

## Novel 1'-Homo-N-2'-deoxy- $\alpha$ -nucleosides: Synthesis, Characterization and Biological Activity

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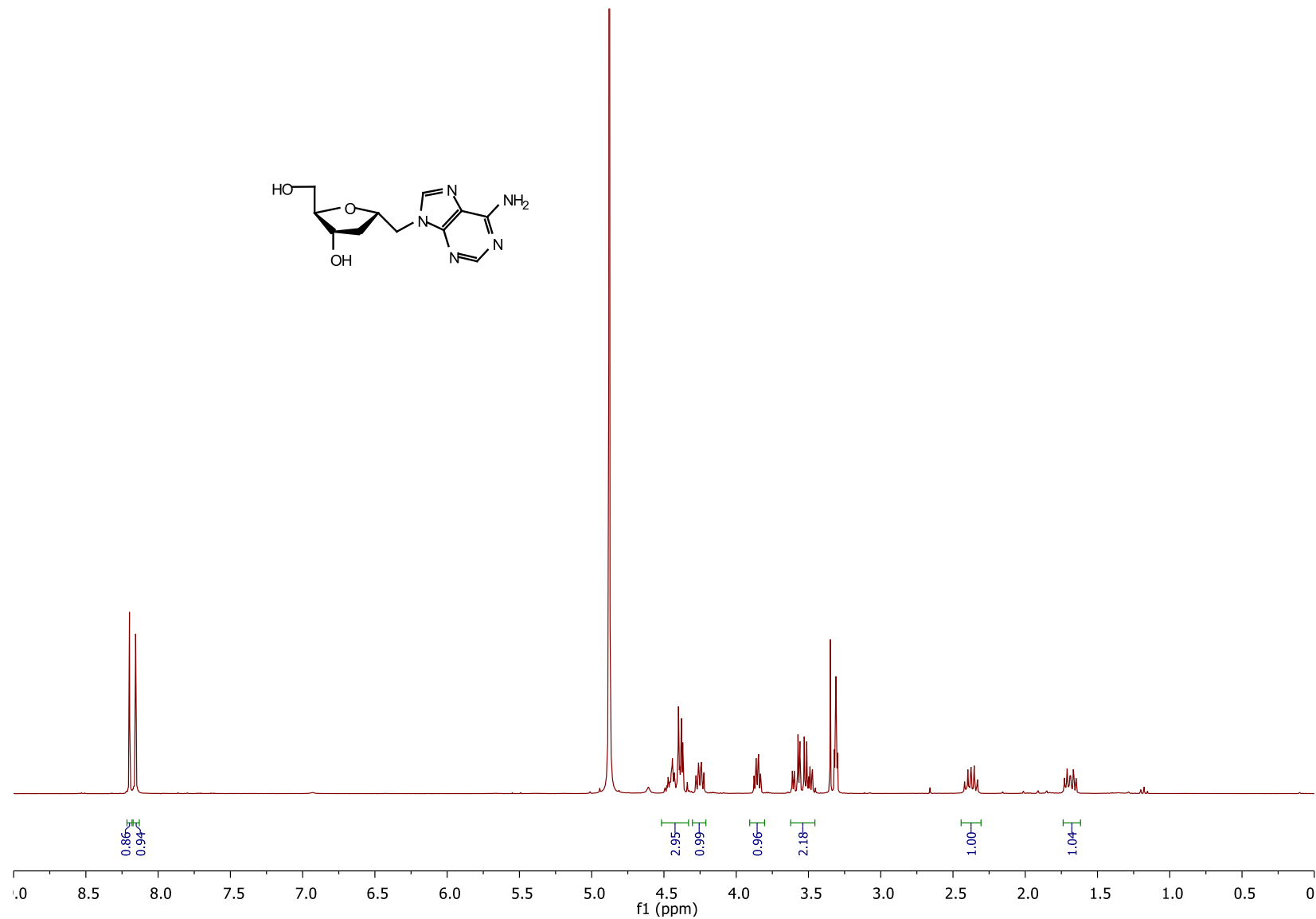
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1'-Homo-N-2'-deoxy- $\alpha$ -adenosine (10a)

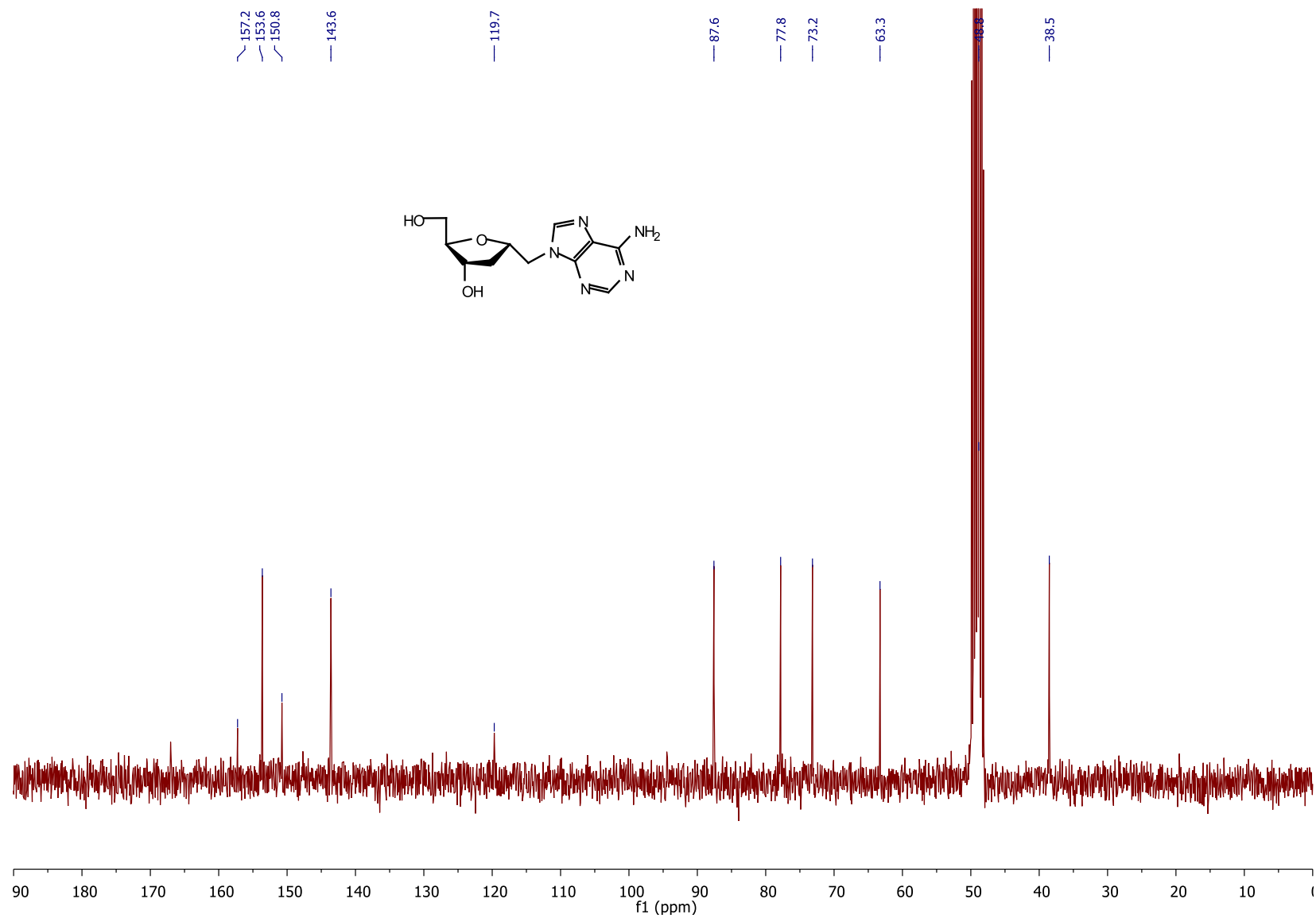
$^1\text{H}$  NMR (300.13 MHz, MeOH- $d_4$ )



S3

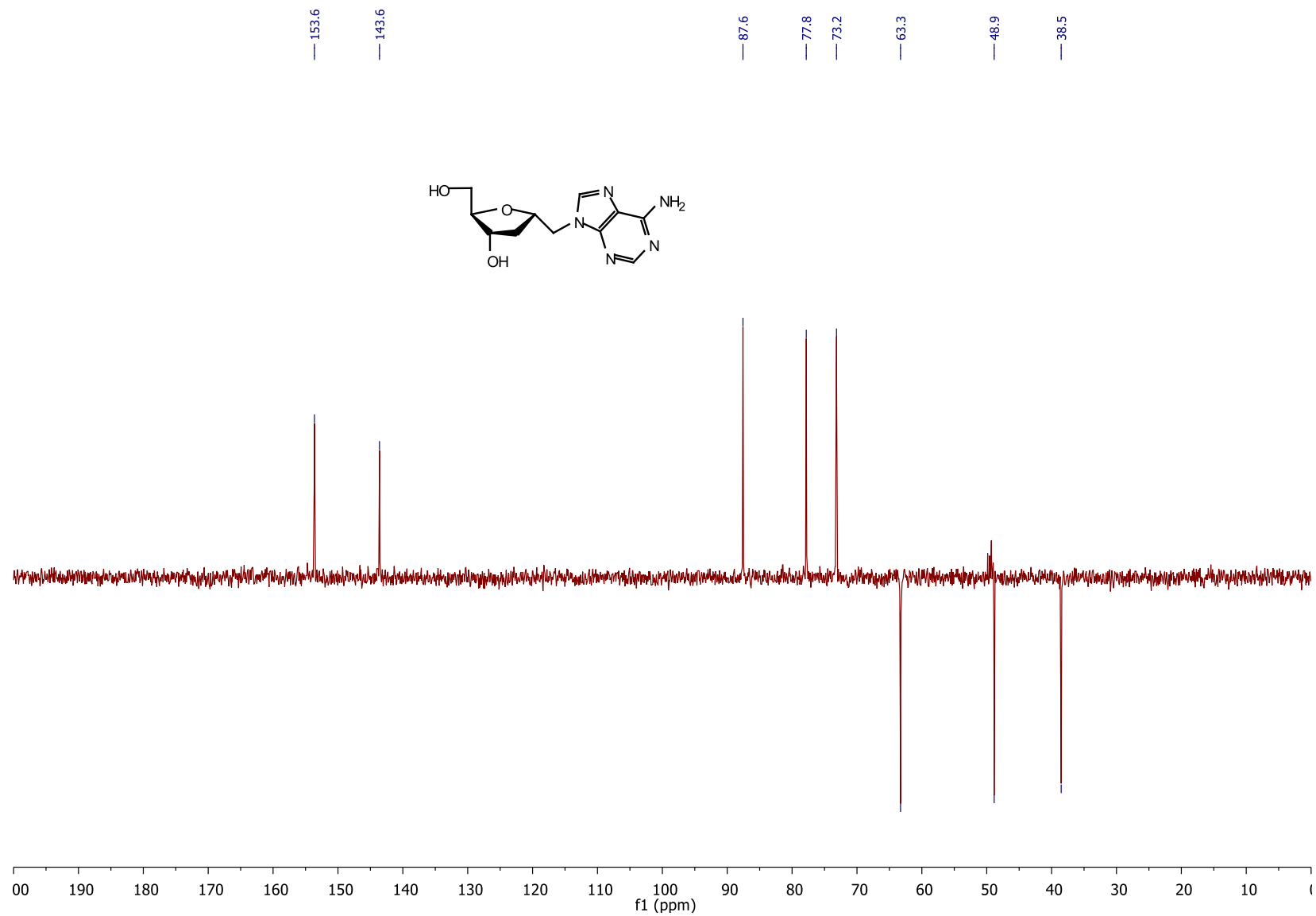
# 1'-Homo-*N*-2'-deoxy- $\alpha$ -adenosine (10a)

$^{13}\text{C}$  NMR (75.5 MHz,  $\text{MeOH-}d_4$ )



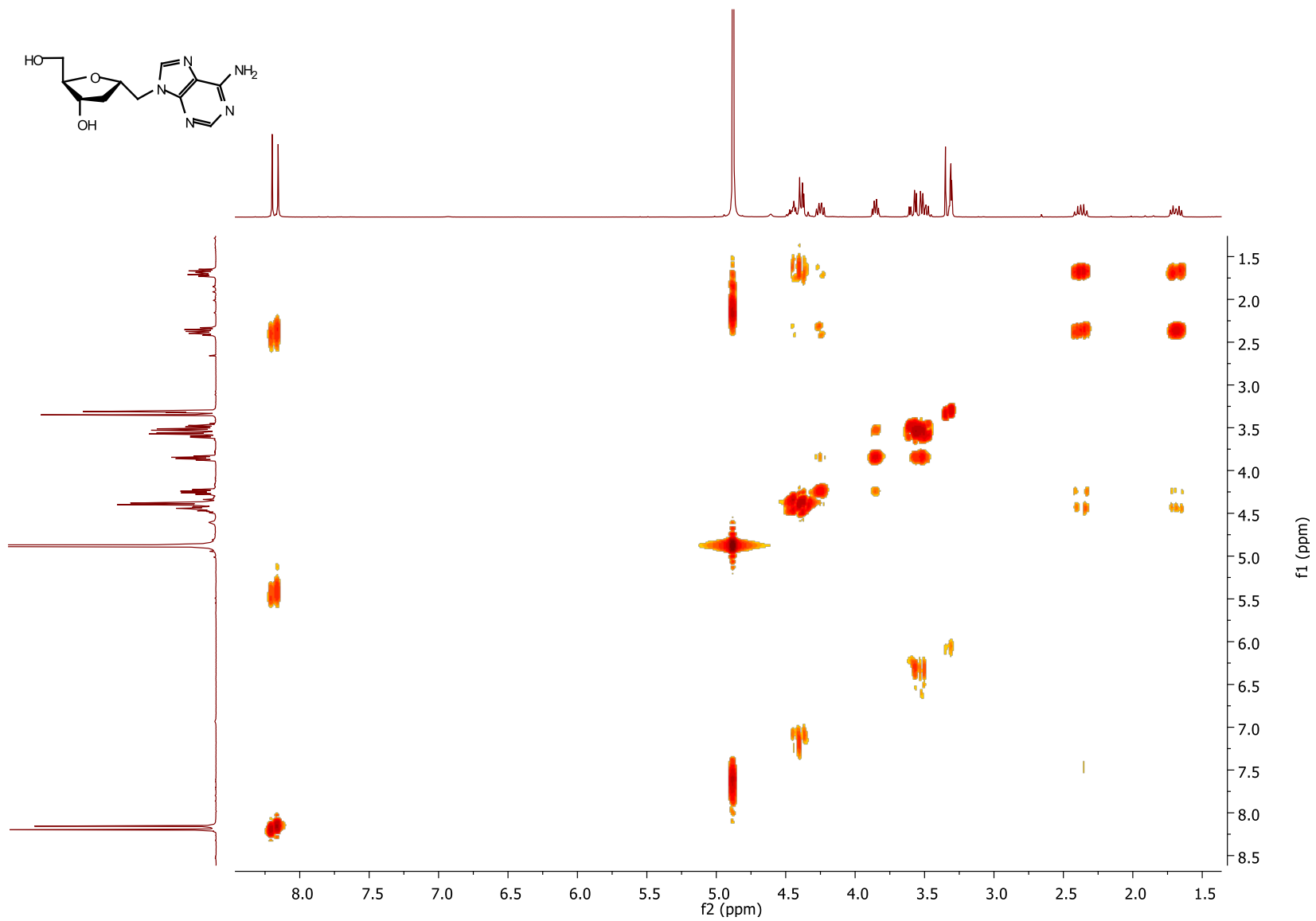
# 1'-Homo-*N*-2'-deoxy- $\alpha$ -adenosine (10a)

DEPT NMR (75.5 MHz, MeOH- $d_4$ )



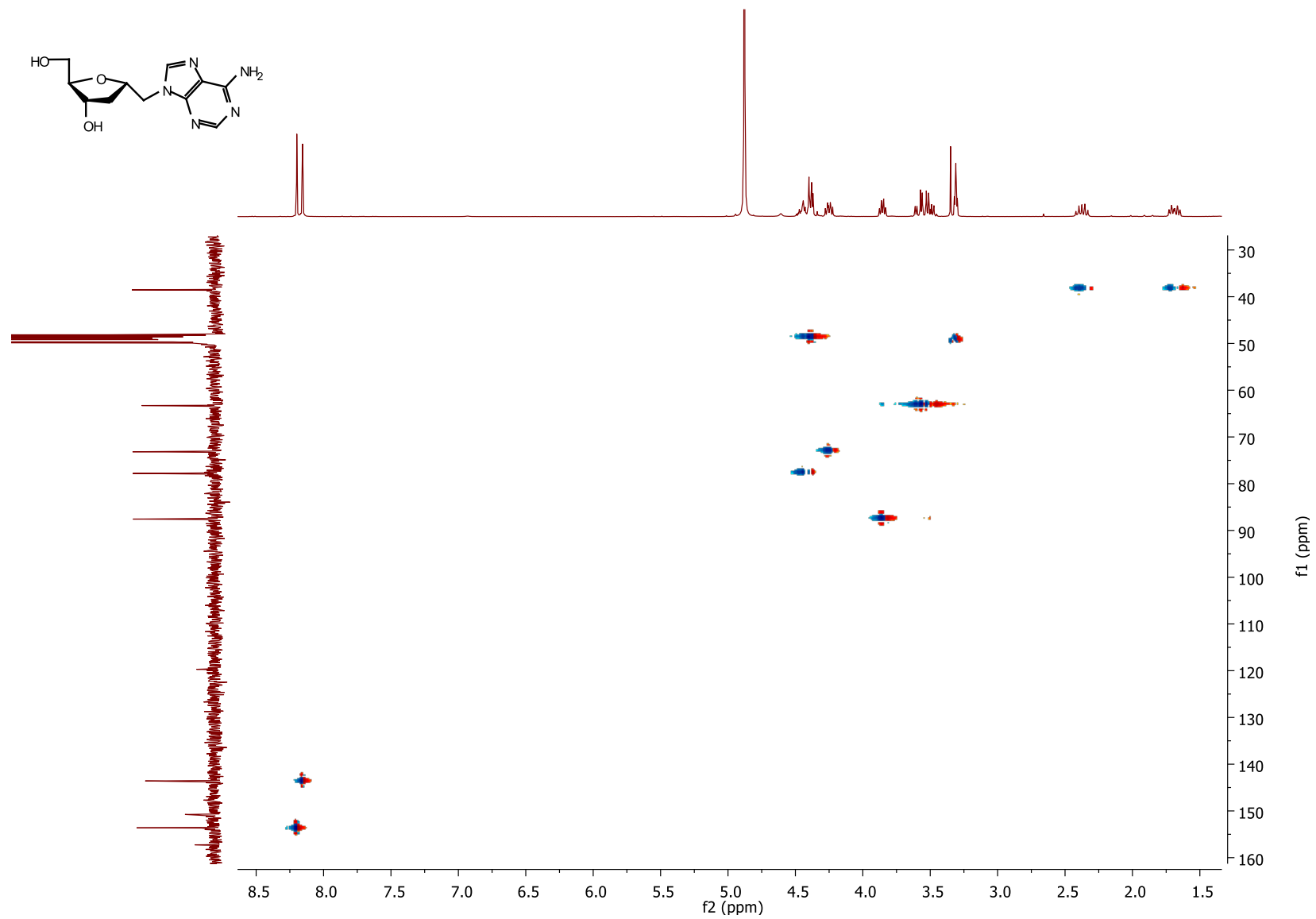
1'-Homo-*N*-2'-deoxy- $\alpha$ -adenosine (10a)

COSY NMR (MeOH- $d_4$ )



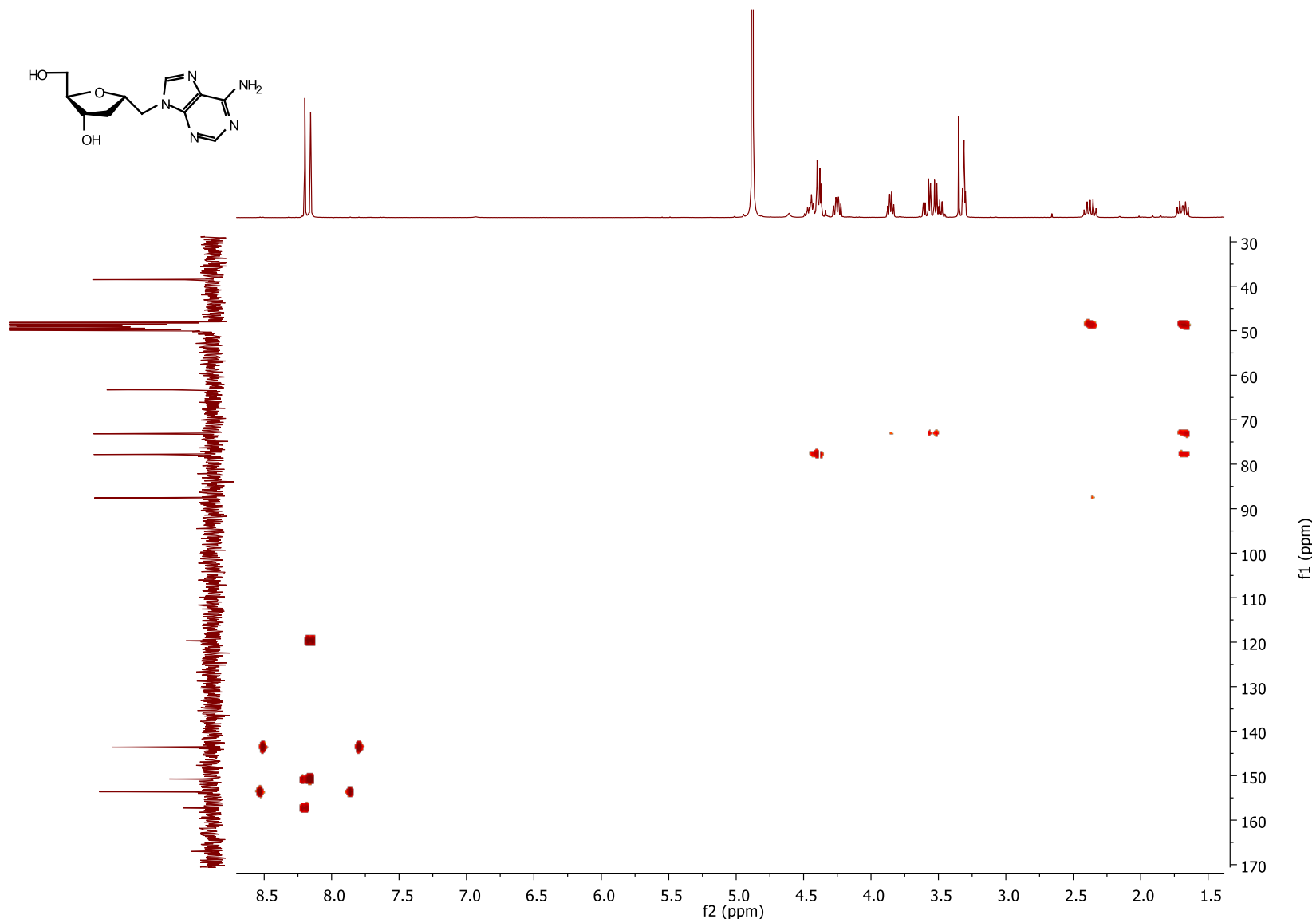
# 1'-Homo-*N*-2'-deoxy- $\alpha$ -adenosine (10a)

HSQC NMR (MeOH- $d_4$ )



# 1'-Homo-*N*-2'-deoxy- $\alpha$ -adenosine (10a)

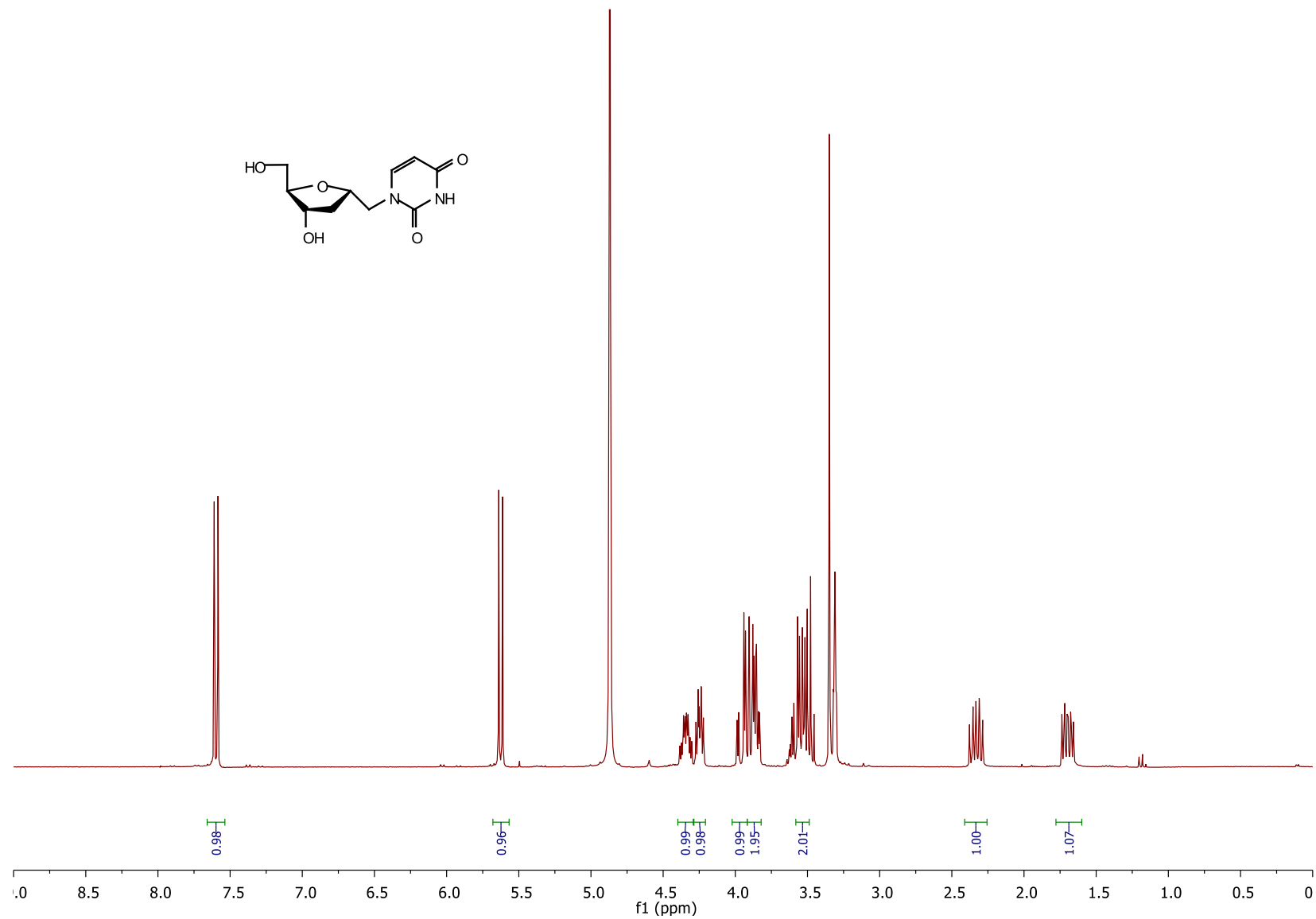
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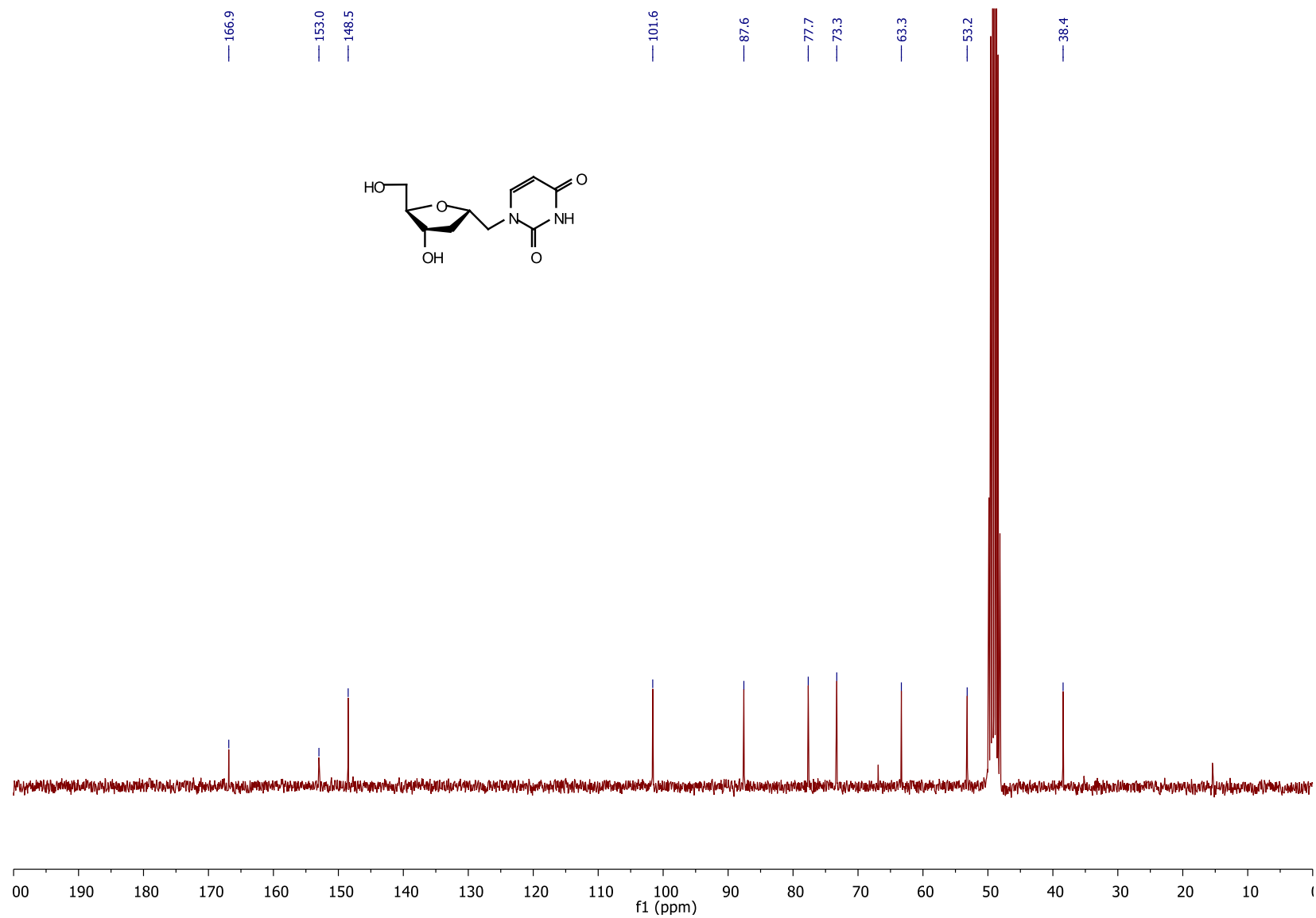
# 1'-Homo-*N*-2'-deoxy- $\alpha$ -uridine (10b)

$^1\text{H}$  NMR (300.13 MHz,  $\text{MeOH-}d_4$ )



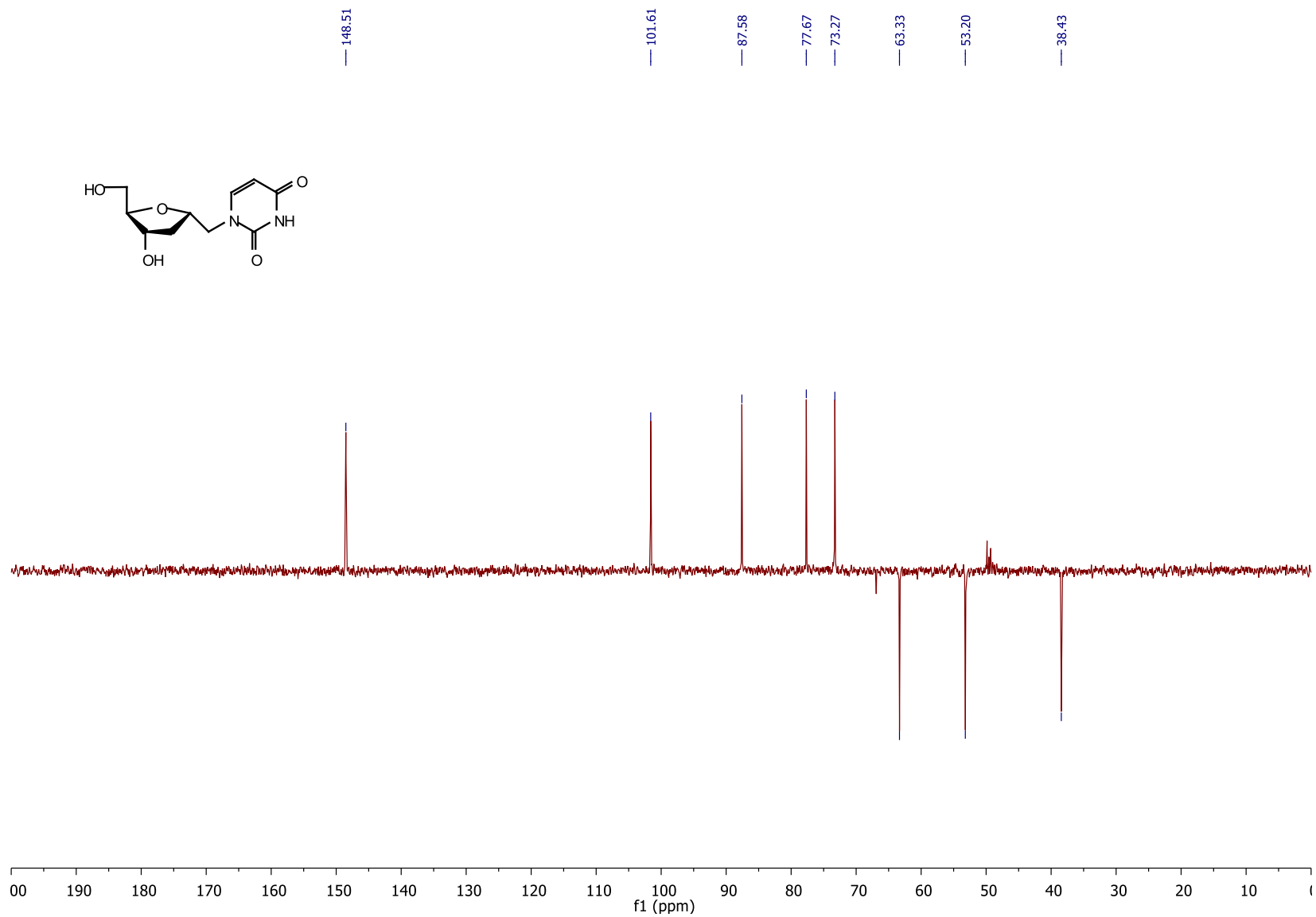
# 1'-Homo-*N*-2'-deoxy- $\alpha$ -uridine (10b)

$^{13}\text{C}$  NMR (75.5 MHz, MeOH- $d_4$ )



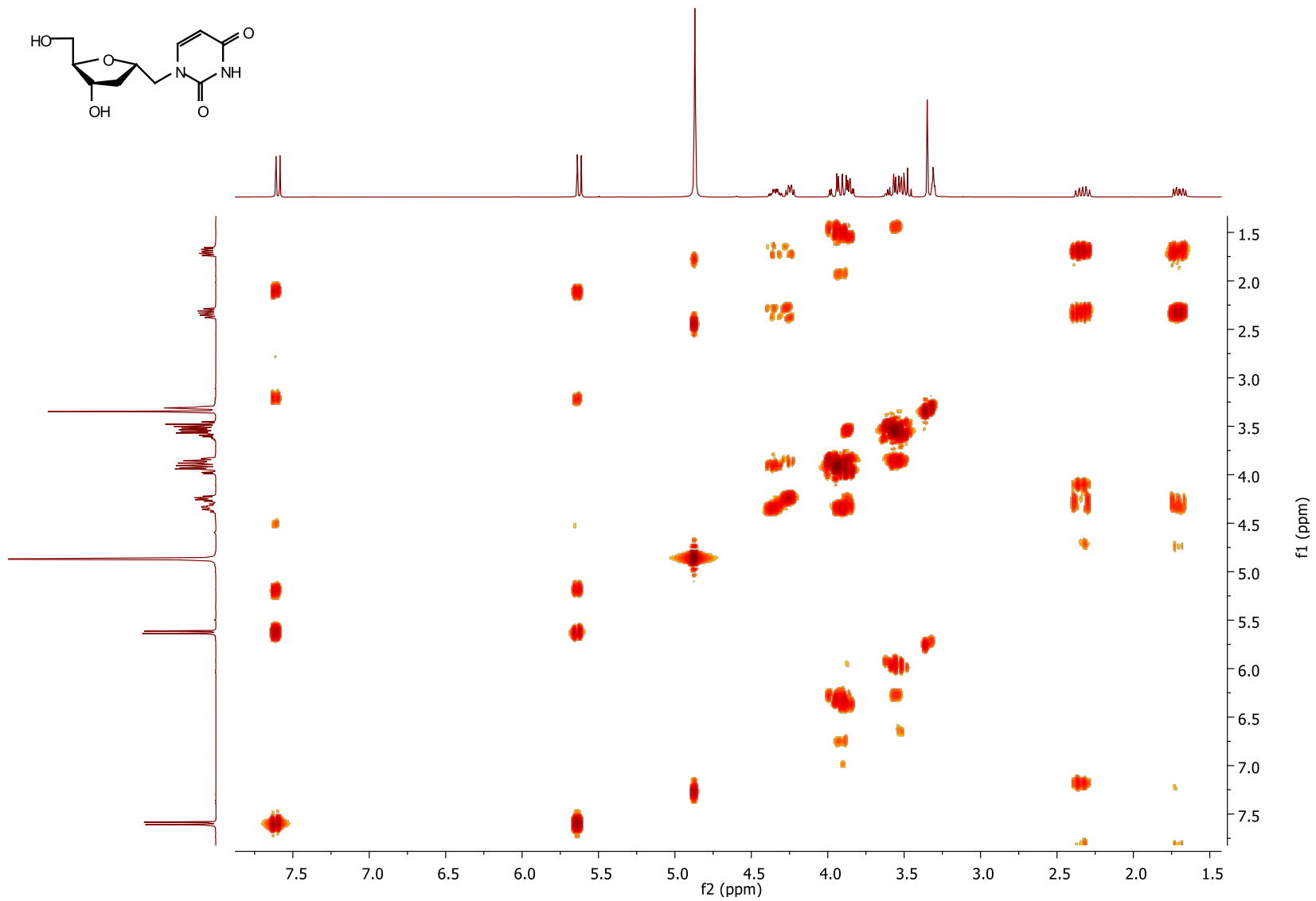
# 1'-Homo-*N*-2'-deoxy- $\alpha$ -uridine (10b)

DEPT NMR (75.5 MHz, MeOH- $d_4$ )



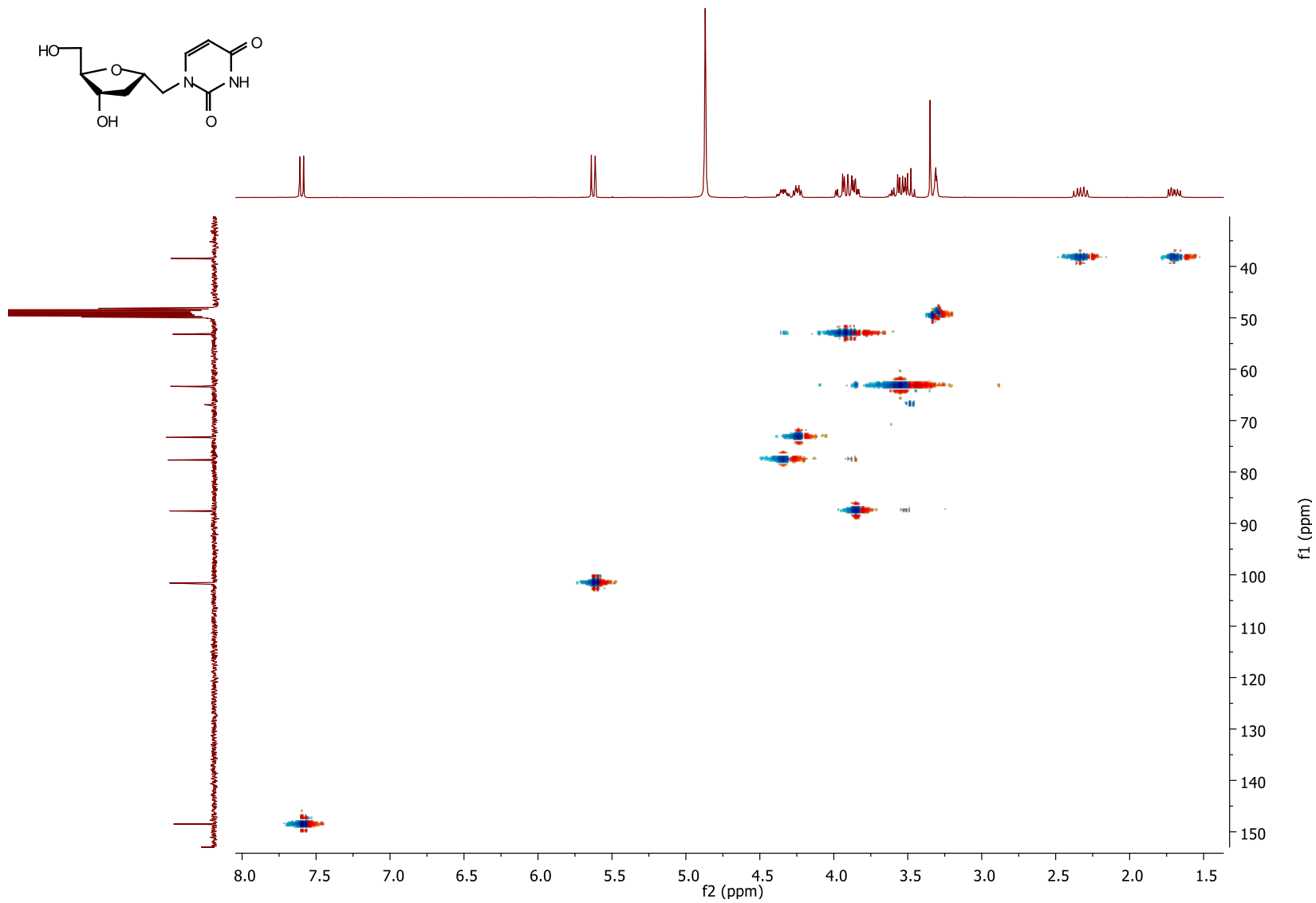
1'-Homo-*N*-2'-deoxy- $\alpha$ -uridine (10b)

COSY NMR (MeOH- $d_4$ )



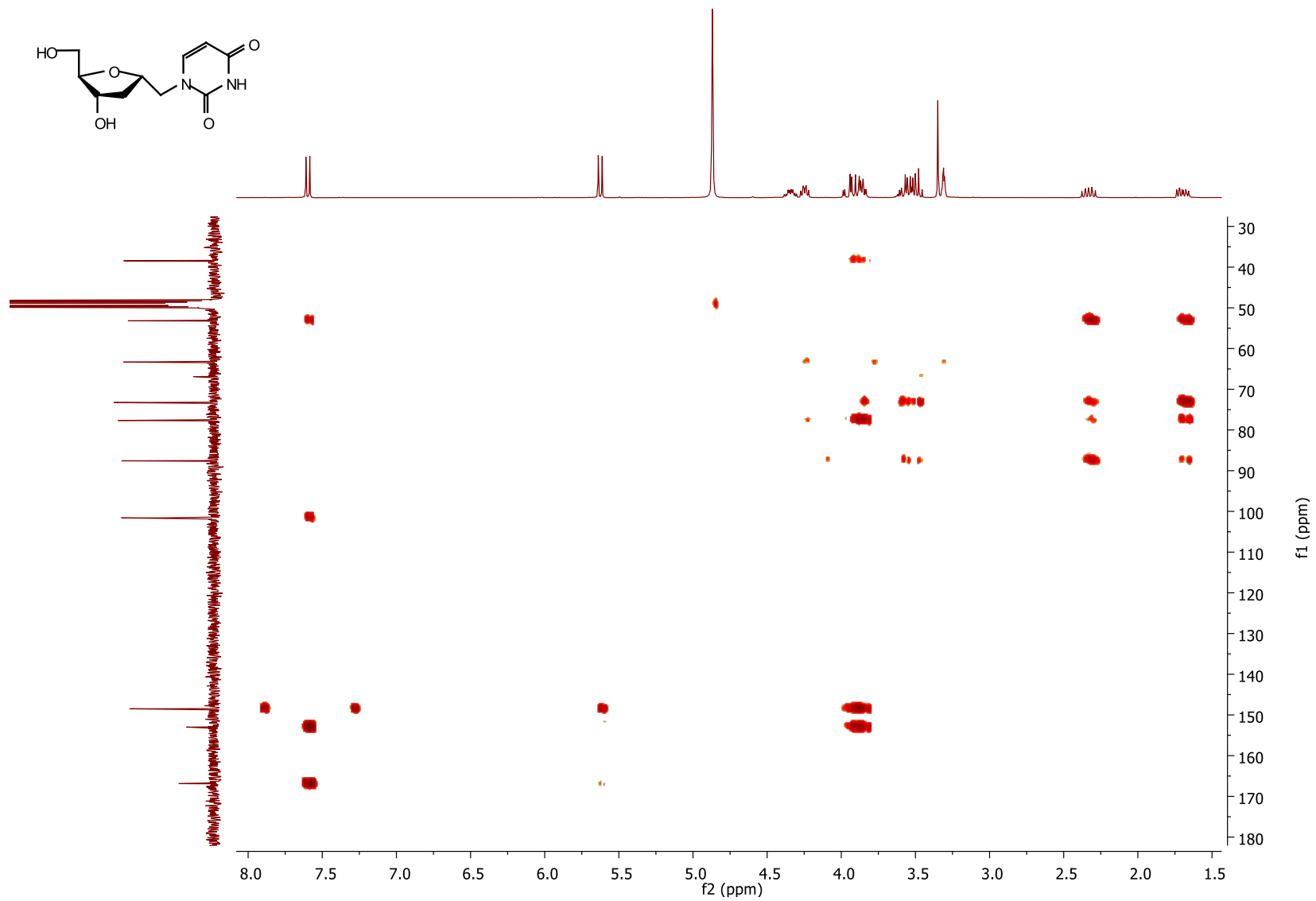
# 1'-Homo-*N*-2'-deoxy- $\alpha$ -uridine (10b)

