

# Supporting Information

for

## Interplay of Protecting Groups and Side Chain Conformation in Glycopyranosides. Modulation of the Influence of Remote Substituents on Glycosylation?

Suresh Dharuman,<sup>†</sup> Harsha Amarasekara,<sup>†</sup> and David Crich\*

Department of Chemistry, Wayne State University, 5101 Cass Avenue, Detroit, MI 48202, USA

[dcrich@chem.wayne.edu](mailto:dcrich@chem.wayne.edu)

<sup>†</sup> These authors contributed equally

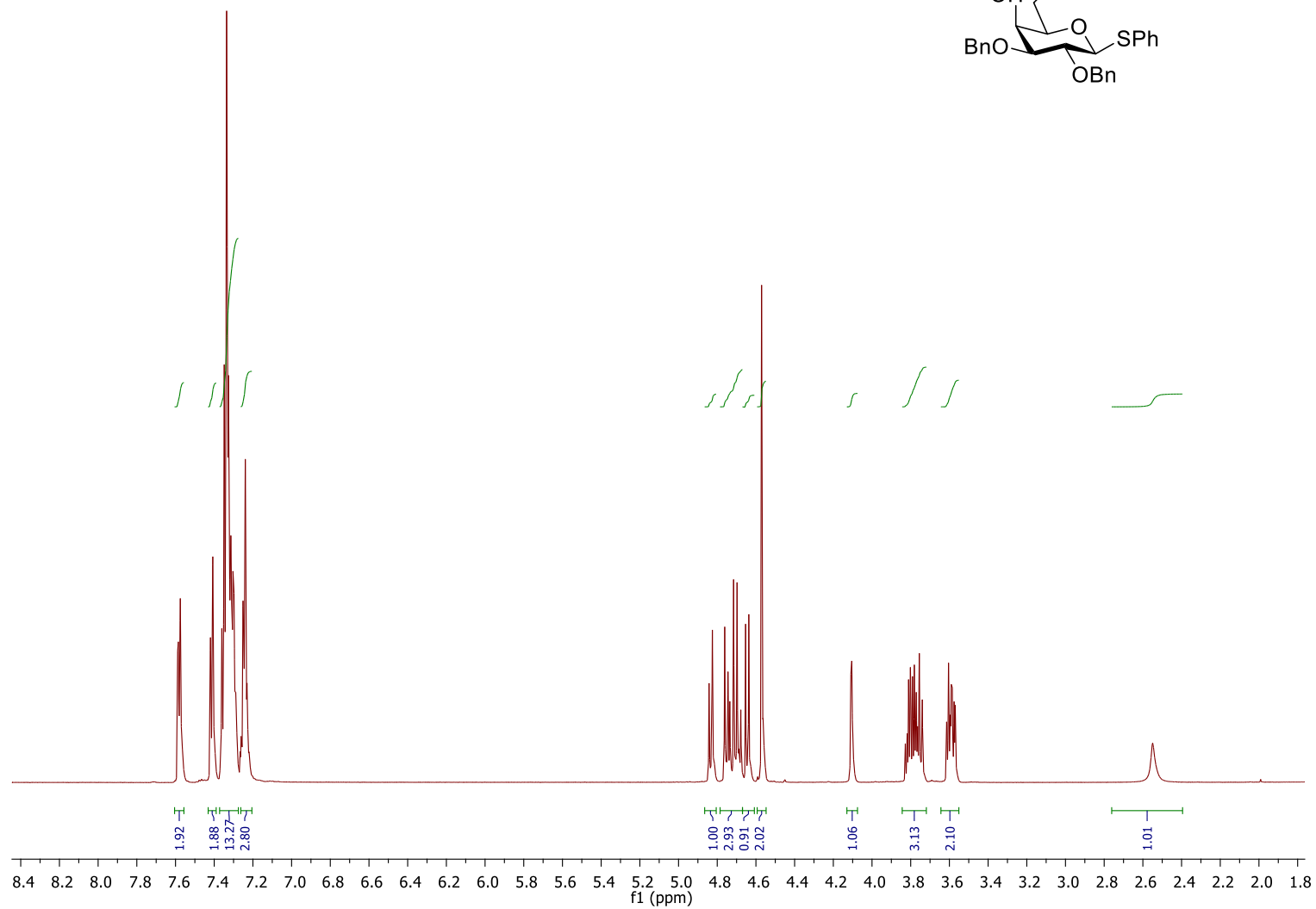
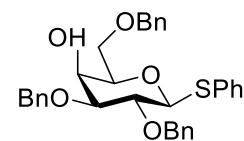
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<b>Compounds</b>	<b>Spectra</b>
Phenyl 2,3,6-tri- <i>O</i> -benzyl-1-thio-β-D-galactopyranoside ( <b>1</b> )	S5 – S6
Phenyl (6 <i>S</i> )-[6- <sup>2</sup> <i>H</i> <sub>1</sub> ]-2,3,6-tri- <i>O</i> -benzyl-1-thio-β-D-galactopyranoside ( <b>6S-D-1</b> )	S7 – S8
Phenyl 2,3,6-tri- <i>O</i> -benzyl-1-thio-β-D-glucopyranoside ( <b>2</b> )	S9 – S10
Phenyl (6 <i>S</i> )-[6- <sup>2</sup> <i>H</i> <sub>1</sub> ]-2,3,6-tri- <i>O</i> -benzyl-1-thio-β-D-glucopyranoside ( <b>6S-D-2</b> )	S11 – S12
Ethyl 2,3,4-tri- <i>O</i> -benzyl-1-thio-β-D-glucopyranoside ( <b>3</b> )	S13 – S14
Ethyl (6 <i>S</i> )-[6- <sup>2</sup> <i>H</i> <sub>1</sub> ]-2,3,4,6-tetra- <i>O</i> -acetyl-1-thio-β-D-glucopyranoside ( <b>6S-D-3</b> )	S15
(6 <i>S</i> )-1,6-Anhydro-2,3,4-tri- <i>O</i> -acetyl-6-bromo-β-D-galactopyranose ( <b>5</b> )	S16 – S17
(6 <i>S</i> )-[6- <sup>2</sup> <i>H</i> <sub>1</sub> ]-1,6-Anhydro-2,3,4-tri- <i>O</i> -acetyl-β-D-galactopyranose ( <b>6</b> )	S18 – S19
Phenyl (6 <i>S</i> )-[6- <sup>2</sup> <i>H</i> <sub>1</sub> ]-2,3,4,6-tetra- <i>O</i> -acetyl-1-thio-β-D-galactopyranoside ( <b>8</b> )	S20 – S21
Phenyl 2,3-di- <i>O</i> -benzyl-4,6- <i>O</i> -benzylidene-(6 <i>S</i> )-[6- <sup>2</sup> <i>H</i> <sub>1</sub> ]-1-thio-β-D-galactopyranoside ( <b>10</b> )	S22 – S23
Ethyl -(6 <i>S</i> )-[6- <sup>2</sup> <i>H</i> <sub>1</sub> ]-2,3,4,6-tetra- <i>O</i> -acetyl-1-thio-β-D-glucopyranoside ( <b>12</b> )	S24 – S25
Phenyl 4- <i>O</i> -acetyl-2,3,6-tri- <i>O</i> -benzyl-1-thio-β-D-galactopyranoside ( <b>13</b> )	S26 – S27
Phenyl 4- <i>O</i> -acetyl-(6 <i>S</i> )-[6- <sup>2</sup> <i>H</i> <sub>1</sub> ]-2,3,6-tri- <i>O</i> -benzyl-1-thio-β-D-galactopyranoside ( <b>6S-D-13</b> )	S28 – S29
Phenyl 4- <i>O</i> -pivaloyl-2,3,6-tri- <i>O</i> -benzyl-1-thio-β-D-galactopyranoside ( <b>14</b> )	S30 – S32
Phenyl 4- <i>O</i> -pivaloyl-(6 <i>S</i> )-[6- <sup>2</sup> <i>H</i> <sub>1</sub> ]-2,3,6-tri- <i>O</i> -benzyl-1-thio-β-D-galactopyranoside ( <b>6S-D-14</b> )	S33 – S34
Phenyl 2,3,6-tri- <i>O</i> -benzyl-4- <i>O</i> -trifluoroacetyl-1-thio-β-D-galactopyranoside ( <b>15</b> )	S35 – S39
Phenyl 4- <i>O</i> -trifluoroacetyl-(6 <i>S</i> )-[6- <sup>2</sup> <i>H</i> <sub>1</sub> ]-2,3,6-tri- <i>O</i> -benzyl-1-thio-β-D-galactopyranoside ( <b>6S-D-15</b> )	S40 – S41

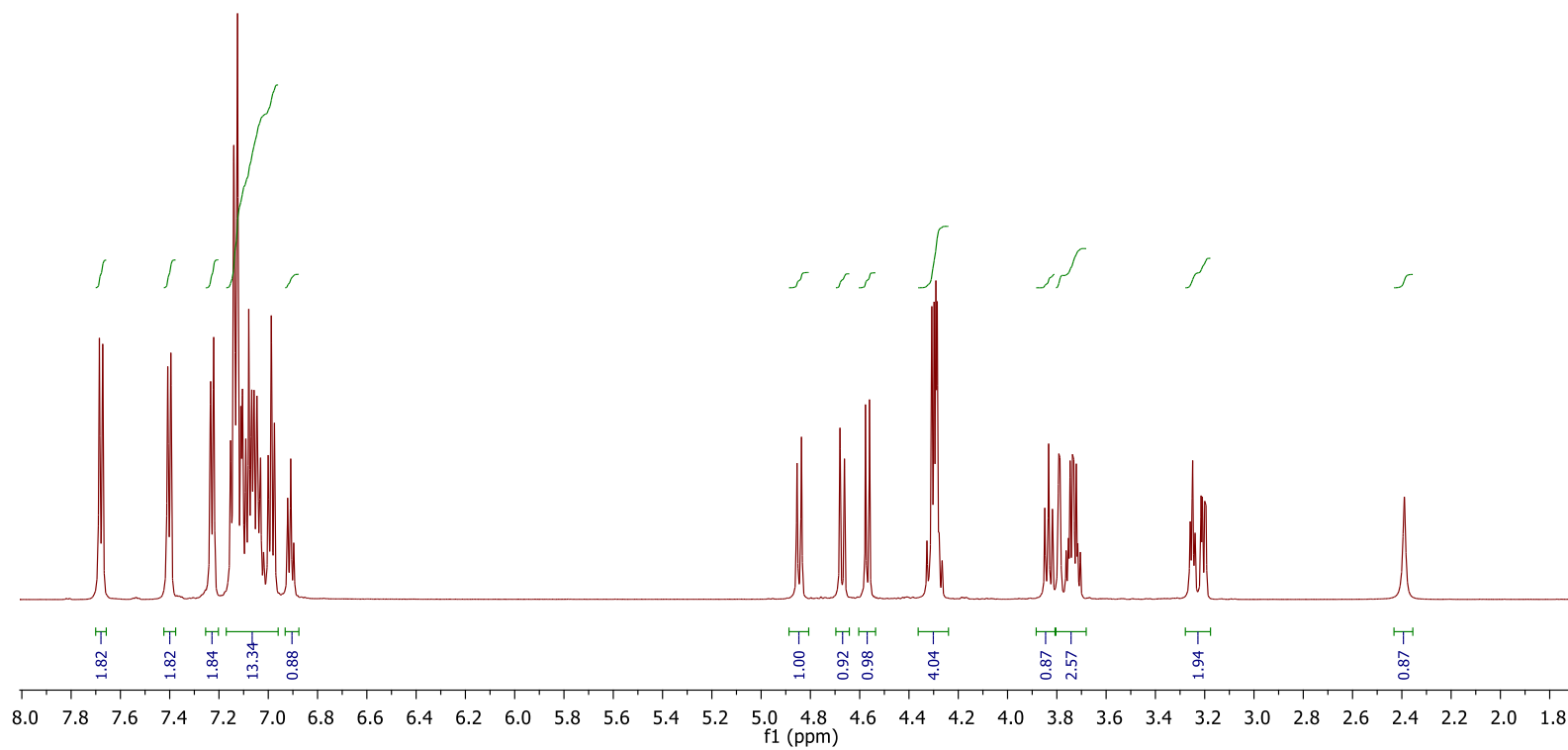
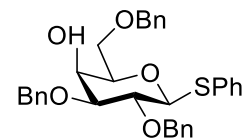
Phenyl 2,3,6-tri- <i>O</i> -benzyl-4- <i>O</i> -trichloroacetyl-1-thio-β-D-galactopyranoside <b>(16)</b>	S42 – S44
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Phenyl 4- <i>O</i> -benzoyl-(6 <i>S</i> )-[6- <sup>2</sup> <i>H</i> <sub>1</sub> ]-2,3,6-tri- <i>O</i> -benzyl-1-thio-β-D-galactopyranoside <b>(6S-D-17)</b>	S49 – S50
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Phenyl 4- <i>O</i> -( <i>p</i> -methylbenzoyl-(6 <i>S</i> )-[6- <sup>2</sup> <i>H</i> <sub>1</sub> ]-2,3,6-tri- <i>O</i> -benzyl-1-thio-β-D-galactopyranoside <b>(6S-D-18)</b>	S54 – S55
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Phenyl 4- <i>O</i> -( <i>p</i> -methoxybenzoyl-(6 <i>S</i> )-[6- <sup>2</sup> <i>H</i> <sub>1</sub> ]-2,3,6-tri- <i>O</i> -benzyl-1-thio-β-D-galactopyranoside <b>(6S-D-19)</b>	S58 – S59
Phenyl 4- <i>O</i> -( <i>p</i> -nitrobenzoyl)-2,3,6-tri- <i>O</i> -benzyl-1-thio-β-D-galactopyranoside <b>(20)</b>	S60 – S62
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Ethyl (6 <i>S</i> )-[6- <sup>2</sup> <i>H</i> <sub>1</sub> ]-6- <i>O</i> - <i>p</i> -nitrobenzoyl-2,3,4-tri- <i>O</i> -benzyl-1-thio-β-D-glucopyranoside ( <b>6S-D-34</b> )	S123 – S124
Ethyl 2,3,4-tri- <i>O</i> -benzyl-6- <i>O</i> -( <i>N</i> -phenylcarbamoyl)-1-thio-β-D-glucopyranoside ( <b>35</b> )	S125 – S127
Ethyl 2,3,4-tri- <i>O</i> -benzyl-(6 <i>S</i> )-[6- <sup>2</sup> <i>H</i> <sub>1</sub> ]-6- <i>O</i> -( <i>N</i> -phenylcarbamoyl)-1-thio-β-D-glucopyranoside ( <b>6S-D-35</b> )	S128 – S129
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Ethyl (6 <i>S</i> )-[6- <sup>2</sup> <i>H</i> <sub>1</sub> ]-2,3,4,6-tetra- <i>O</i> -benzyl-1-thio-β-D-glucopyranoside ( <b>6S-D-36</b> )	S132 – S133

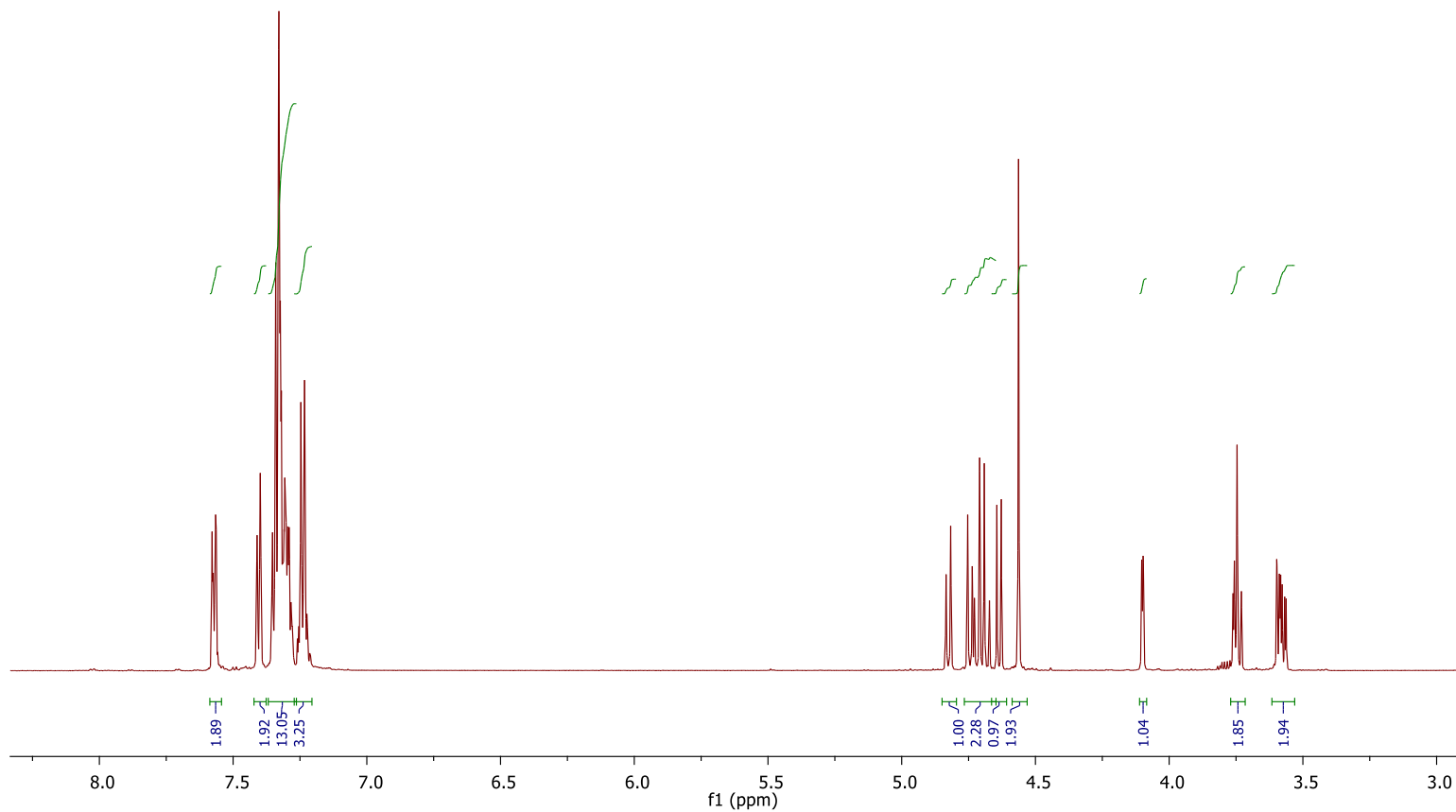
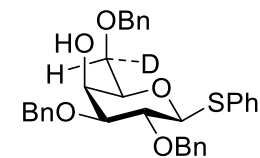
$^1\text{H}$  NMR (600 MHz,  $\text{CDCl}_3$ ) Spectrum of Phenyl 2,3,6-tri-*O*-benzyl-1-thio- $\beta$ -D-galactopyranoside (**1**)



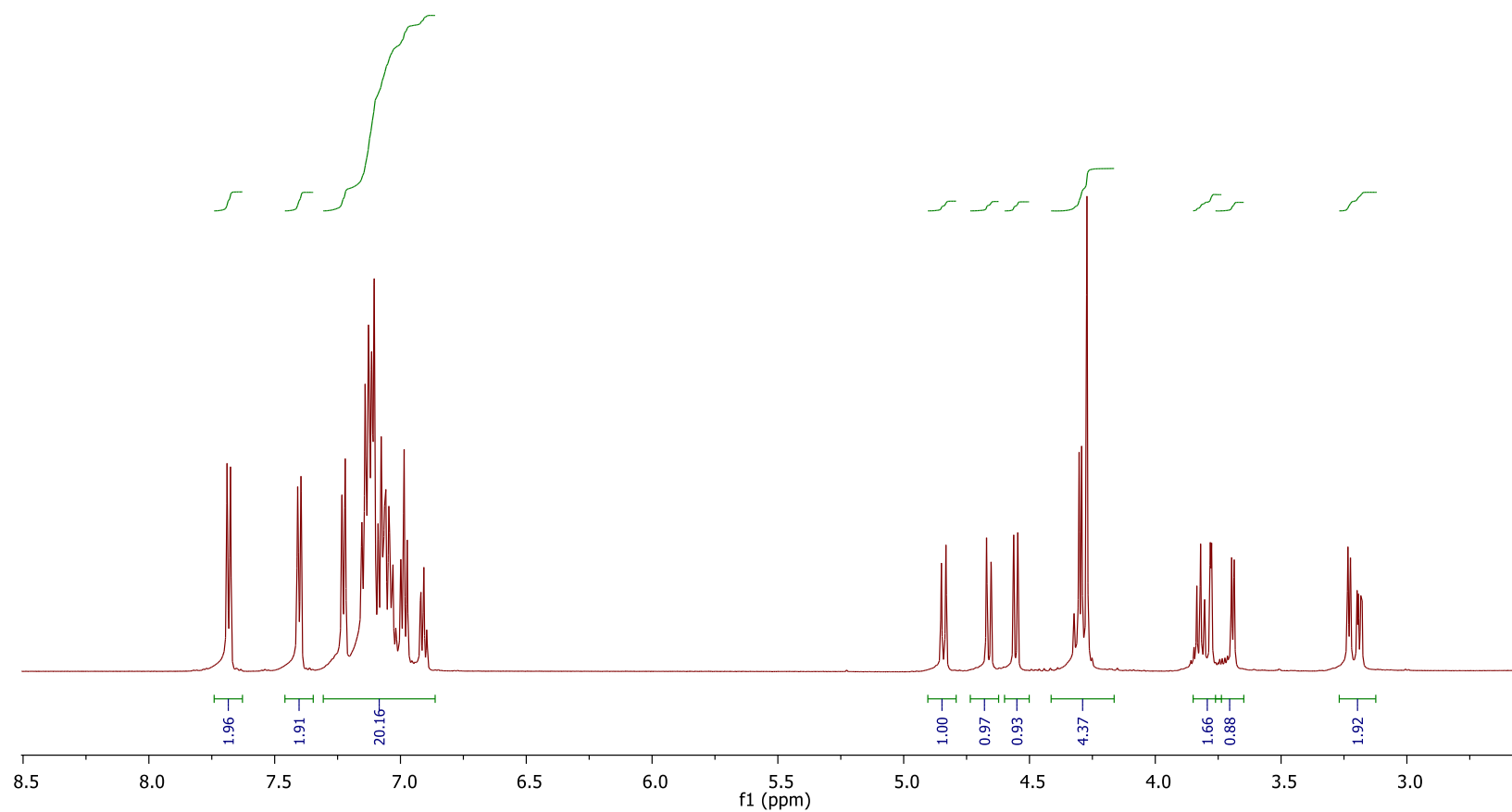
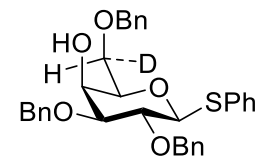
$^1\text{H}$  NMR (600 MHz,  $\text{C}_6\text{D}_6$ ) Spectrum of Phenyl 2,3,6-tri-*O*-benzyl-1-thio- $\beta$ -D-galactopyranoside (**1**)



$^1\text{H}$  NMR (600 MHz,  $\text{CDCl}_3$ ) Spectrum of Phenyl (6*S*)-[6- $^2\text{H}_1$ ]-2,3,6-tri-*O*-benzyl-1-thio- $\beta$ -D-galactopyranoside (**6S-D-1**)

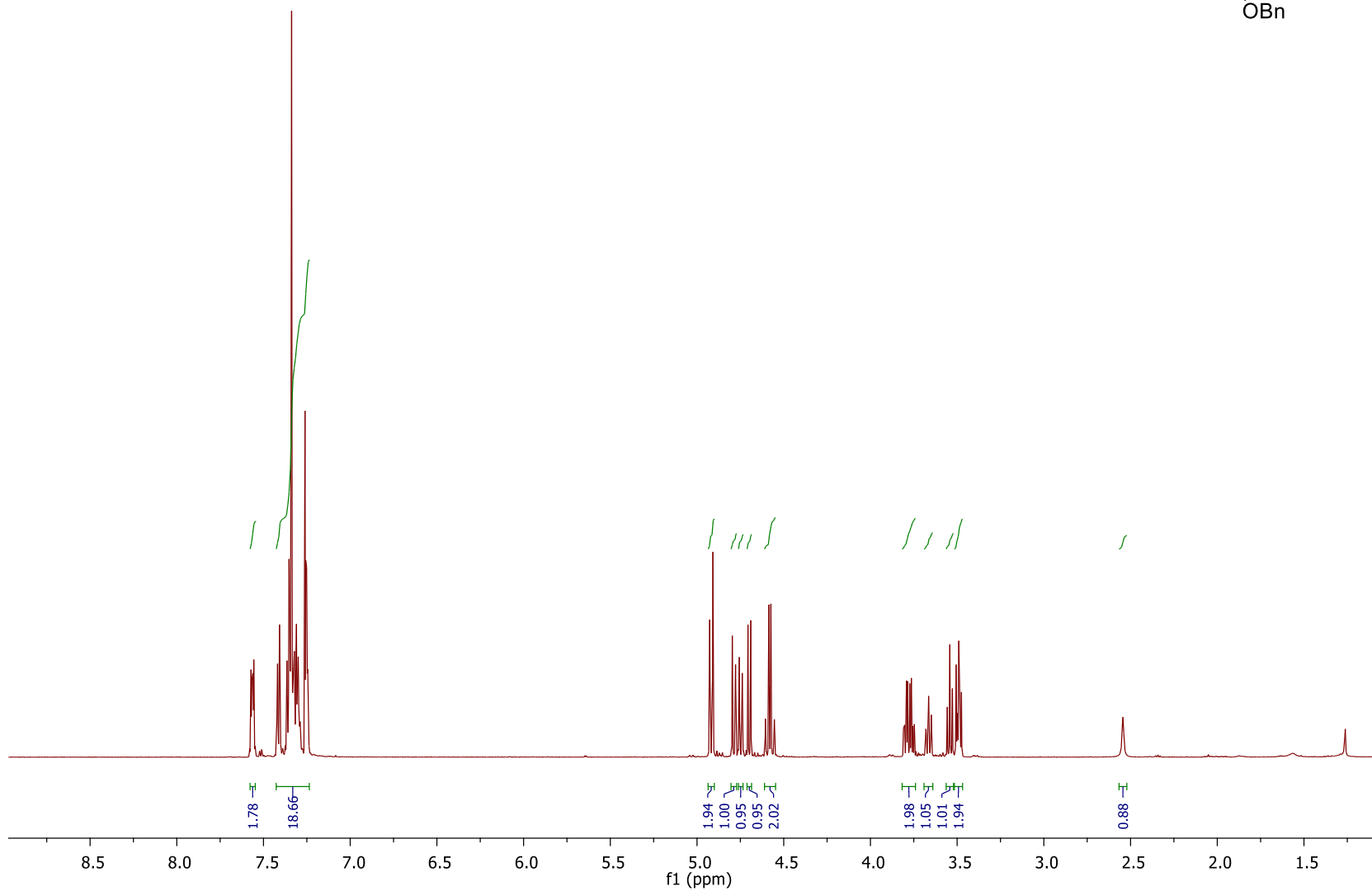
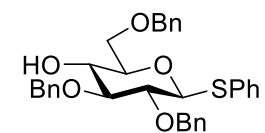


$^1\text{H}$  NMR (600 MHz,  $\text{C}_6\text{D}_6$ ) Spectrum of Phenyl (6*S*)-[6- $^2\text{H}_1$ ]-2,3,6-tri-*O*-benzyl-1-thio- $\beta$ -D-galactopyranoside (**6S-D-1**)

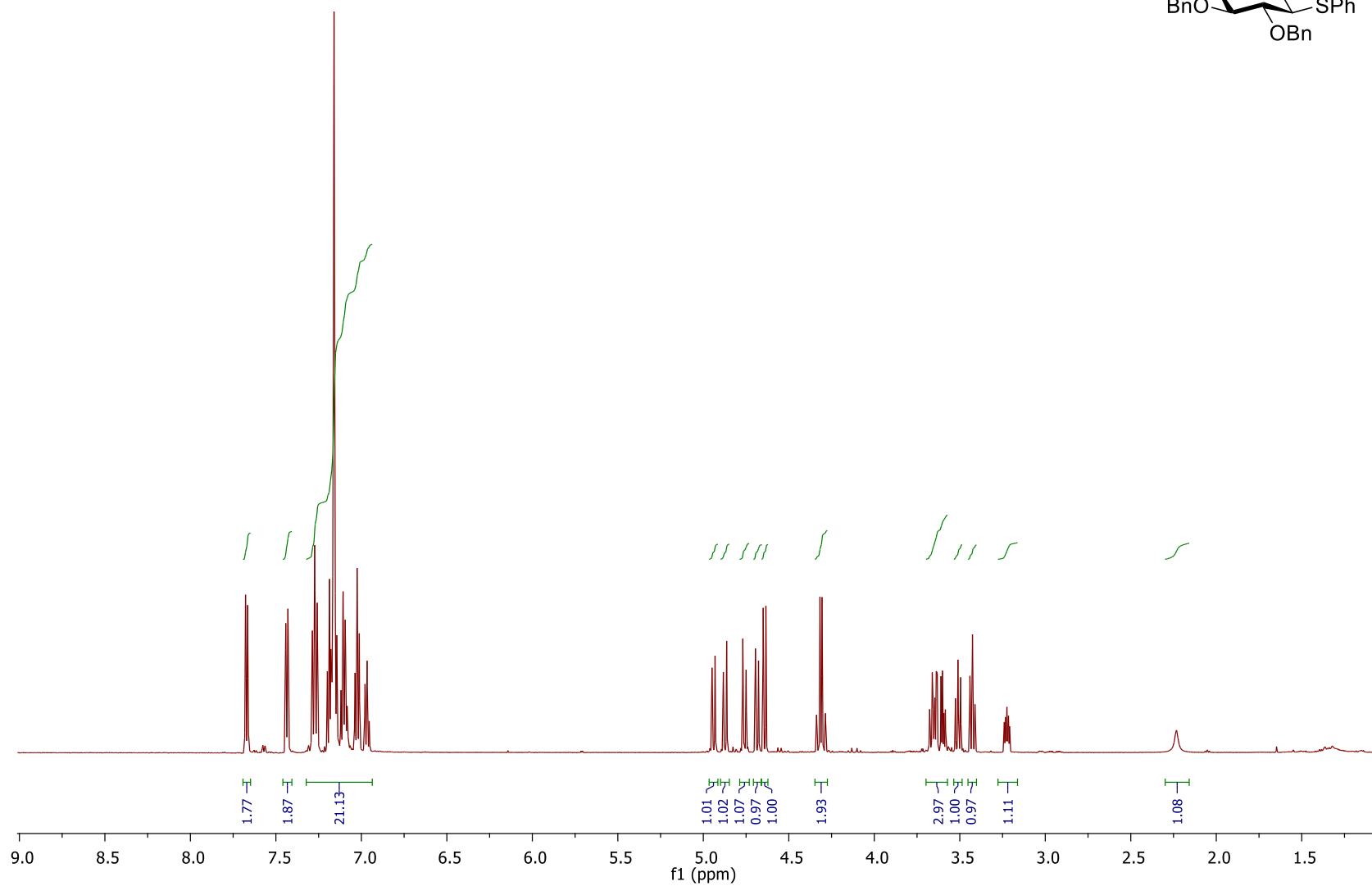
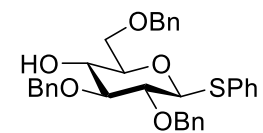




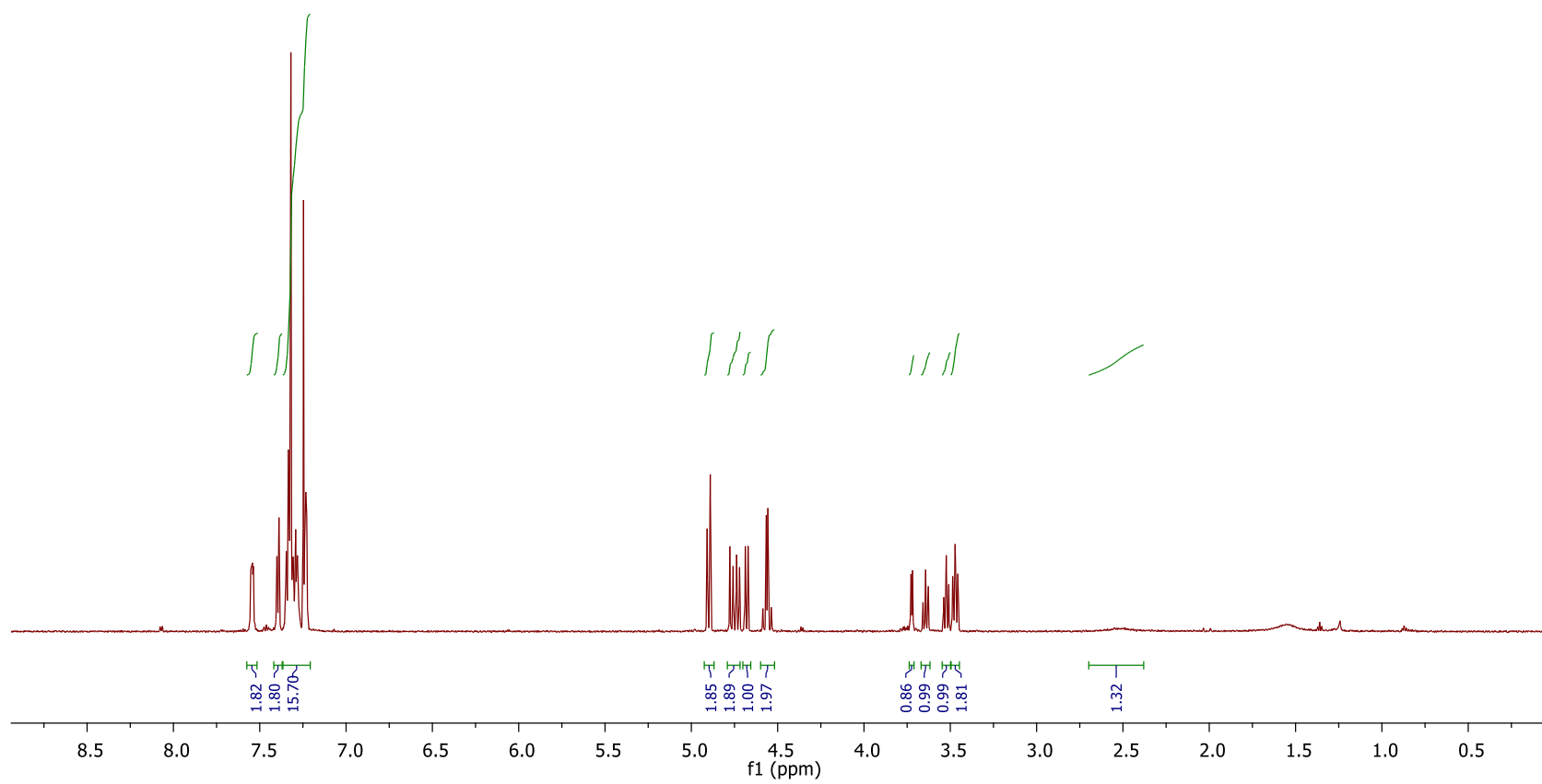
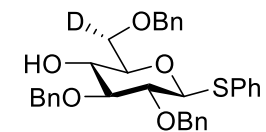
$^1\text{H}$  NMR (600 MHz,  $\text{CDCl}_3$ ) Spectrum of Phenyl 2,3,6-tri-*O*-benzyl-1-thio- $\beta$ -D-glucopyranoside (**2**)



$^1\text{H}$  NMR (600 MHz,  $\text{C}_6\text{D}_6$ ) Spectrum of Phenyl 2,3,6-tri-*O*-benzyl-1-thio- $\beta$ -D-glucopyranoside (**2**)

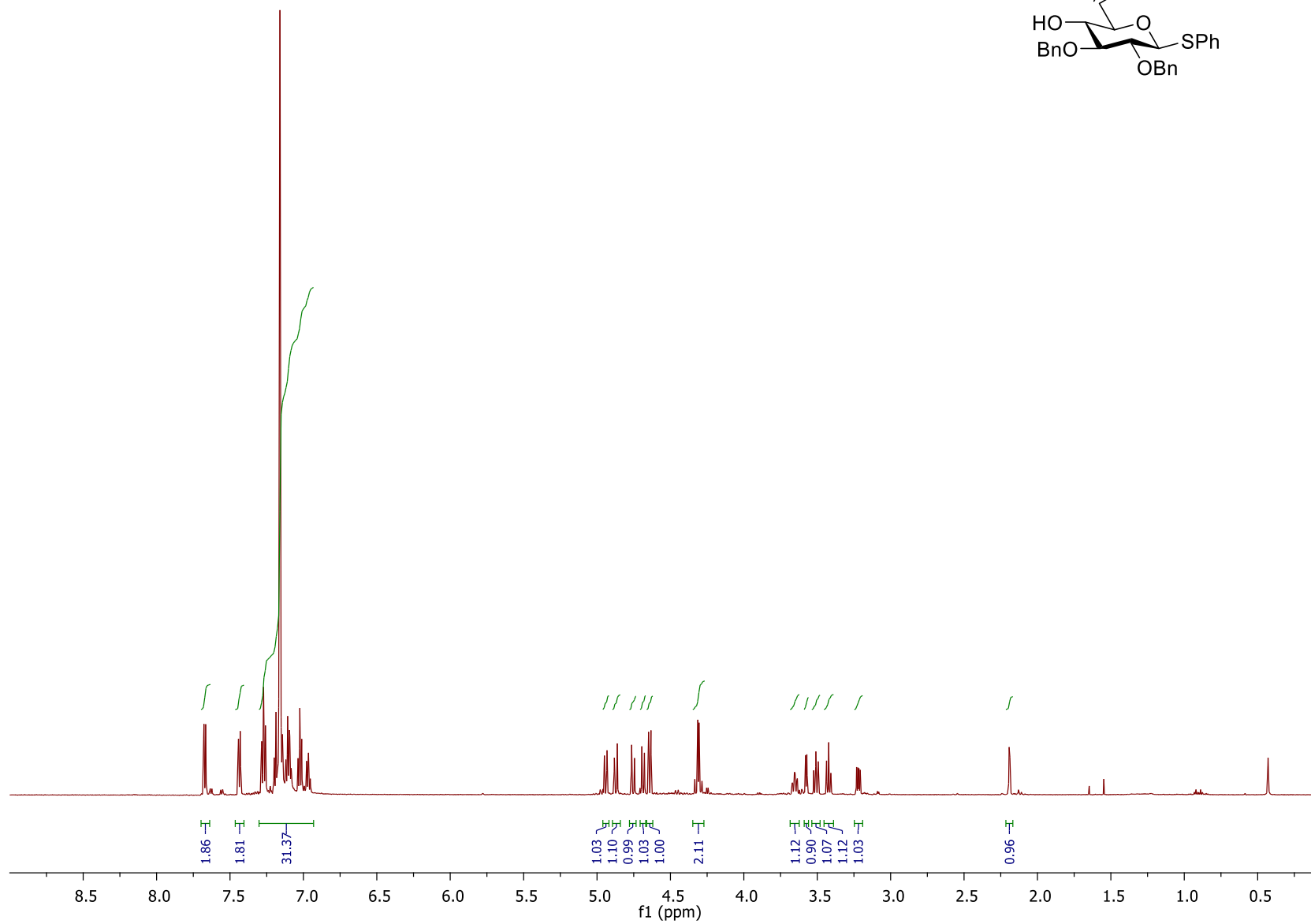
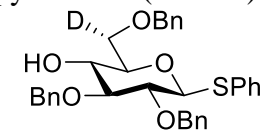


$^1\text{H}$  NMR (600 MHz,  $\text{CDCl}_3$ ) Spectrum of Phenyl (6*S*)-[6- $^2\text{H}_1$ ]-2,3,6-tri-*O*-benzyl-1-thio- $\beta$ -D-glucopyranoside(6*S*-**D-2**)

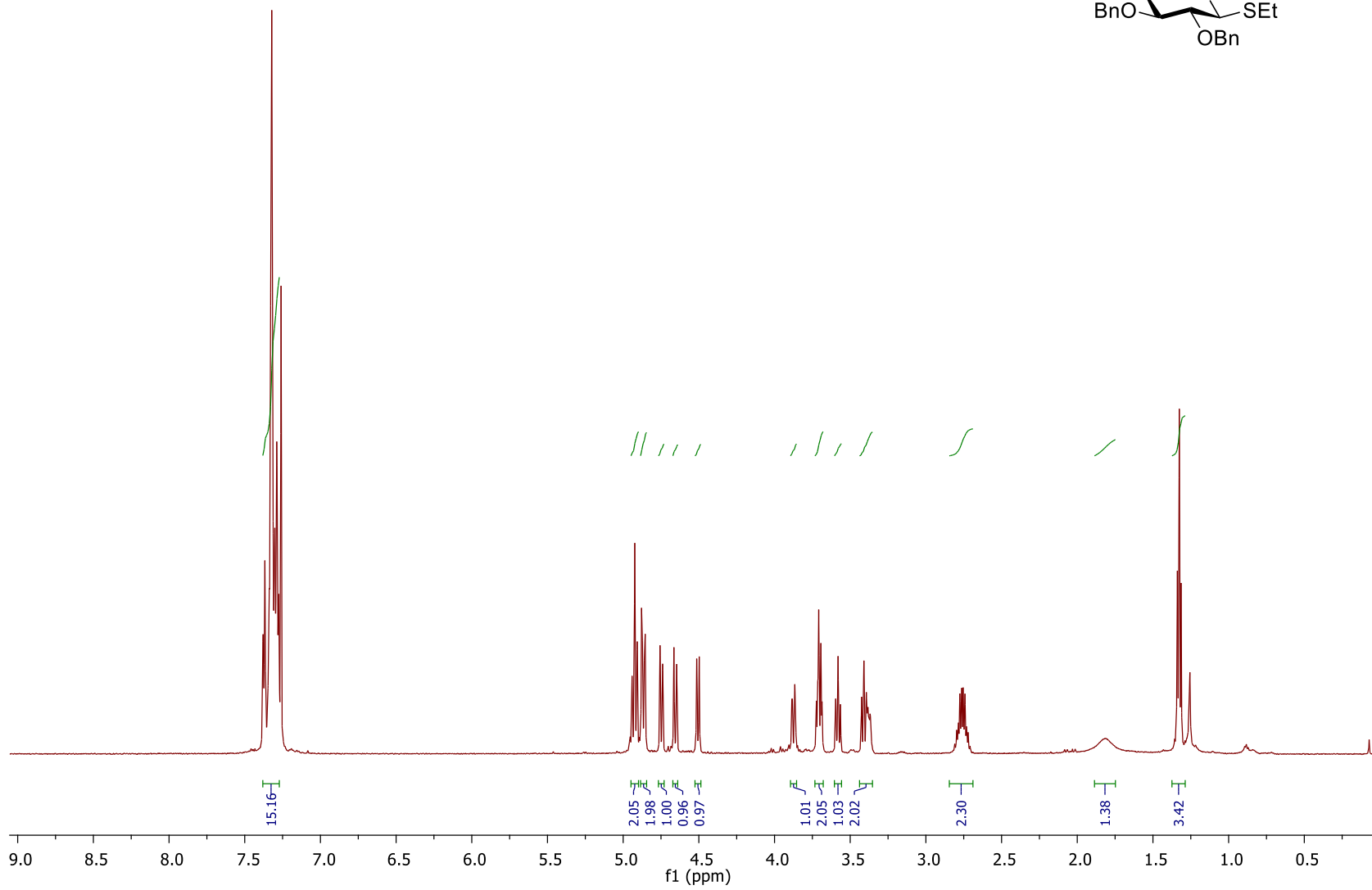
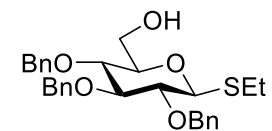


S11

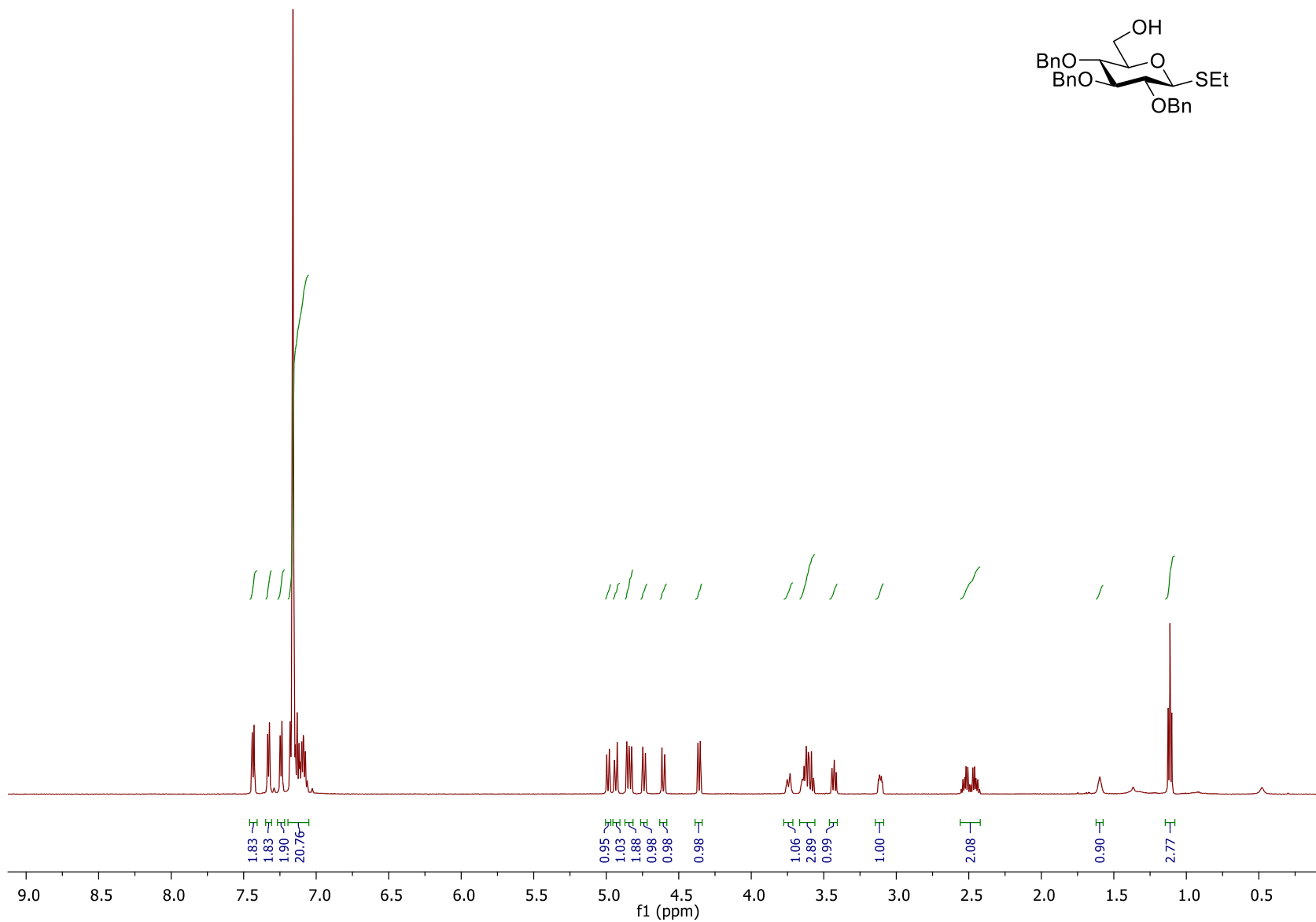
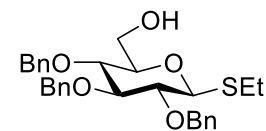
$^1\text{H}$  NMR (600 MHz,  $\text{C}_6\text{D}_6$ ) Spectrum of Phenyl (6*S*)-[6- $^2\text{H}_1$ ]-2,3,6-tri-*O*-benzyl-1-thio- $\beta$ -D-glucopyranoside (**6*S*-D-2**)



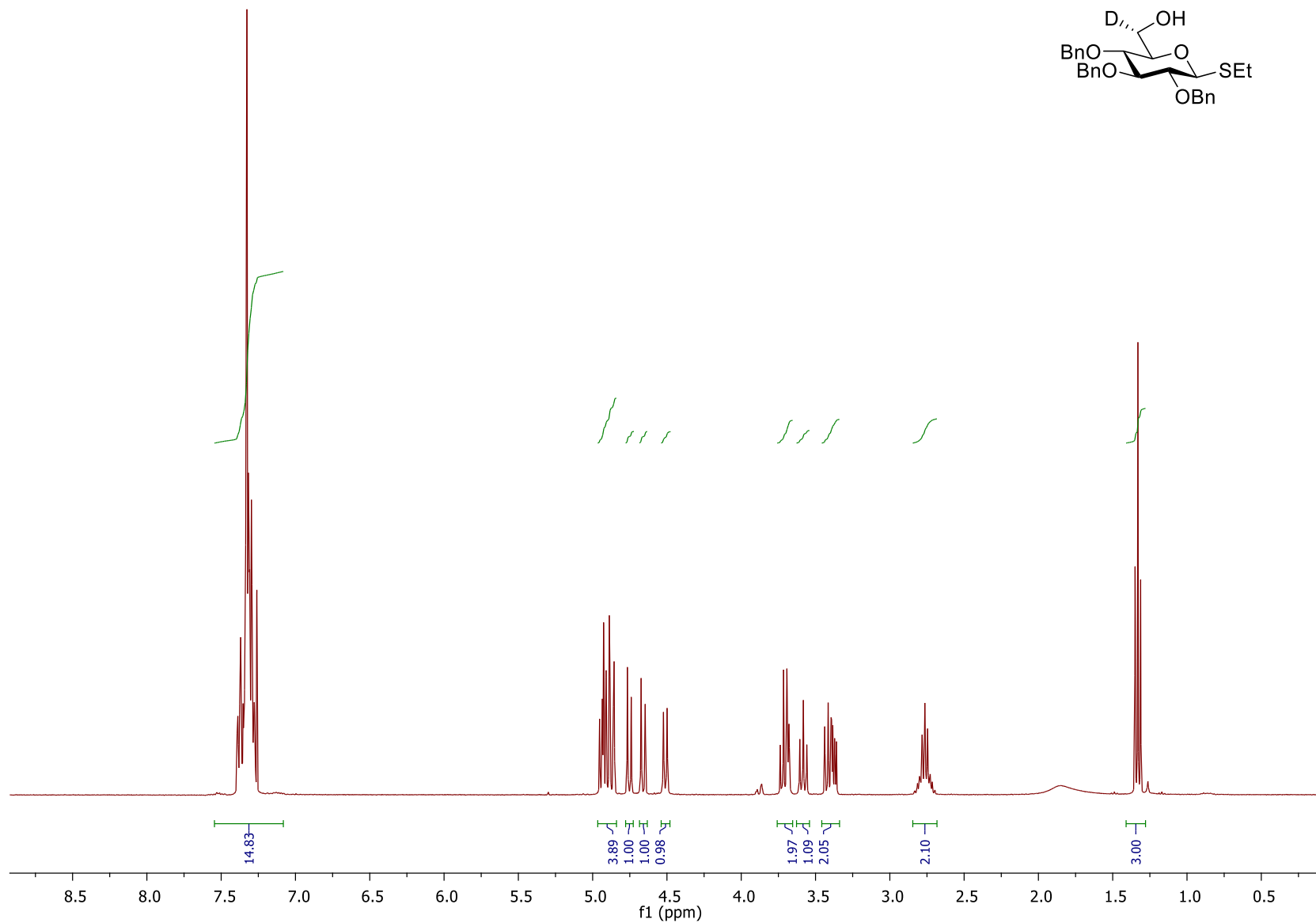
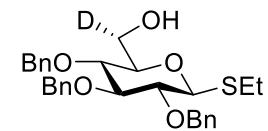
$^1\text{H}$  NMR (600 MHz,  $\text{CDCl}_3$ ) Spectrum of Ethyl 2,3,4-tri-*O*-benzyl-1-thio- $\beta$ -D-glucopyranoside (**3**)



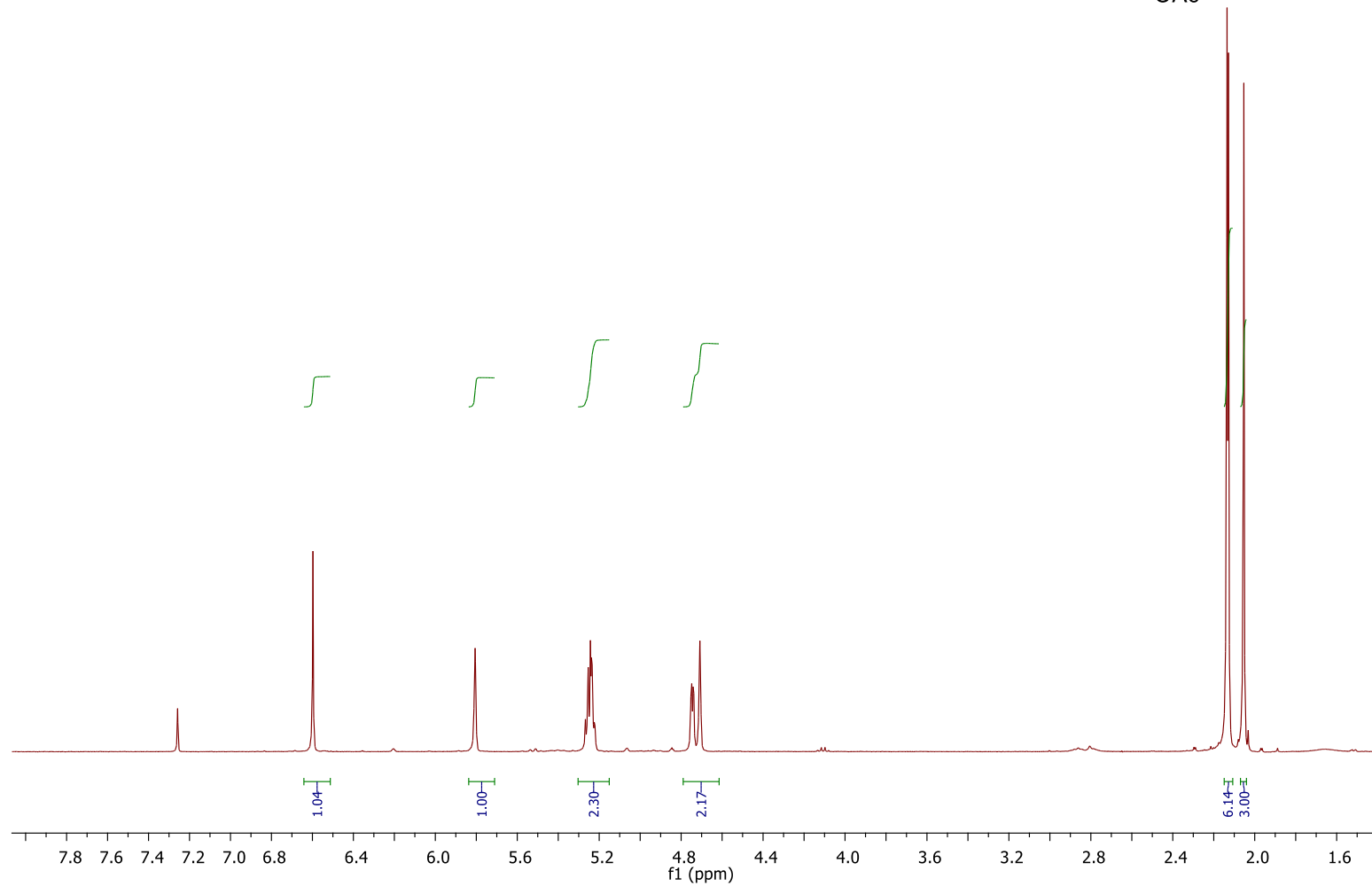
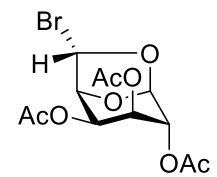
$^1\text{H}$  NMR (600 MHz,  $\text{C}_6\text{D}_6$ ) Spectrum of Ethyl 2,3,4-tri-*O*-benzyl-1-thio- $\beta$ -D-glucopyranoside (**3**)



$^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ ) Spectrum of Ethyl (6*S*)-[6- $^2\text{H}_1$ ]-2,3,4,6-tetra-*O*-acetyl-1-thio- $\beta$ -D-glucopyranoside (**6*S*-D-3**)

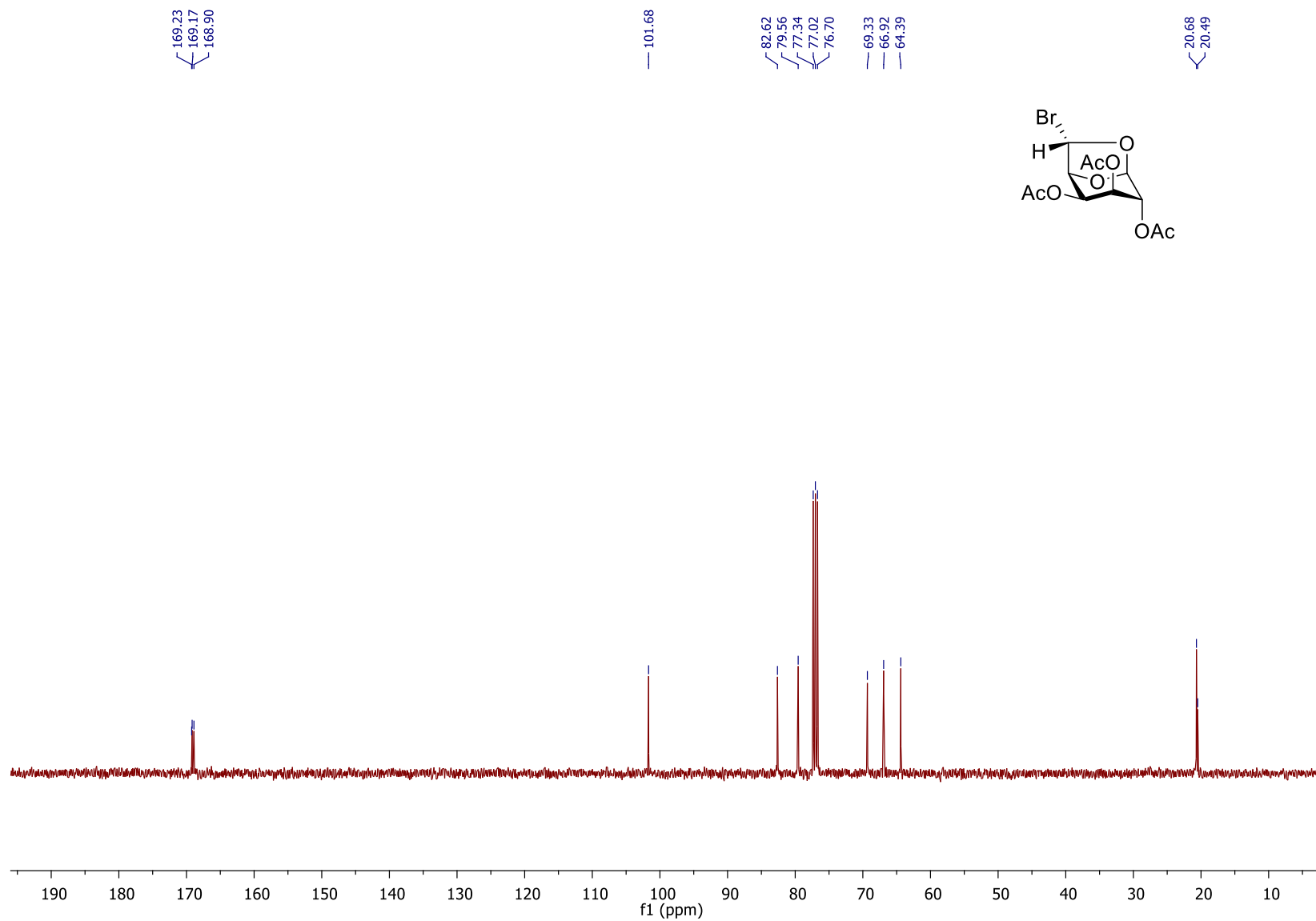


$^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ ) Spectrum of (6*S*)-1,6-Anhydro-2,3,4-tri-*O*-acetyl-6-bromo- $\beta$ -D-galactopyranose (**5**)

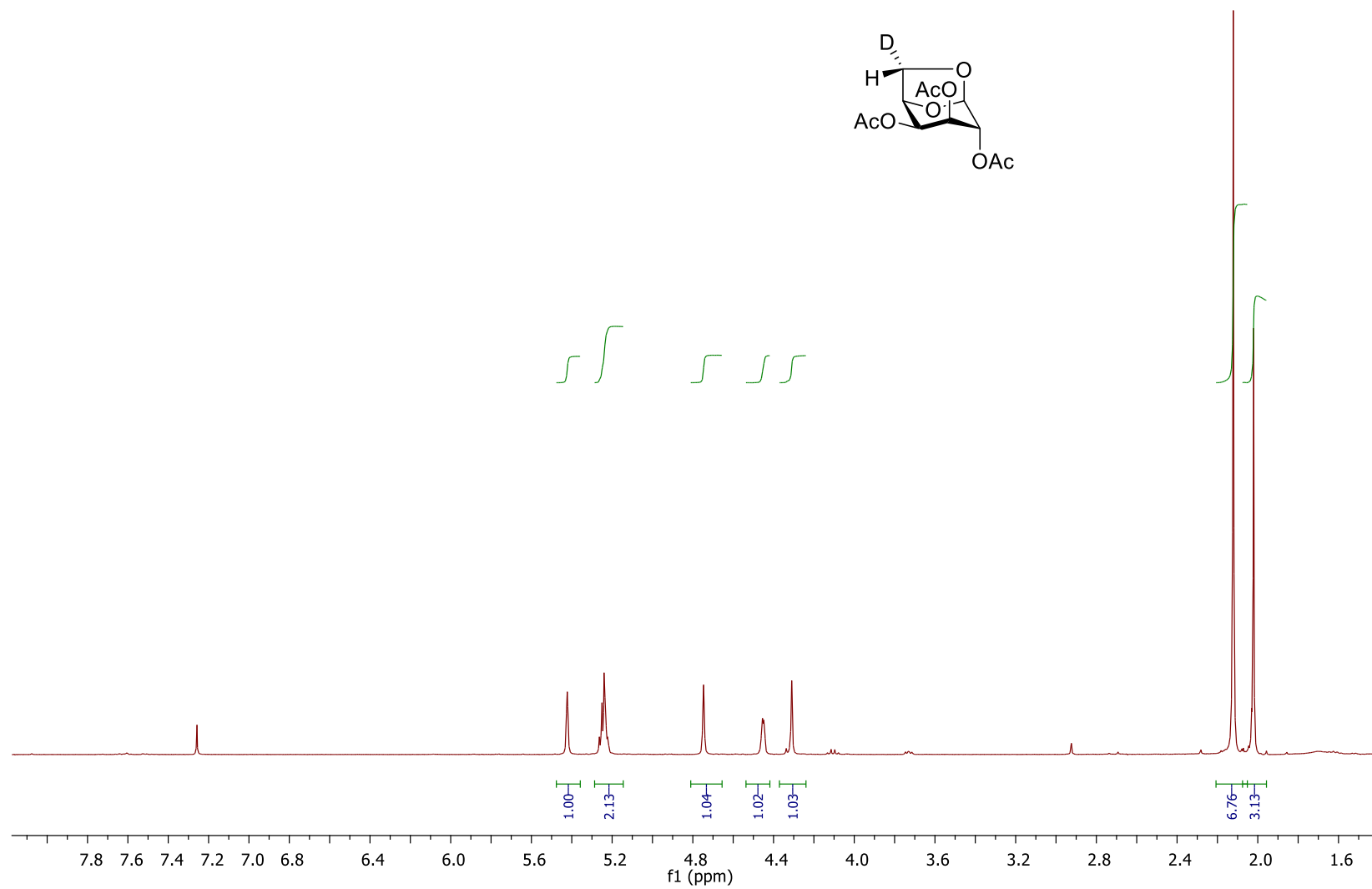




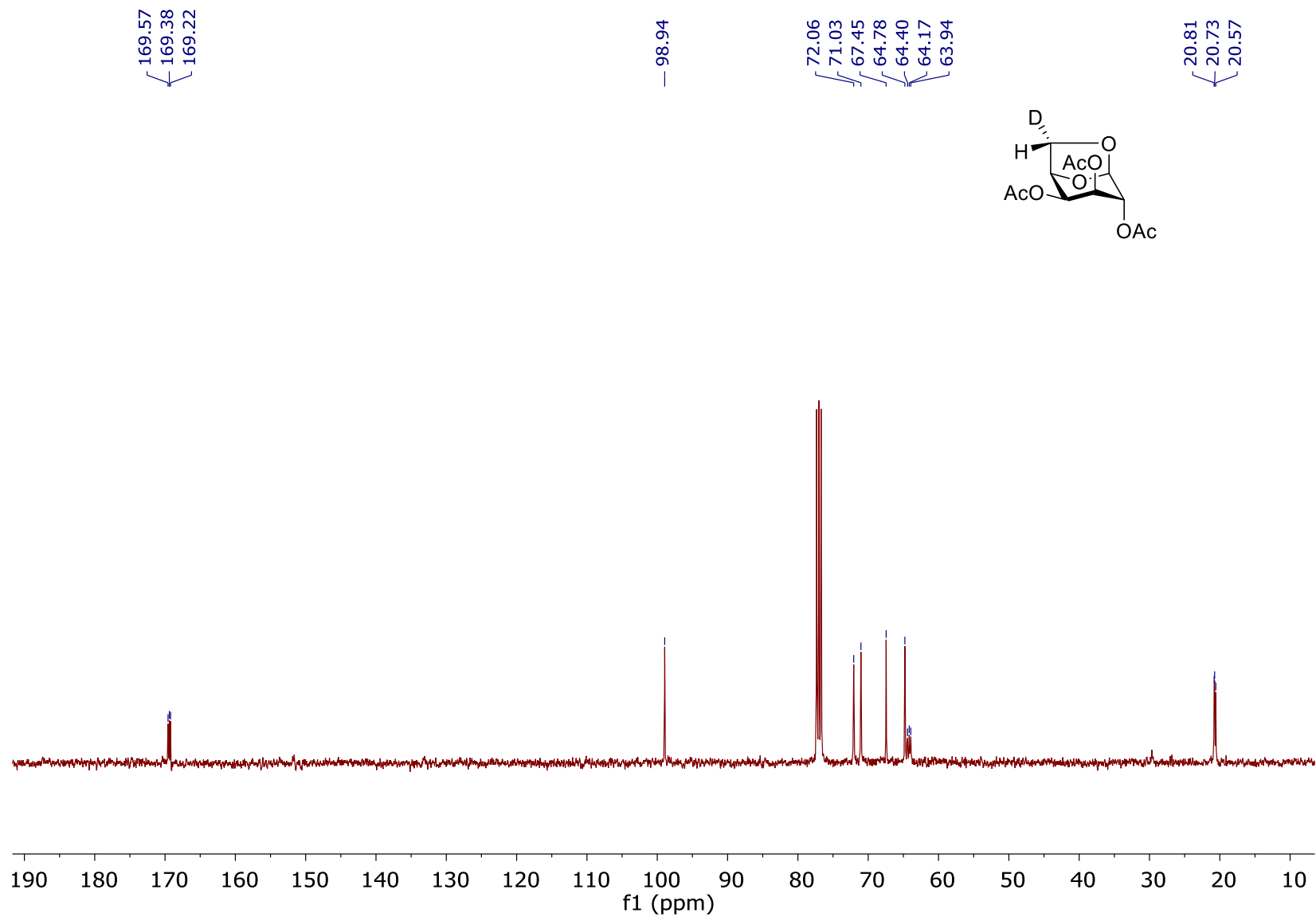
$^1\text{H}$  NMR (100 MHz,  $\text{CDCl}_3$ ) Spectrum of (6*S*)-1,6-Anhydro-2,3,4-tri-*O*-acetyl-6-bromo- $\beta$ -D-galactopyranose (**5**)



