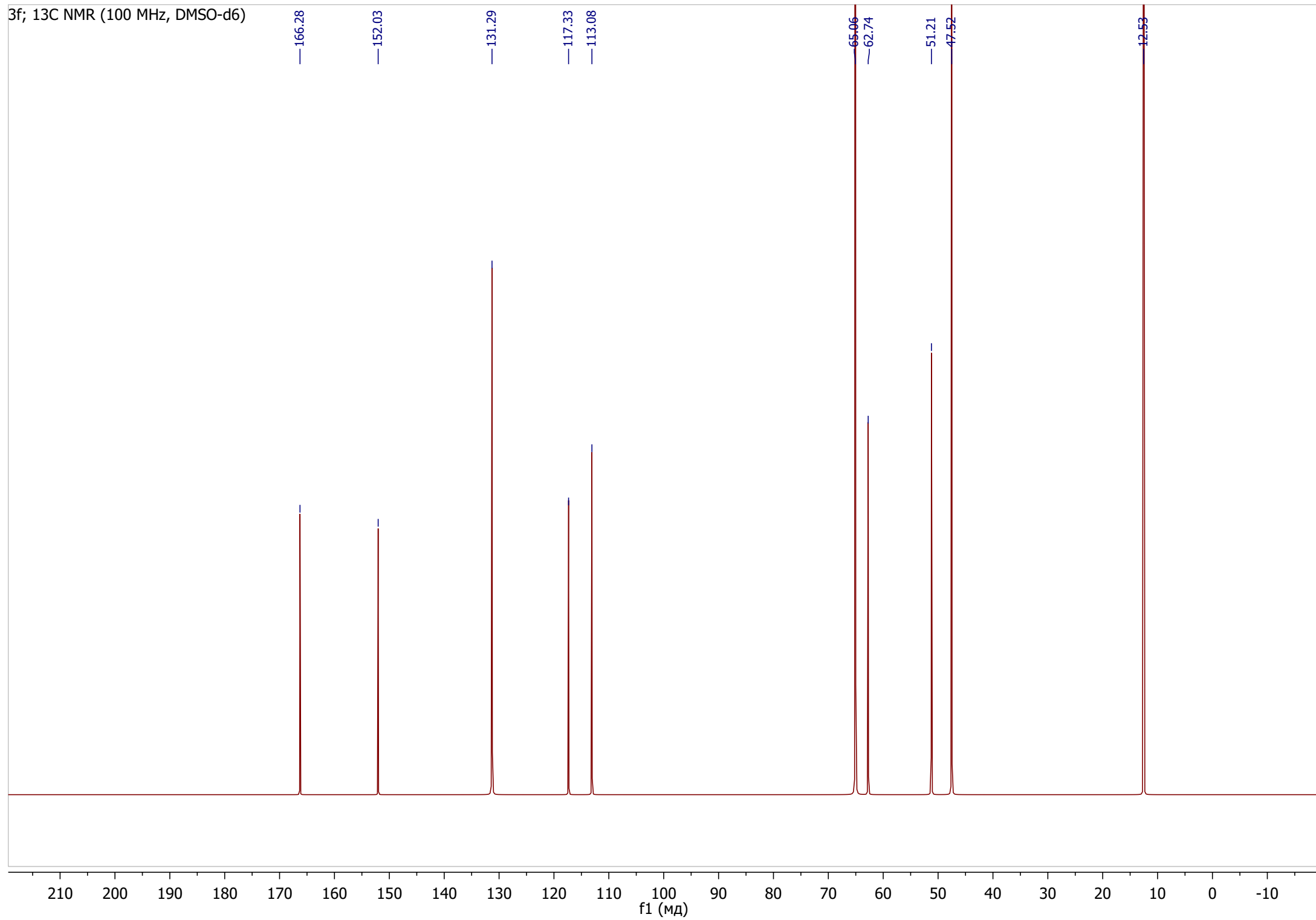


Table S1. The result of the HPLC analysis of the aqueous extract after the methylation reaction.

				Peak Area, S					Contents (internal normalization), %					
				8	5, 6 7		4	1	Sum, S	1	4	5, 6 7		8
	inj	m, г	V, мл	1,4	1,6	1,8	2,4	3		3	2,4	1,8	1,6	1,4
№	10	0,1	10	128	5579	11625	9234	2119	28685	7	32	41	19	93

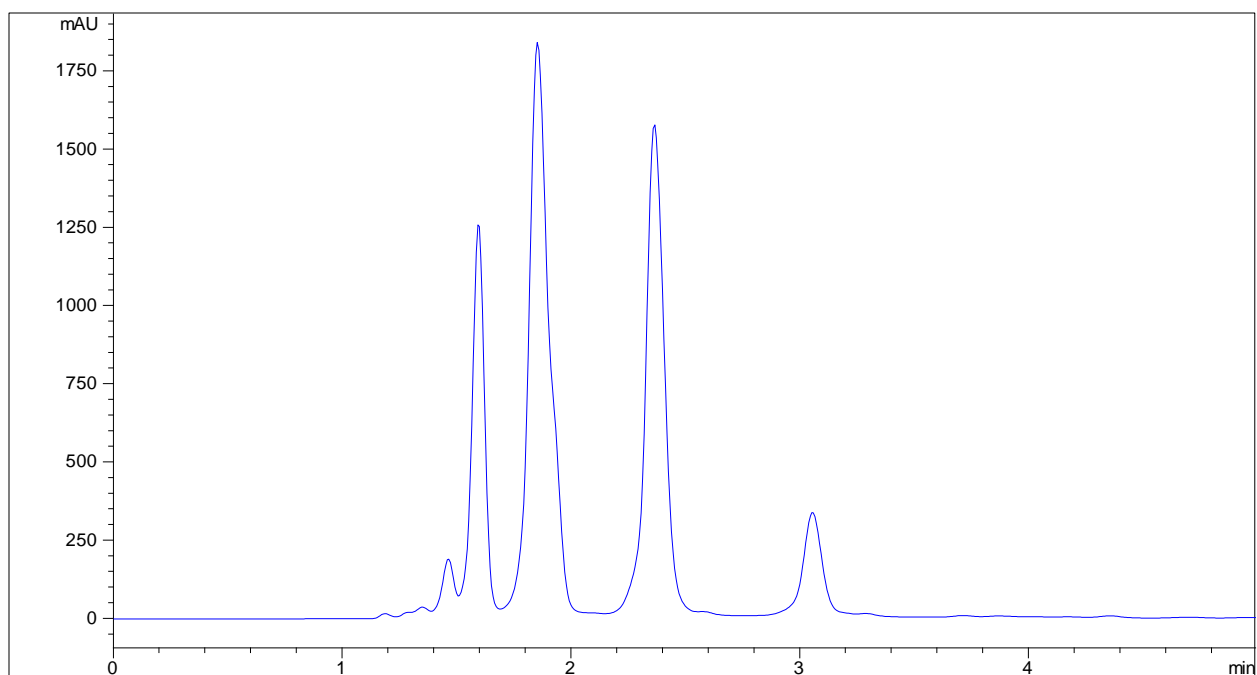


Figure S1. The result of the HPLC analysis of the aqueous extract after the methylation reaction.