HSQC NMR (MeOH- $d_4$ )



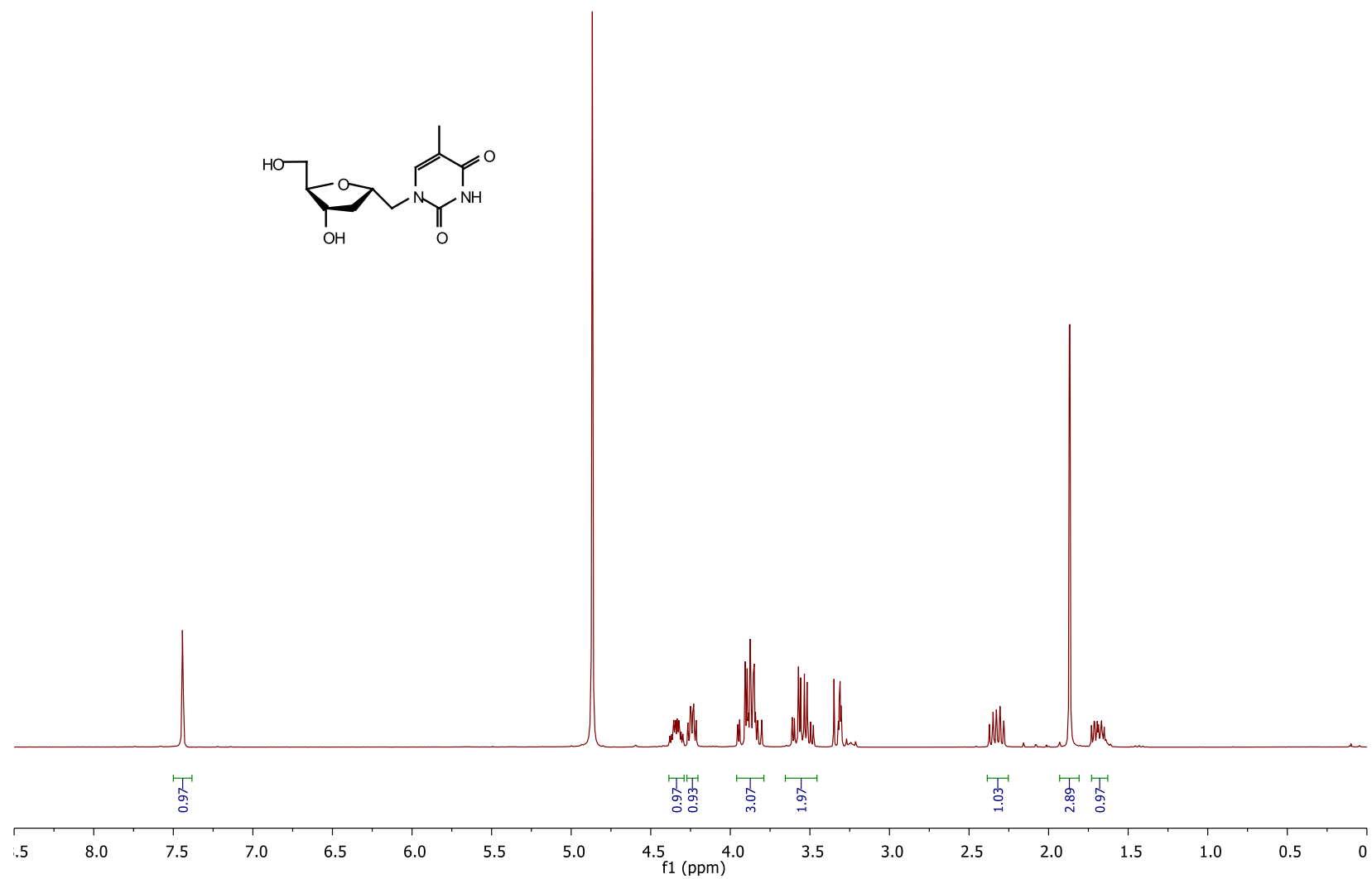
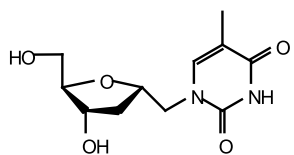
# 1'-Homo-*N*-2'-deoxy- $\alpha$ -uridine (10b)

HMBC NMR (MeOH- $d_4$ )



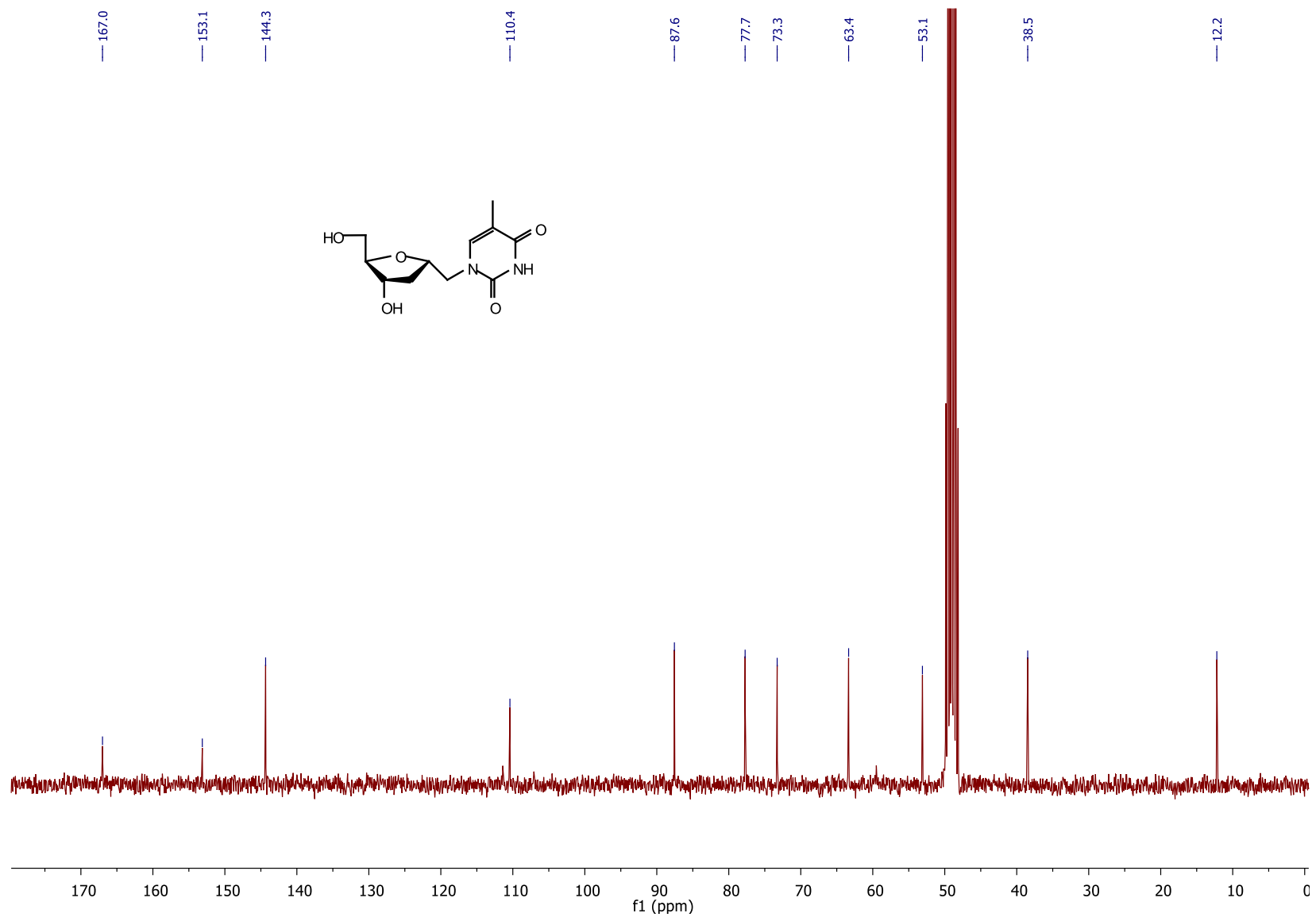
# 1'-Homo-*N*- $\alpha$ -thymidine (10c)

$^1\text{H}$  NMR (300.13 MHz,  $\text{MeOH-}d_4$ )



# 1'-Homo-*N*- $\alpha$ -thymidine (10c)

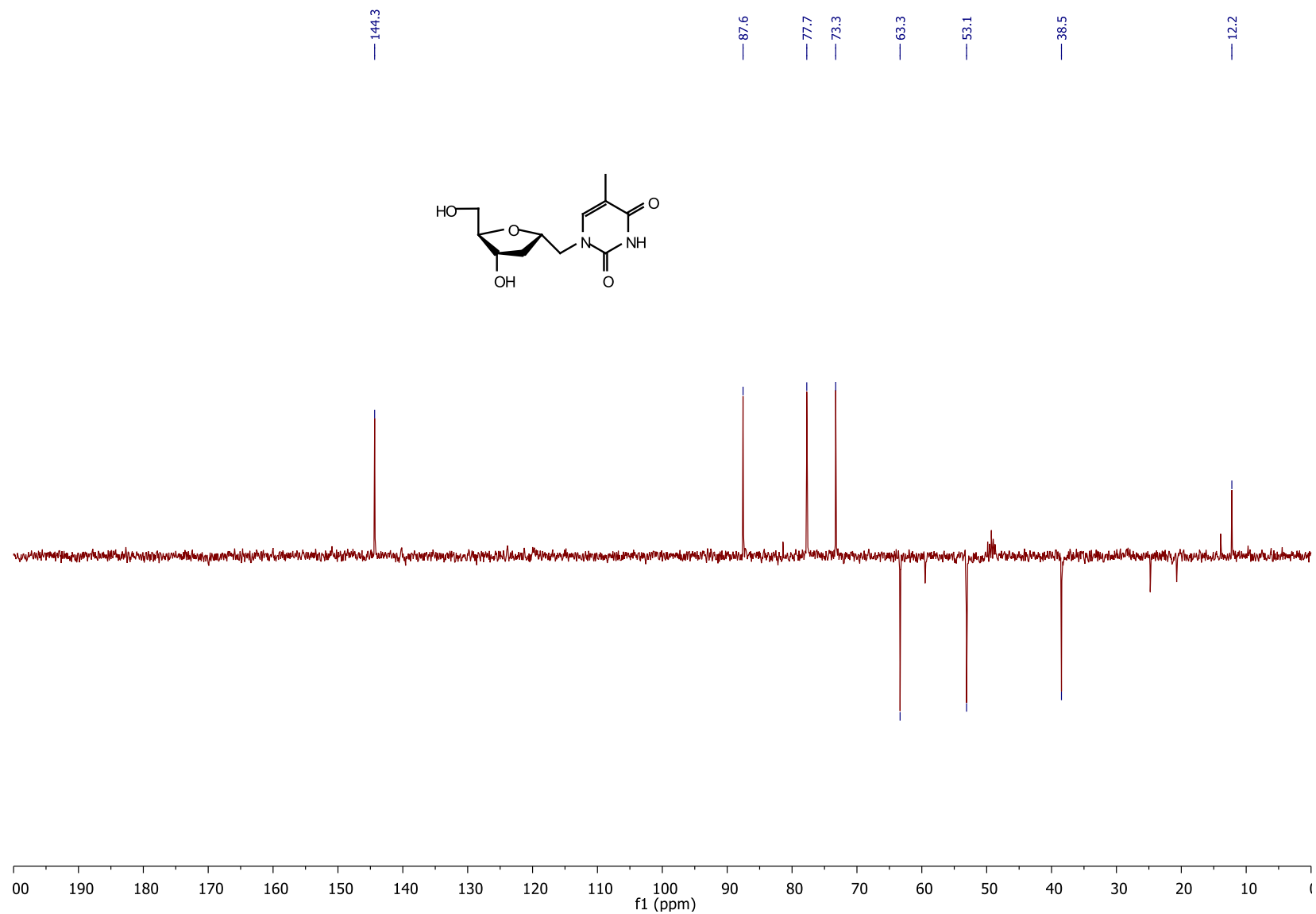
$^{13}\text{C}$  NMR (75.5 MHz,  $\text{MeOH-}d_4$ )





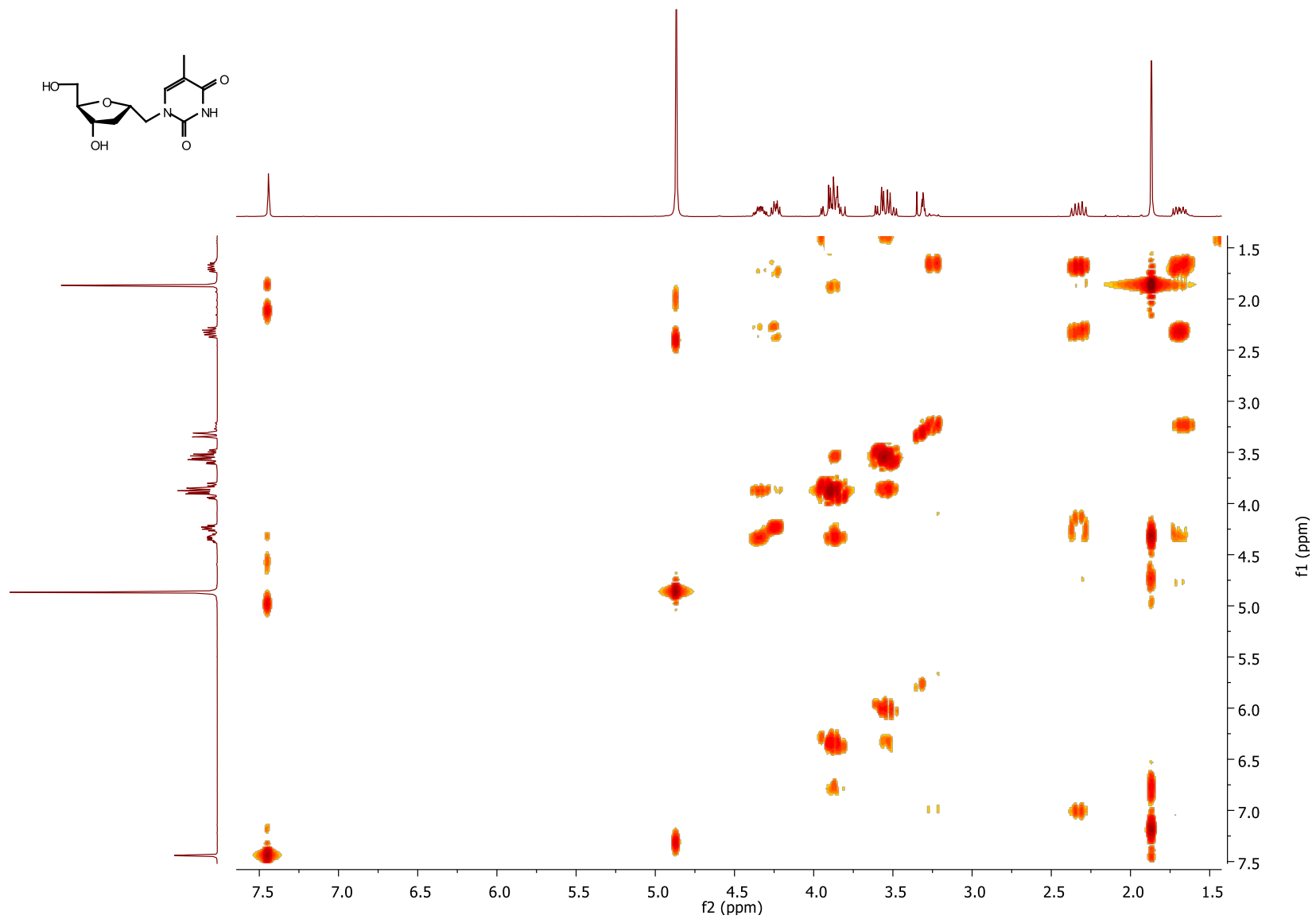
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DEPT NMR (75.5 MHz, MeOH- $d_4$ )



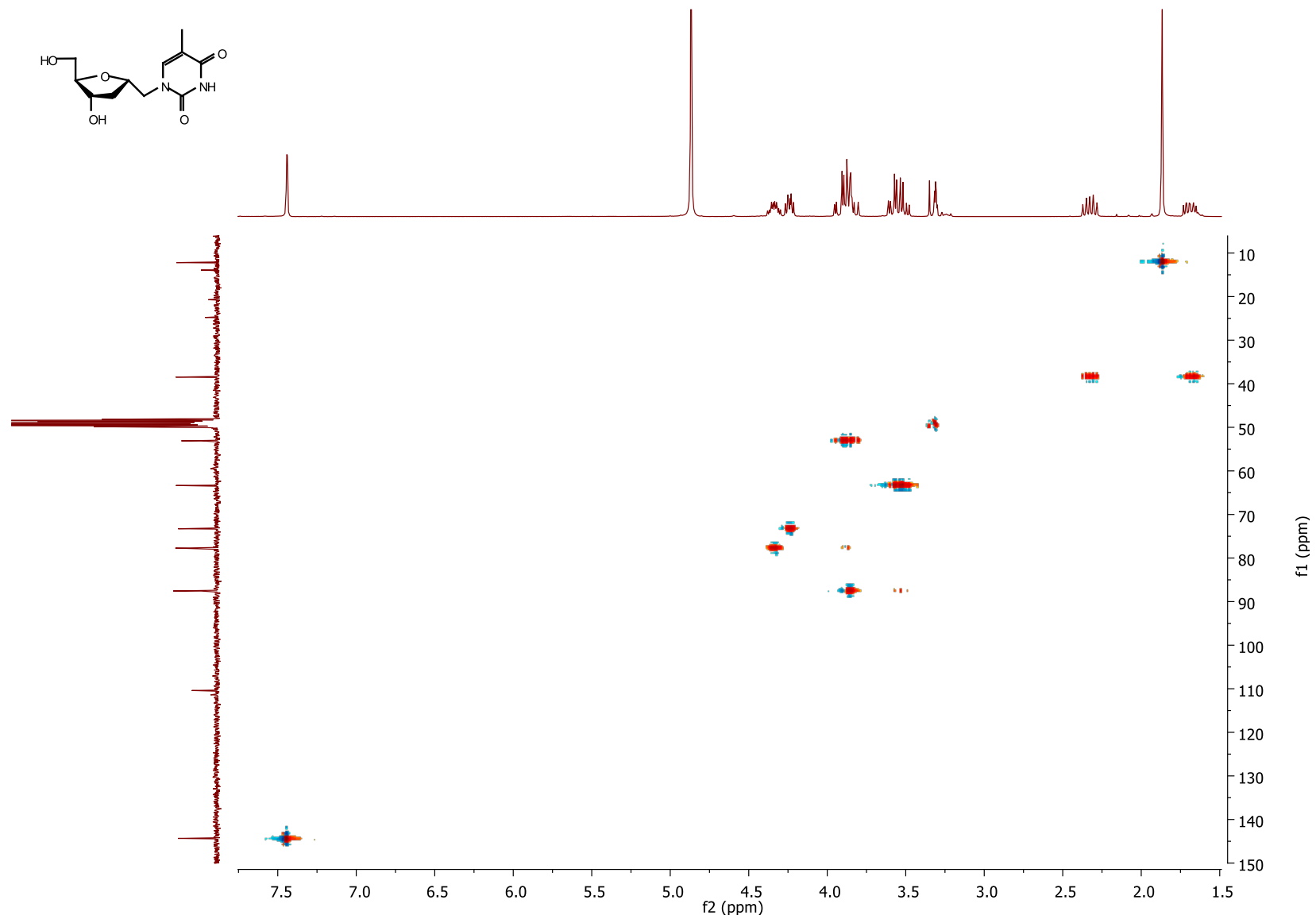
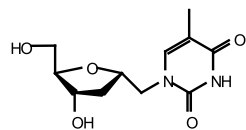
# 1'-Homo-*N*- $\alpha$ -thymidine (10c)

COSY NMR (MeOH- $d_4$ )



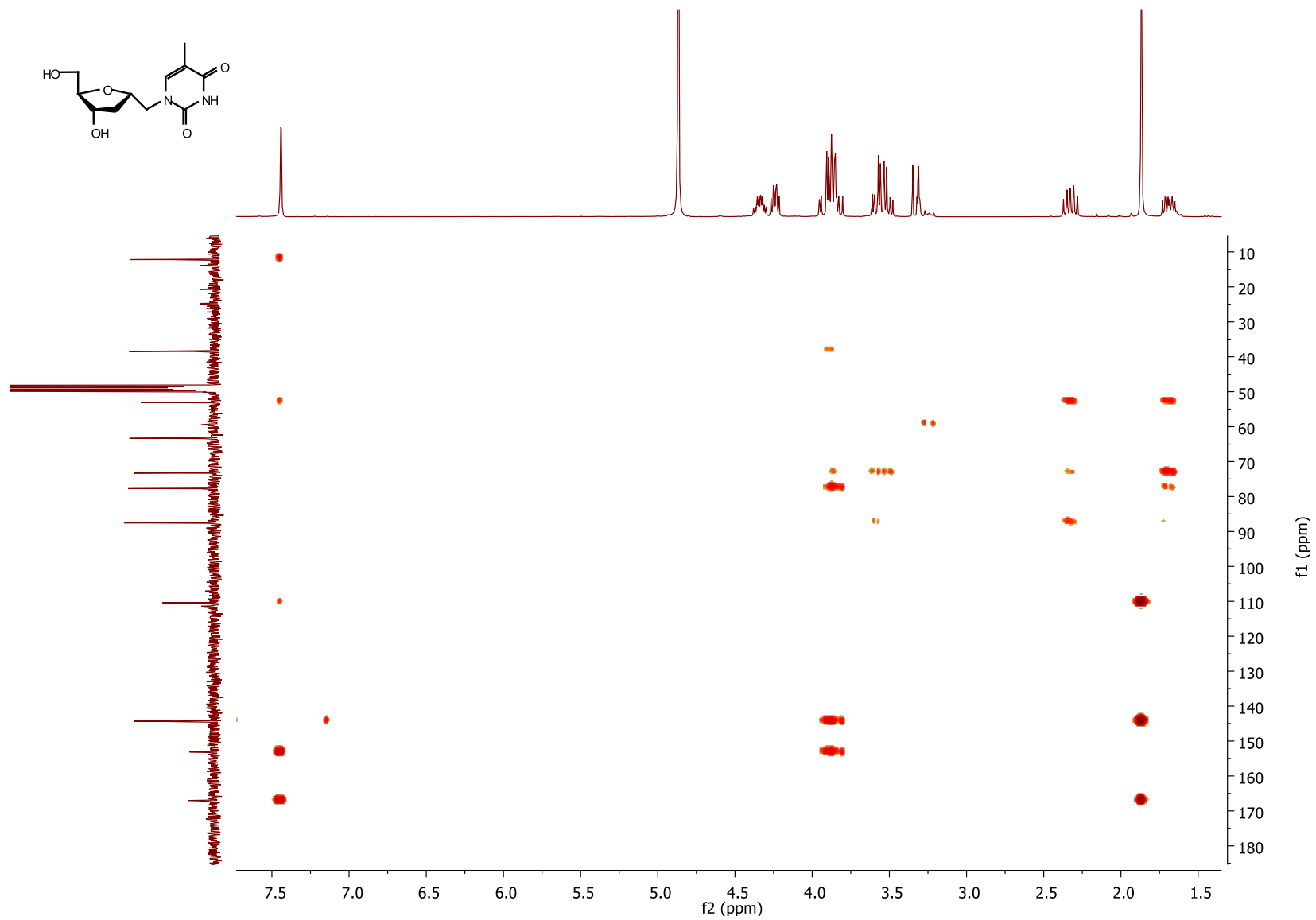
# 1'-Homo-*N*- $\alpha$ -thymidine (10c)

HSQC NMR (MeOH- $d_4$ )



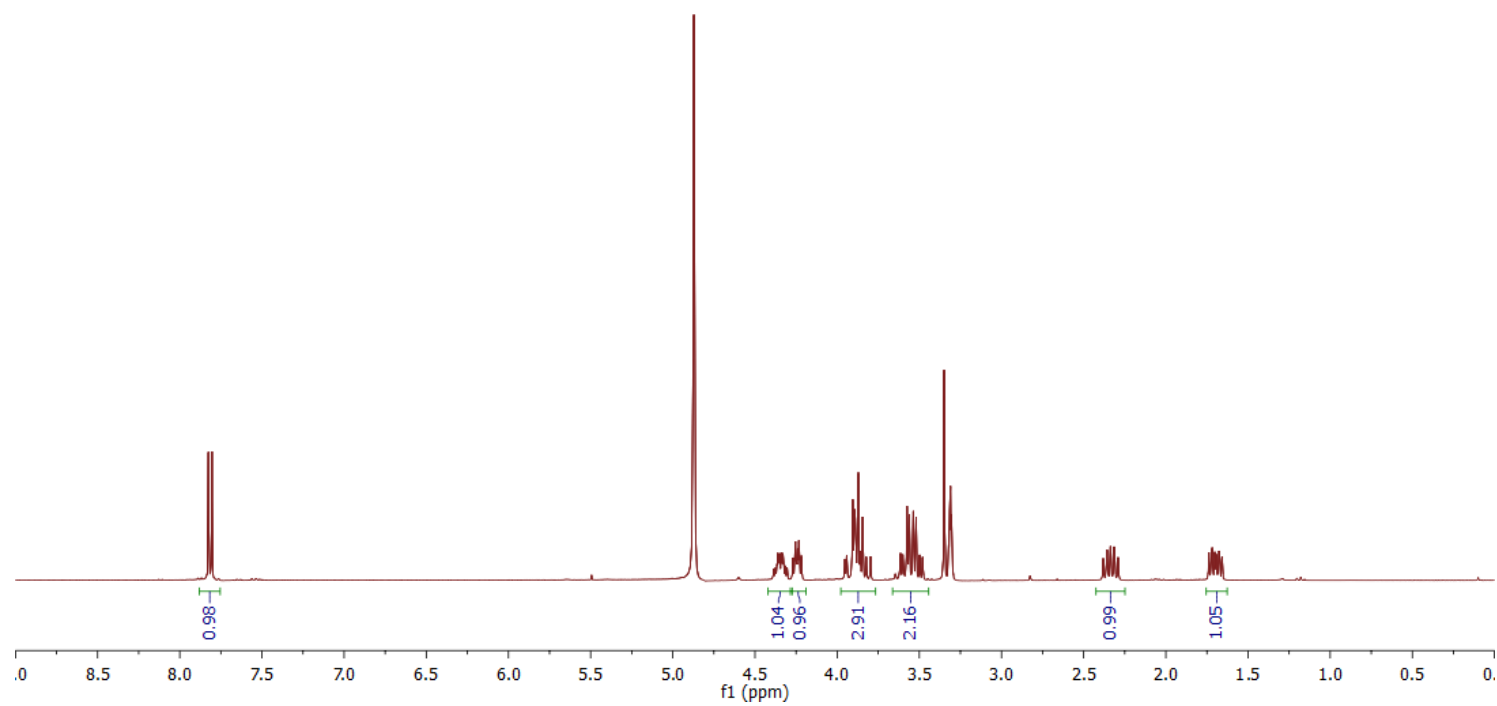
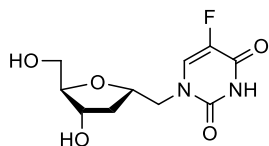
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HMBC NMR (MeOH- $d_4$ )



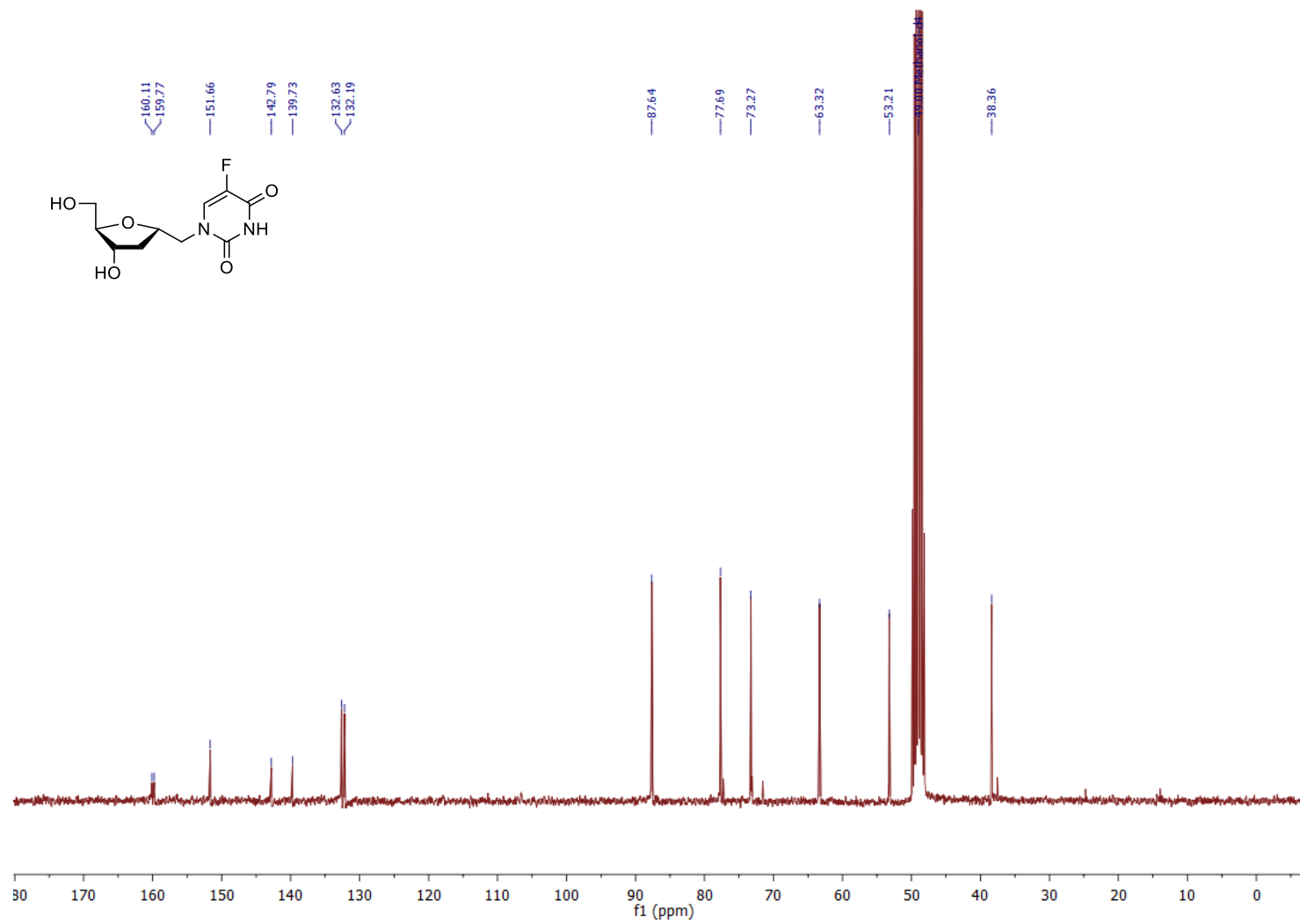
# 1'-Homo-N-2'-deoxy- $\alpha$ -5-fluorouridine (10d)

$^1\text{H}$  NMR (300.13 MHz, MeOH- $d_4$ )



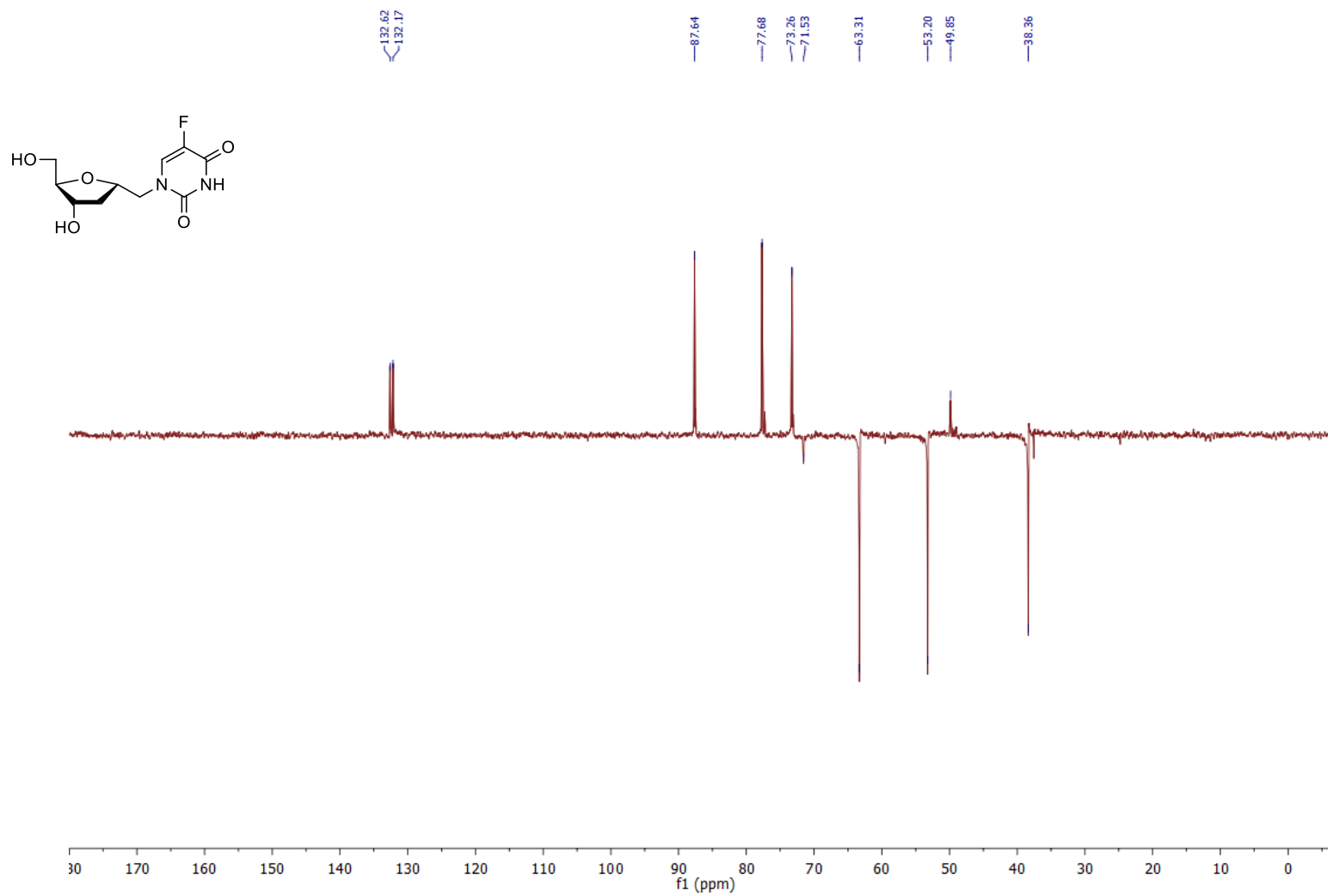
# 1'-Homo-N-2'-deoxy- $\alpha$ -5-fluorouridine (10d)

$^{13}\text{C}$  NMR (75.5 MHz, MeOH- $d_4$ )



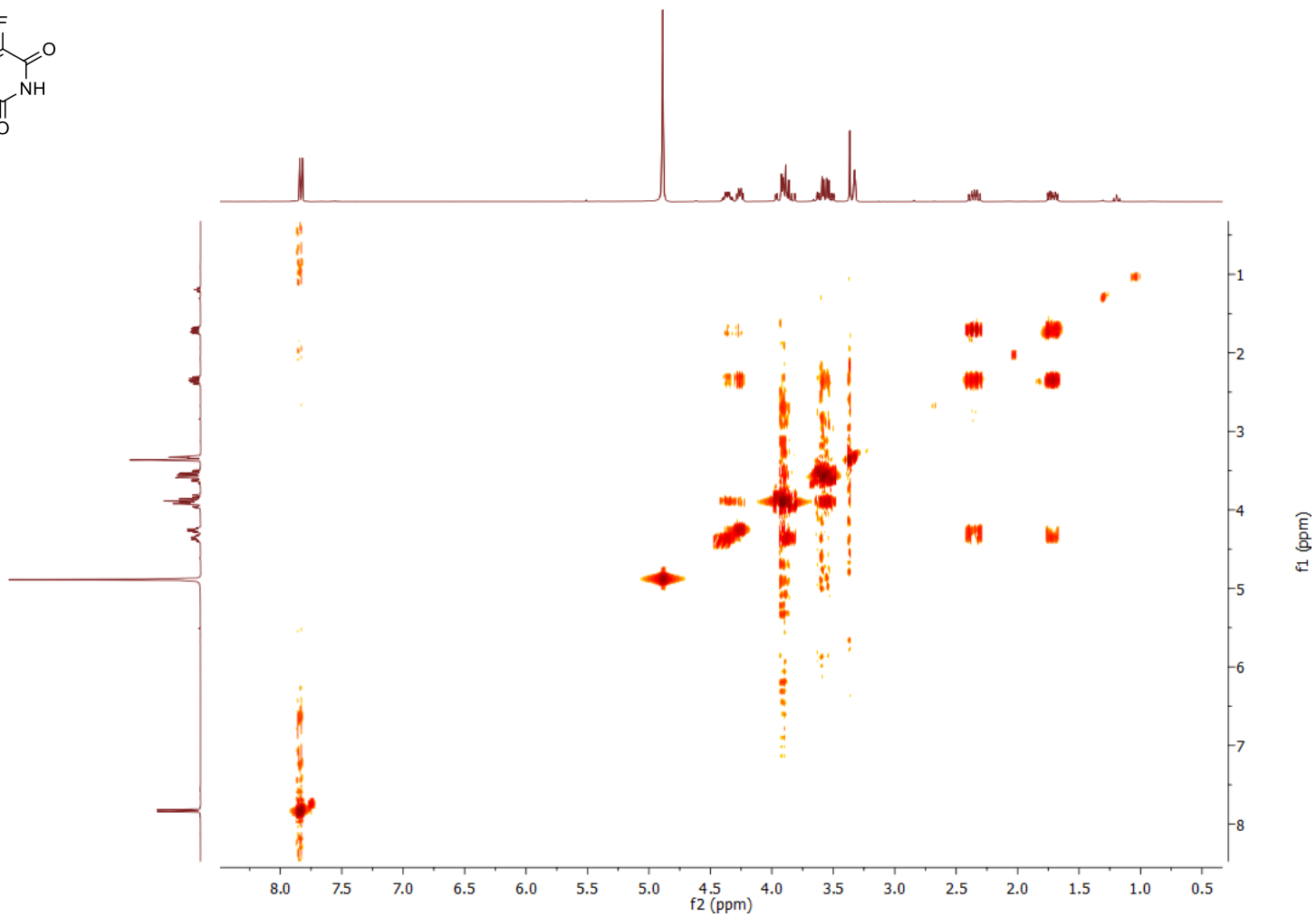
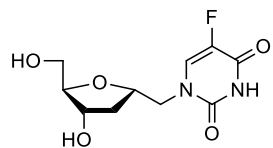
# 1'-Homo-N-2'-deoxy- $\alpha$ -5-fluorouridine (10d)

DEPT 135 NMR (75.5 MHz, MeOH- $d_4$ )



# 1'-Homo-*N*-2'-deoxy- $\alpha$ -5-fluorouridine (10d)

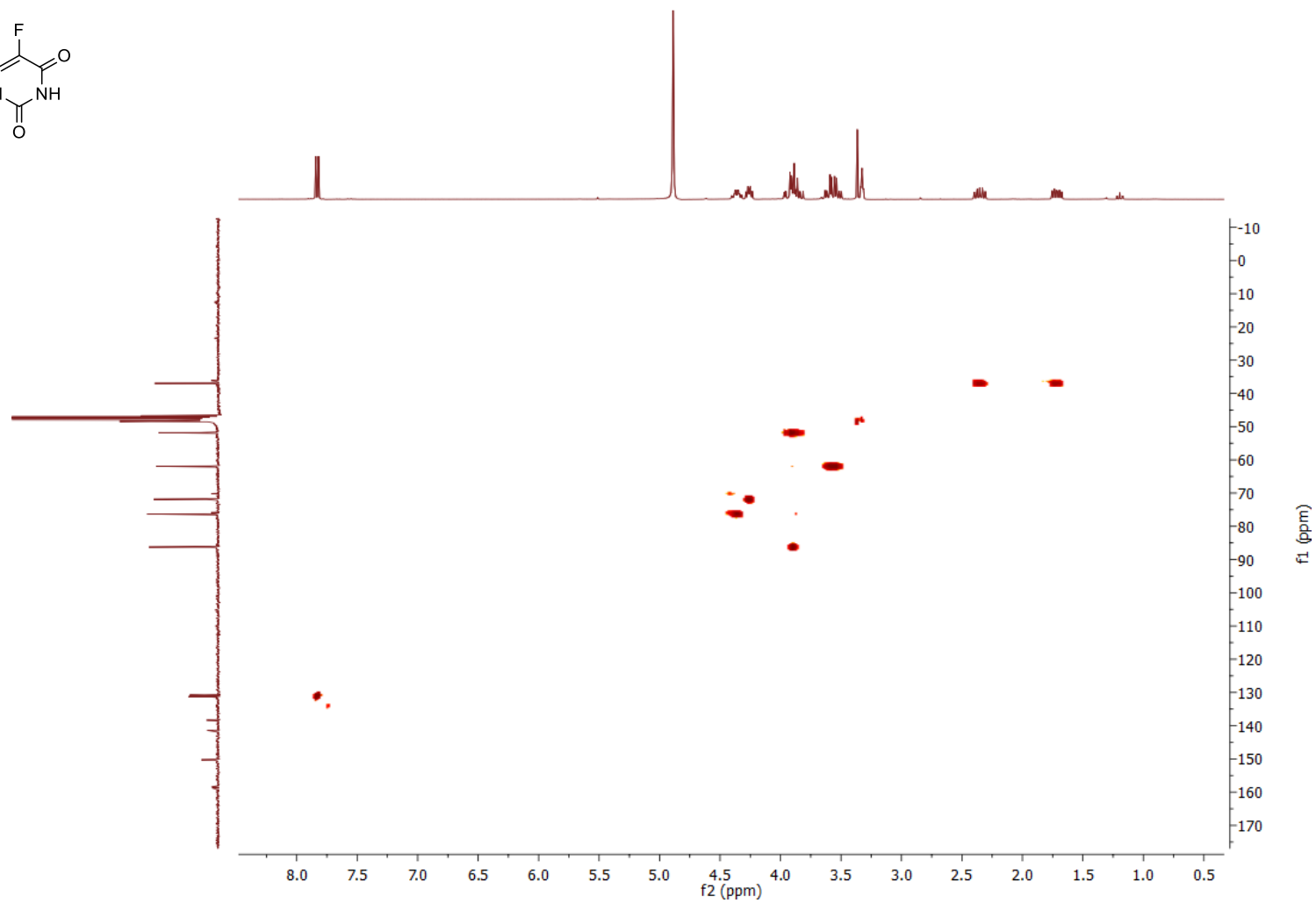
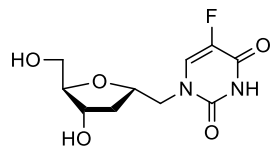
COSY NMR (MeOH- $d_4$ )