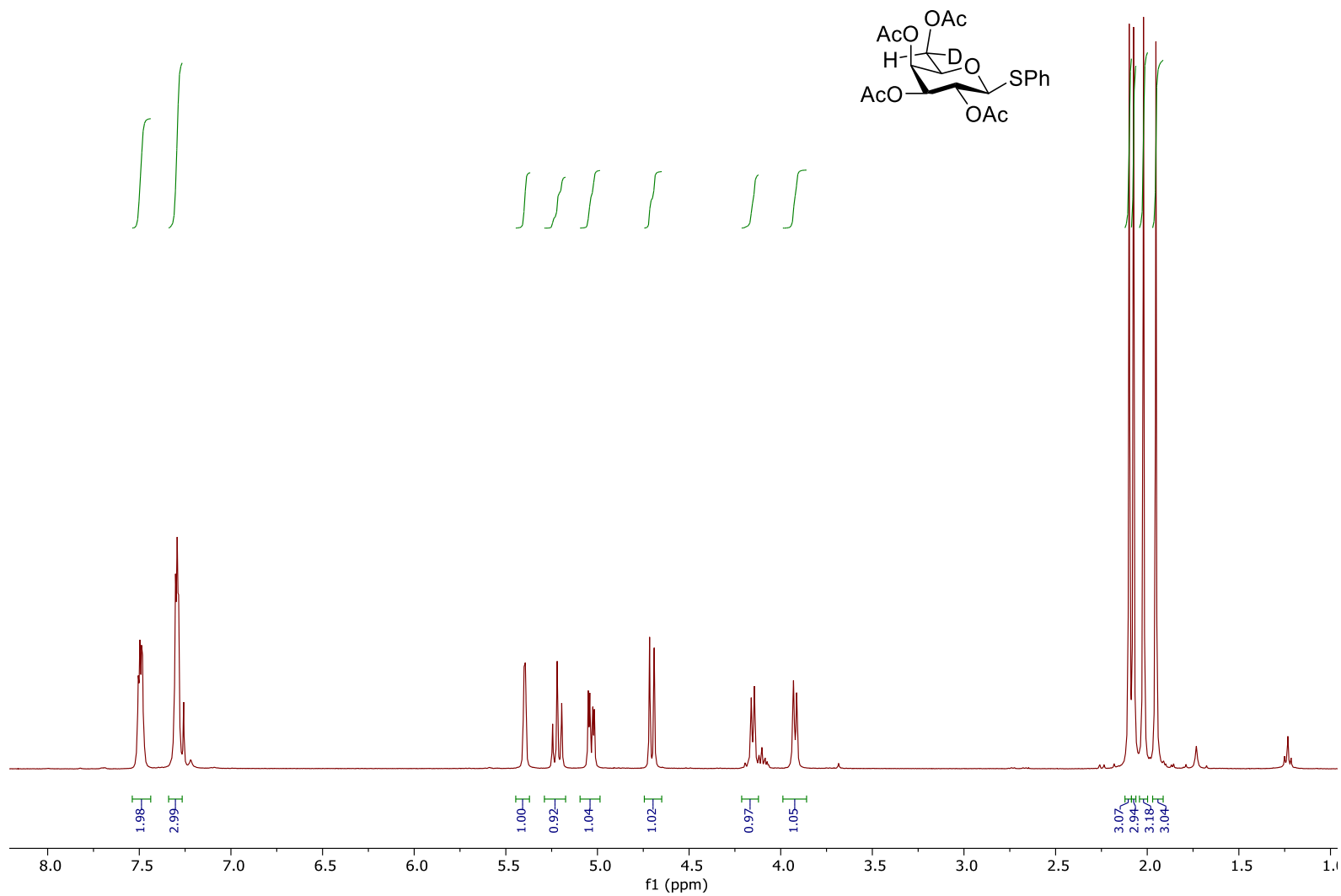
$^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ ) Spectrum of (6*S*)-[6- $^2\text{H}_1$ ]-1,6-Anhydro-2,3,4-tri-*O*-acetyl- $\beta$ -D-galactopyranose (**6**)



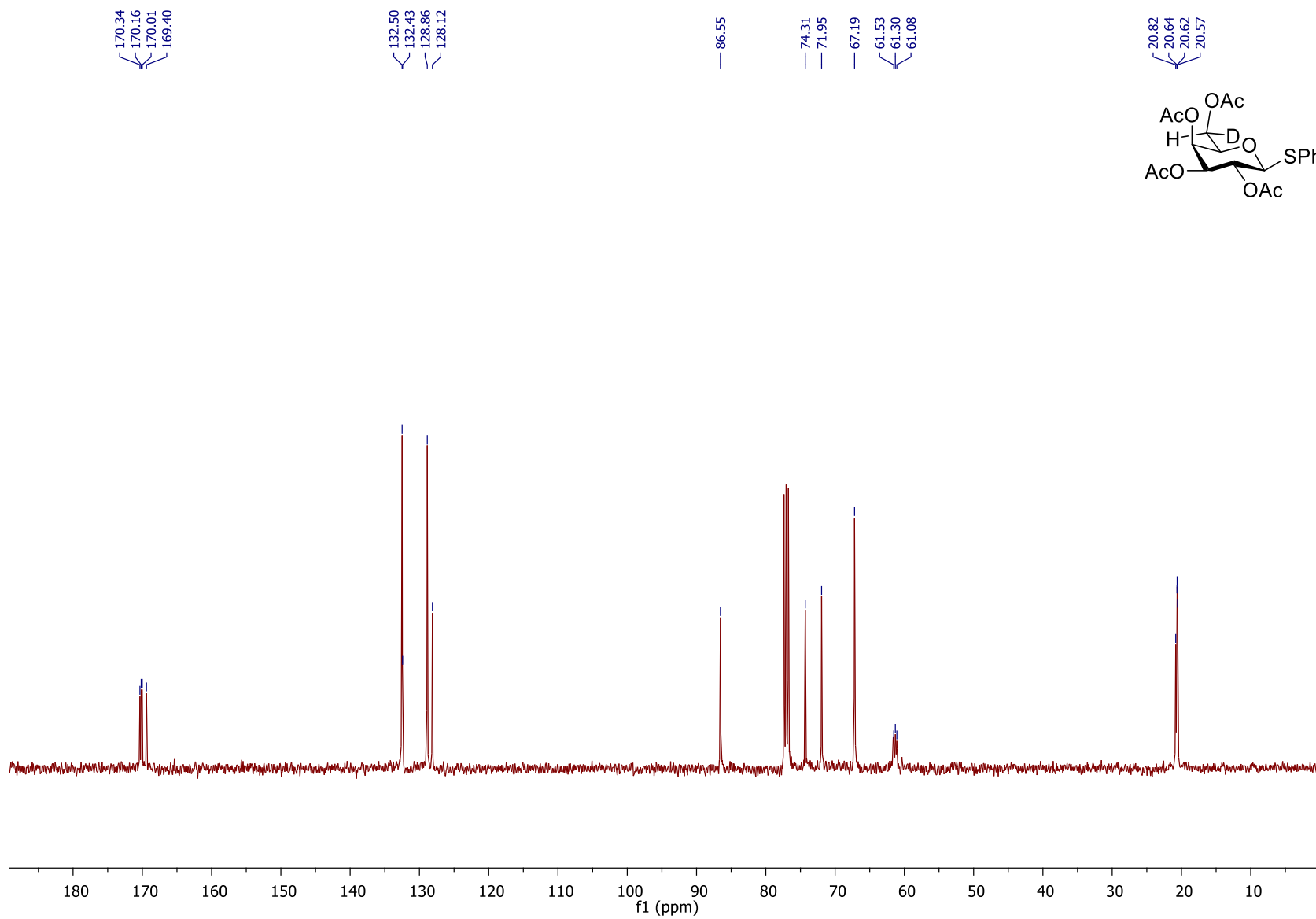
$^{13}\text{C}$  NMR (100 MHz,  $\text{CDCl}_3$ ) Spectrum of (6*S*)-[6- $^2\text{H}_1$ ]-1,6-Anhydro-2,3,4-tri-O-acetyl- $\beta$ -D-galactopyranose (**6**)



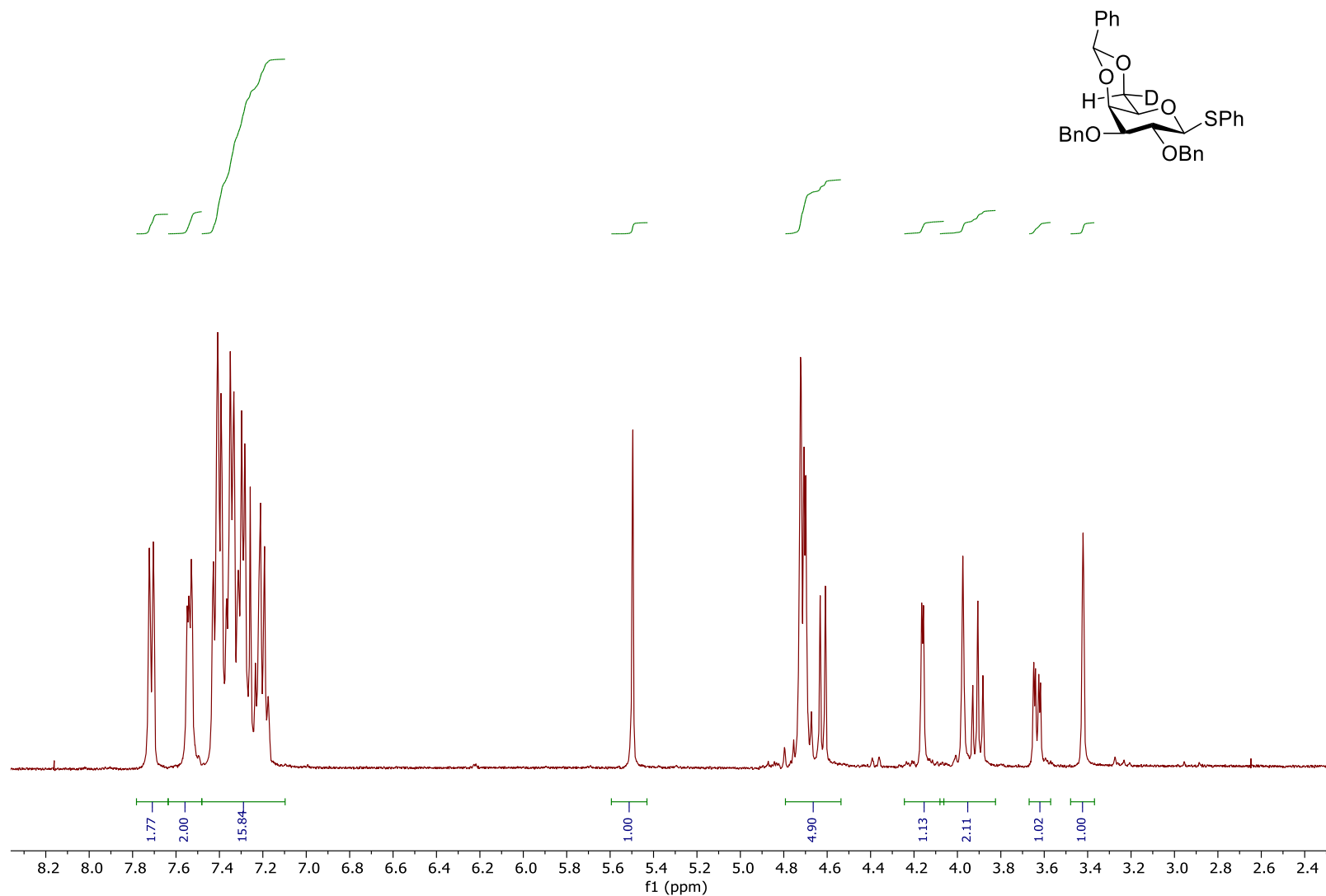
$^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ ) Spectrum of Phenyl (6*S*)-[6- $^2\text{H}_1$ ]-2,3,4,6-tetra-*O*-acetyl-1-thio- $\beta$ -D-galactopyranoside (**8**)



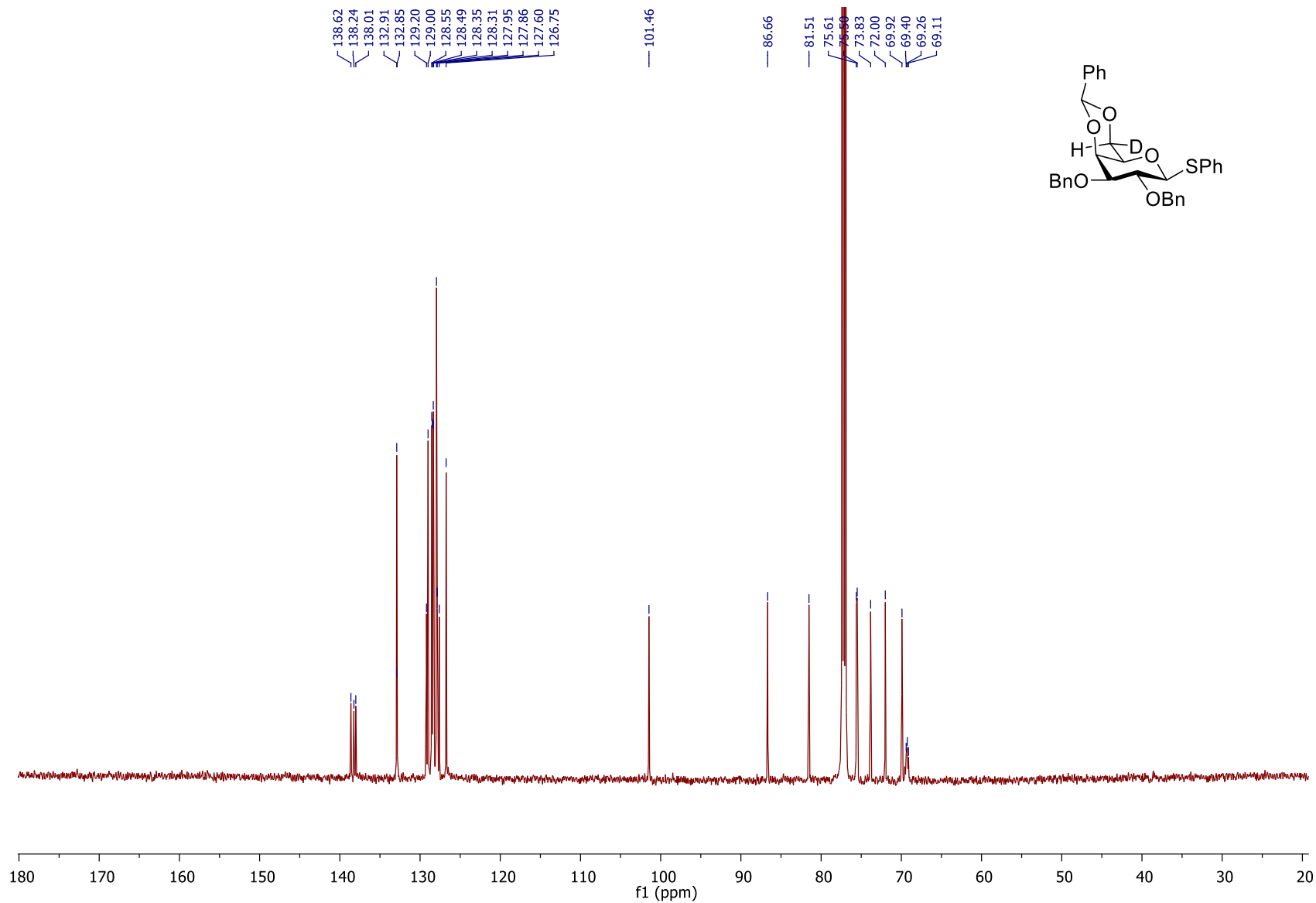
$^{13}\text{C}$  NMR (100 MHz,  $\text{CDCl}_3$ ) Spectrum of Phenyl (6*S*)-[6- $^2H_1$ ]-2,3,4,6-tetra-*O*-acetyl-1-thio- $\beta$ -D-galactopyranoside (**8**)



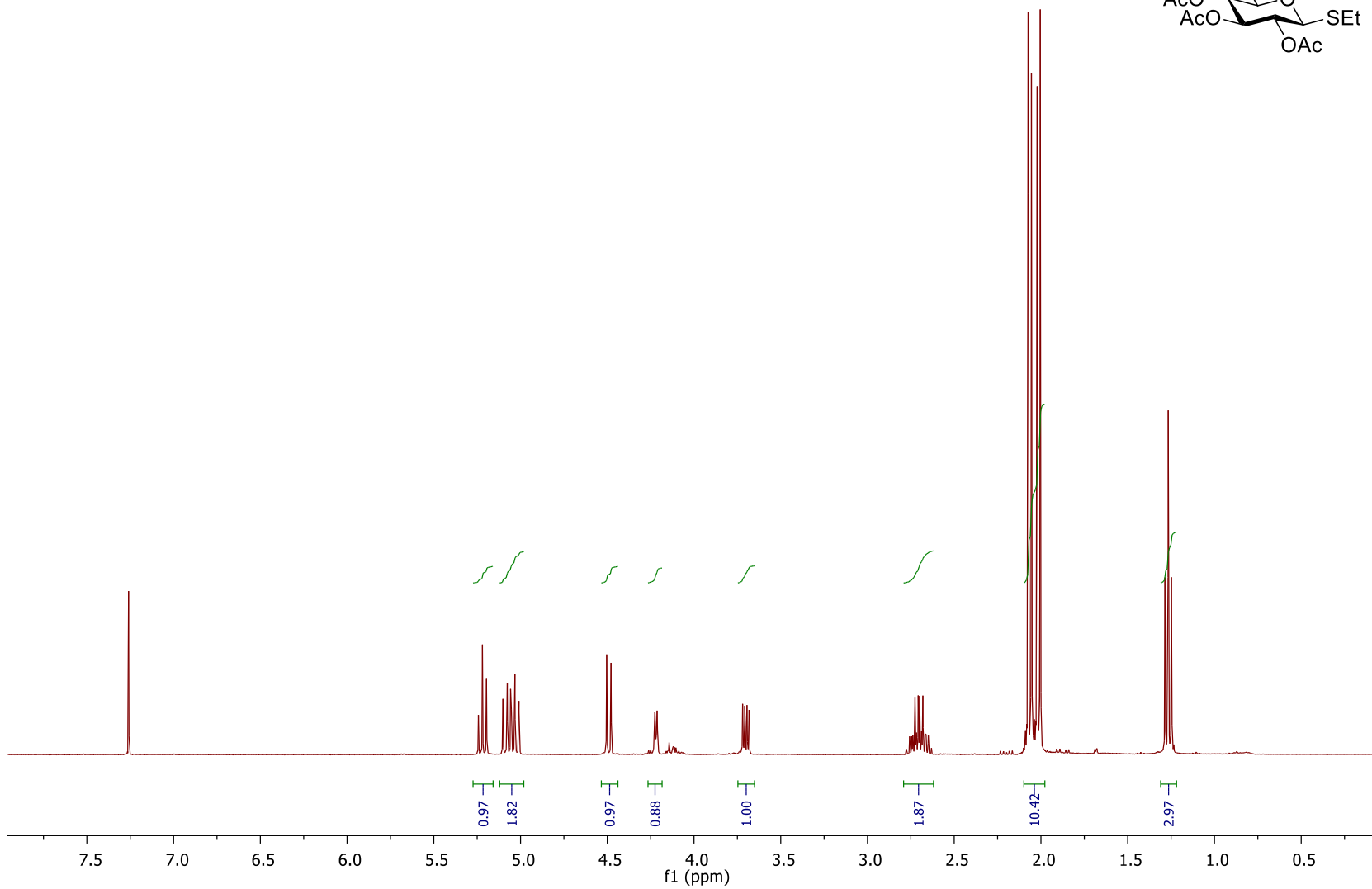
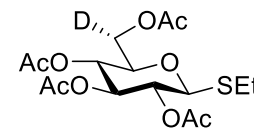
$^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ ) Spectrum of Phenyl 2,3-di-*O*-benzyl-4,6-*O*-benzylidene-(6*S*)-[6- $^2\text{H}_1$ ]-1-thio- $\beta$ -D-galactopyranoside (**10**)



$^{13}\text{C}$  NMR (150 MHz,  $\text{CDCl}_3$ ) Spectrum of Phenyl 2,3-di-*O*-benzyl-4,6-*O*-benzylidene-(6*S*)-[6- $^2\text{H}_1$ ]-1-thio- $\beta$ -D-galactopyranoside (**10**)

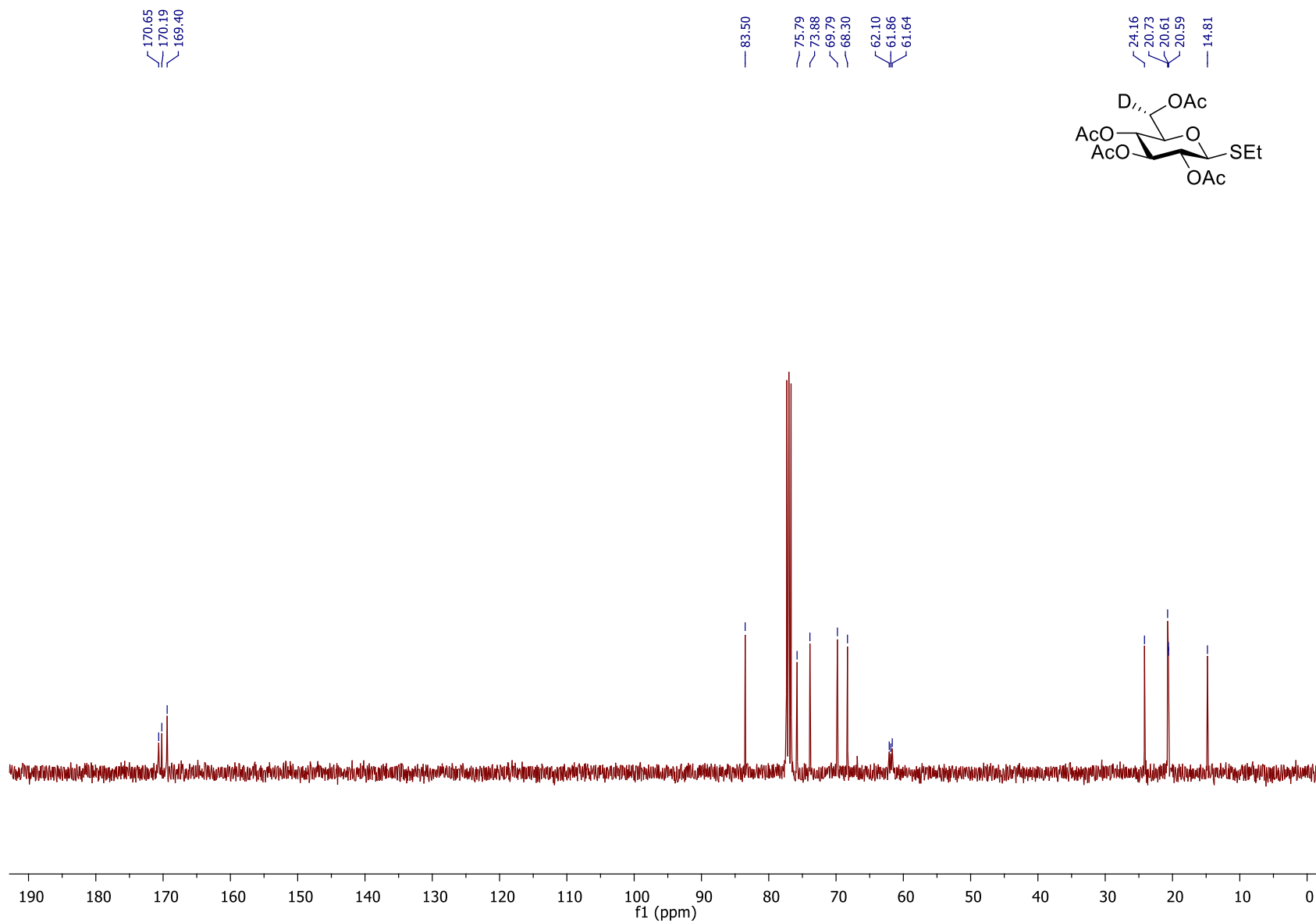


$^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ ) Spectrum of Ethyl -(6S)-[6- $^2\text{H}_1$ ]-2,3,4,6-tetra-O-acetyl-1-thio- $\beta$ -D-glucopyranoside (**12**)

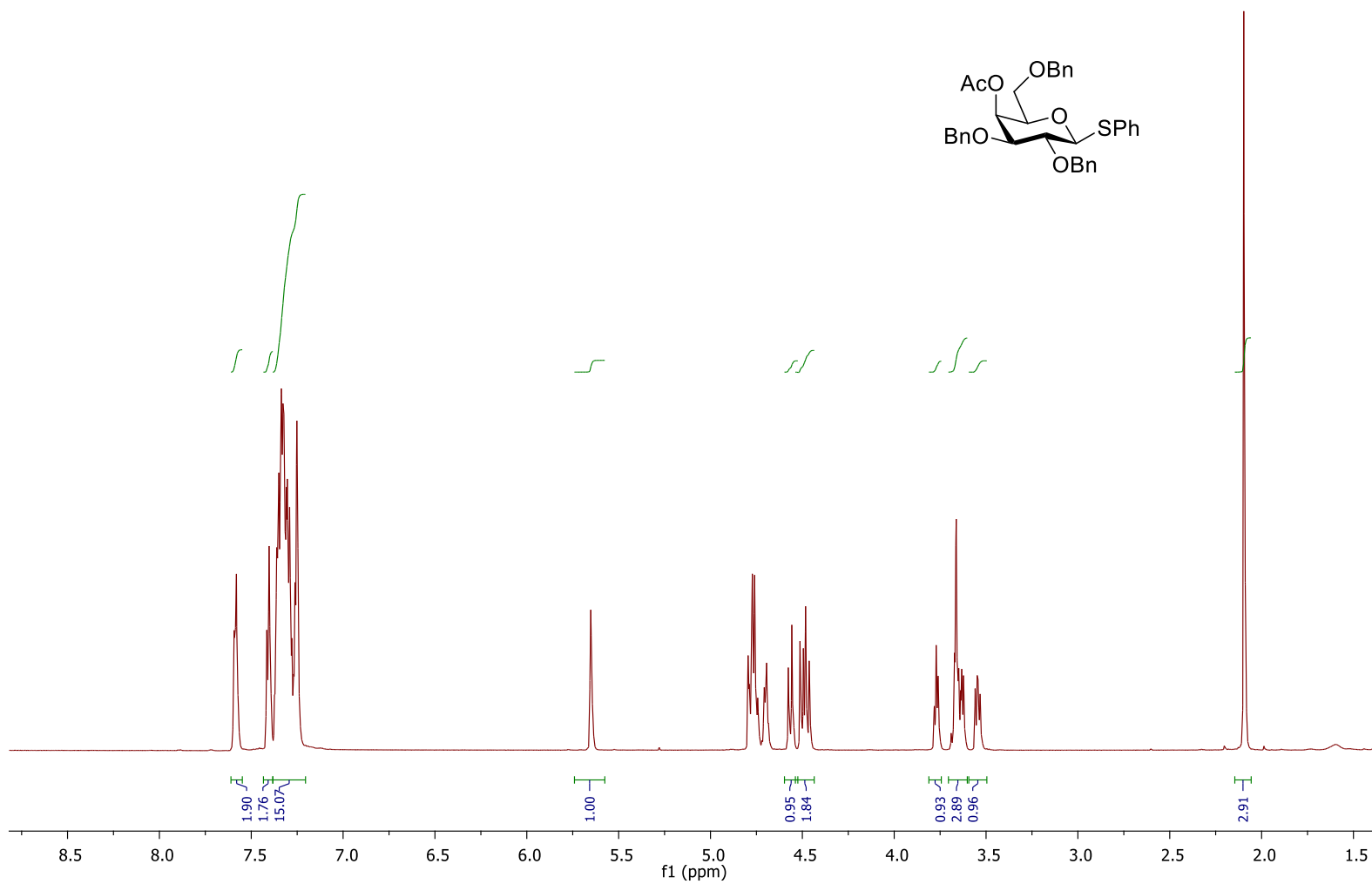




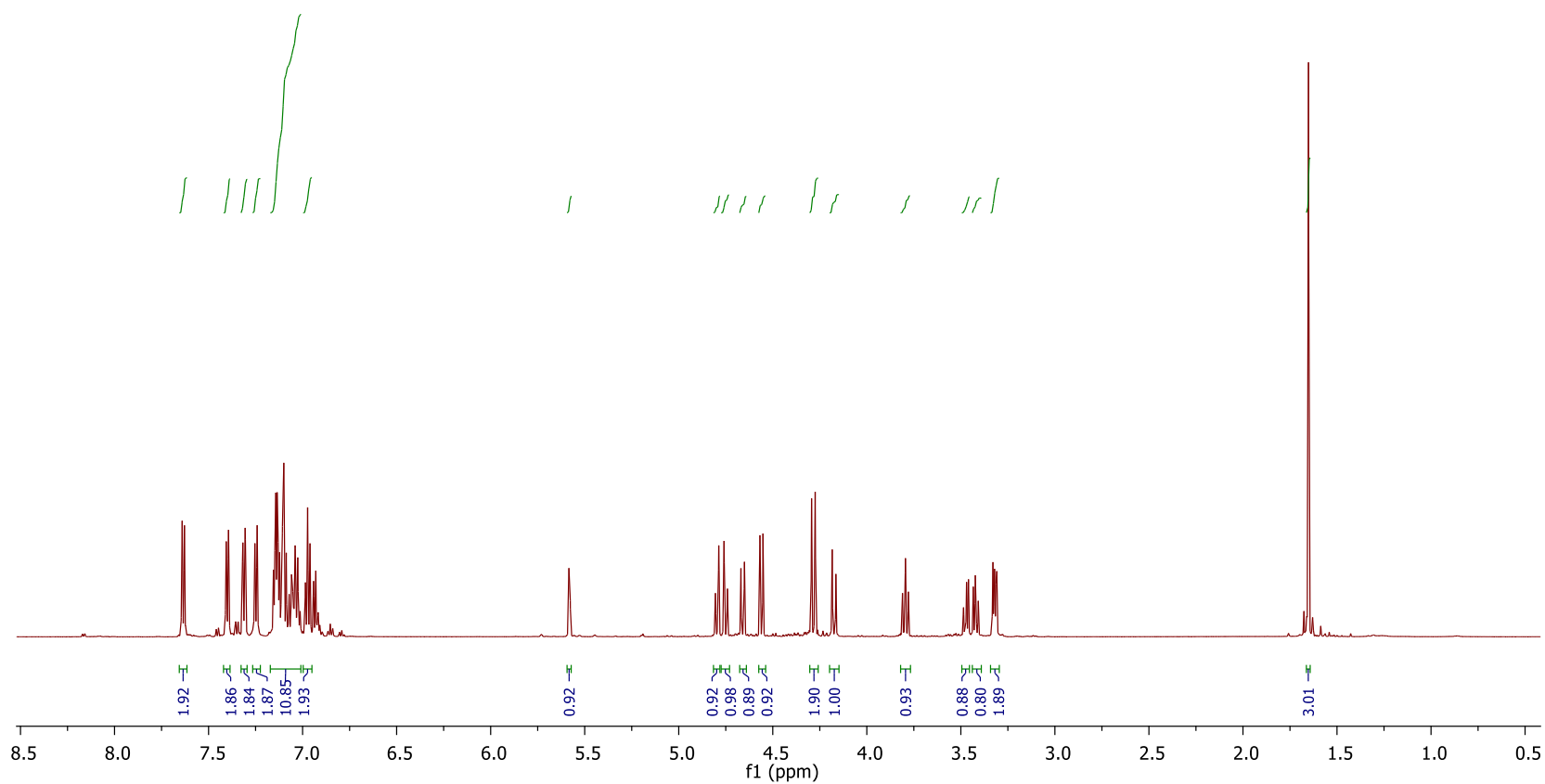
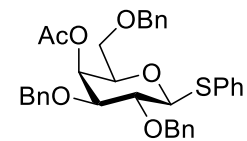
$^{13}\text{C}$  NMR (100 MHz,  $\text{CDCl}_3$ ) Spectrum of Ethyl -(6*S*)-[6- $^2\text{H}_1$ ]-2,3,4,6-tetra-*O*-acetyl-1-thio- $\beta$ -D-glucopyranoside (**12**)



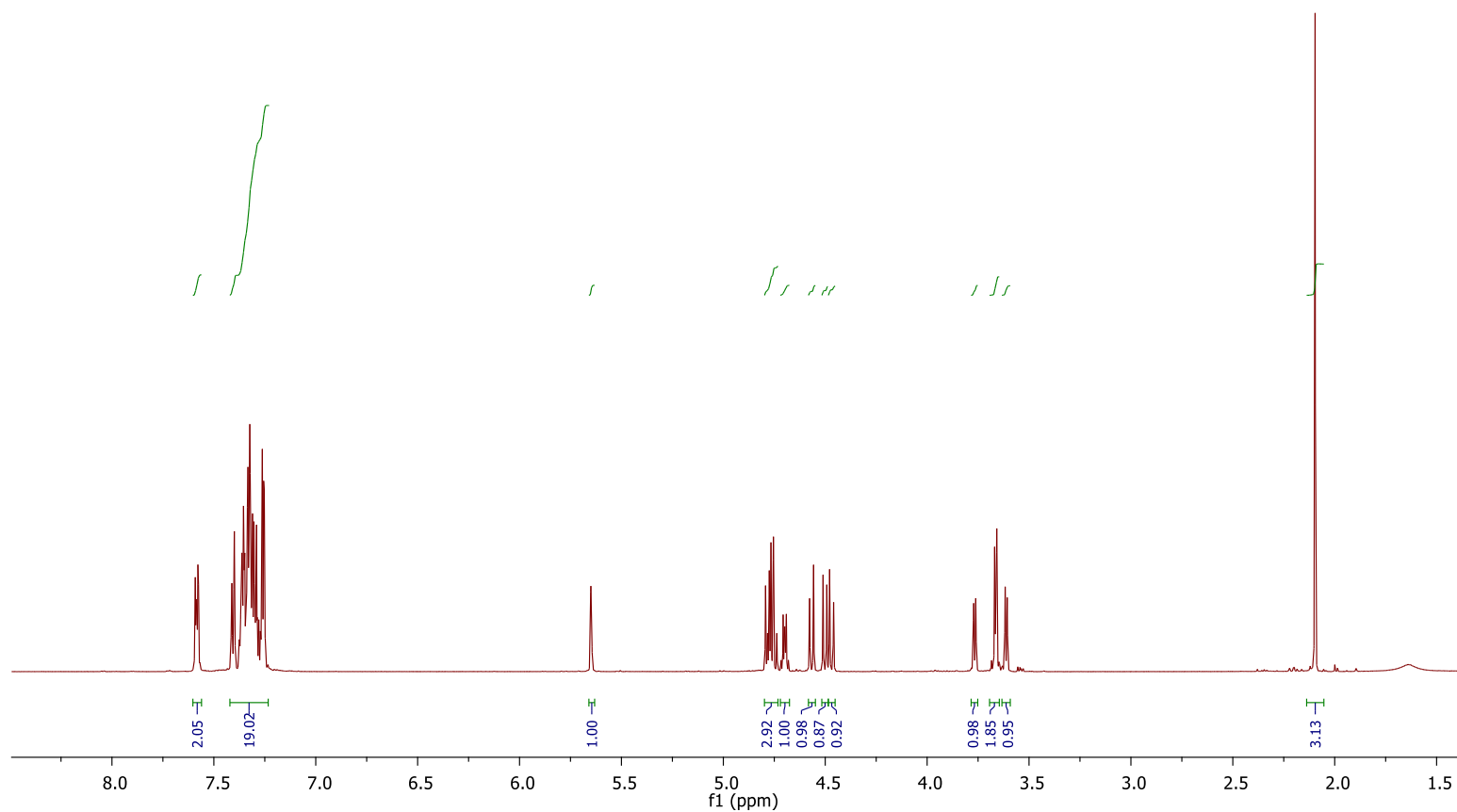
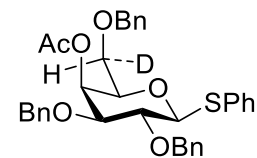
$^1\text{H}$  NMR (600 MHz,  $\text{CDCl}_3$ ) Spectrum of Phenyl 4-*O*-acetyl-2,3,6-tri-*O*-benzyl-1-thio- $\beta$ -D-galactopyranoside (**13**)



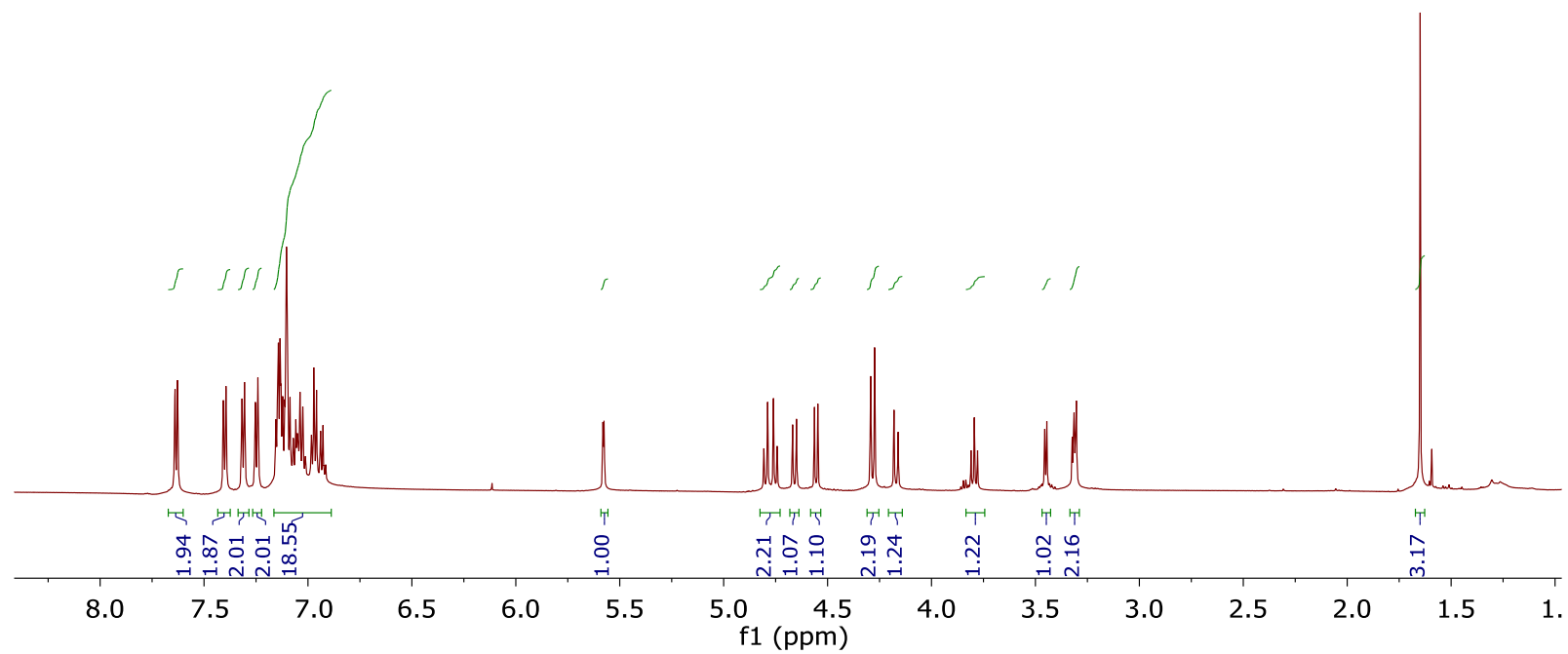
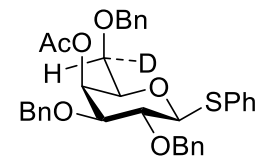
$^1\text{H}$  NMR (600 MHz,  $\text{C}_6\text{D}_6$ ) Spectrum of Phenyl 4-*O*-acetyl-2,3,6-tri-*O*-benzyl-1-thio- $\beta$ -D-galactopyranoside (**13**)



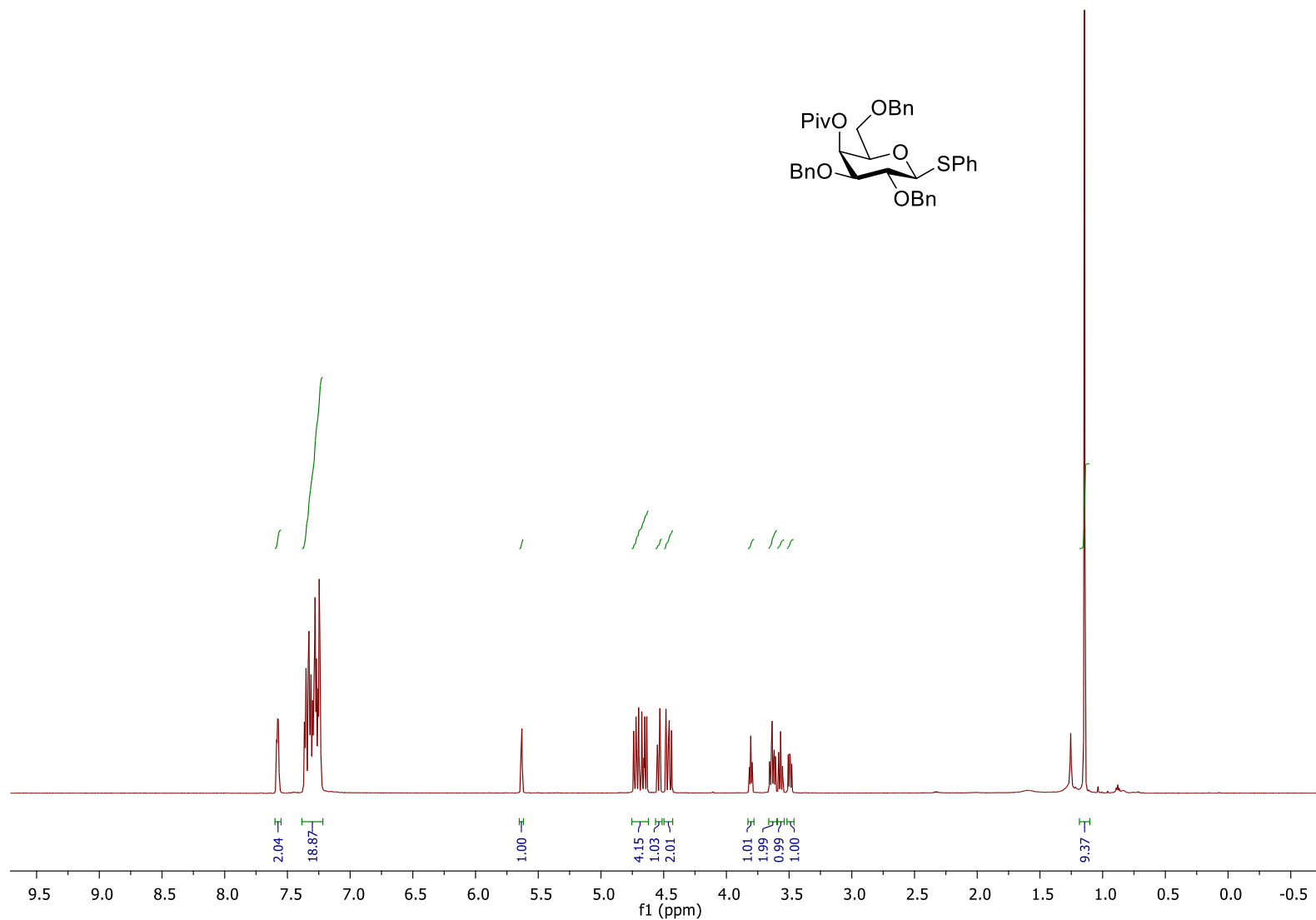
<sup>1</sup>H NMR (600 MHz, CDCl<sub>3</sub>) Spectrum of Phenyl 4-*O*-acetyl-(6*S*)-[6-<sup>2</sup>H<sub>1</sub>]-2,3,6-tri-*O*-benzyl-1-thio-β-D-galactopyranoside (**6S-D-13**)



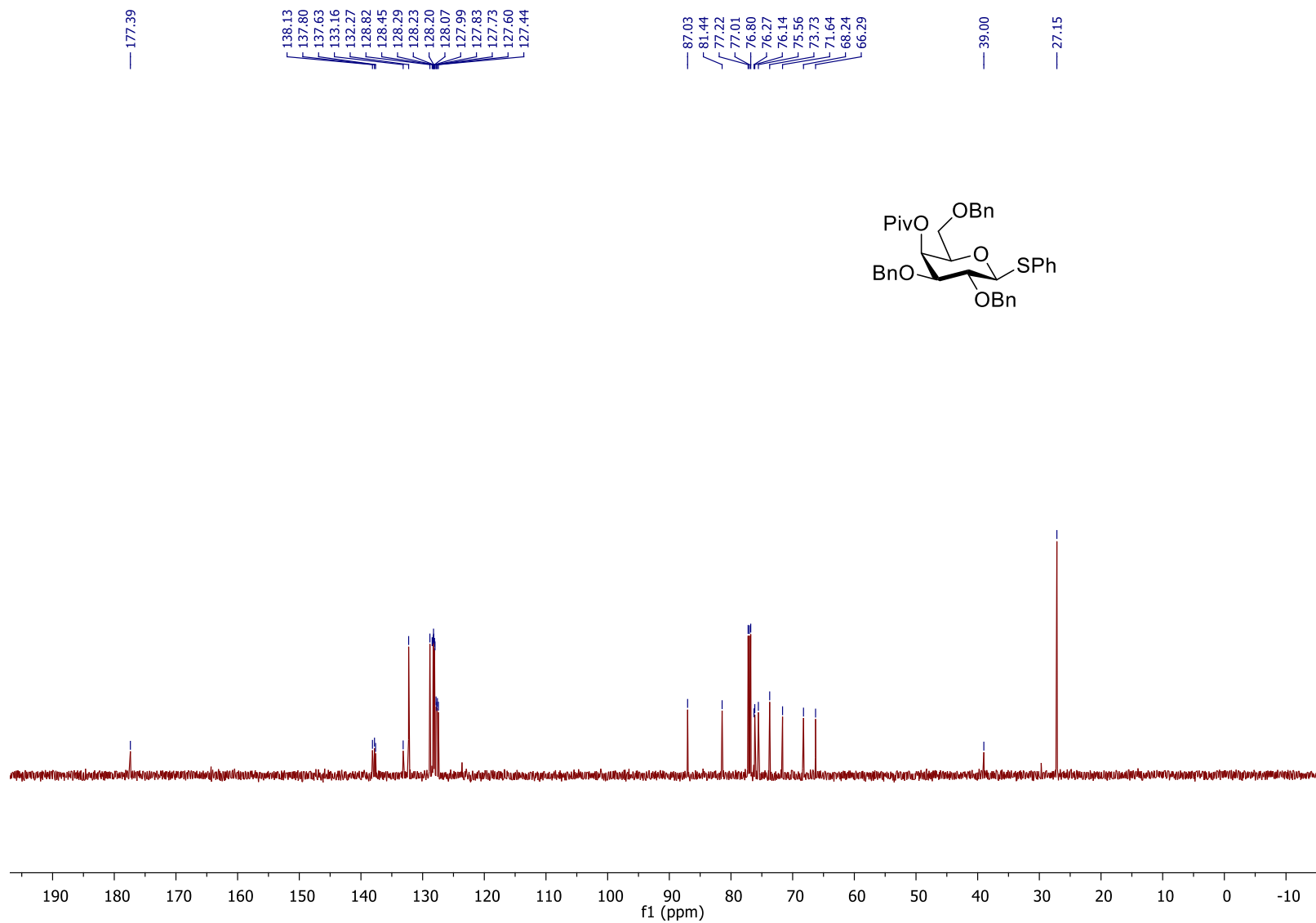
<sup>1</sup>H NMR (600 MHz, C<sub>6</sub>D<sub>6</sub>) Spectrum of Phenyl 4-*O*-acetyl-(6*S*)-[6-<sup>2</sup>H<sub>1</sub>]-2,3,6-tri-*O*-benzyl-1-thio-β-D-galactopyranoside (**6S-D-13**)



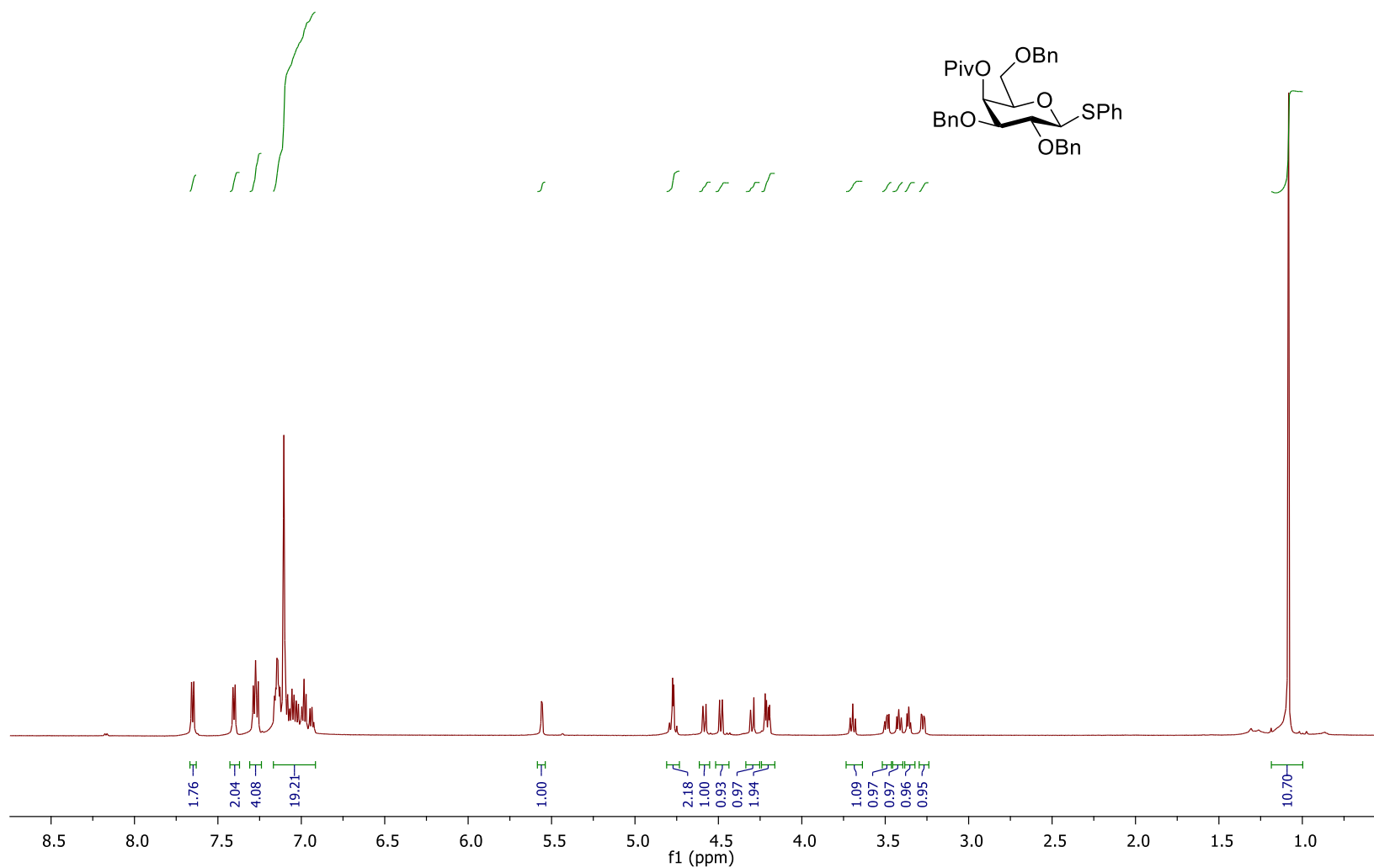
<sup>1</sup>H NMR (600 MHz, CDCl<sub>3</sub>) Spectrum of Phenyl 4-*O*-pivaloyl-2,3,6-tri-*O*-benzyl-1-thio-β-D-galactopyranoside (**14**)



$^{13}\text{C}$  NMR (150 MHz,  $\text{CDCl}_3$ ) Spectrum of Phenyl 4-*O*-pivaloyl-2,3,6-tri-*O*-benzyl-1-thio- $\beta$ -D-galactopyranoside (**14**)

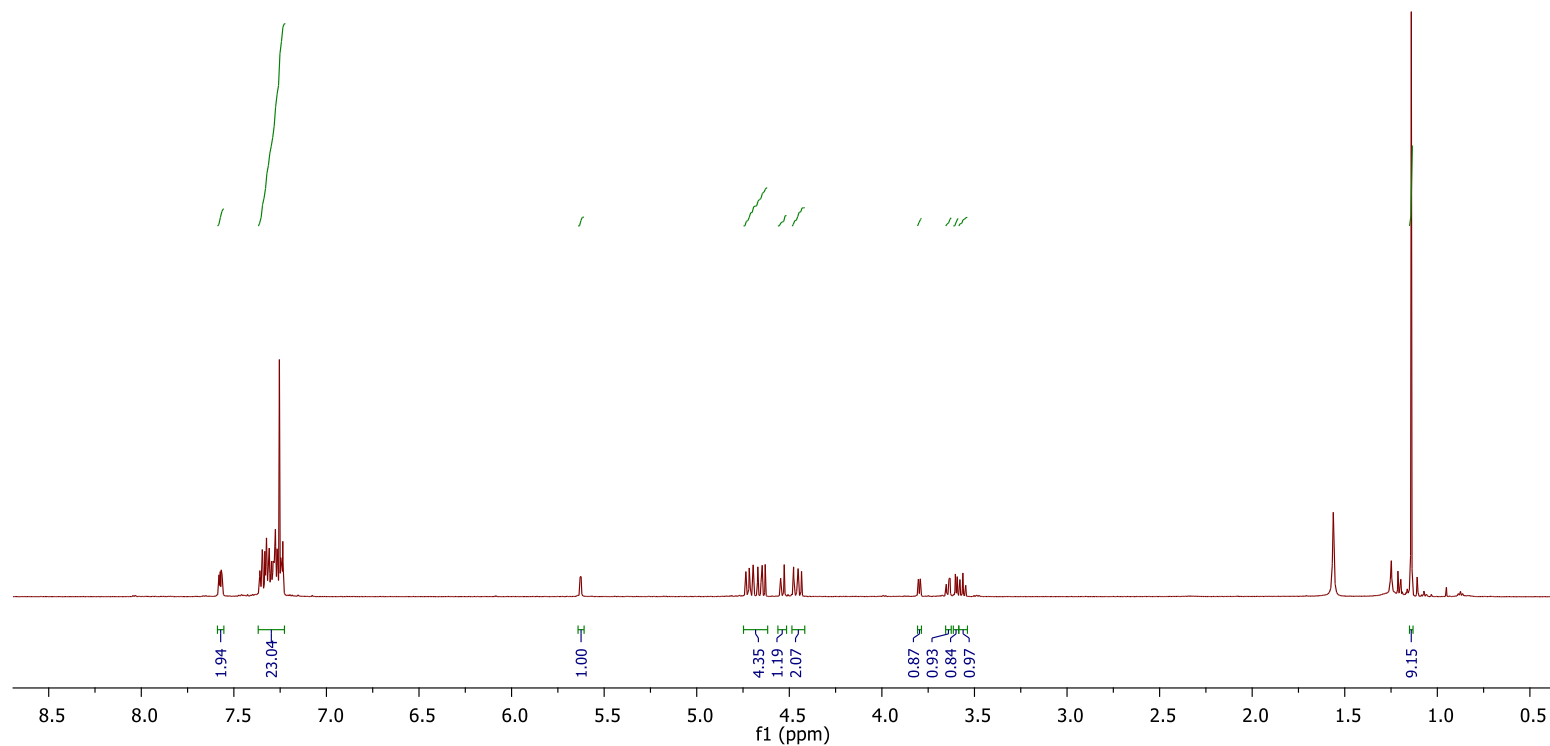
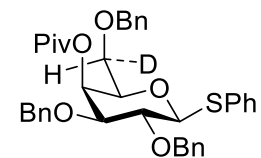


$^1\text{H}$  NMR (600 MHz,  $\text{C}_6\text{D}_6$ ) Spectrum of Phenyl 4-*O*-pivaloyl-2,3,6-tri-*O*-benzyl-1-thio- $\beta$ -D-galactopyranoside (**14**)

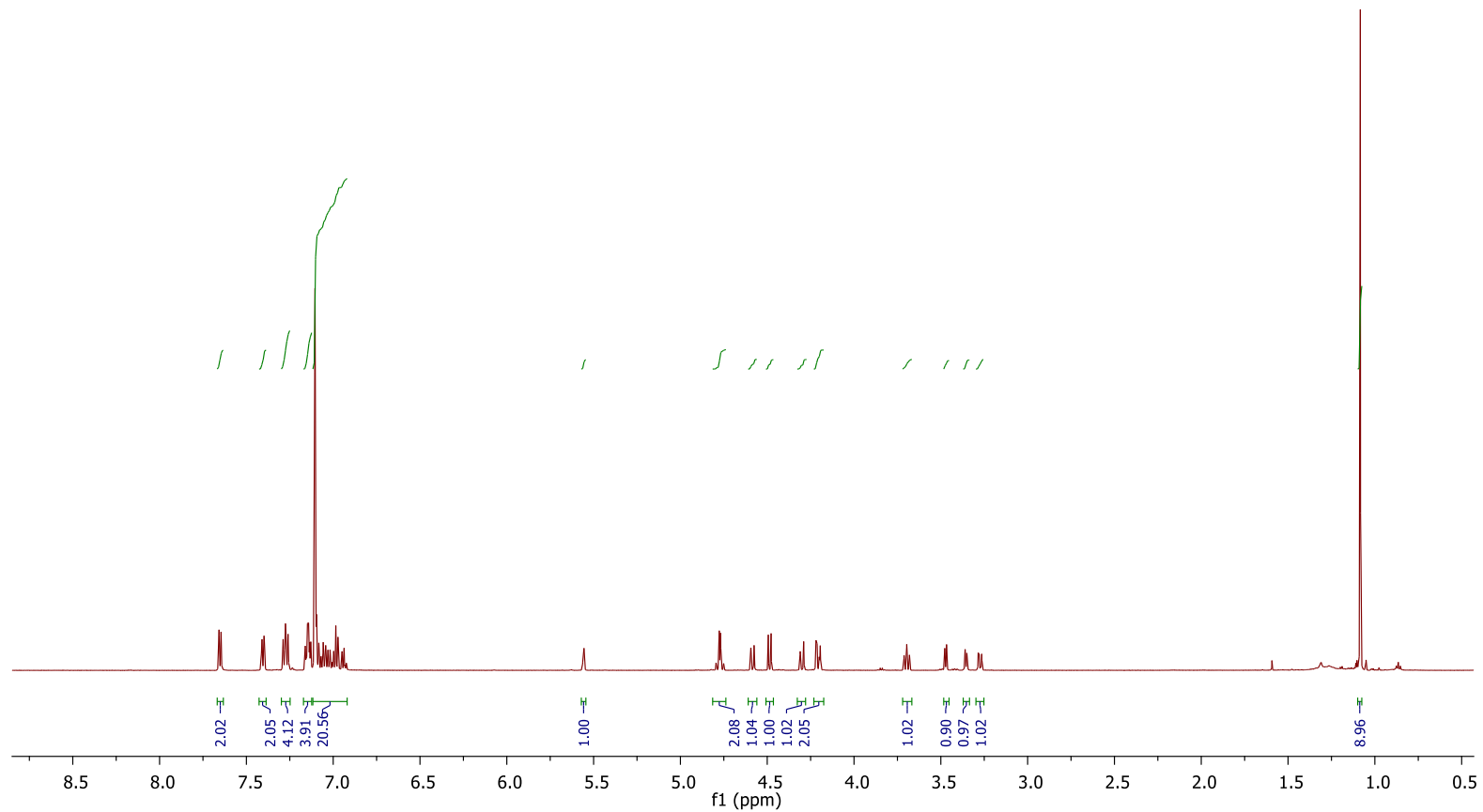
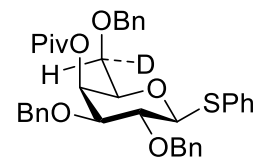




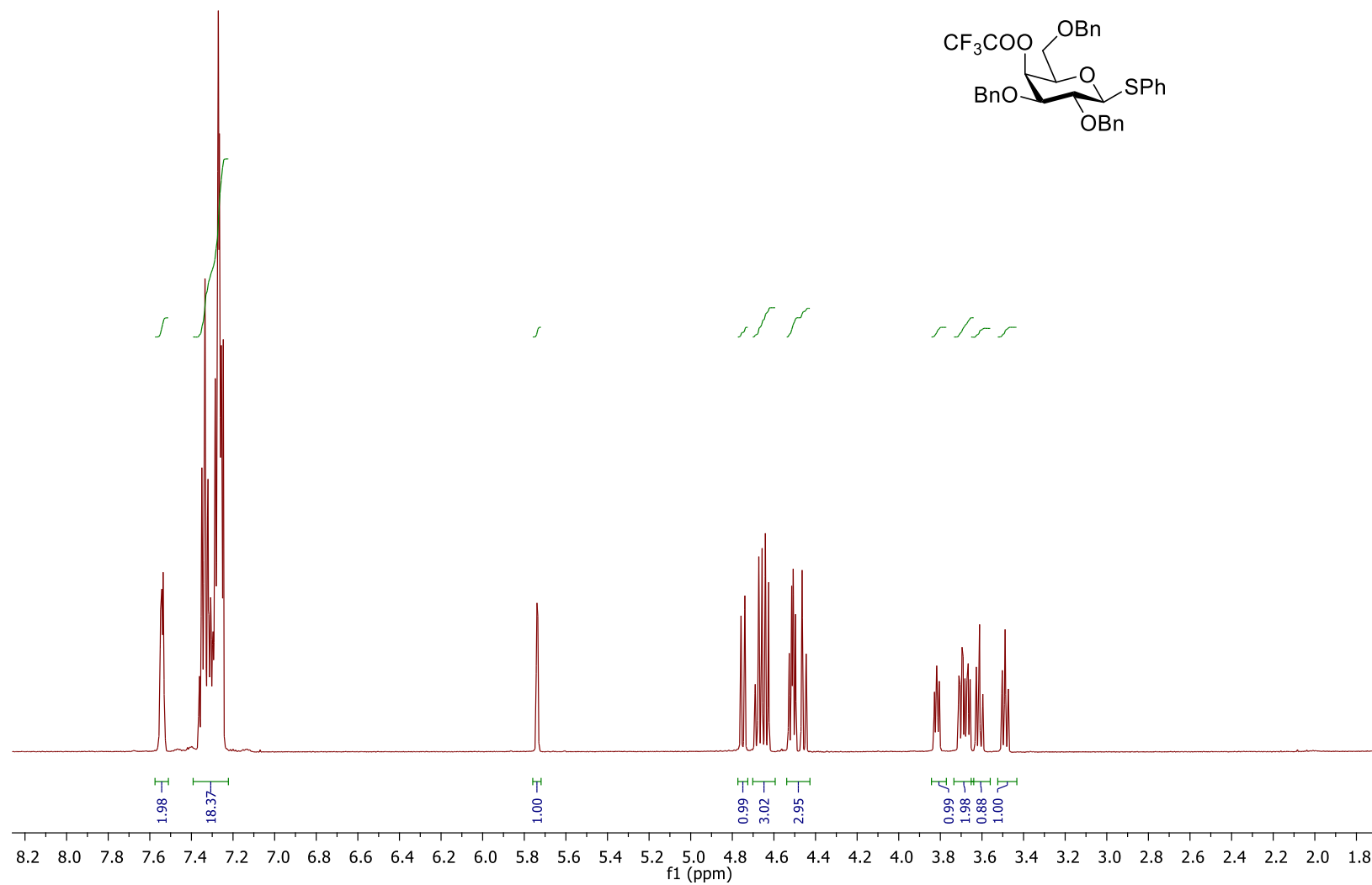
<sup>1</sup>H NMR (600 MHz, CDCl<sub>3</sub>) Spectrum of Phenyl 4-*O*-pivaloyl-(6*S*)-[6-<sup>2</sup>H<sub>1</sub>]-2,3,6-tri-*O*-benzyl-1-thio-β-D-galactopyranoside (**6S-D-14**)