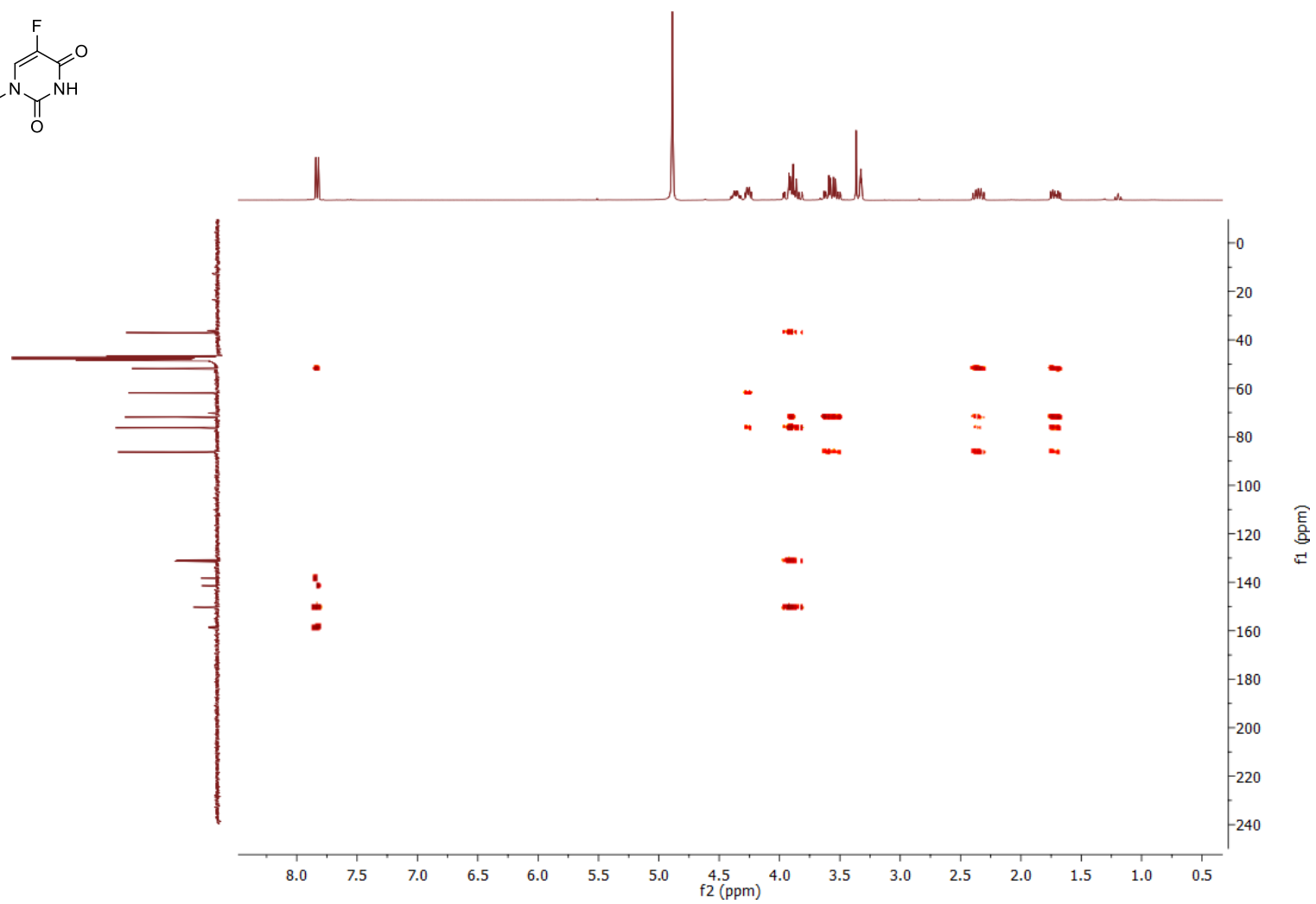
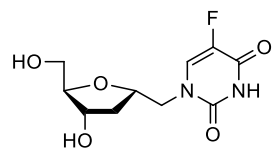
1'-Homo-N-2'-deoxy- $\alpha$ -5-fluorouridine (10d)

HSQC NMR (MeOH- $d_4$ )



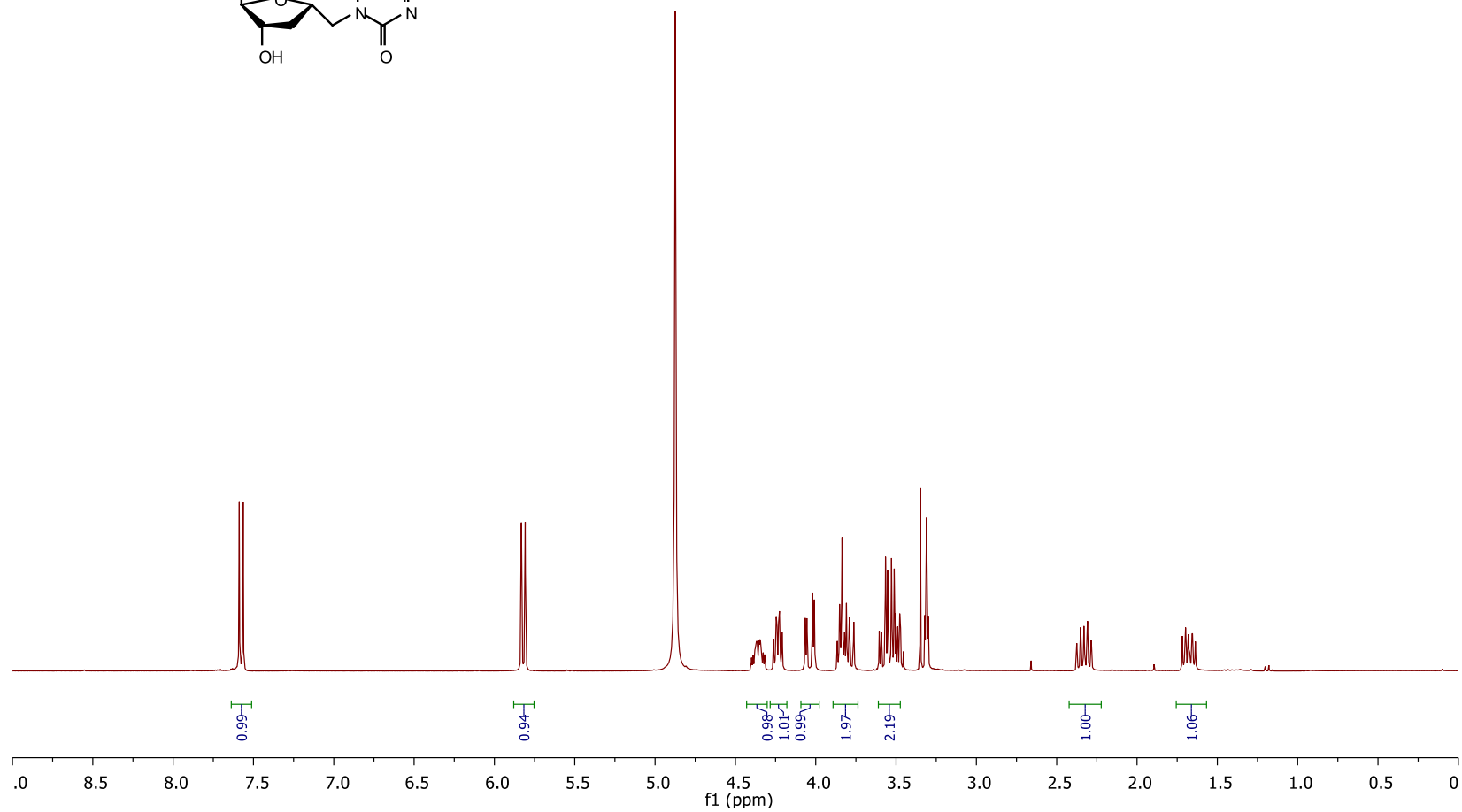
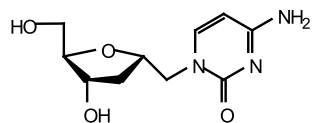
# 1'-Homo-N-2'-deoxy- $\alpha$ -5-fluorouridine (10d)

HMBC NMR (MeOH- $d_4$ )



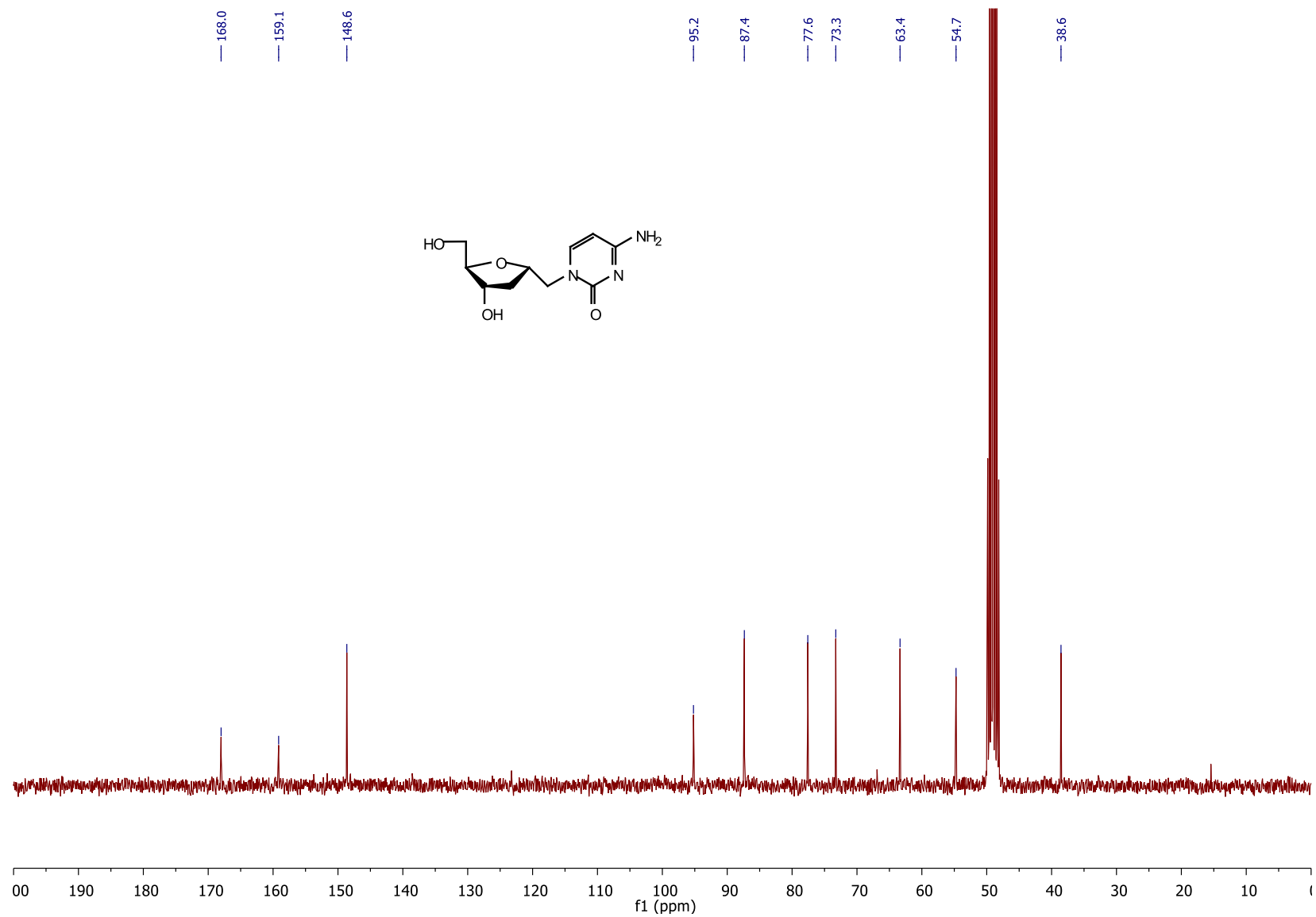
# 1'-Homo-*N*-2'-deoxy- $\alpha$ -cytidine (10e)

$^1\text{H}$  NMR (300.13 MHz,  $\text{MeOH-}d_4$ )



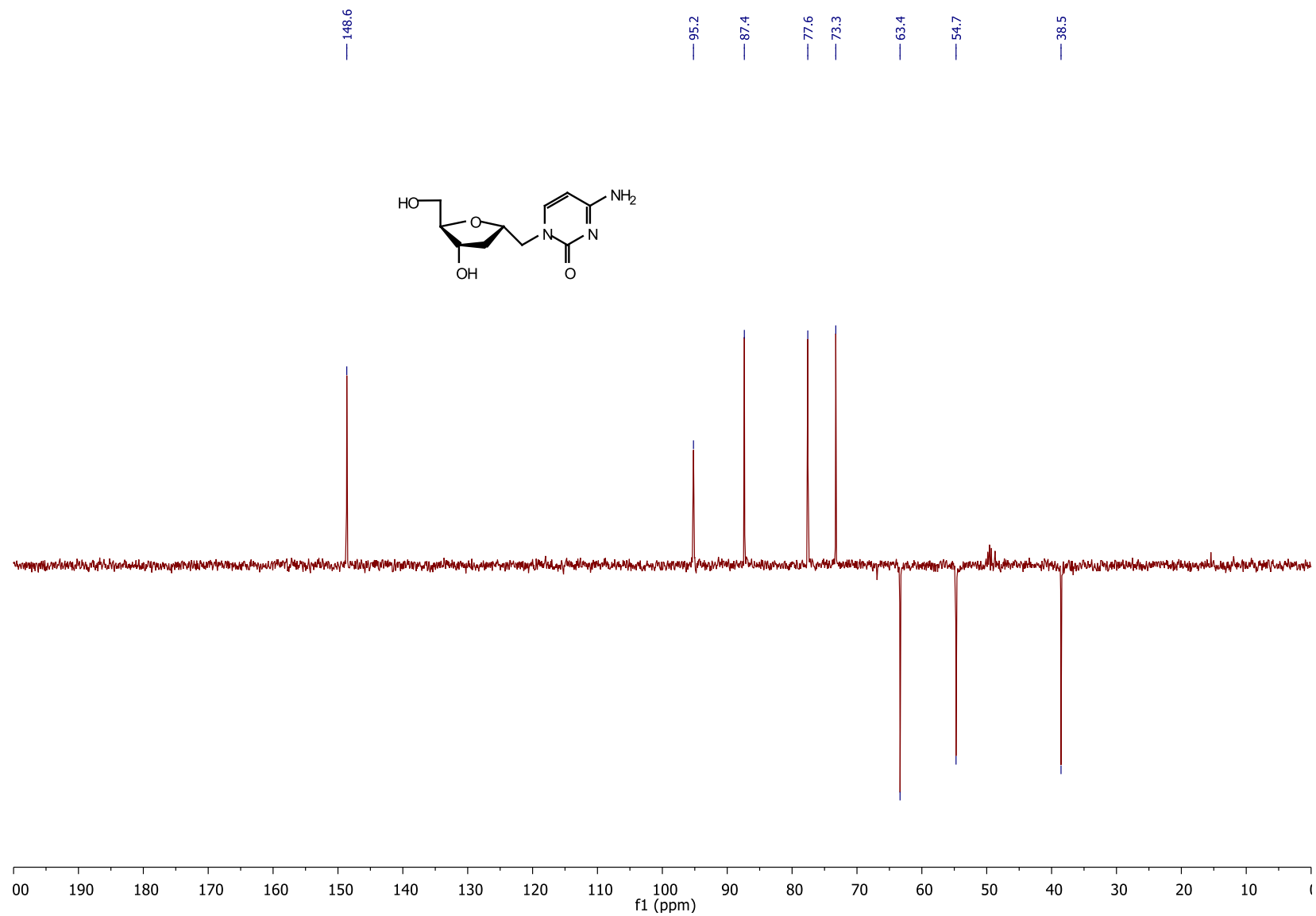
# 1'-Homo-*N*-2'-deoxy- $\alpha$ -cytidine (10e)

$^{13}\text{C}$  NMR (75.5 MHz, MeOH- $d_4$ )



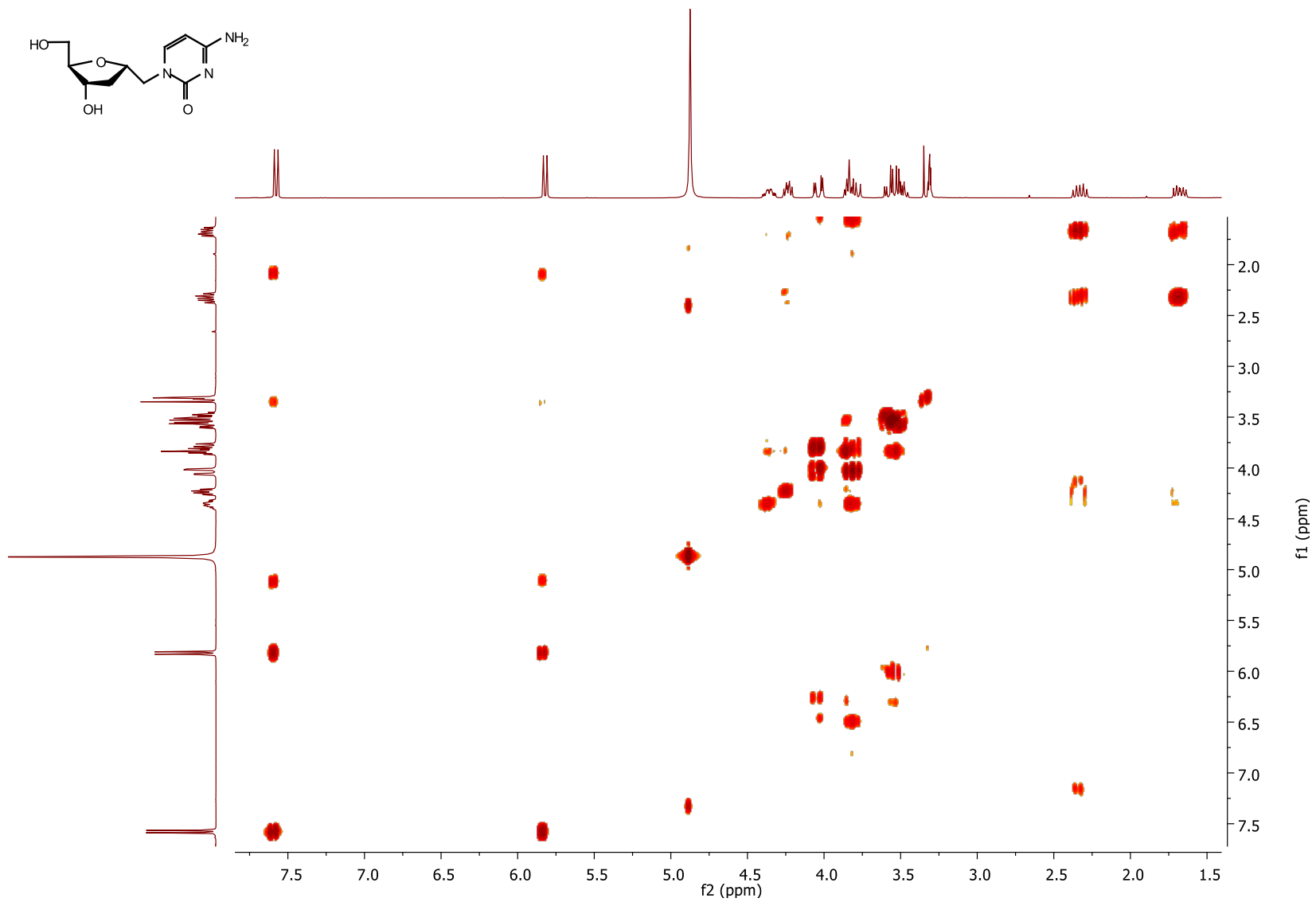
# 1'-Homo-*N*-2'-deoxy- $\alpha$ -cytidine (10e)

DEPT NMR (75.5 MHz, MeOH- $d_4$ )



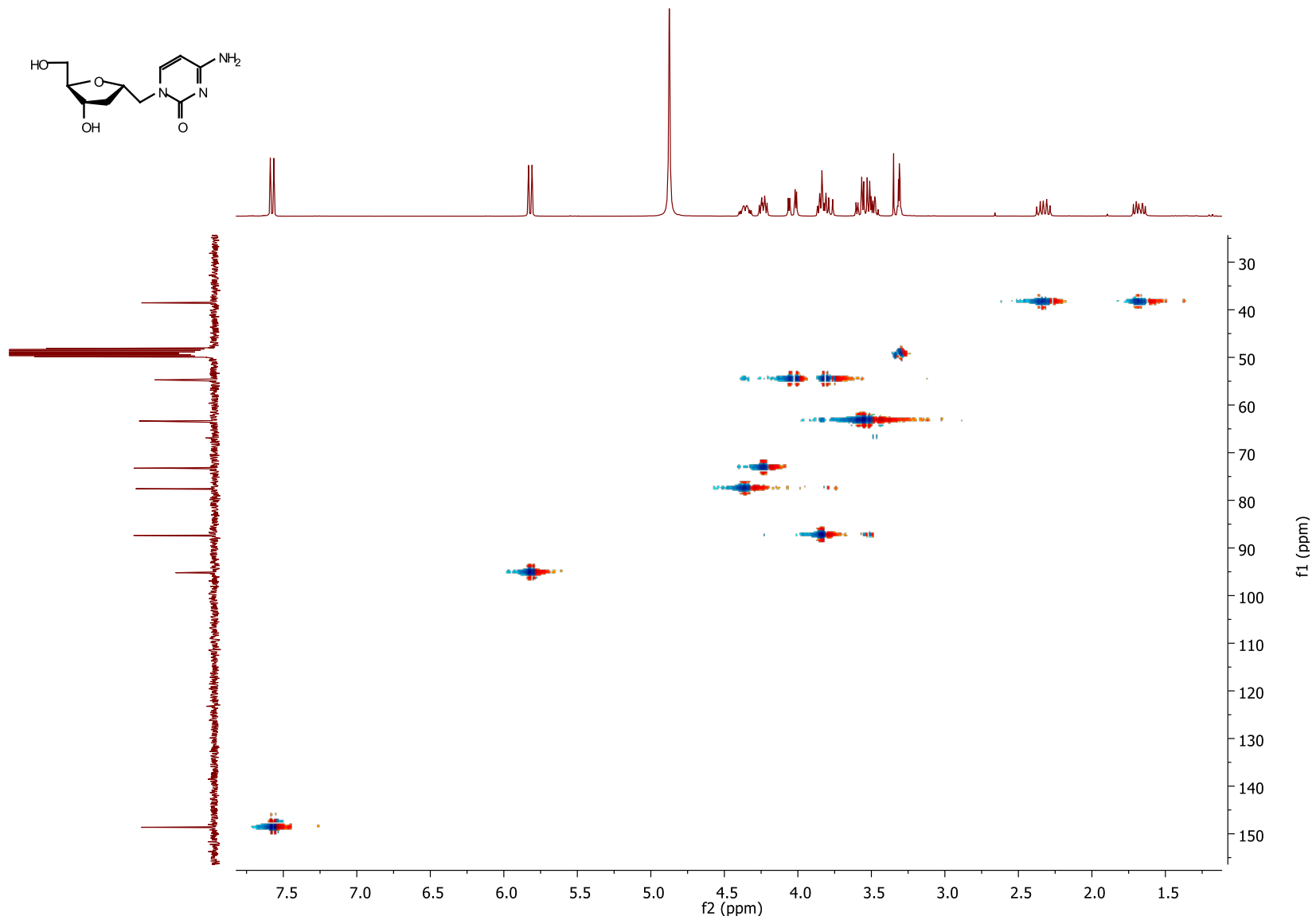
1'-Homo-*N*-2'-deoxy- $\alpha$ -cytidine (10e)

COSY NMR (MeOH- $d_4$ )



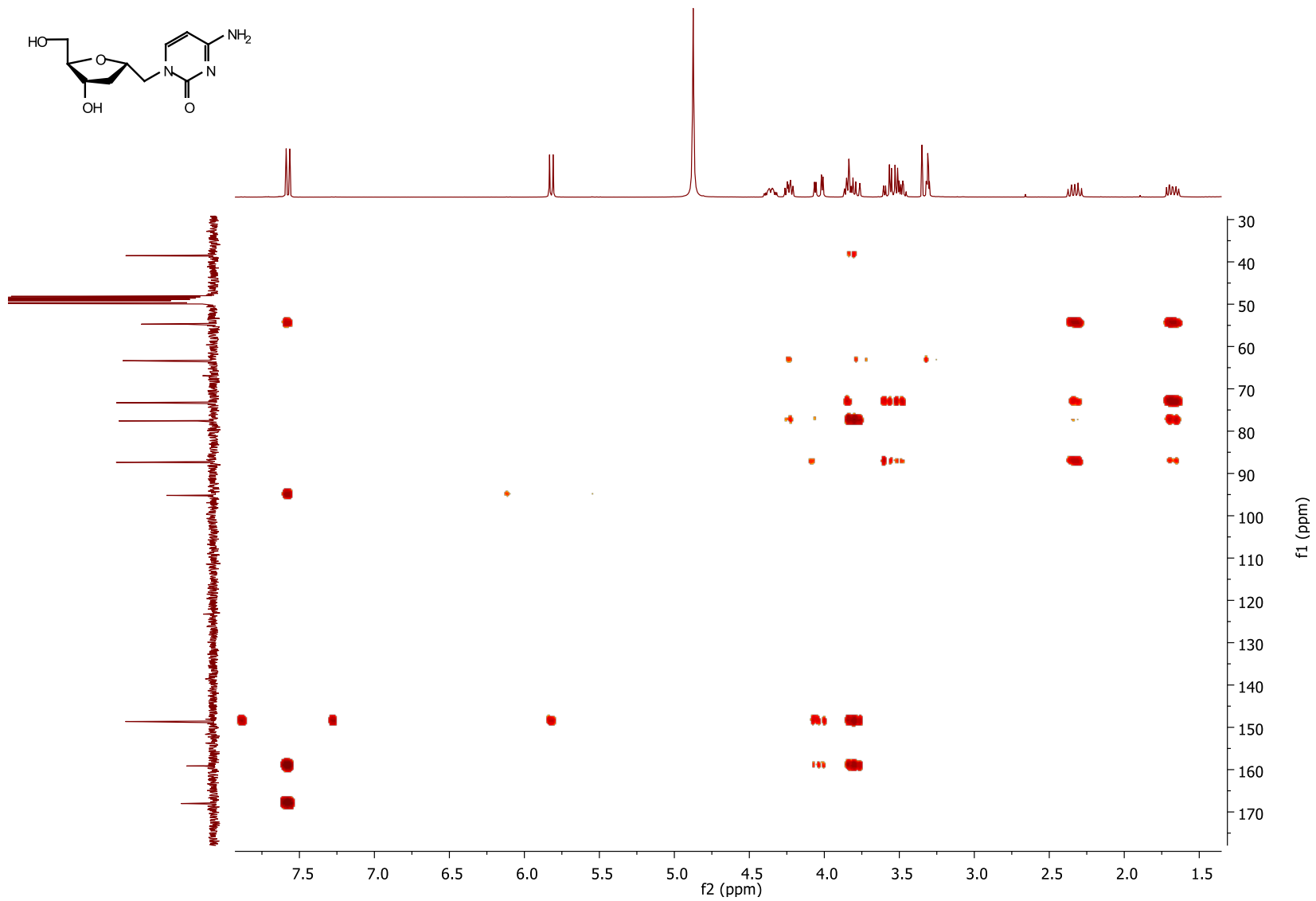
1'-Homo-*N*-2'-deoxy- $\alpha$ -cytidine (10e)

HSQC NMR (MeOH- $d_4$ )



# 1'-Homo-*N*-2'-deoxy- $\alpha$ -cytidine (10e)

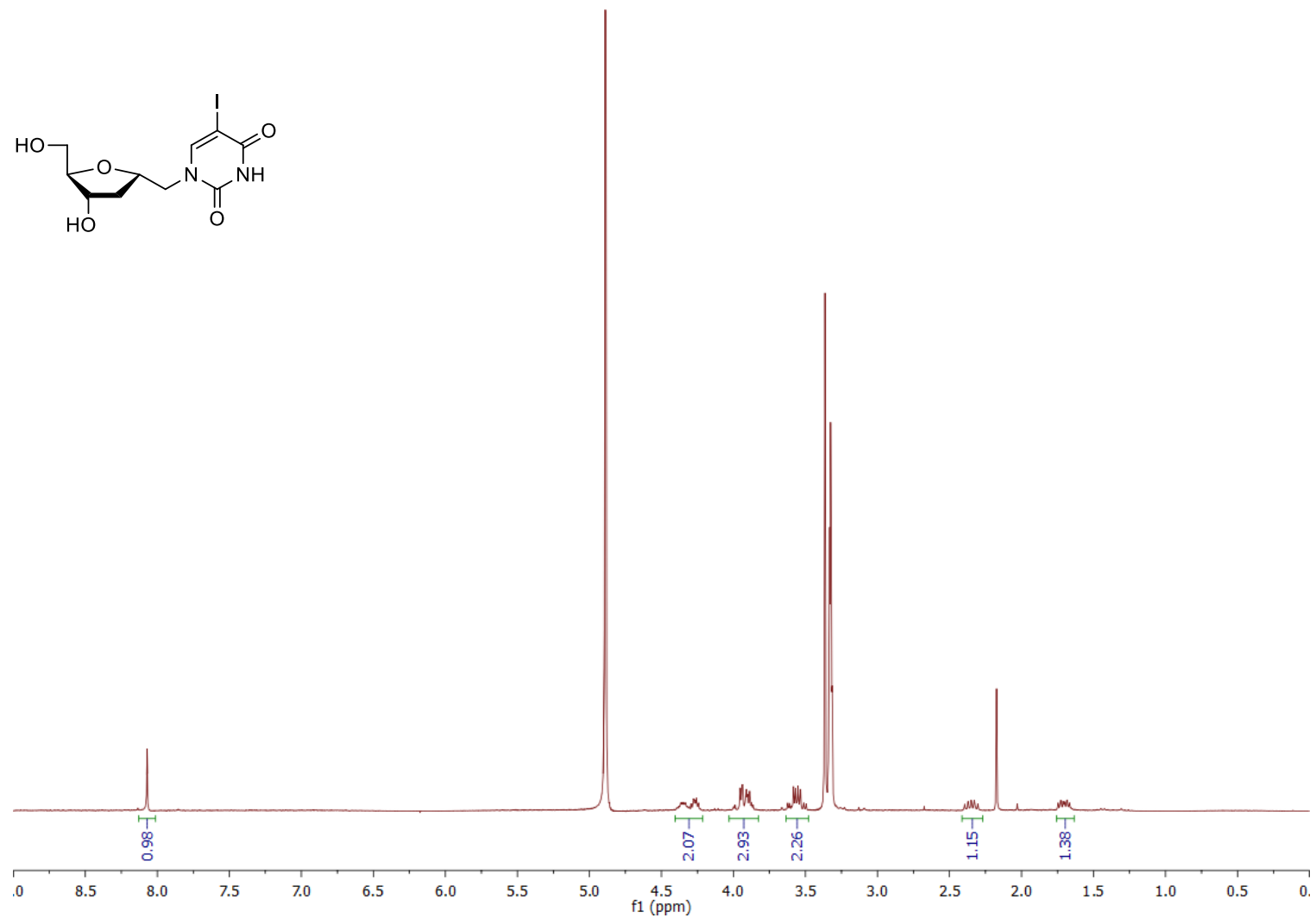
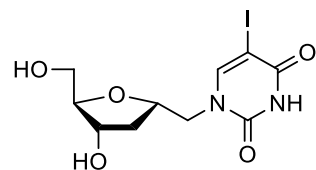
HMBC NMR (MeOH- $d_4$ )





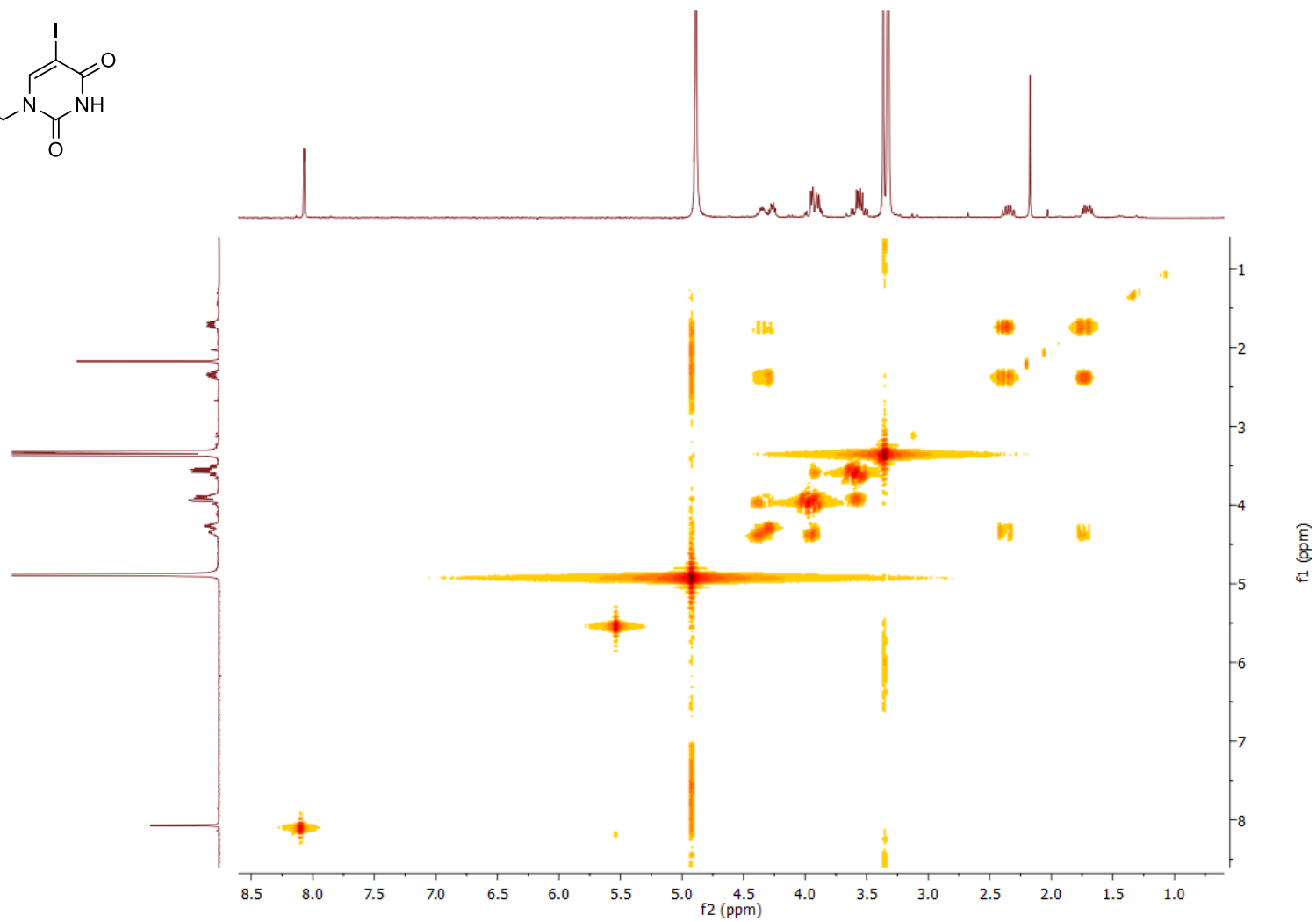
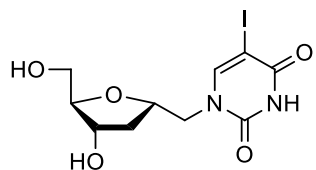
1'-Homo-N-2'-deoxy- $\alpha$ -5-iodouridine (10f)

$^1\text{H}$  NMR (300.13 MHz, MeOH- $d_4$ )



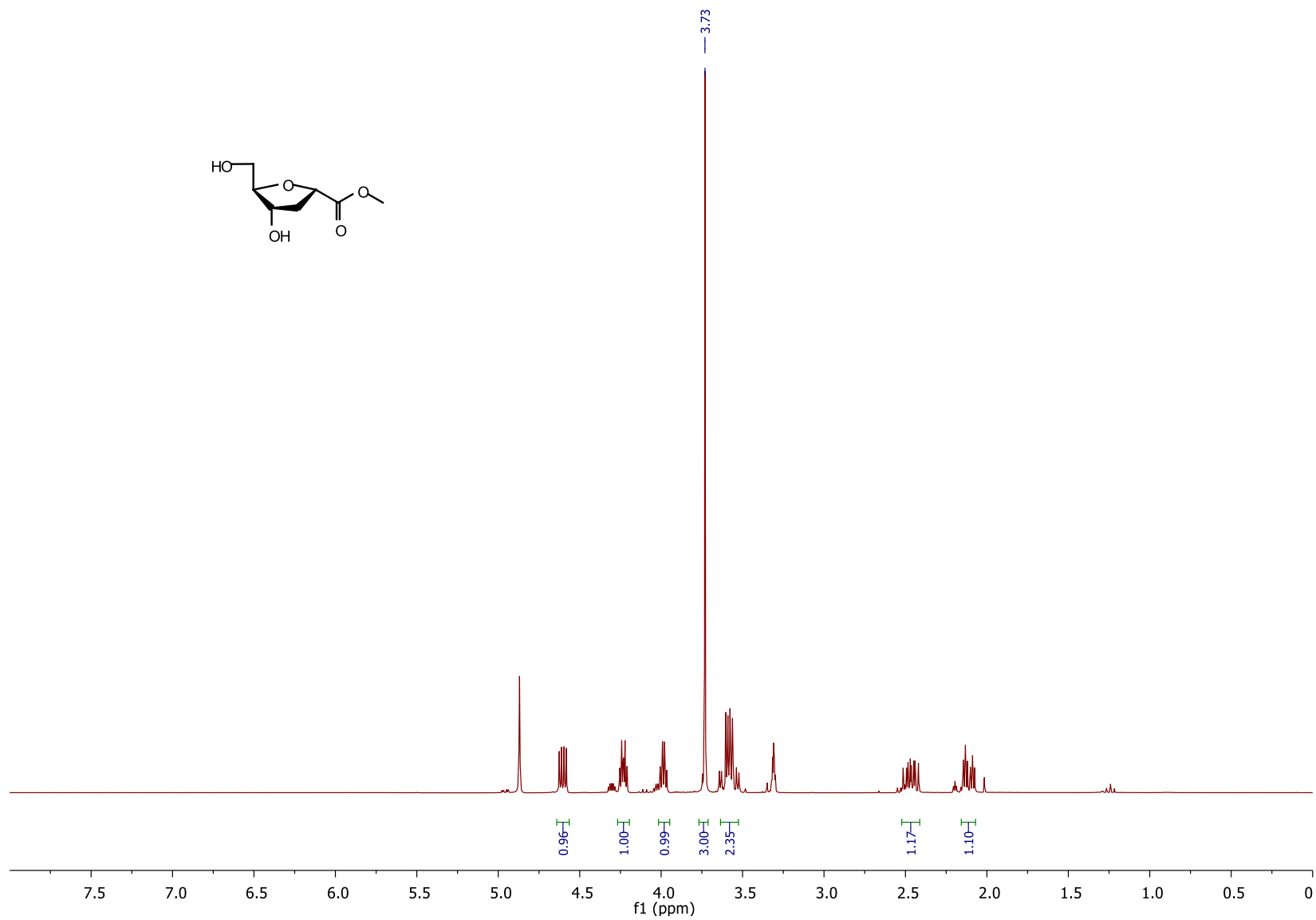
# 1'-Homo-N-2'-deoxy- $\alpha$ -5-iodouridine (10f)

COSY NMR (MeOH- $d_4$ )



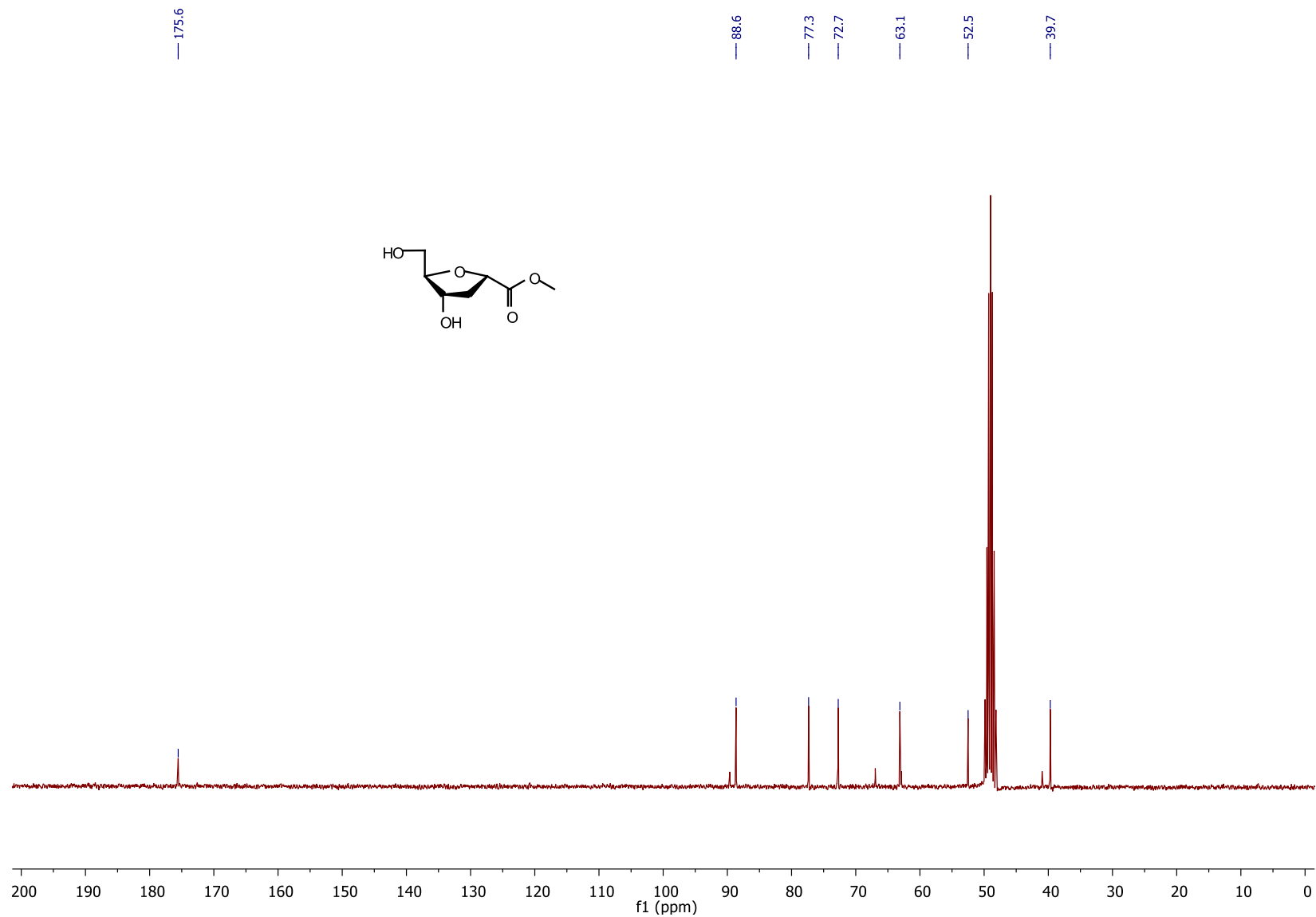
# 1,2-Dideoxy-1 $\alpha$ -(methoxycarbonyl)-D-ribofuranose (13)

$^1\text{H}$  NMR (300.13 MHz,  $\text{MeOH-}d_4$ )



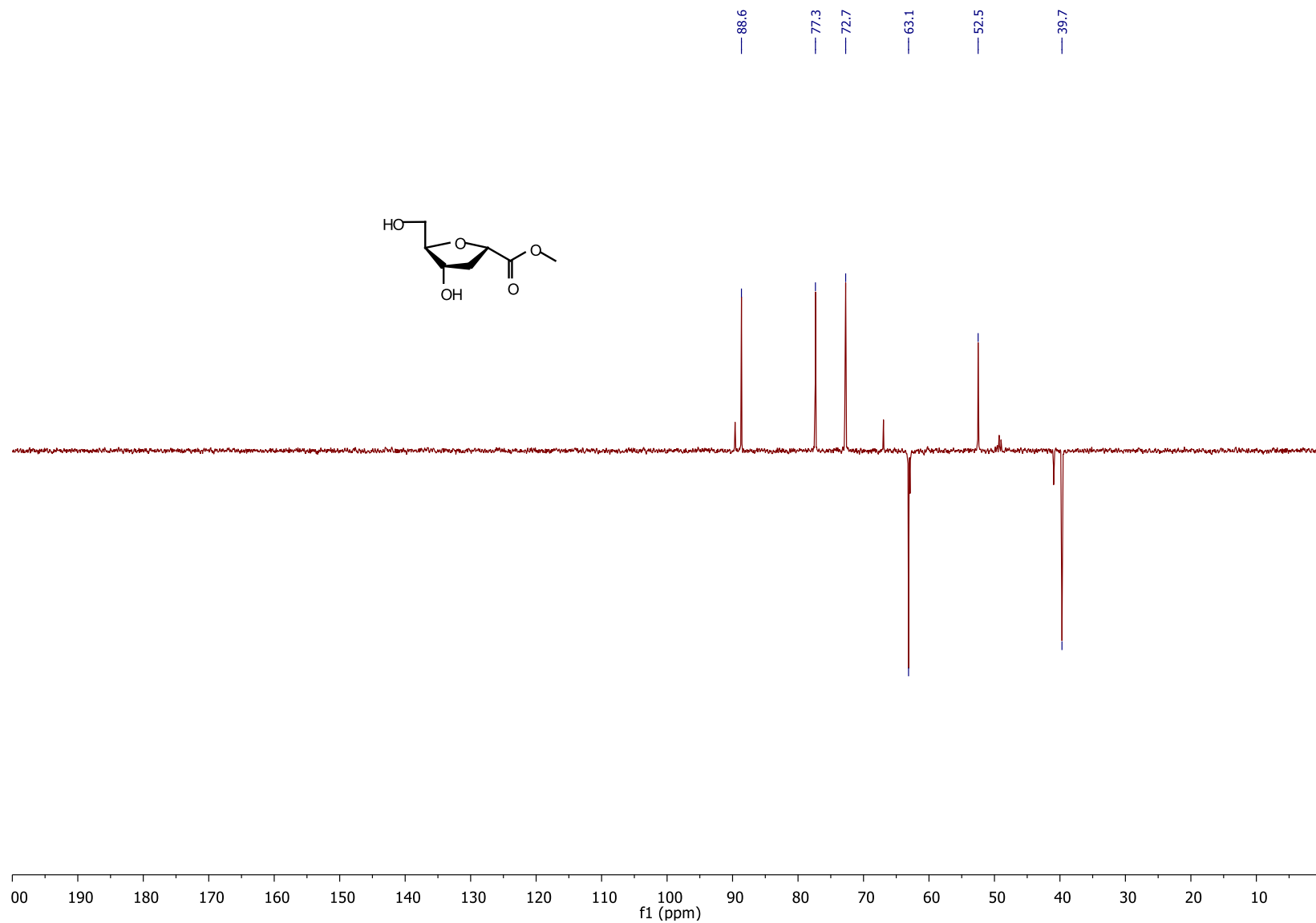
# 1,2-Dideoxy-1 $\alpha$ -(methoxycarbonyl)-D-ribofuranose (13)