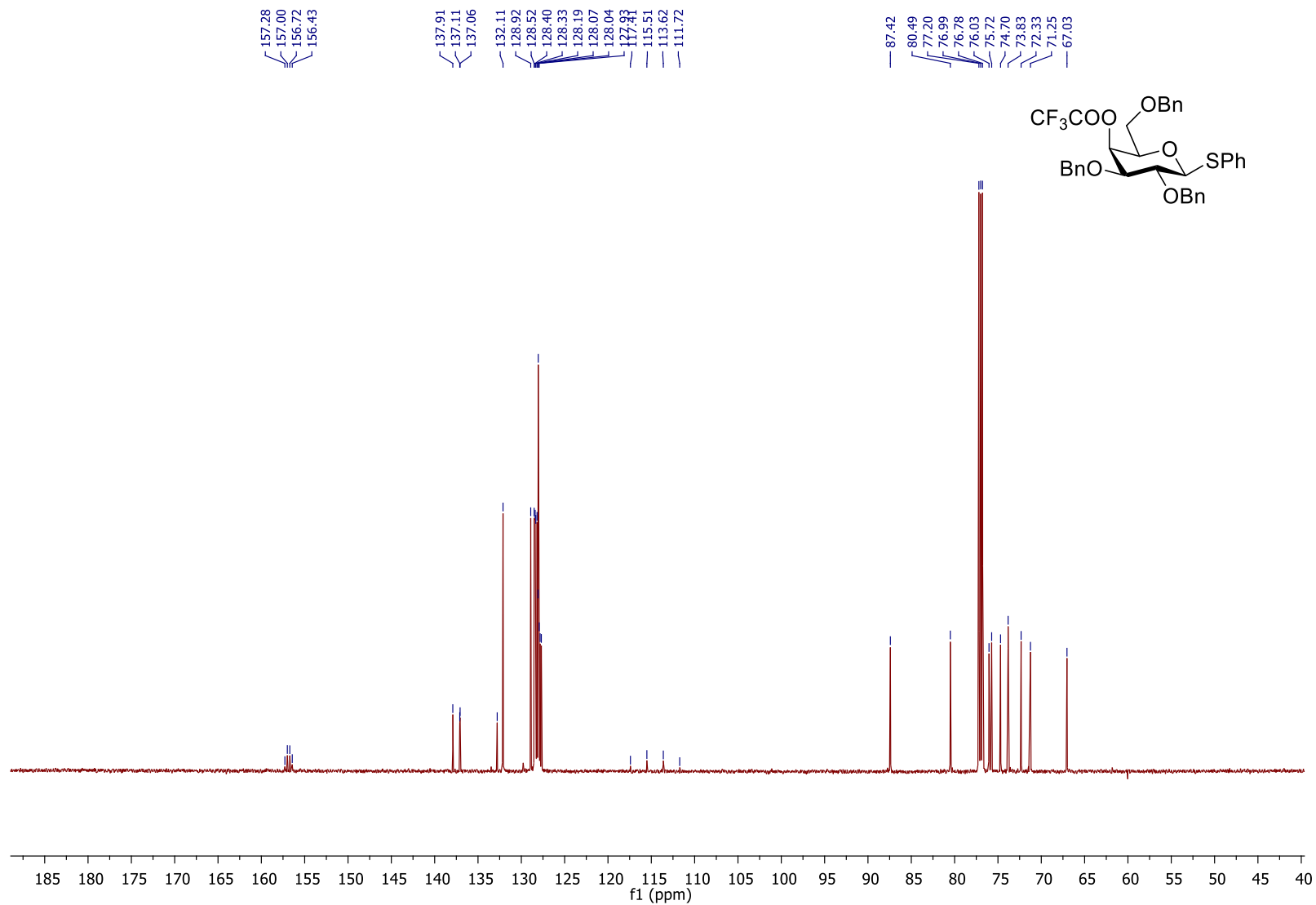
$^1\text{H}$  NMR (600 MHz,  $\text{C}_6\text{D}_6$ ) Spectrum of Phenyl 4-*O*-pivaloyl-(6*S*)-[6- $^2\text{H}_1$ ]-2,3,6-tri-*O*-benzyl-1-thio- $\beta$ -D-galactopyranoside (**6S-D-14**)



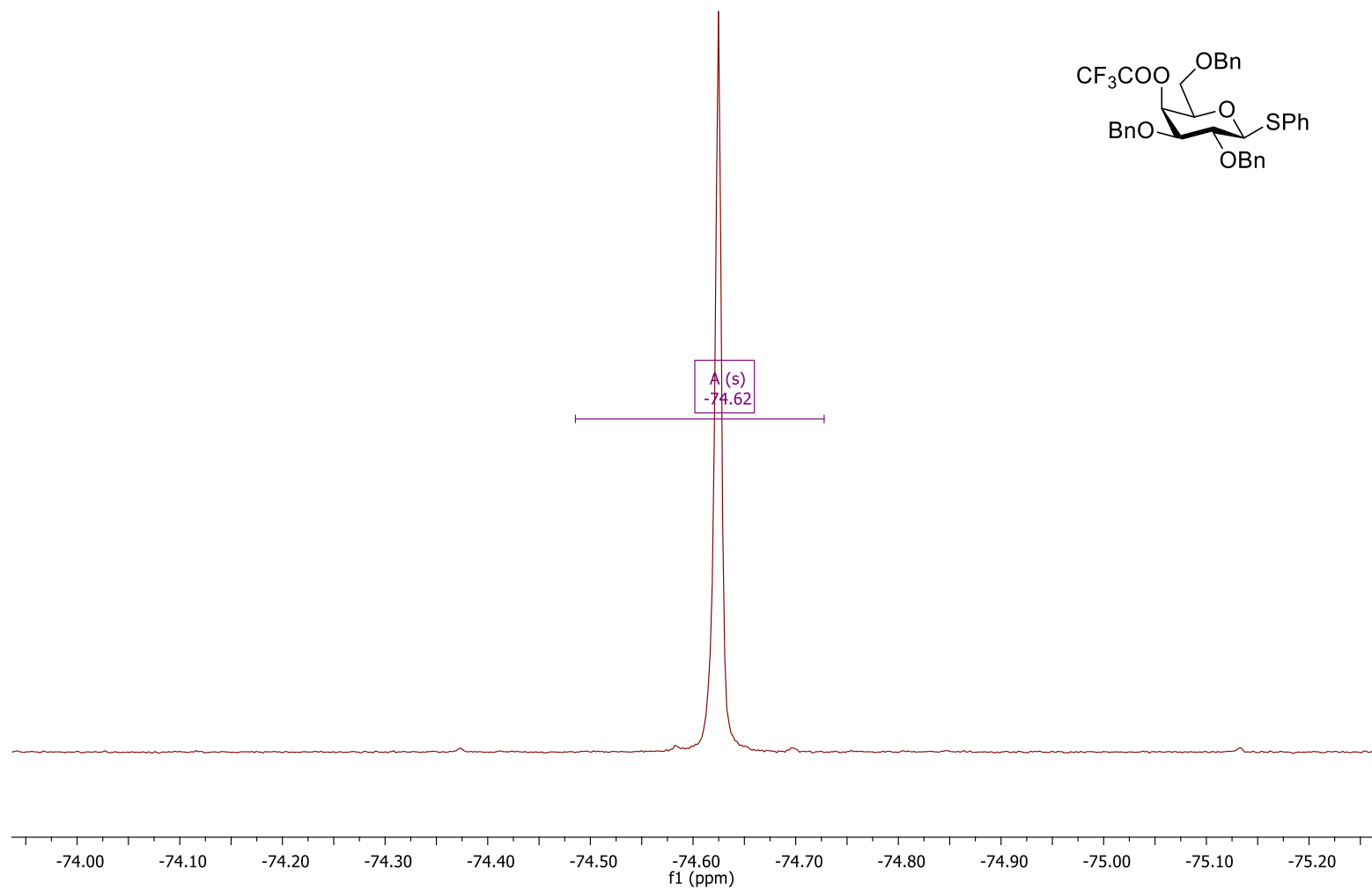
<sup>1</sup>H NMR (600 MHz, CDCl<sub>3</sub>) Spectrum of Phenyl 2,3,6-tri-*O*-benzyl-4-*O*-trifluoroacetyl -1-thio-β-D-galactopyranoside (**15**)



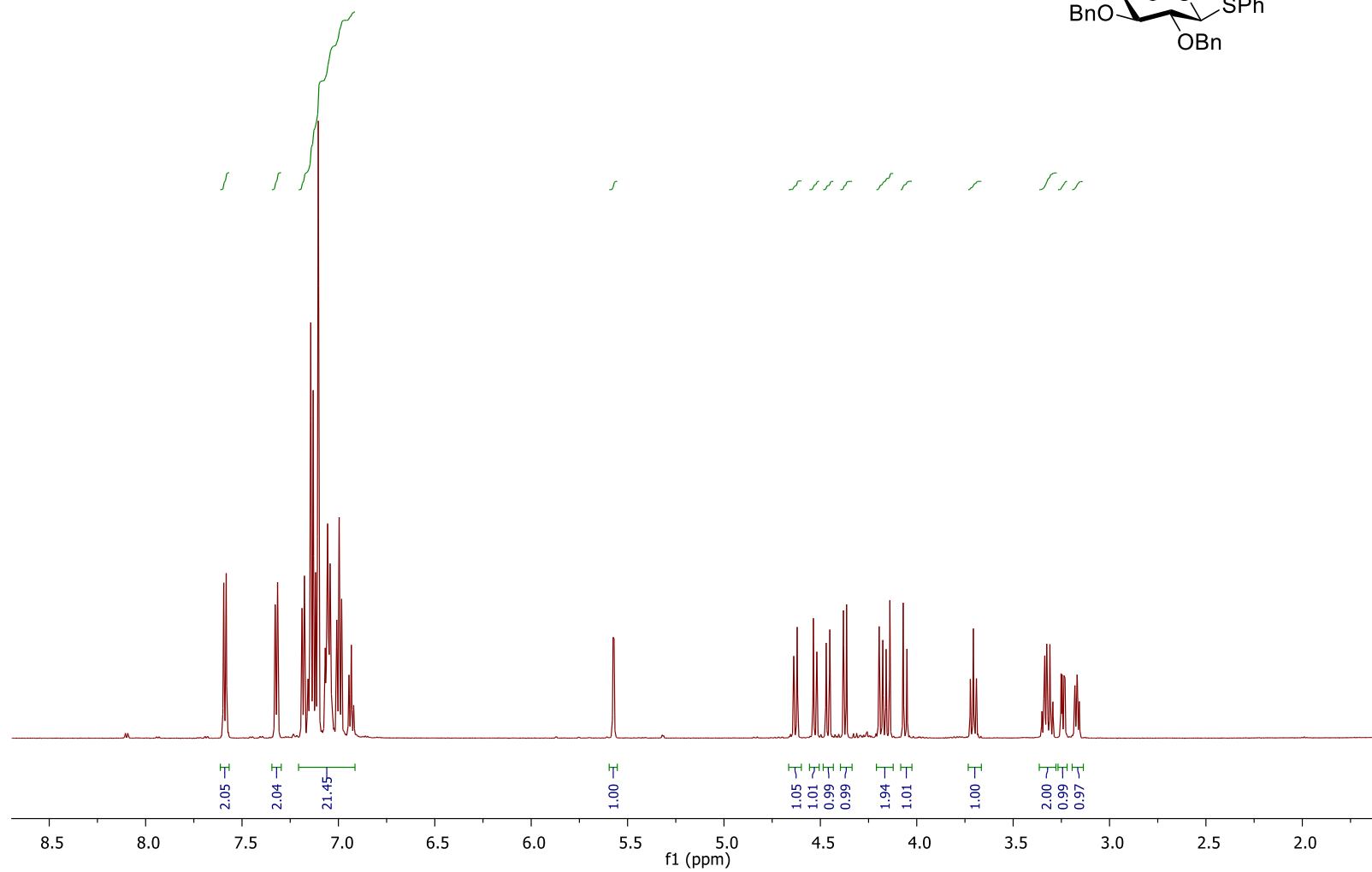
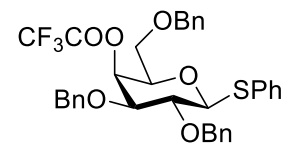
$^{13}\text{C}$  NMR (150 MHz,  $\text{CDCl}_3$ ) Spectrum of Phenyl 2,3,6-tri-*O*-benzyl-4-*O*-trifluoroacetyl -1-thio- $\beta$ -D-galactopyranoside (**15**)



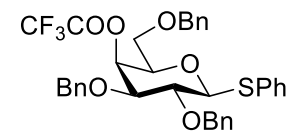
$^{19}\text{F}$  NMR (375 MHz,  $\text{CDCl}_3$ ) Spectrum of Phenyl 2,3,6-tri-*O*-benzyl-4-*O*-trifluoroacetyl -1-thio- $\beta$ -D-galactopyranoside (**15**)



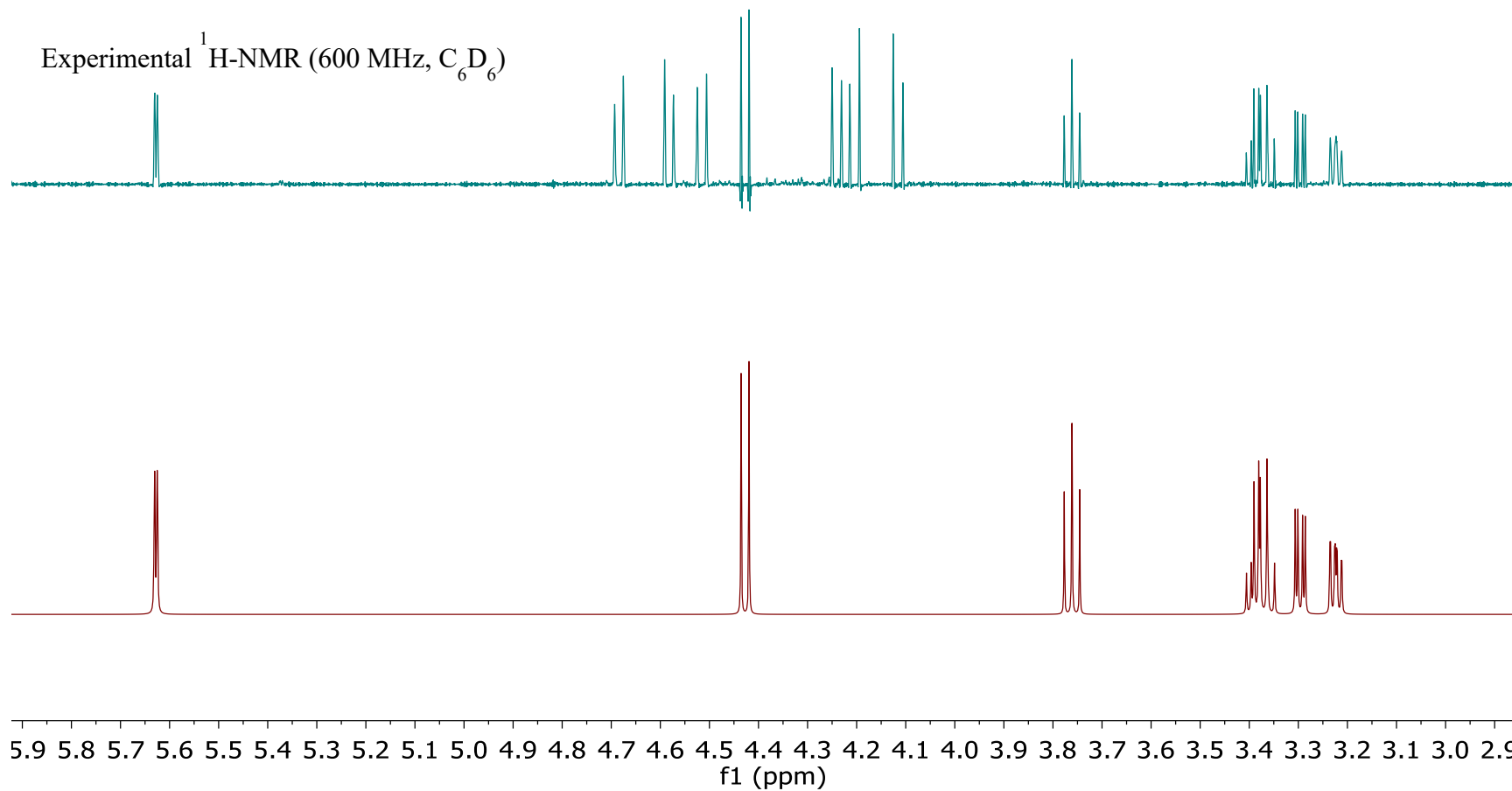
$^1\text{H}$  NMR (600 MHz,  $\text{C}_6\text{D}_6$ ) Spectrum of Phenyl 2,3,6-tri-*O*-benzyl-4-*O*-trifluoroacetyl -1-thio- $\beta$ -D-galactopyranoside (**15**)



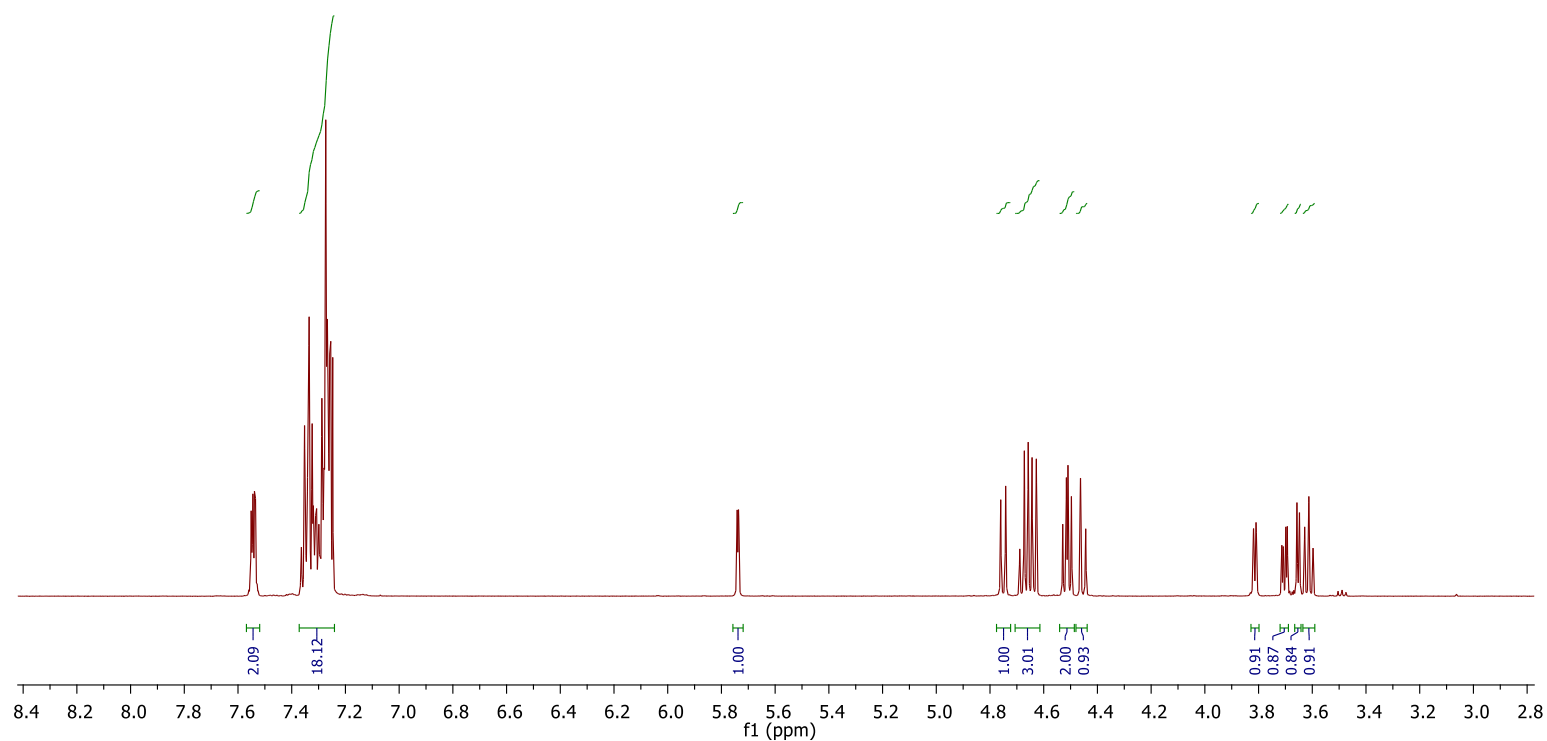
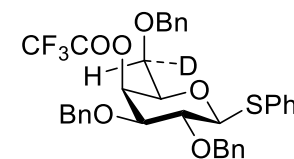
Simulated  $^1\text{H}$  NMR and  $^1\text{H}$  NMR (600 MHz,  $\text{C}_6\text{D}_6$ ) Spectrum of Phenyl 2,3,6-tri-*O*-benzyl-4-*O*-trifluoroacetyl -1-thio- $\beta$ -D-galactopyranoside (**15**)



Experimental  $^1\text{H}$ -NMR (600 MHz,  $\text{C}_6\text{D}_6$ )

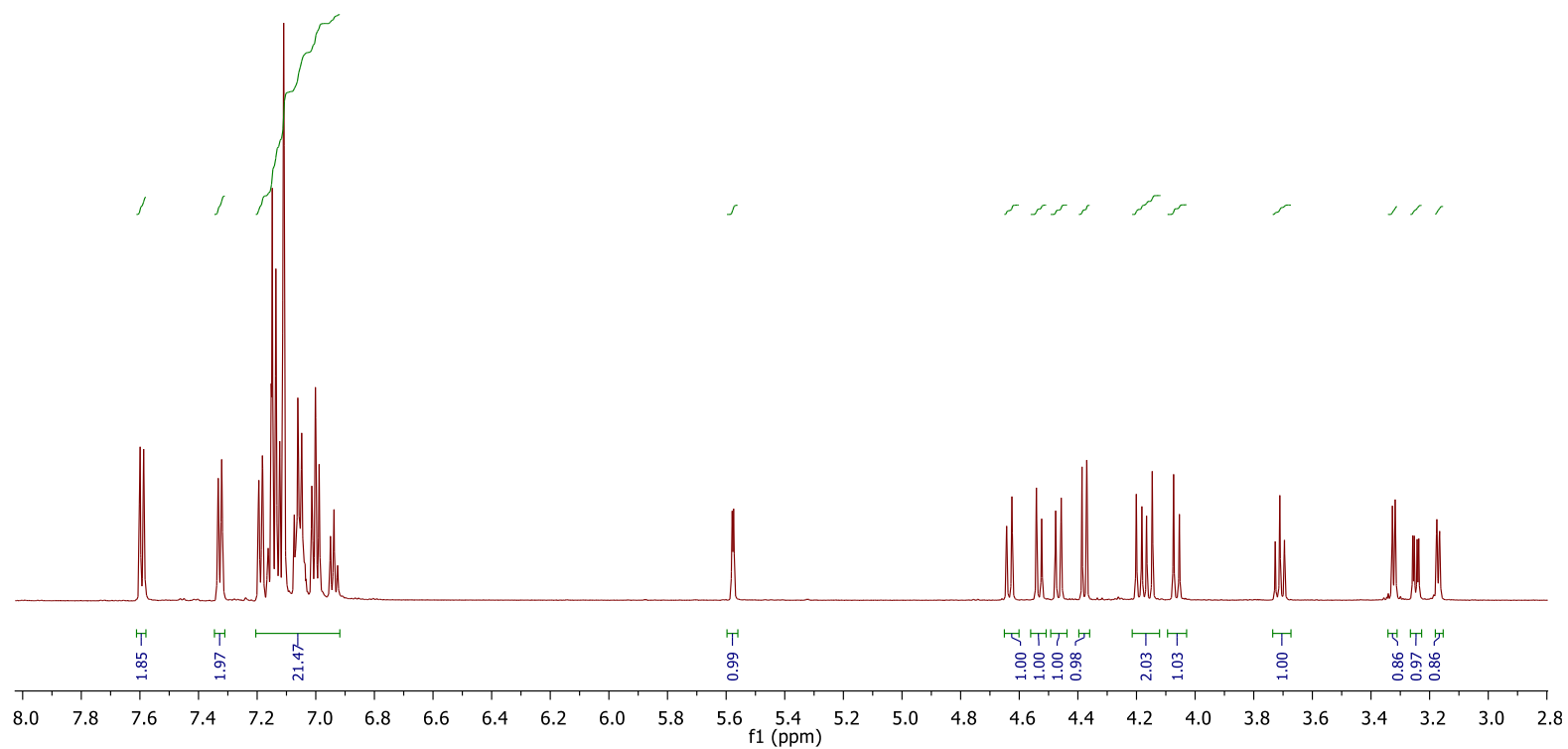
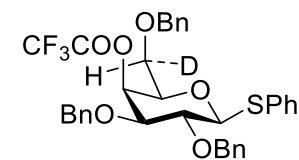


<sup>1</sup>H NMR (600 MHz, CDCl<sub>3</sub>) Spectrum of Phenyl 4-*O*-trifluoroacetyl-(6*S*)-[6-<sup>2</sup>H<sub>1</sub>]-2,3,6-tri-*O*-benzyl-1-thio-β-D-galactopyranoside  
(6*S*-D-15)

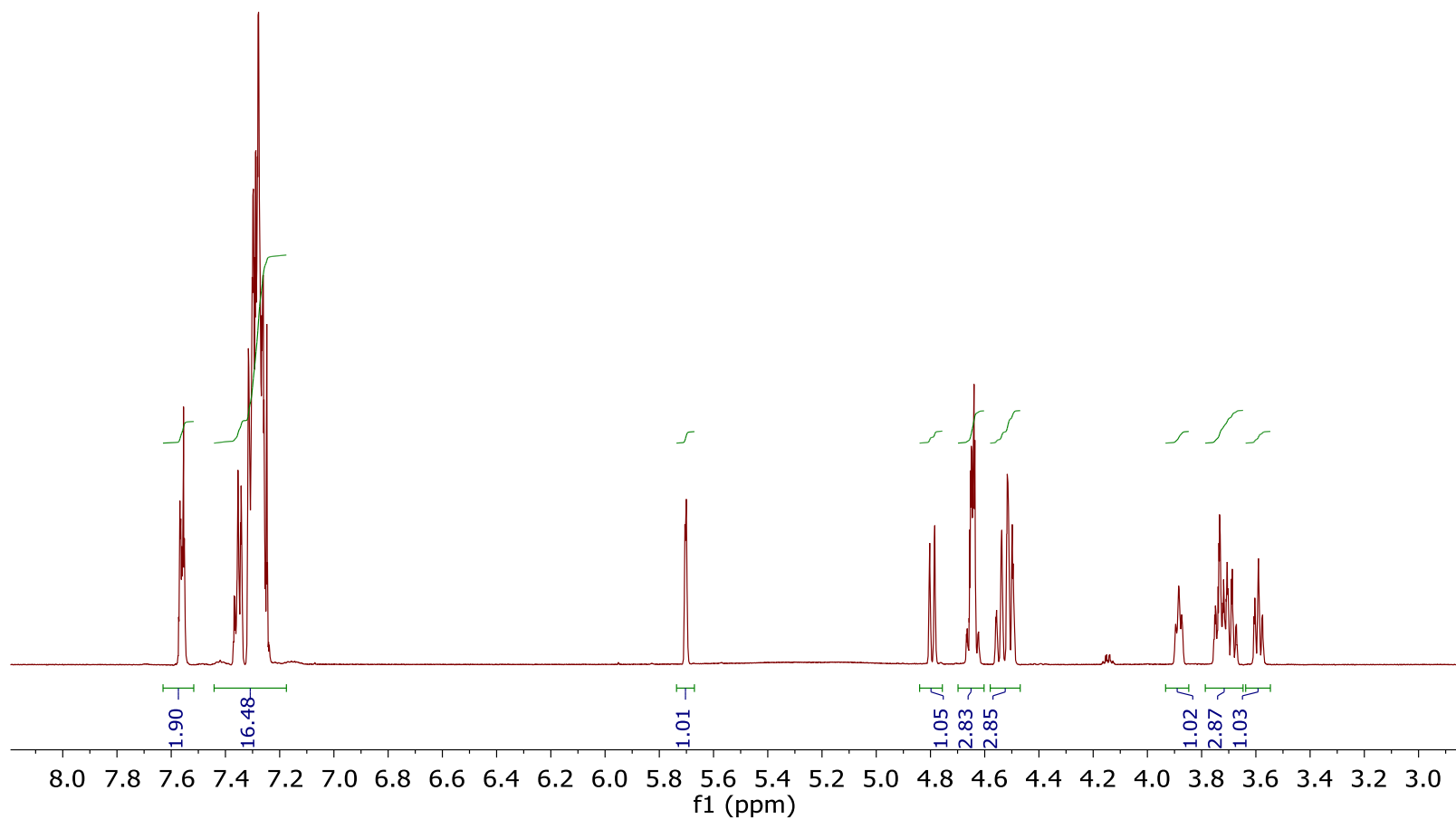
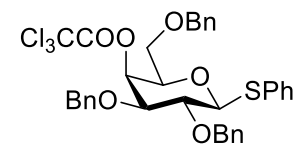




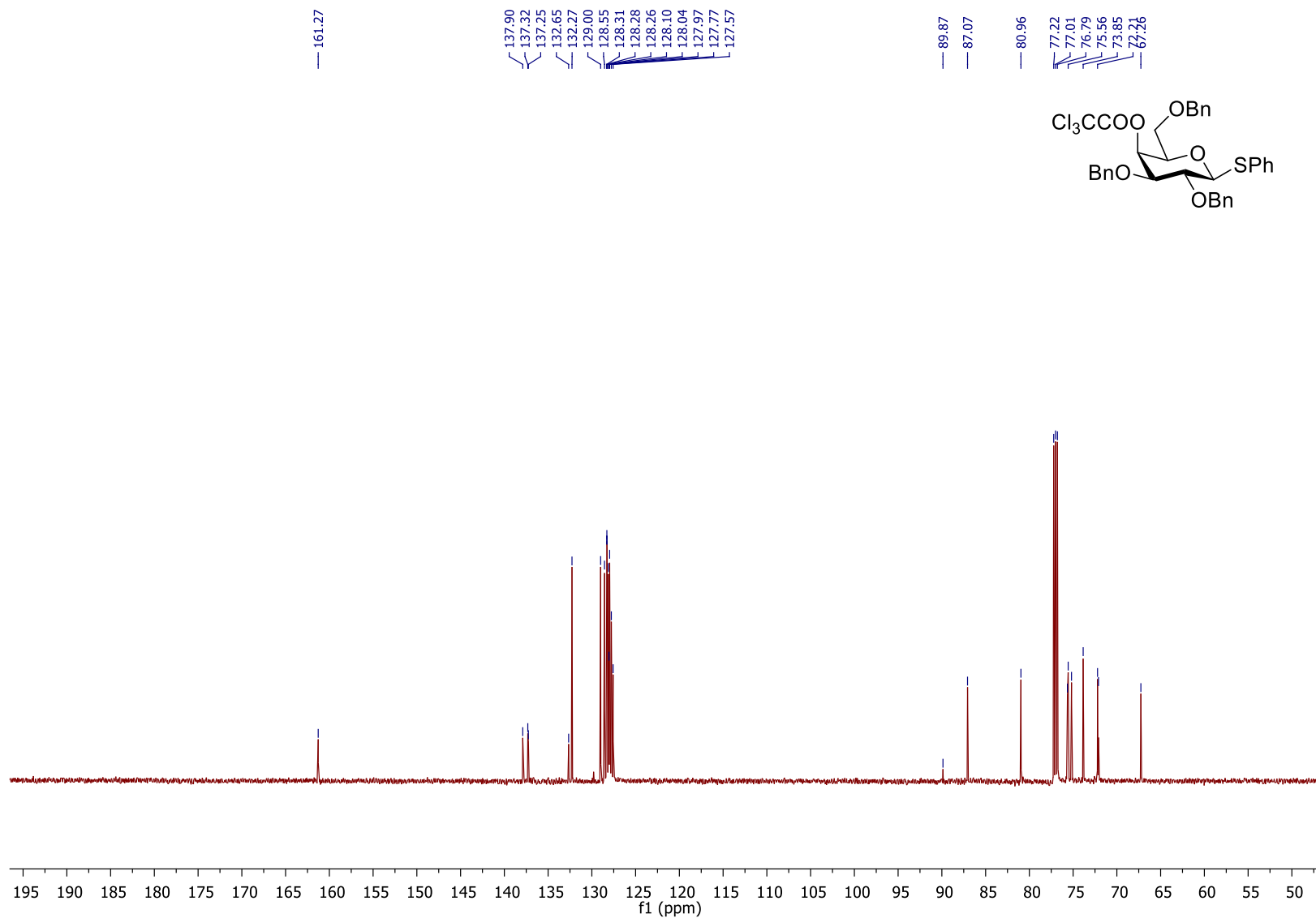
<sup>1</sup>H NMR (600 MHz, C<sub>6</sub>D<sub>6</sub>) Spectrum of Phenyl 4-*O*-trifluoroacetyl-(6*S*)-[6-<sup>2</sup>H<sub>1</sub>]-2,3,6-tri-*O*-benzyl-1-thio-β-D-galactopyranoside (**6S-D-15**)



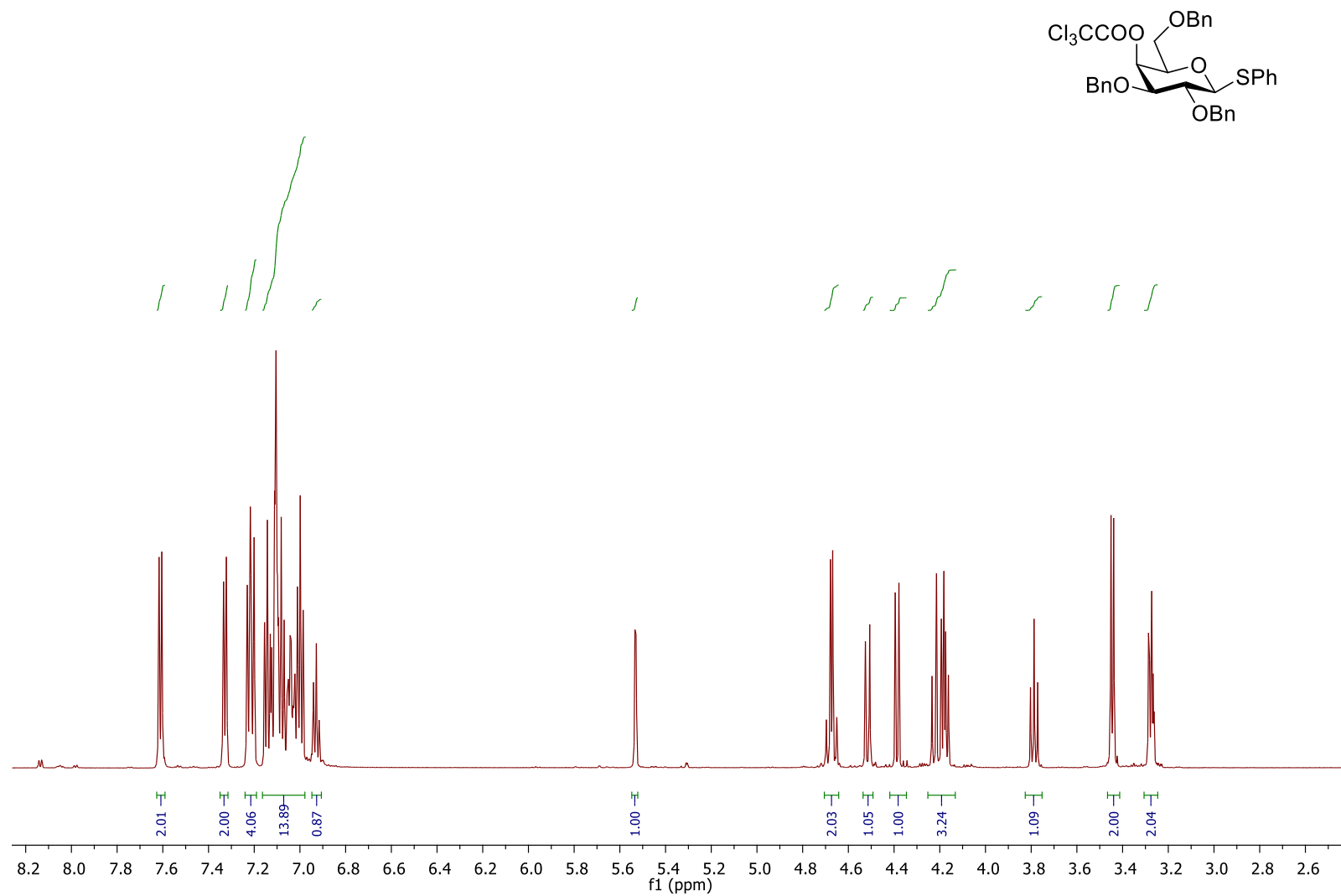
<sup>1</sup>H NMR (600 MHz, CDCl<sub>3</sub>) Spectrum of Phenyl 2,3,6-tri-*O*-benzyl-4-*O*-trichloroacetyl -1-thio-β-D-galactopyranoside (**16**)



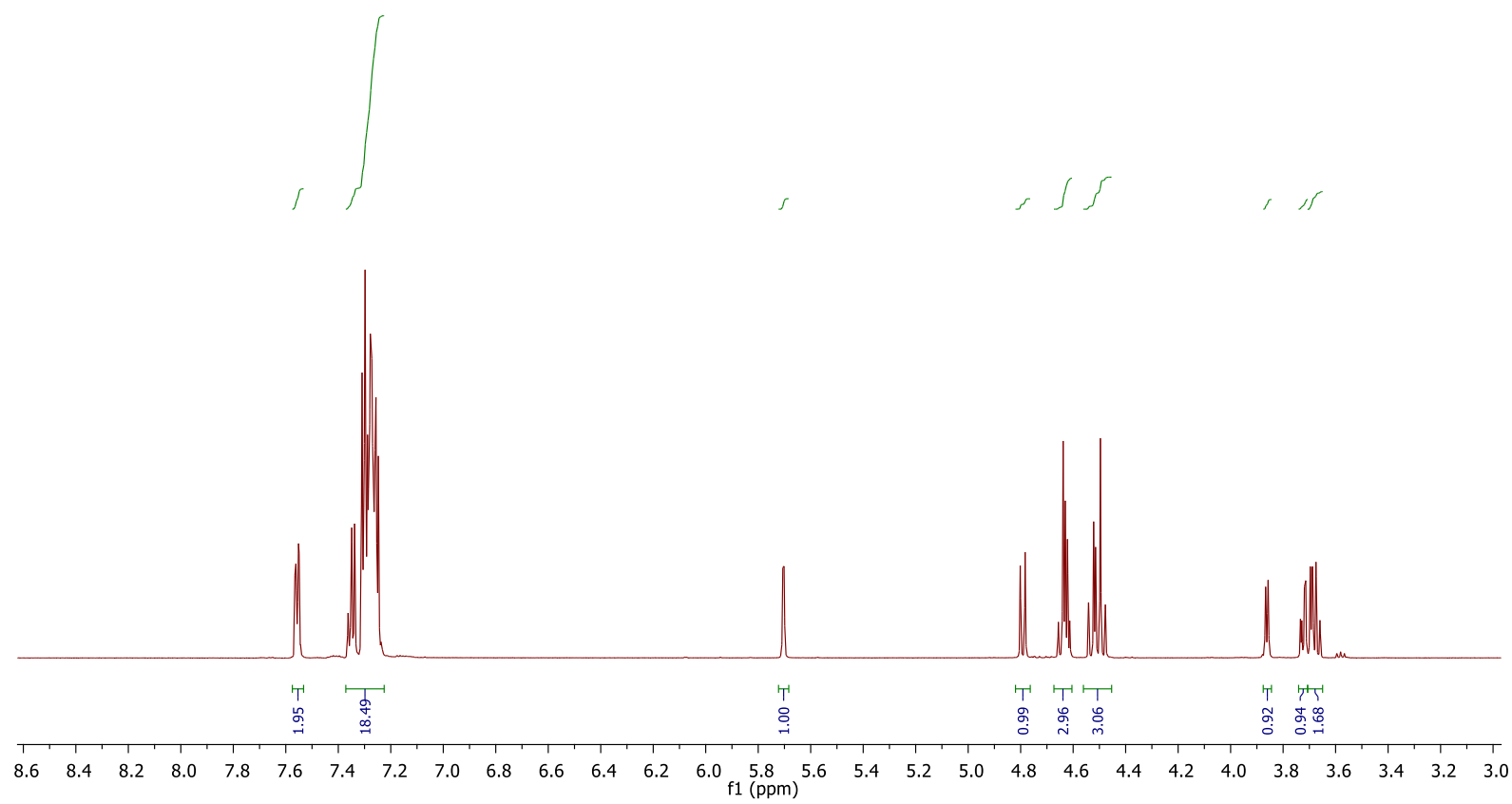
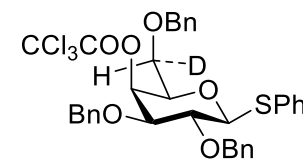
$^{13}\text{C}$  NMR (150 MHz,  $\text{CDCl}_3$ ) Spectrum of Phenyl 2,3,6-tri-*O*-benzyl-4-*O*-trichloroacetyl -1-thio- $\beta$ -D-galactopyranoside (**16**)



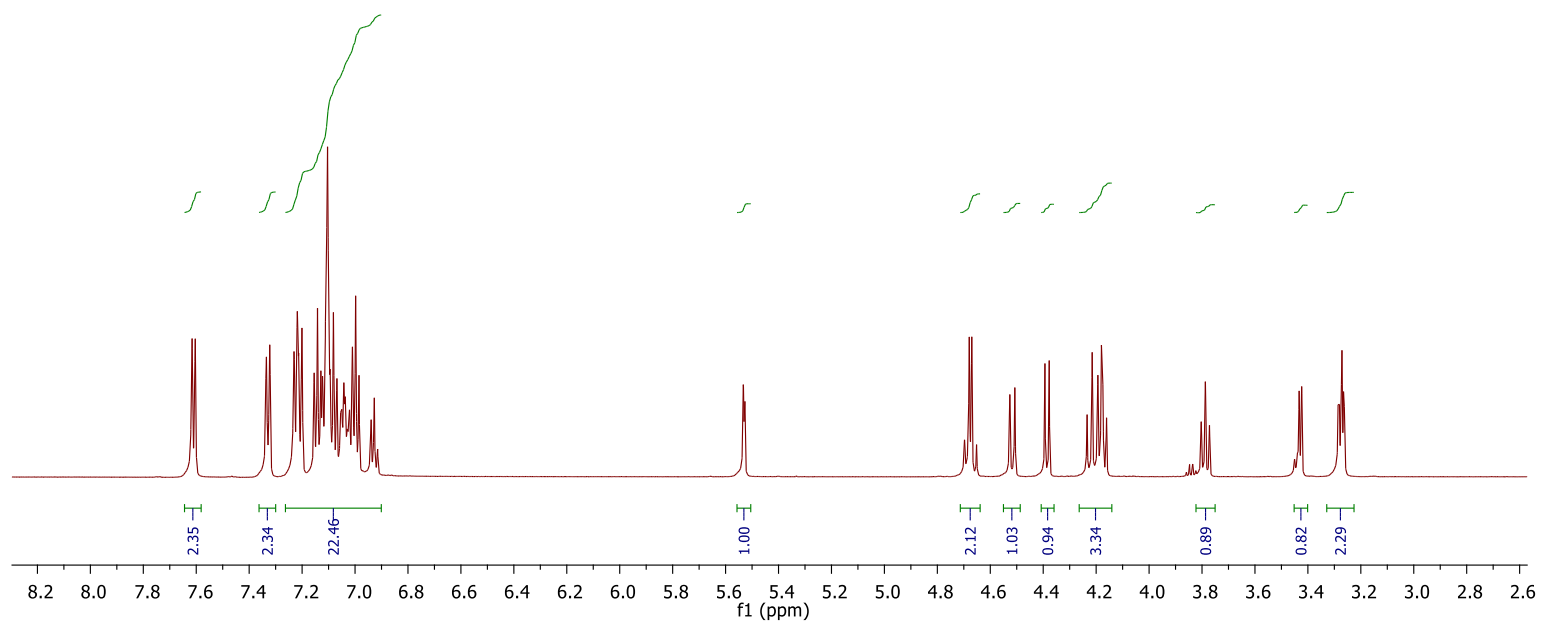
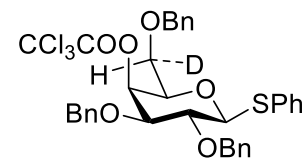
<sup>1</sup>H NMR (600 MHz, C<sub>6</sub>D<sub>6</sub>) Spectrum of Phenyl 2,3,6-tri-*O*-benzyl-4-*O*-trichloroacetyl-1-thio-β-D-galactopyranoside (**16**)



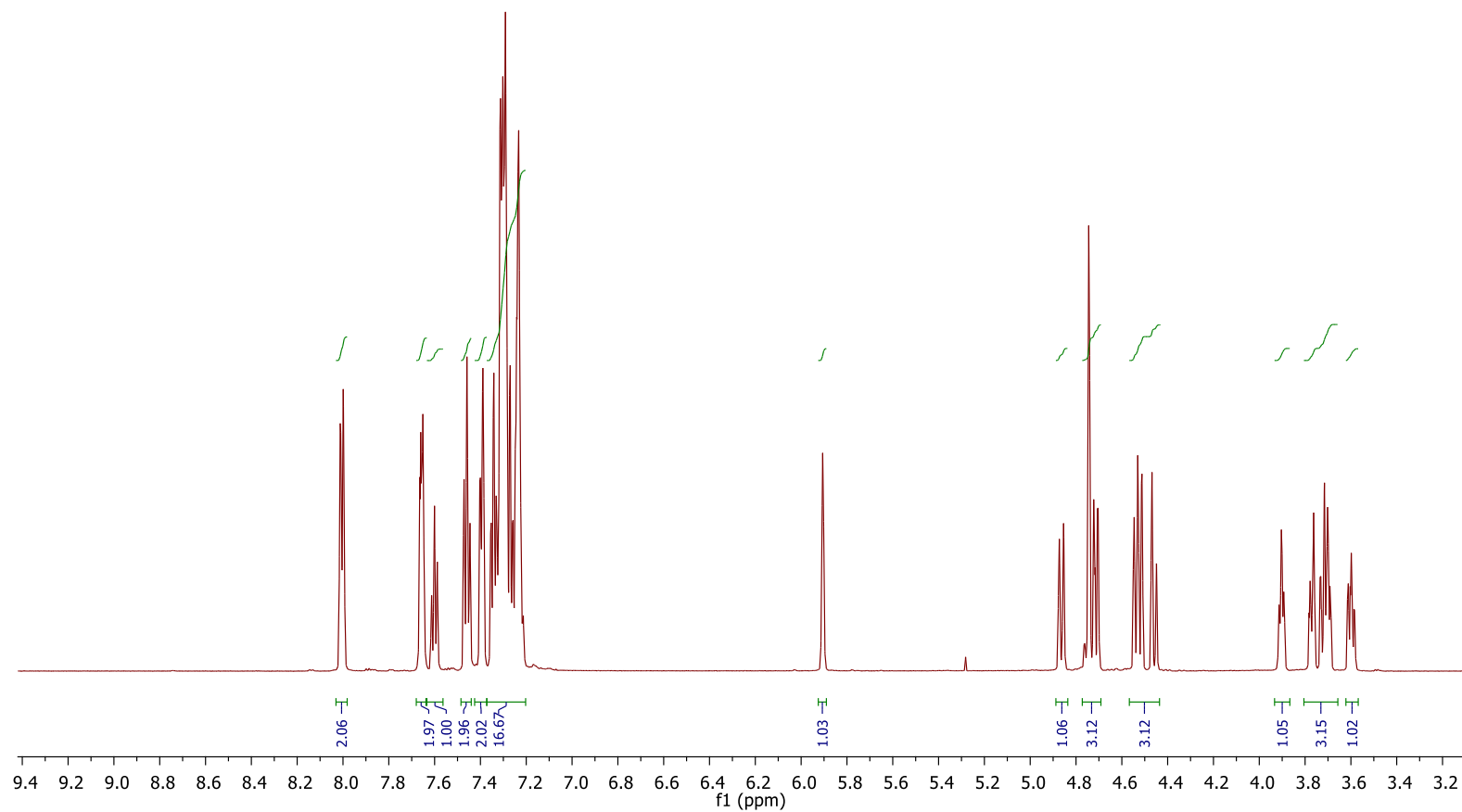
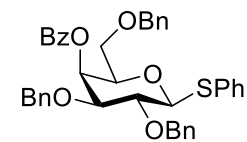
<sup>1</sup>H NMR (600 MHz, CDCl<sub>3</sub>) Spectrum of Phenyl 4-*O*-trichloroacetyl-(6*S*)-[6-<sup>2</sup>H<sub>1</sub>]-2,3,6-tri-*O*-benzyl-1-thio-β-D-galactopyranoside  
**(6S-D-16)**



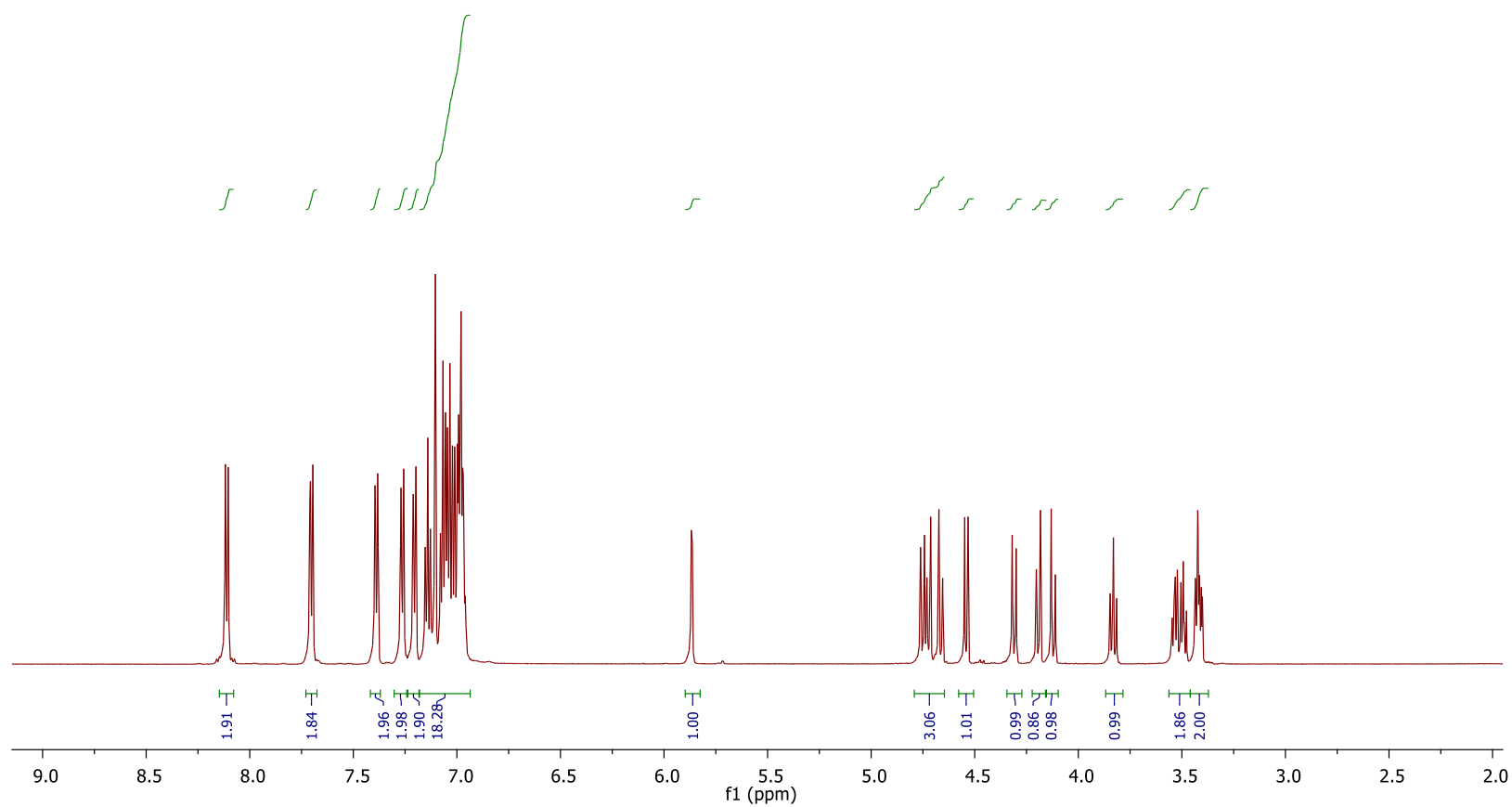
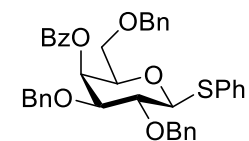
<sup>1</sup>H NMR (600 MHz, C<sub>6</sub>D<sub>6</sub>) Spectrum of Phenyl 4-*O*-trichloroacetyl-(6*S*)-[6-<sup>2</sup>H<sub>1</sub>]-2,3,6-tri-*O*-benzyl-1-thio-β-D-galactopyranoside  
**(6*S*-D-16)**



$^1\text{H}$  NMR (600 MHz,  $\text{CDCl}_3$ ) Spectrum of Phenyl 4-*O*-benzoyl-2,3,6-tri-*O*-benzyl-1-thio- $\beta$ -D-galactopyranoside (**17**)

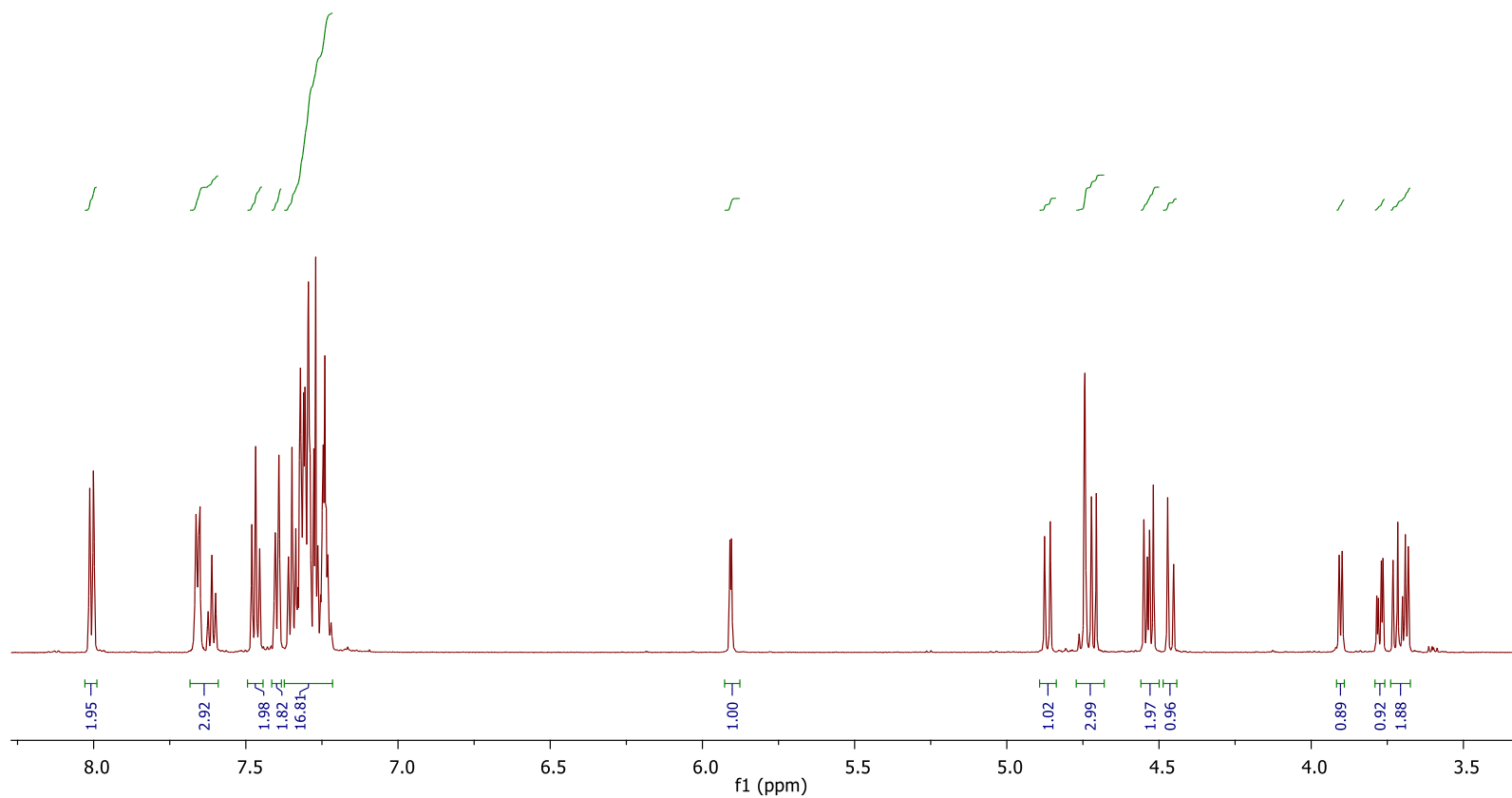
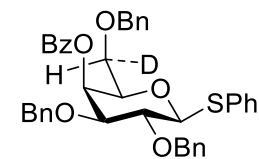


$^1\text{H}$  NMR (600 MHz,  $\text{C}_6\text{D}_6$ ) Spectrum of Phenyl 4-*O*-benzoyl-2,3,6-tri-*O*-benzyl-1-thio- $\beta$ -D-galactopyranoside (**17**)

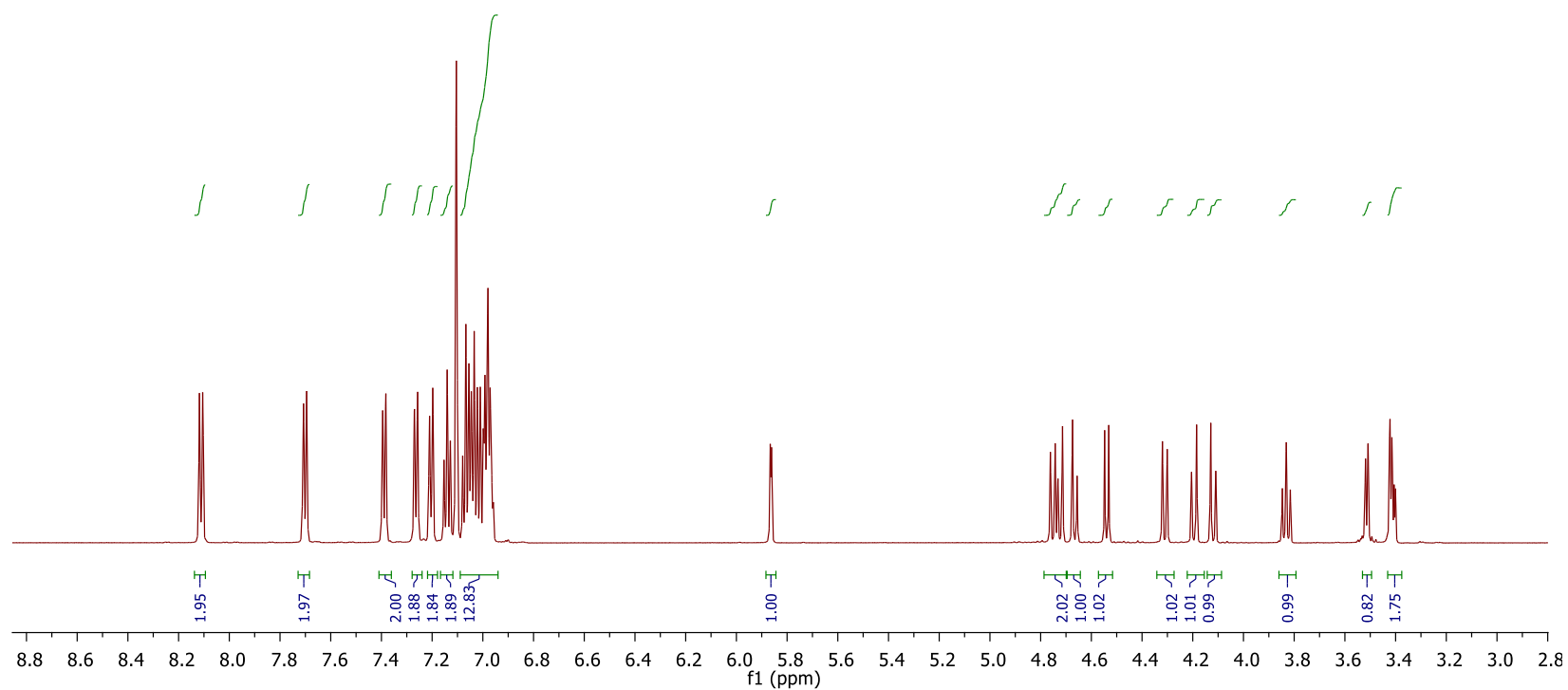
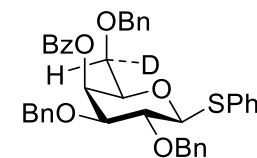




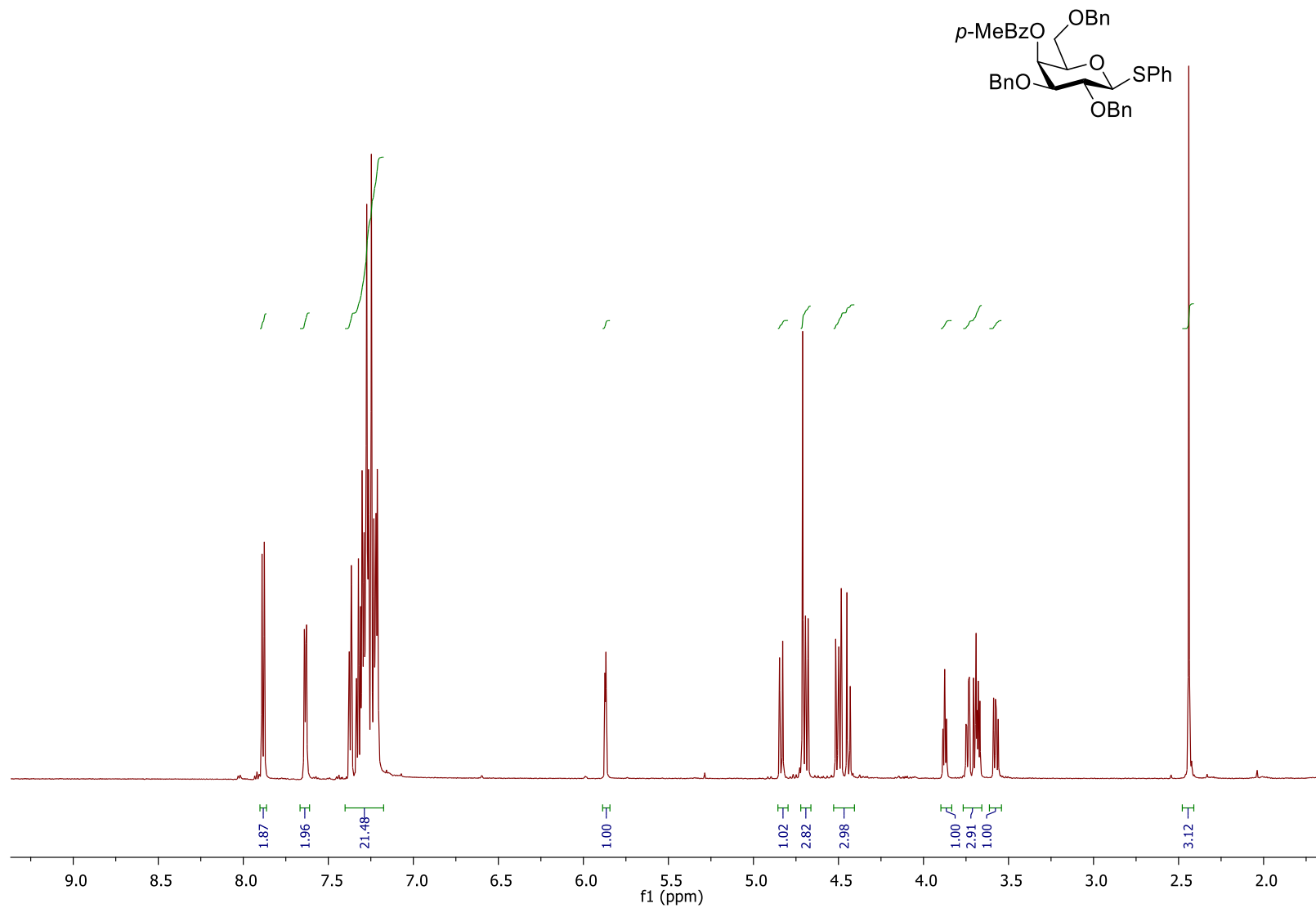
$^1\text{H}$  NMR (600 MHz,  $\text{CDCl}_3$ ) Spectrum of Phenyl 4-*O*-benzoyl-(6*S*)-[6- $^2\text{H}_1$ ]-2,3,6-tri-*O*-benzyl-1-thio- $\beta$ -D-galactopyranoside (**6S-D-17**)