$^{13}\text{C}$  NMR (75.5 MHz, MeOH- $d_4$ )



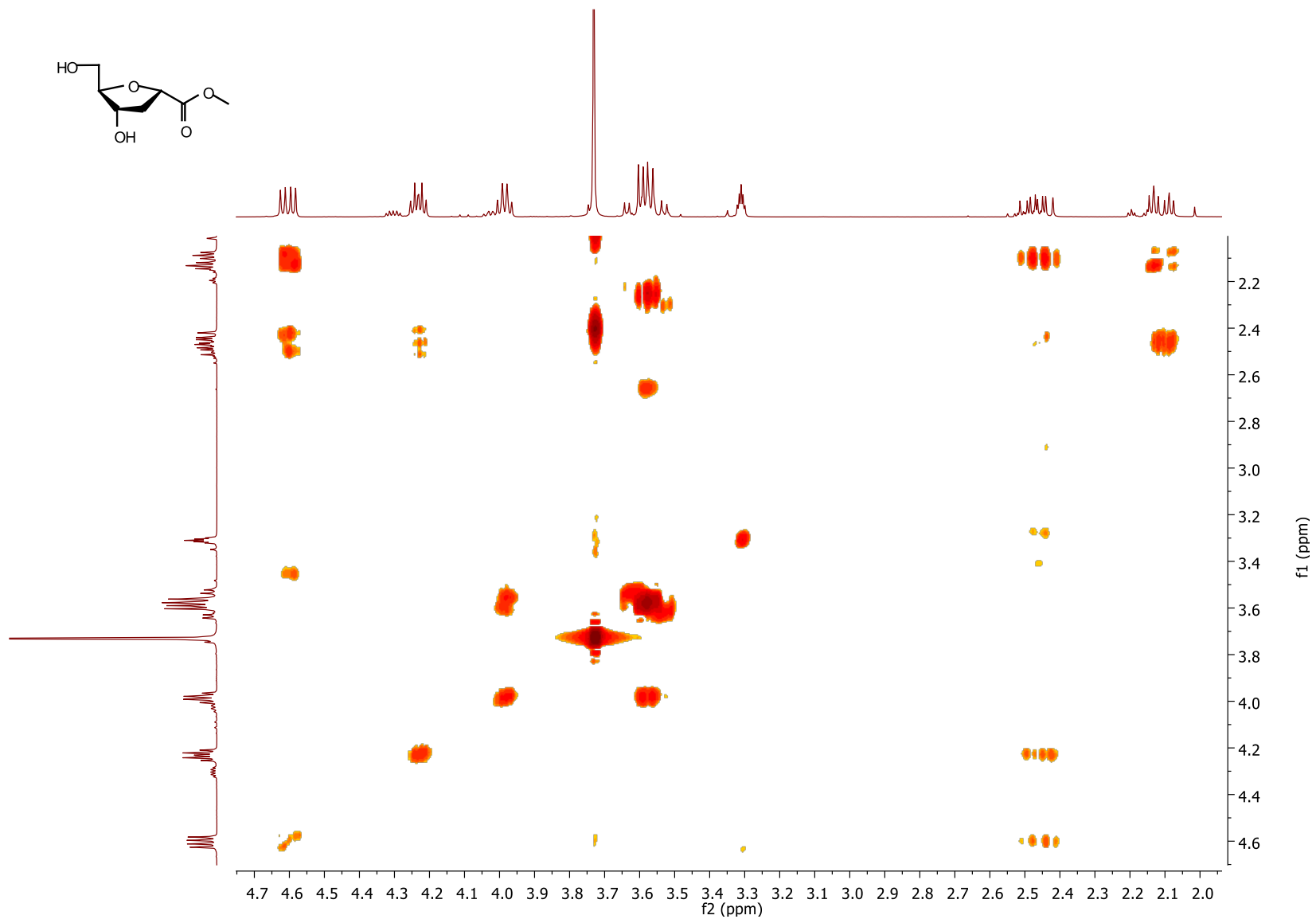
# 1,2-Dideoxy-1 $\alpha$ -(methoxycarbonyl)-D-ribofuranose (13)

DEPT NMR (75.5 MHz, MeOH- $d_4$ )



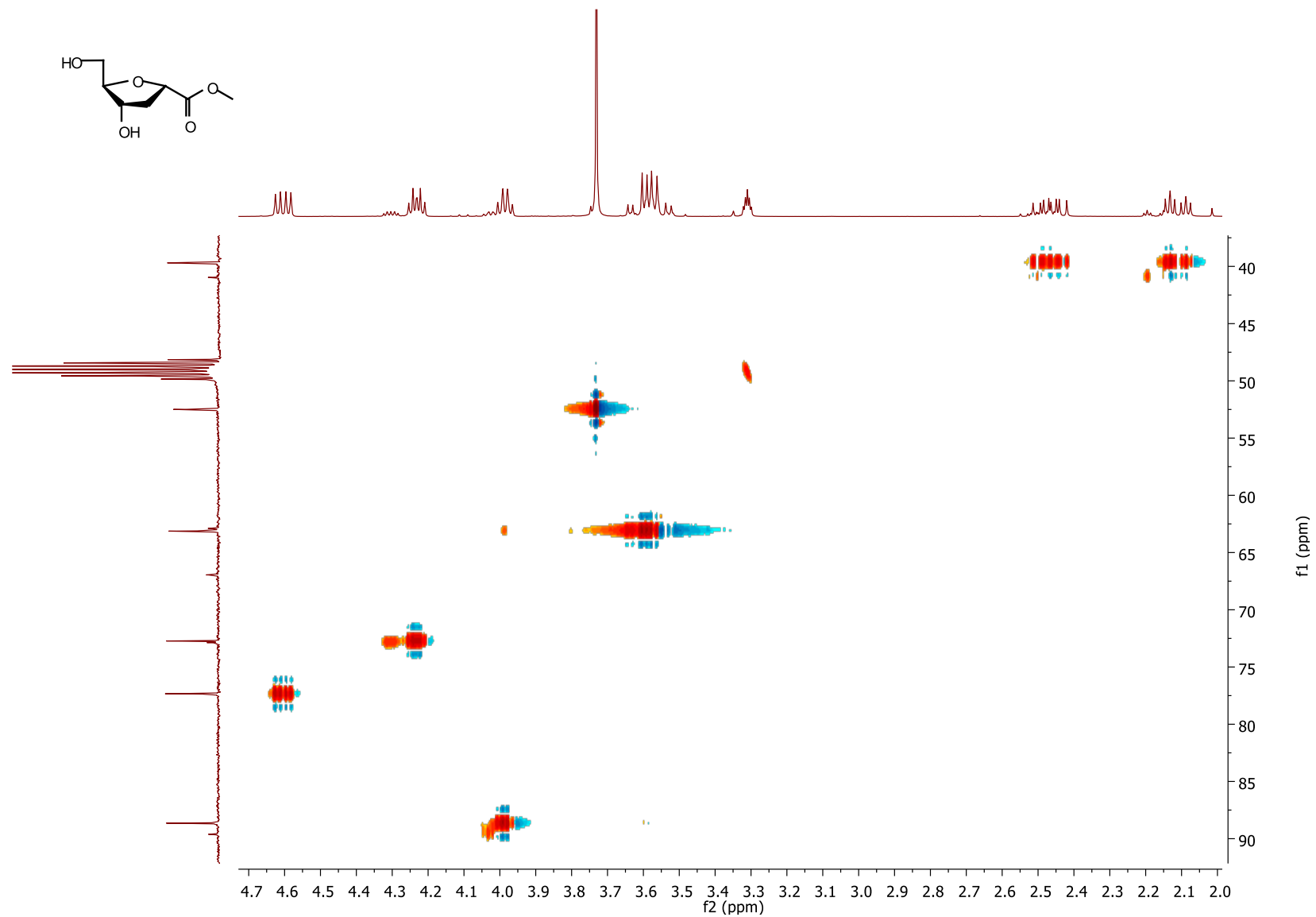
# 1,2-Dideoxy-1 $\alpha$ -(methoxycarbonyl)-D-ribofuranose (13)

COSY NMR (MeOH- $d_4$ )



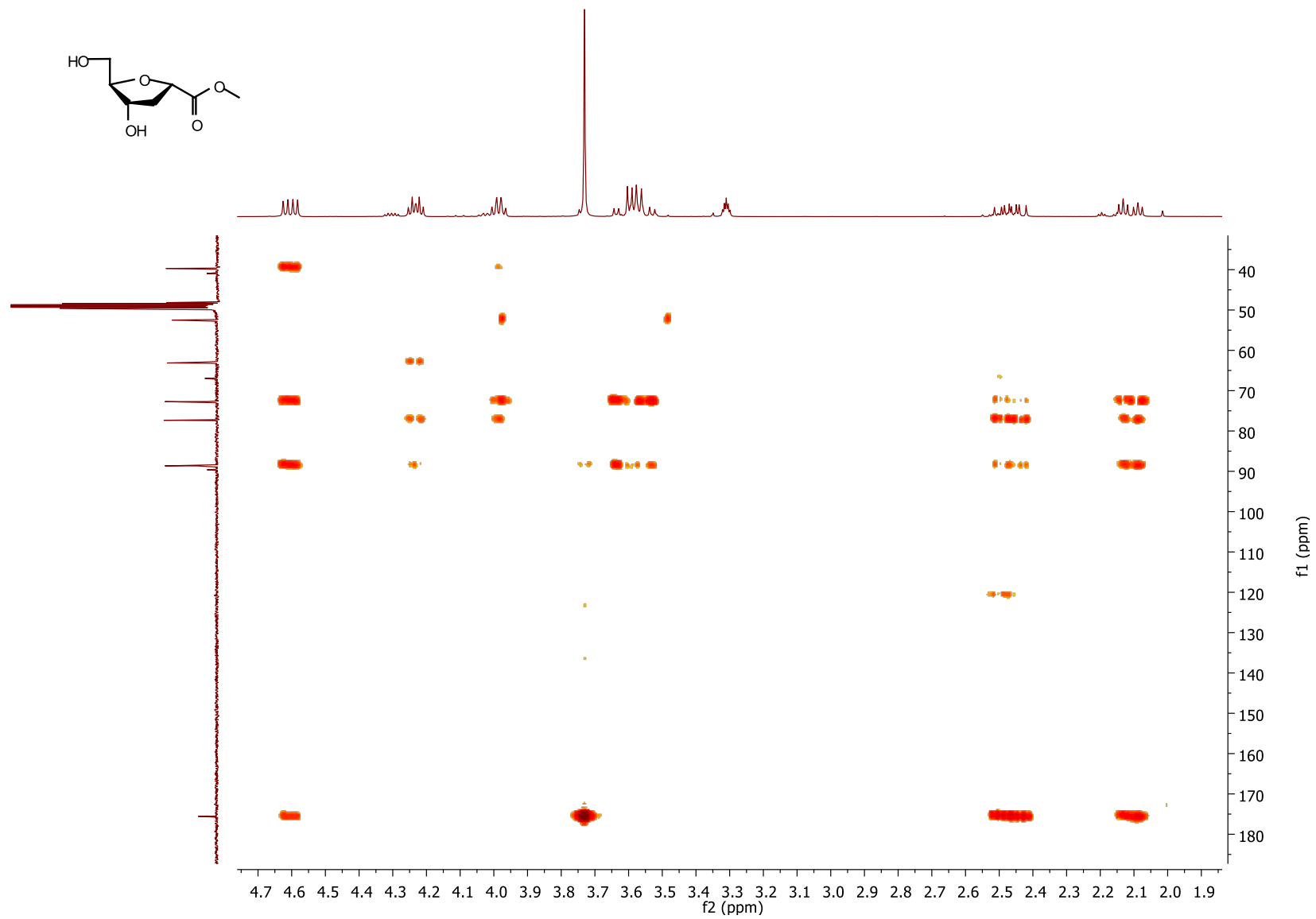
# 1,2-Dideoxy-1 $\alpha$ -(methoxycarbonyl)-D-ribofuranose (7)

HSQC NMR (MeOH- $d_4$ )



# 1,2-Dideoxy-1 $\alpha$ -(methoxycarbonyl)-D-ribofuranose (13)

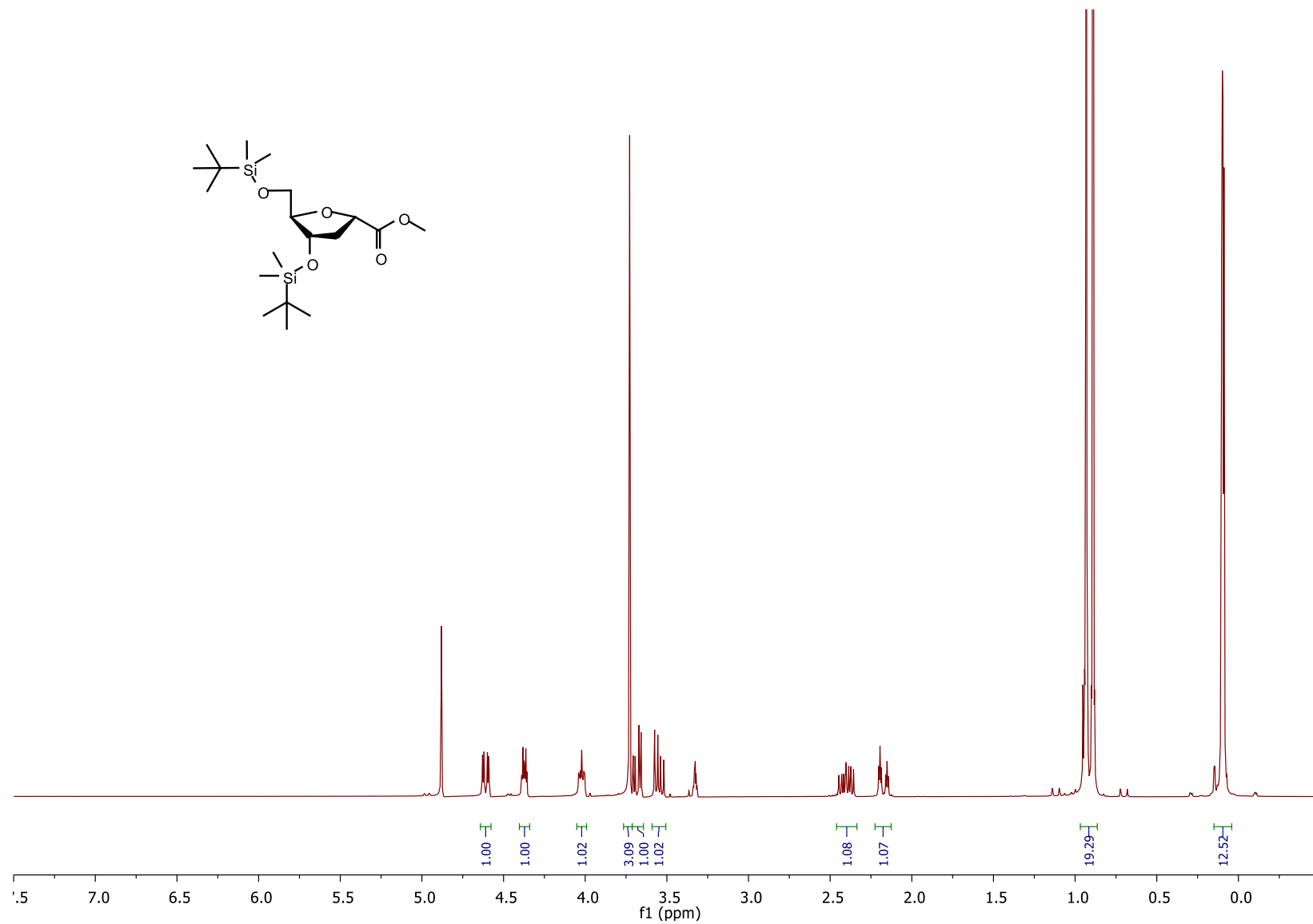
HMBC NMR (MeOH- $d_4$ )





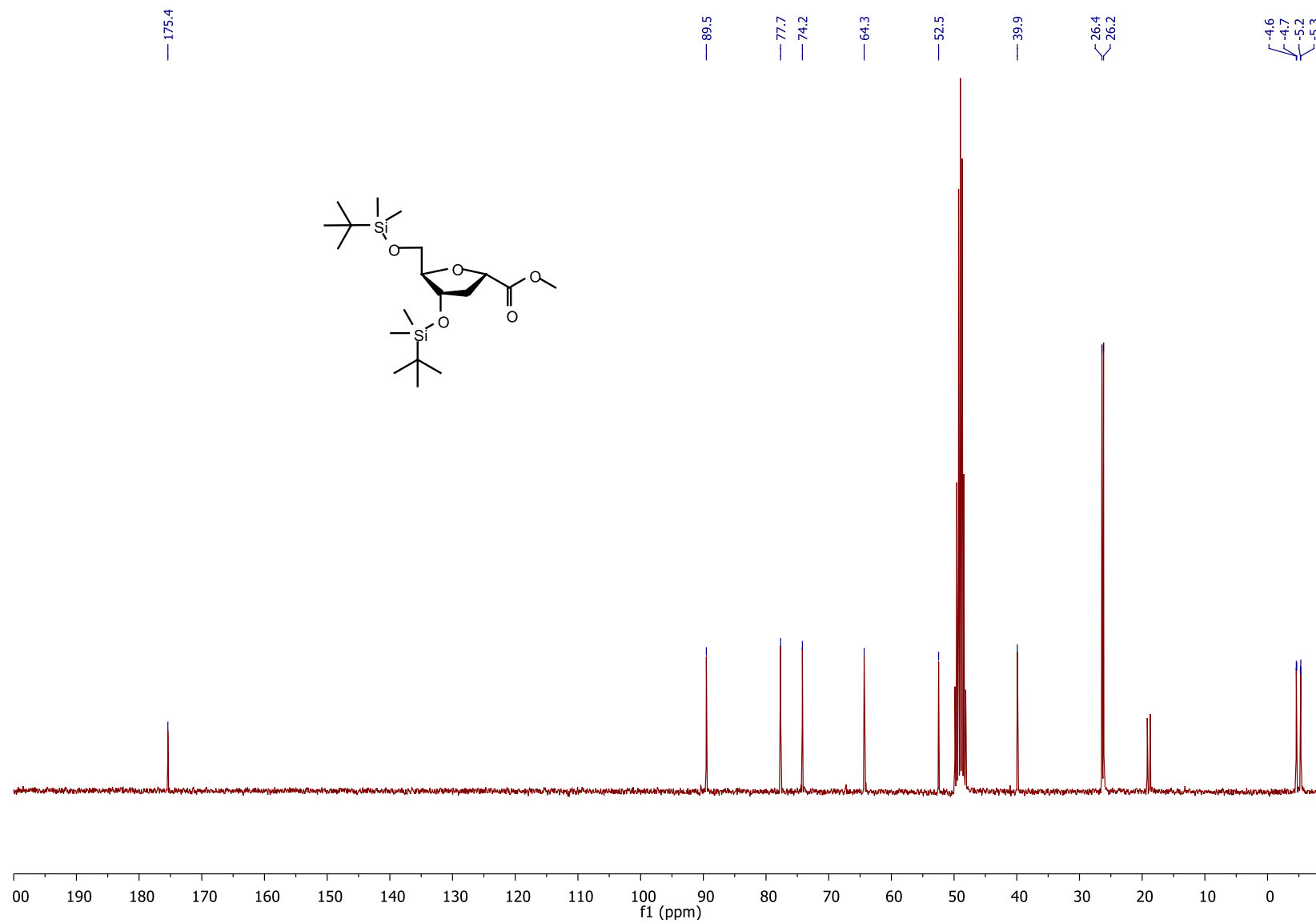
3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1,2-dideoxy-1 $\alpha$ -(methoxycarbonyl)-*D*-ribofuranose (20)

$^1\text{H}$  NMR (300.13 MHz,  $\text{MeOH-}d_4$ )



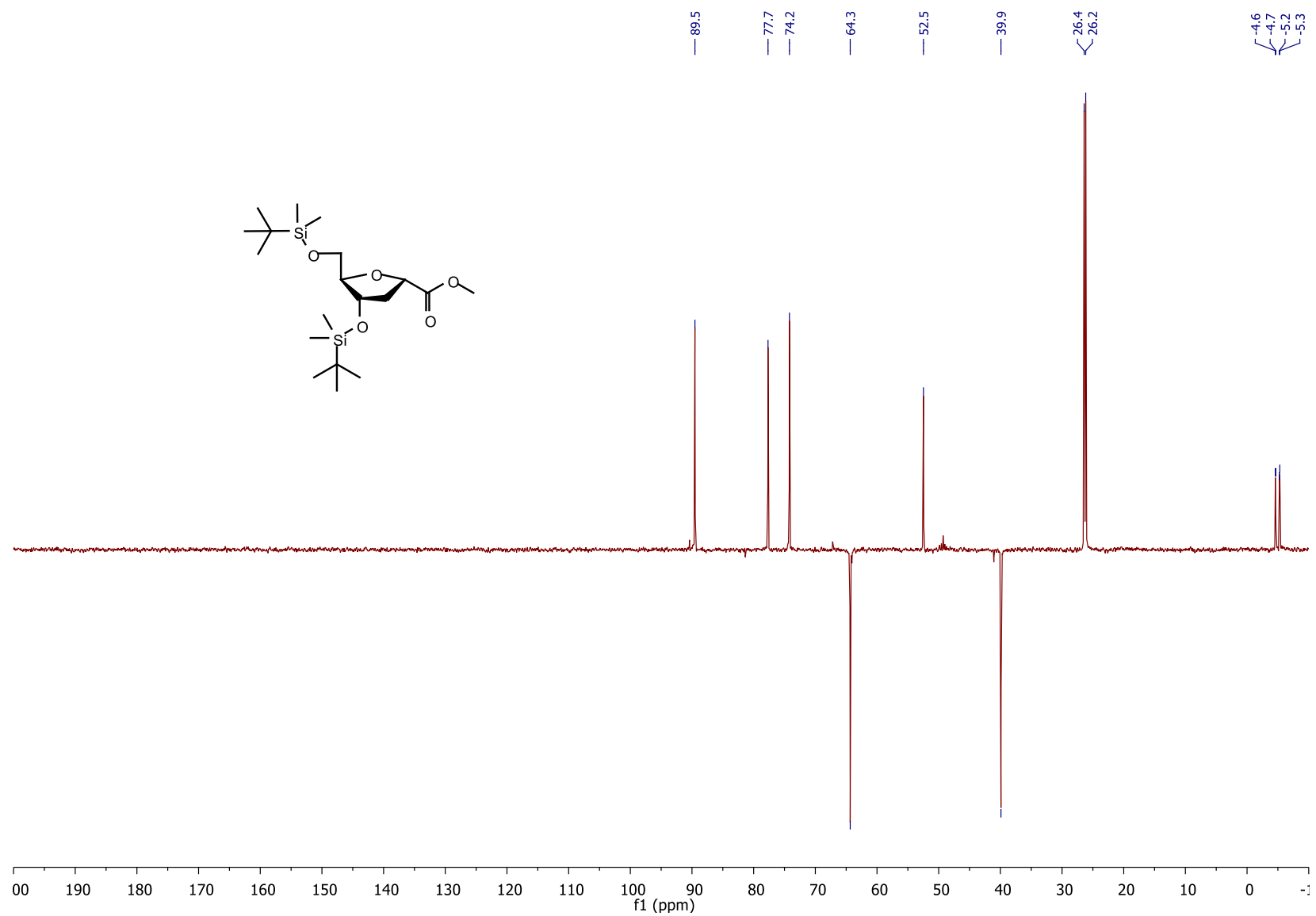
3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1,2-dideoxy-1 $\alpha$ -(methoxycarbonyl)-*D*-ribofuranose (20)

$^{13}\text{C}$  NMR (75.5 MHz,  $\text{MeOH-}d_4$ )



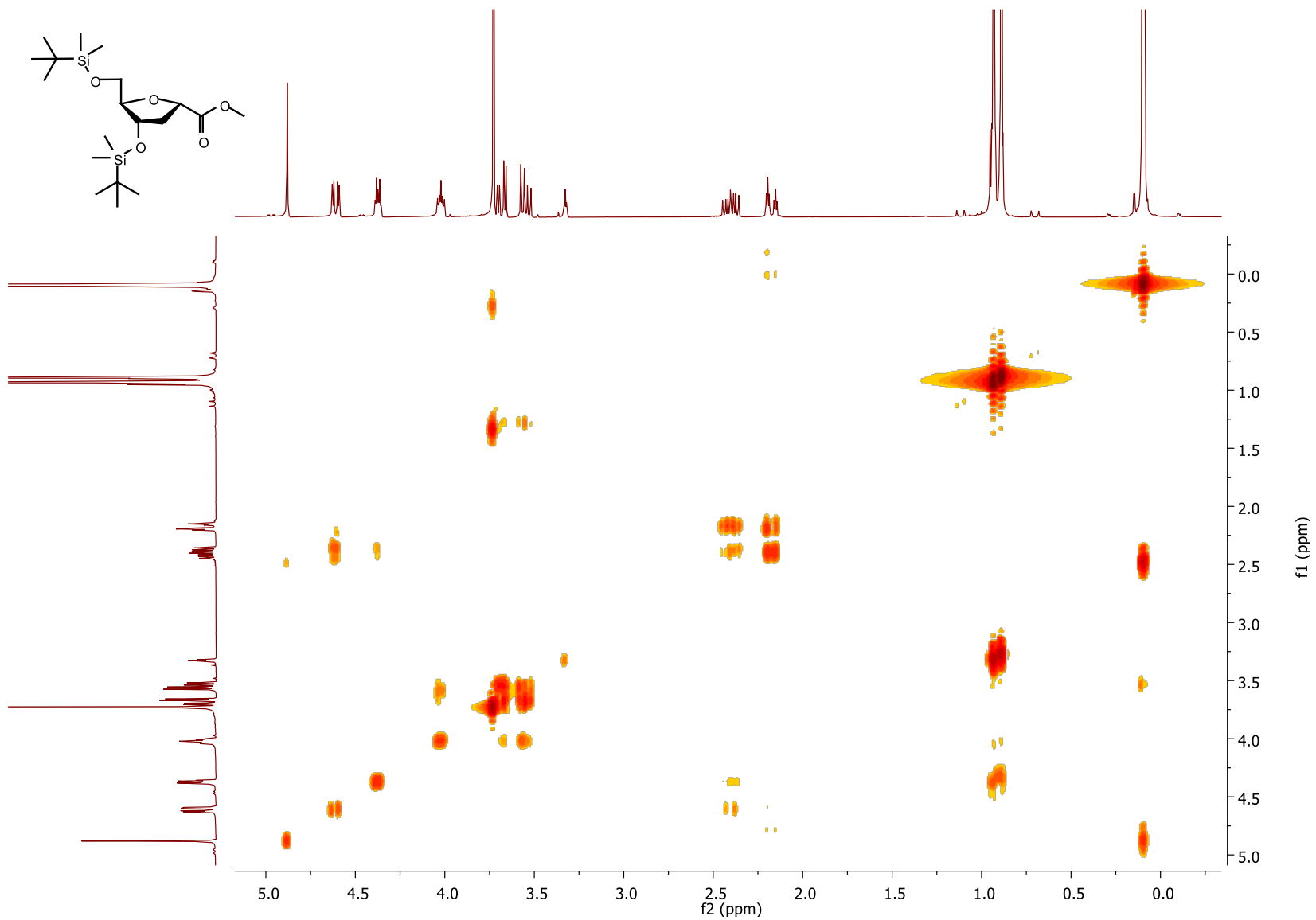
3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1,2-dideoxy-1 $\alpha$ -(methoxycarbonyl)-*D*-ribofuranose (20)

DEPT NMR (75.5 MHz, MeOH-*d*<sub>4</sub>)



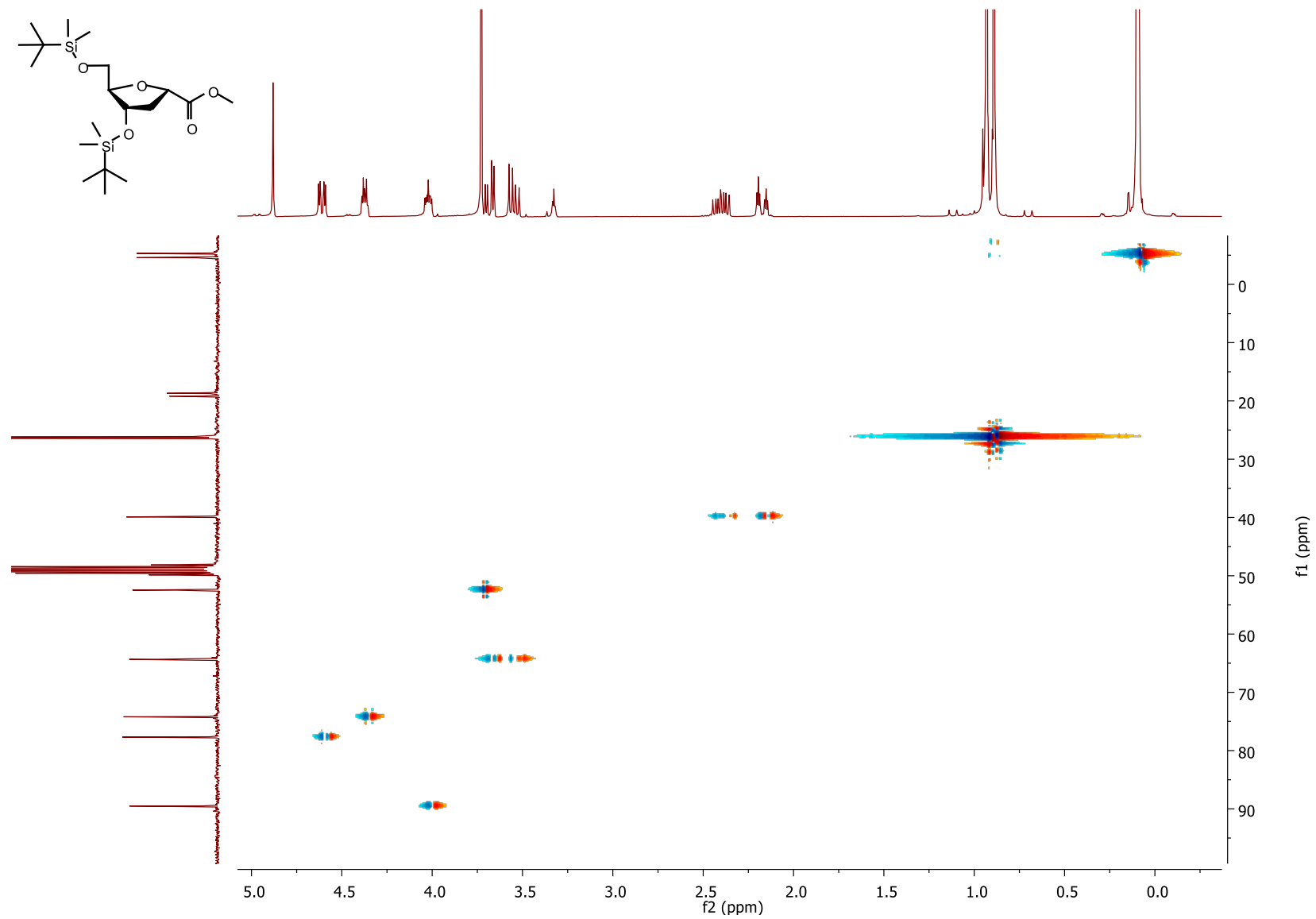
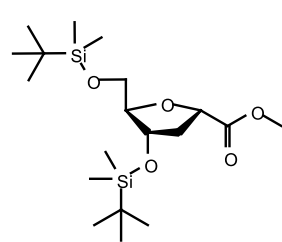
3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1,2-dideoxy-1 $\alpha$ -(methoxycarbonyl)-*D*-ribofuranose (20)

COSY NMR (MeOH- $d_4$ )



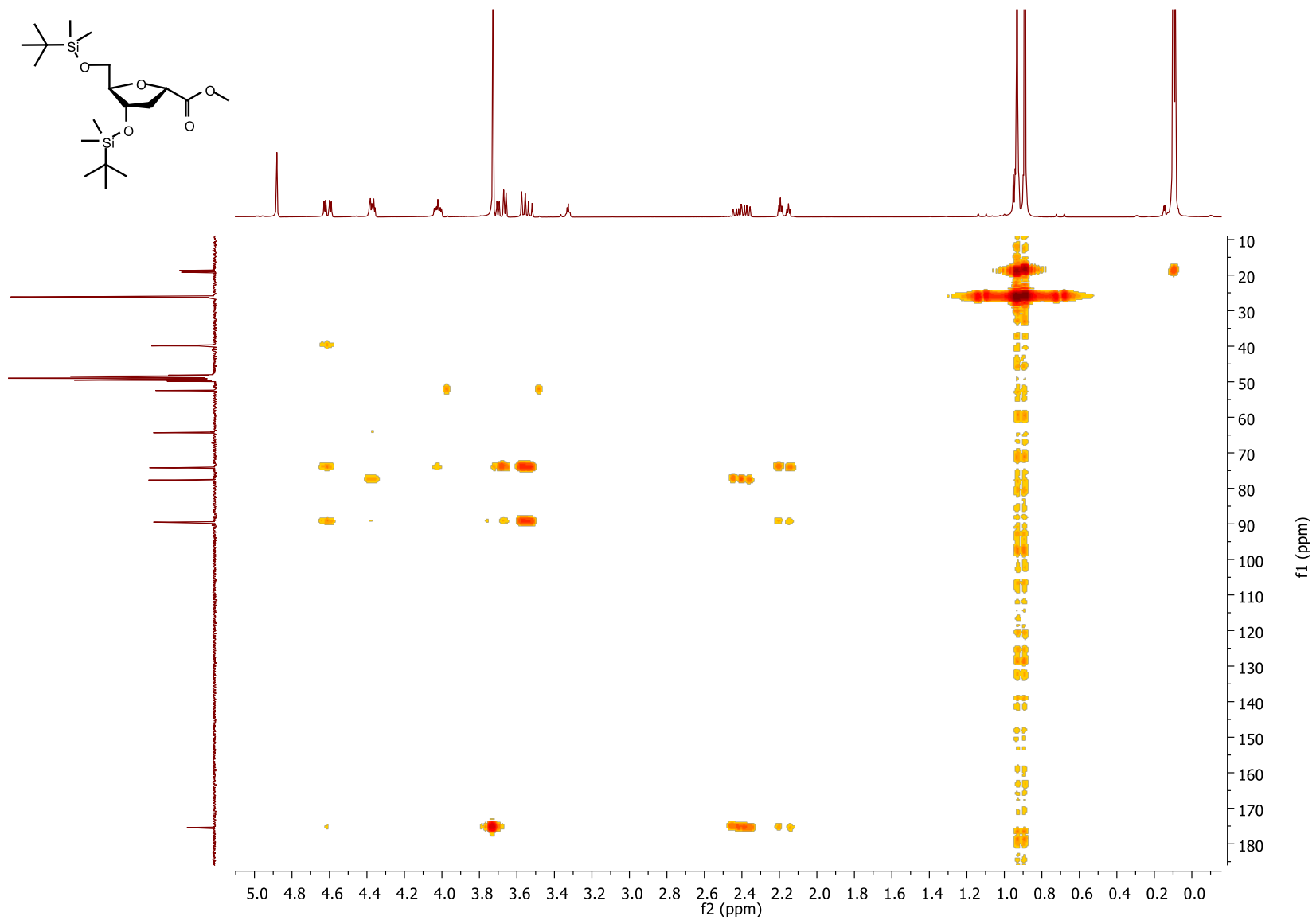
3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1,2-dideoxy-1 $\alpha$ -(methoxycarbonyl)-*D*-ribofuranose (20)

HSQC NMR (MeOH- $d_4$ )



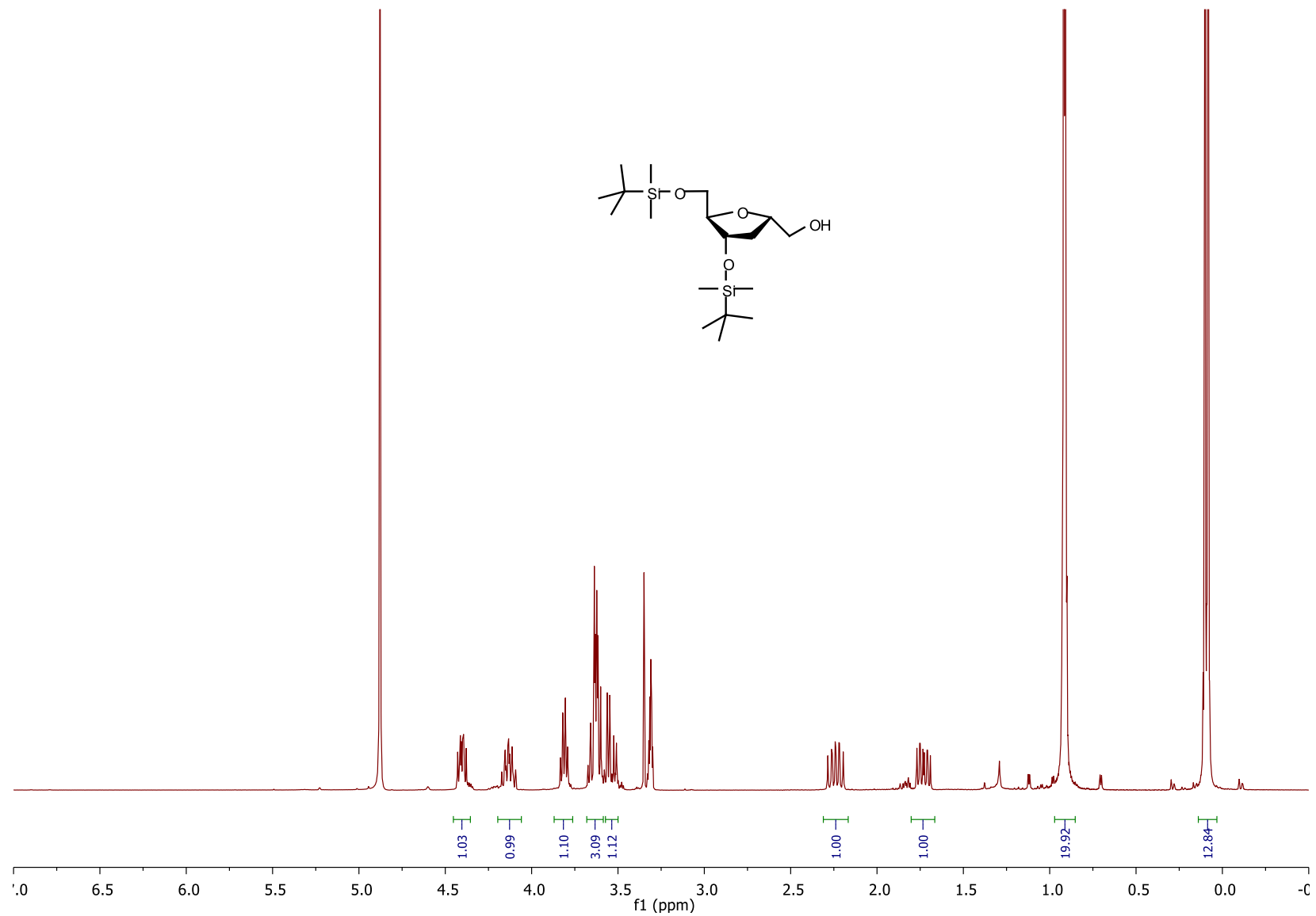
3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1,2-dideoxy-1 $\alpha$ -(methoxycarbonyl)- $\beta$ -D-ribofuranose (20)

HMBC NMR (MeOH- $d_4$ )



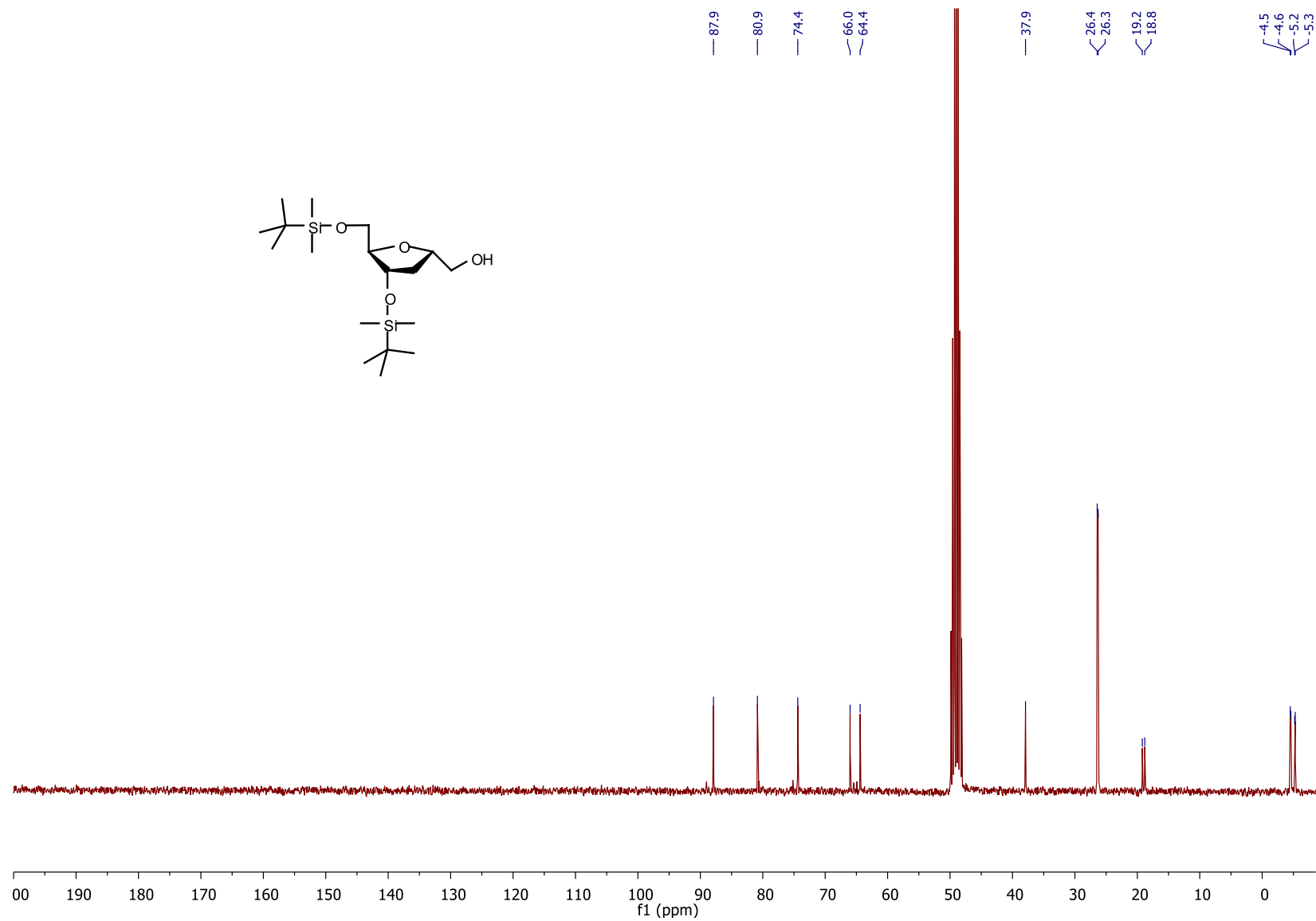
3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1,2-dideoxy-1 $\alpha$ -(hydroxymethyl)-*D*-ribofuranose (15)

$^1\text{H}$  NMR (300.13 MHz,  $\text{MeOH-}d_4$ )