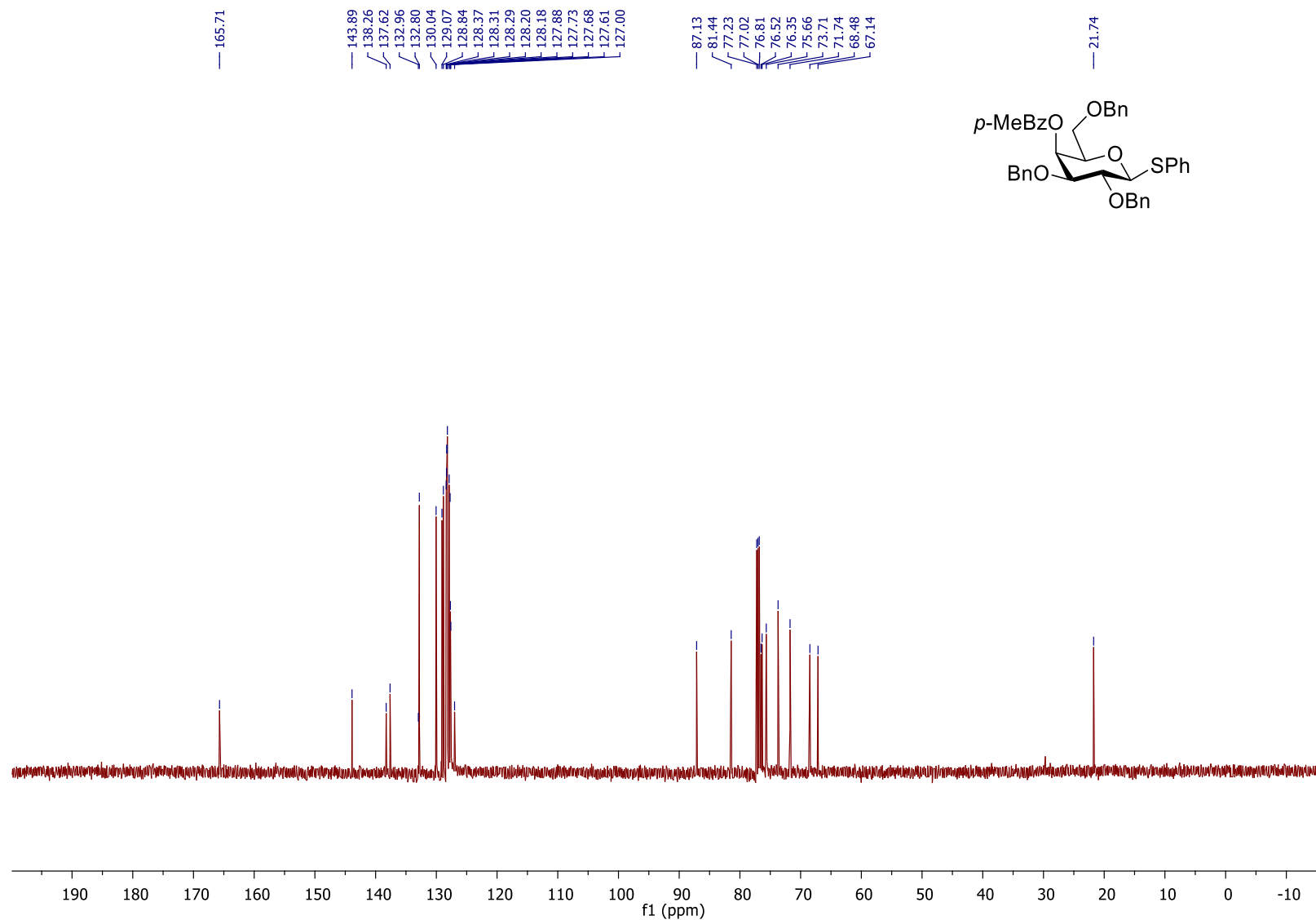
$^1\text{H}$  NMR (600 MHz,  $\text{C}_6\text{D}_6$ ) Spectrum of Phenyl 4-*O*-benzoyl-(6*S*)-[6- $^2\text{H}_1$ ]-2,3,6-tri-*O*-benzyl-1-thio- $\beta$ -D-galactopyranoside (**6S-D-17**)



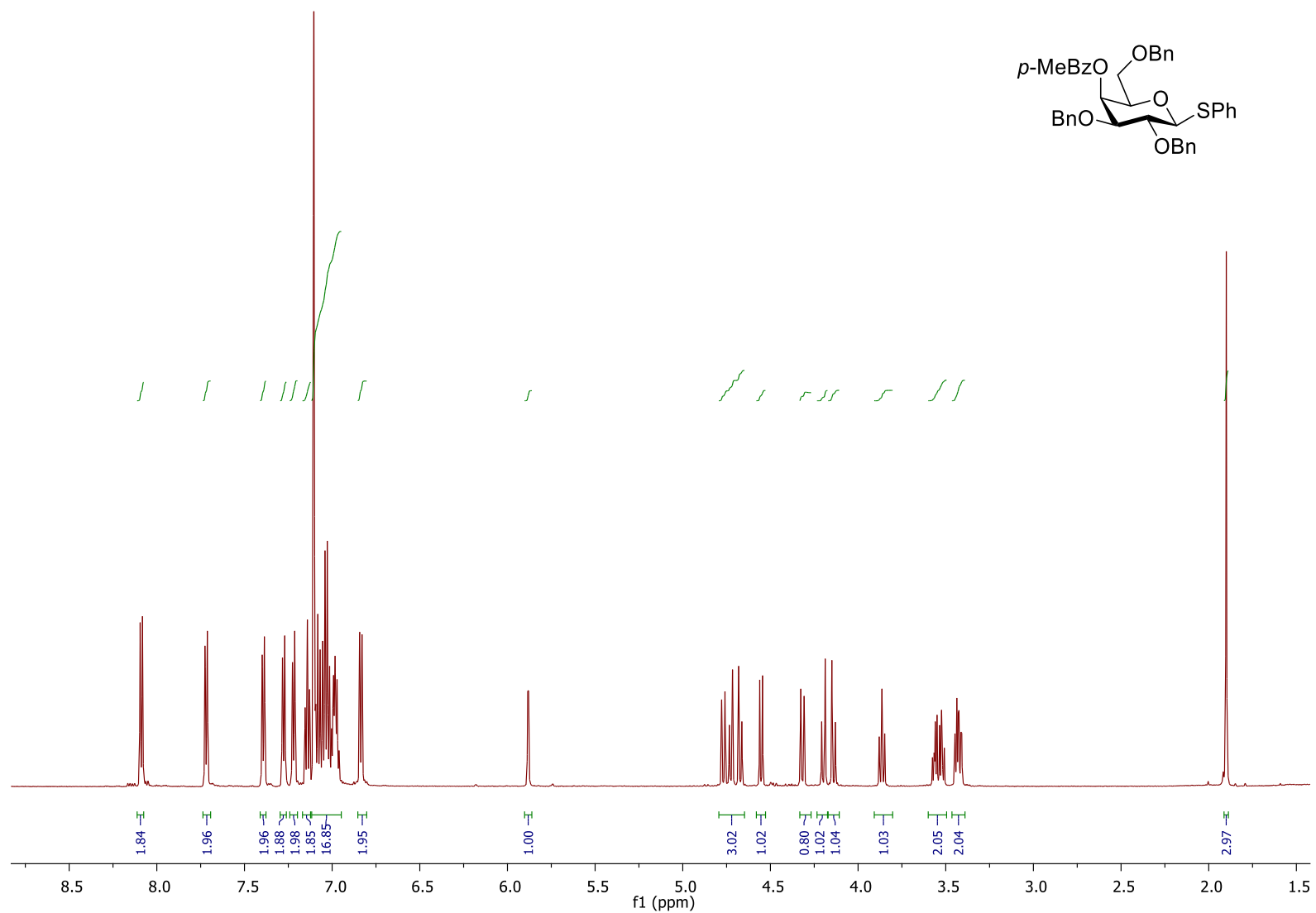
$^1\text{H}$  NMR (600 MHz,  $\text{CDCl}_3$ ) Spectrum of Phenyl 4-*O*-(*p*-methylbenzoyl)-2,3,6-tri-*O*-benzyl-1-thio- $\beta$ -D-galactopyranoside (**18**)



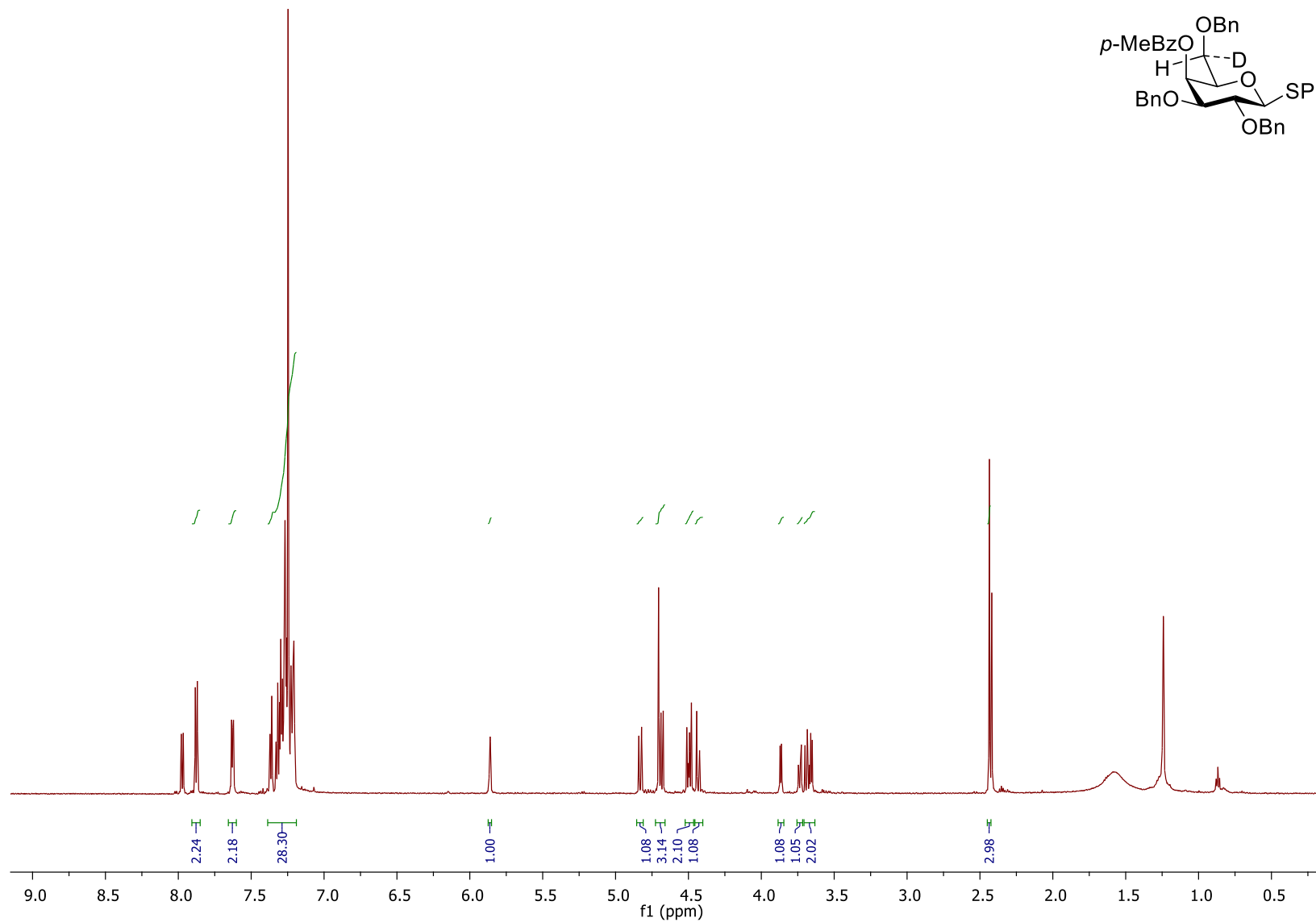
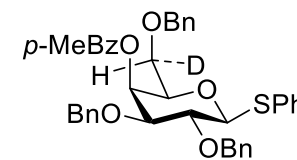
$^{13}\text{C}$  NMR (150 MHz,  $\text{CDCl}_3$ ) Spectrum of Phenyl 4-*O*-(*p*-methylbenzoyl)-2,3,6-tri-*O*-benzyl-1-thio- $\beta$ -D-galactopyranoside (**18**)



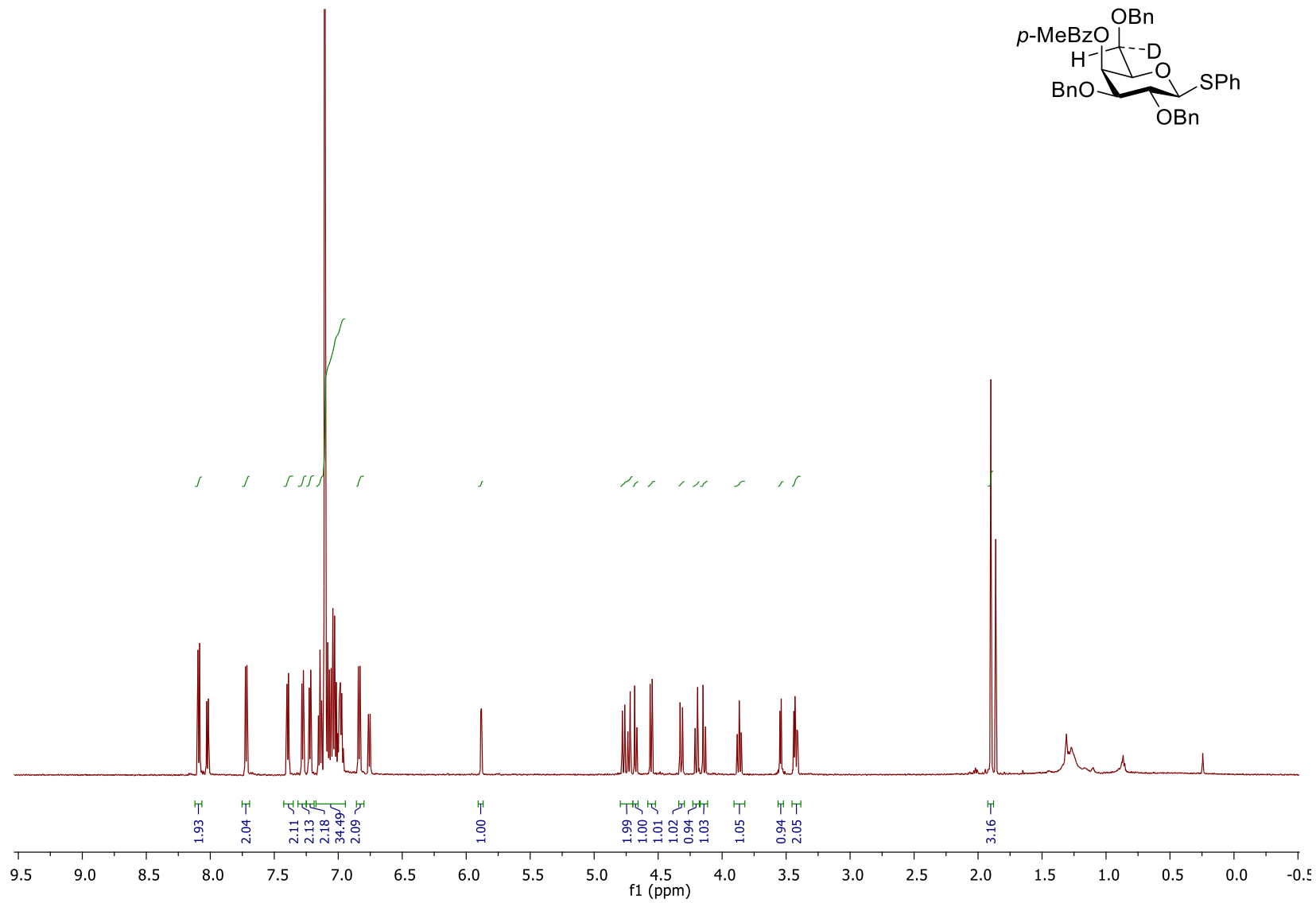
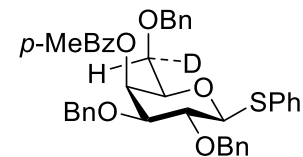
$^1\text{H}$  NMR (600 MHz,  $\text{C}_6\text{D}_6$ ) Spectrum of Phenyl 4-*O*-(*p*-methylbenzoyl)-2,3,6-tri-*O*-benzyl-1-thio- $\beta$ -D-galactopyranoside (**18**)



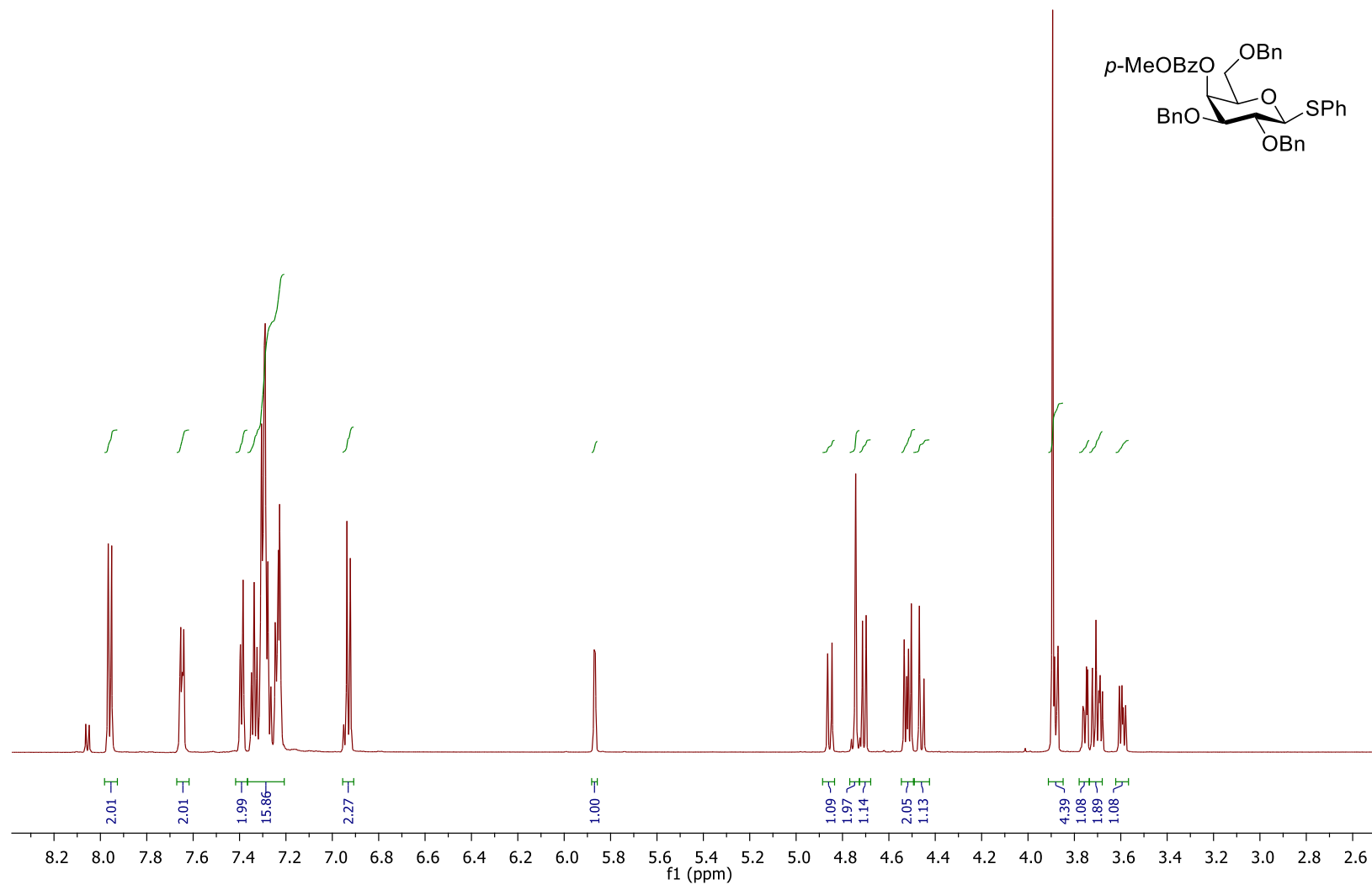
<sup>1</sup>H NMR (600 MHz, CDCl<sub>3</sub>) Spectrum of Phenyl 4-*O*-(*p*-methylbenzoyl-(6*S*)-[6-<sup>2</sup>H<sub>1</sub>]-2,3,6-tri-*O*-benzyl-1-thio-β-D-galactopyranoside (6*S*-**D-18**)



<sup>1</sup>H NMR (600 MHz, C<sub>6</sub>D<sub>6</sub>) Spectrum of Phenyl 4-*O*-(*p*-methylbenzoyl-(6*S*)-[6-<sup>2</sup>H<sub>1</sub>]-2,3,6-tri-*O*-benzyl-1-thio-β-D-galactopyranoside (6*S*-D-18)

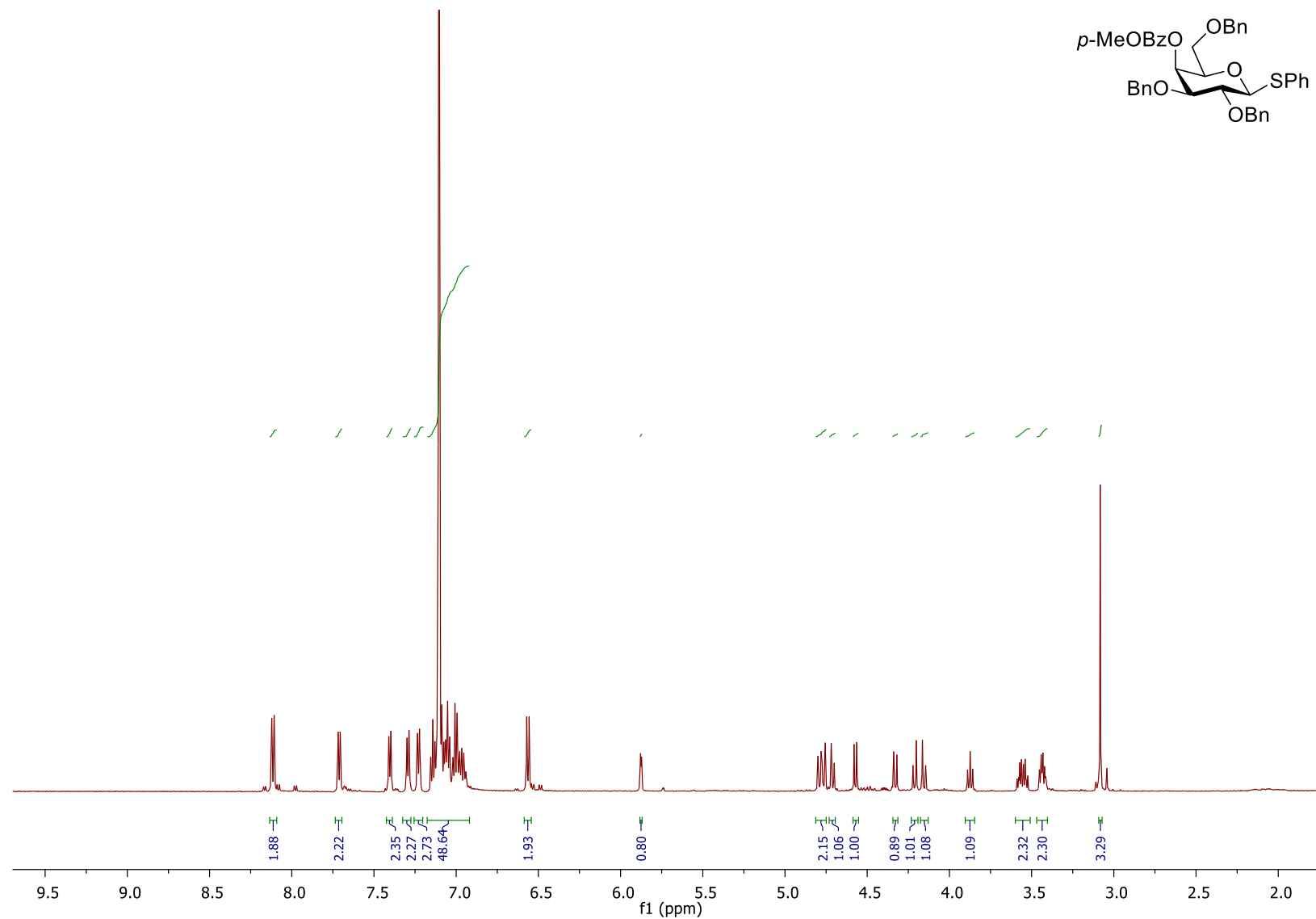


<sup>1</sup>H NMR (600 MHz, CDCl<sub>3</sub>) Spectrum of Phenyl 4-*O*-(*p*-methoxybenzoyl)-2,3,6-tri-*O*-benzyl-1-thio-β-D-galactopyranoside (**19**)

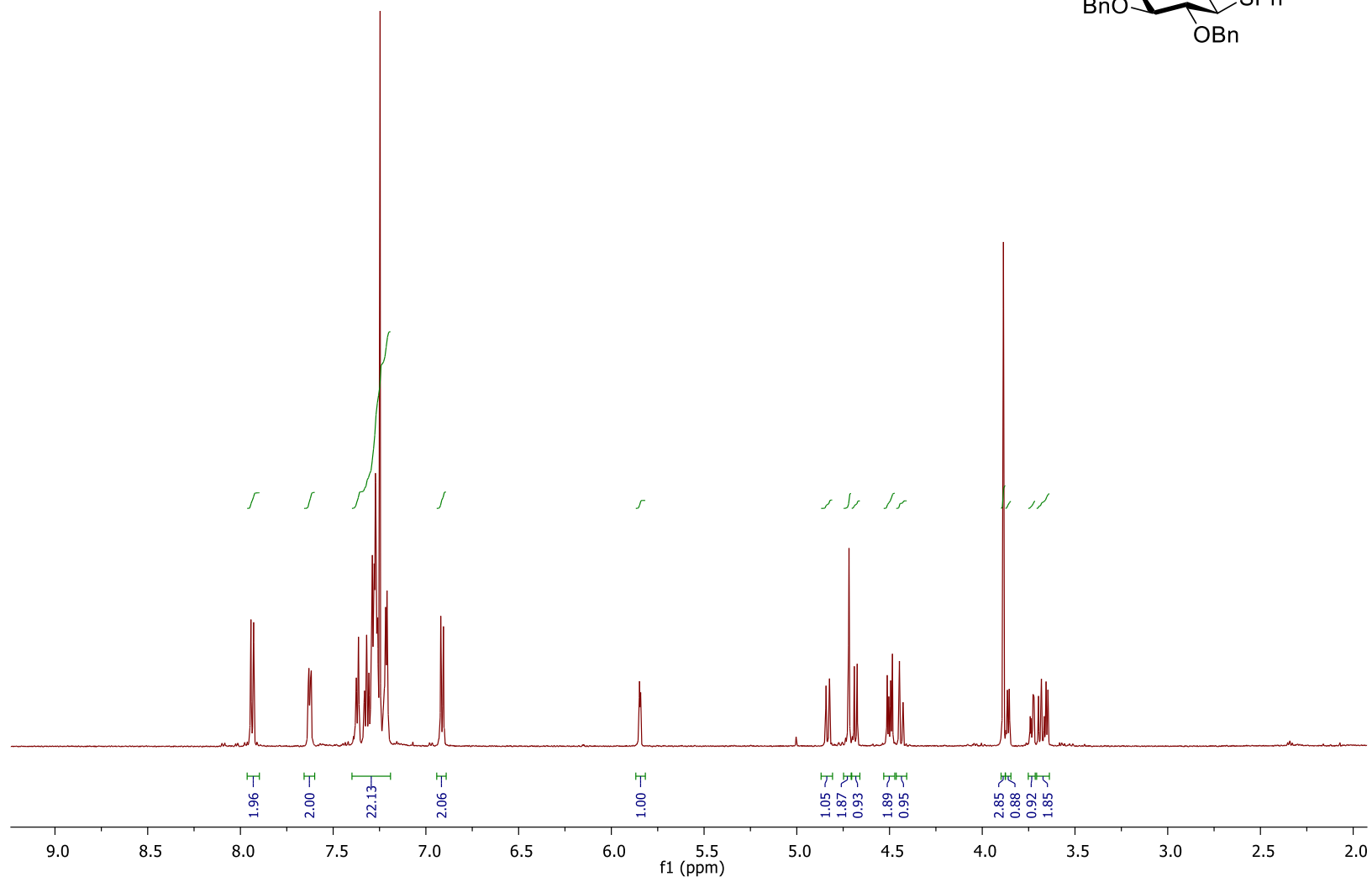
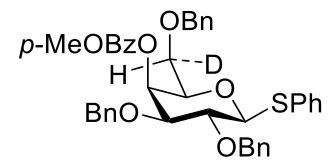




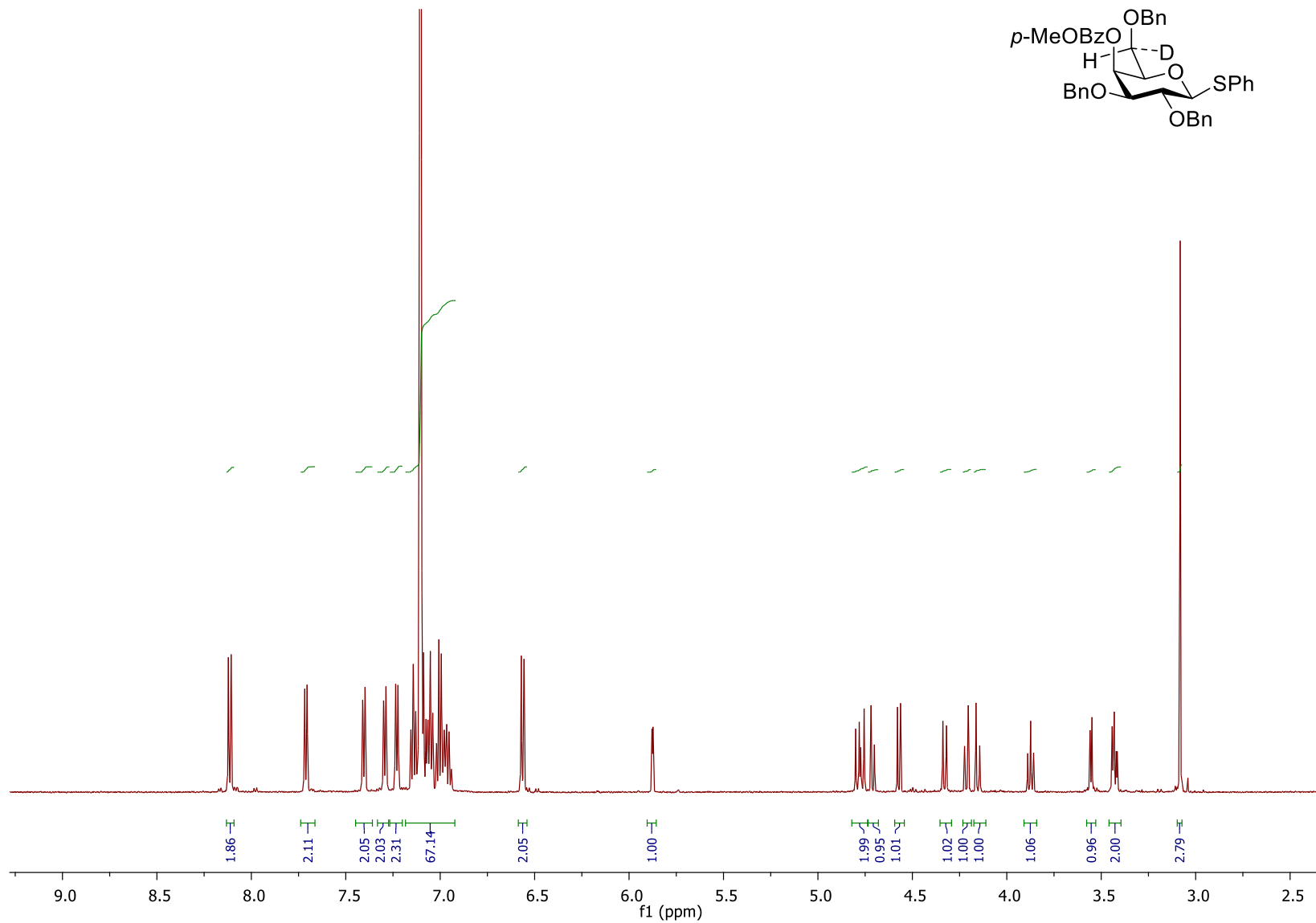
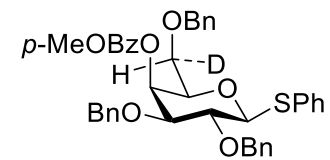
<sup>1</sup>H NMR (600 MHz, C<sub>6</sub>D<sub>6</sub>) Spectrum of Phenyl 4-*O*-(*p*-methoxybenzoyl)-2,3,6-tri-*O*-benzyl-1-thio-β-D-galactopyranoside (**19**)



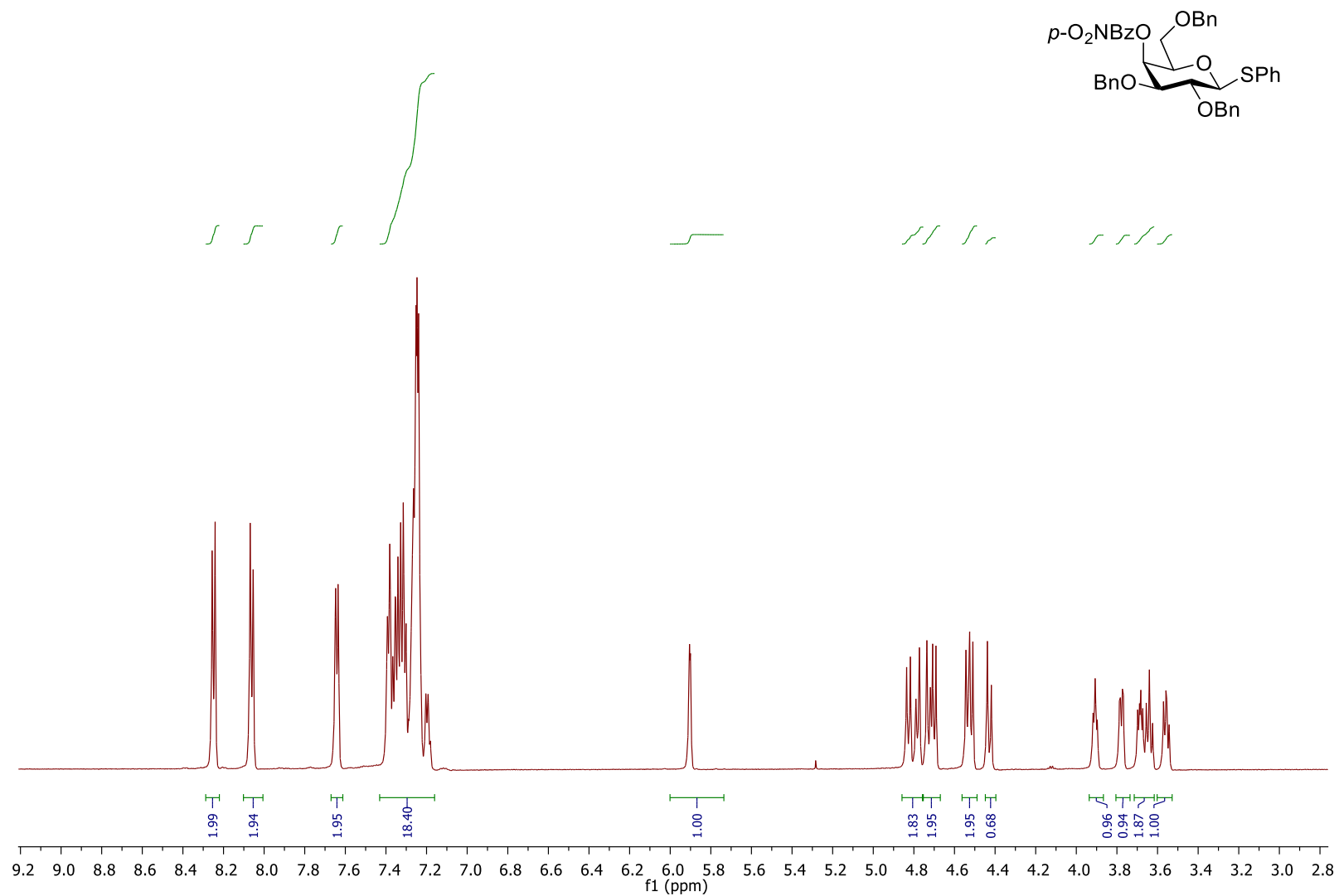
<sup>1</sup>H NMR (600 MHz, CDCl<sub>3</sub>) Spectrum of Phenyl 4-*O*-(*p*-methoxybenzoyl-(6*S*)-[6-<sup>2</sup>H<sub>1</sub>]-2,3,6-tri-*O*-benzyl-1-thio-β-D-galactopyranoside (**6S-D-19**)



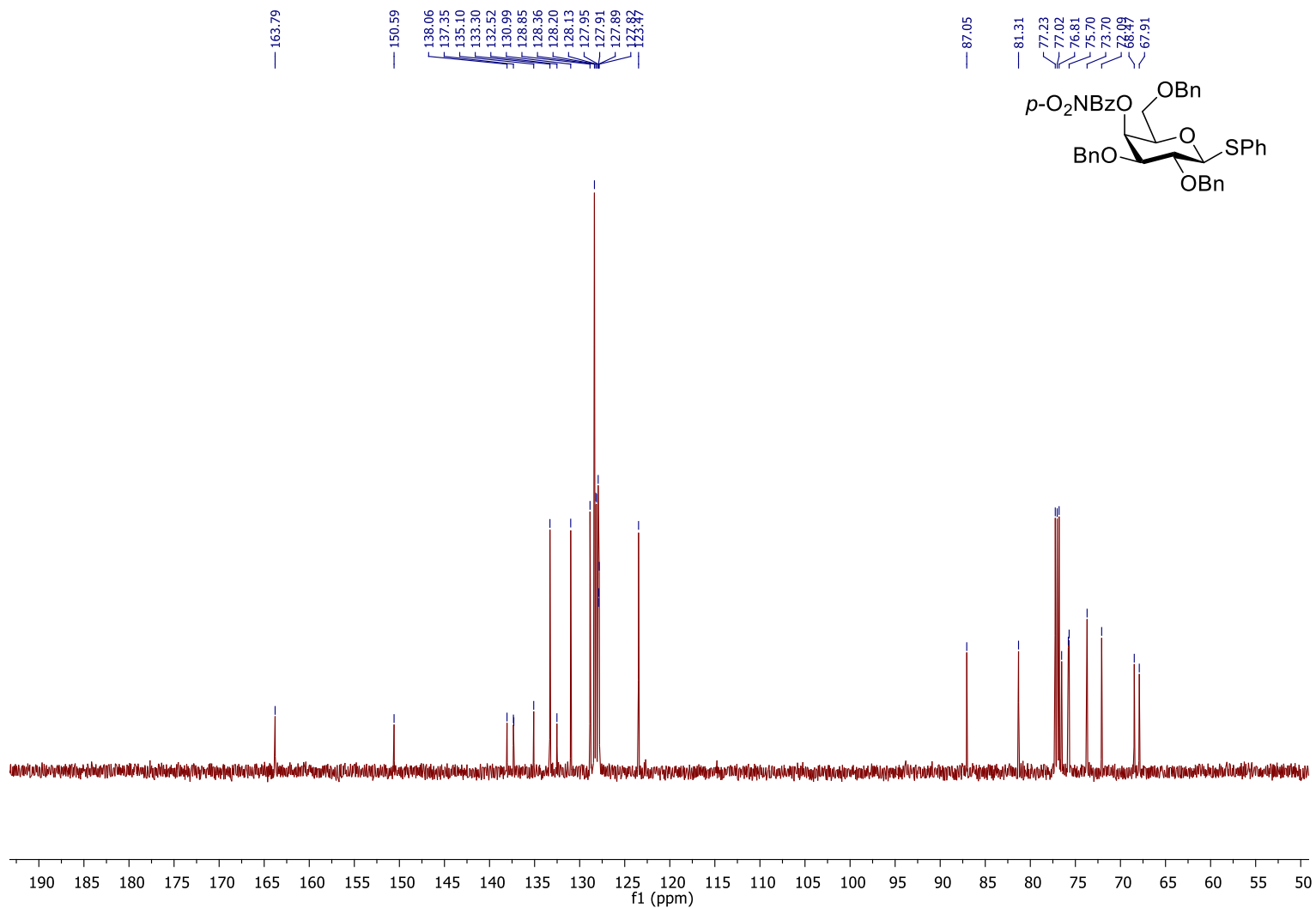
$^1\text{H}$  NMR (600 MHz,  $\text{C}_6\text{D}_6$ ) Spectrum of Phenyl 4-*O*-(*p*-methoxybenzoyl-(6*S*)-[6- $^2\text{H}_1$ ]-2,3,6-tri-*O*-benzyl-1-thio- $\beta$ -D-galactopyranoside (**6S-D-19**)



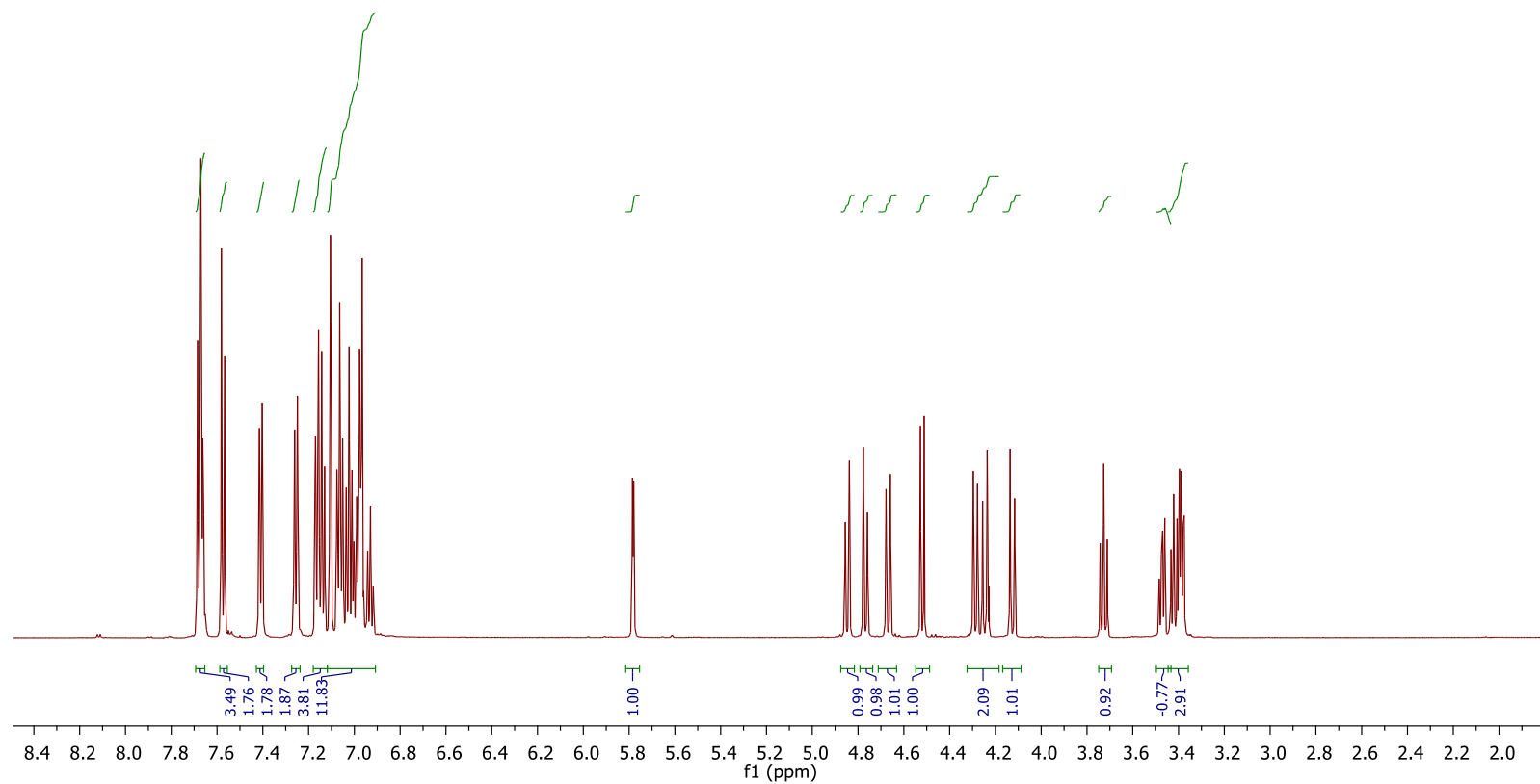
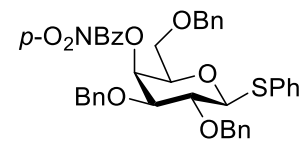
<sup>1</sup>H NMR (600 MHz, CDCl<sub>3</sub>) Spectrum of Phenyl 4-*O*-(*p*-nitrobenzoyl)-2,3,6-tri-*O*-benzyl-1-thio-β-D-galactopyranoside (**20**)



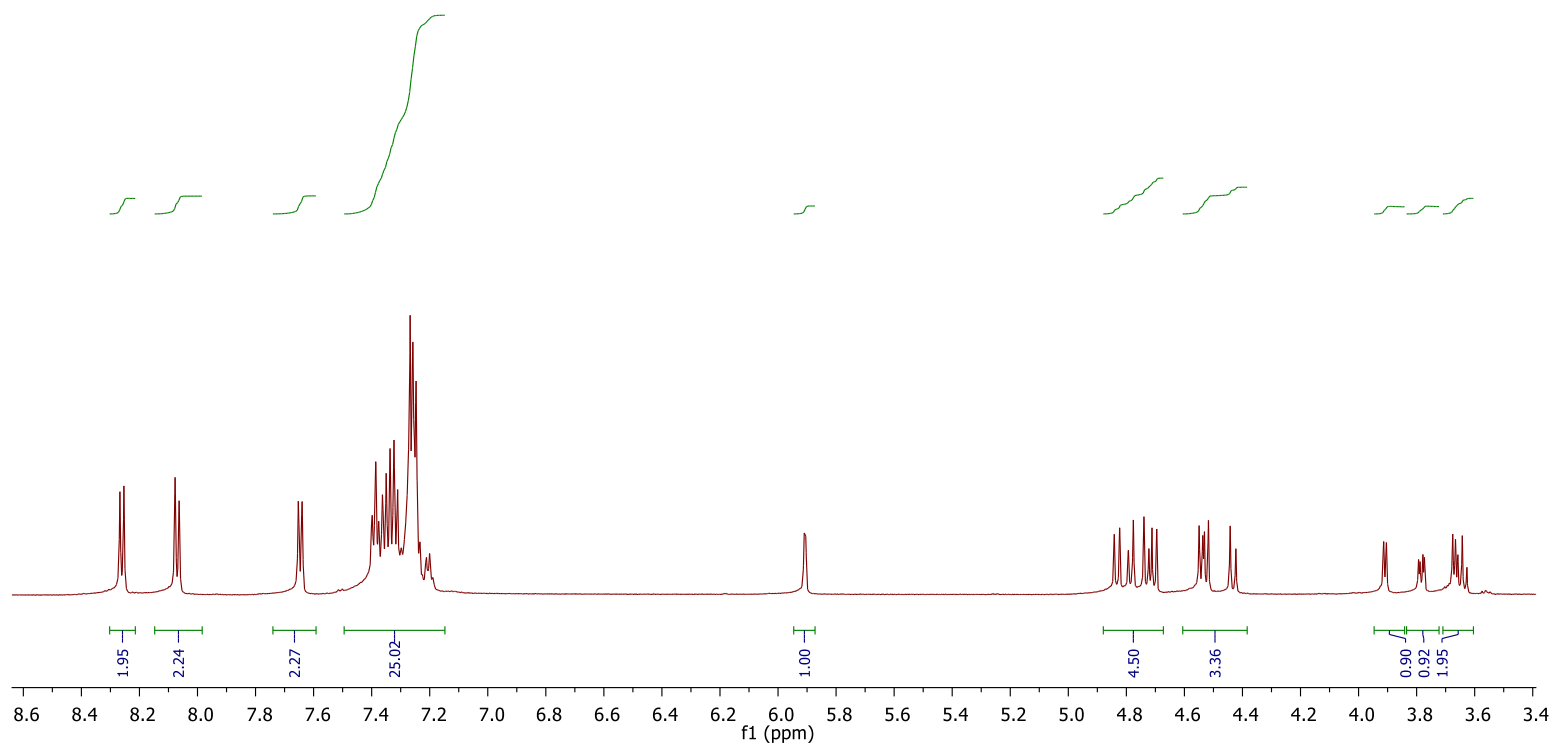
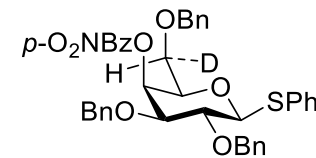
$^{13}\text{C}$  NMR (150 MHz,  $\text{CDCl}_3$ ) Spectrum of Phenyl 4-*O*-(*p*-nitrobenzoyl)-2,3,6-tri-*O*-benzyl-1-thio- $\beta$ -D-galactopyranoside (**20**)



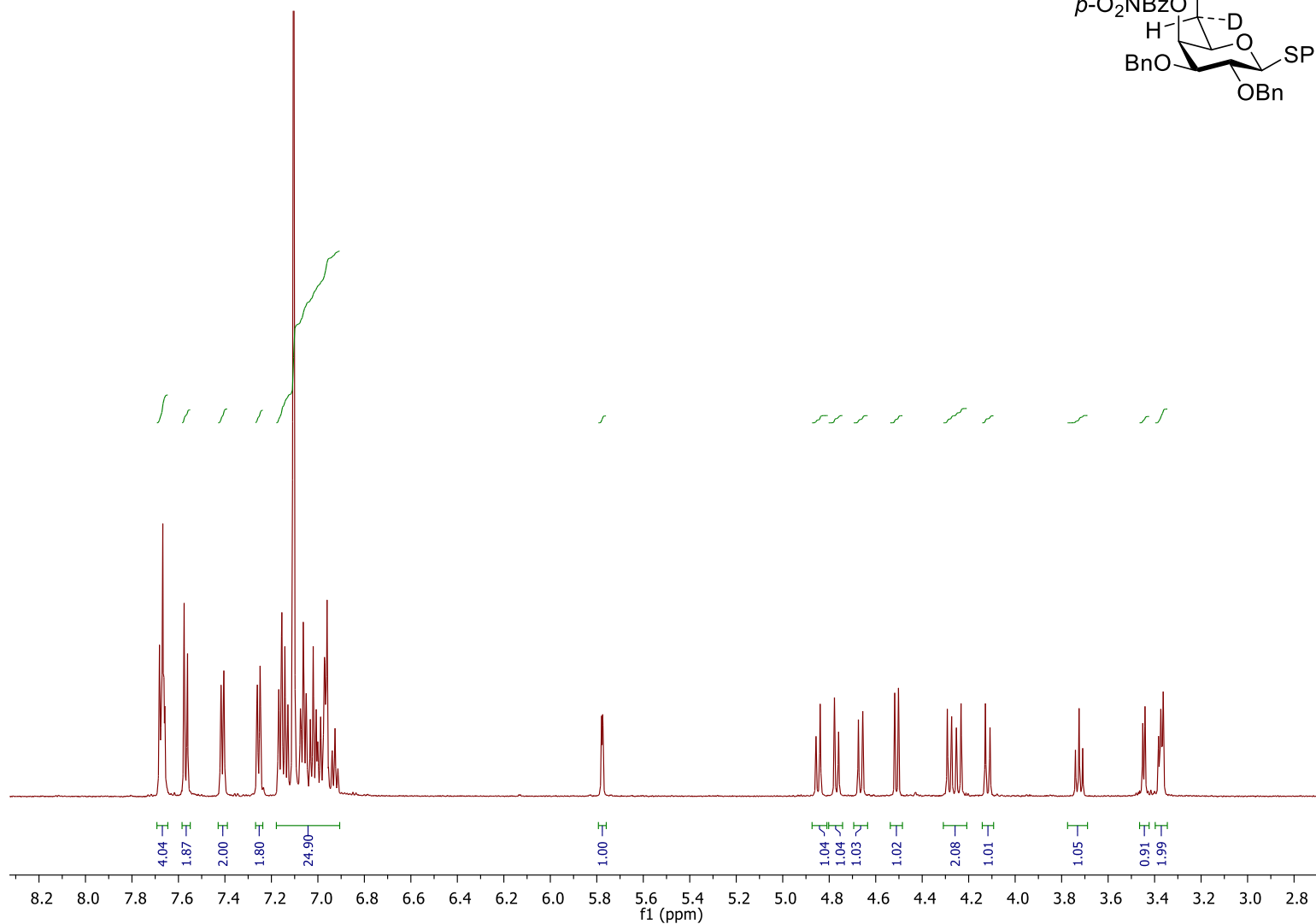
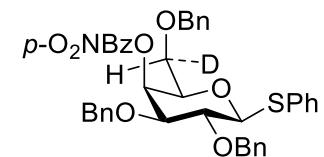
<sup>1</sup>H NMR (600 MHz, C<sub>6</sub>D<sub>6</sub>) Spectrum of Phenyl 4-*O*-(*p*-nitrobenzoyl)-2,3,6-tri-*O*-benzyl-1-thio-β-D-galactopyranoside (**20**)



$^1\text{H}$  NMR (600 MHz,  $\text{CDCl}_3$ ) Spectrum of Phenyl 4-*O*-(*p*-nitrobenzoyl)-(6*S*)-[6- $^2\text{H}_1$ ]-2,3,6-tri-*O*-benzyl-1-thio- $\beta$ -D-galactopyranoside (**6S-D-20**)

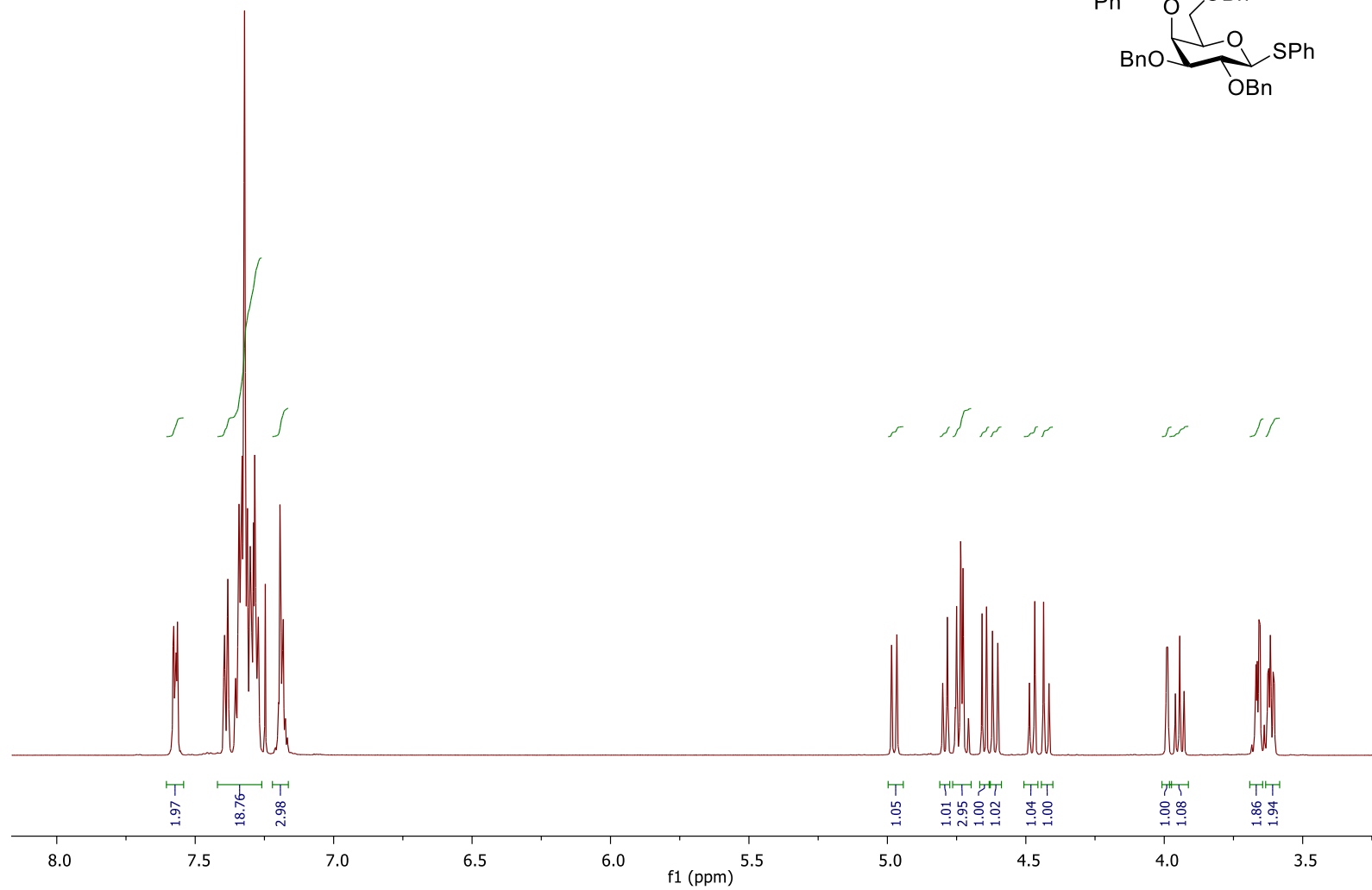
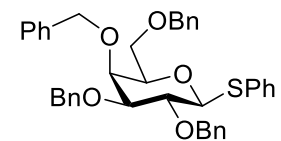


$^1\text{H}$  NMR (600 MHz,  $\text{C}_6\text{D}_6$ ) Spectrum of Phenyl 4-*O*-(*p*-nitrobenzoyl)-(6*S*)-[6- $^2\text{H}_1$ ]-2,3,6-tri-*O*-benzyl-1-thio- $\beta$ -D-galactopyranoside (**6S-D-20**)

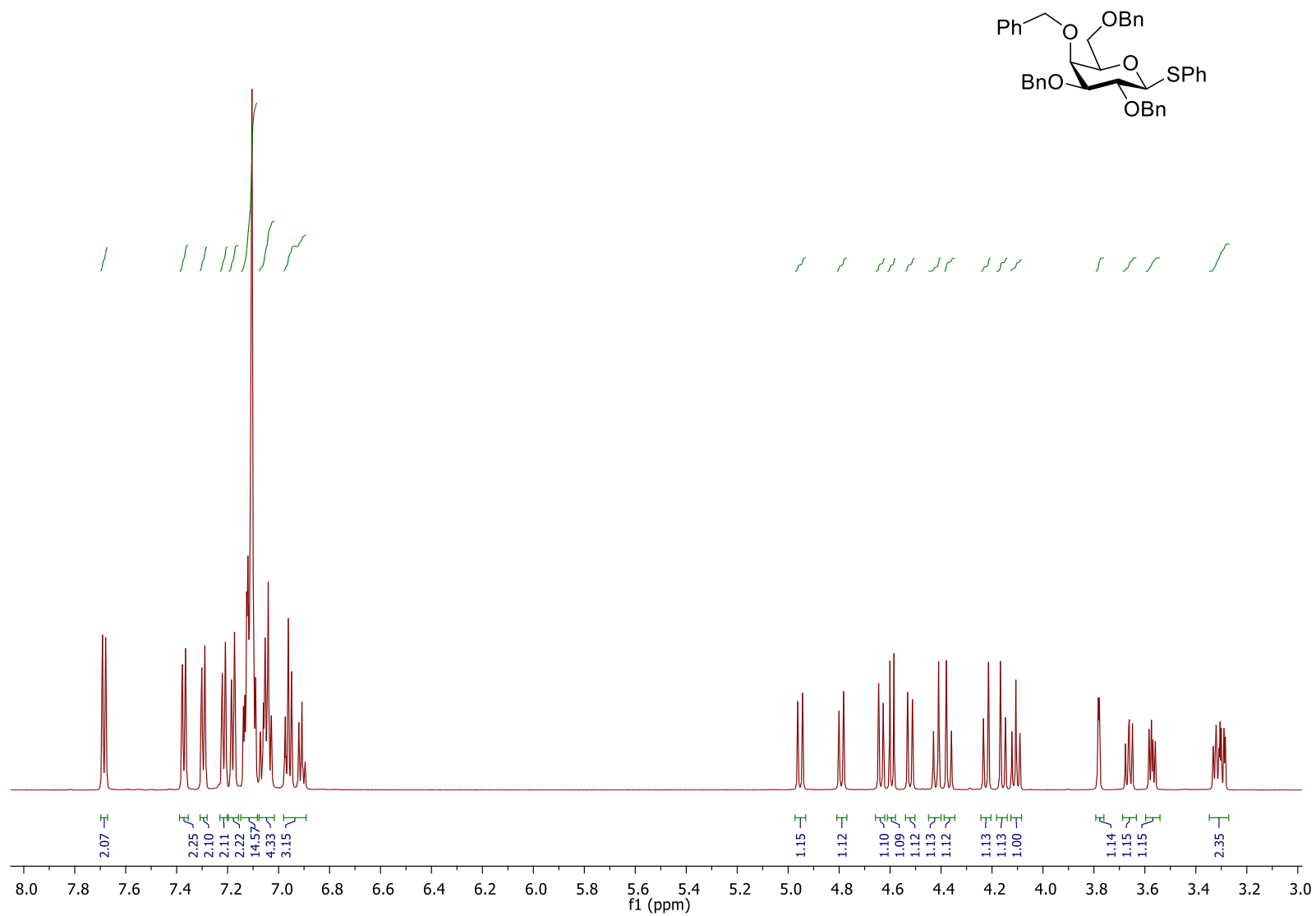




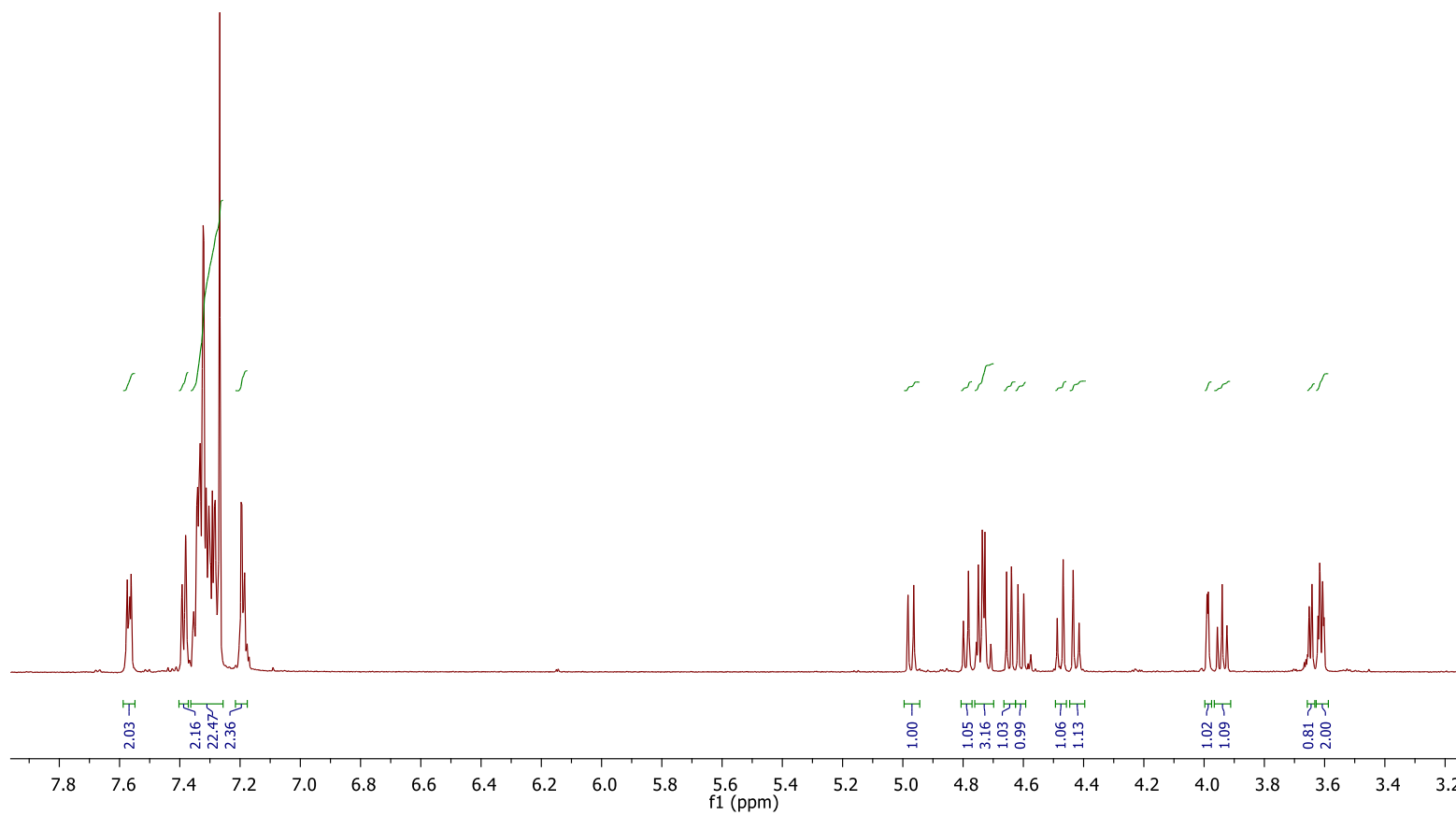
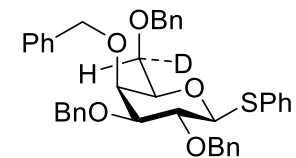
$^1\text{H}$  NMR (600 MHz,  $\text{CDCl}_3$ ) Spectrum of Phenyl 2,3,4,6-tetra-*O*-benzyl-1-thio- $\beta$ -D-galactopyranoside (**21**)



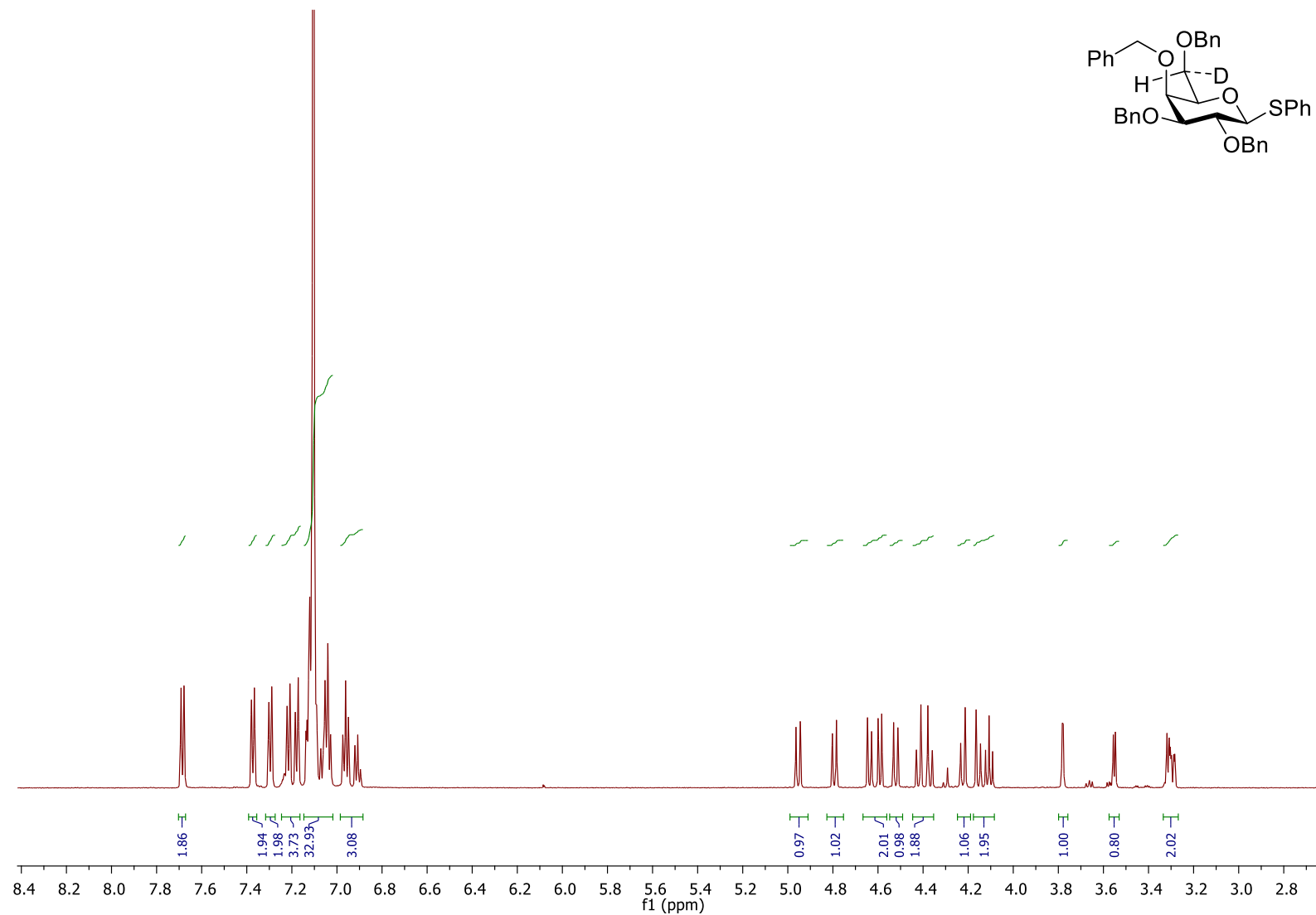
$^1\text{H}$  NMR (600 MHz,  $\text{C}_6\text{D}_6$ ) Spectrum of Phenyl 2,3,4,6-tetra-*O*-benzyl-1-thio- $\beta$ -D-galactopyranoside (**21**)



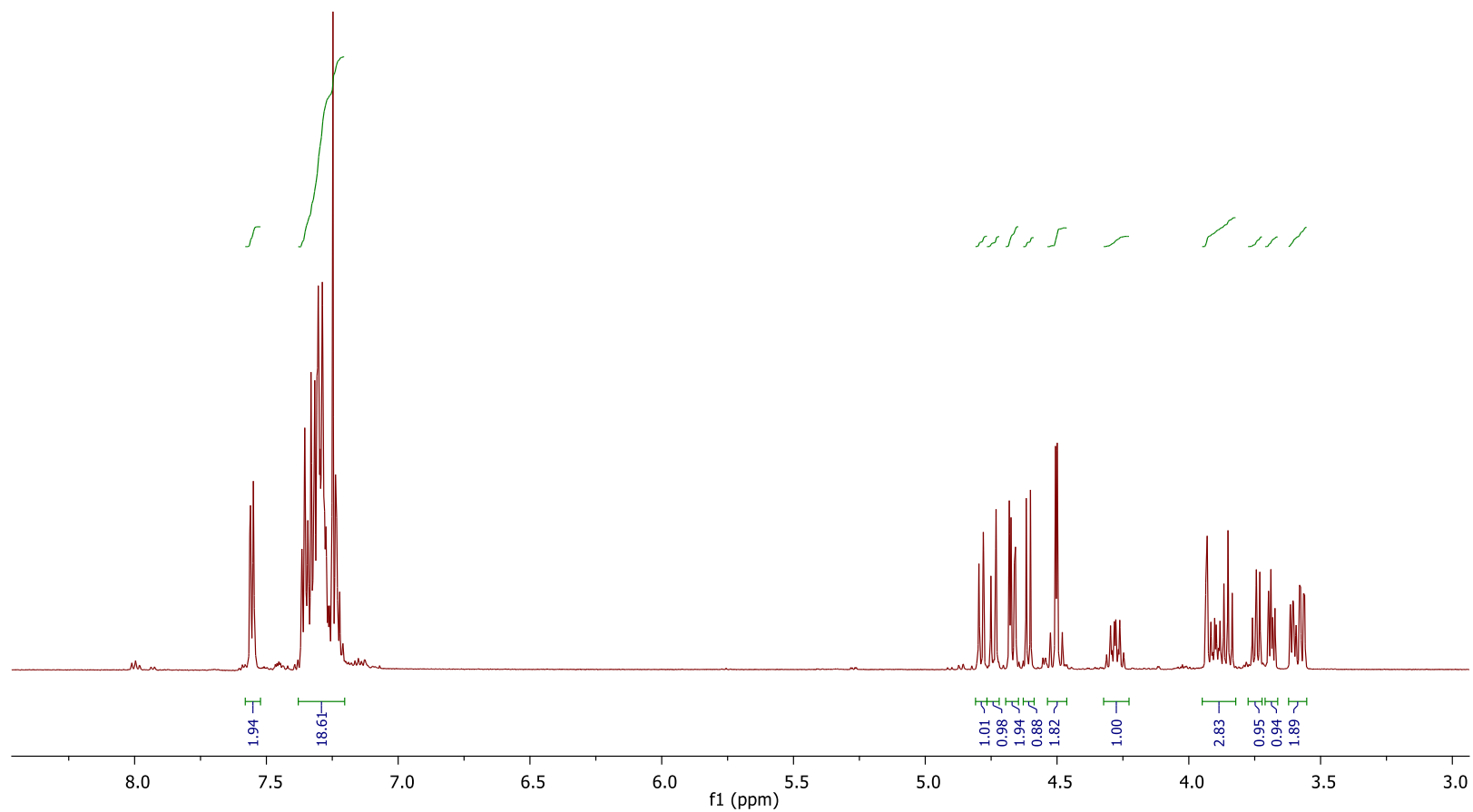
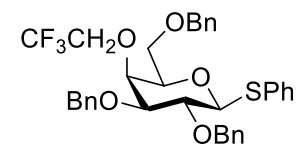
$^1\text{H}$  NMR (600 MHz,  $\text{CDCl}_3$ ) Spectrum of Phenyl (6*S*)-[6- $^2\text{H}_1$ ]-2,3,4,6-tetra-*O*-benzyl-1-thio- $\beta$ -D-galactopyranoside (**6S-D-21**)



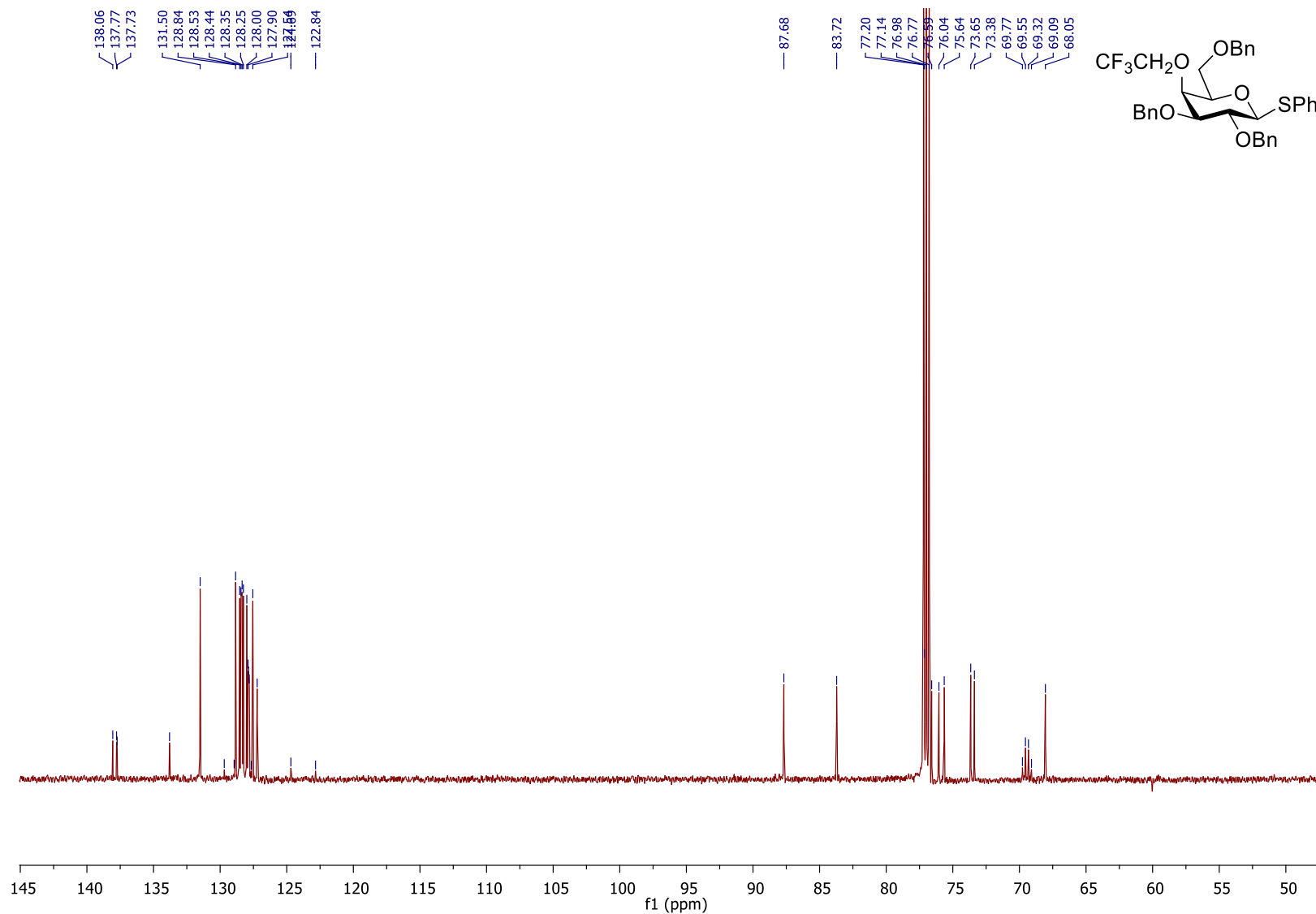
$^1\text{H}$  NMR (600 MHz,  $\text{C}_6\text{D}_6$ ) Spectrum of Phenyl (6*S*)-[6- $^2\text{H}_1$ ]-2,3,4,6-tetra-*O*-benzyl-1-thio- $\beta$ -D-galactopyranoside (**6S-D-21**)



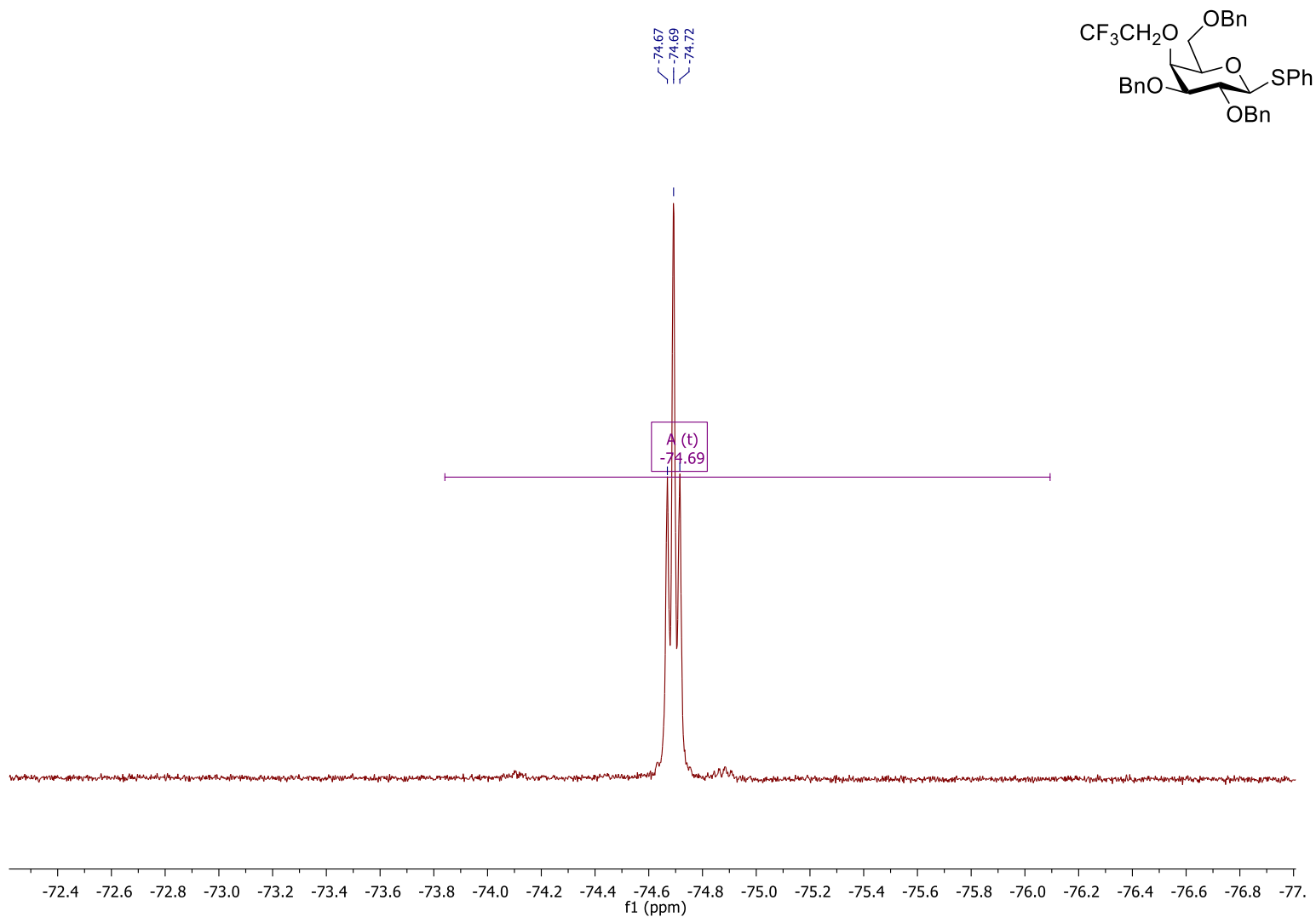
<sup>1</sup>H NMR (600 MHz, CDCl<sub>3</sub>) Spectrum of Phenyl 2,3,6-tri-*O*-benzyl-4-*O*-(1',1',1'-trifluoroethyl)-1-thio-β-D-galactopyranoside (**22**)



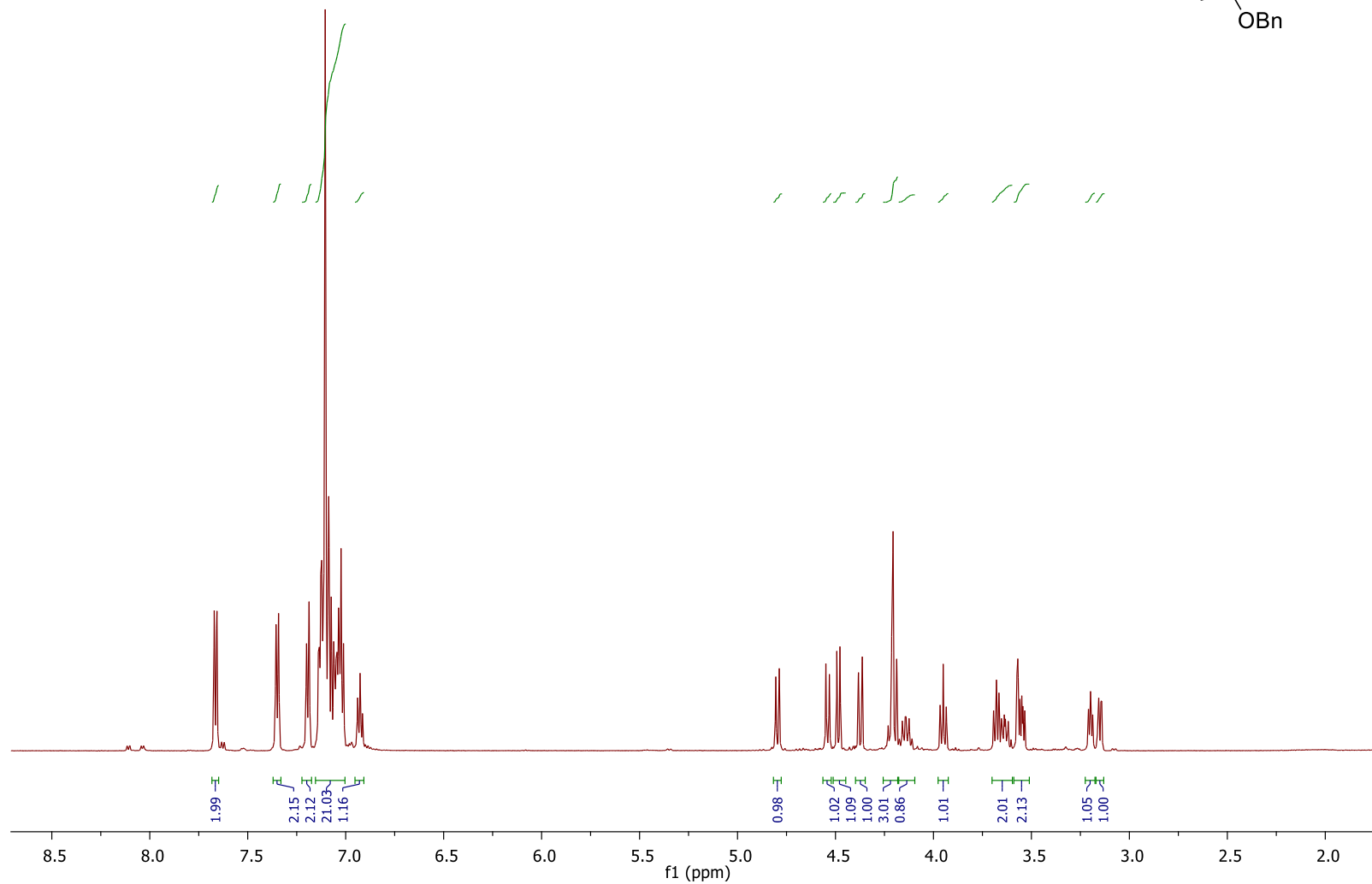
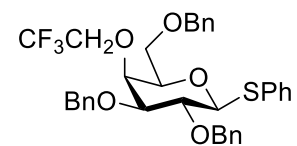
$^{13}\text{C}$  NMR (150 MHz,  $\text{CDCl}_3$ ) Spectrum of Phenyl 2,3,6-tri-*O*-benzyl-4-*O*-(1',1',1'-trifluoroethyl)-1-thio- $\beta$ -D-galactopyranoside (**22**)



$^{19}\text{F}$  NMR (375 MHz,  $\text{CDCl}_3$ ) Spectrum of Phenyl 2,3,6-tri-*O*-benzyl-4-*O*-(1',1',1'-trifluoroethyl)-1-thio- $\beta$ -D-galactopyranoside (**22**)

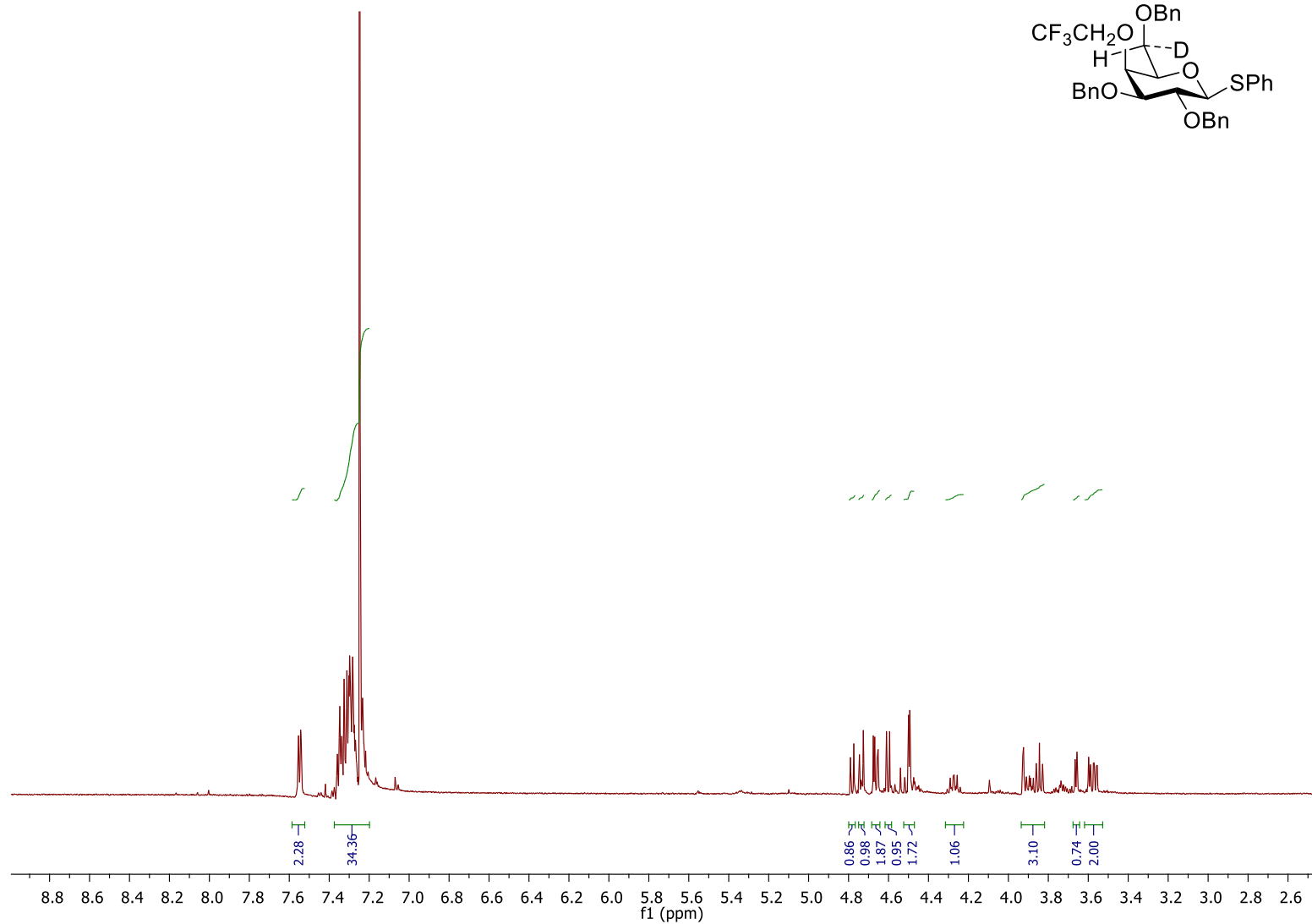
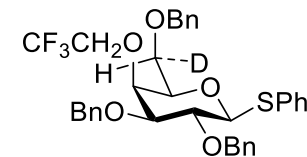


<sup>1</sup>H NMR (600 MHz, C<sub>6</sub>D<sub>6</sub>) Spectrum of Phenyl 2,3,6-tri-*O*-benzyl-4-*O*-(1',1',1'-trifluoroethyl)-1-thio-β-D-galactopyranoside (**22**)

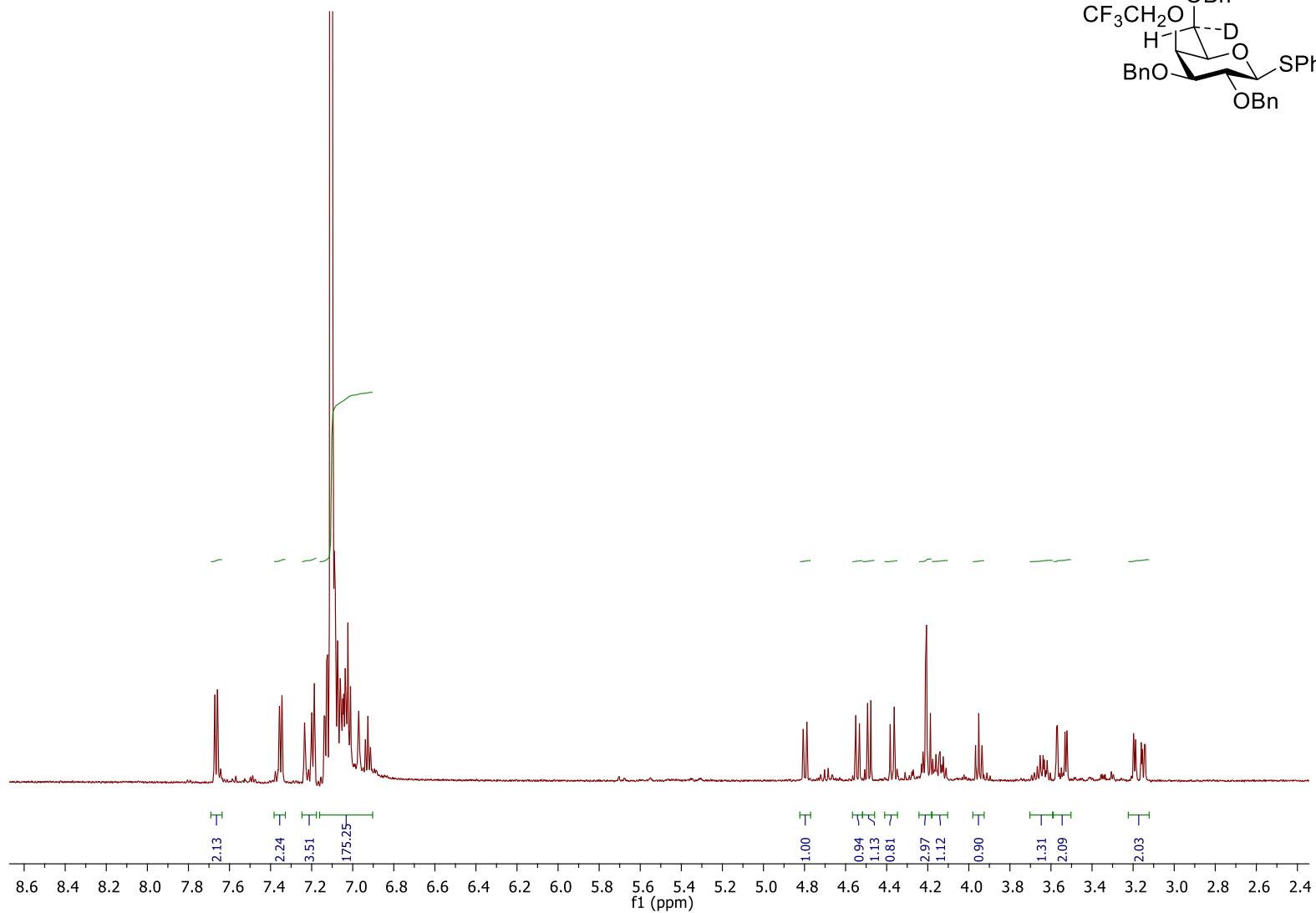
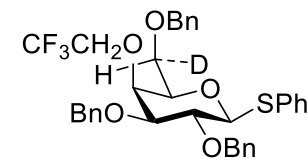




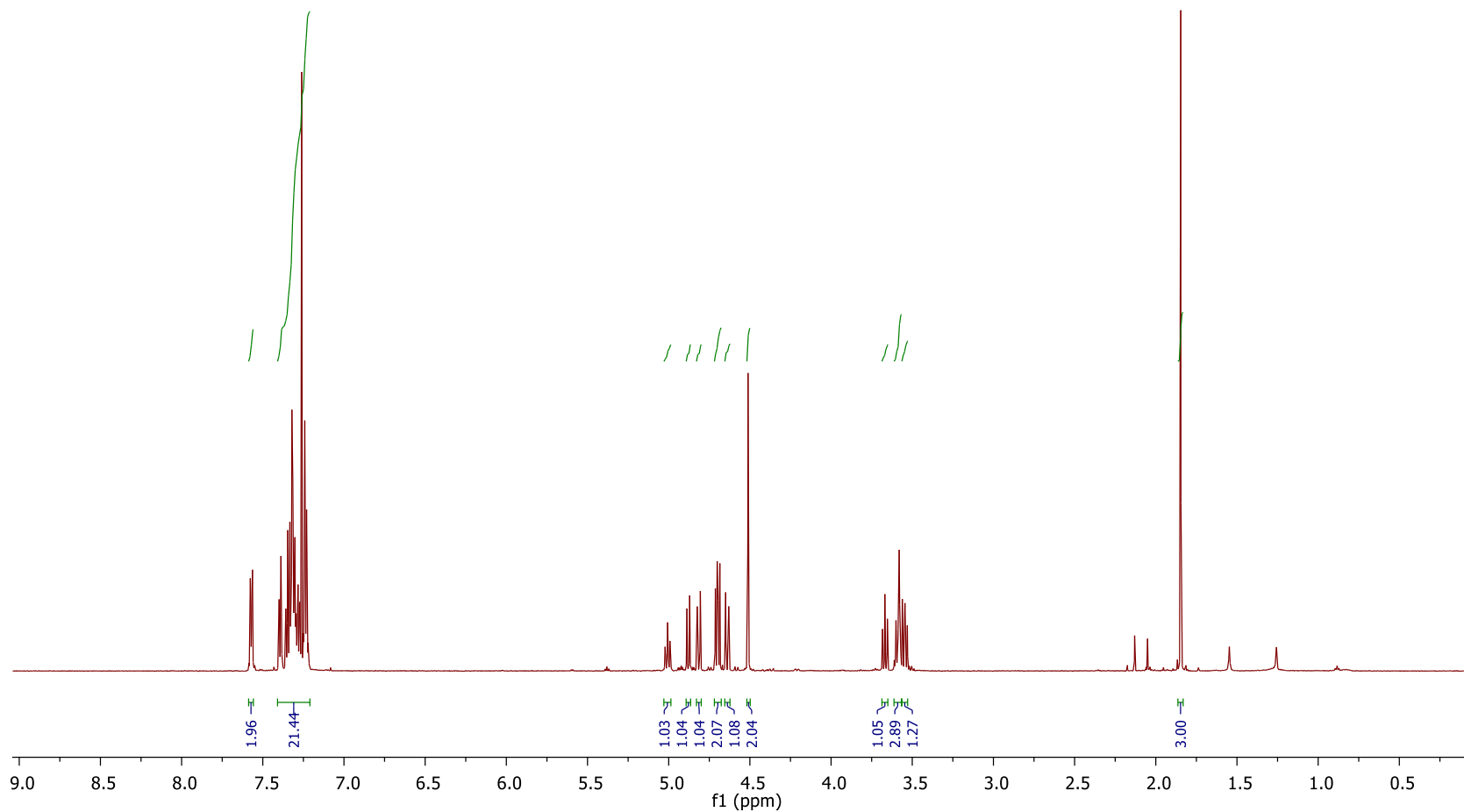
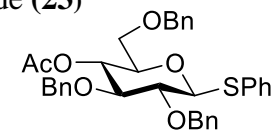
$^1\text{H}$  NMR (600 MHz,  $\text{CDCl}_3$ ) Spectrum of Phenyl (6*S*)-[6- $^2\text{H}_1$ ]-2,3,6-tri-*O*-benzyl-4-*O*-(1',1',1'-trifluoroethyl)-1-thio- $\beta$ -D-galactopyranoside (**6S-D-22**)



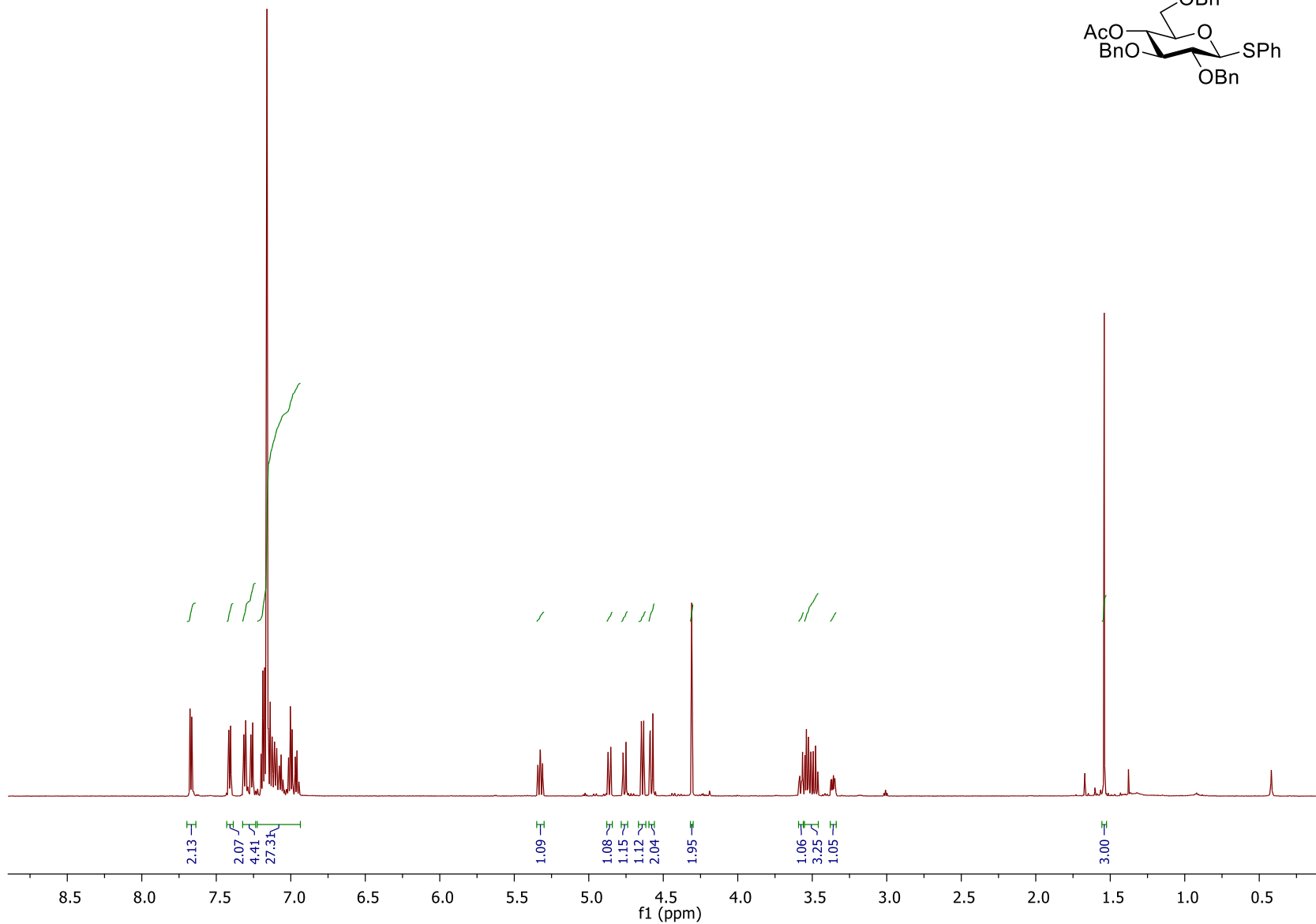
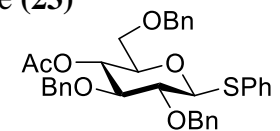
$^1\text{H}$  NMR (600 MHz,  $\text{C}_6\text{D}_6$ ) Spectrum of Phenyl (6*S*)-[6- $^2\text{H}_1$ ]-2,3,6-tri-*O*-benzyl-4-*O*-(1',1',1'-trifluoroethyl)-1-thio- $\beta$ -D-galactopyranoside (**6S-D-22**)



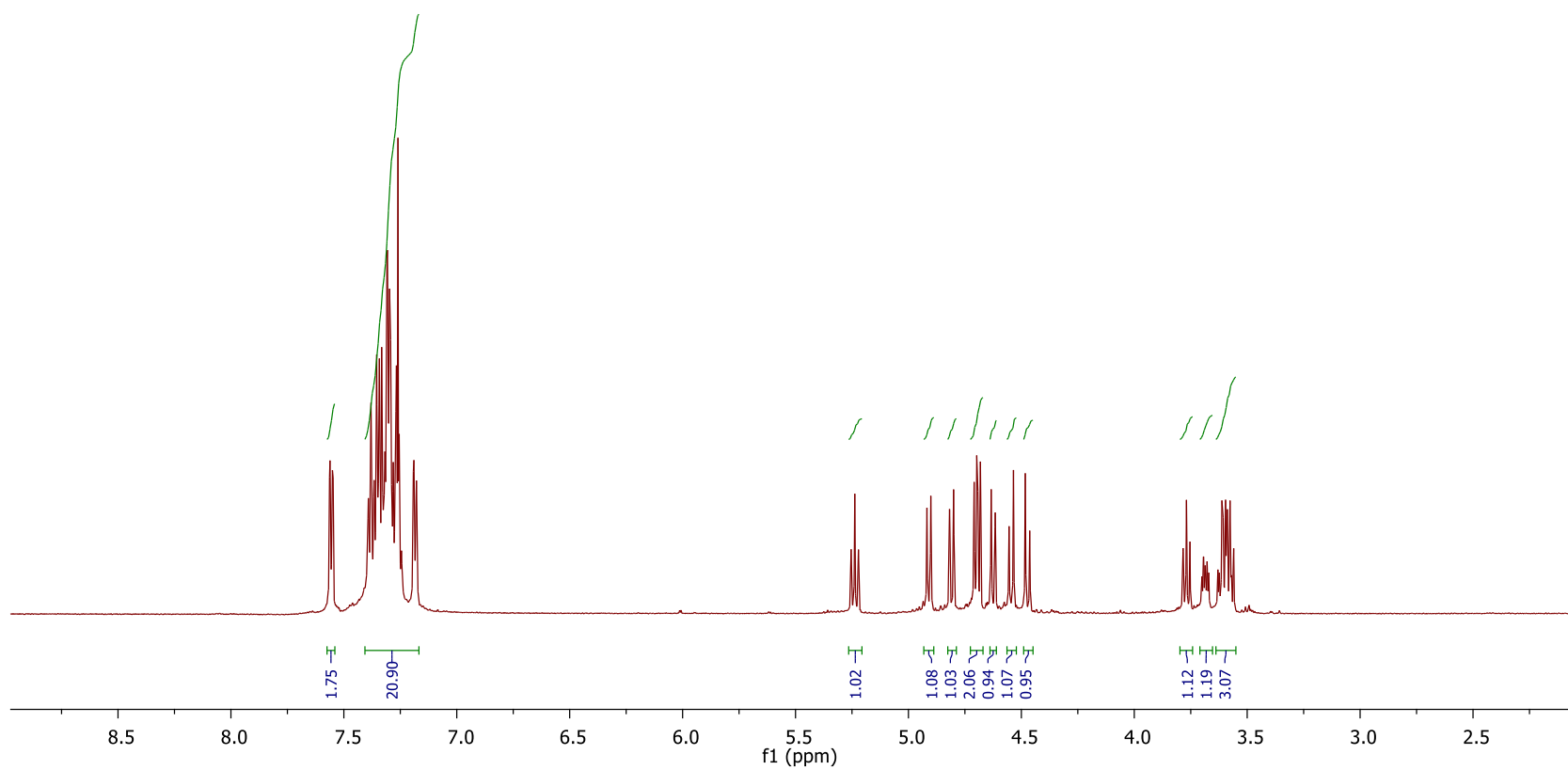
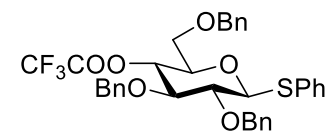
$^1\text{H}$  NMR (600 MHz,  $\text{CDCl}_3$ ) Spectrum of Phenyl 4-*O*-acetyl-2,3,6-tri-*O*-benzyl-1-thio- $\beta$ -D-glucopyranoside (**23**)



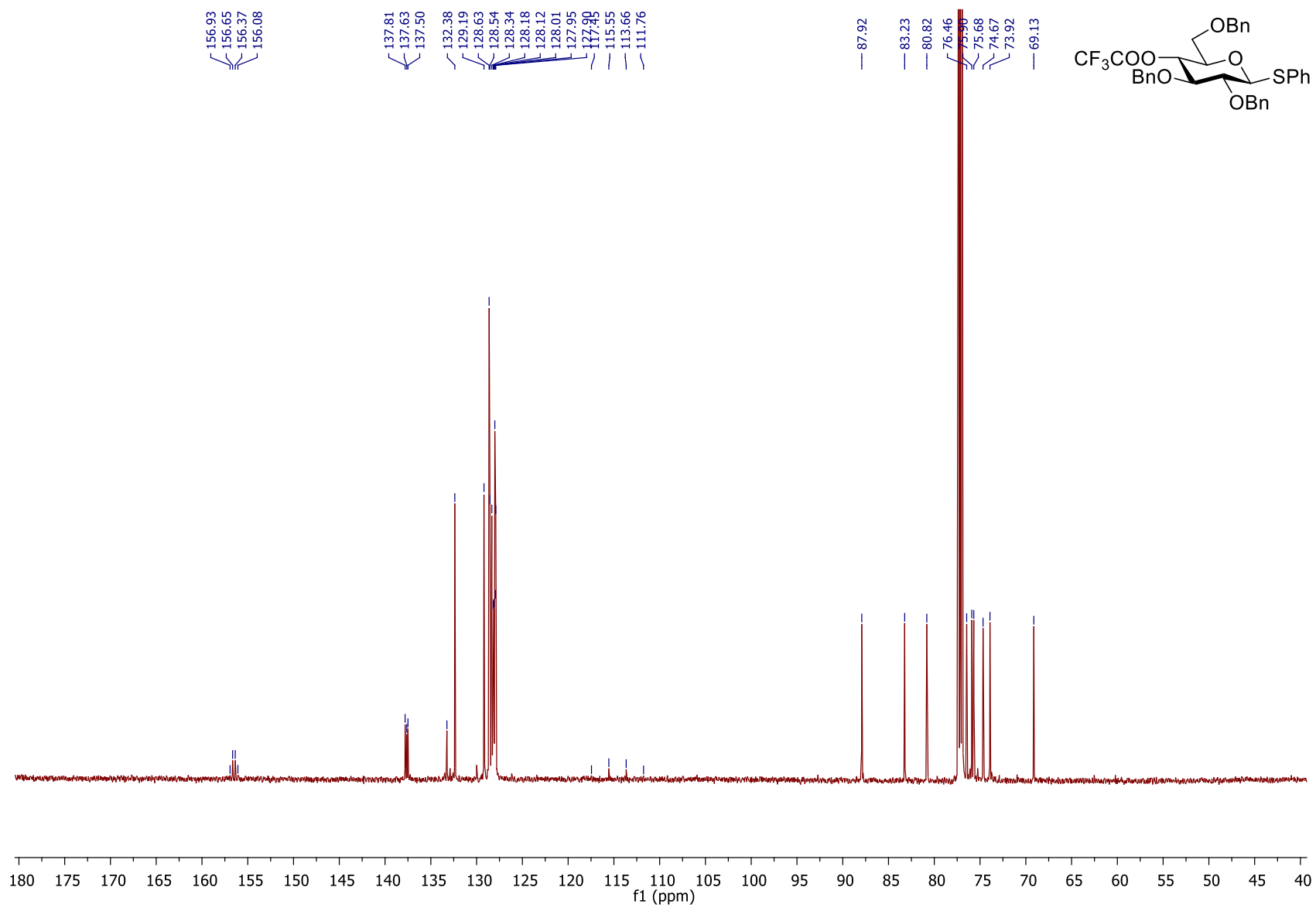
$^1\text{H}$  NMR (600 MHz,  $\text{C}_6\text{D}_6$ ) Spectrum of Phenyl 4-*O*-acetyl-2,3,6-tri-*O*-benzyl-1-thio- $\beta$ -D-glucopyranoside (**23**)



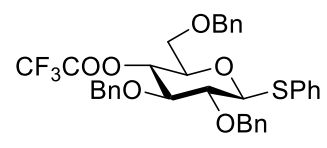
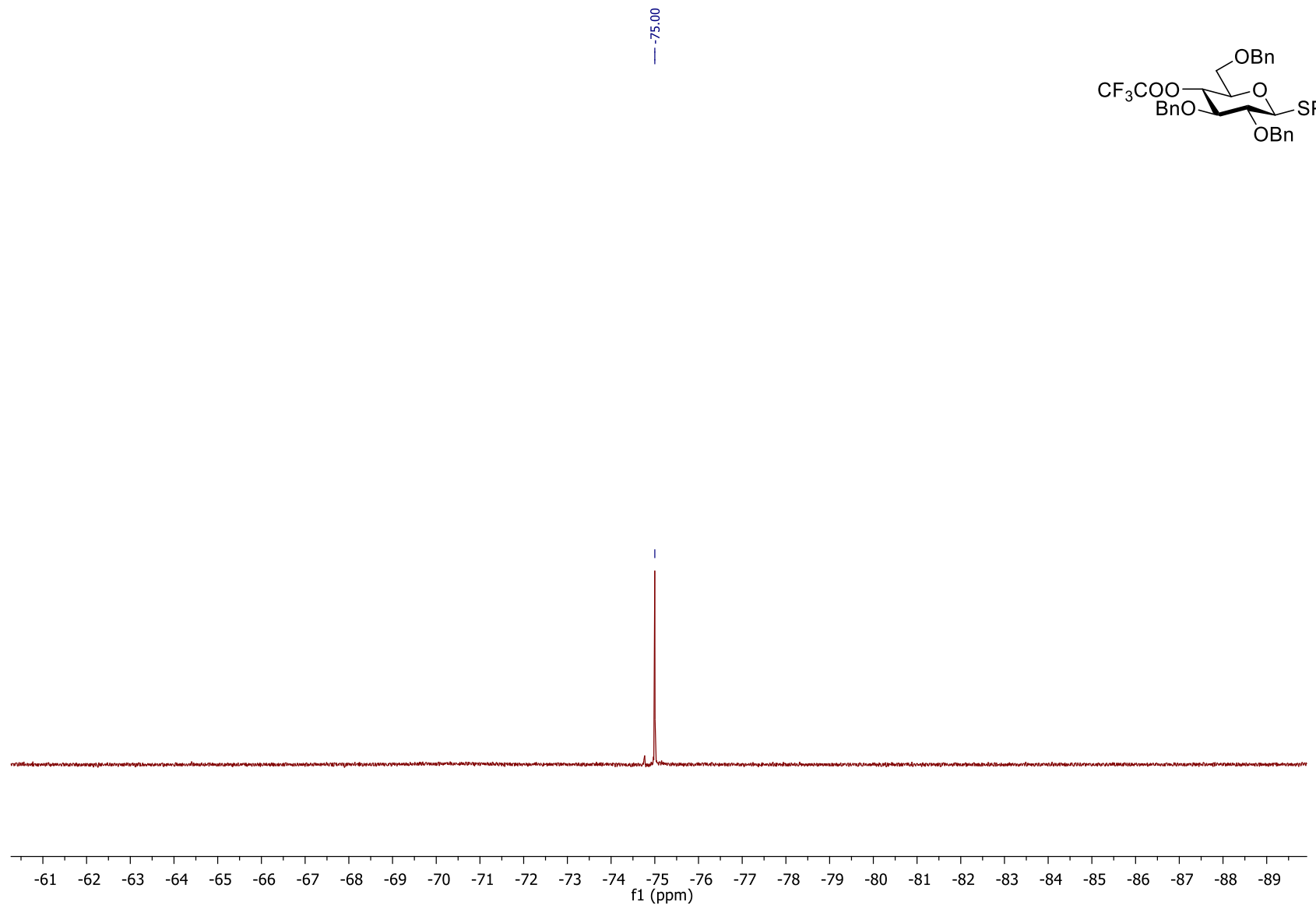
$^1\text{H}$  NMR (600 MHz,  $\text{CDCl}_3$ ) Spectrum of Phenyl 2,3,6-tri-*O*-benzyl-4-*O*-trifluoroacetyl-1-thio- $\beta$ -D-glucopyranoside (**24**)



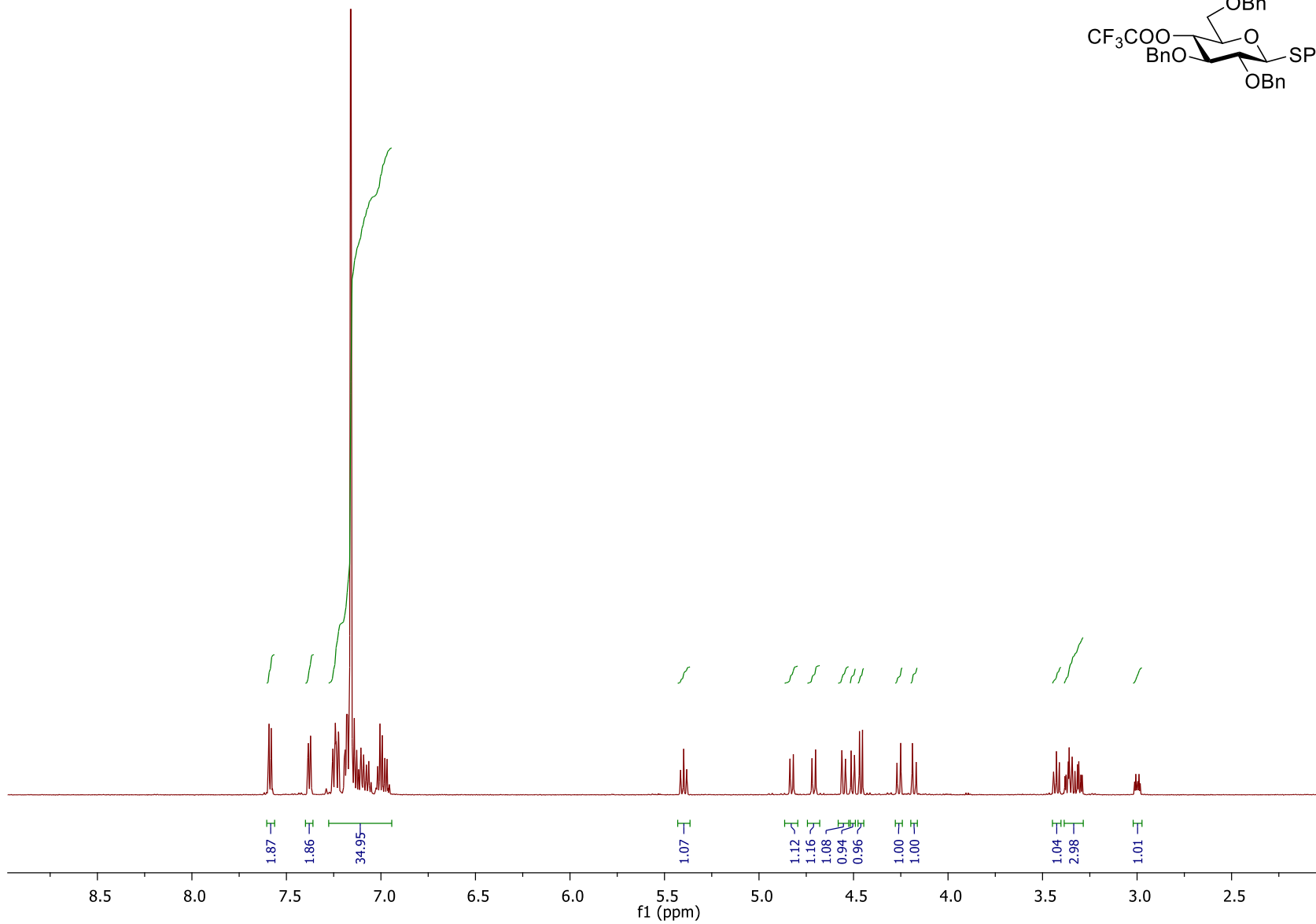
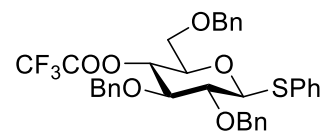
<sup>13</sup>C NMR (150 MHz, CDCl<sub>3</sub>) Spectrum of Phenyl 2,3,6-tri-*O*-benzyl-4-*O*-trifluoroacetyl-1-thio-β-D-glucopyranoside (**24**)



<sup>19</sup>F NMR (376 MHz, CDCl<sub>3</sub>) Spectrum of Phenyl 2,3,6-tri-*O*-benzyl-4-*O*-trifluoroacetyl-1-thio-β-*D*-glucopyranoside (**24**)

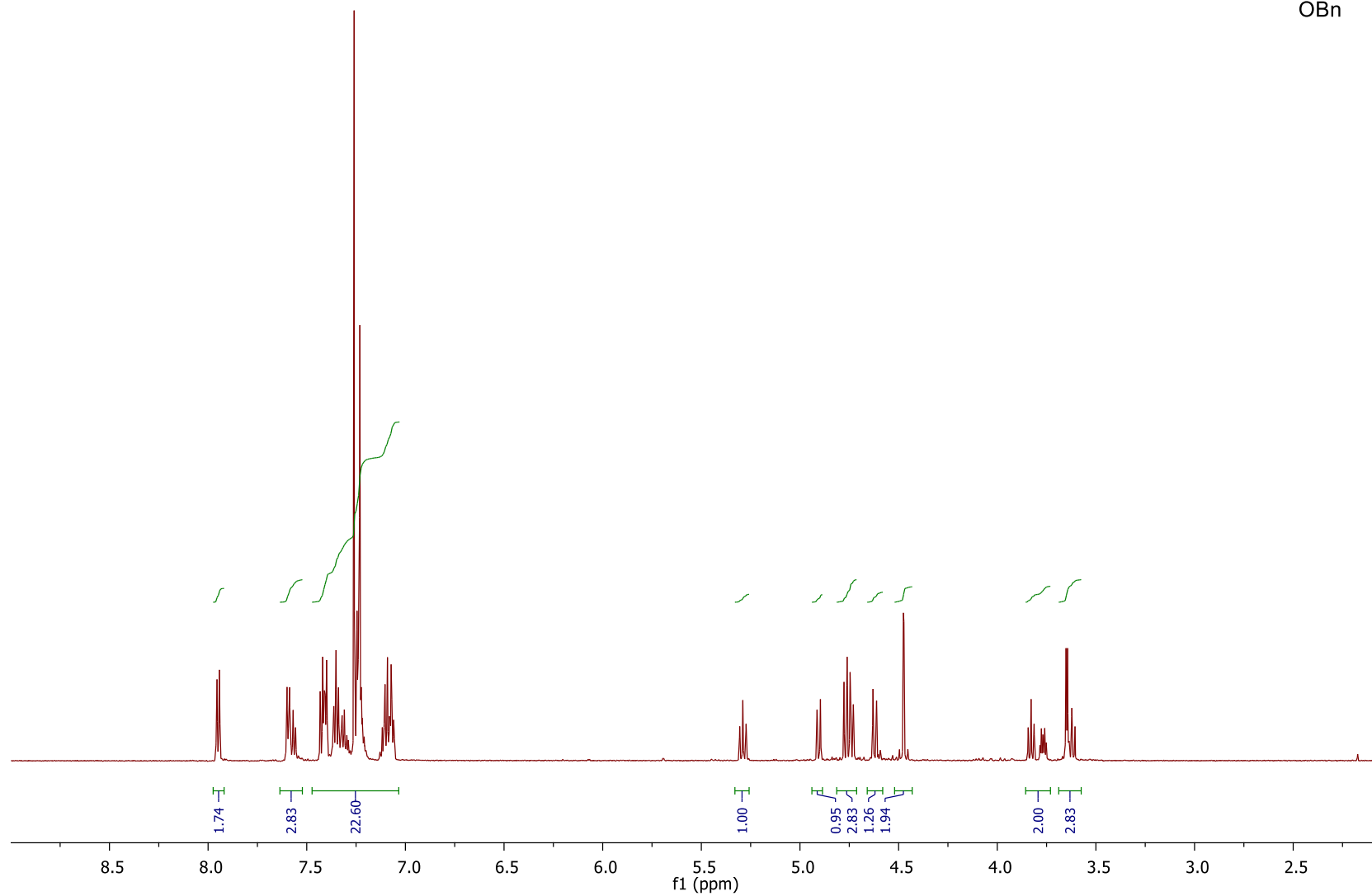
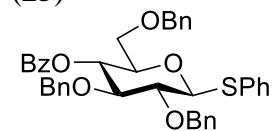


$^1\text{H}$  NMR (600 MHz,  $\text{C}_6\text{D}_6$ ) Spectrum of Phenyl 2,3,6-tri-*O*-benzyl-4-*O*-trifluoroacetyl-1-thio- $\beta$ -D-glucopyranoside (**24**)

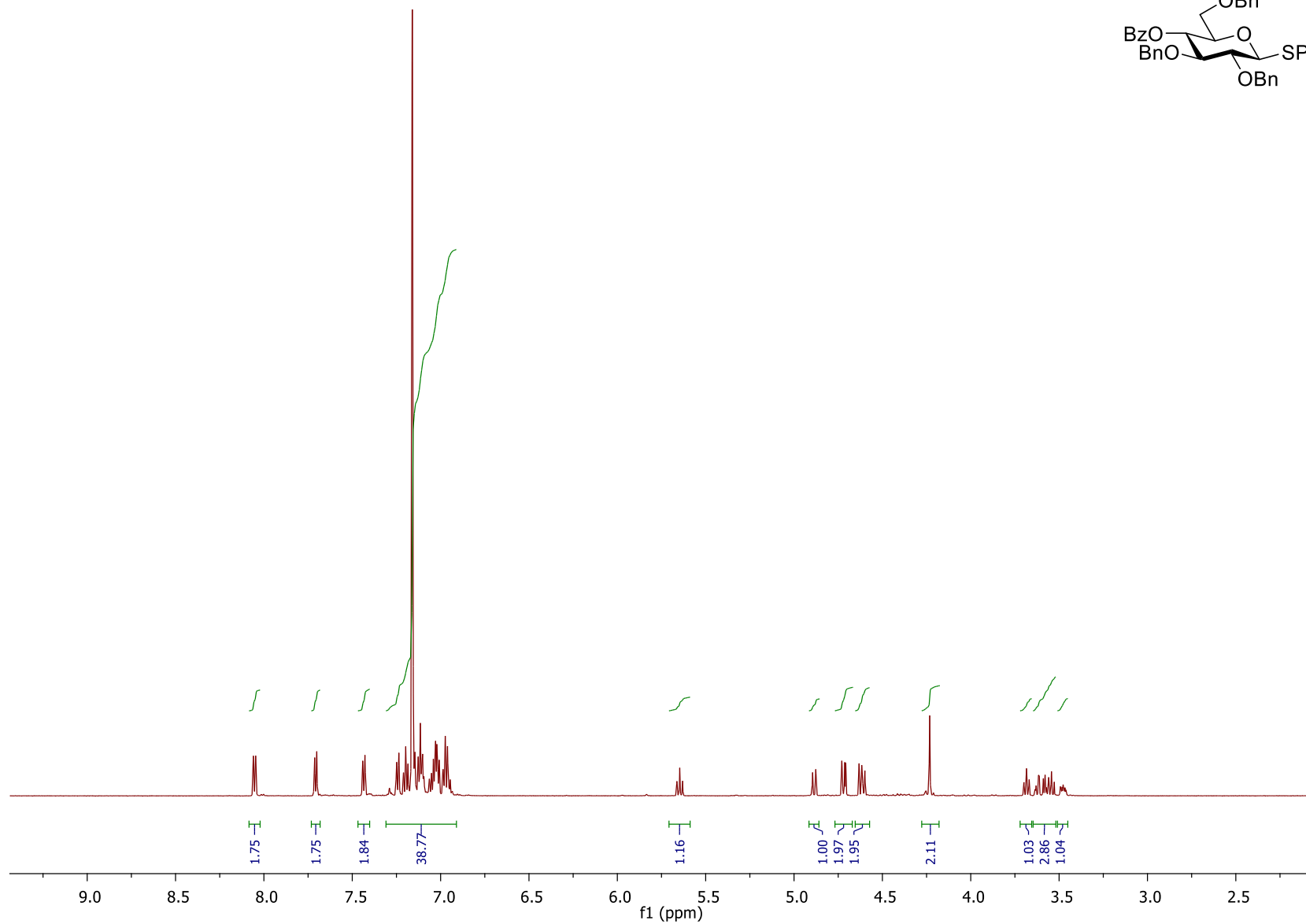
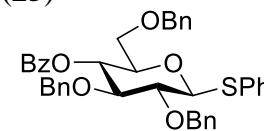




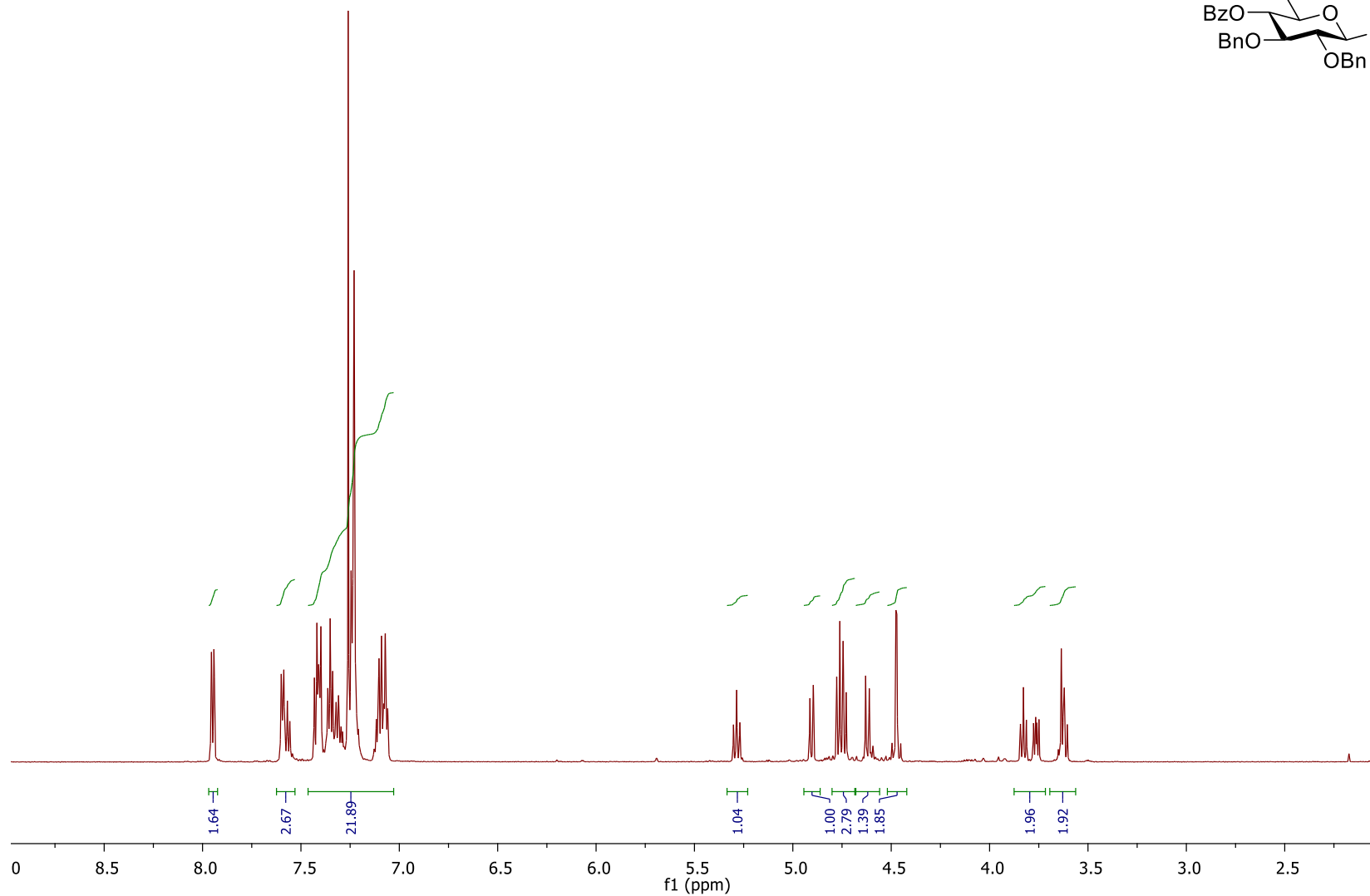
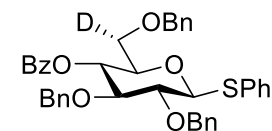
$^1\text{H}$  NMR (600 MHz,  $\text{CDCl}_3$ ) Spectrum of Phenyl 4-*O*-benzoyl-2,3,6-tri-*O*-benzyl-1-thio- $\beta$ -D-glucopyranoside (**25**)