3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1,2-dideoxy-1 $\alpha$ -(hydroxymethyl)-*D*-ribofuranose (15)

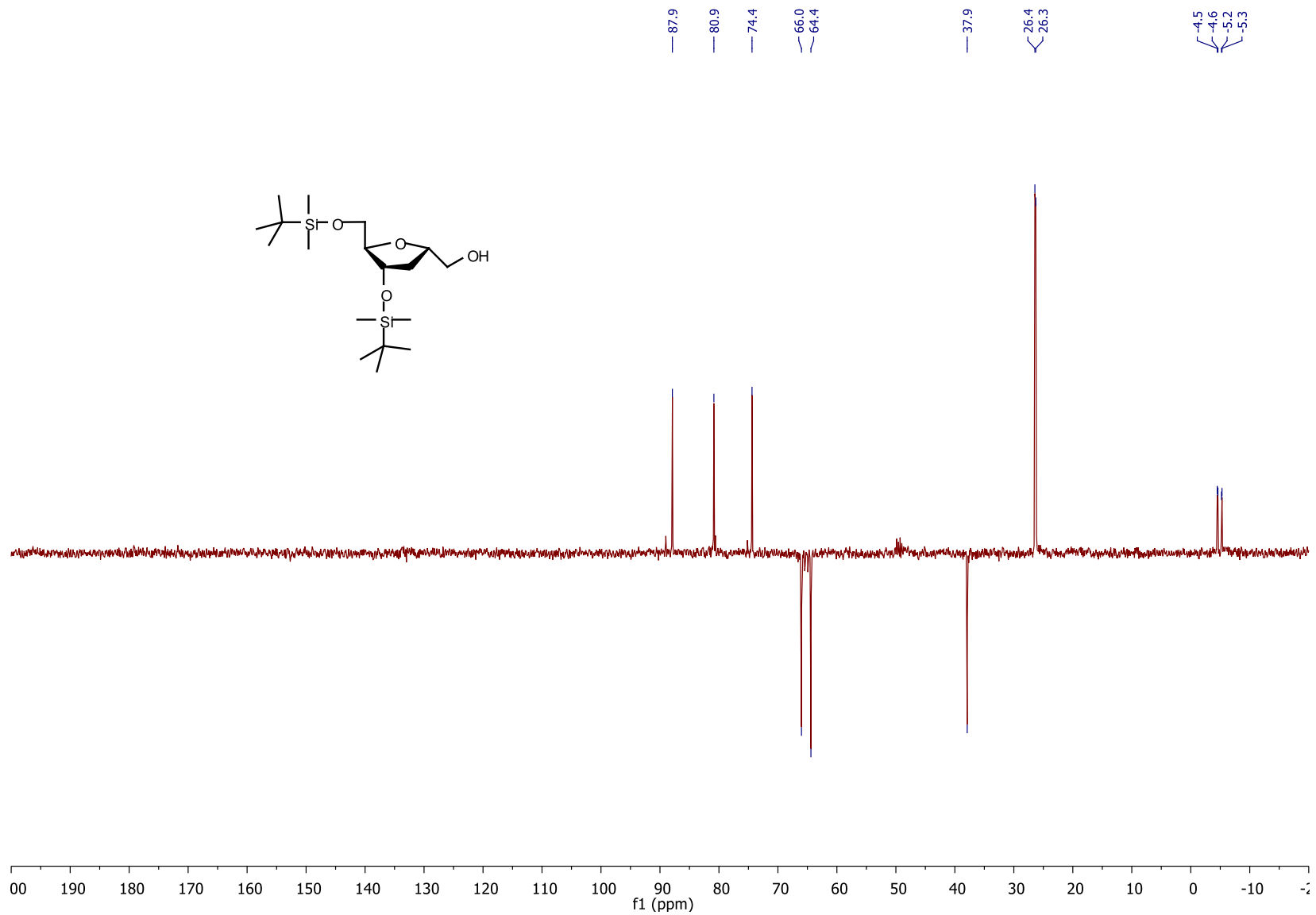
$^{13}\text{C}$  NMR (75.5 MHz,  $\text{MeOH-}d_4$ )





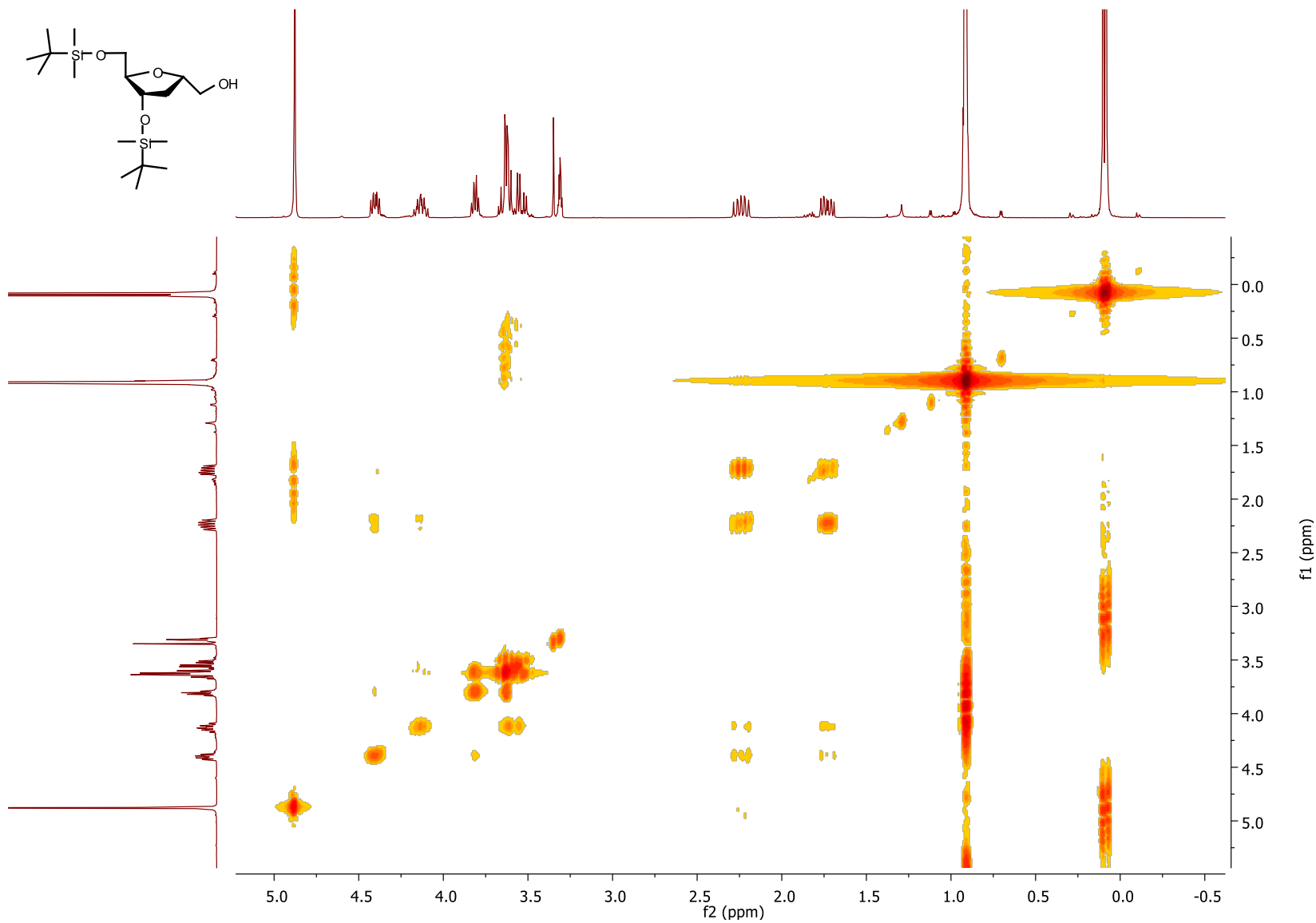
3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1,2-dideoxy-1 $\alpha$ -(hydroxymethyl)-*D*-ribofuranose (15)

DEPT NMR (75.5 MHz, MeOH-*d*<sub>4</sub>)



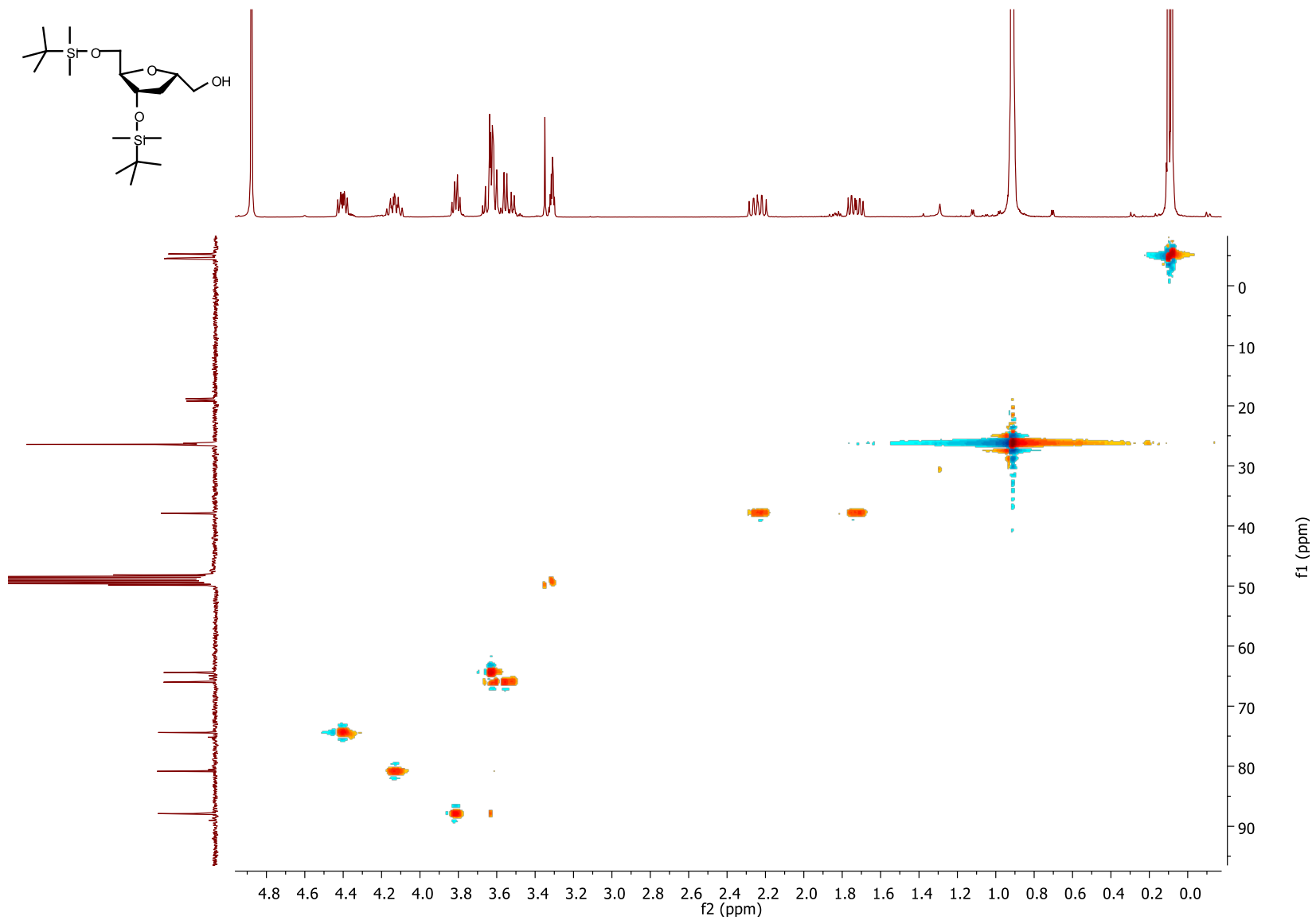
3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1,2-dideoxy-1 $\alpha$ -(hydroxymethyl)-*D*-ribofuranose (15)

COSY NMR (MeOH-*d*<sub>4</sub>)



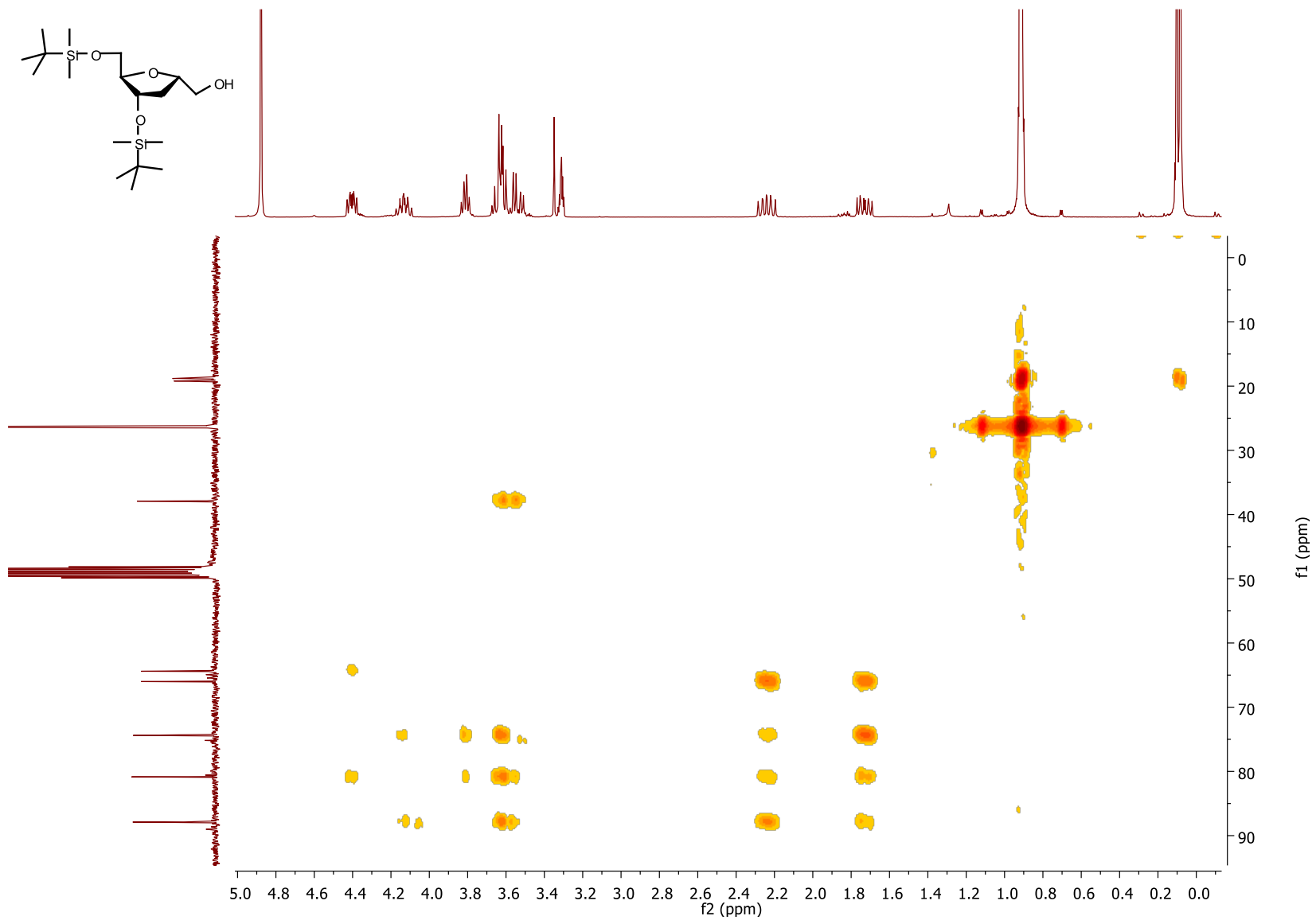
3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1,2-dideoxy-1 $\alpha$ -(hydroxymethyl)-*D*-ribofuranose (15)

HSQC NMR (MeOH- $d_4$ )



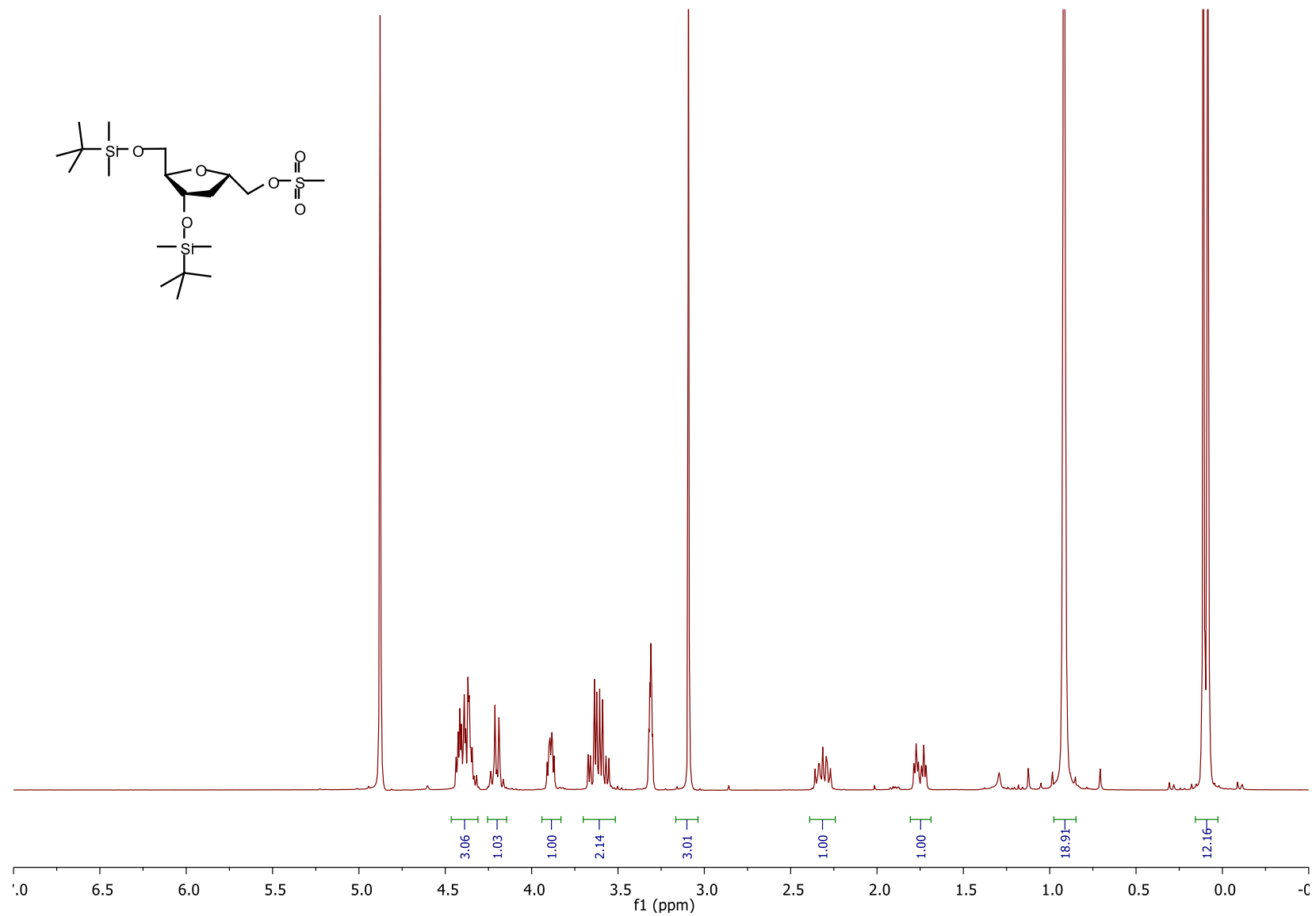
3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1,2-dideoxy-1 $\alpha$ -(hydroxymethyl)-*D*-ribofuranose (15)

HMBC NMR (MeOH- $d_4$ )



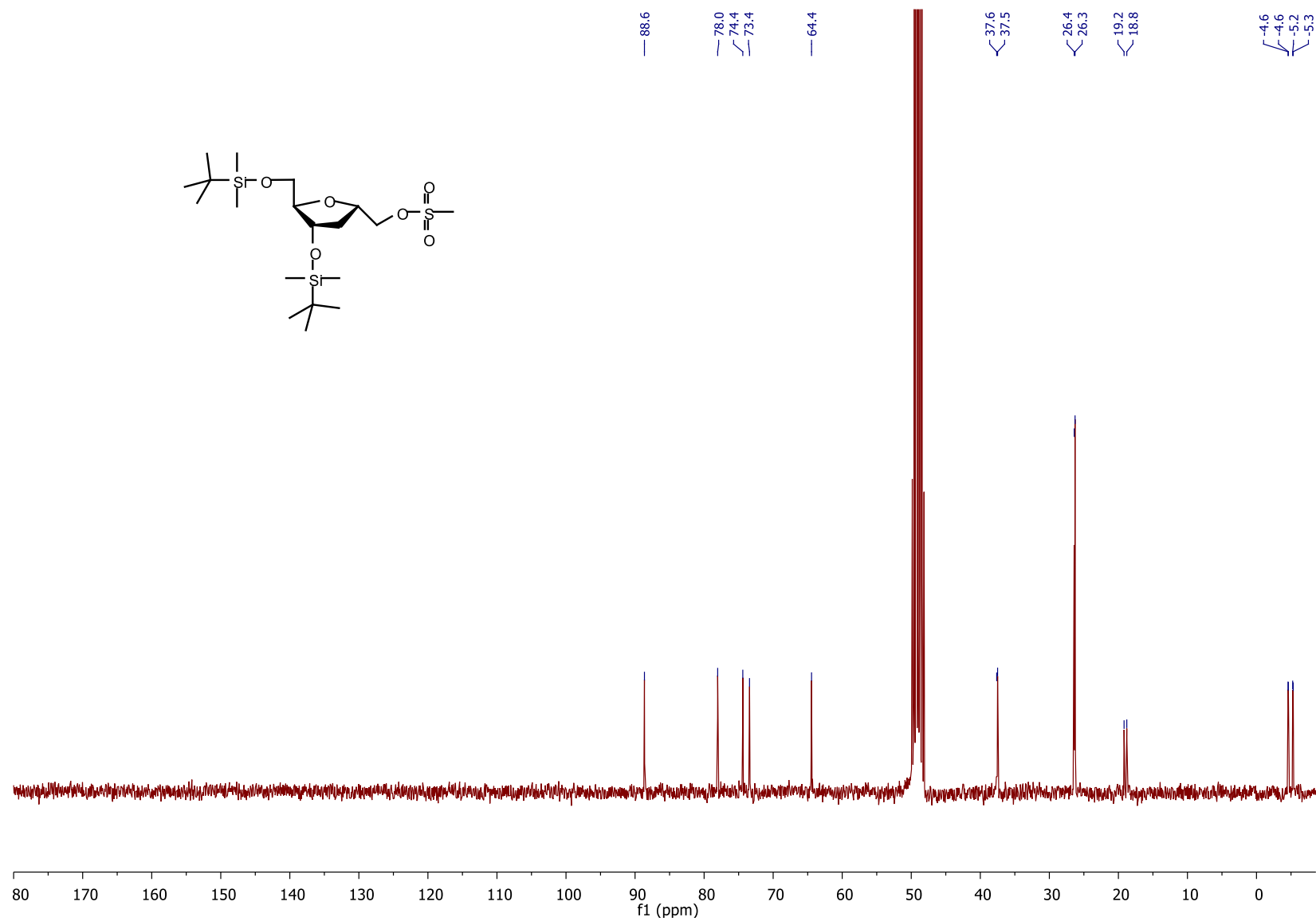
3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1,2-dideoxy-1 $\alpha$ -(((methylsulfonyl)oxy)methyl)-*D*-ribofuranose (16)

$^1\text{H}$  NMR (300.13 MHz,  $\text{MeOH-}d_4$ )



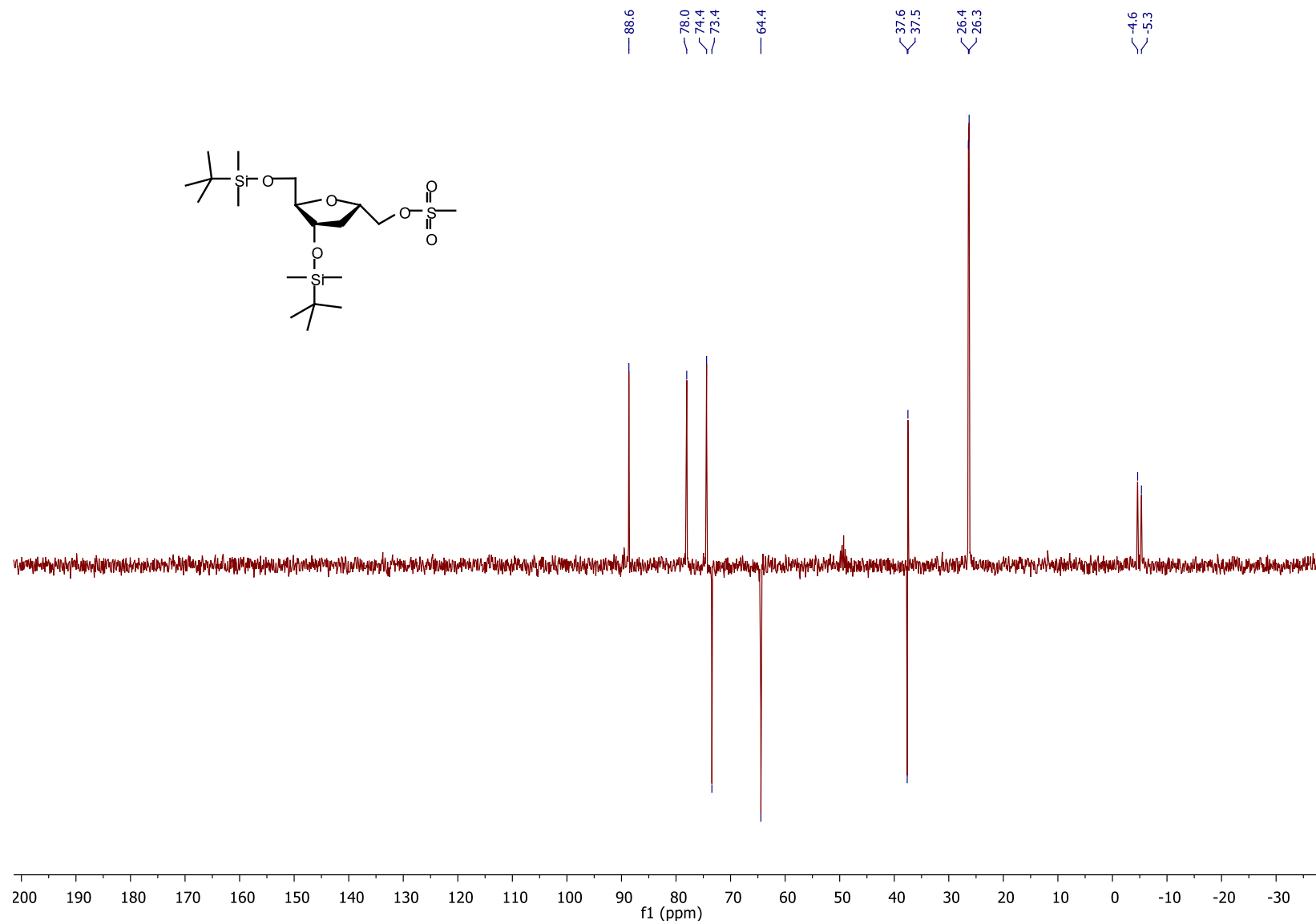
3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1,2-dideoxy-1 $\alpha$ -(((methylsulfonyl)oxy)methyl)-*D*-ribofuranose (16)

$^{13}\text{C}$  NMR (75.5 MHz,  $\text{MeOH-}d_4$ )



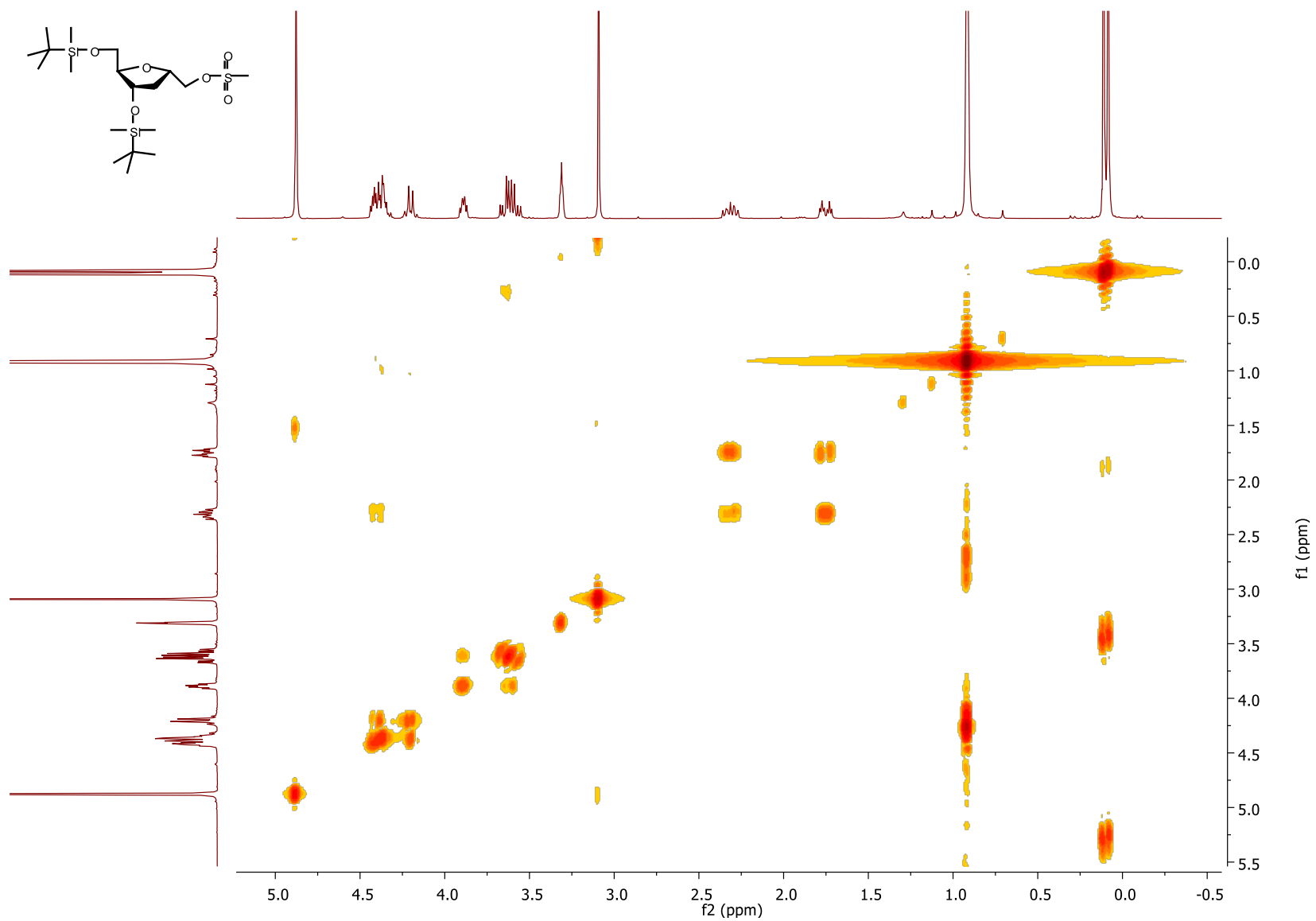
3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1,2-dideoxy-1 $\alpha$ -(((methylsulfonyl)oxy)methyl)-*D*-ribofuranose (16)

DEPT NMR (75.5 MHz, MeOH-*d*<sub>4</sub>)



3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1,2-dideoxy-1 $\alpha$ -(((methylsulfonyl)oxy)methyl)-*D*-ribofuranose (16)

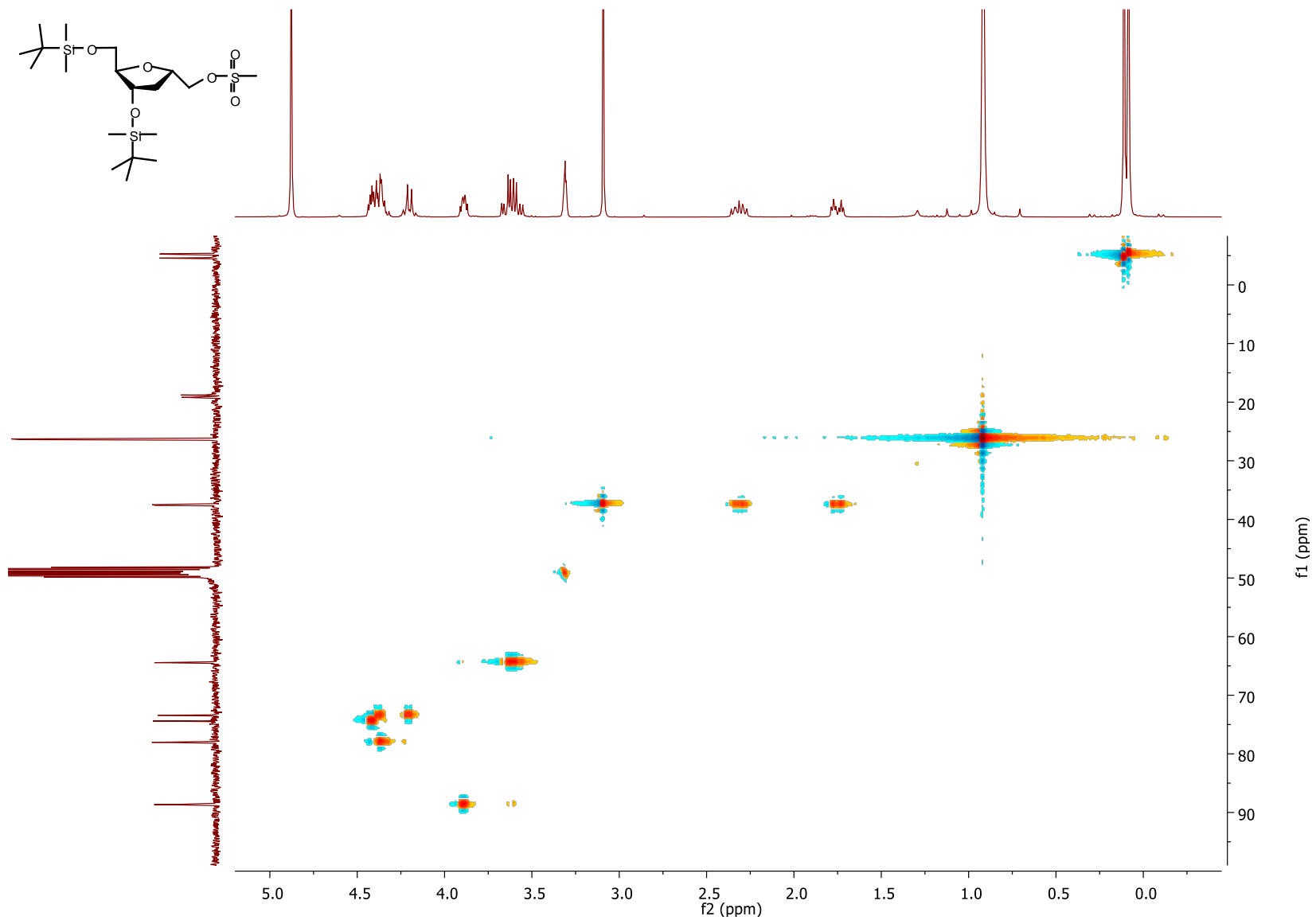
COSY NMR (MeOH- $d_4$ )





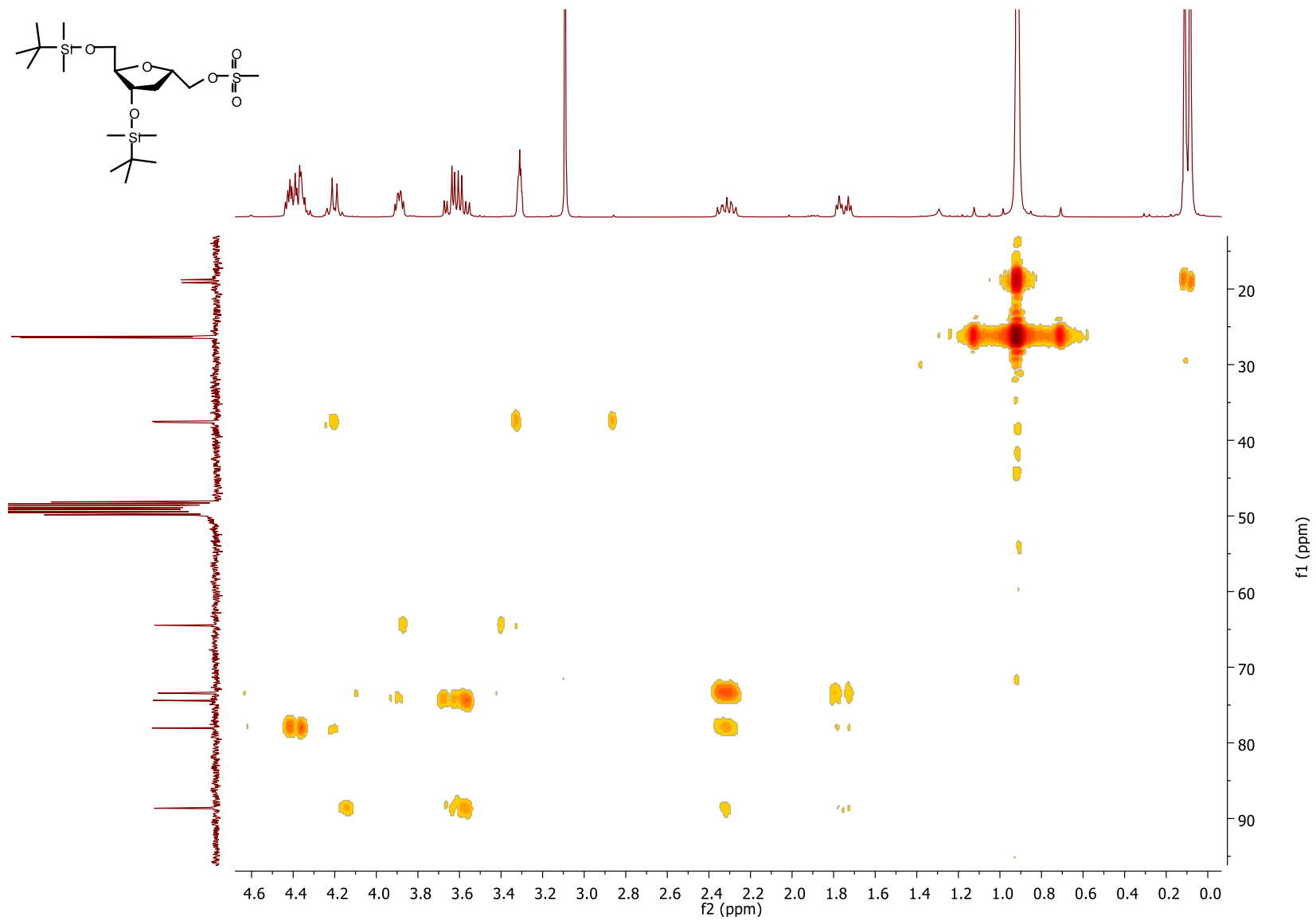
3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1,2-dideoxy-1 $\alpha$ -(((methylsulfonyl)oxy)methyl)-*D*-ribofuranose (16)

HSQC NMR (MeOH- $d_4$ )



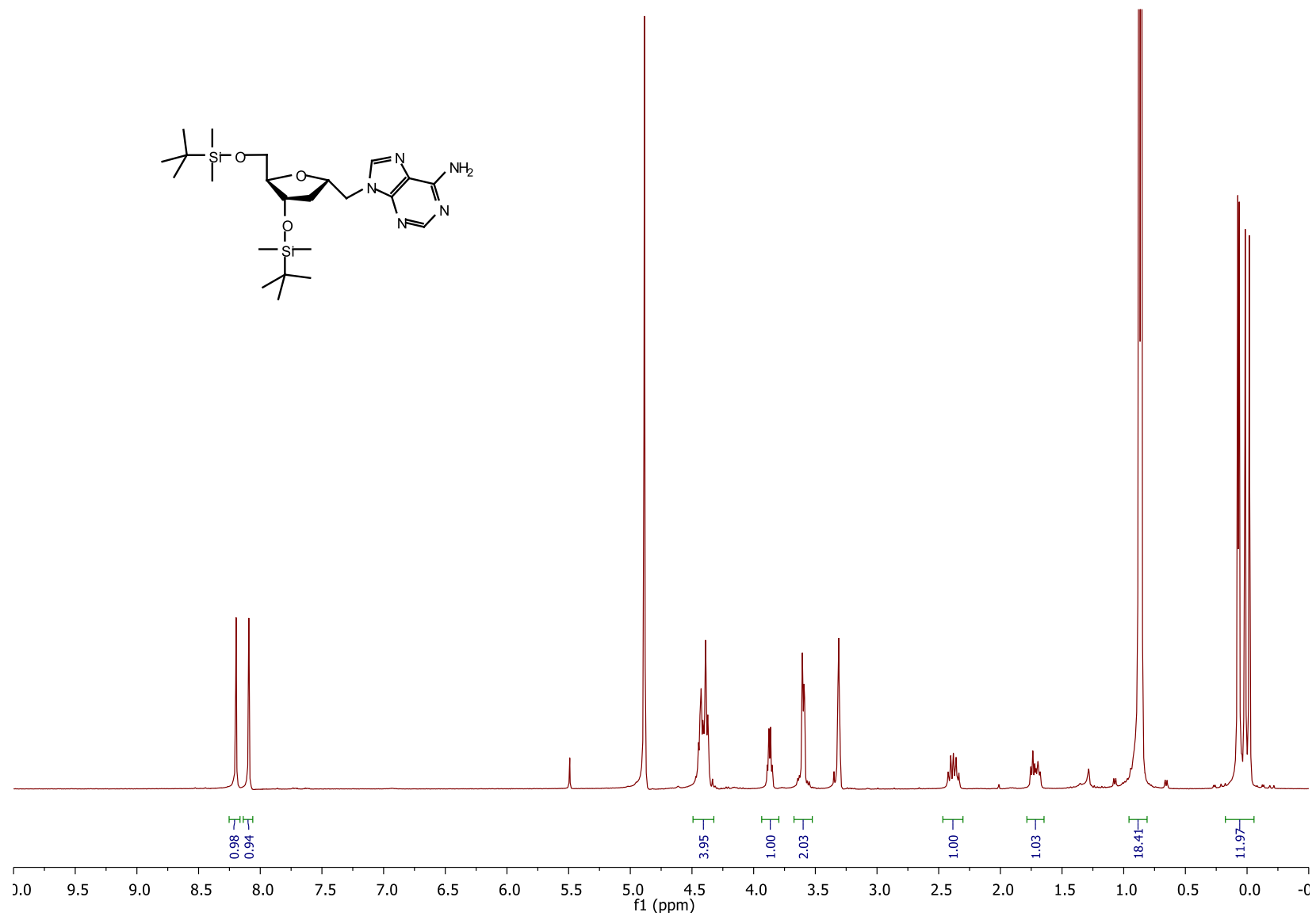
3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1,2-dideoxy-1 $\alpha$ -(((methylsulfonyl)oxy)methyl)-*D*-ribofuranose (16)

HMBC NMR (MeOH- $d_4$ )