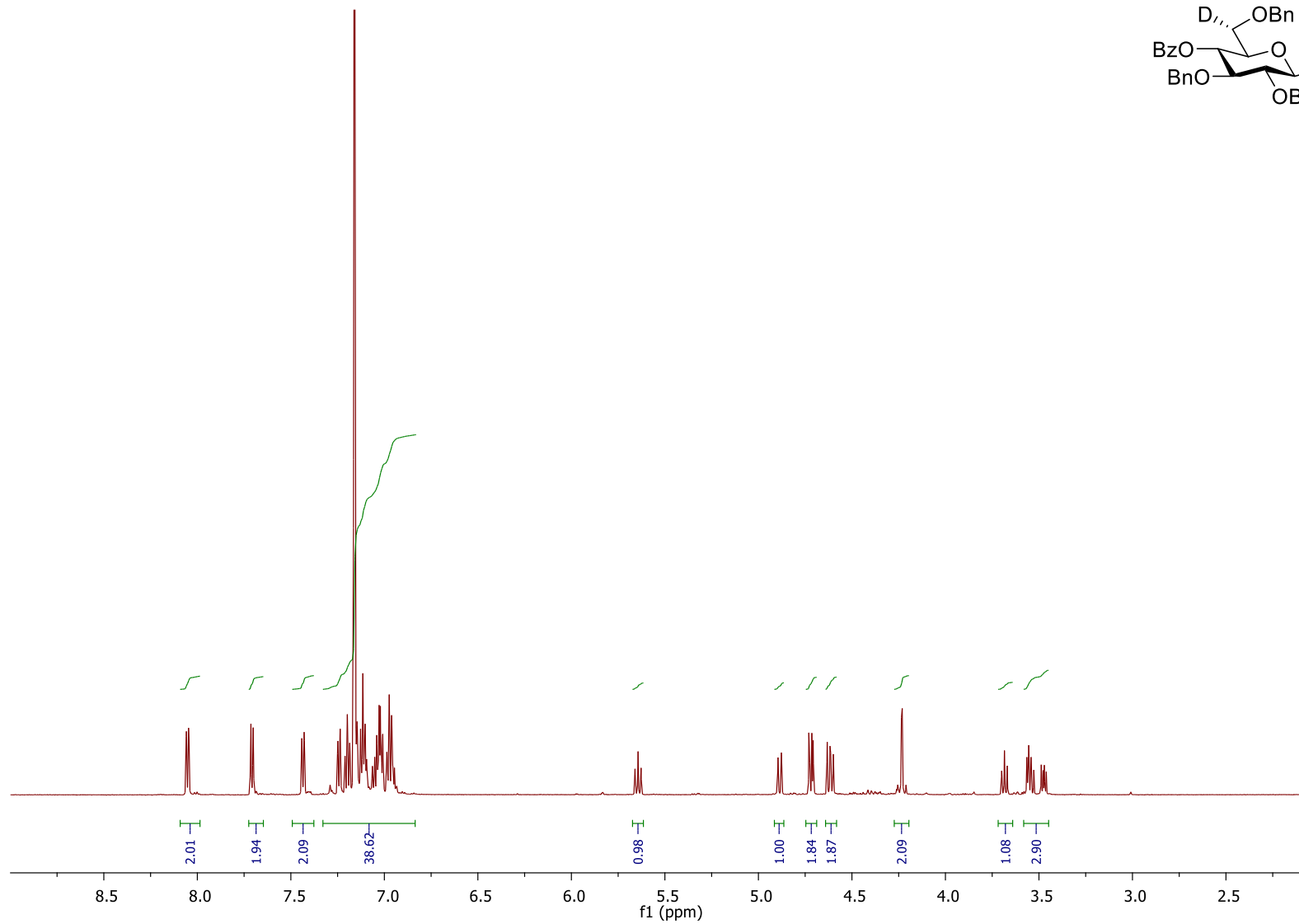
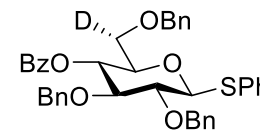
<sup>1</sup>H NMR (600 MHz, C<sub>6</sub>D<sub>6</sub>) Spectrum of Phenyl 4-*O*-benzoyl-2,3,6-tri-*O*-benzyl-1-thio-β-D-glucopyranoside (**25**)



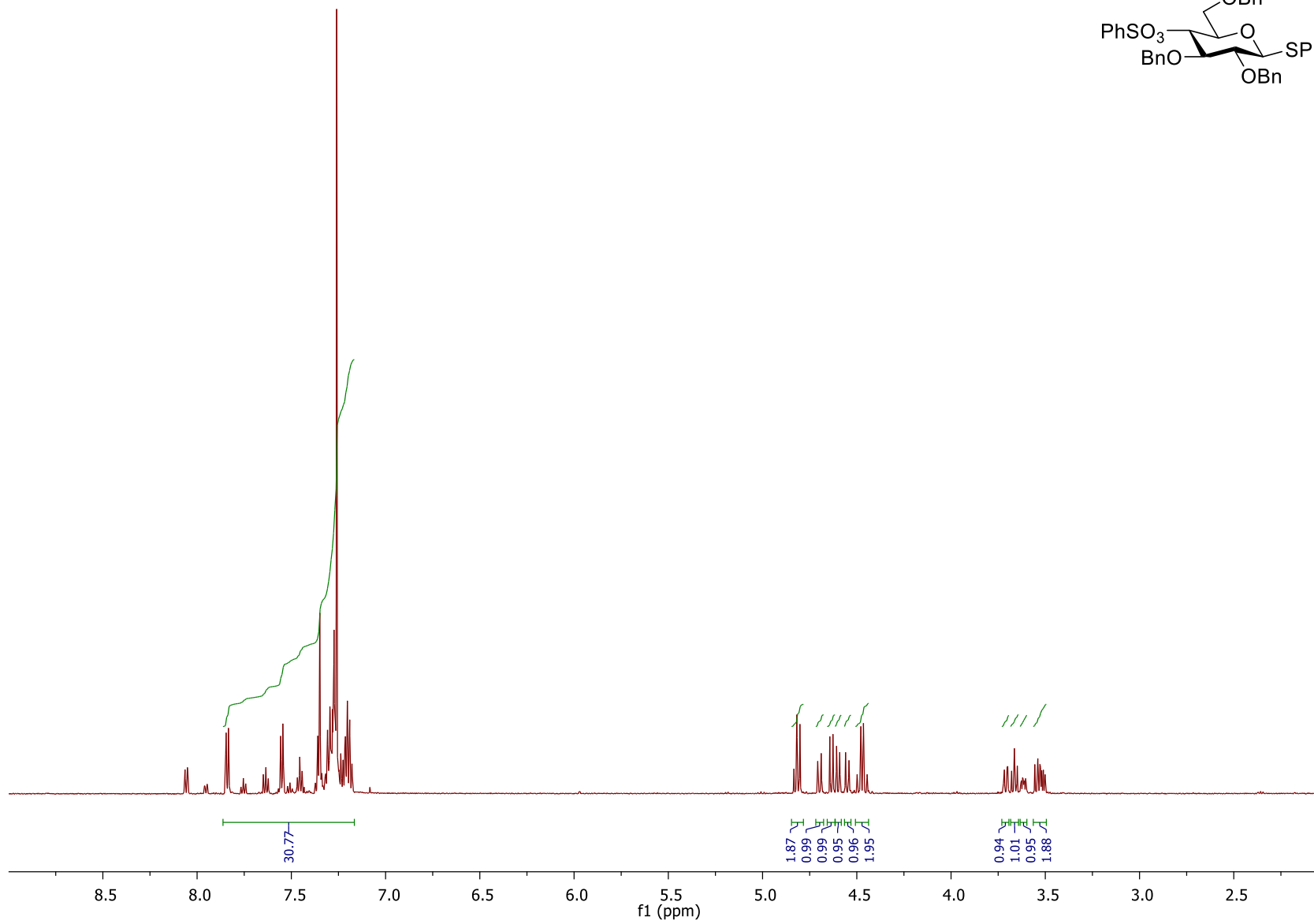
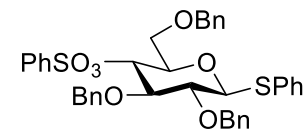
$^1\text{H}$  NMR (600 MHz,  $\text{CDCl}_3$ ) Spectrum of Phenyl 4-*O*-benzoyl-(6*S*)-[6- $^2\text{H}_1$ ]-2,3,6-tri-*O*-benzyl-1-thio- $\beta$ -D-glucopyranoside (**6S-D-25**)



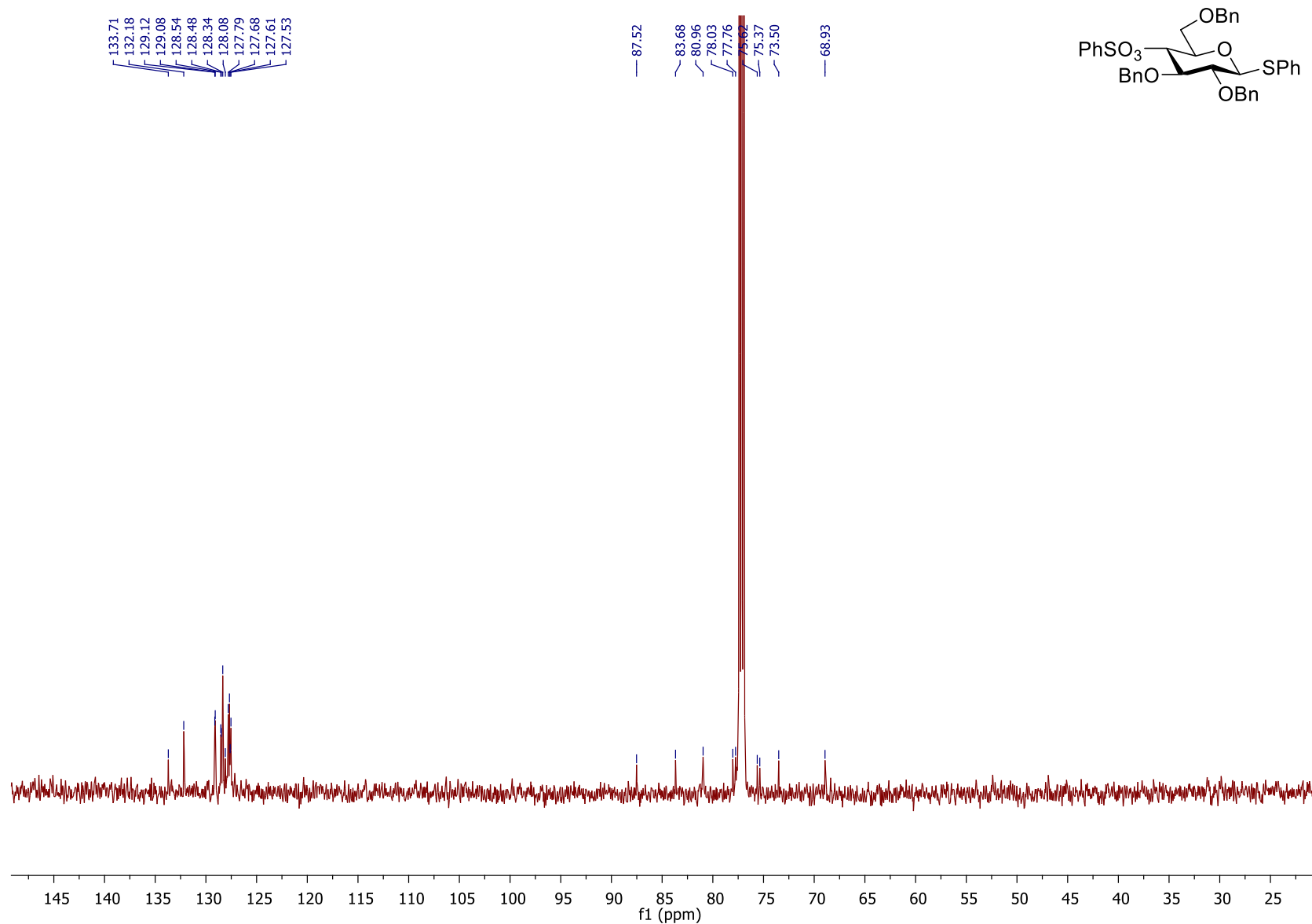
$^1\text{H}$  NMR (600 MHz,  $\text{C}_6\text{D}_6$ ) Spectrum of Phenyl 4-*O*-benzoyl-(6*S*)-[6- $^2\text{H}_1$ ]-2,3,6-tri-*O*-benzyl-1-thio- $\beta$ -D-(6*S*- $^2\text{H}$ )-glucopyranoside (**6*S*-D-25**)



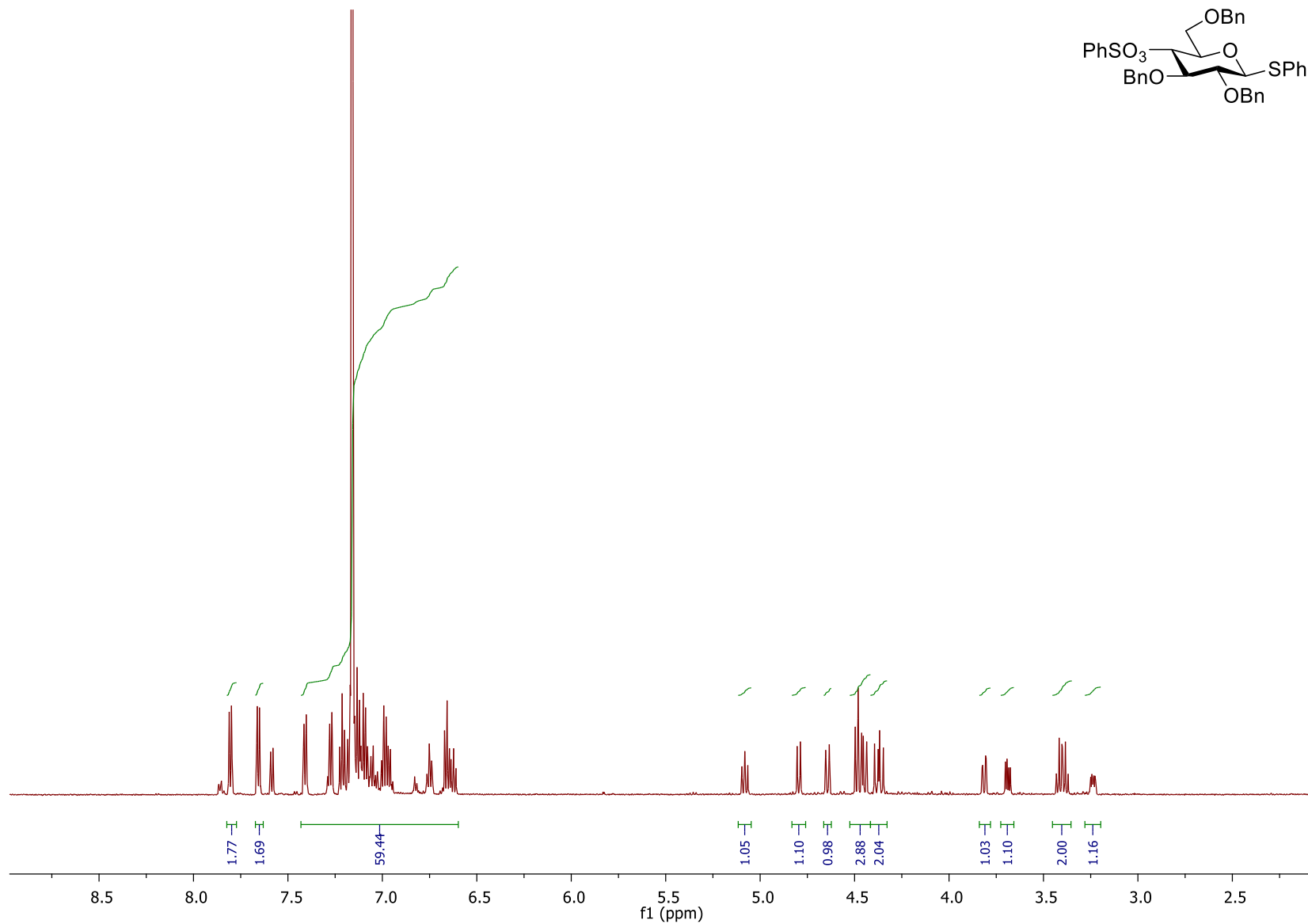
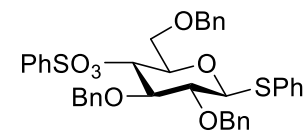
$^1\text{H}$  NMR (600 MHz,  $\text{CDCl}_3$ ) Spectrum of Phenyl 4-*O*-benzenesulfonyl-2,3,6-tri-*O*-benzyl-1-thio- $\beta$ -D-glucopyranoside (**26**)



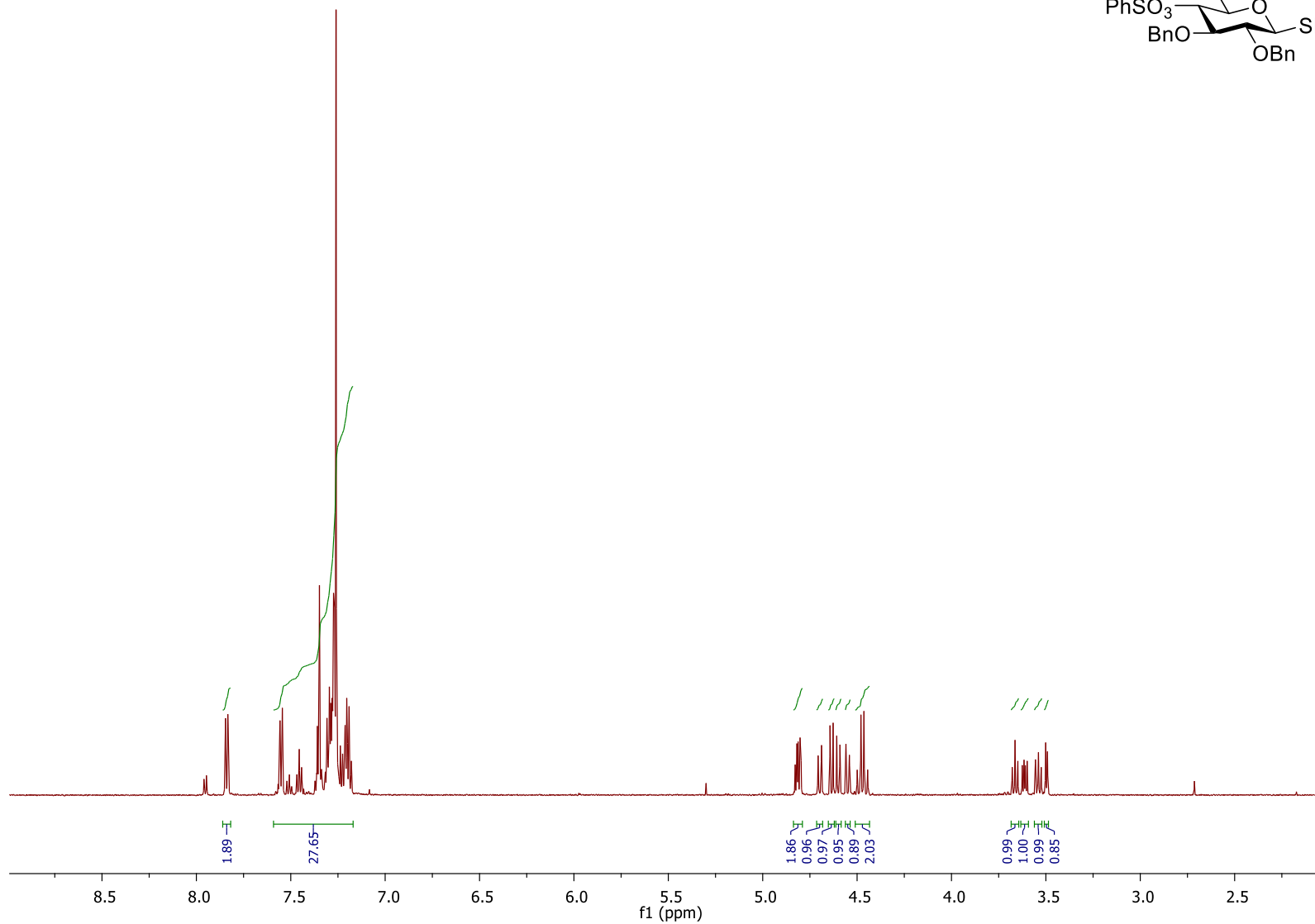
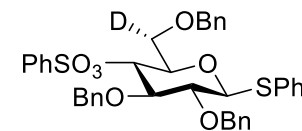
$^{13}\text{C}$  NMR (150 MHz,  $\text{CDCl}_3$ ) Spectrum of Phenyl 4-*O*-benzenesulfonyl-2,3,6-tri-*O*-benzyl-1-thio- $\beta$ -D-glucopyranoside (**26**)



$^1\text{H}$  NMR (600 MHz,  $\text{C}_6\text{D}_6$ ) Spectrum of Phenyl 4-*O*-benzenesulfonyl-2,3,6-tri-*O*-benzyl-1-thio- $\beta$ -D-glucopyranoside (**26**)

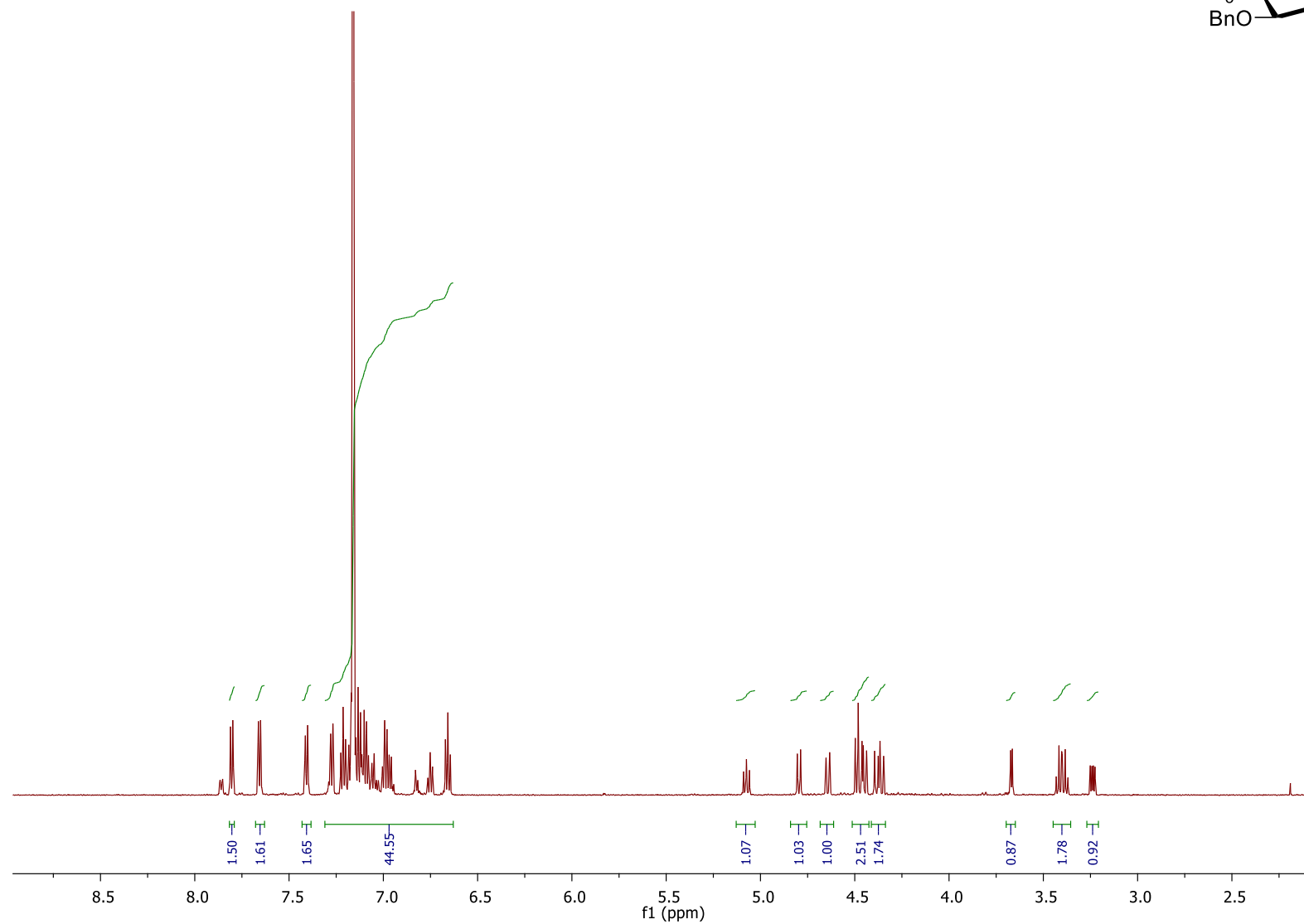
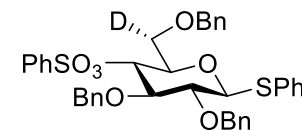


$^1\text{H}$  NMR (600 MHz,  $\text{CDCl}_3$ ) Spectrum of Phenyl 4-*O*-benzenesulfonyl-(6*S*)-[6- $^2\text{H}_1$ ]-2,3,6-tri-*O*-benzyl-1-thio- $\beta$ -D-glucopyranoside  
(**6S-D-26**)

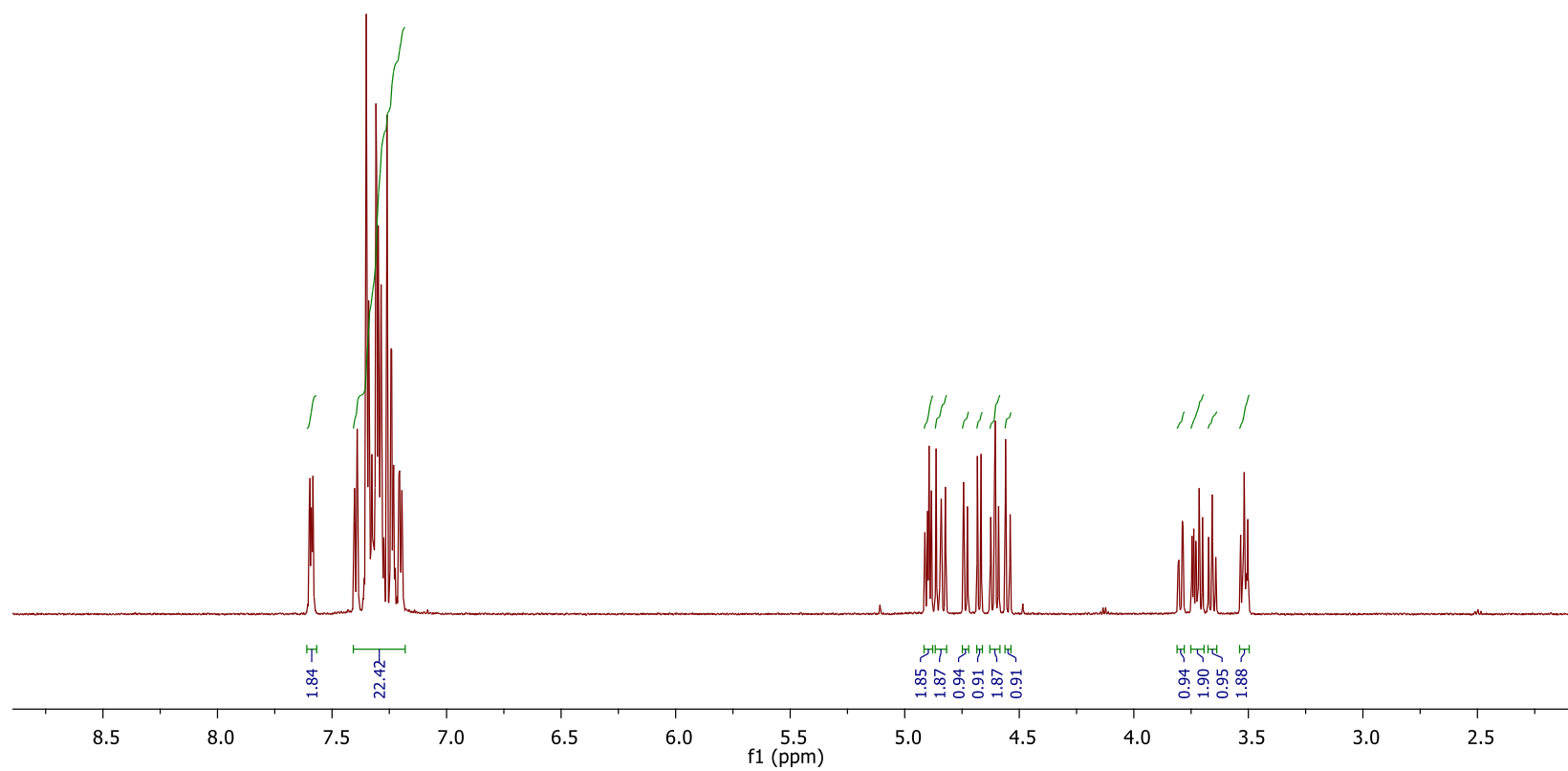
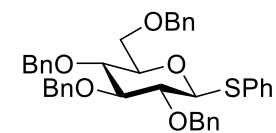




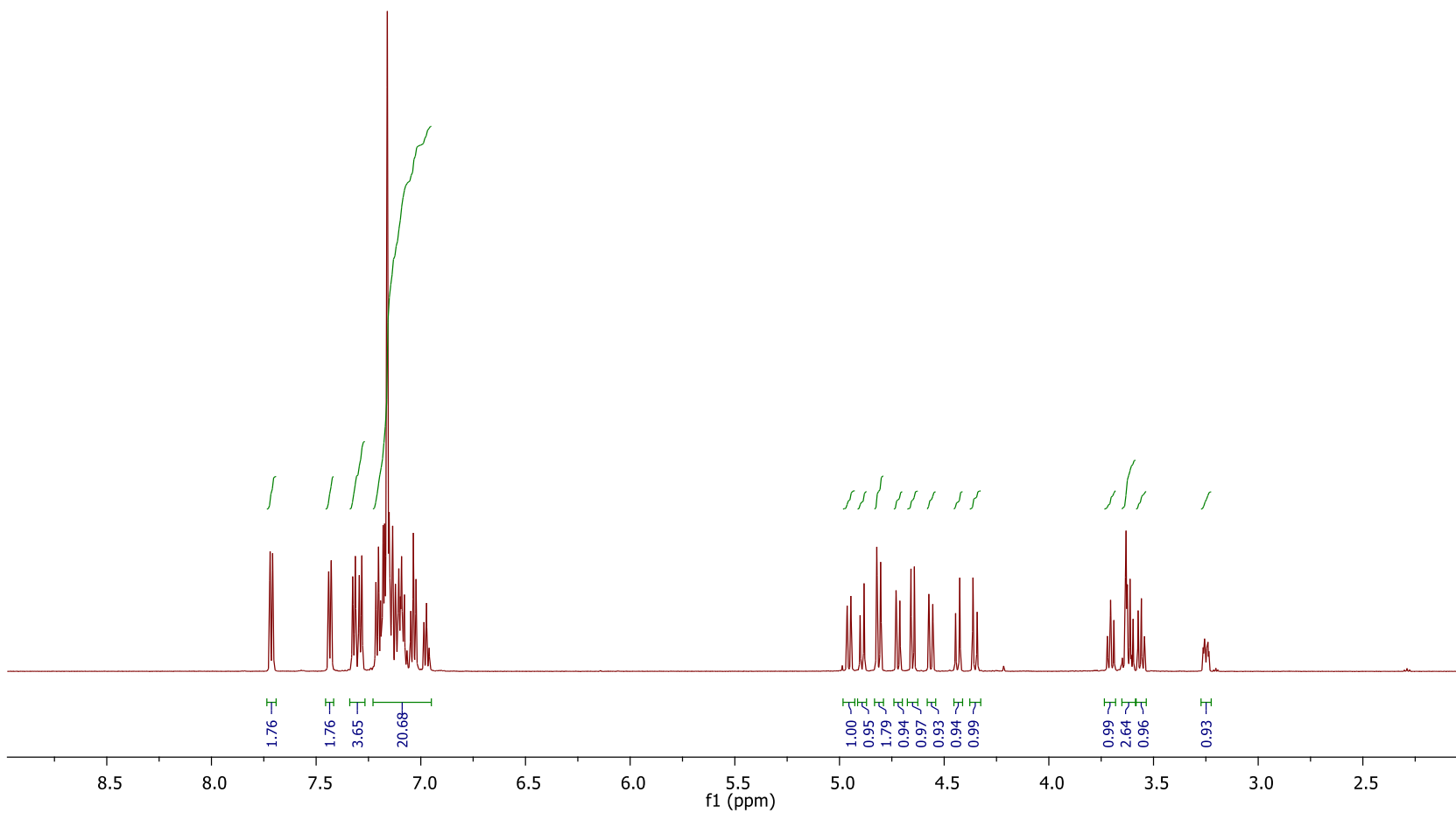
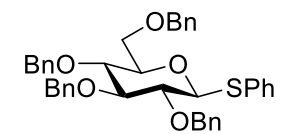
$^1\text{H}$  NMR (600 MHz,  $\text{C}_6\text{D}_6$ ) Spectrum of Phenyl 4-*O*-benzenesulfonyl-(6*S*)-[6- $^2\text{H}_1$ ]-2,3,6-tri-*O*-benzyl-1-thio- $\beta$ -D-glucopyranoside (**6S-D-26**)



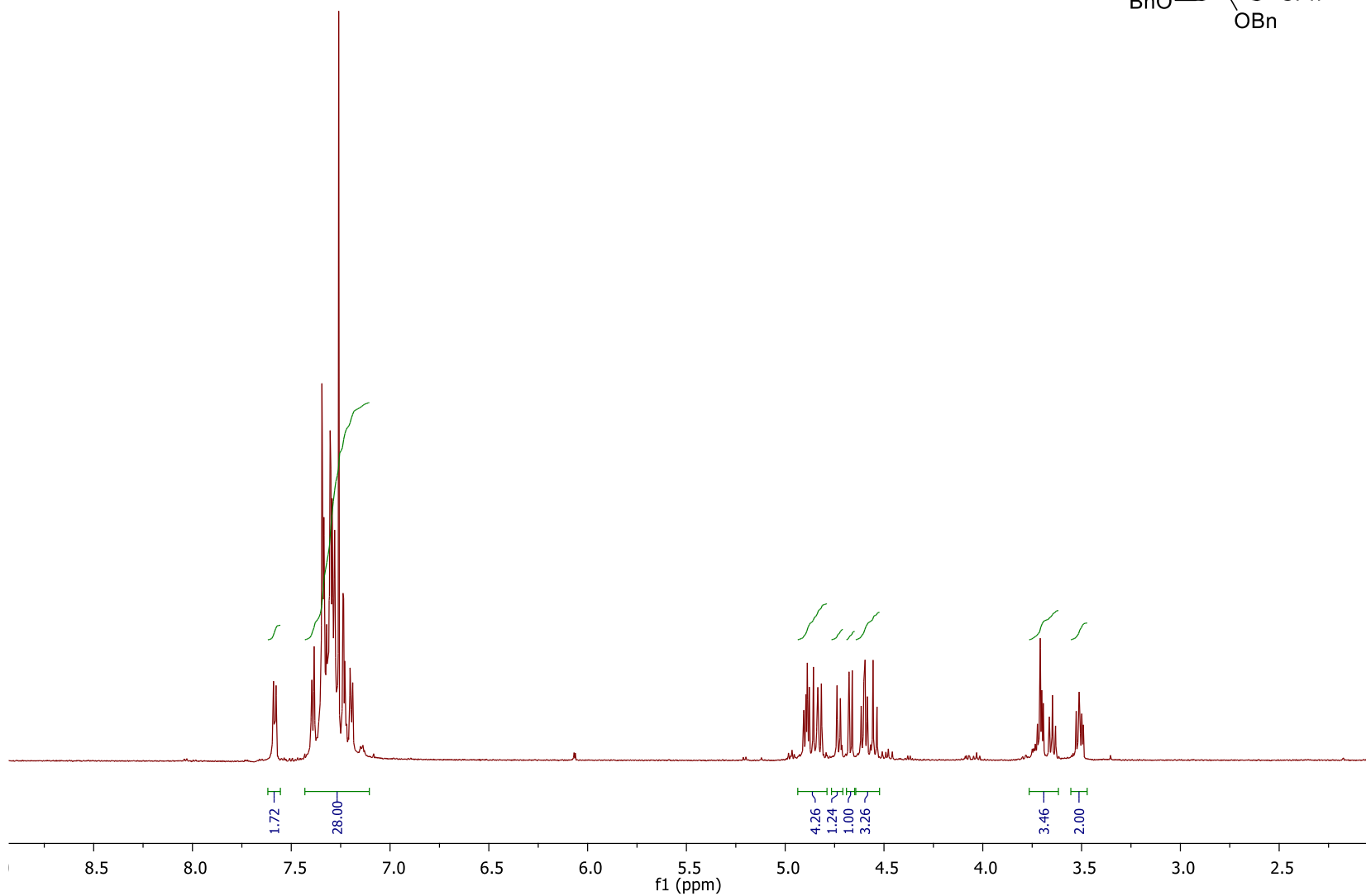
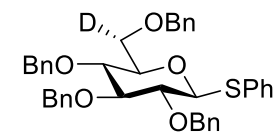
$^1\text{H}$  NMR (600 MHz,  $\text{CDCl}_3$ ) Spectrum of Phenyl 2,3,4,6-tetra-*O*-benzyl-1-thio- $\beta$ -D-glucopyranoside (**27**)



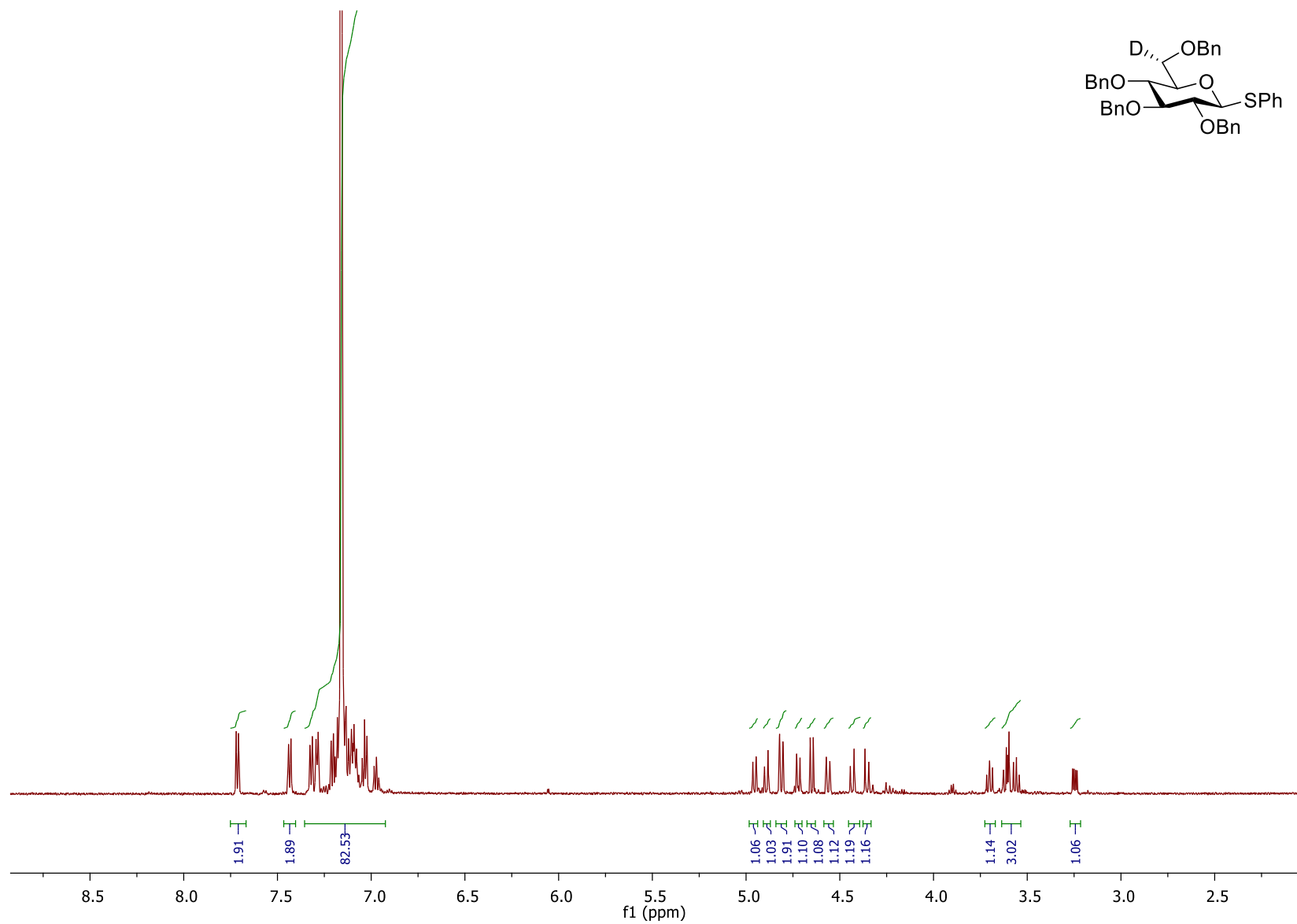
$^1\text{H}$  NMR (600 MHz,  $\text{C}_6\text{D}_6$ ) Spectrum of Phenyl 2,3,4,6-tetra-*O*-benzyl-1-thio- $\beta$ -D-glucopyranoside (**27**)



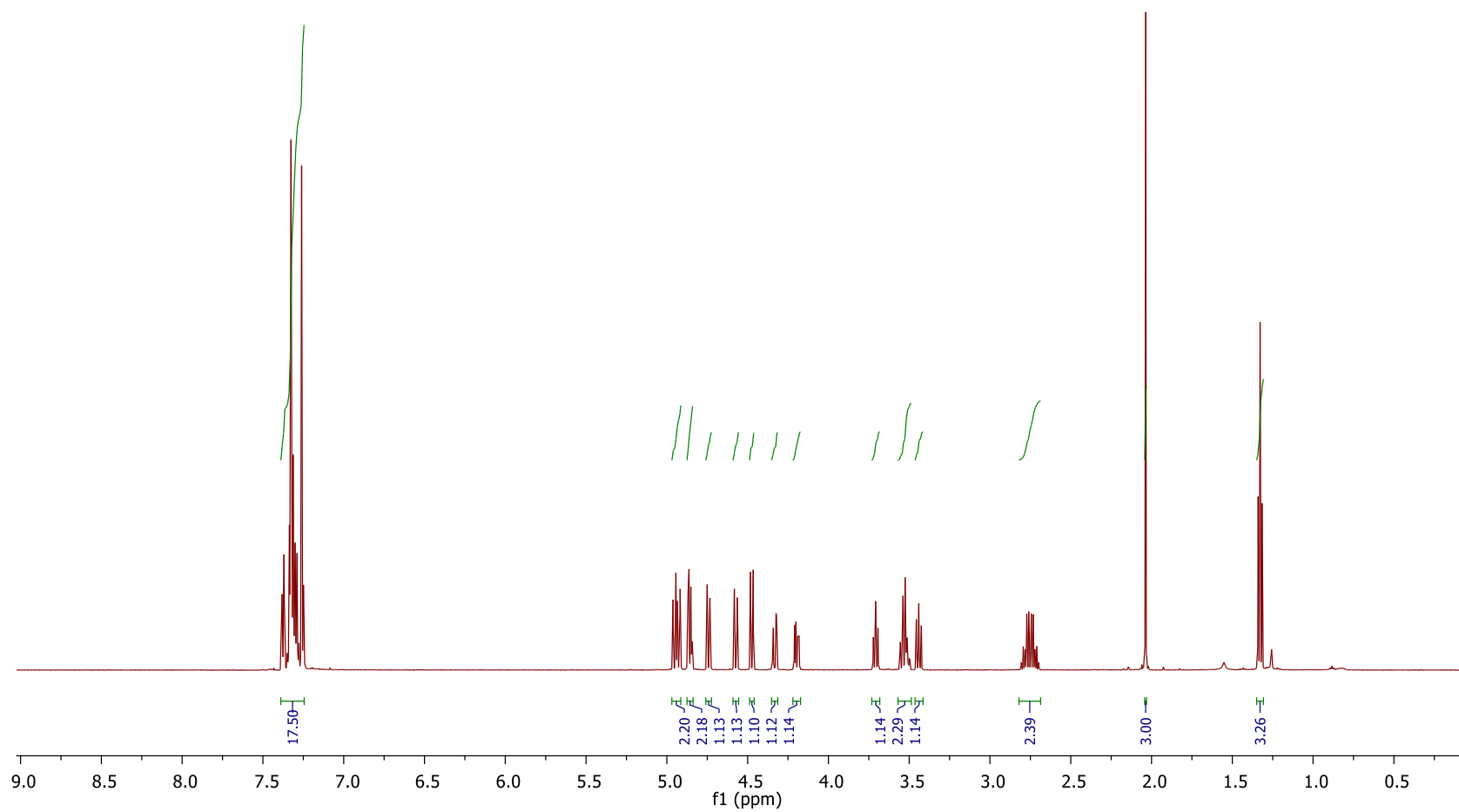
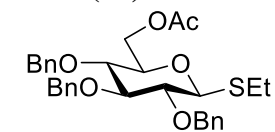
$^1\text{H}$  NMR (600 MHz,  $\text{CDCl}_3$ ) Spectrum of Phenyl (6*S*)-[6- $^2\text{H}_1$ ]-2,3,4,6-tetra-*O*-benzyl-1-thio- $\beta$ -D-glucopyranoside (**6*S*-D-27**)



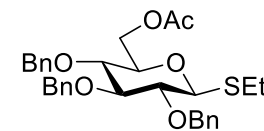
$^1\text{H}$  NMR (600 MHz,  $\text{C}_6\text{D}_6$ ) Spectrum of Phenyl (6*S*)-[6- $^2\text{H}_1$ ]-2,3,4,6-tetra-*O*-benzyl-1-thio- $\beta$ -D-glucopyranoside (**6S-D-27**)



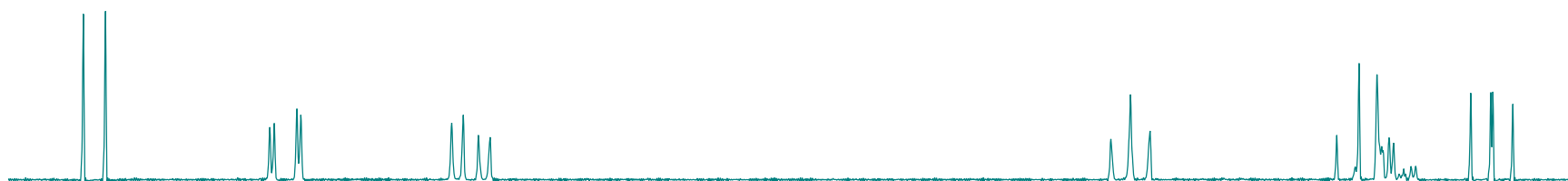
<sup>1</sup>H NMR (600 MHz, CDCl<sub>3</sub>) Spectrum of Ethyl 6-*O*-acetyl-2,3,4-tri-*O*-benzyl-1-thio-β-D-glucopyranoside (**28**)



Simulated  $^1\text{H}$  NMR and  $^1\text{H}$  NMR (600 MHz,  $\text{CDCl}_3$ ) Spectrum of Ethyl 6-*O*-acetyl-2,3,4-tri-*O*-benzyl-1-thio- $\beta$ -D-glucopyranoside (28)



Experimental  $^1\text{H}$  NMR (600 MHz,  $\text{CDCl}_3$ )

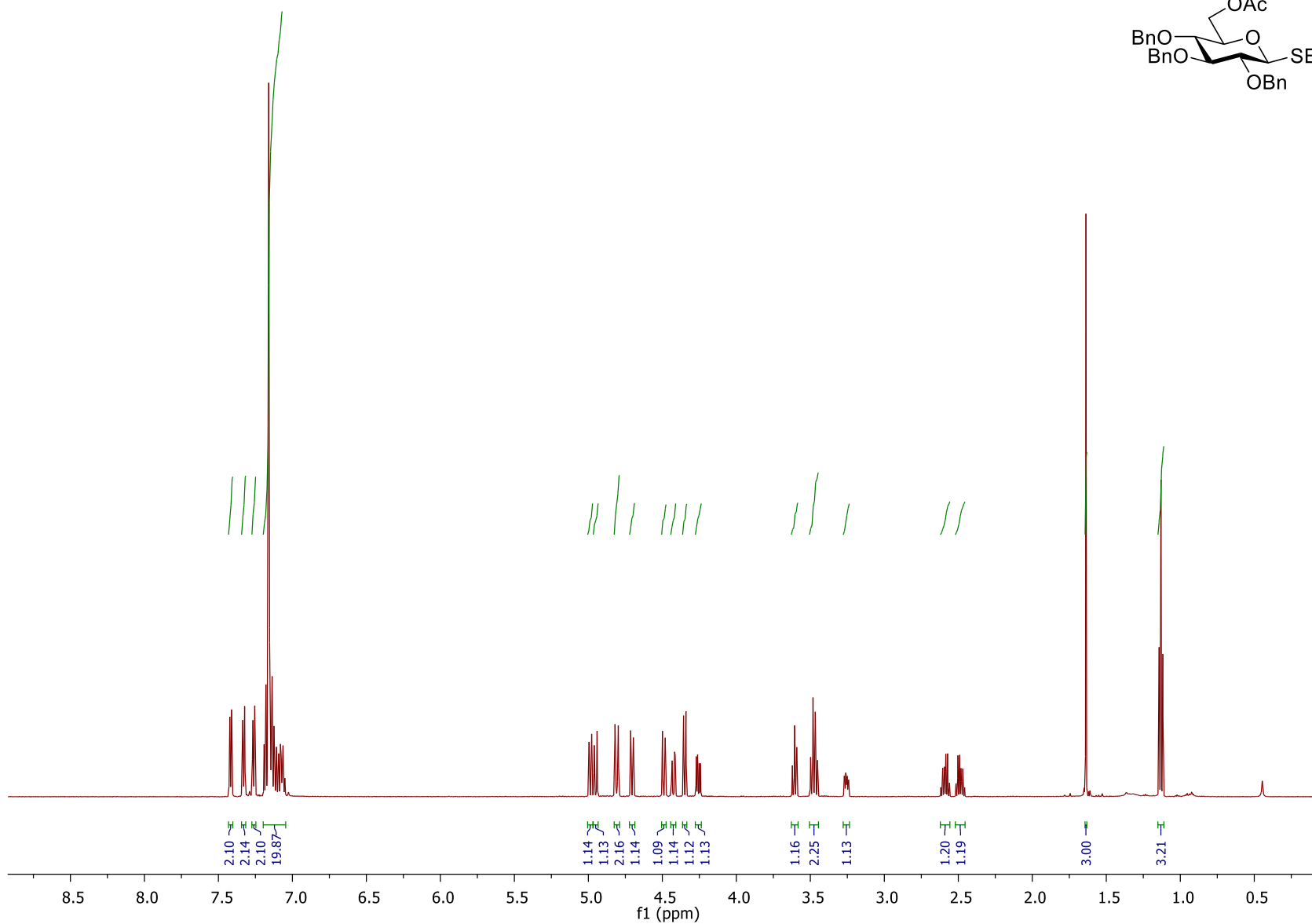
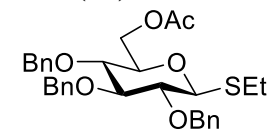


Simulated  $^1\text{H}$  NMR



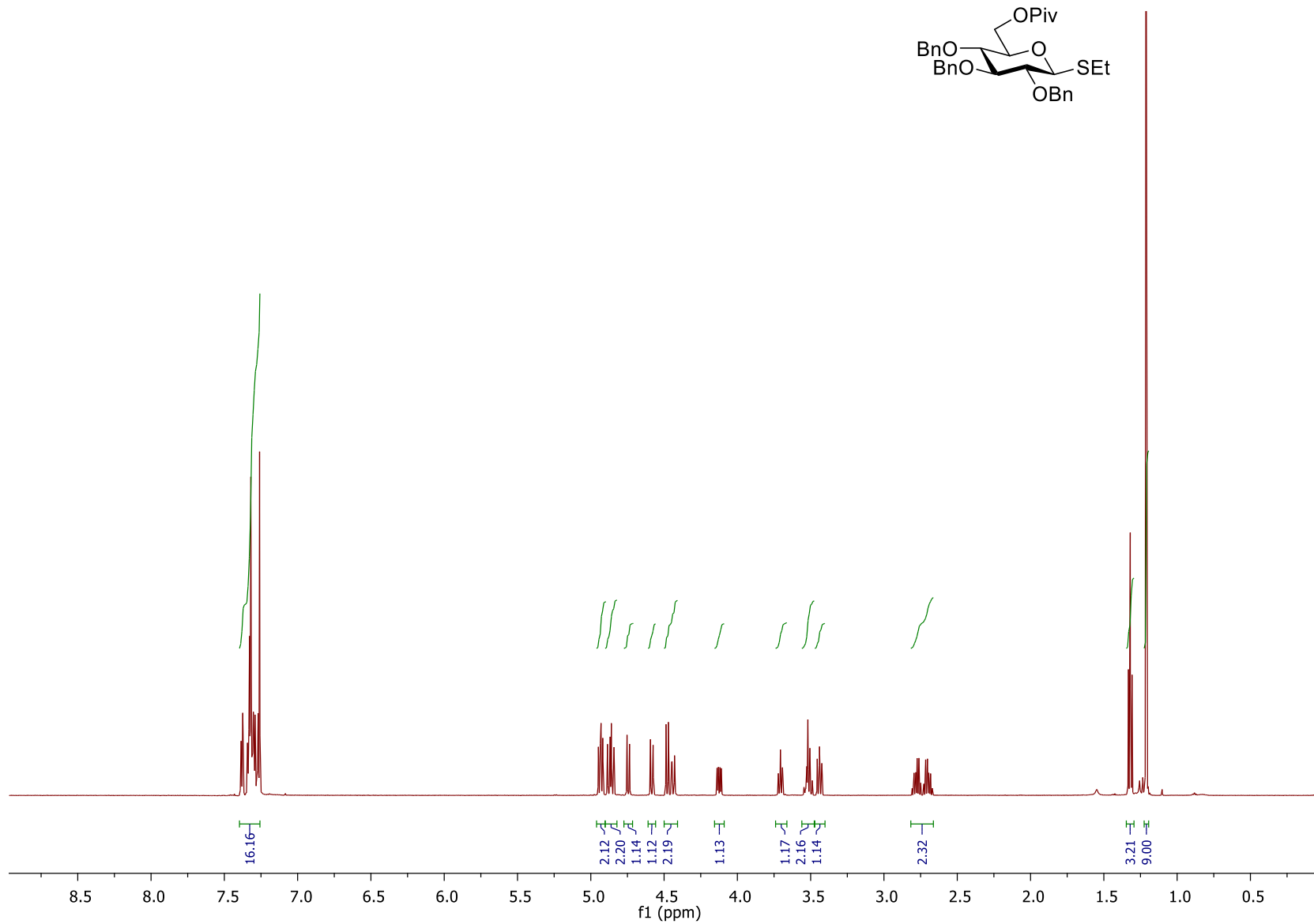
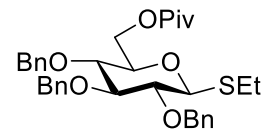
4.50 4.45 4.40 4.35 4.30 4.25 4.20 4.15 4.10 4.05 4.00 3.95 3.90 3.85 3.80 3.75 3.70 3.65 3.60 3.55 3.50 3.45 3.40  
f1 (ppm)  
S95

$^1\text{H}$  NMR (600 MHz,  $\text{C}_6\text{D}_6$ ) Spectrum of Ethyl 6-*O*-acetyl-2,3,4-tri-*O*-benzyl-1-thio- $\beta$ -D-glucopyranoside (**28**)

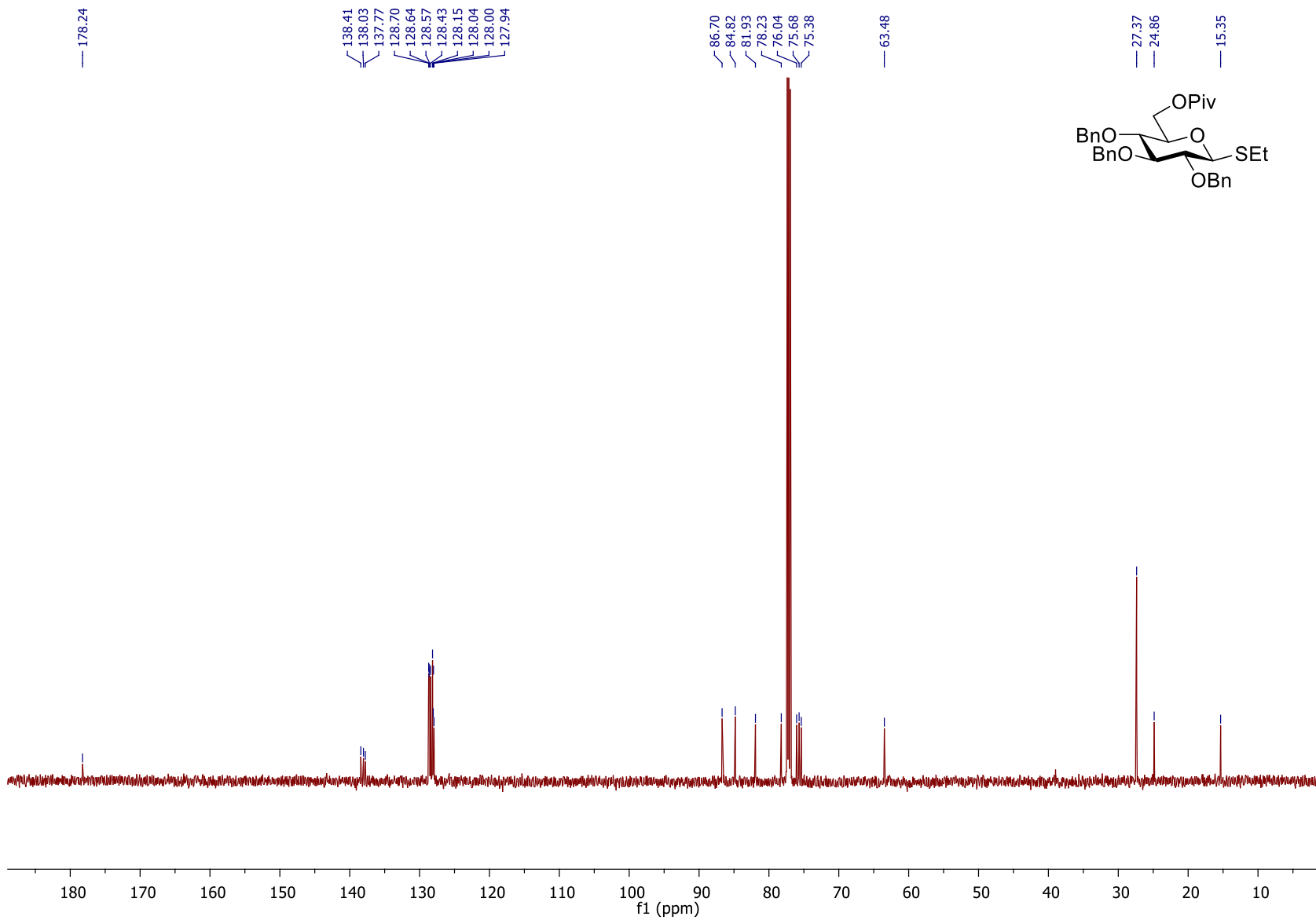




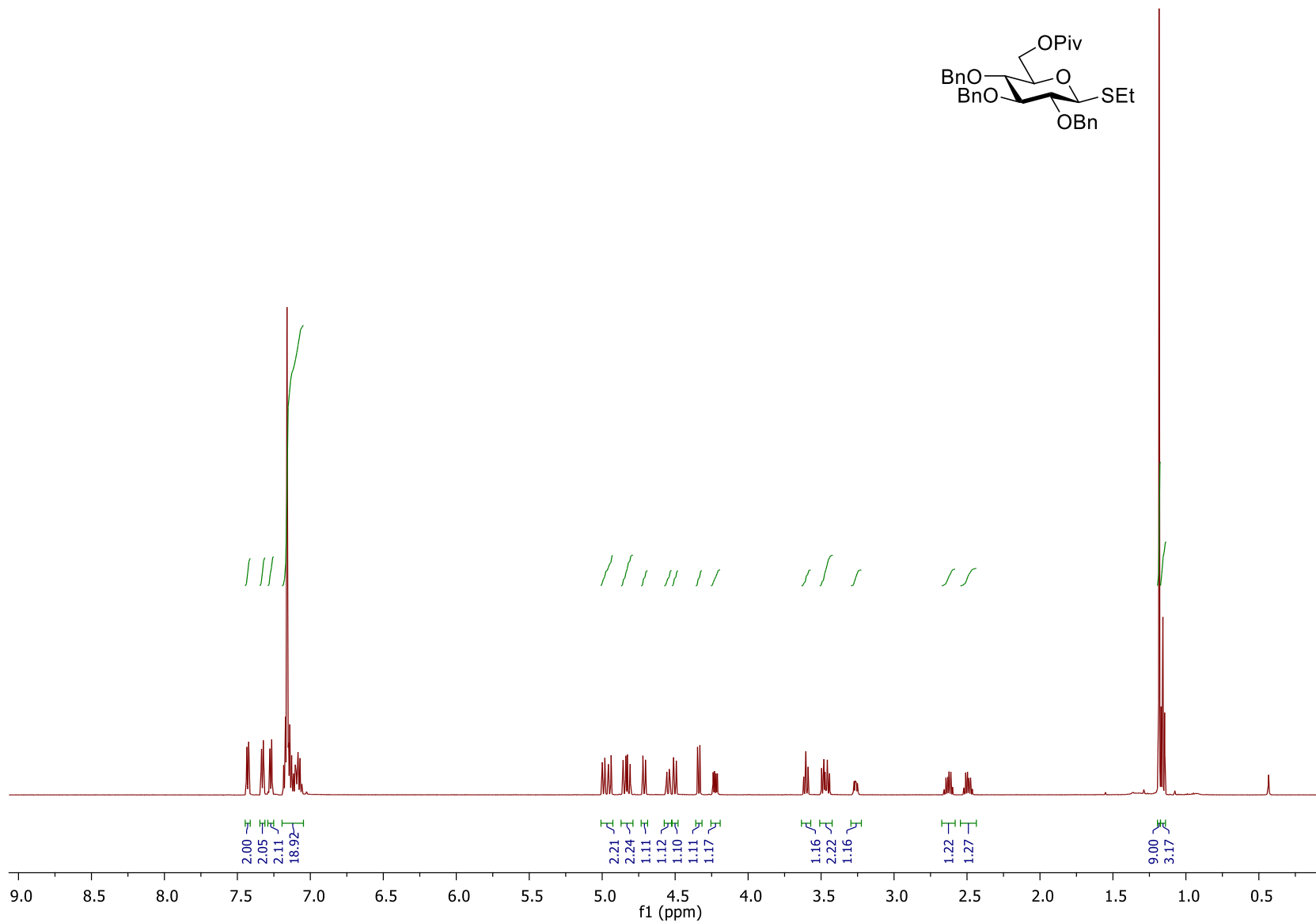
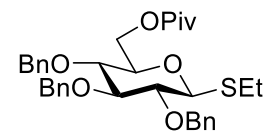
$^1\text{H}$  NMR (600 MHz,  $\text{CDCl}_3$ ) Spectrum of Ethyl 2,3,4-tri-*O*-benzyl-6-*O*-pivaloyl-1-thio- $\beta$ -D-glucopyranoside (**29**)



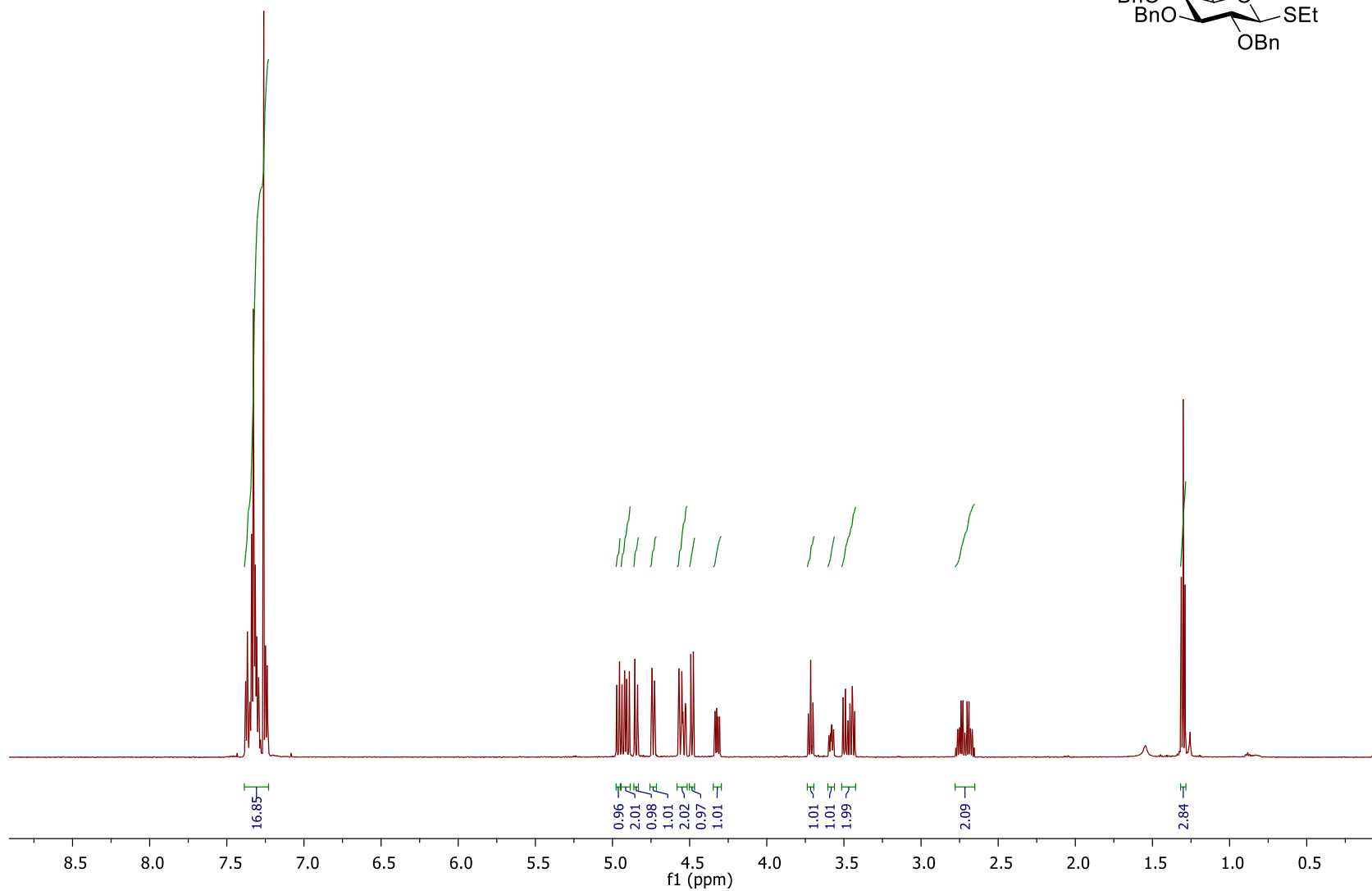
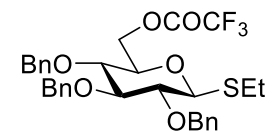
<sup>13</sup>C NMR (150 MHz, CDCl<sub>3</sub>) Spectrum of Ethyl 2,3,4-tri-*O*-benzyl-6-*O*-pivaloyl-1-thio-β-D-glucopyranoside (**29**)



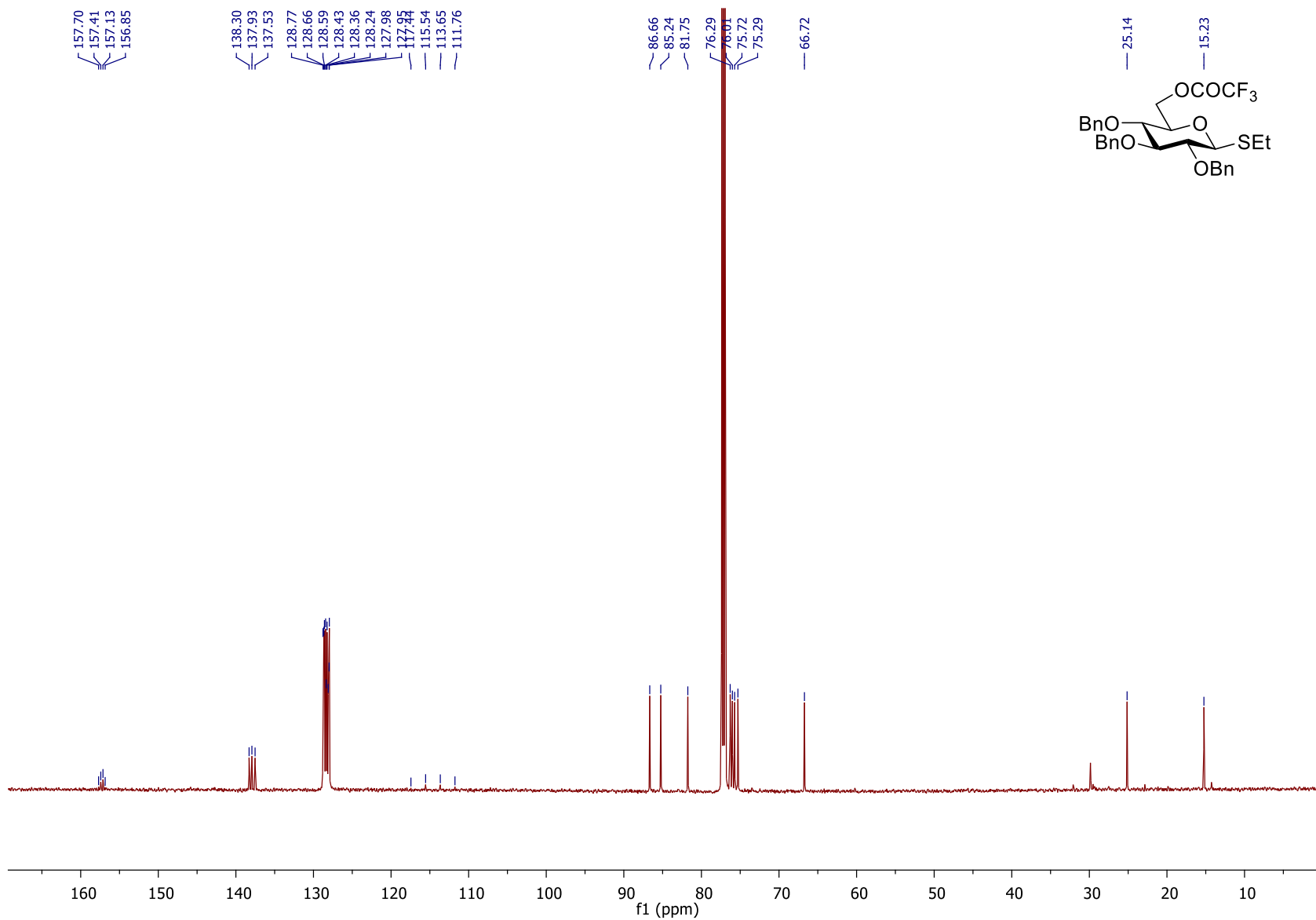
$^1\text{H}$  NMR (600 MHz,  $\text{C}_6\text{D}_6$ ) Spectrum of Ethyl 2,3,4-tri-*O*-benzyl-6-*O*-pivalyl-1-thio- $\beta$ -D-glucopyranoside (**29**)



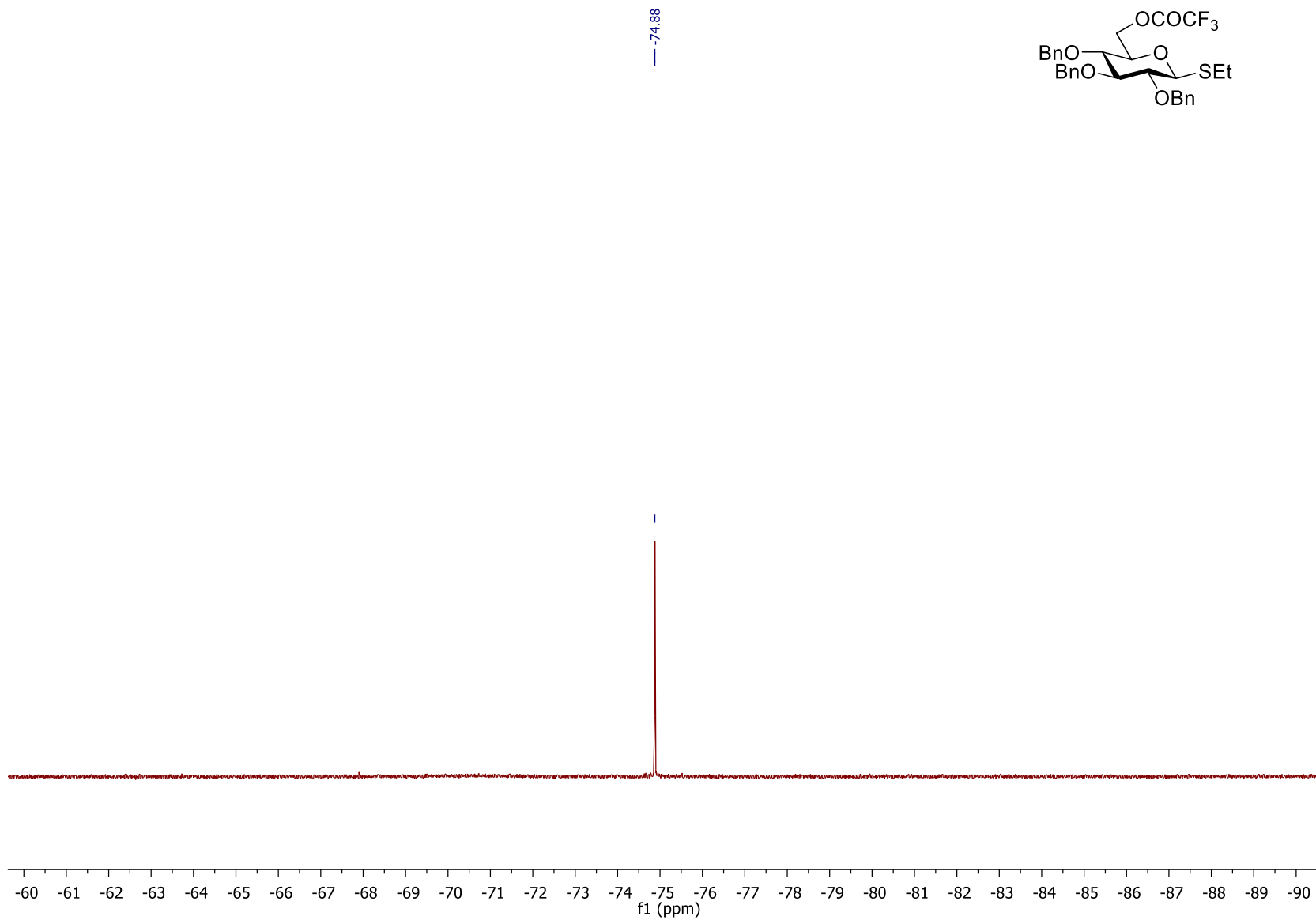
$^1\text{H}$  NMR (600 MHz,  $\text{CDCl}_3$ ) Spectrum of Ethyl 2,3,4-tri-*O*-benzyl-6-*O*-trifluoroacetyl-1-thio- $\beta$ -D-glucopyranoside (**30**)



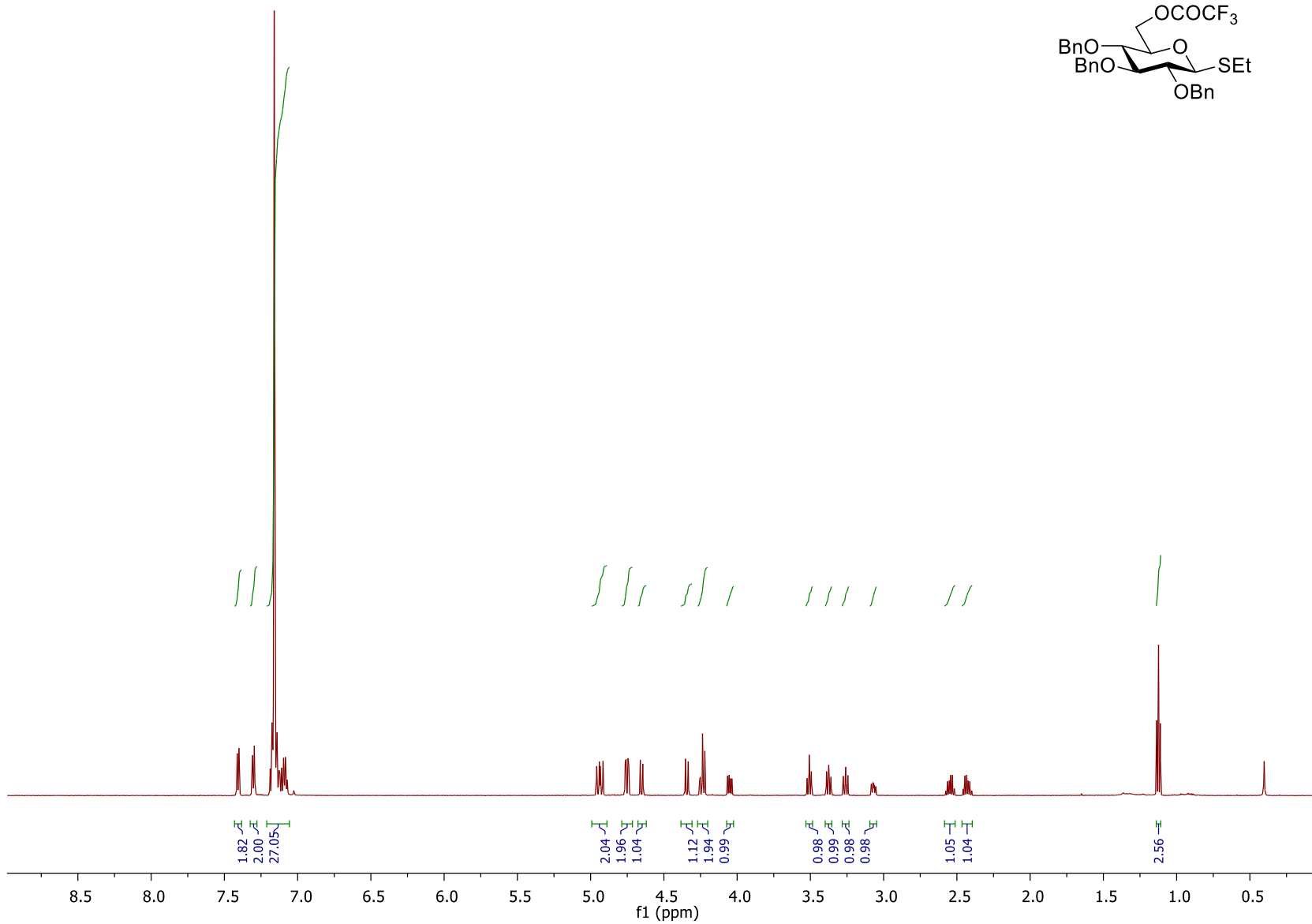
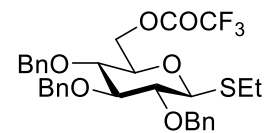
<sup>13</sup>C NMR (150 MHz, CDCl<sub>3</sub>) Spectrum of Ethyl 2,3,4-tri-*O*-benzyl-6-*O*-trifluoroacetyl-1-thio-β-D-glucopyranoside (**30**)



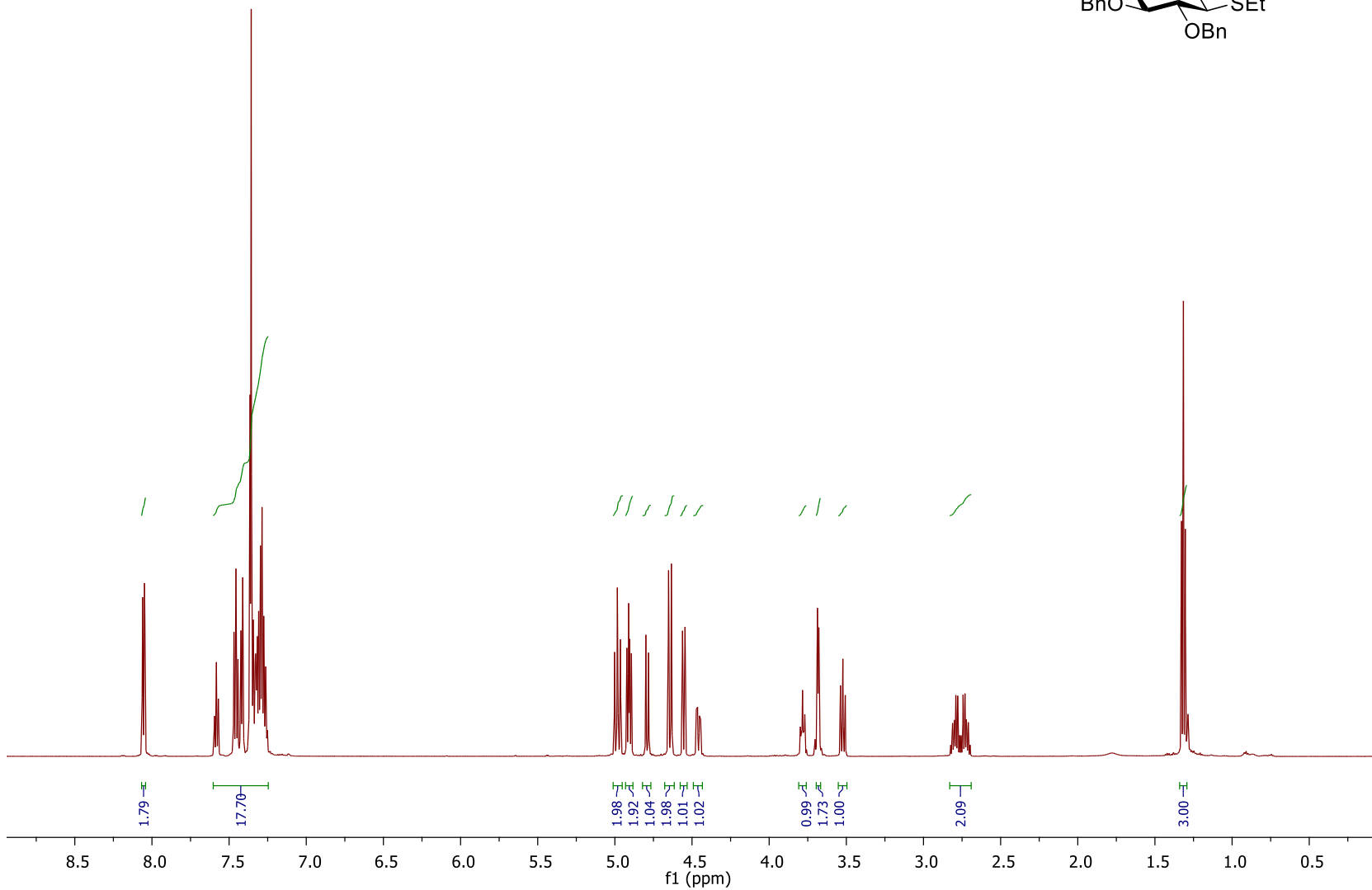
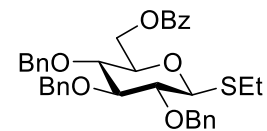
$^{19}\text{F}$  NMR (376 MHz,  $\text{CDCl}_3$ ) Spectrum of Ethyl 2,3,4-tri-*O*-benzyl-6-*O*-trifluoroacetyl-1-thio- $\beta$ -D-glucopyranoside (**30**)



$^1\text{H}$  NMR (600 MHz,  $\text{C}_6\text{D}_6$ ) Spectrum of Ethyl 2,3,4-tri-*O*-benzyl-6-*O*-trifluoroacetyl-1-thio- $\beta$ -D-glucopyranoside (**30**)

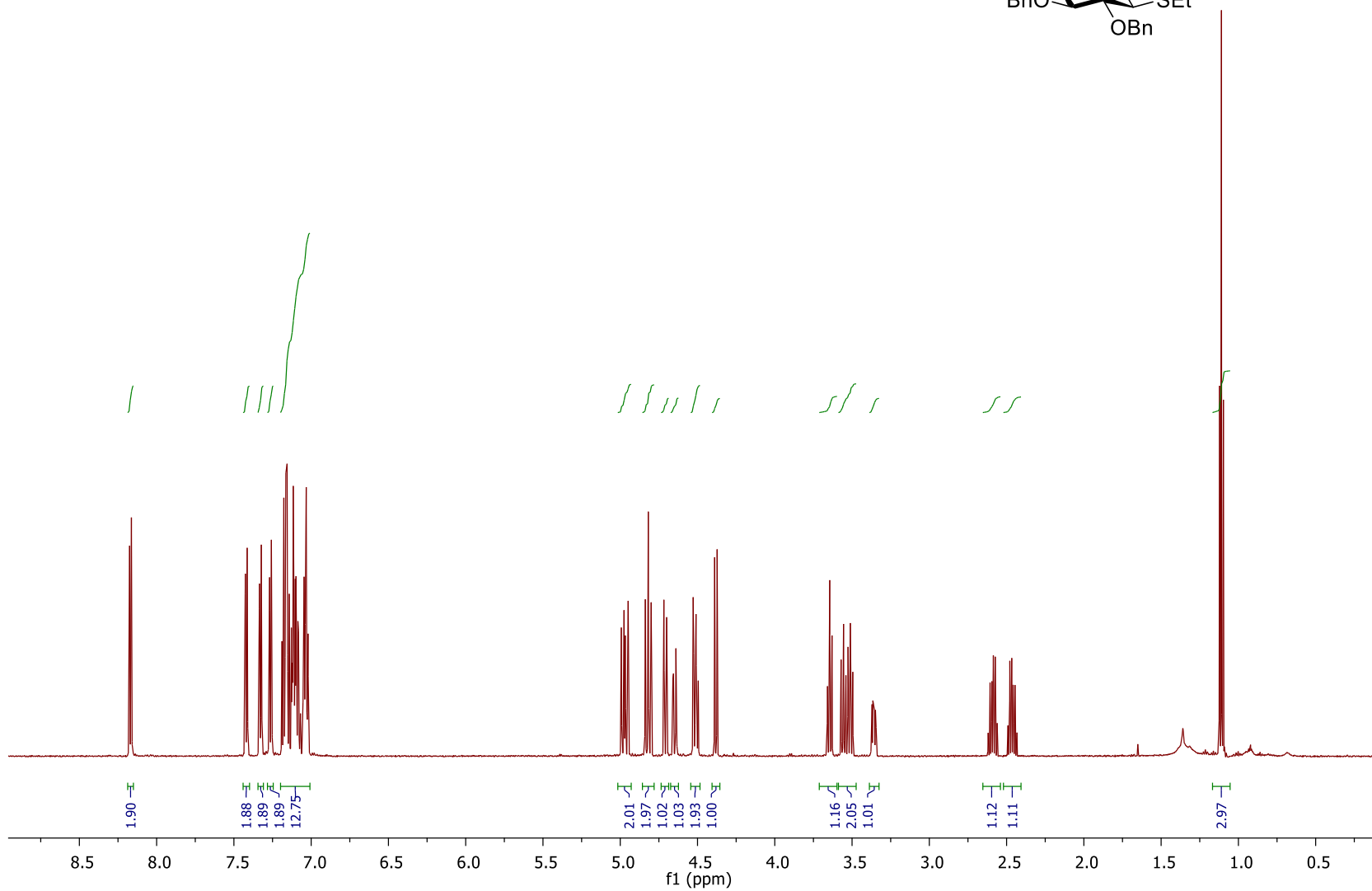
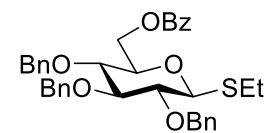


$^1\text{H}$  NMR (600 MHz,  $\text{CDCl}_3$ ) Spectrum of Ethyl 6-*O*-benzoyl-2,3,4-tri-*O*-benzyl-1-thio- $\beta$ -D-glucopyranoside (**31**)

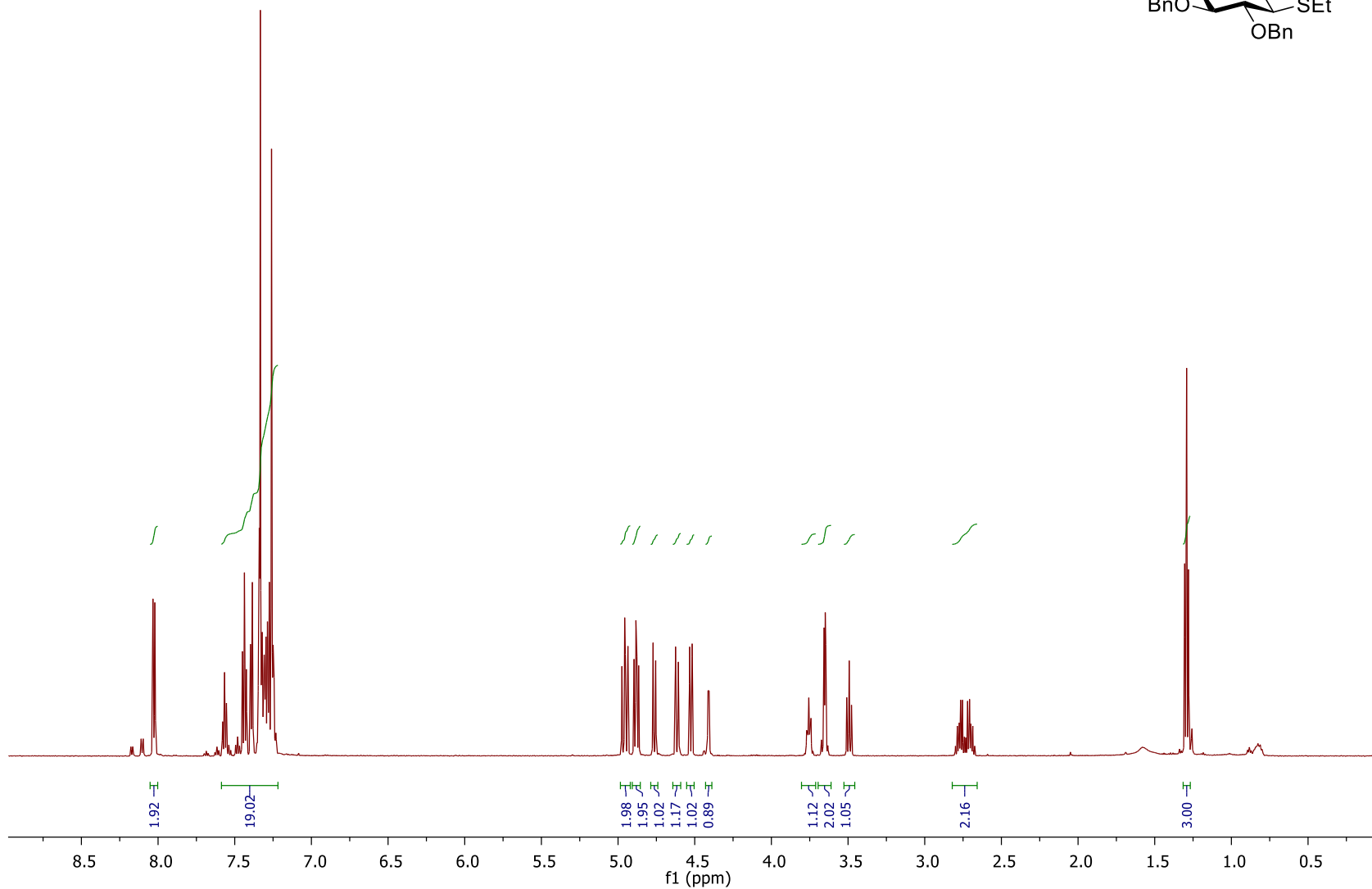
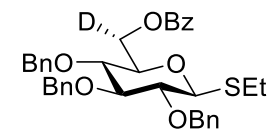




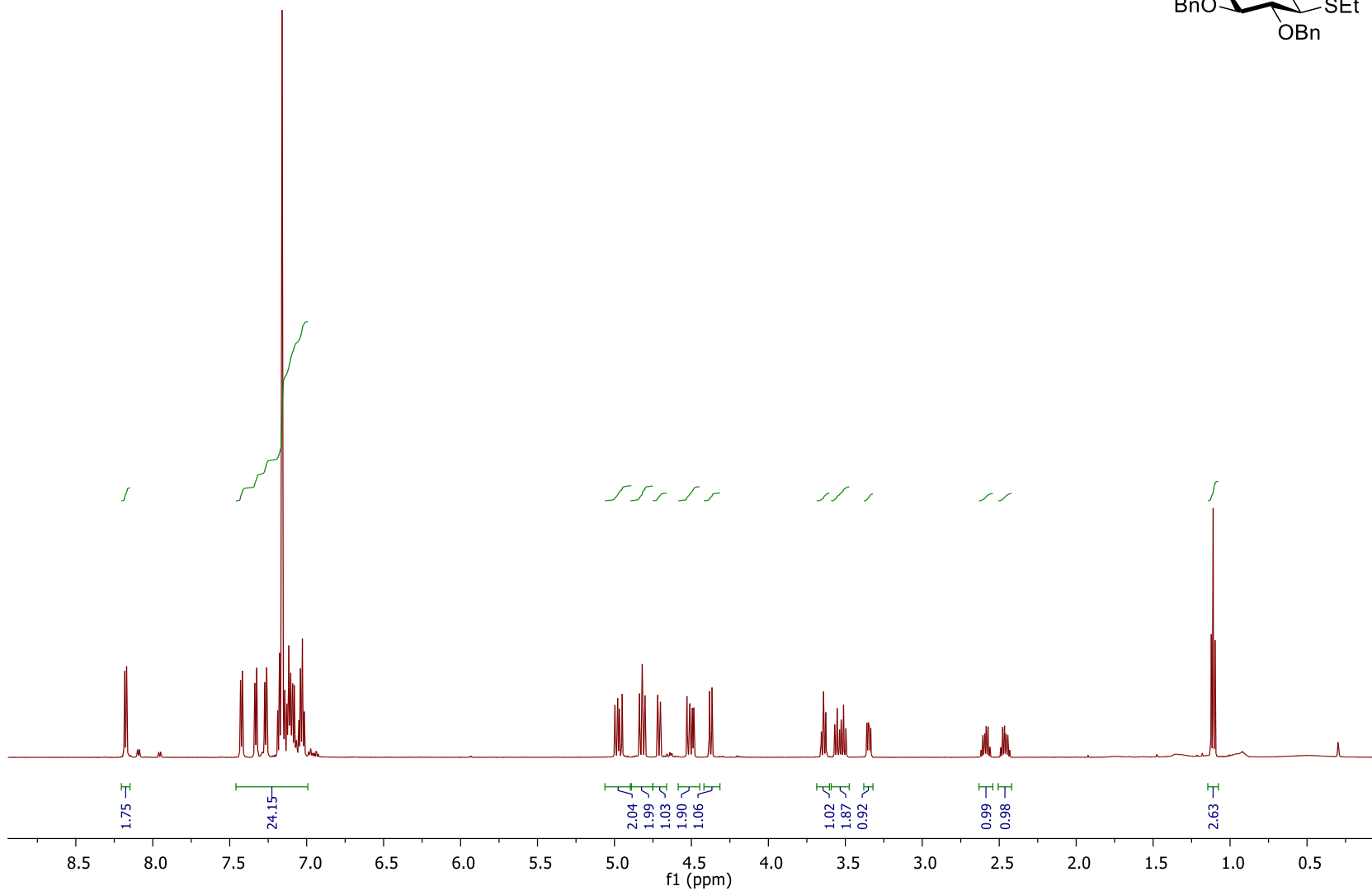
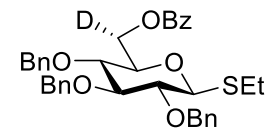
$^1\text{H}$  NMR (600 MHz,  $\text{C}_6\text{D}_6$ ) Spectrum of Ethyl 6-*O*-benzoyl-2,3,4-tri-*O*-benzyl-1-thio- $\beta$ -D-glucopyranoside (**31**)



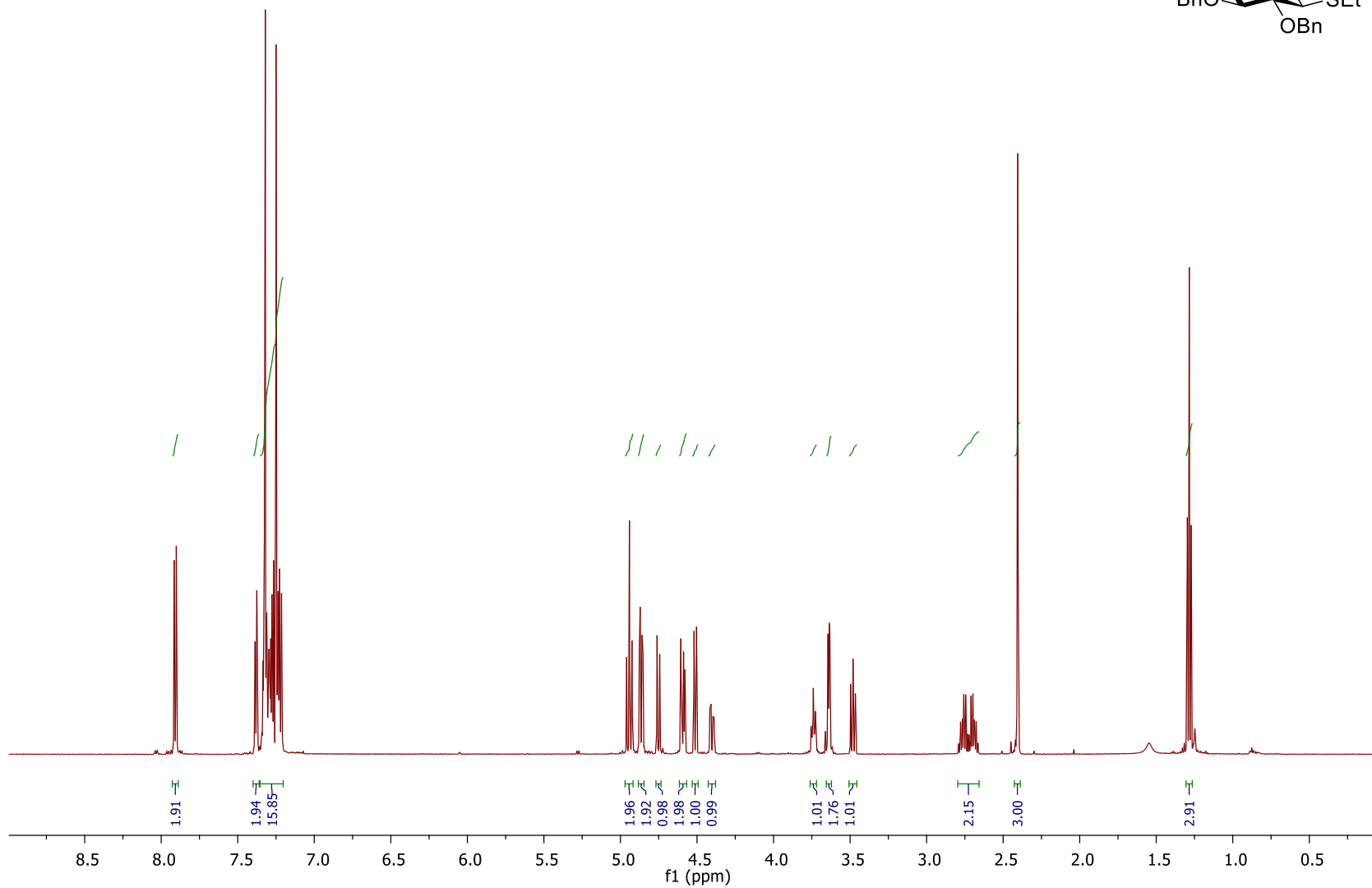
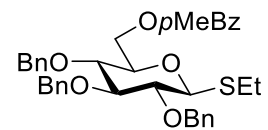
$^1\text{H}$  NMR (600 MHz,  $\text{CDCl}_3$ ) Spectrum of Ethyl (6*S*)-[6- $^2\text{H}_1$ ]-6-*O*-benzoyl-2,3,4-tri-*O*-benzyl-1-thio- $\beta$ -D-glucopyranoside (**6*S*-D-31**)



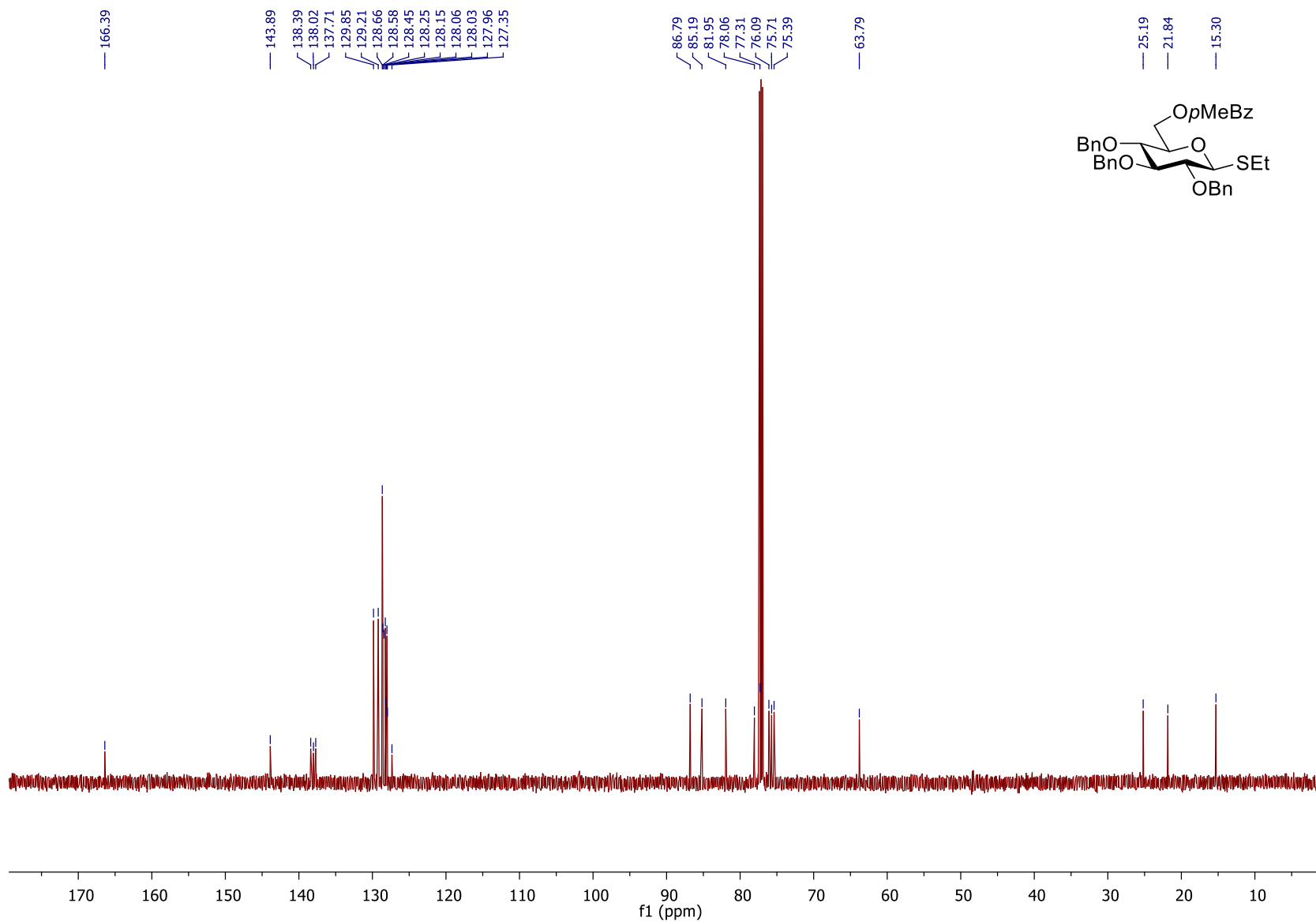
$^1\text{H}$  NMR (600 MHz,  $\text{C}_6\text{D}_6$ ) Spectrum of Ethyl (6*S*)-[6- $^2\text{H}_1$ ]-6-*O*-benzoyl-2,3,4-tri-*O*-benzyl-1-thio- $\beta$ -D-glucopyranoside (**6S-D-31**)



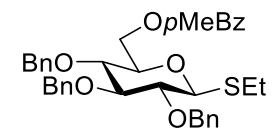
$^1\text{H}$  NMR (600 MHz,  $\text{CDCl}_3$ ) Spectrum of Ethyl 6-*O*-*p*-methylbenzoyl-2,3,4-tri-*O*-benzyl-1-thio- $\beta$ -D-glucopyranoside (**32**)



$^{13}\text{C}$  NMR (150 MHz,  $\text{CDCl}_3$ ) Spectrum of Ethyl 6-*O*-*p*-methylbenzoyl-2,3,4-tri-*O*-benzyl-1-thio- $\beta$ -D-glucopyranoside (**32**)



Simulated  $^1\text{H}$  NMR and  $^1\text{H}$  NMR (600 MHz,  $\text{CDCl}_3$ ) Spectrum of Ethyl 6-*O*-*p*-methylbenzoyl-2,3,4-tri-*O*-benzyl-1-thio- $\beta$ -D-glucopyranoside (**32**)



Experimental  $^1\text{H}$ -NMR (600 MHz,  $\text{CDCl}_3$ )

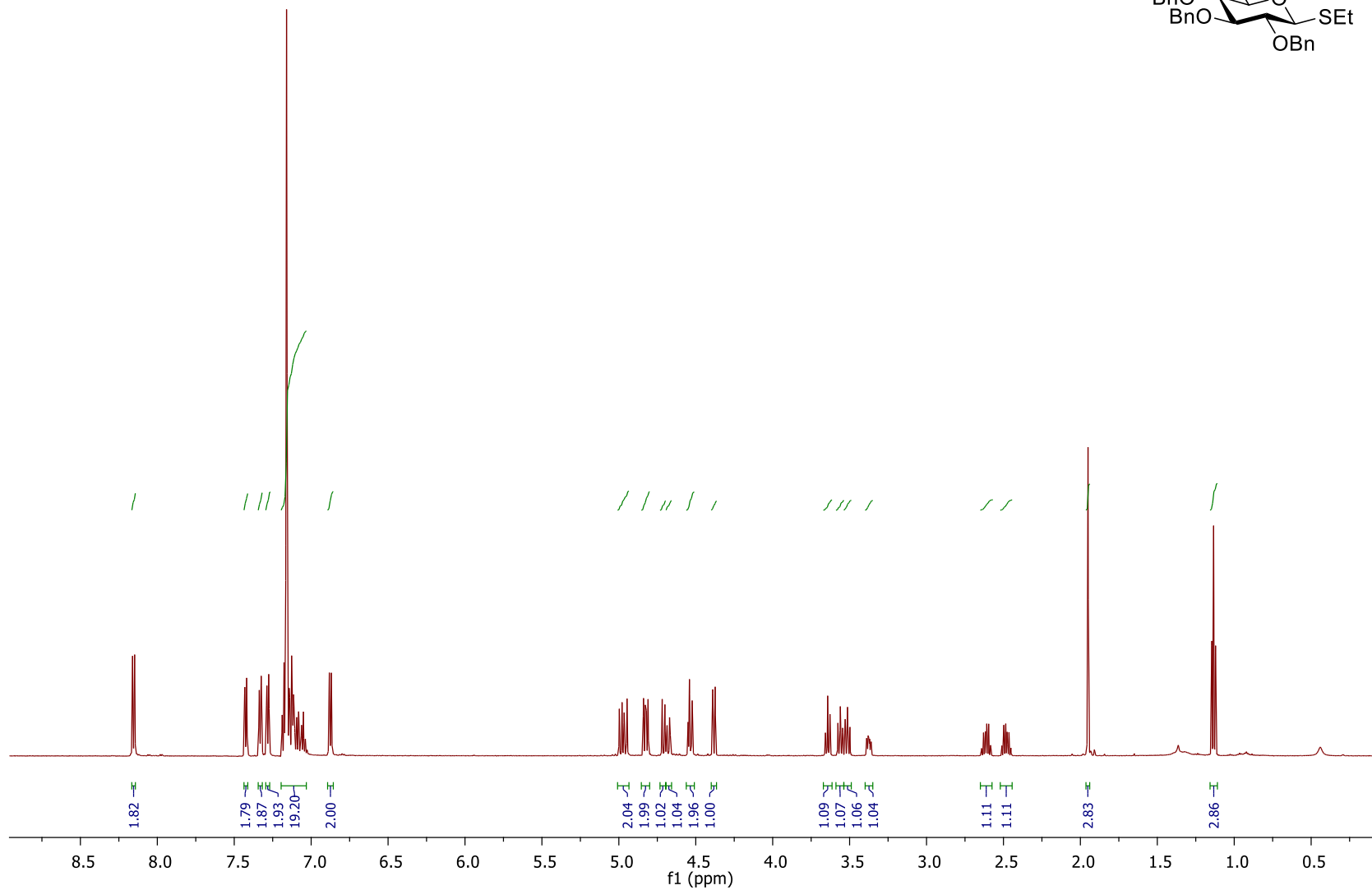
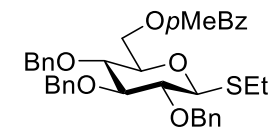


Simulated  $^1\text{H}$ -NMR

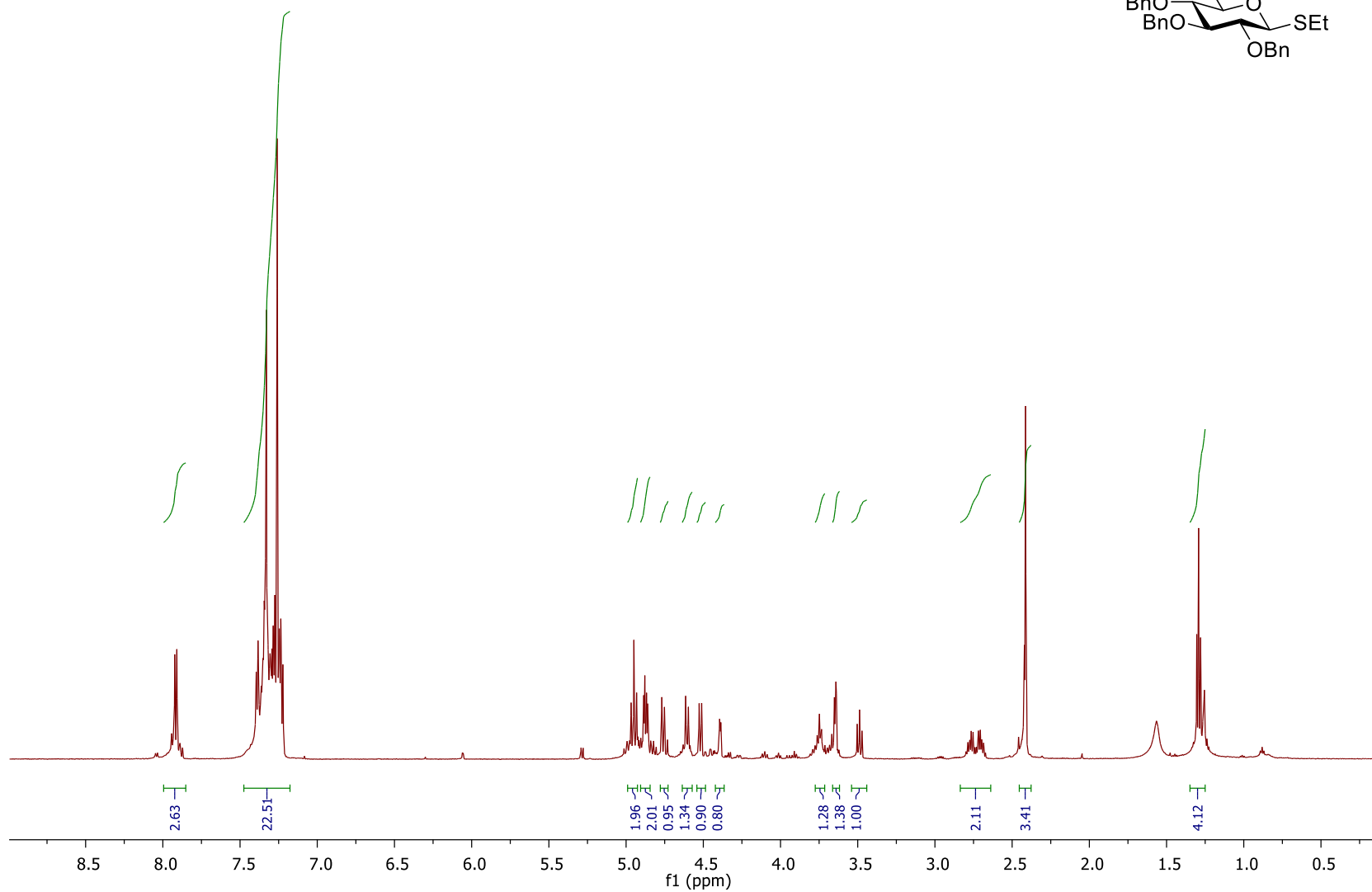
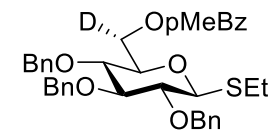


4.65 4.60 4.55 4.50 4.45 4.40 4.35 4.30 4.25 4.20 4.15 4.10 4.05 4.00 3.95 3.90 3.85 3.80 3.75 3.70 3.65 3.60 3.55 3.50 3.45  
f1s(ppm)

$^1\text{H}$  NMR (600 MHz,  $\text{C}_6\text{D}_6$ ) Spectrum of Ethyl 6-*O*-*p*-methylbenzoyl-2,3,4-tri-*O*-benzyl-1-thio- $\beta$ -D-glucopyranoside (**32**)

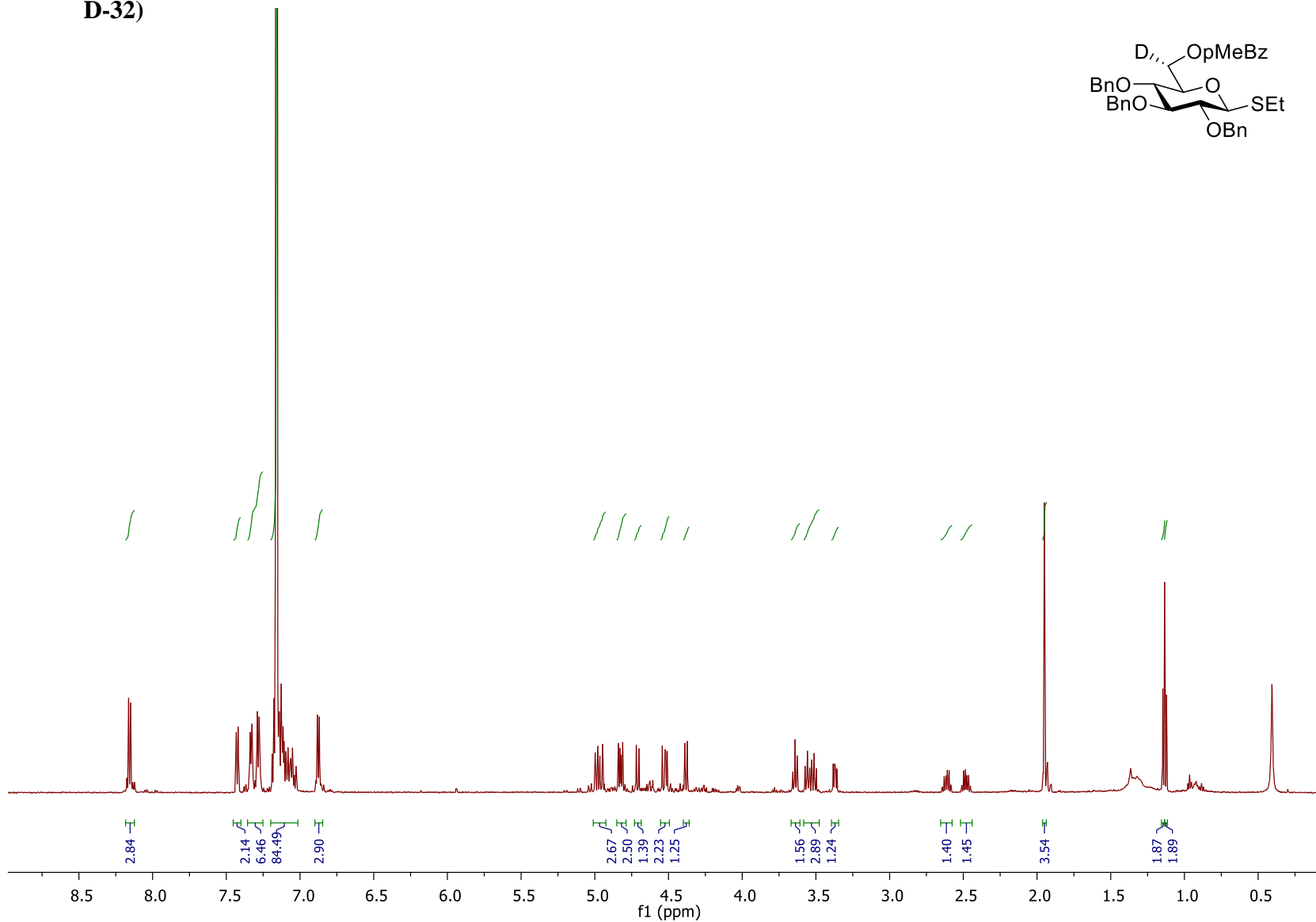
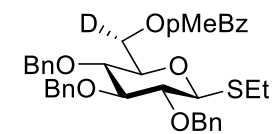


$^1\text{H}$  NMR (600 MHz,  $\text{CDCl}_3$ ) Spectrum of Ethyl (6*S*)-[6- $^2\text{H}_1$ ]-6-*O*-*p*-methylbenzoyl-2,3,4-tri-*O*-benzyl-1-thio- $\beta$ -D-glucopyranoside (6*S*-D-32)

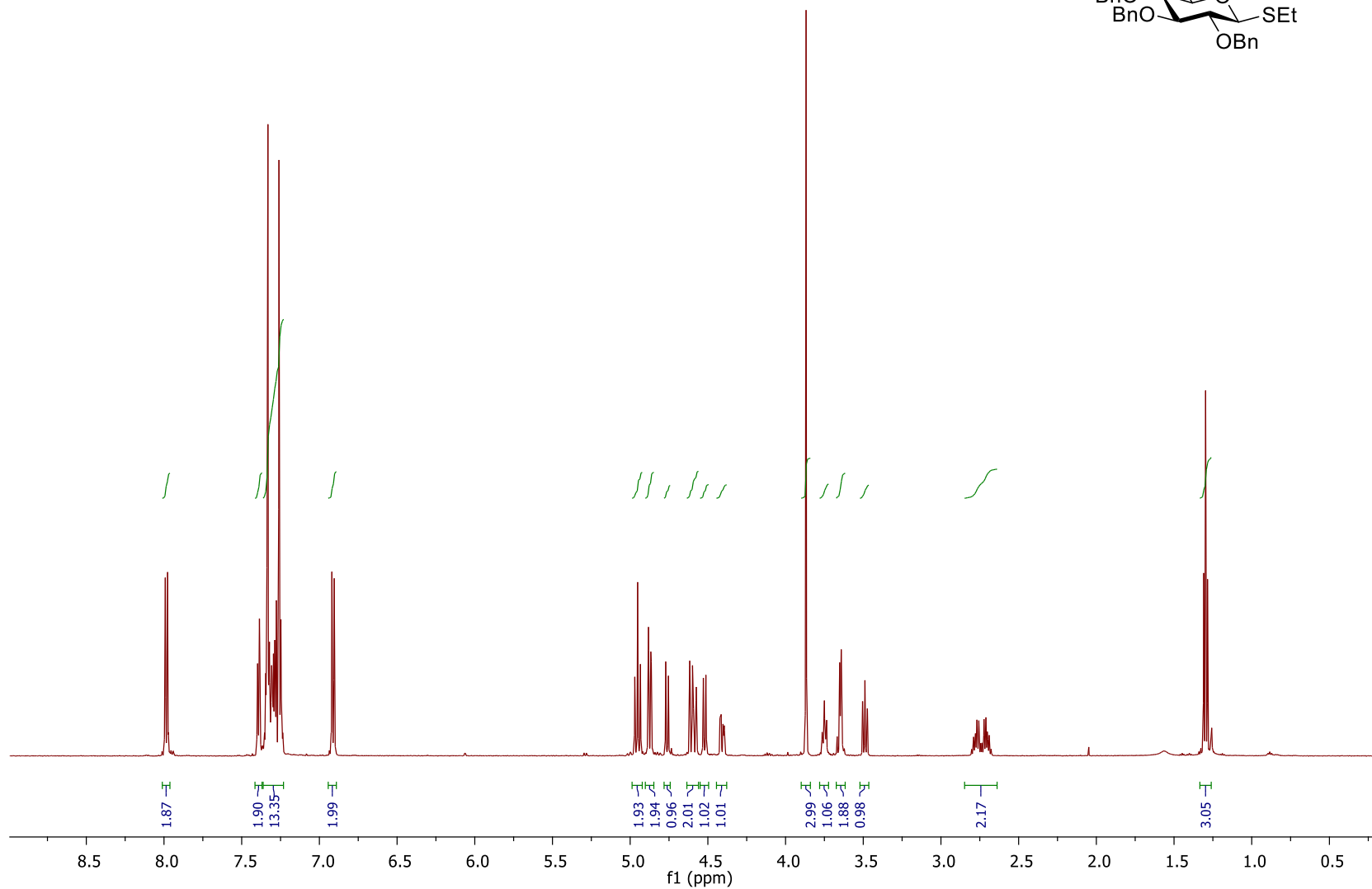
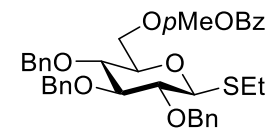




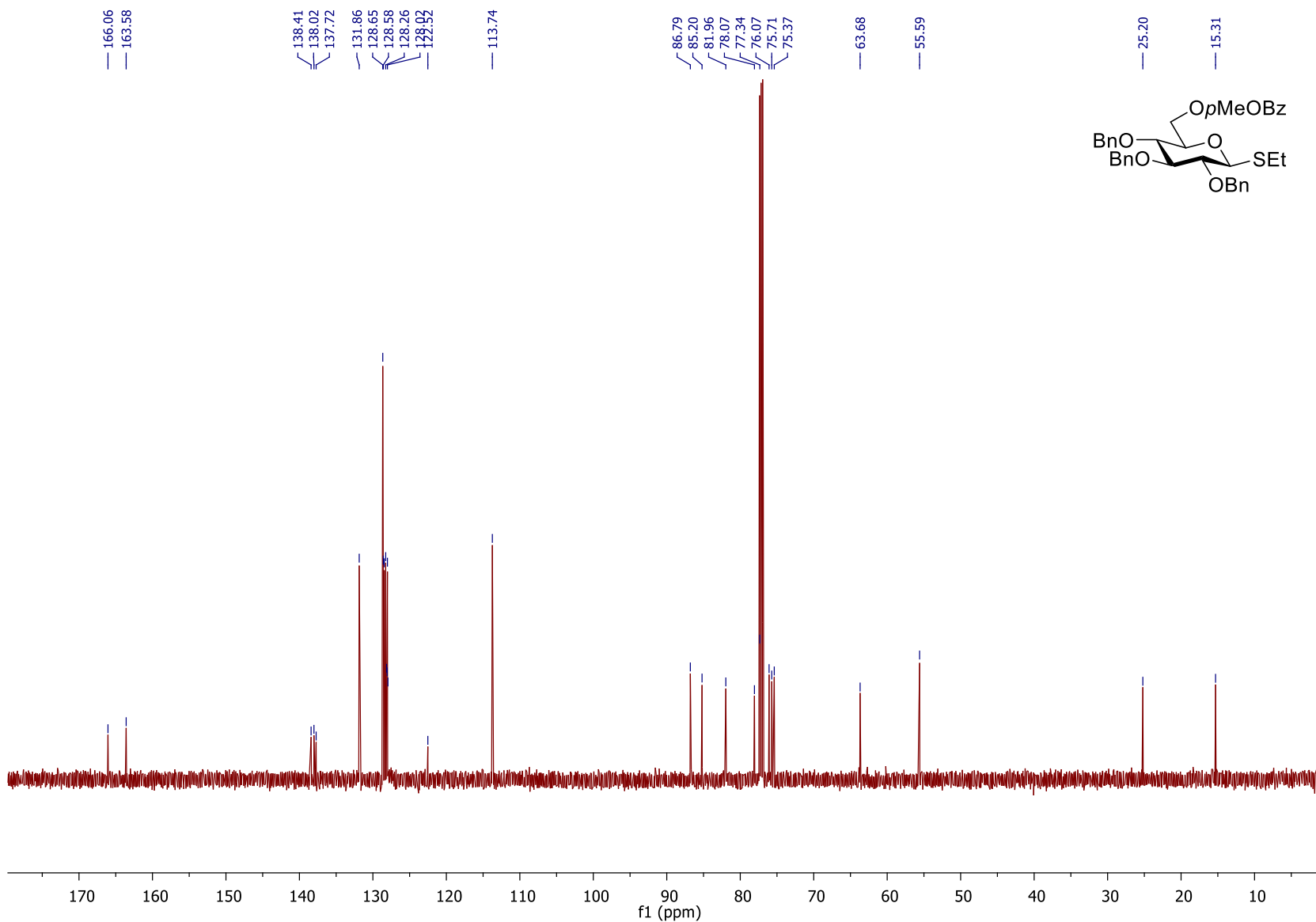
<sup>1</sup>H NMR (600 MHz, C<sub>6</sub>D<sub>6</sub>) Spectrum of Ethyl (6*S*)-[6-<sup>2</sup>H<sub>1</sub>]-6-*O-p*-methylbenzoyl-2,3,4-tri-*O*-benzyl-1-thio-β-D-glucopyranoside (**6S-D-32**)



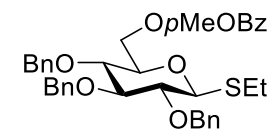
$^1\text{H}$  NMR (600 MHz,  $\text{CDCl}_3$ ) Spectrum of Ethyl 6-*O*-*p*-methoxybenzoyl-2,3,4-tri-*O*-benzyl-1-thio- $\beta$ -D-glucopyranoside (**33**)



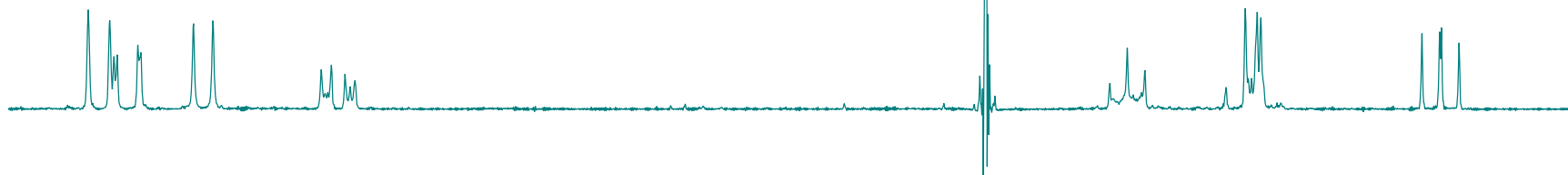
$^{13}\text{C}$  NMR (150 MHz,  $\text{CDCl}_3$ ) Spectrum of Ethyl 6-*O*-*p*-methoxybenzoyl-2,3,4-tri-*O*-benzyl-1-thio- $\beta$ -D-glucopyranoside (**33**)



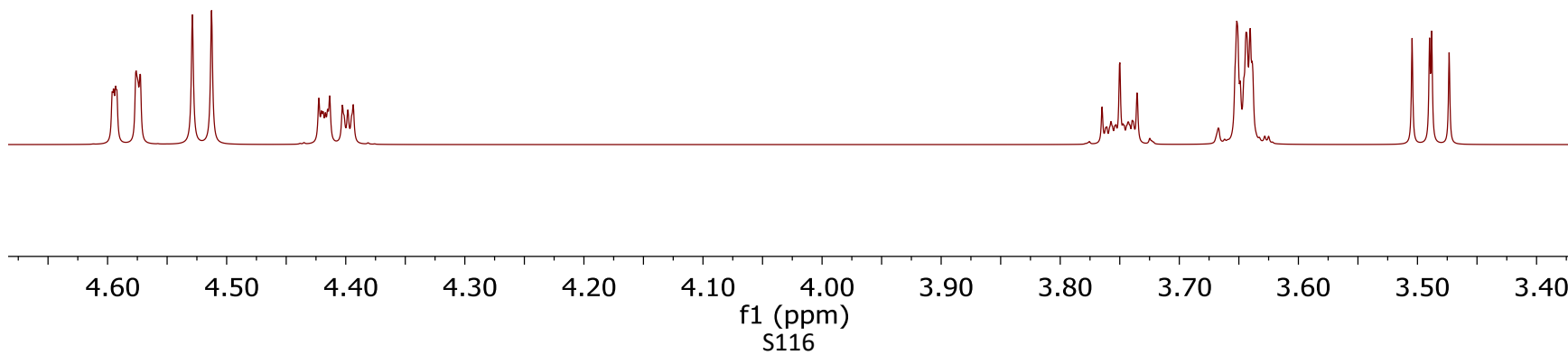
Simulated  $^1\text{H}$  NMR and  $^1\text{H}$  NMR (600 MHz,  $\text{CDCl}_3$ ) Spectrum of Ethyl 6-*O*-*p*-methoxybenzoyl-2,3,4-tri-*O*-benzyl-1-thio- $\beta$ -D-glucopyranoside (**33**)