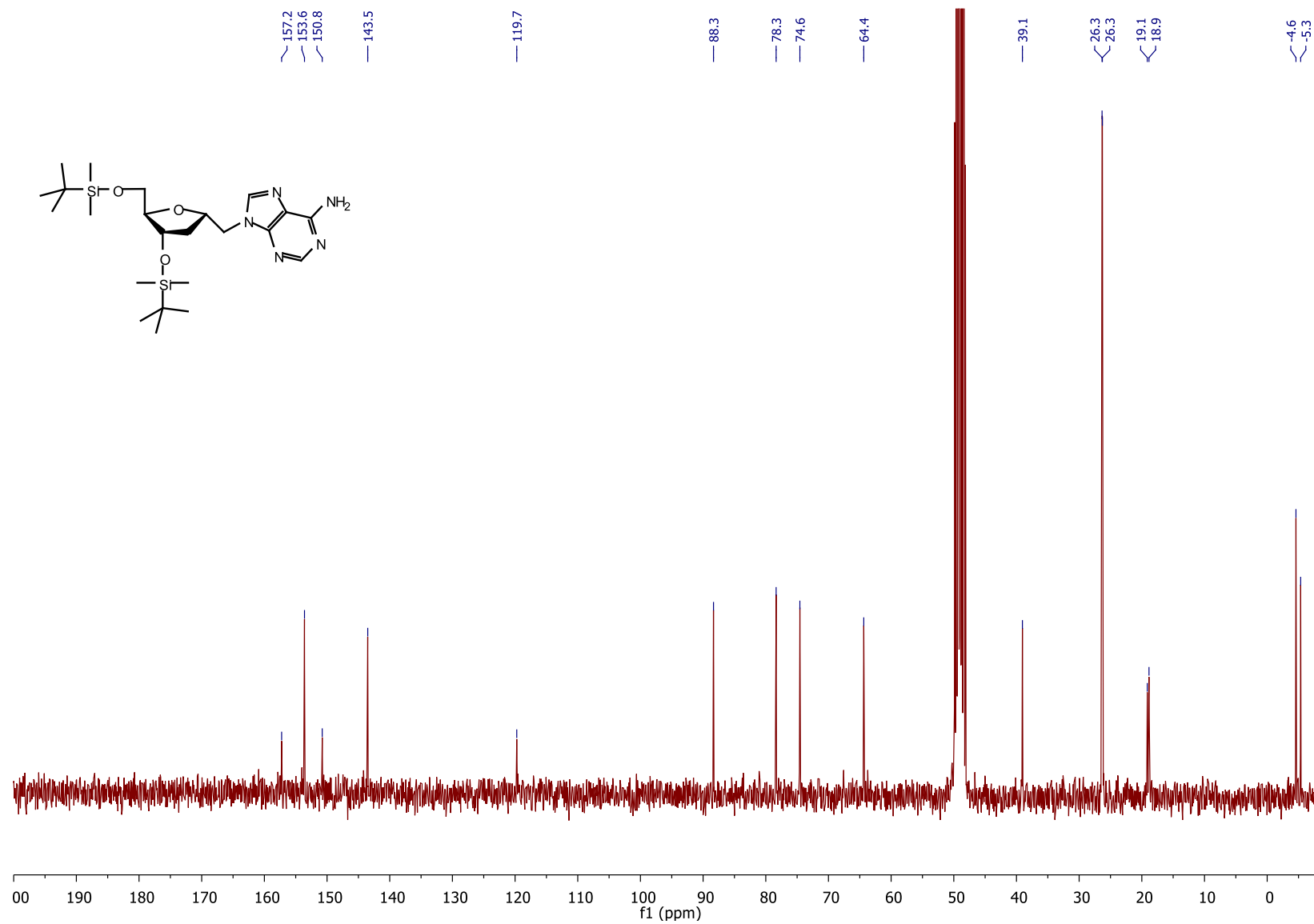
3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1'-homo-*N*-2'-deoxy- $\alpha$ -adenosine (17a)

$^1\text{H}$  NMR (300.13 MHz,  $\text{MeOH-}d_4$ )



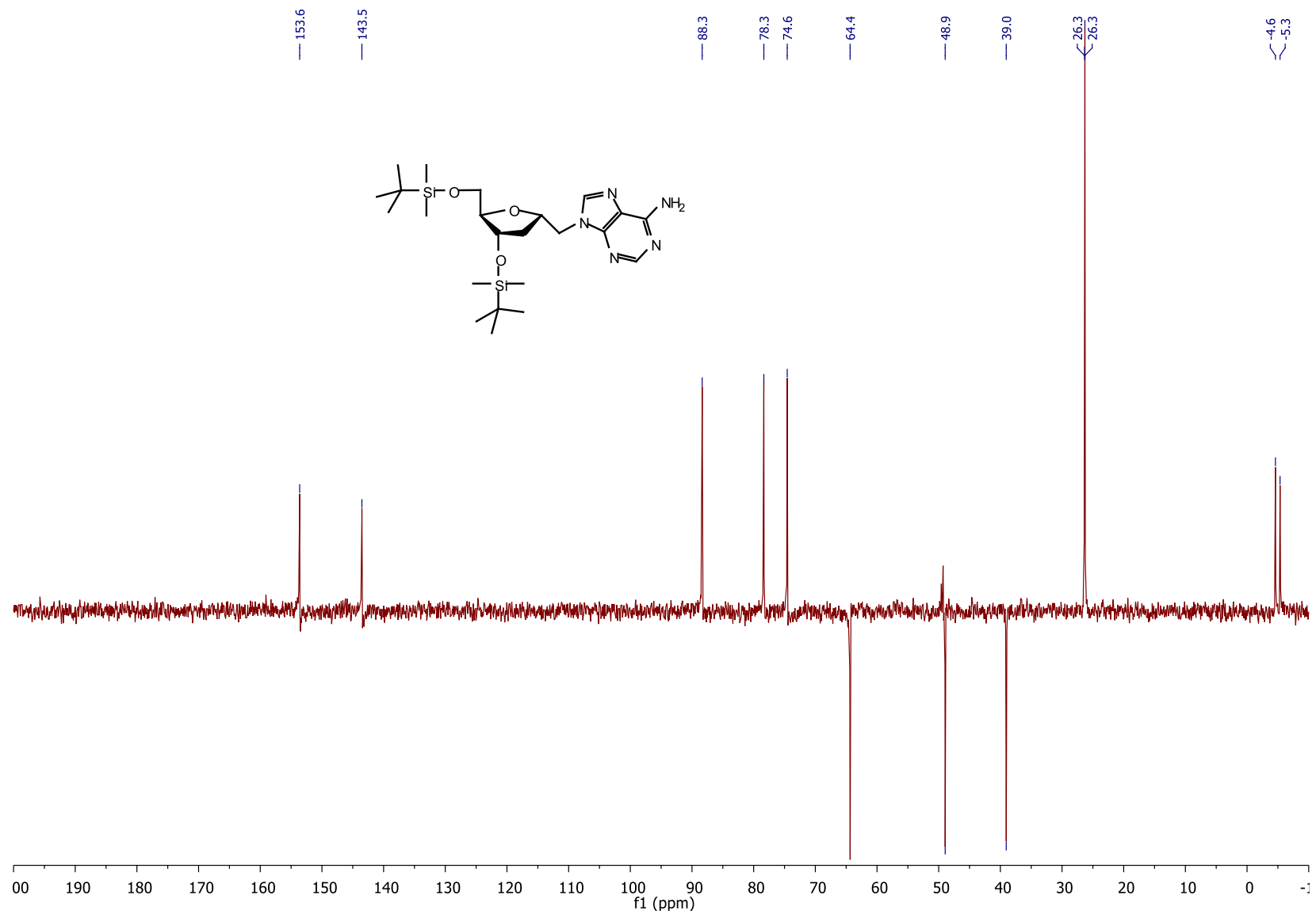
### 3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1'-homo-*N*-2'-deoxy- $\alpha$ -adenosine (17a)

$^{13}\text{C}$  NMR (75.5 MHz,  $\text{MeOH-}d_4$ )



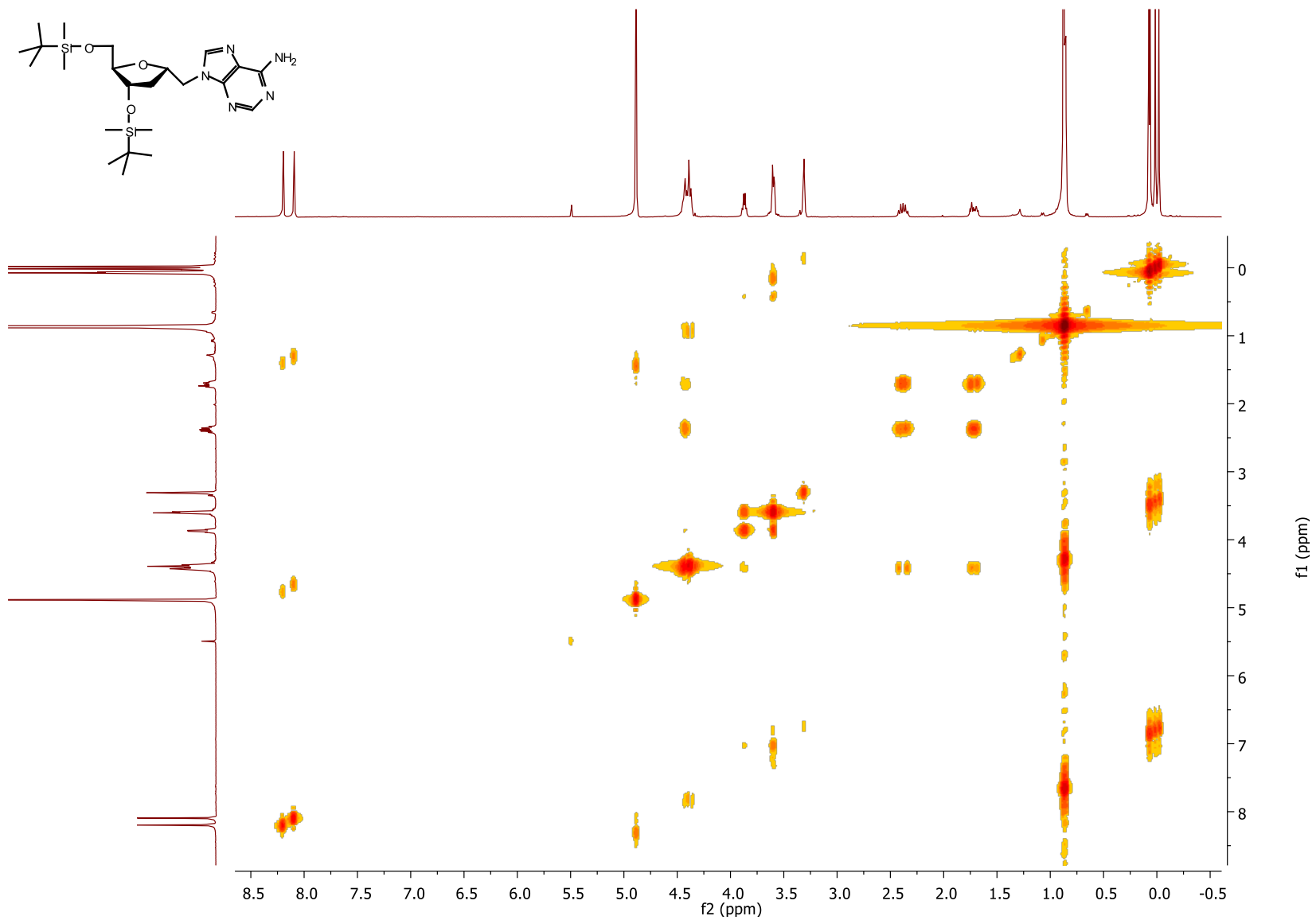
### 3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1'-homo-*N*-2'-deoxy- $\alpha$ -adenosine (17a)

DEPT NMR (75.5 MHz, MeOH- $d_4$ )



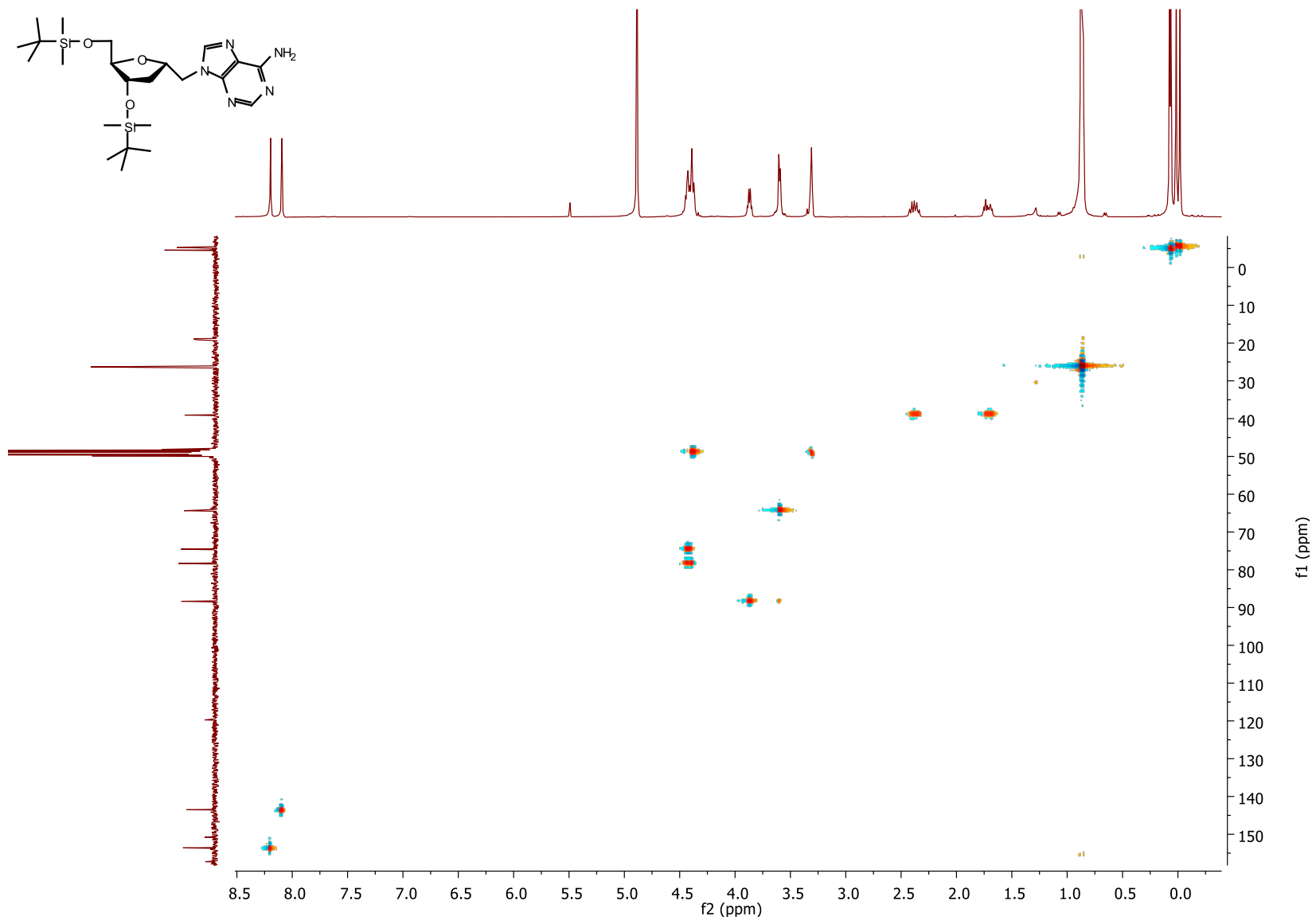
3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1'-homo-*N*-2'-deoxy- $\alpha$ -adenosine (17a)

COSY NMR (MeOH- $d_4$ )



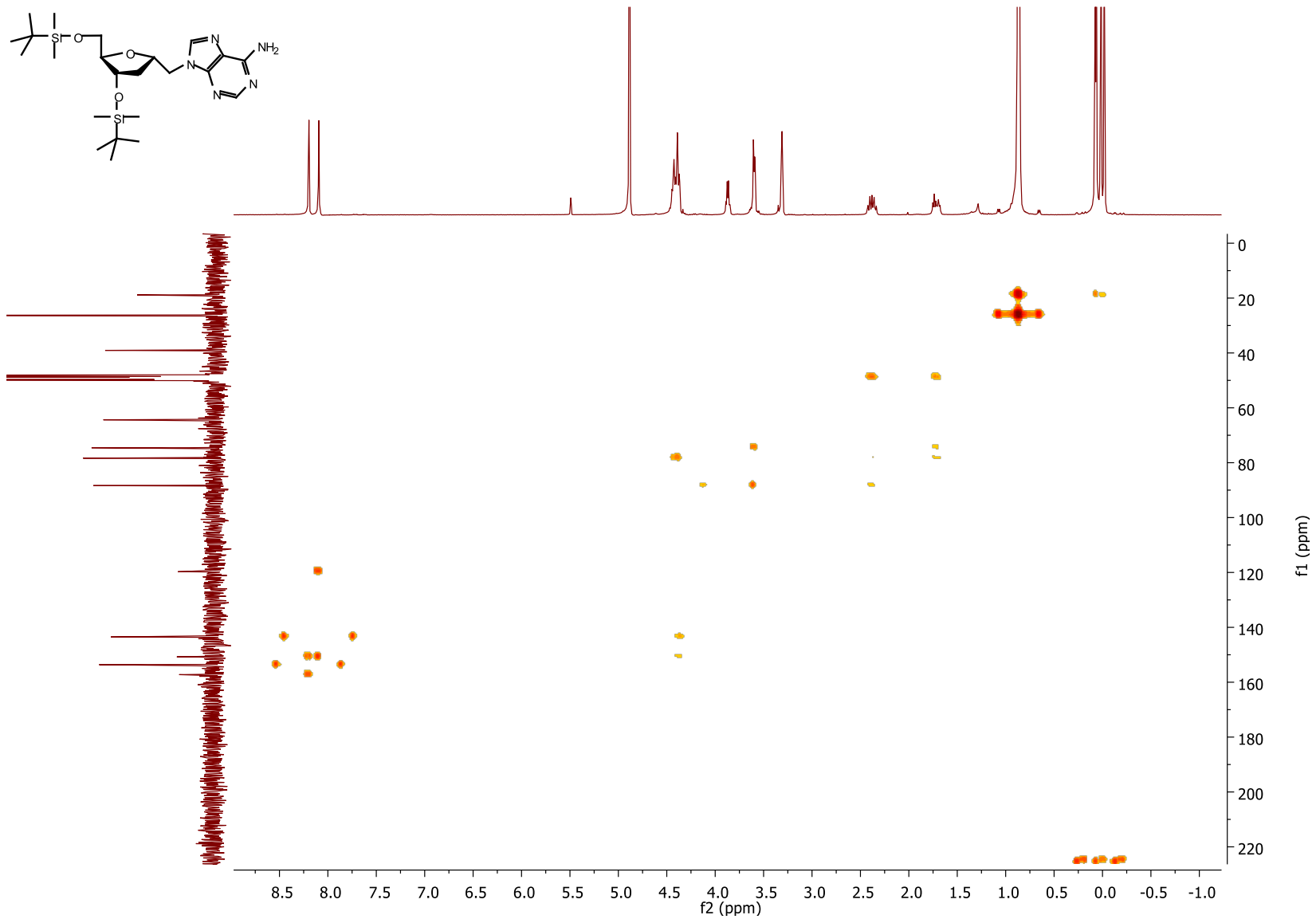
3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1'-homo-*N*-2'-deoxy- $\alpha$ -adenosine (17a)

HSQC NMR (MeOH- $d_4$ )



3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1'-homo-*N*-2'-deoxy- $\alpha$ -adenosine (17a)

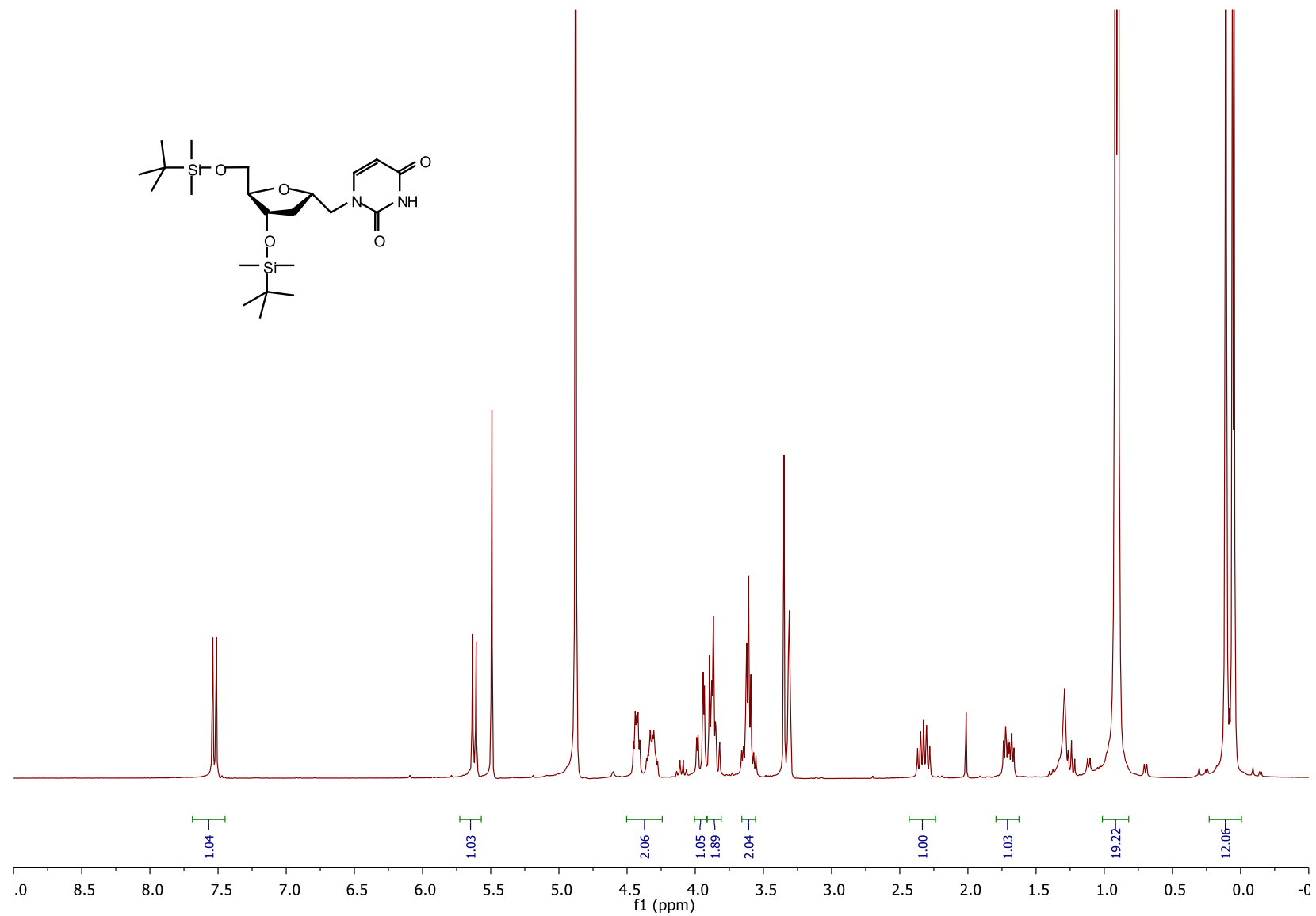
HMBC NMR (MeOH- $d_4$ )





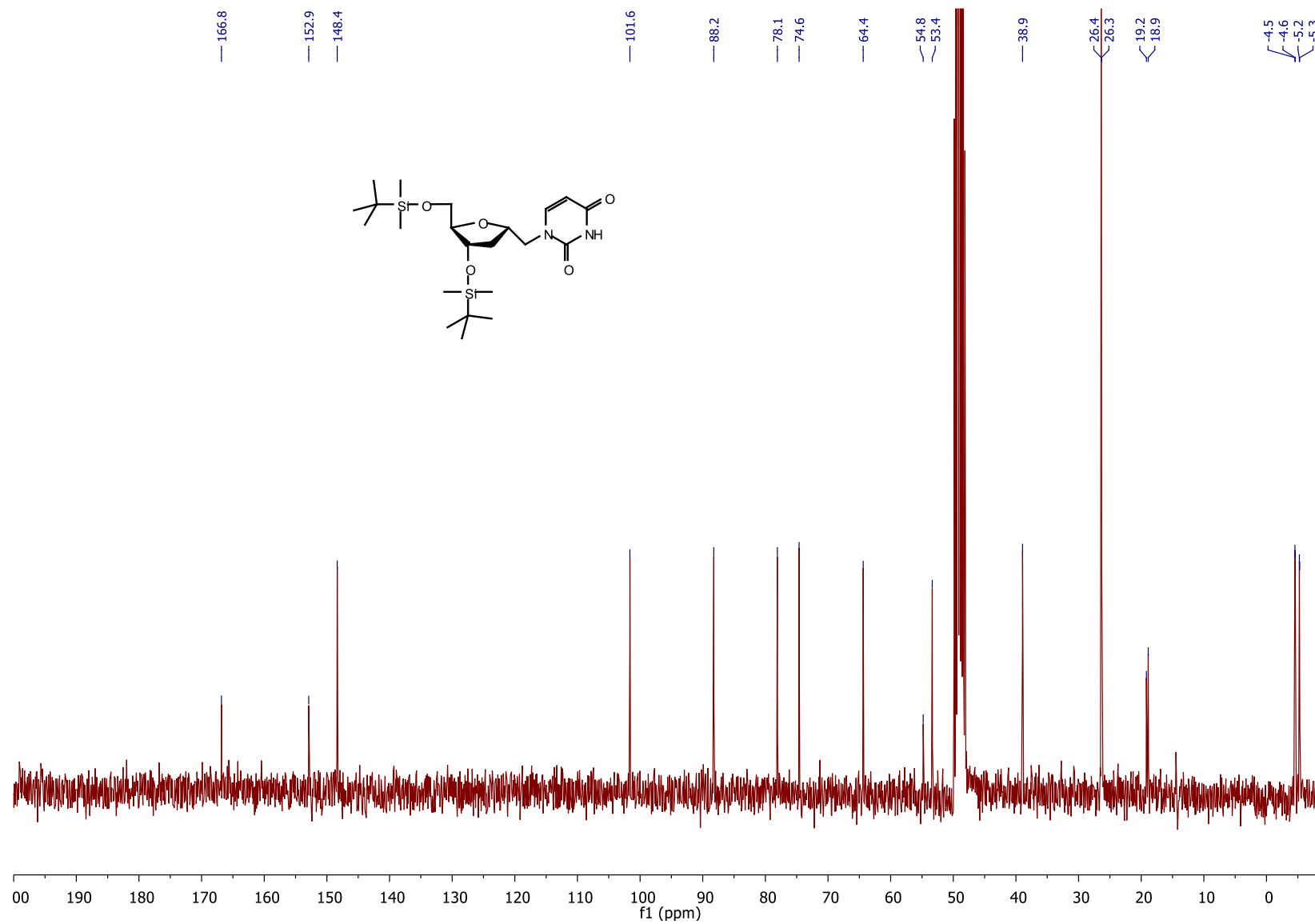
3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1'-homo-*N*-2'-deoxy- $\alpha$ -uridine (17b)

$^1\text{H}$  NMR (300.13 MHz,  $\text{MeOH-}d_4$ )



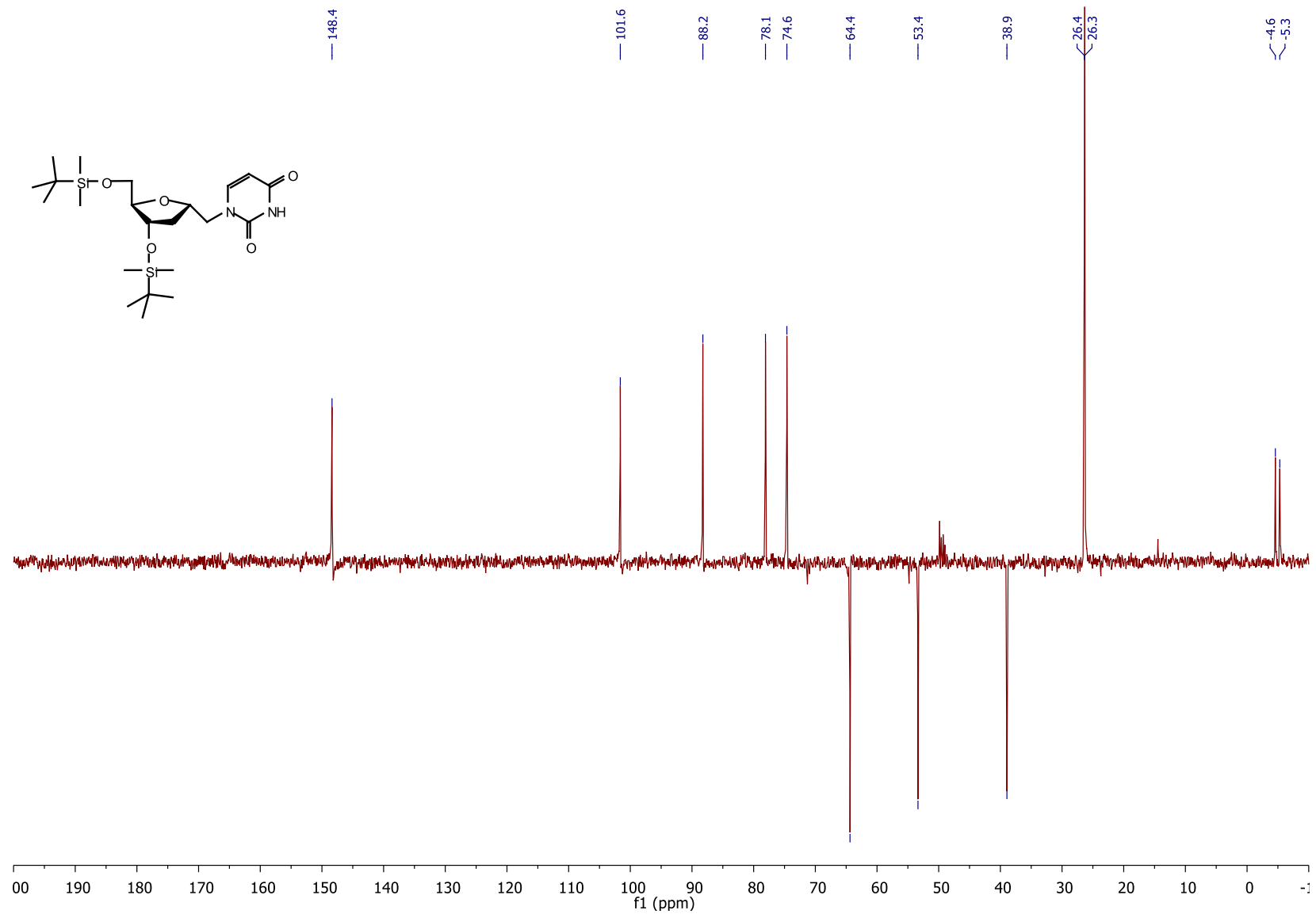
### 3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1'-homo-*N*-2'-deoxy- $\alpha$ -uridine (17b)

$^{13}\text{C}$  NMR (75.5 MHz, MeOH- $d_4$ )



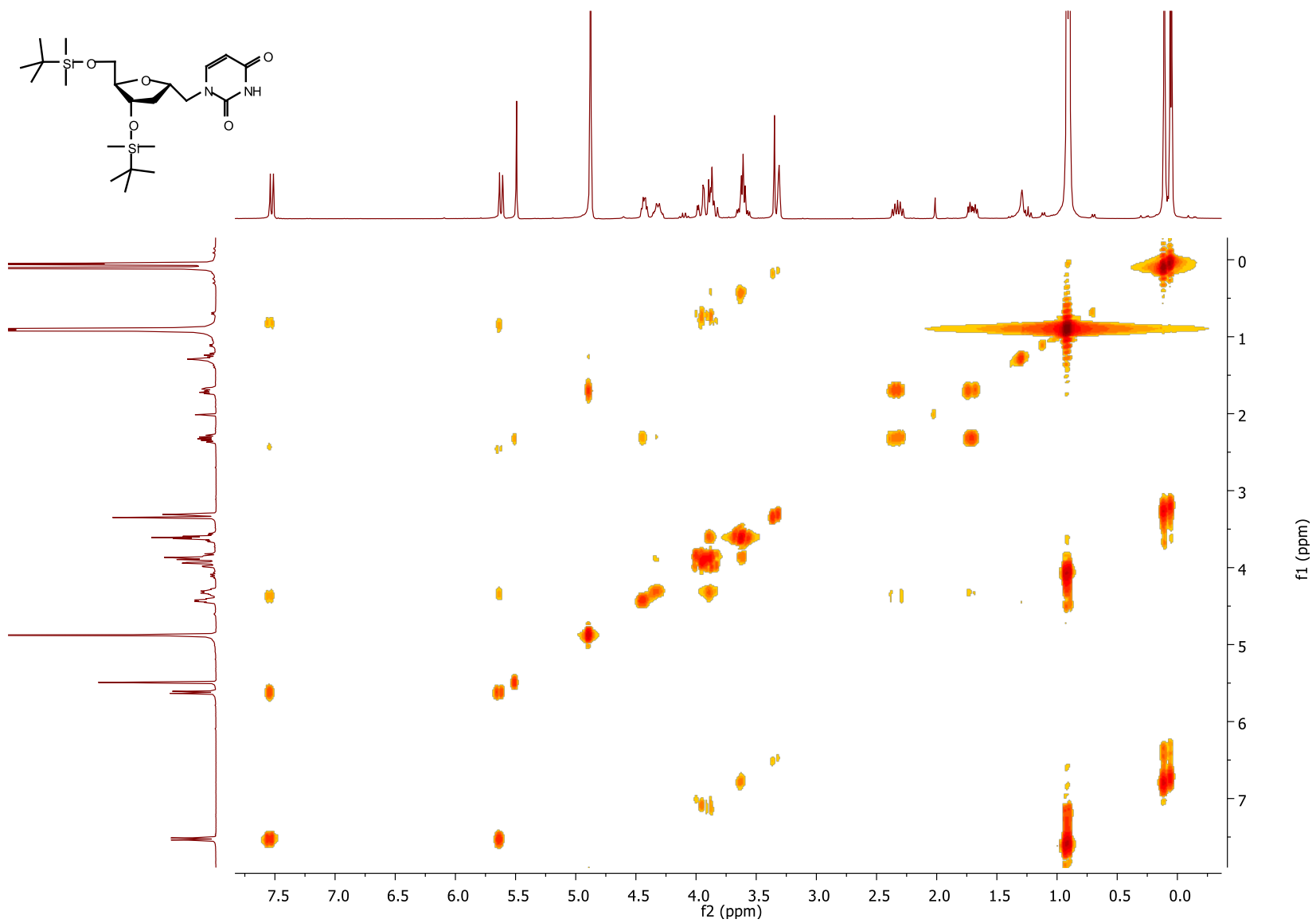
3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1'-homo-*N*-2'-deoxy- $\alpha$ -uridine (17b)

DEPT NMR (75.5 MHz, MeOH- $d_4$ )



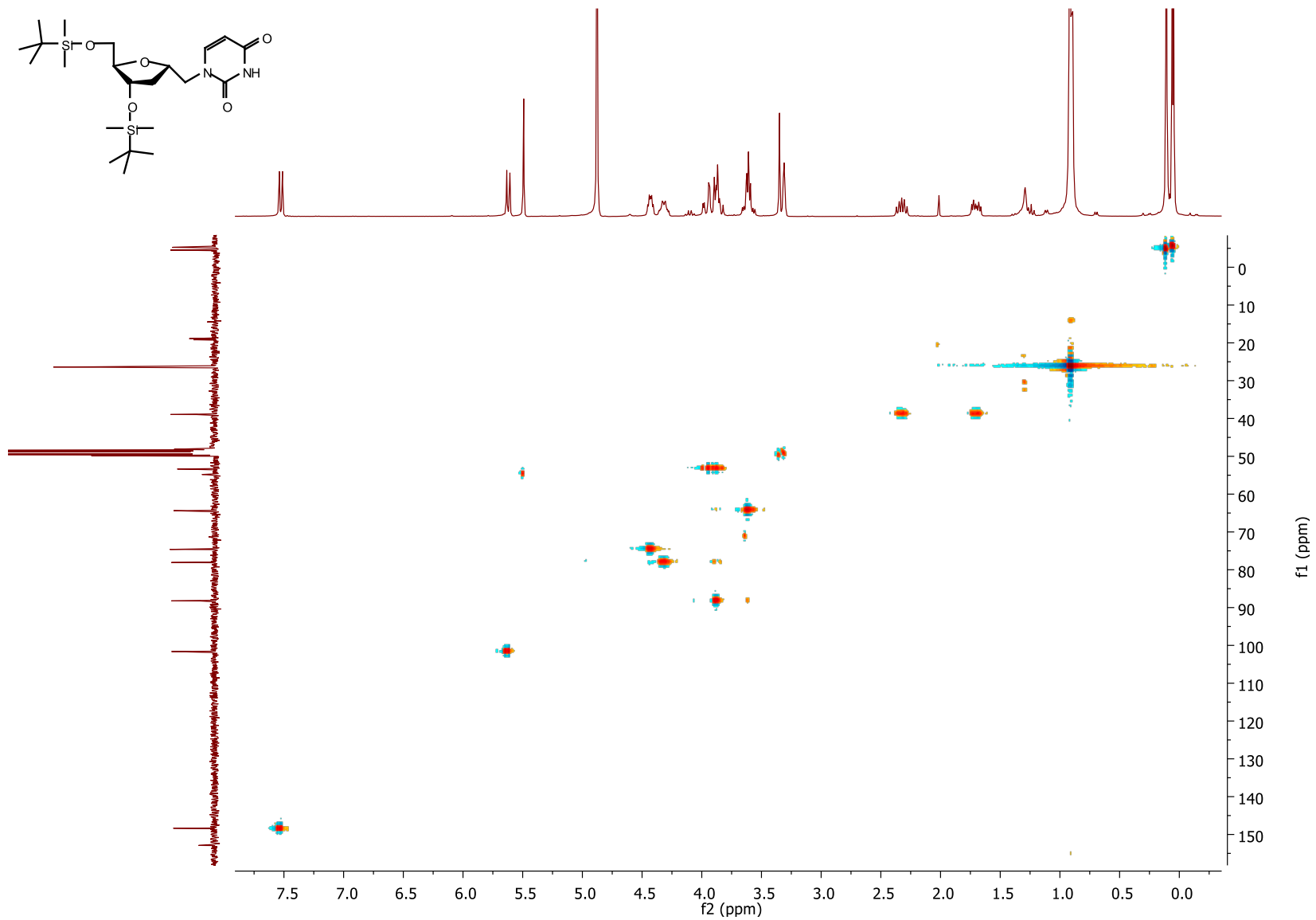
3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1'-homo-*N*-2'-deoxy- $\alpha$ -uridine (17b)

COSY NMR (MeOH- $d_4$ )



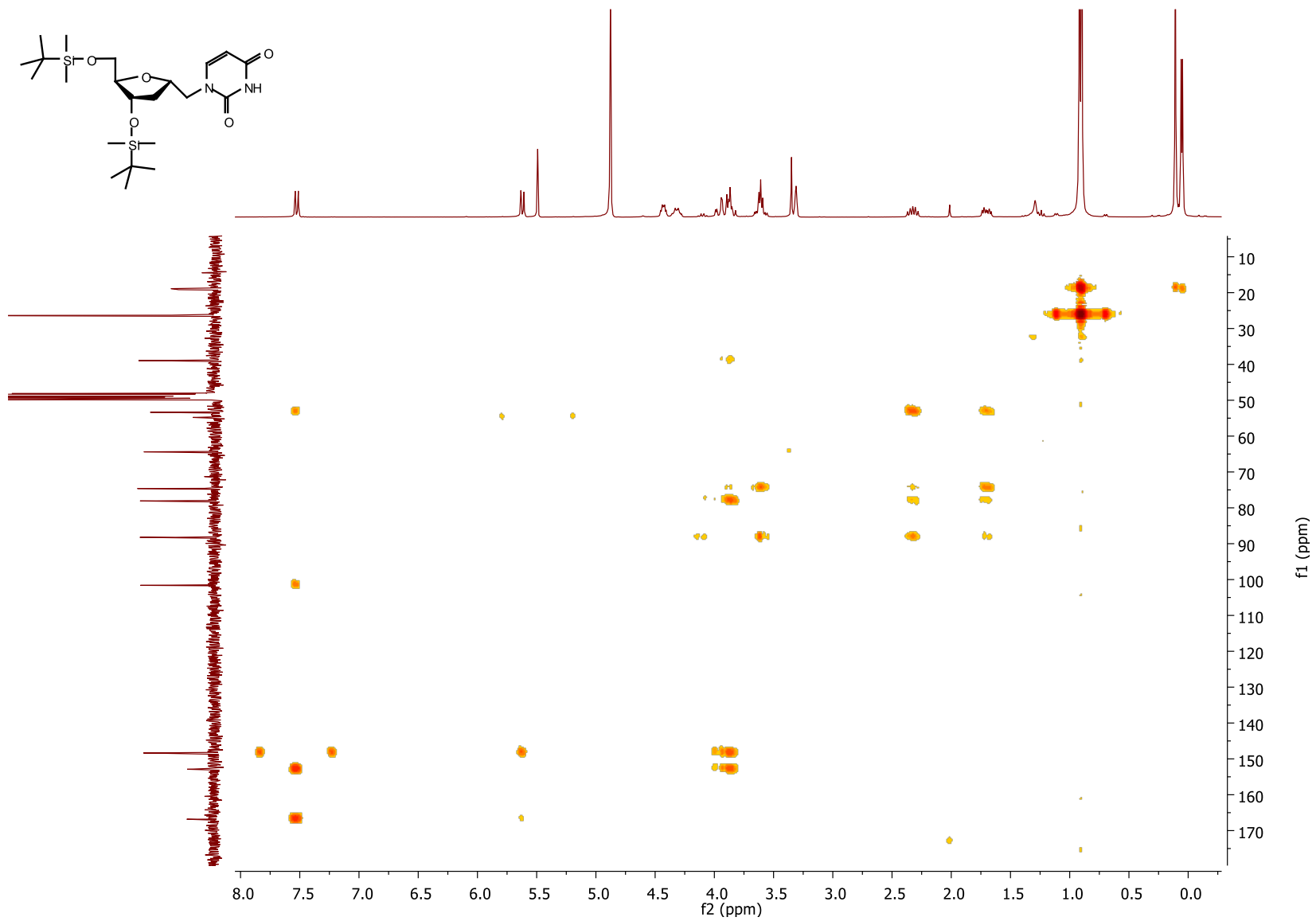
3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1'-homo-*N*-2'-deoxy- $\alpha$ -uridine (17b)

HSQC NMR (MeOH- $d_4$ )



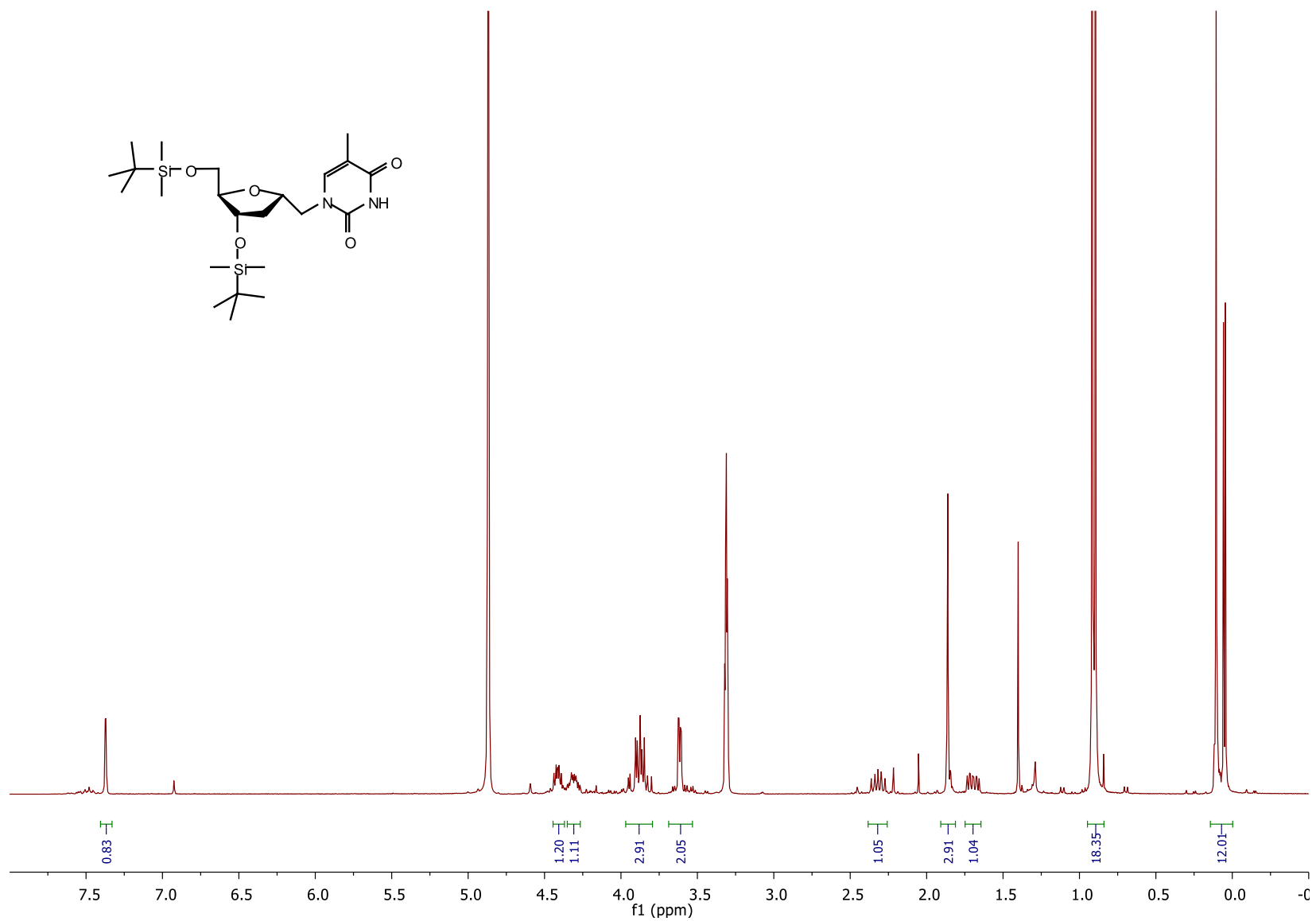
3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1'-homo-*N*-2'-deoxy- $\alpha$ -uridine (17b)

HMBC NMR (MeOH- $d_4$ )