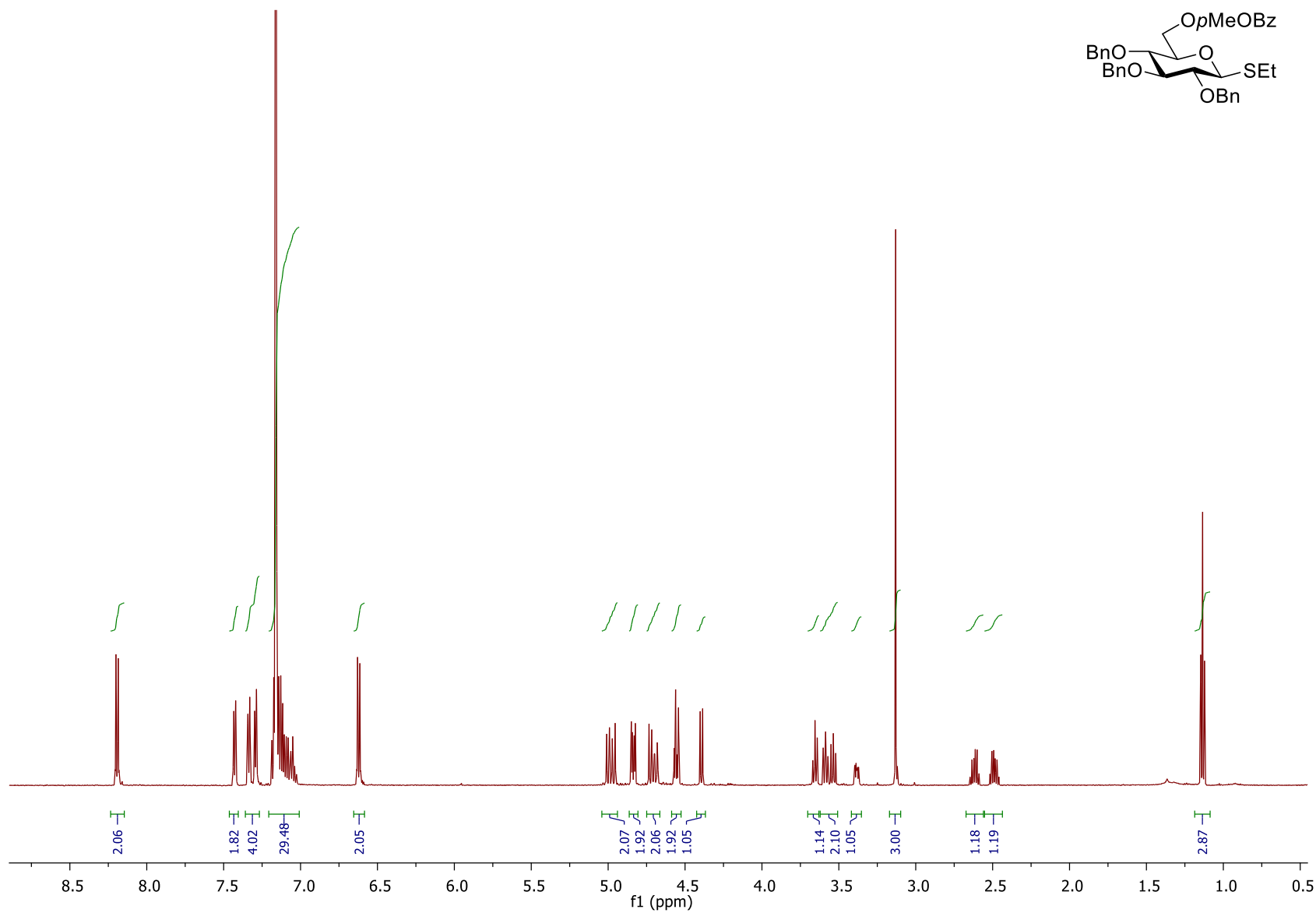
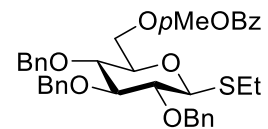
Experimental  $^1\text{H}$ -NMR (600 MHz,  $\text{CDCl}_3$ )



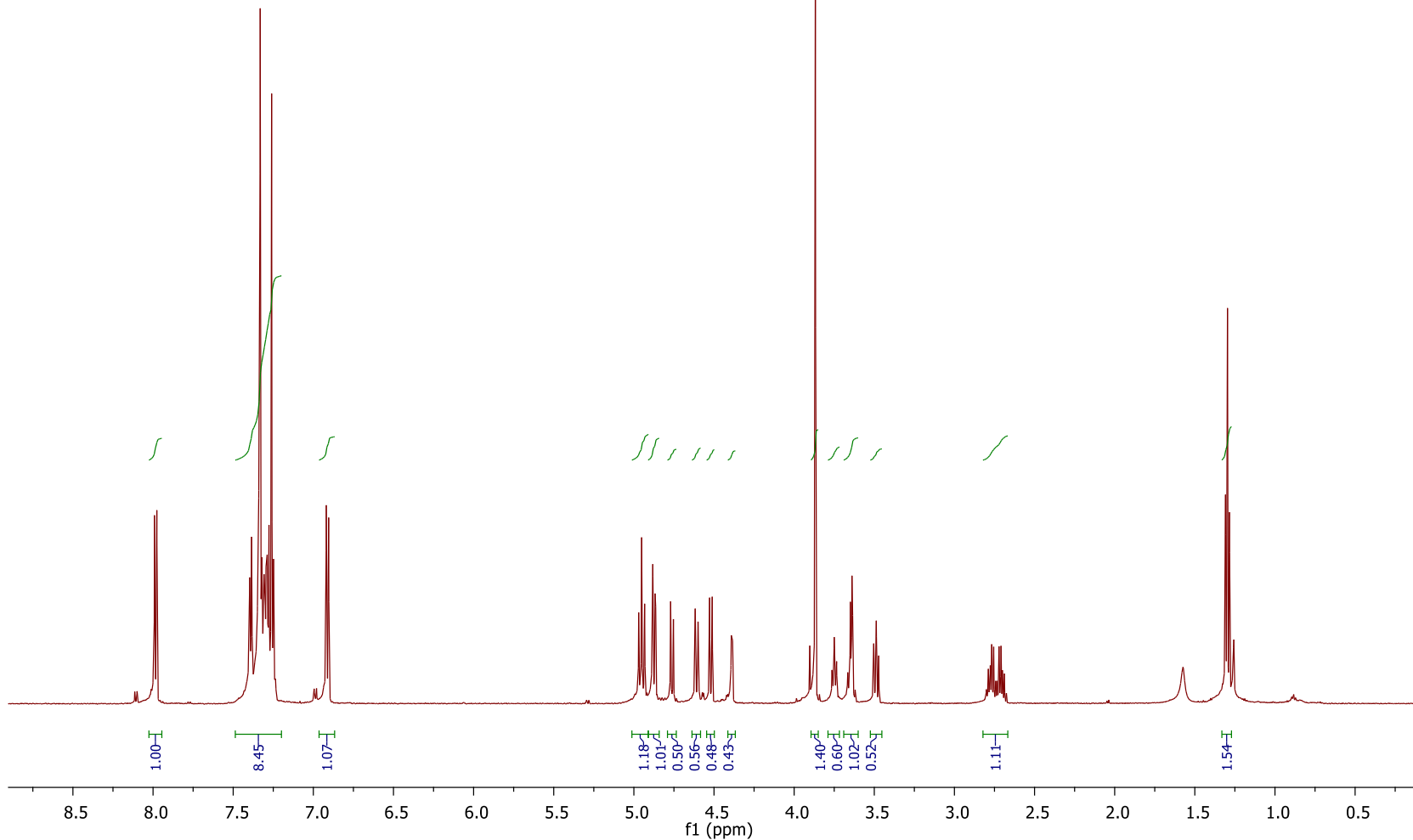
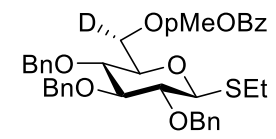
Simulated  $^1\text{H}$ -NMR



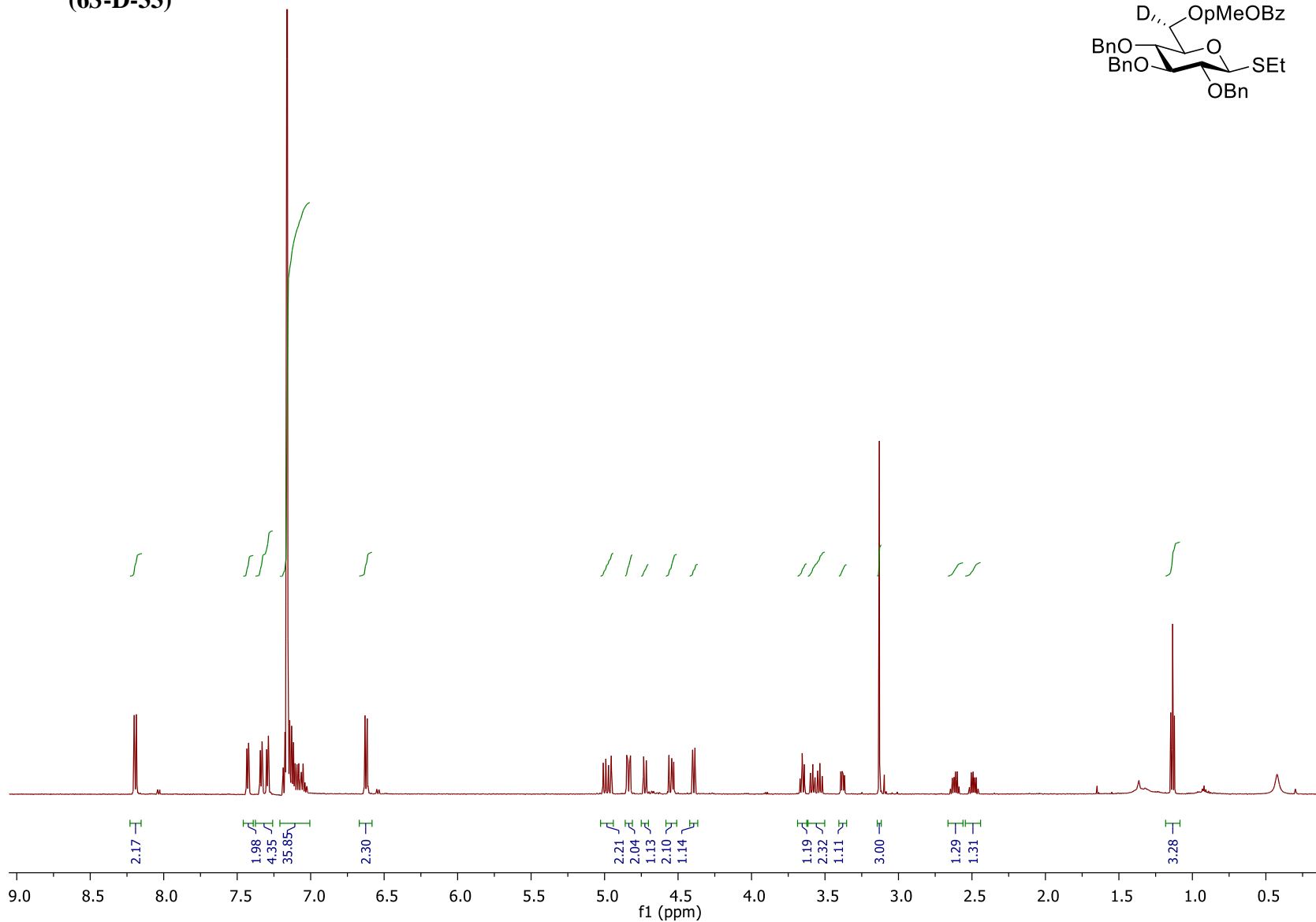
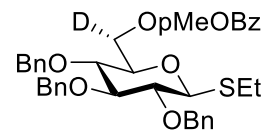
$^1\text{H}$  NMR (600 MHz,  $\text{C}_6\text{D}_6$ ) Spectrum of Ethyl 6-*O*-*p*-methoxybenzoyl-2,3,4-tri-*O*-benzyl-1-thio- $\beta$ -D-glucopyranoside (**33**)



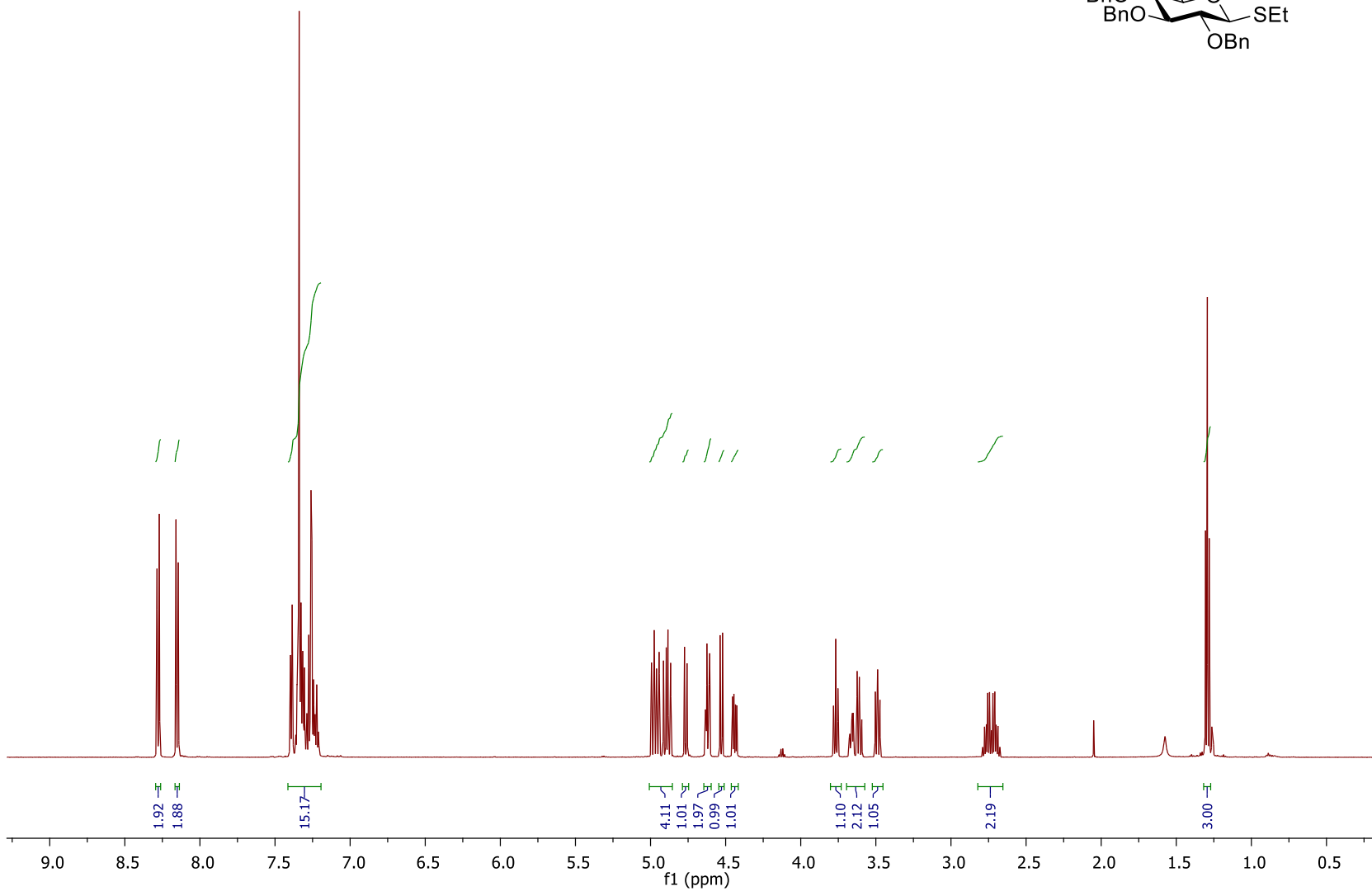
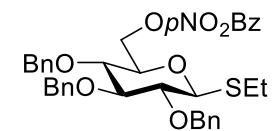
$^1\text{H}$  NMR (600 MHz,  $\text{CDCl}_3$ ) Spectrum of Ethyl (6*S*)-[6- $^2\text{H}_1$ ]-6-*O-p*-methoxybenzoyl-2,3,4-tri-*O*-benzyl-1-thio- $\beta$ -D-glucopyranoside (**6*S*-D-33**)



<sup>1</sup>H NMR (600 MHz, C<sub>6</sub>D<sub>6</sub>) Spectrum of Ethyl (6*S*)-[6-<sup>2</sup>H<sub>1</sub>]-6-*O*-*p*-methoxybenzoyl-2,3,4-tri-*O*-benzyl-1-thio-β-D-glucopyranoside (**6S-D-33**)

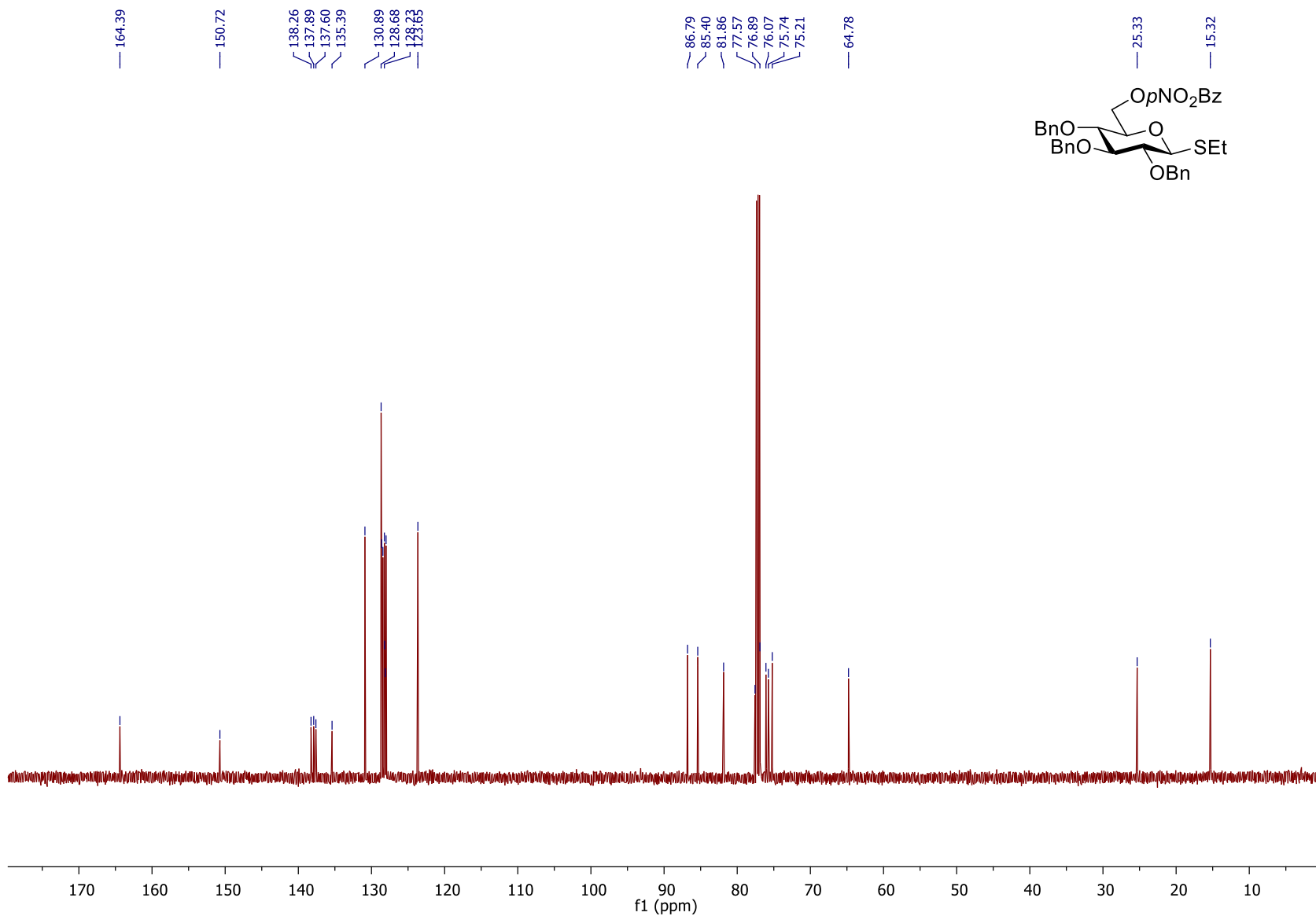


$^1\text{H}$  NMR (600 MHz,  $\text{CDCl}_3$ ) Spectrum of Ethyl 6-*O*-*p*-nitrobenzoyl-2,3,4-tri-*O*-benzyl-1-thio- $\beta$ -D-glucopyranoside (**34**)

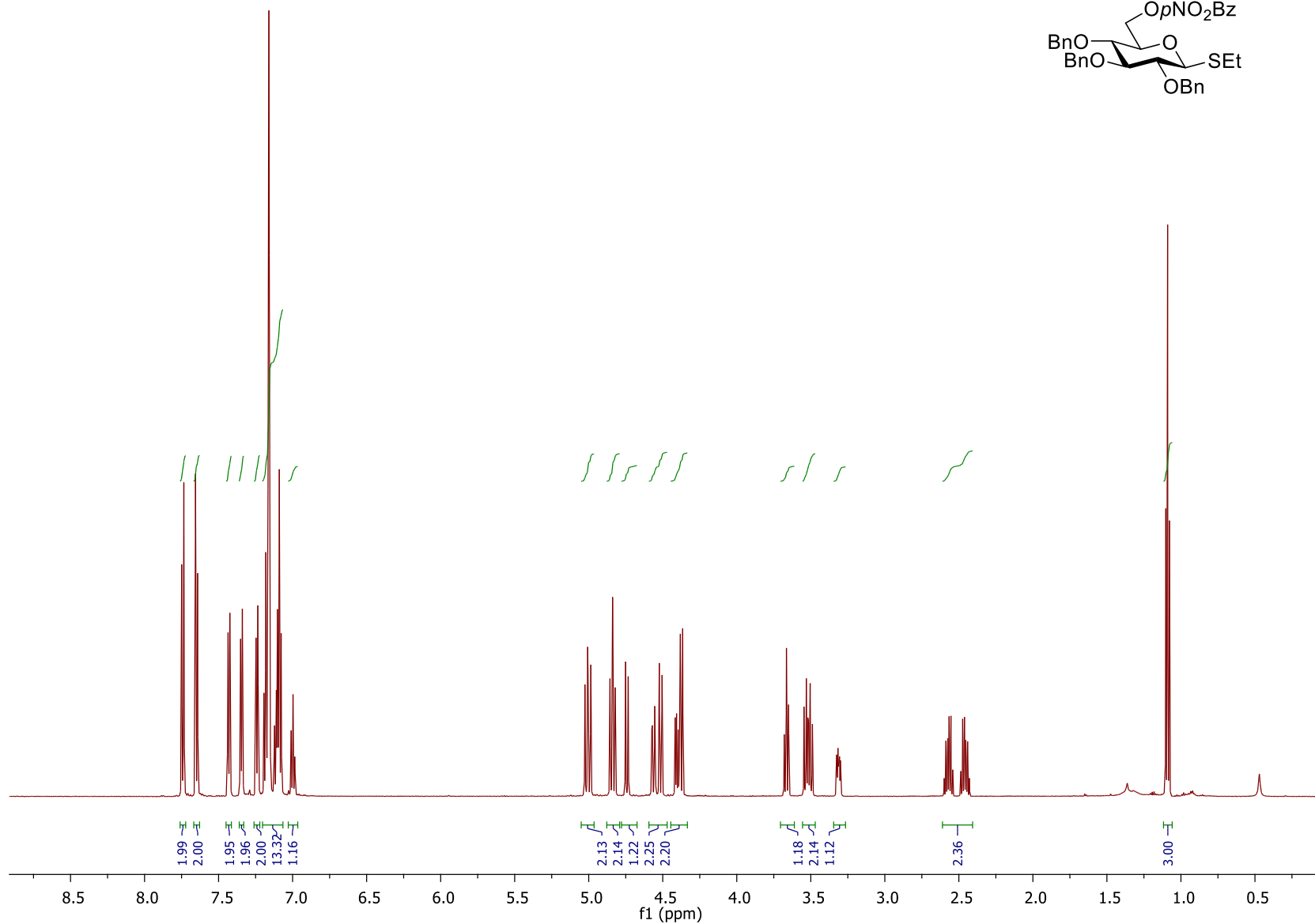
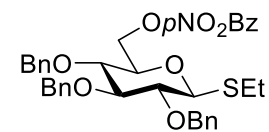




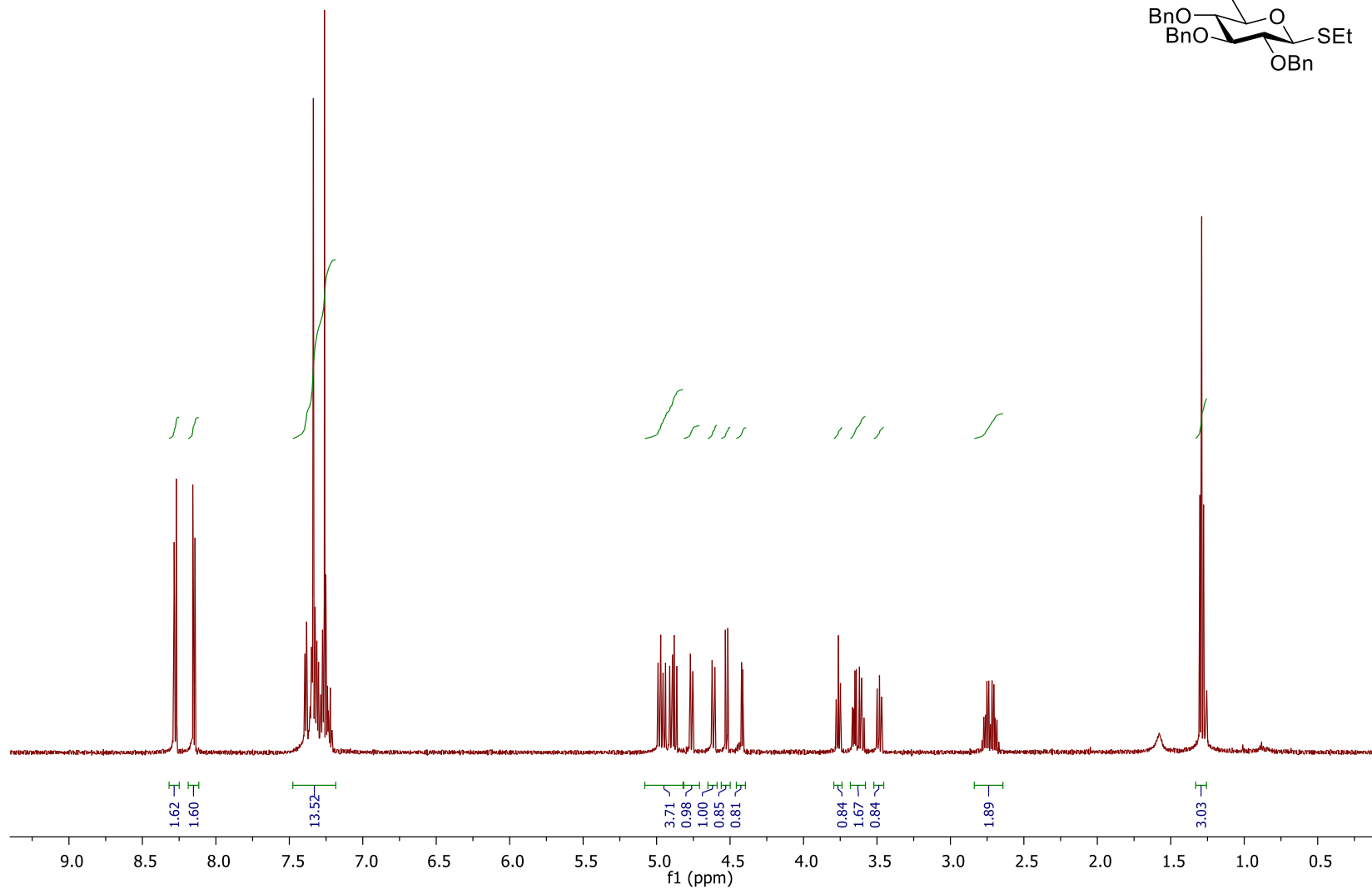
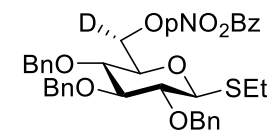
$^{13}\text{C}$  NMR (150 MHz,  $\text{CDCl}_3$ ) Spectrum of Ethyl 6-*O*-*p*-nitrobenzoyl-2,3,4-tri-*O*-benzyl-1-thio- $\beta$ -D-glucopyranoside (**34**)



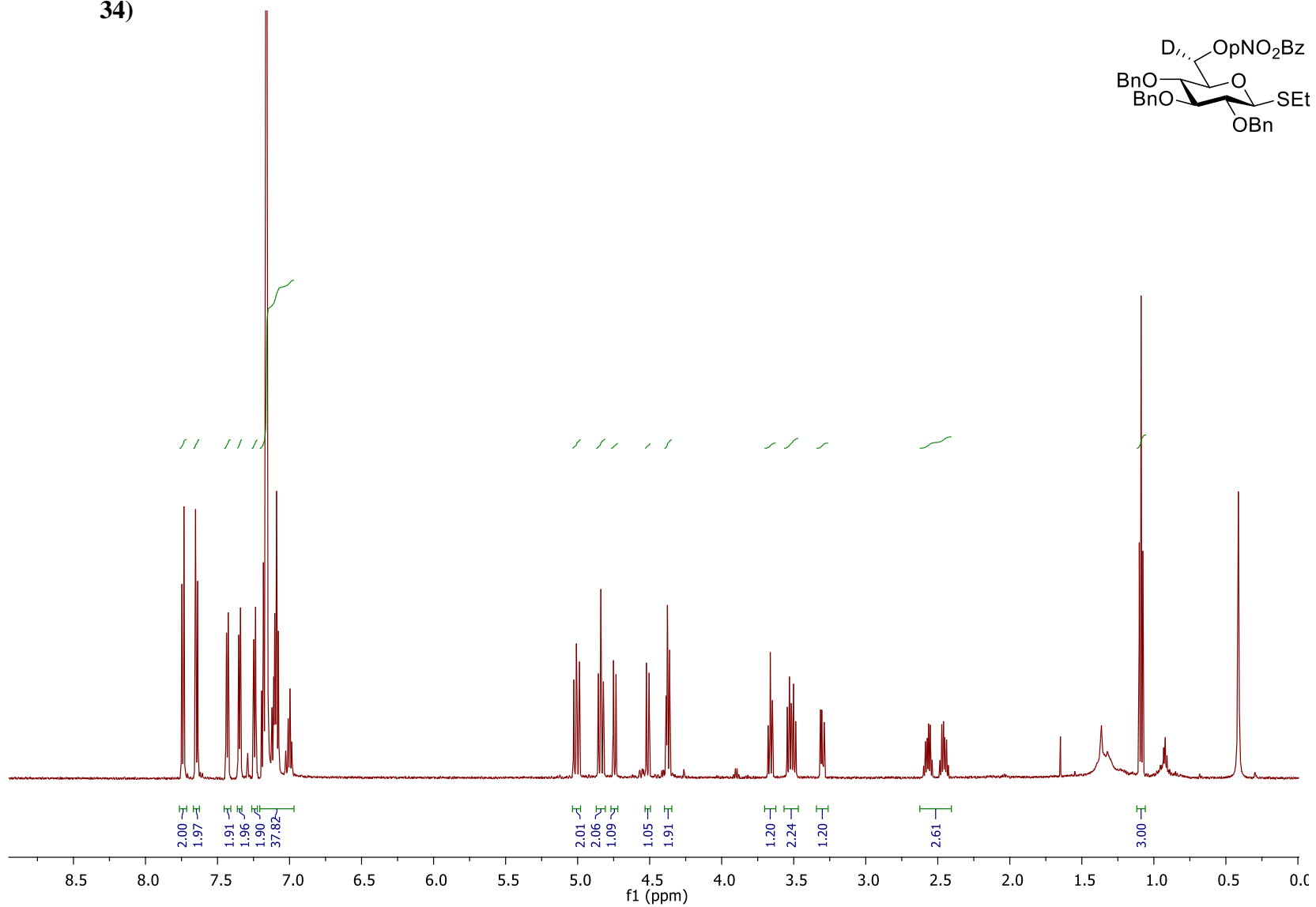
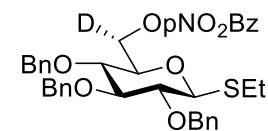
$^1\text{H}$  NMR (600 MHz,  $\text{C}_6\text{D}_6$ ) Spectrum of Ethyl 6-*O*-*p*-nitrobenzoyl-2,3,4-tri-*O*-benzyl-1-thio- $\beta$ -D-glucopyranoside (**34**)



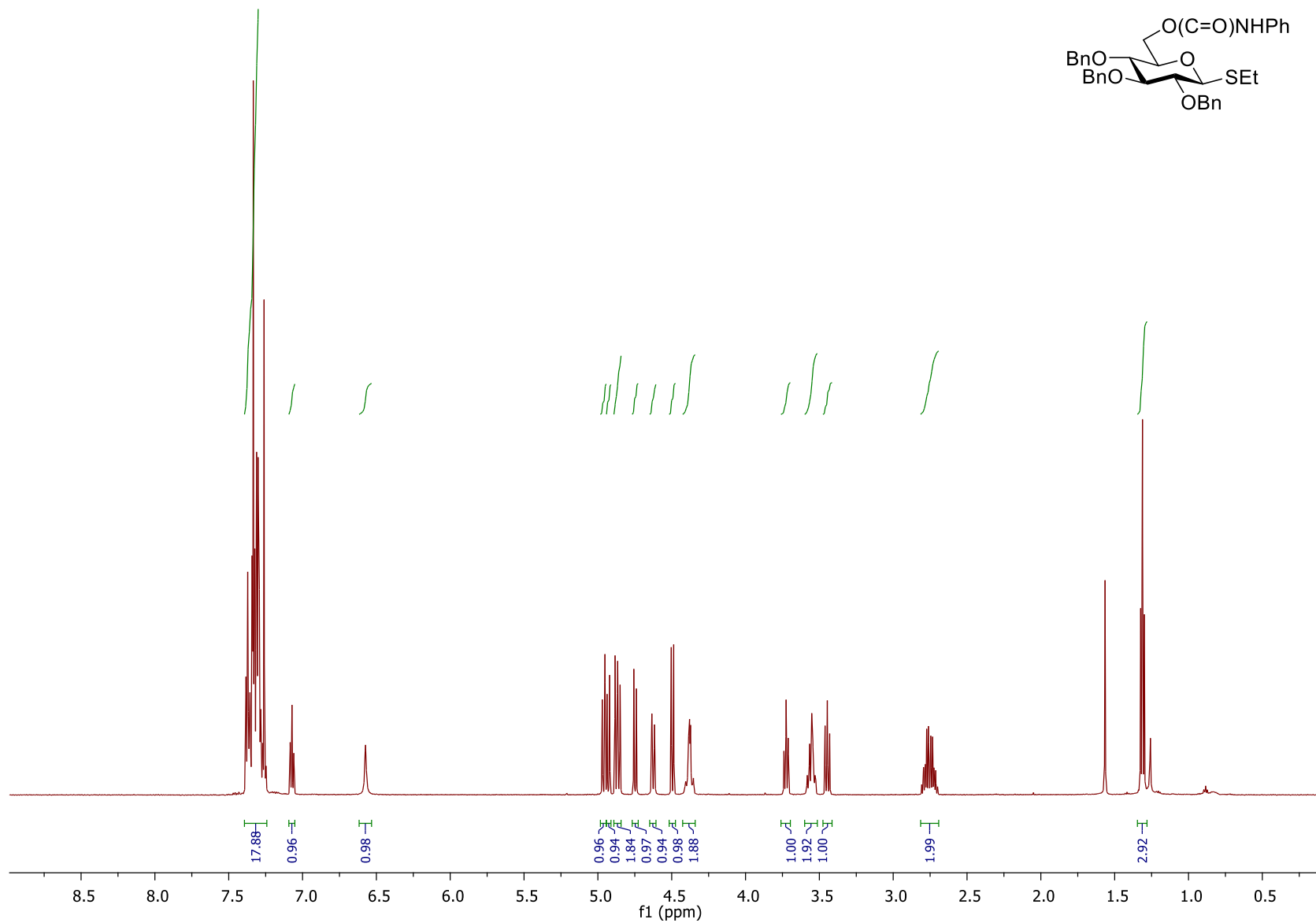
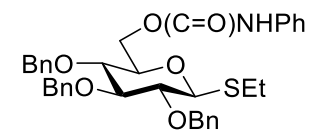
<sup>1</sup>H NMR (600 MHz, CDCl<sub>3</sub>) Spectrum of Ethyl (6*S*)-[6-<sup>2</sup>H<sub>1</sub>]-6-*O*-*p*-nitrobenzoyl-2,3,4-tri-*O*-benzyl-1-thio-βD-glucopyranoside (**6S-D-34**)



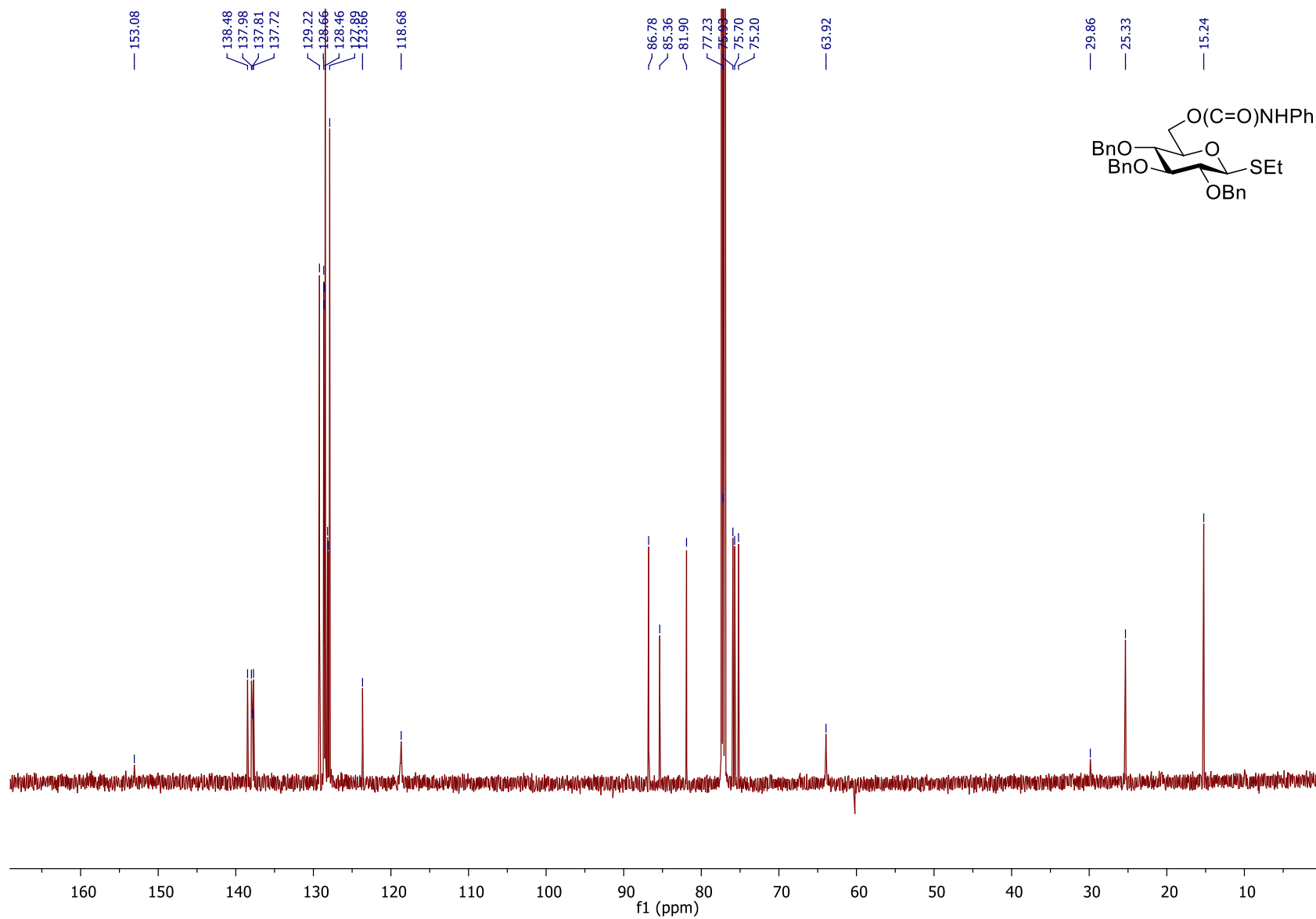
$^1\text{H}$  NMR (600 MHz,  $\text{C}_6\text{D}_6$ ) Spectrum of Ethyl (6*S*)-[6- $^2\text{H}_1$ ]-6-*O-p*-nitrobenzoyl-2,3,4-tri-*O*-benzyl-1-thio- $\beta$ -D-glucopyranoside (**6S-D-34**)



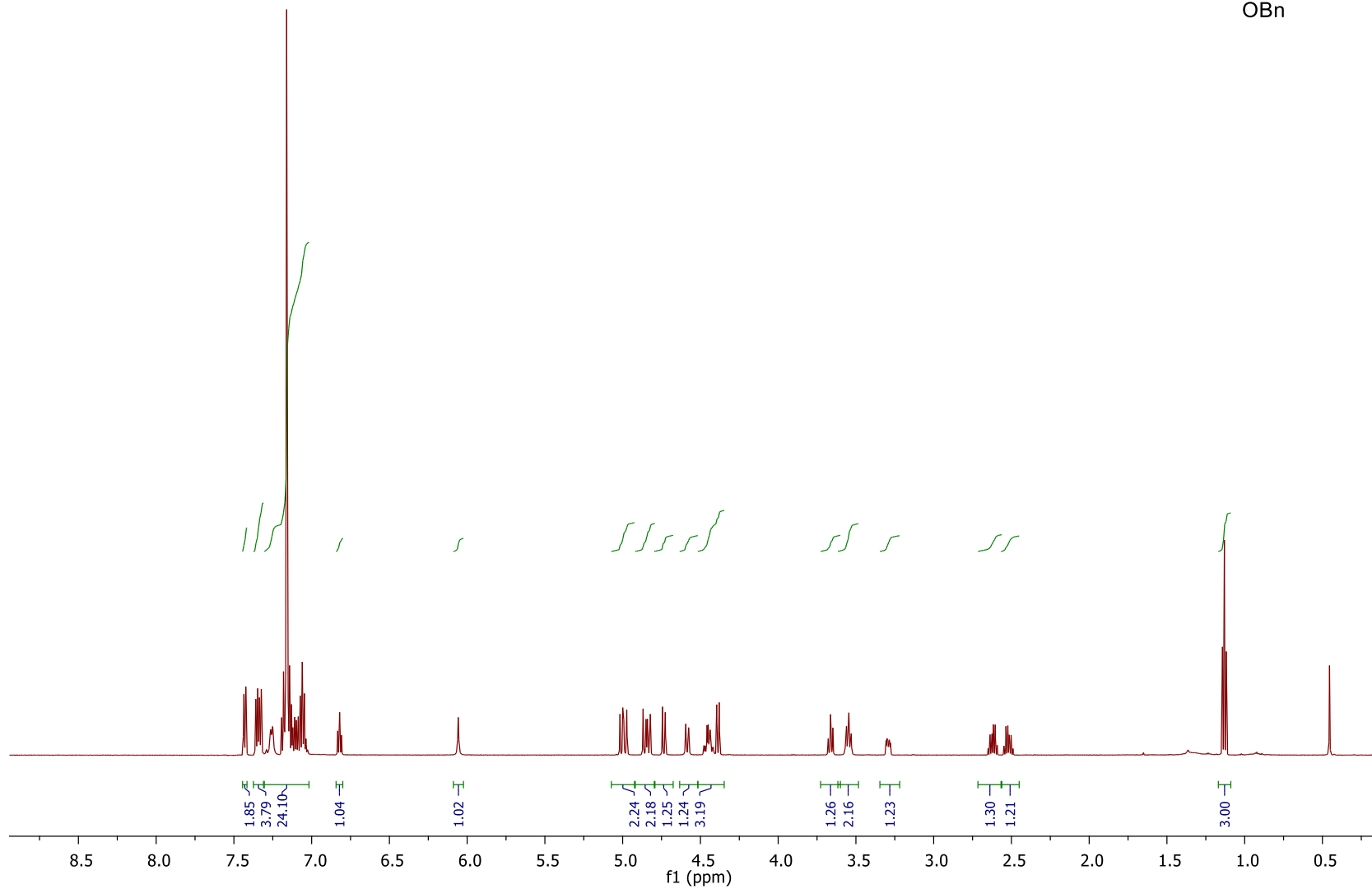
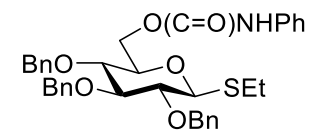
<sup>1</sup>H NMR (600 MHz, CDCl<sub>3</sub>) Spectrum of Ethyl 2,3,4-tri-*O*-benzyl-6-*O*-(*N*-phenylcarbamoyl)-1-thio-β-D-glucopyranoside (**35**)



$^{13}\text{C}$  NMR (150 MHz,  $\text{CDCl}_3$ ) Spectrum of Ethyl 2,3,4-tri-*O*-benzyl-6-*O*-(*N*-phenylcarbamoyl)-1-thio- $\beta$ -D-glucopyranoside (**35**)

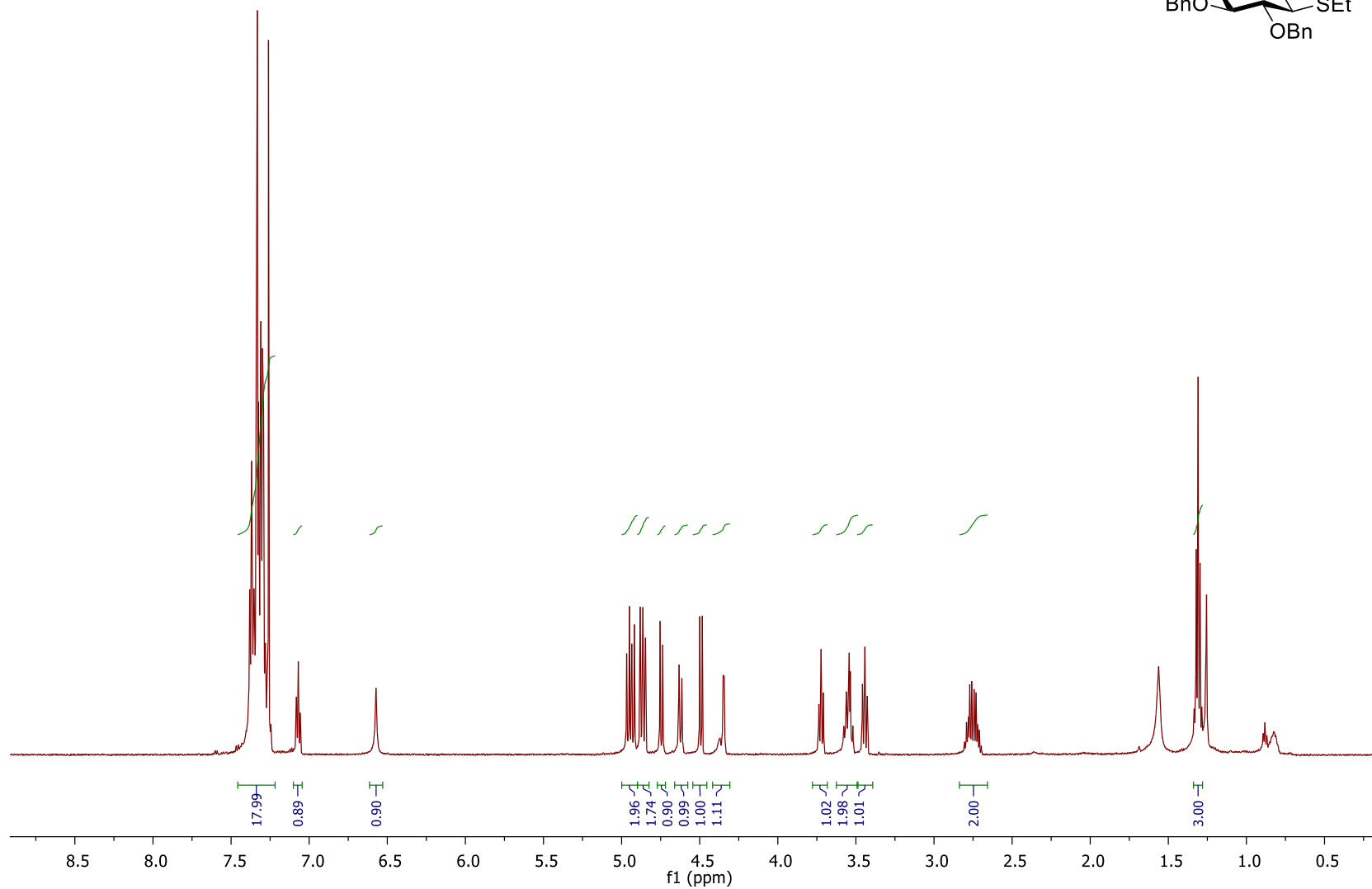
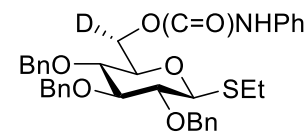


$^1\text{H}$  NMR (600 MHz,  $\text{C}_6\text{D}_6$ ) Spectrum of Ethyl 2,3,4-tri-*O*-benzyl-6-*O*-(*N*-phenylcarbamoyl)-1-thio- $\beta$ -D-glucopyranoside (**35**)



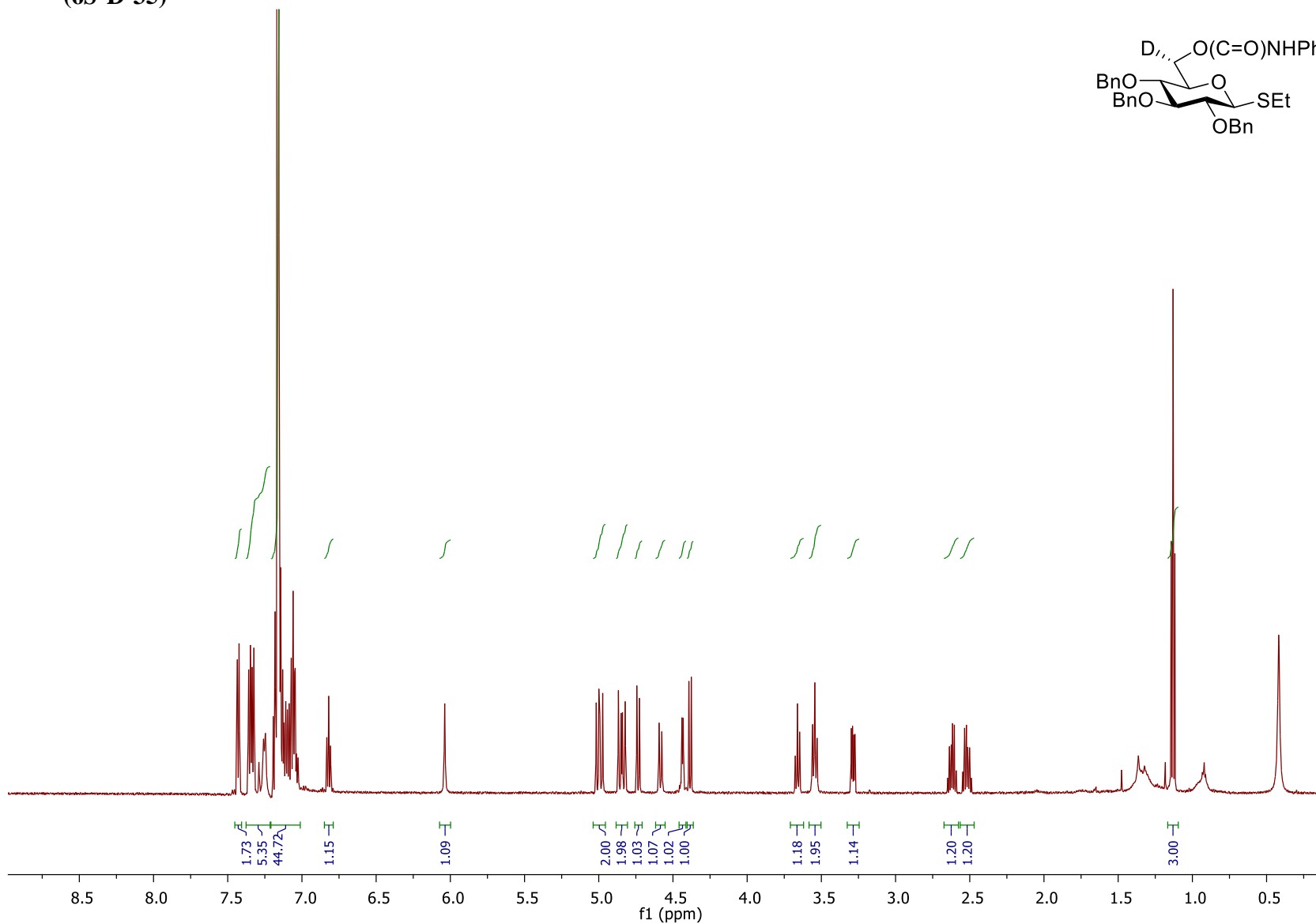
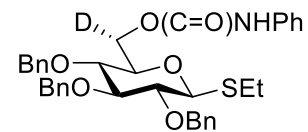
S127

$^1\text{H}$  NMR (600 MHz,  $\text{CDCl}_3$ ) Spectrum of Ethyl 2,3,4-tri-*O*-benzyl-(6*S*)-[6- $^2\text{H}_1$ ]-6-*O*-(*N*-phenylcarbamoyl)-1-thio- $\beta$ -D-glucopyranoside (**6S-D-35**)

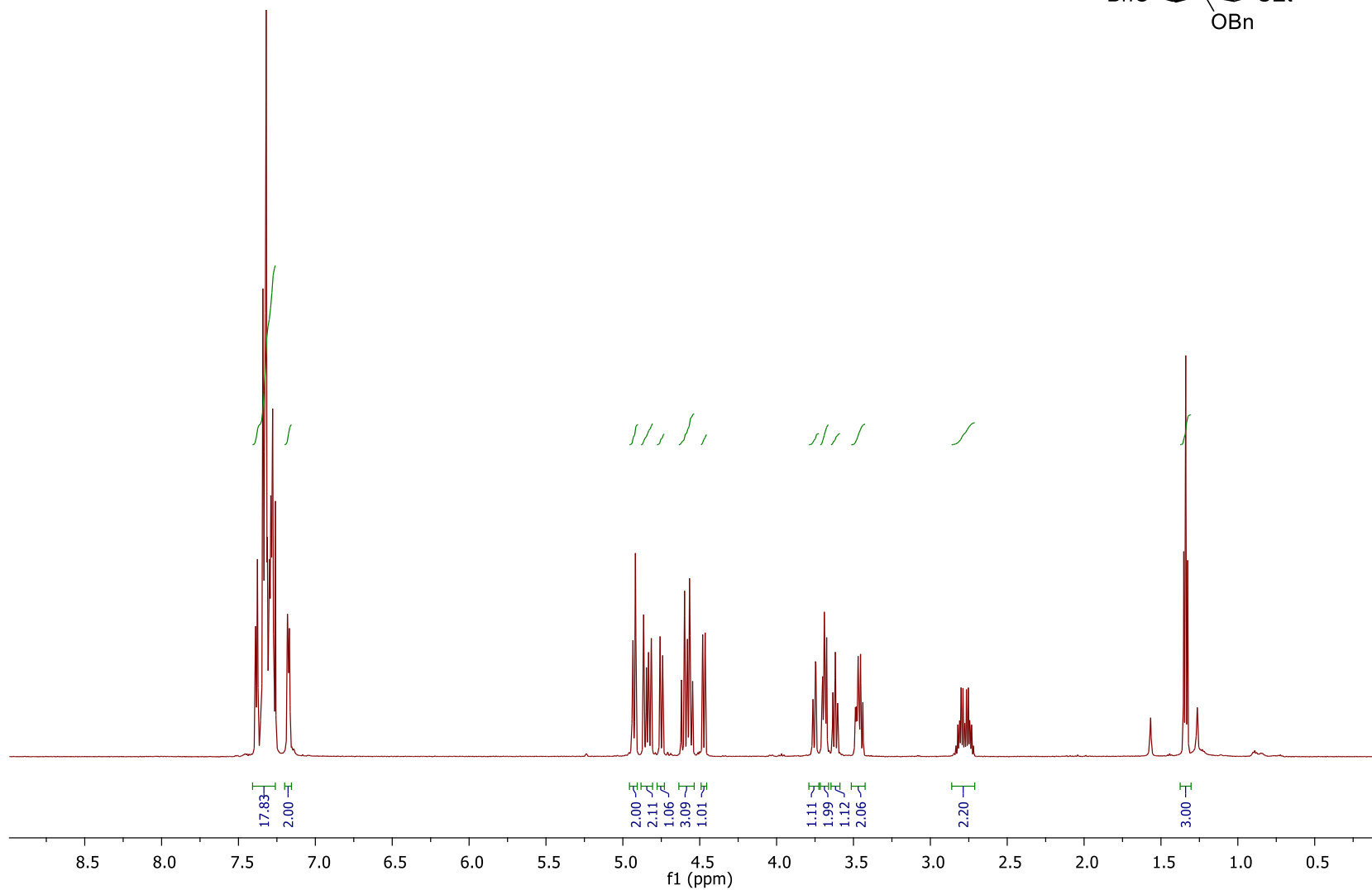
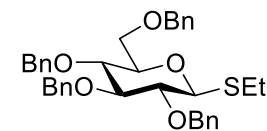




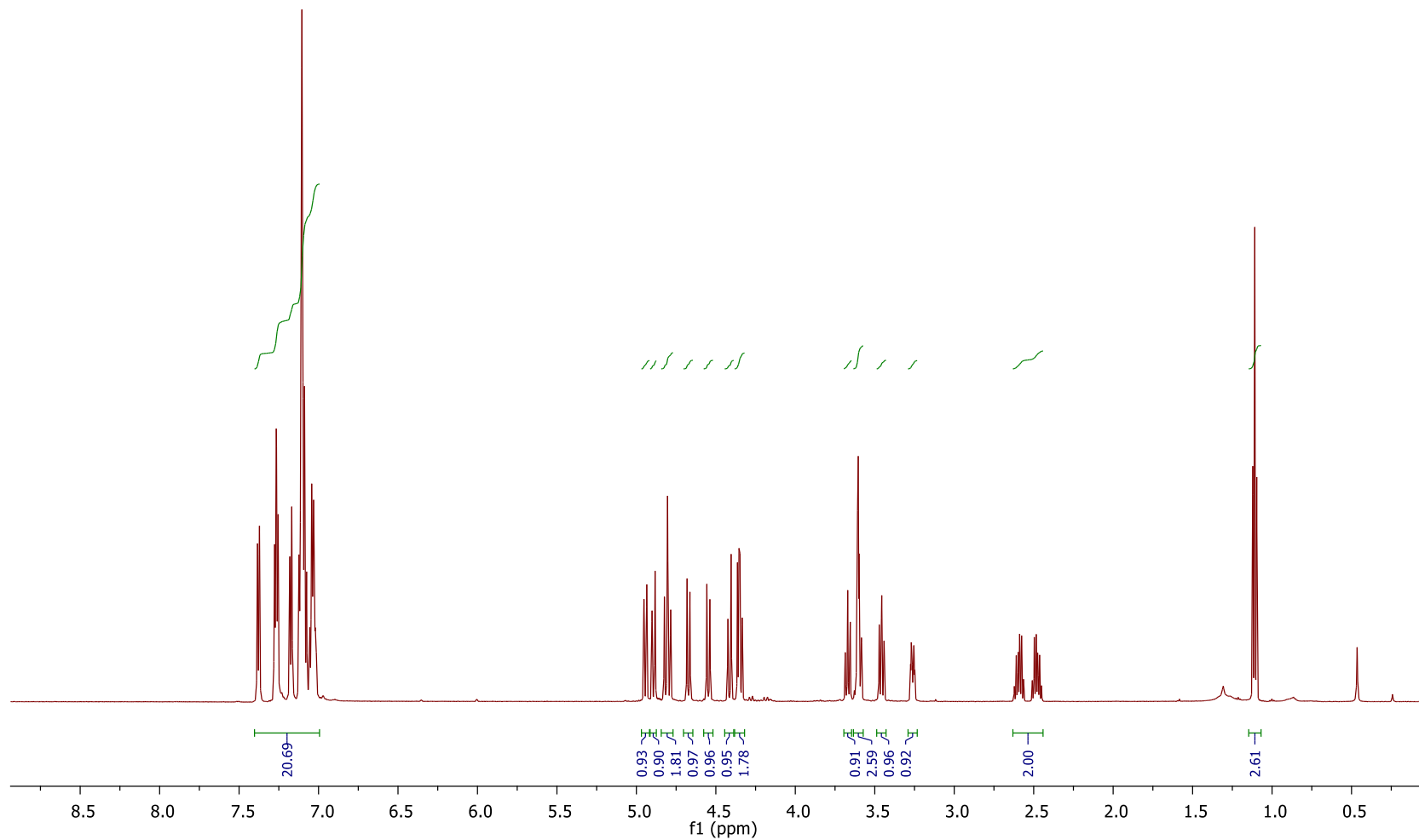
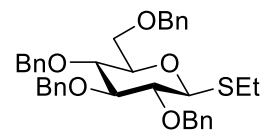
$^1\text{H}$  NMR (600 MHz,  $\text{C}_6\text{D}_6$ ) Spectrum of Ethyl 2,3,4-tri-*O*-benzyl-(6*S*)-[6- $^2\text{H}_1$ ]-6-*O*-(*N*-phenylcarbamoyl)-1-thio- $\beta$ -D-glucopyranoside (**6S-D-35**)



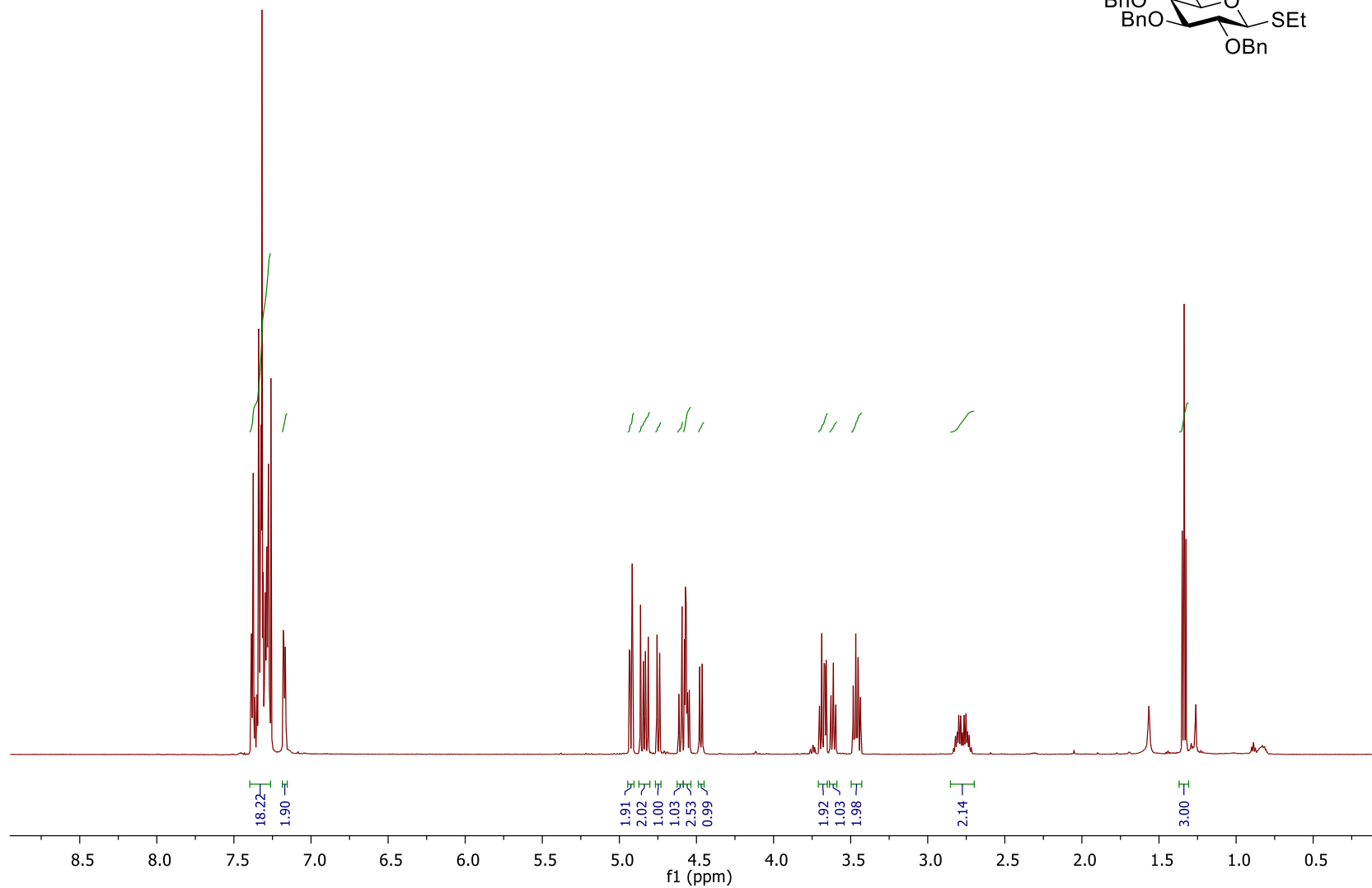
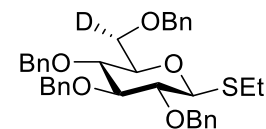
$^1\text{H}$  NMR (600 MHz,  $\text{CDCl}_3$ ) Spectrum of Ethyl 2,3,4,6-tetra-*O*-benzyl-1-thio- $\beta$ -D-glucopyranoside (**36**)



$^1\text{H}$  NMR (600 MHz,  $\text{C}_6\text{D}_6$ ) Spectrum of Ethyl 2,3,4,6-tetra-*O*-benzyl-1-thio- $\beta$ -D-glucopyranoside (**36**)



$^1\text{H}$  NMR (600 MHz,  $\text{CDCl}_3$ ) Spectrum of Ethyl (6*S*)-[6- $^2\text{H}_1$ ]-2,3,4,6-tetra-*O*-benzyl-1-thio- $\beta$ -D-glucopyranoside (**6*S*-D-36**)



$^1\text{H}$  NMR (600 MHz,  $\text{C}_6\text{D}_6$ ) Spectrum of Ethyl (6*S*)-[6- $^2\text{H}_1$ ]-2,3,4,6-tetra-*O*-benzyl-1-thio- $\beta$ -D-glucopyranoside (**6*S*-D-36**)