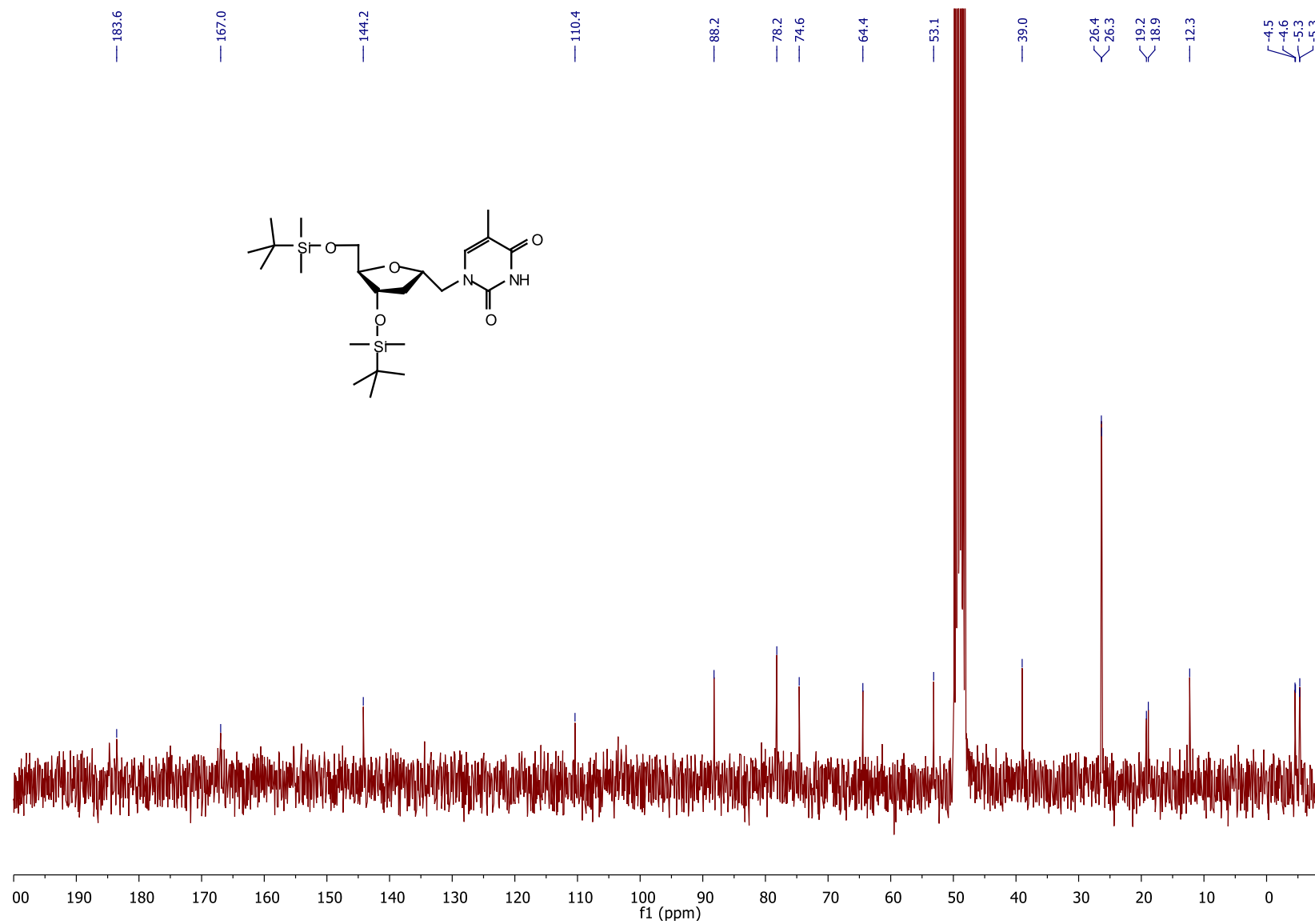
3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1'-homo-*N*- $\alpha$ -thymidine (17c)

$^1\text{H}$  NMR (300.13 MHz,  $\text{MeOH-}d_4$ )



3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1'-homo-*N*- $\alpha$ -thymidine (17c)

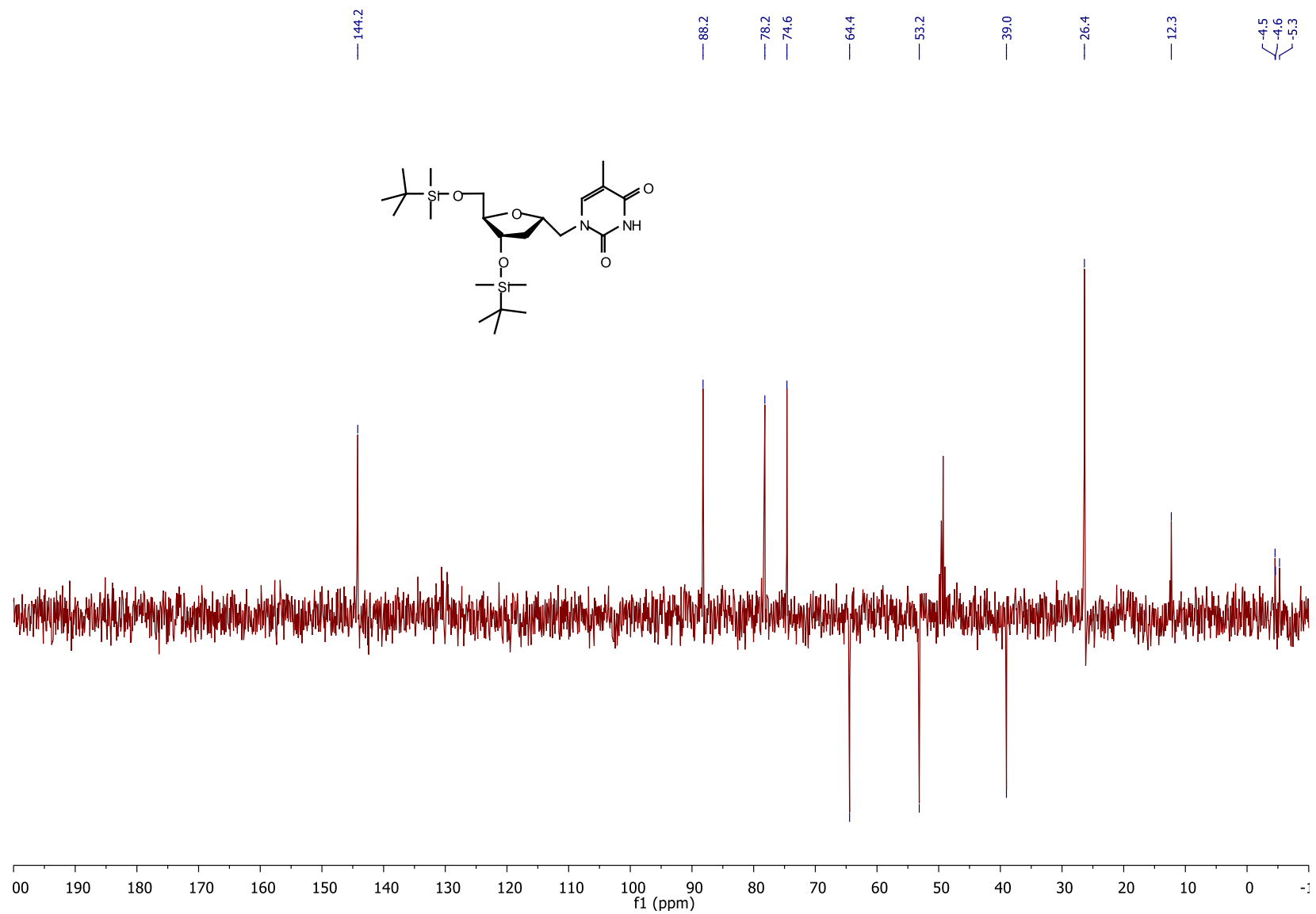
$^{13}\text{C}$  NMR (75.5 MHz,  $\text{MeOH-}d_4$ )





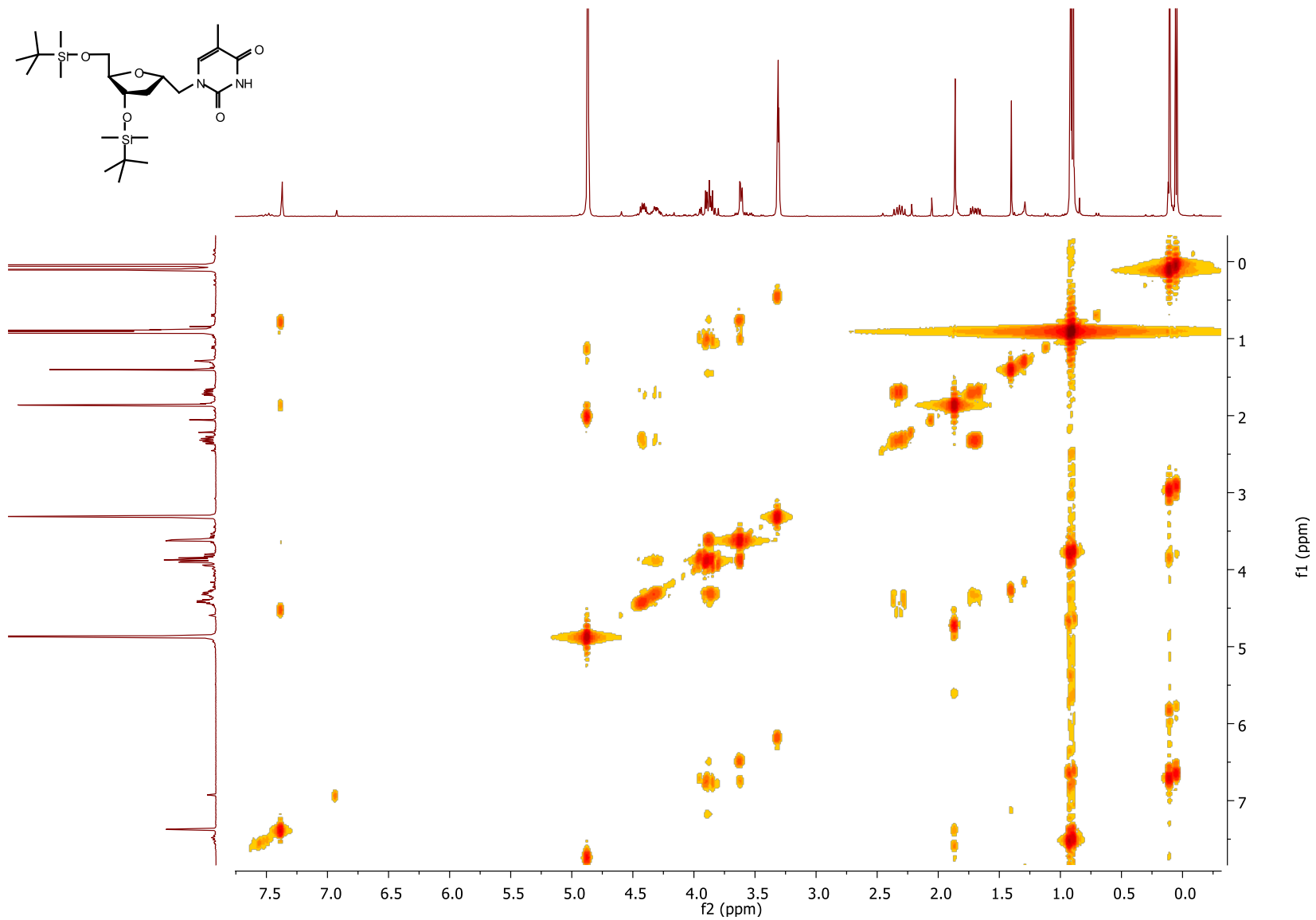
3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1'-homo-*N*- $\alpha$ -thymidine (17c)

DEPT NMR (75.5 MHz, MeOH- $d_4$ )



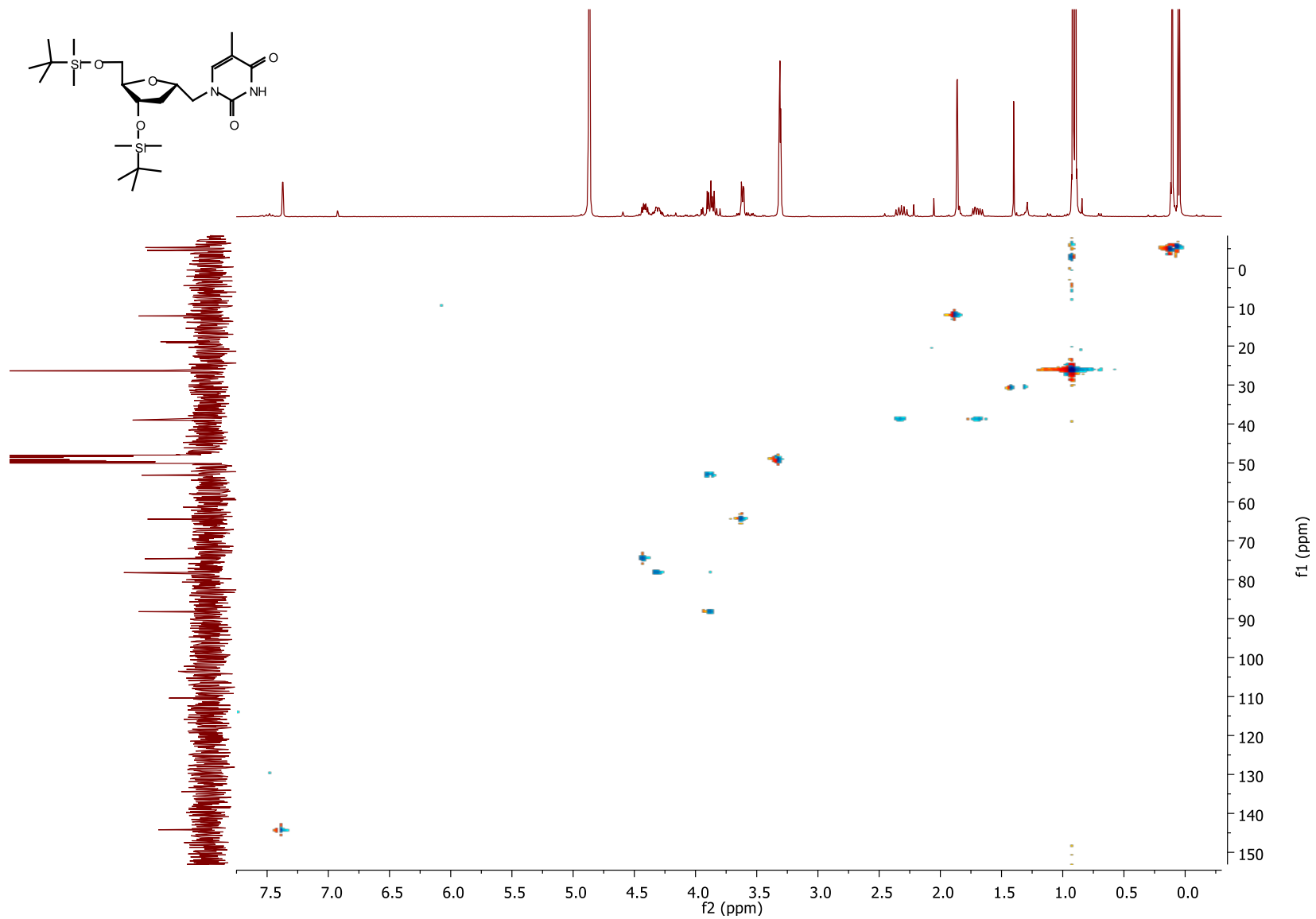
3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1'-homo-*N*- $\alpha$ -thymidine (17c)

COSY NMR (MeOH- $d_4$ )



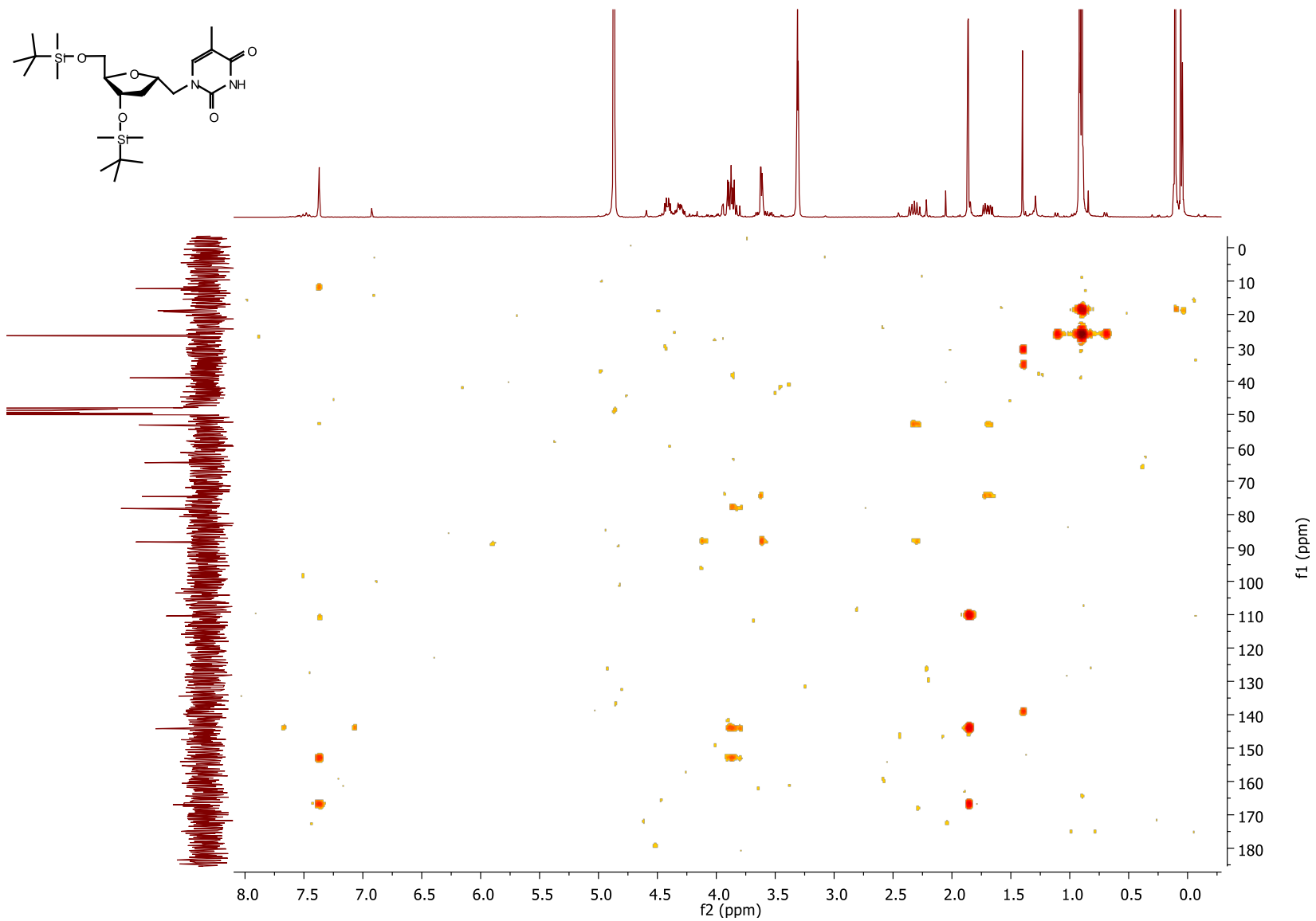
3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1'-homo-*N*- $\alpha$ -thymidine (17c)

HSQC NMR (MeOH- $d_4$ )



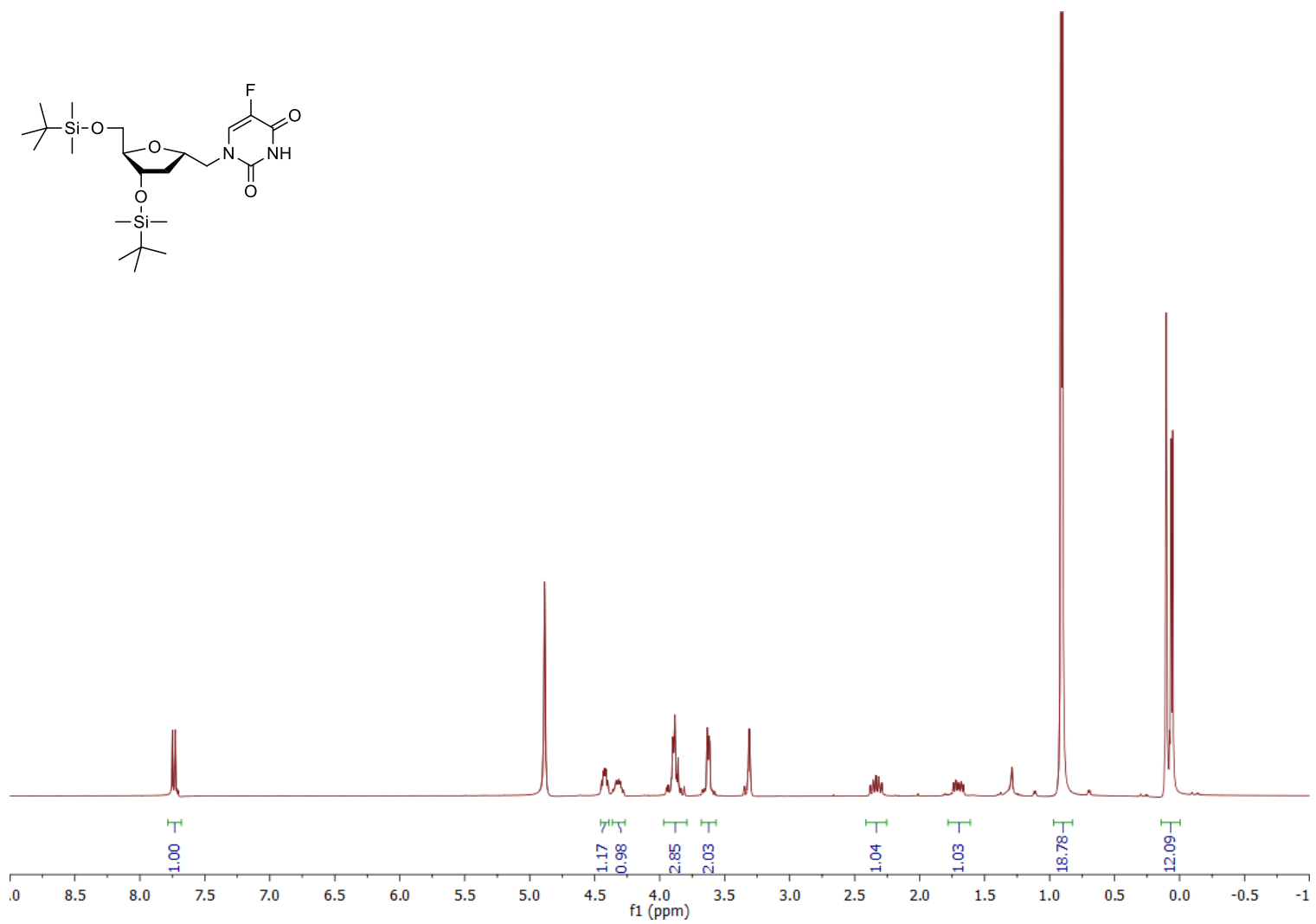
3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1'-homo-*N*- $\alpha$ -thymidine (17c)

HMBC NMR (MeOH- $d_4$ )



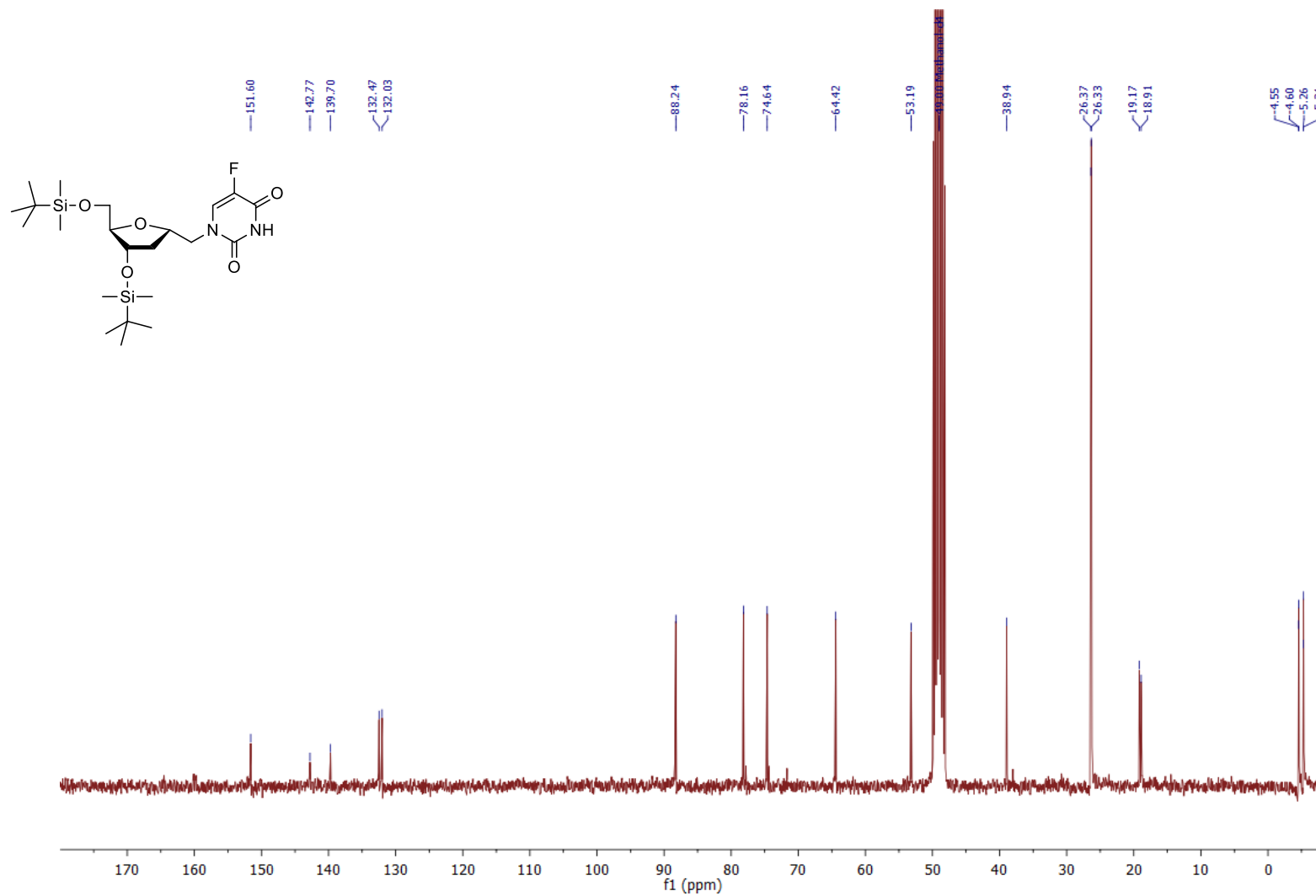
3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1'-homo-*N*-2'-deoxy- $\alpha$ -5-fluorouridine (17d)

$^1\text{H}$  NMR (300.13 MHz, MeOH- $d_4$ )



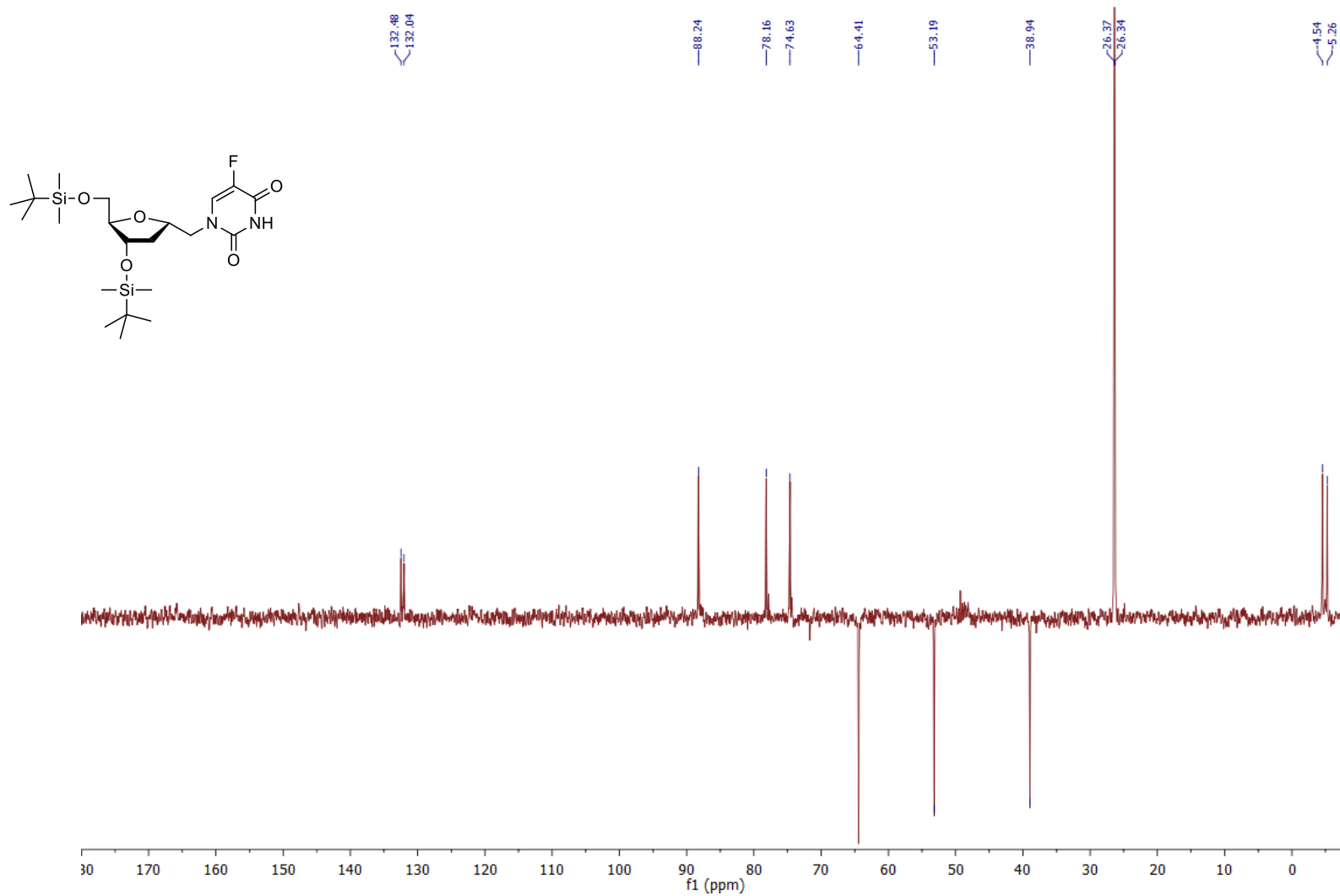
### 3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1'-homo-*N*-2'-deoxy- $\alpha$ -5-fluorouridine (17d)

$^{13}\text{C}$  NMR (75.5 MHz,  $\text{MeOH-}d_4$ )



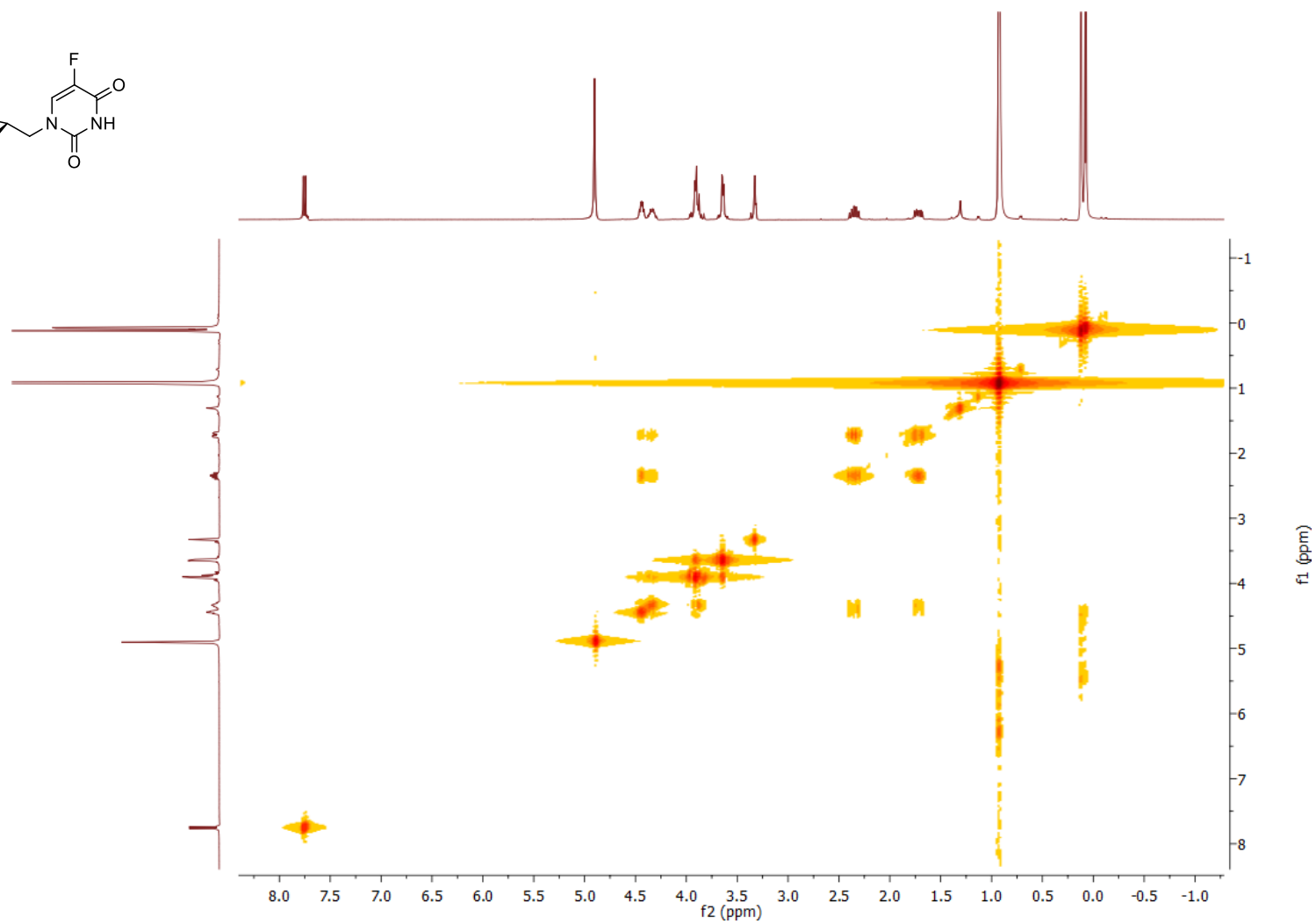
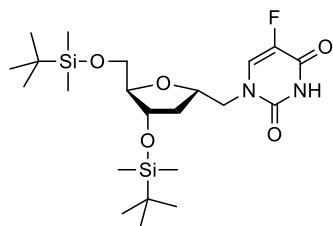
3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1'-homo-*N*-2'-deoxy- $\alpha$ -5-fluorouridine (17d)

DEPT 135 (75.5 MHz, MeOH-*d*<sub>4</sub>)



3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1'-homo-*N*-2'-deoxy- $\alpha$ -5-fluorouridine (17d)

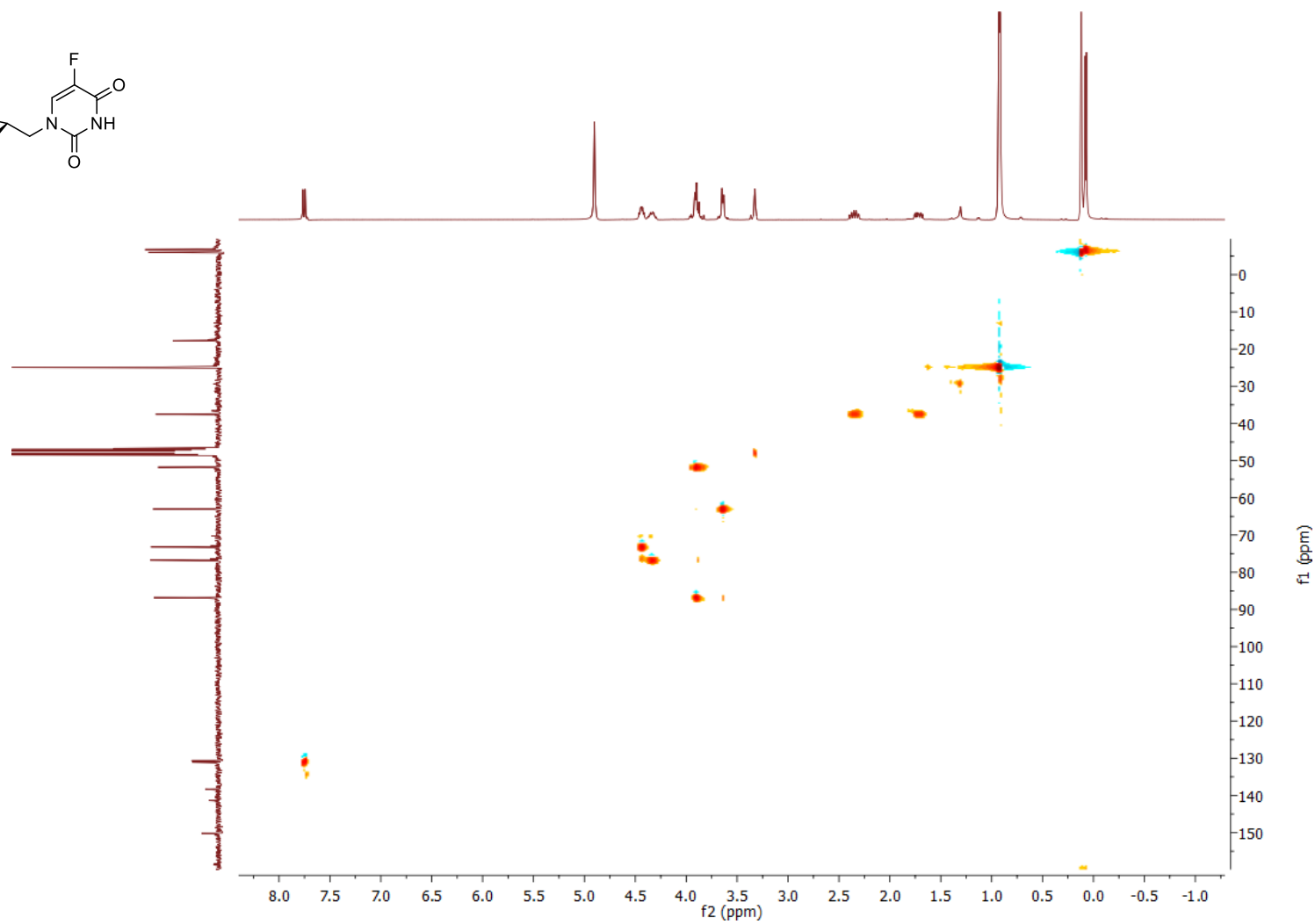
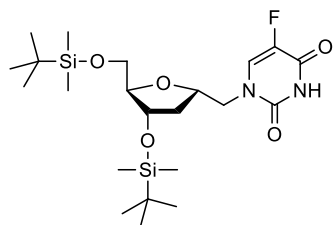
COSY NMR (MeOH- $d_4$ )





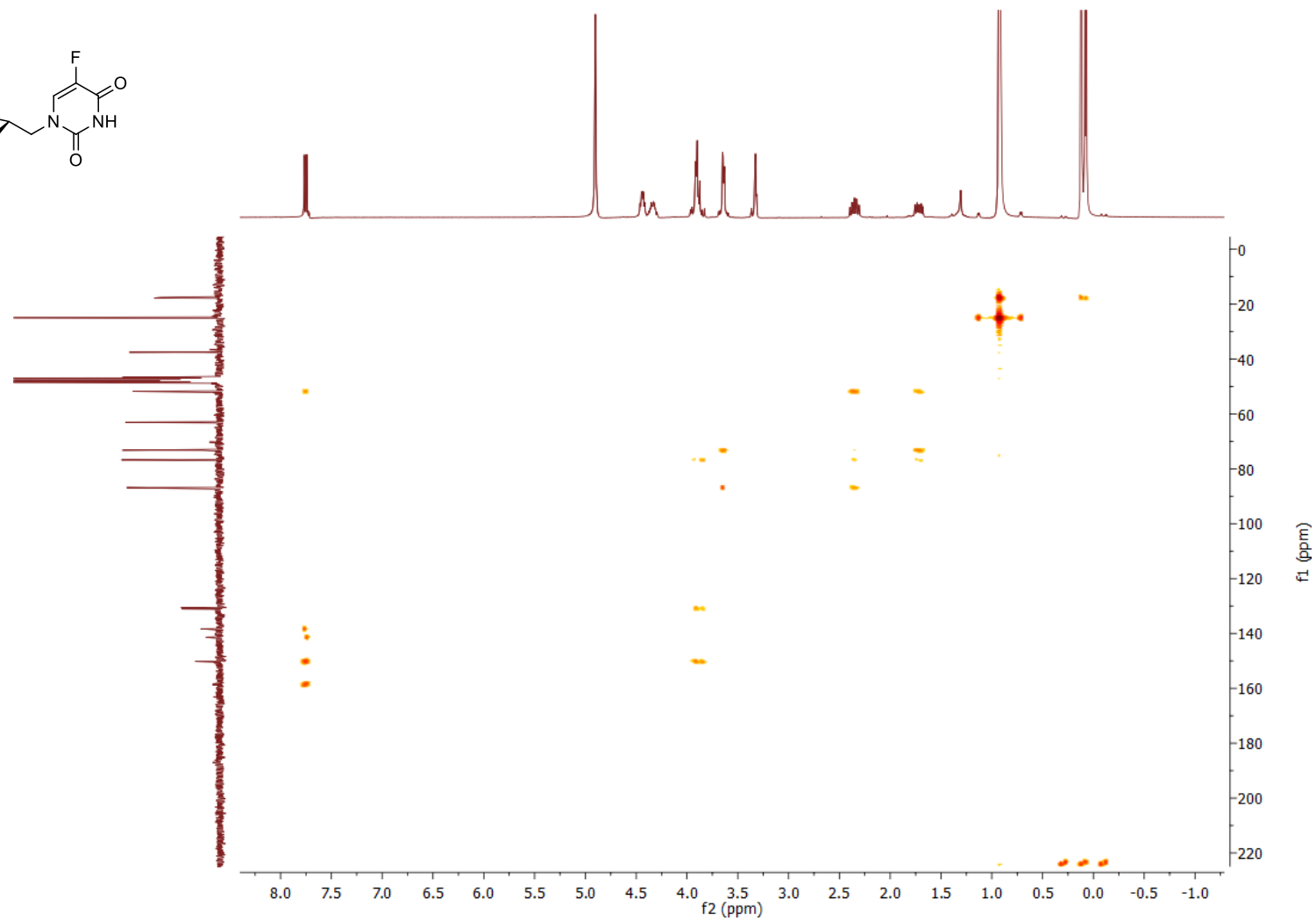
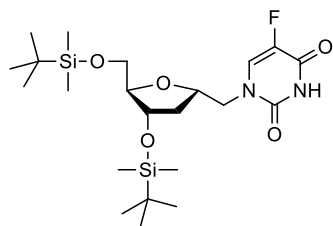
3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1'-homo-*N*-2'-deoxy- $\alpha$ -5-fluorouridine (17d)

HSQC NMR (MeOH- $d_4$ )



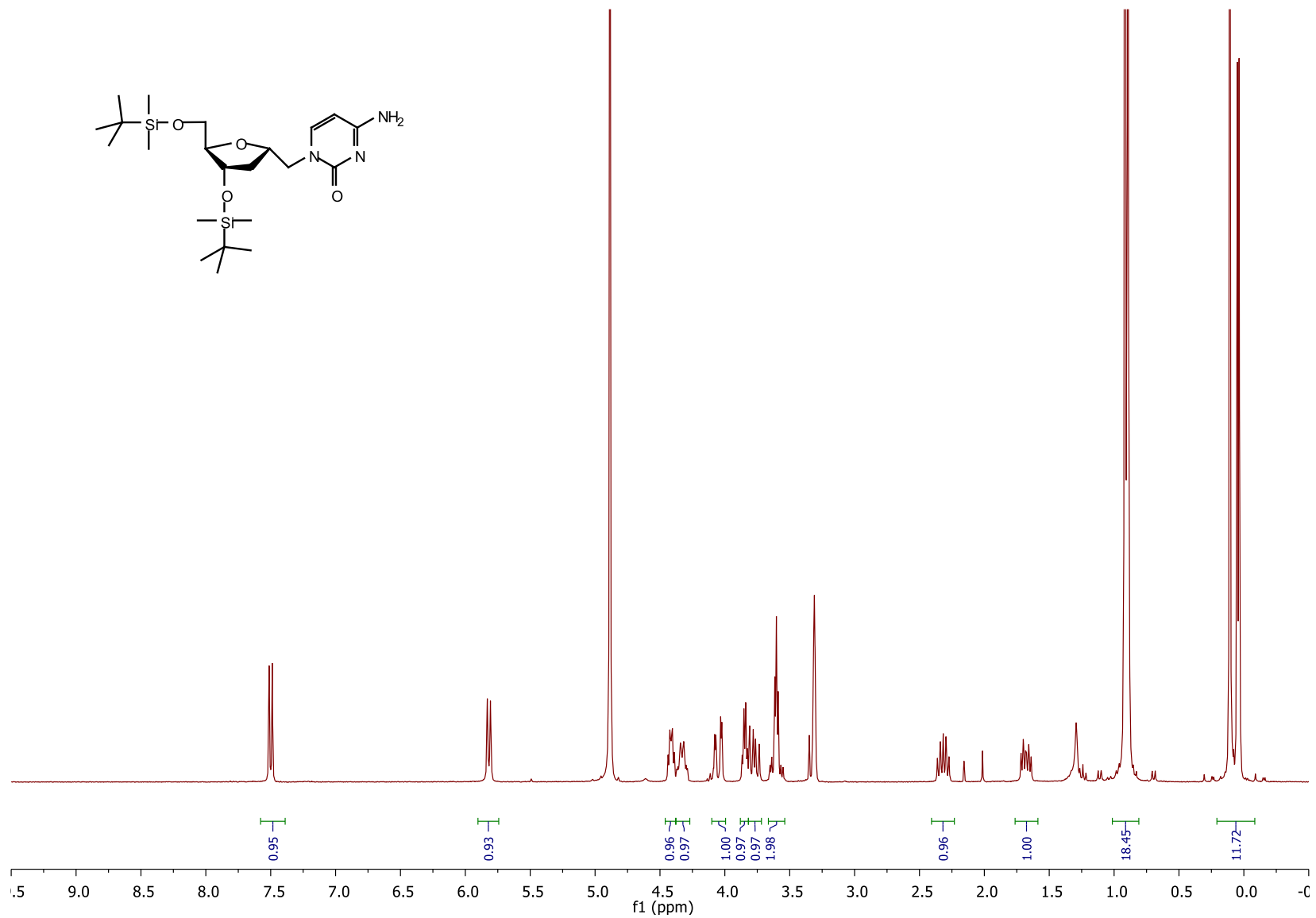
3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1'-homo-*N*-2'-deoxy- $\alpha$ -5-fluorouridine (17d)

HMBC NMR (MeOH- $d_4$ )



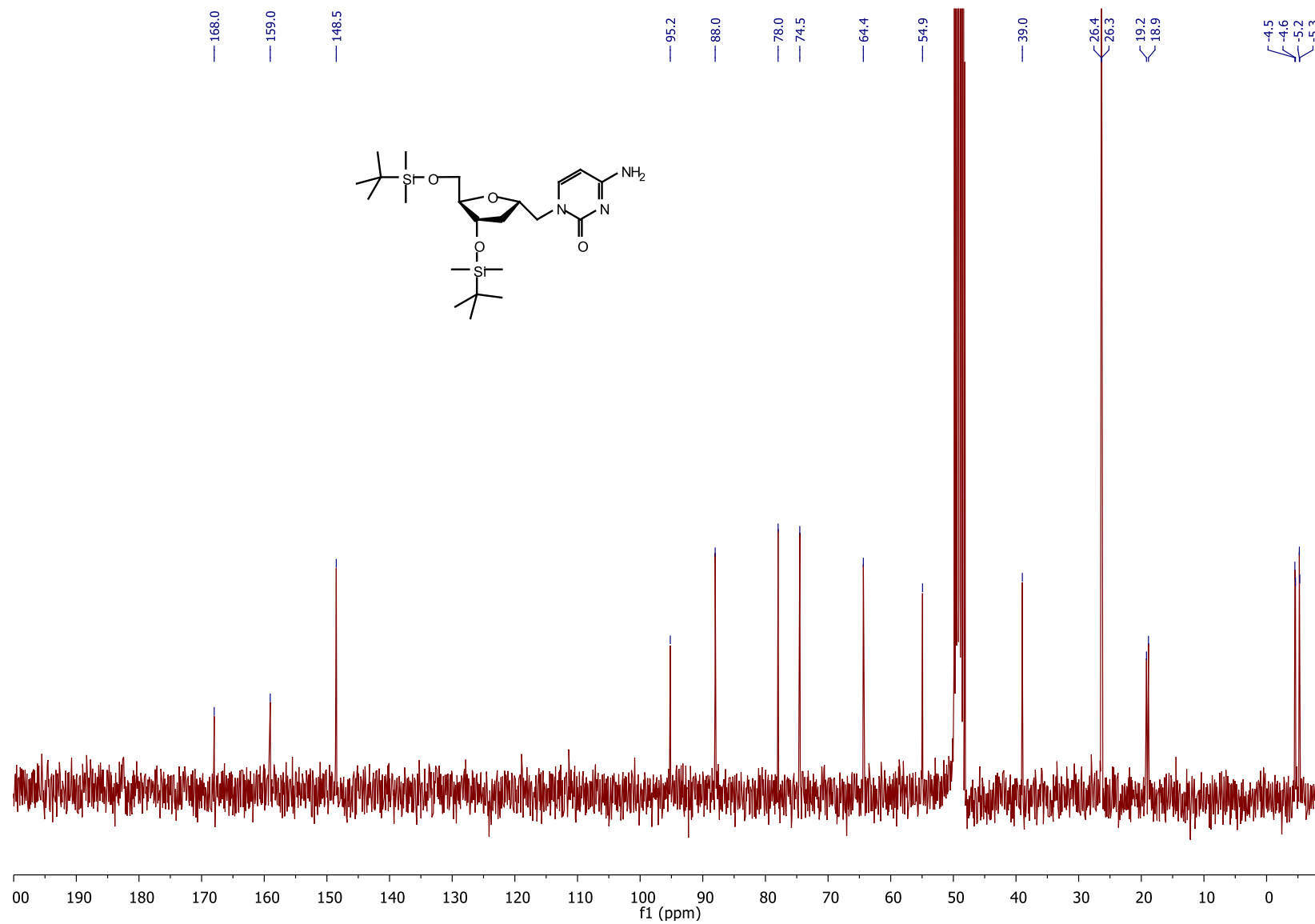
3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1'-homo-*N*-2'-deoxy- $\alpha$ -cytidine (17e)

$^1\text{H}$  NMR (300.13 MHz,  $\text{MeOH-}d_4$ )



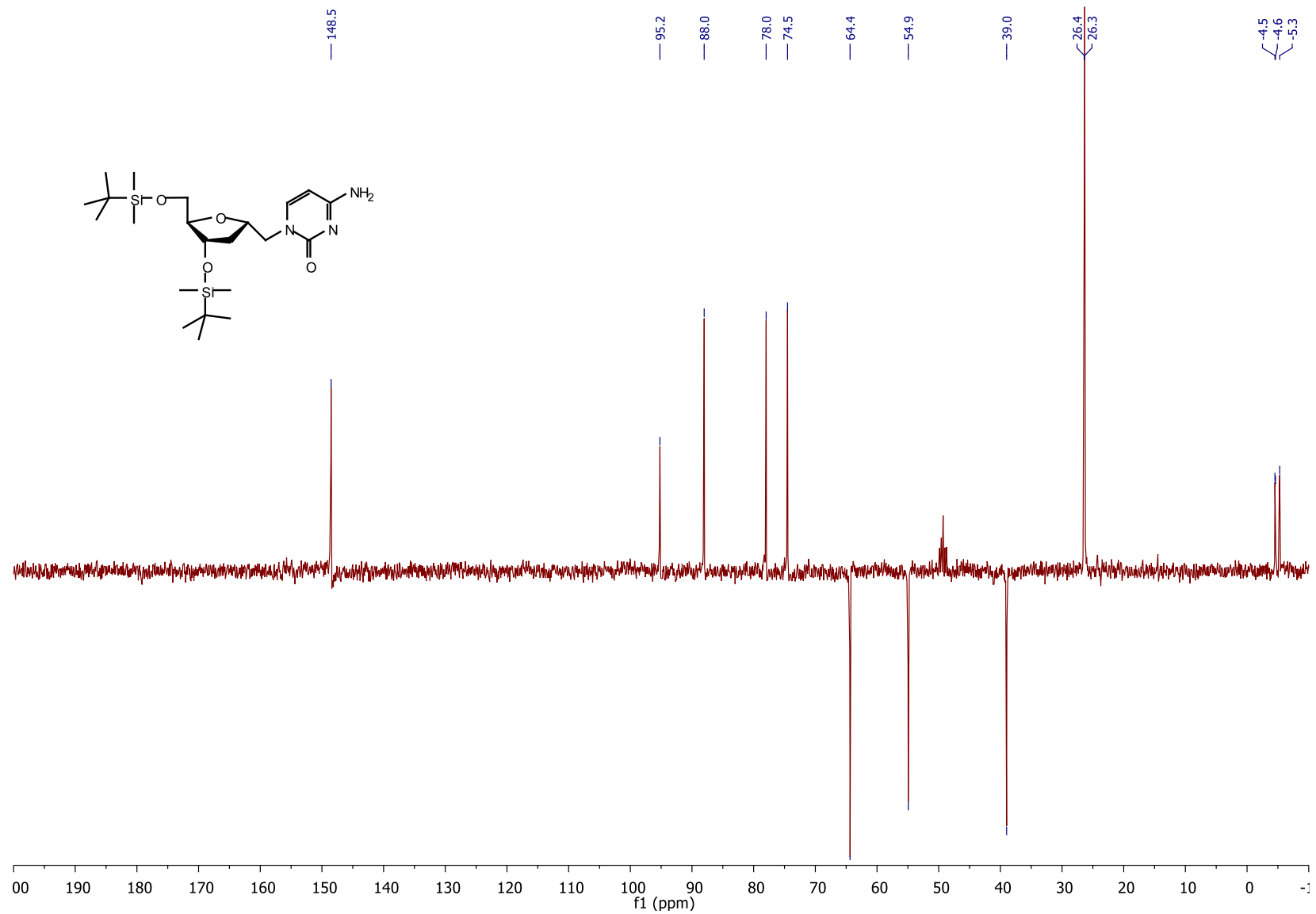
### 3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1'-homo-*N*-2'-deoxy- $\alpha$ -cytidine (17e)

$^{13}\text{C}$  NMR (75.5 MHz, MeOH- $d_4$ )



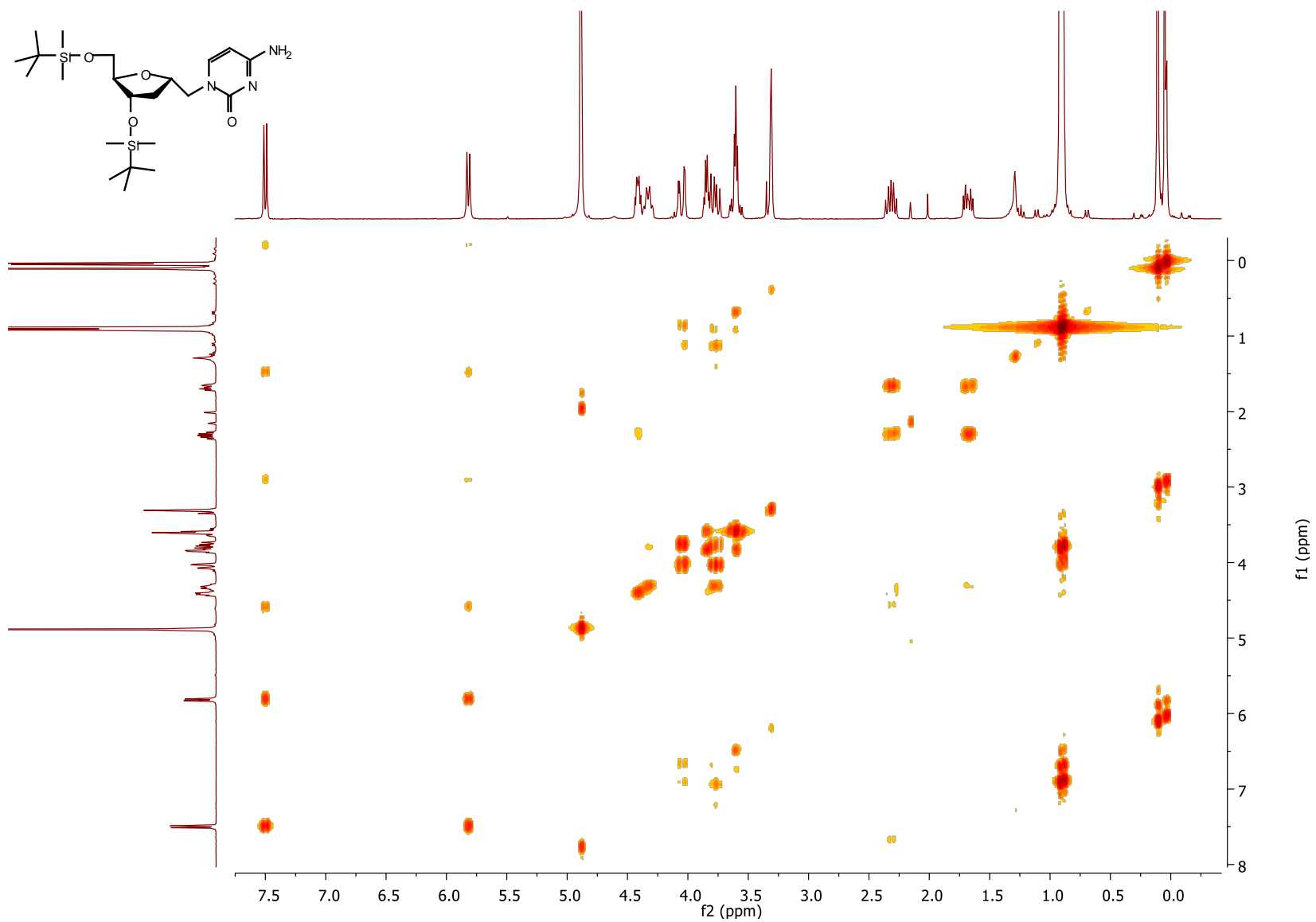
### 3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1'-homo-*N*-2'-deoxy- $\alpha$ -cytidine (17e)

DEPT NMR (75.5 MHz, MeOH- $d_4$ )



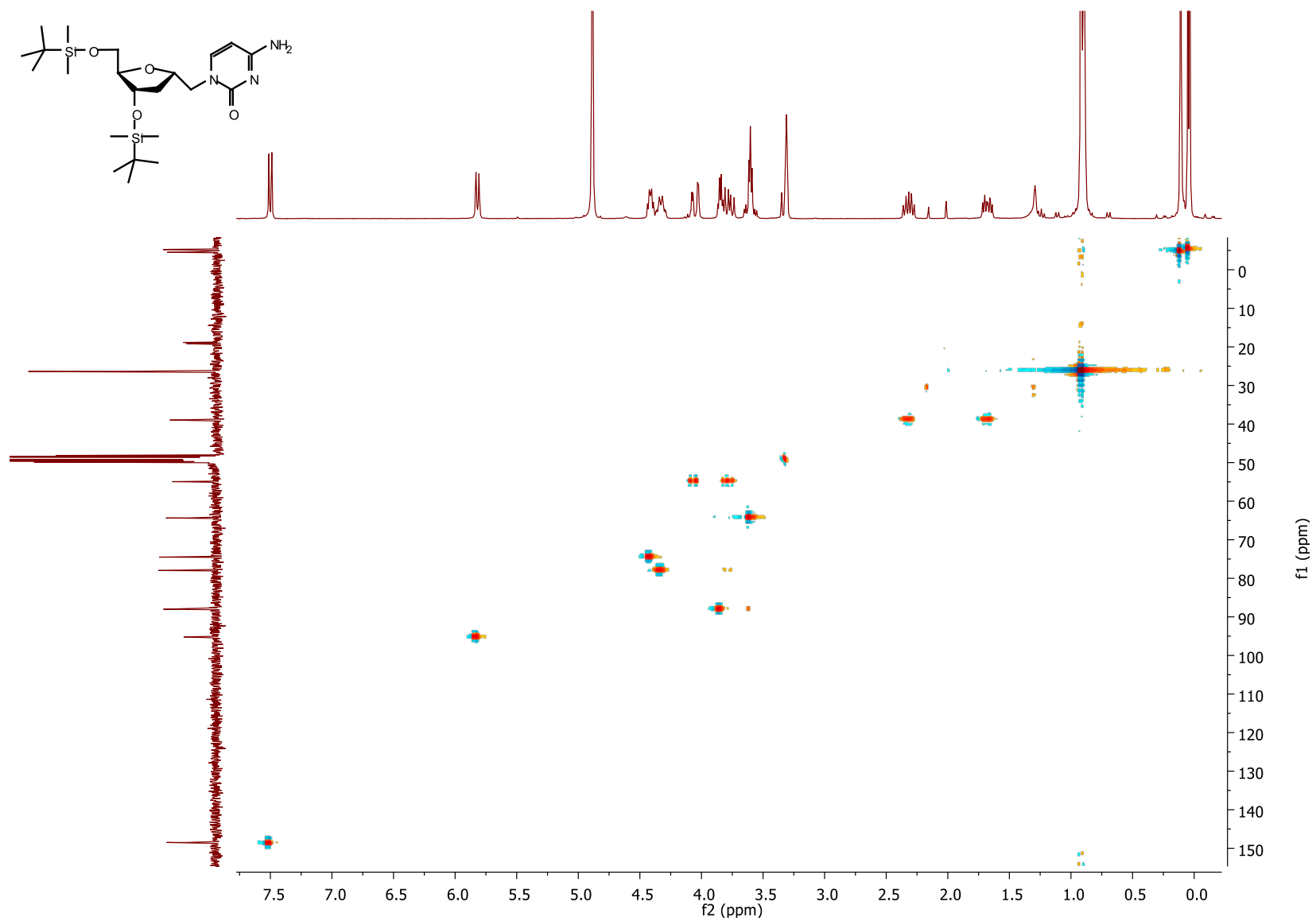
3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1'-homo-*N*-2'-deoxy- $\alpha$ -cytidine (17e)

COSY NMR (MeOH- $d_4$ )



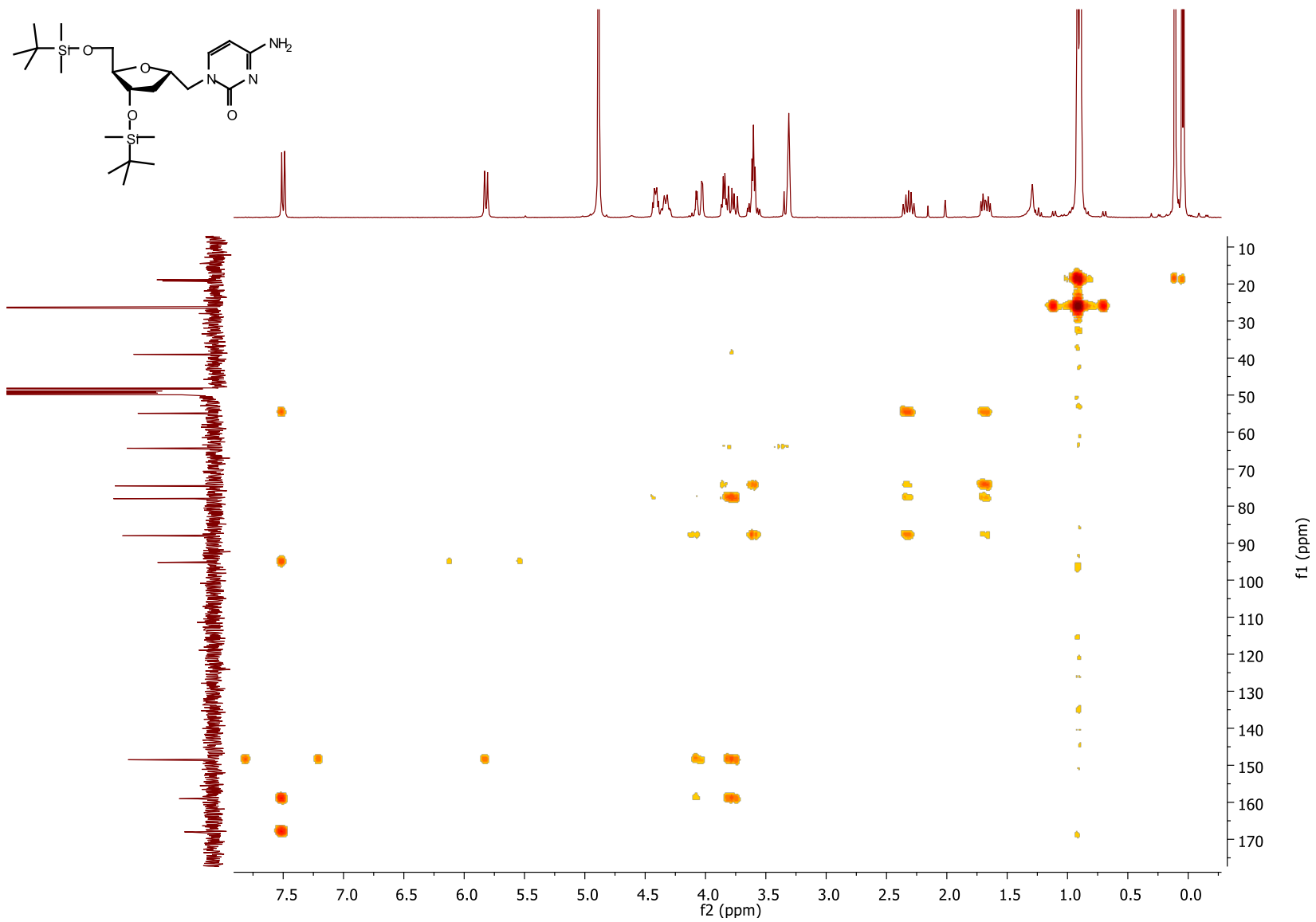
3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1'-homo-*N*-2'-deoxy- $\alpha$ -cytidine (17e)

HSQC NMR (MeOH- $d_4$ )



3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1'-homo-*N*-2'-deoxy- $\alpha$ -cytidine (17e)

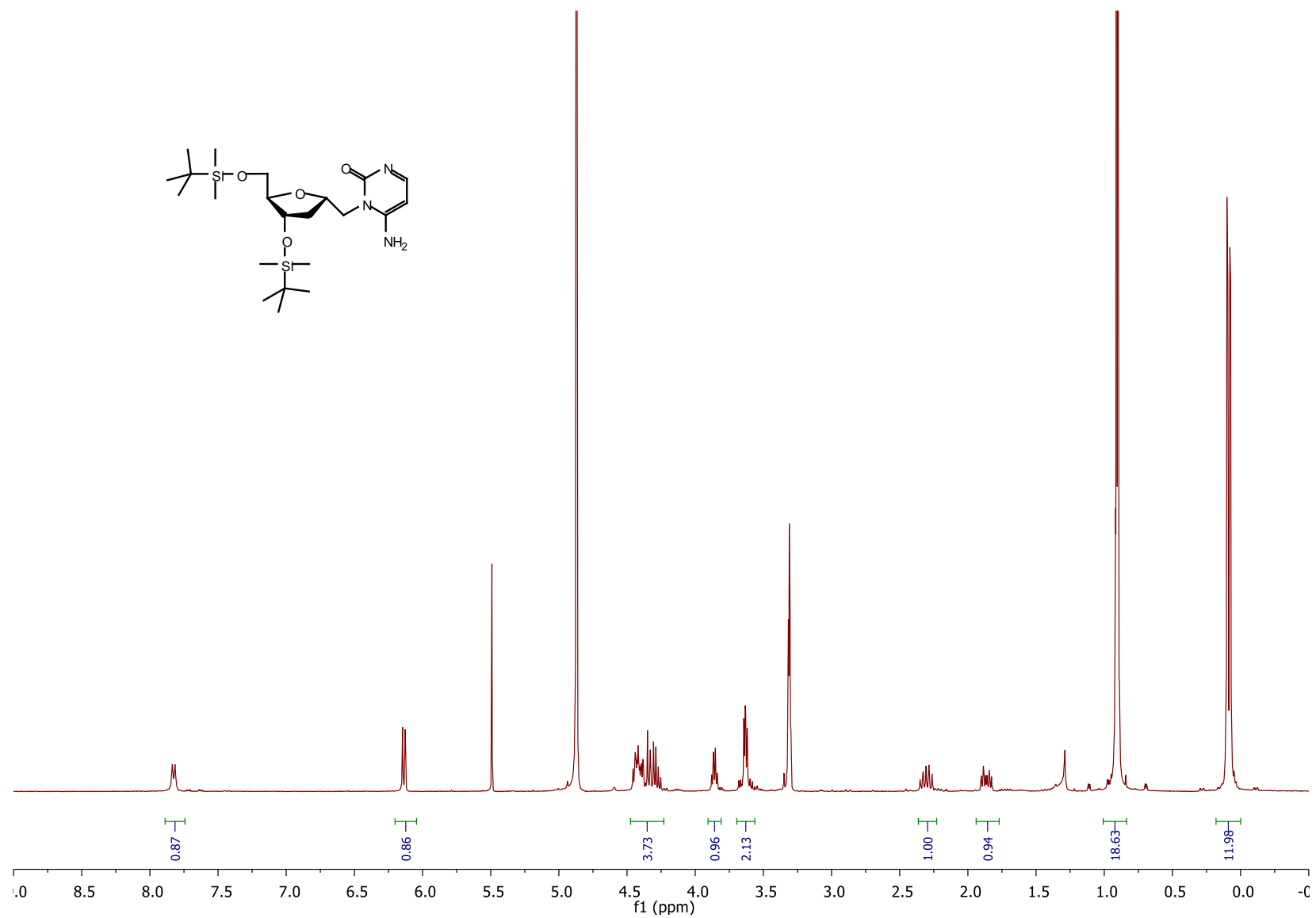
HMBC NMR (MeOH- $d_4$ )





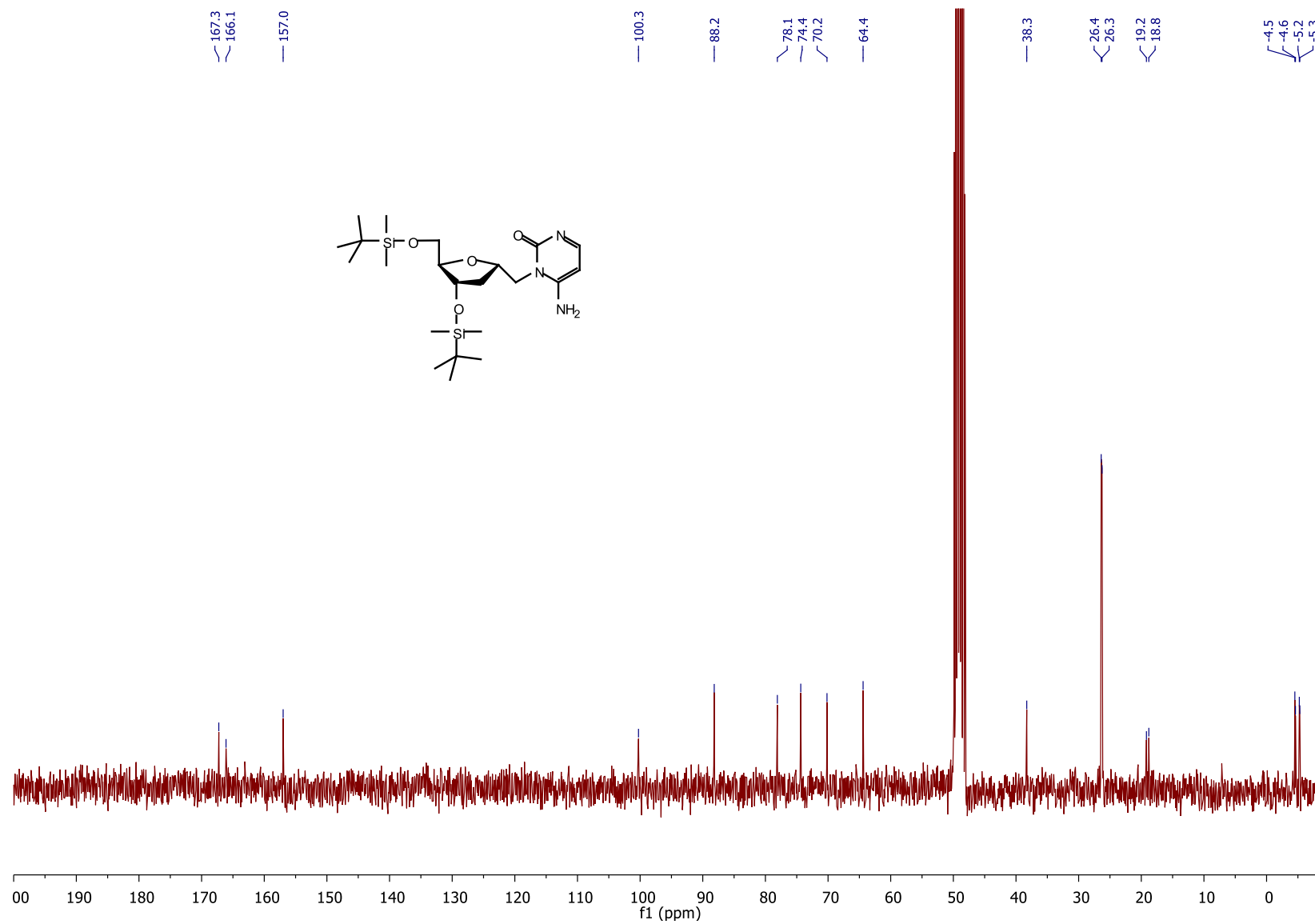
N-3 analogue of 3,5-bis-O-(*tert*-Butyldimethylsilyl)-1'-homo-N-2'-deoxy- $\alpha$ -cytidine (17e)

$^1\text{H}$  NMR (300.13 MHz,  $\text{MeOH-}d_4$ )



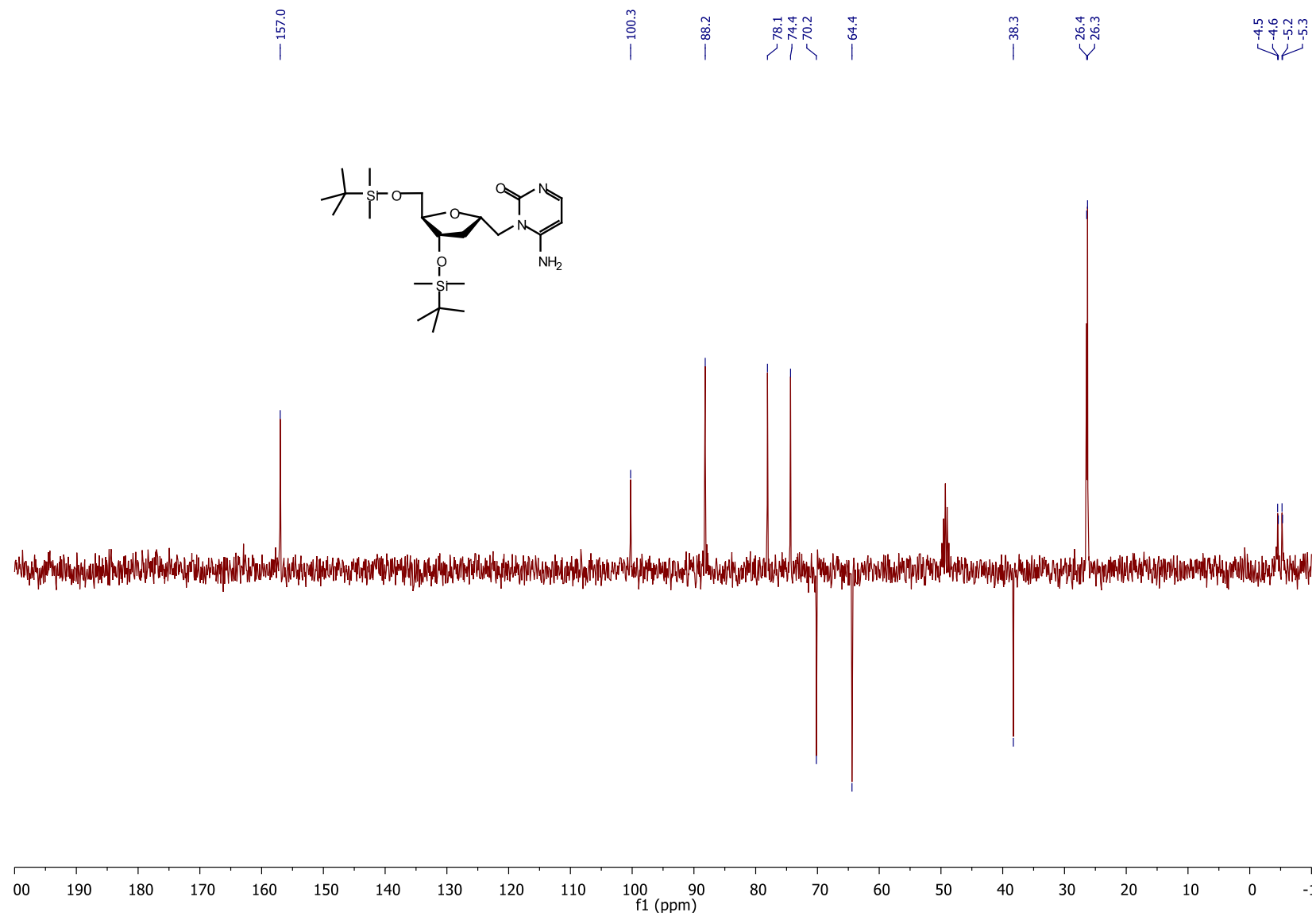
N-3 analogue of 3,5-bis-O-(*tert*-Butyldimethylsilyl)-1'-homo-N-2'-deoxy- $\alpha$ -cytidine (17e)

$^{13}\text{C}$  NMR (75.5 MHz,  $\text{MeOH-}d_4$ )



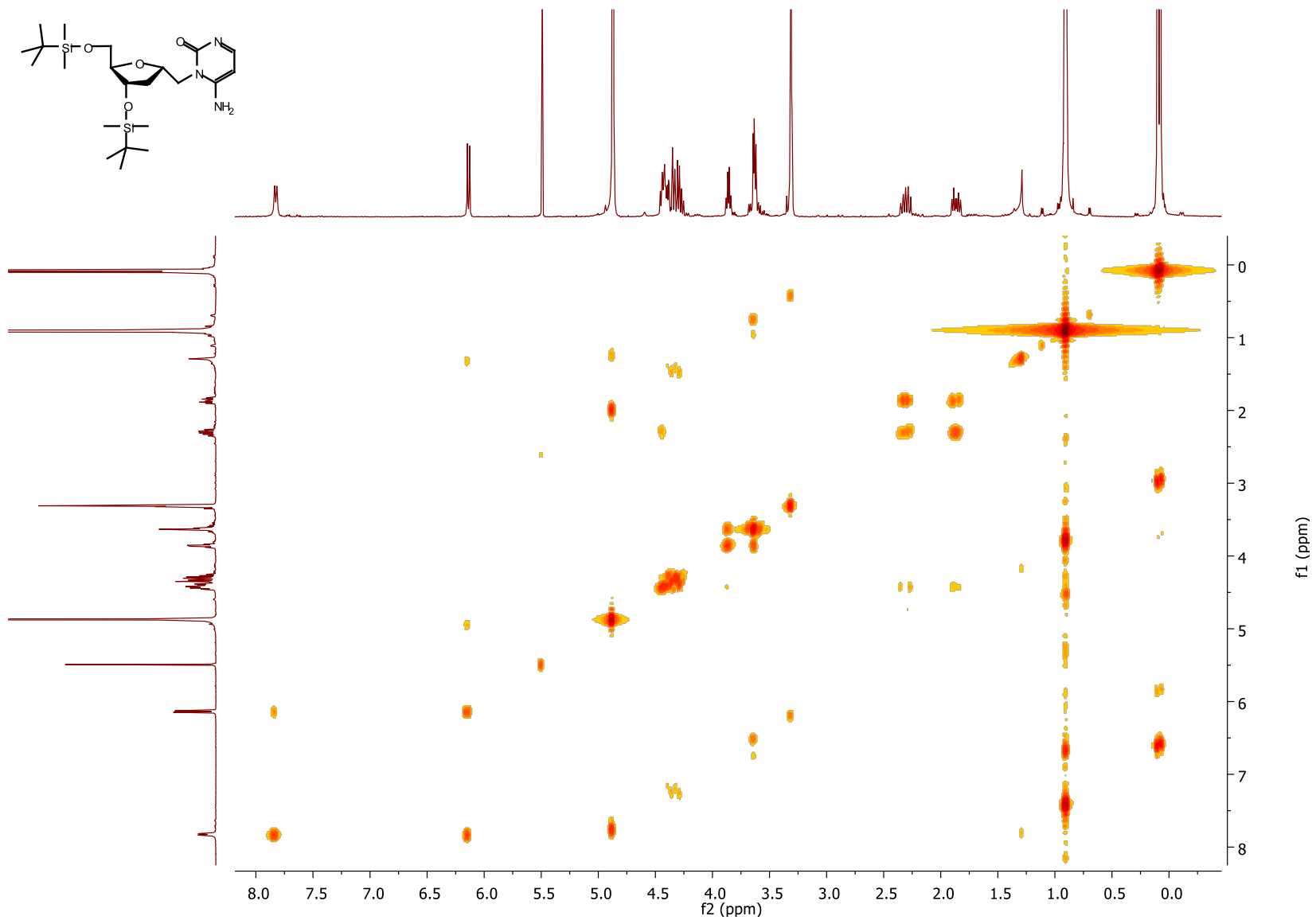
N-3 analogue of 3,5-bis-O-(*tert*-Butyldimethylsilyl)-1'-homo-N-2'-deoxy- $\alpha$ -cytidine (17e)

DEPT NMR (75.5 MHz, MeOH- $d_4$ )



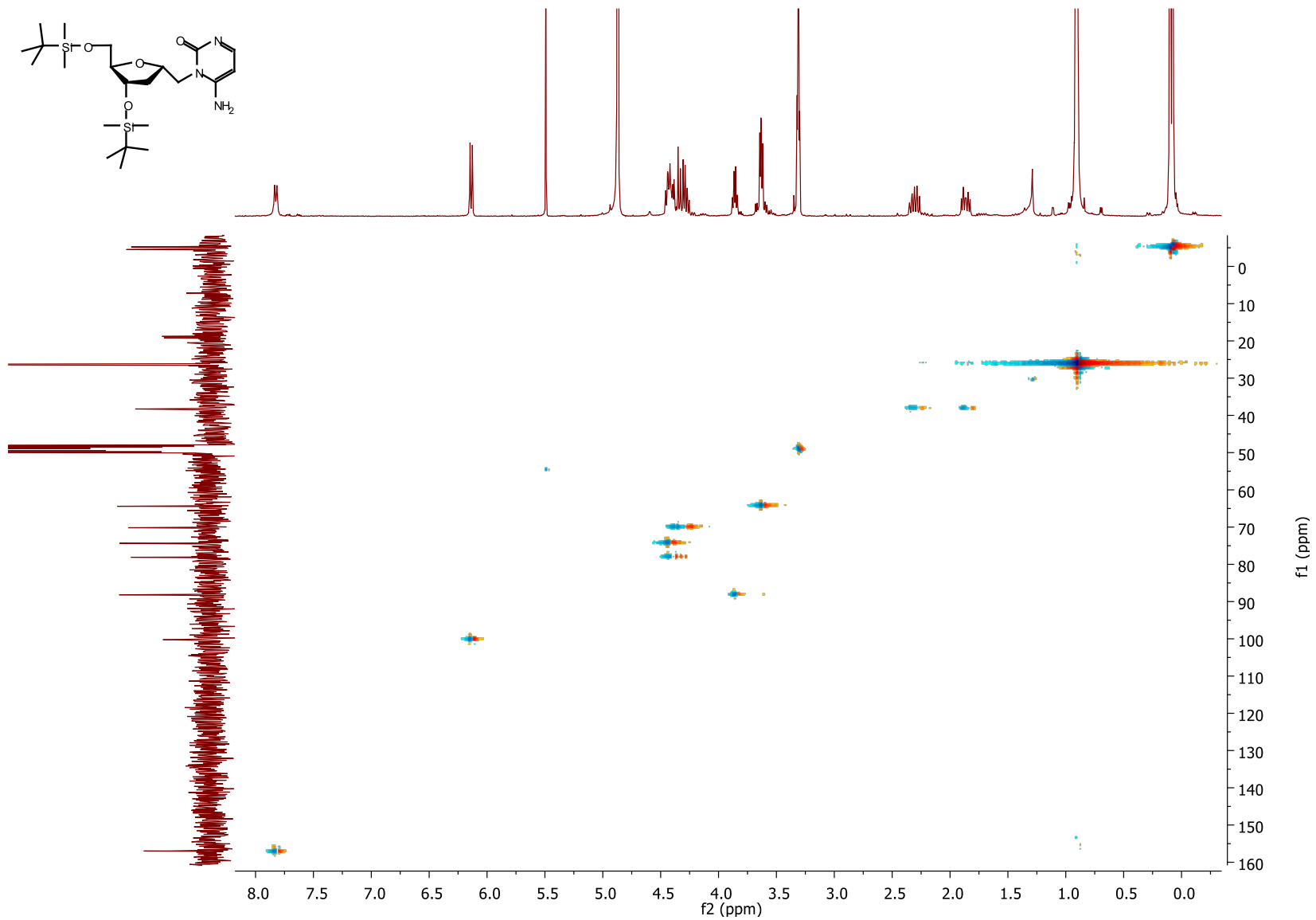
N-3 analogue of 3,5-bis-O-(*tert*-Butyldimethylsilyl)-1'-homo-N-2'-deoxy- $\alpha$ -cytidine (17e)

COSY NMR (MeOH- $d_4$ )



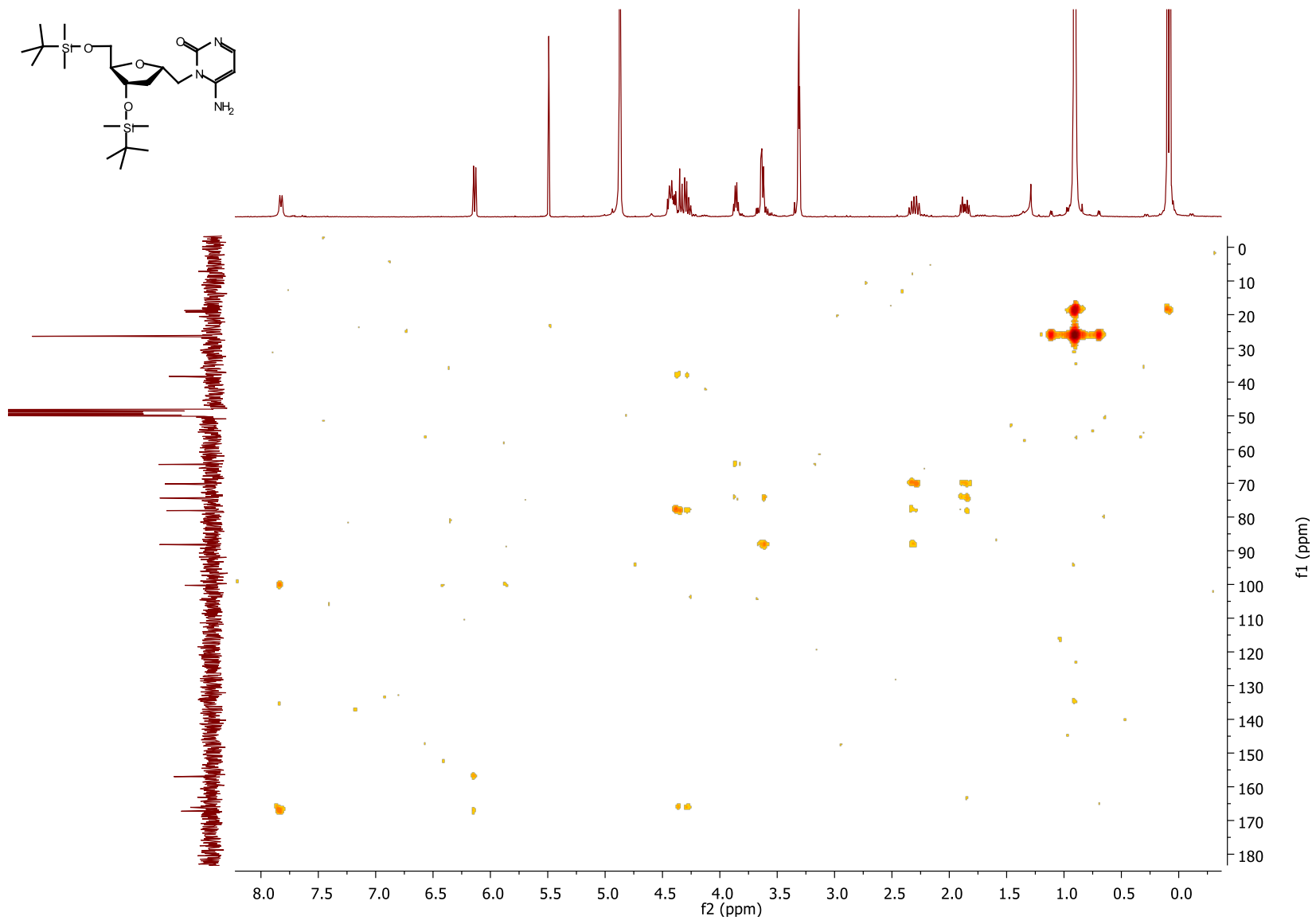
N-3 analogue of 3,5-bis-O-(*tert*-Butyldimethylsilyl)-1'-homo-N-2'-deoxy- $\alpha$ -cytidine (17e)

HSQC NMR (MeOH- $d_4$ )



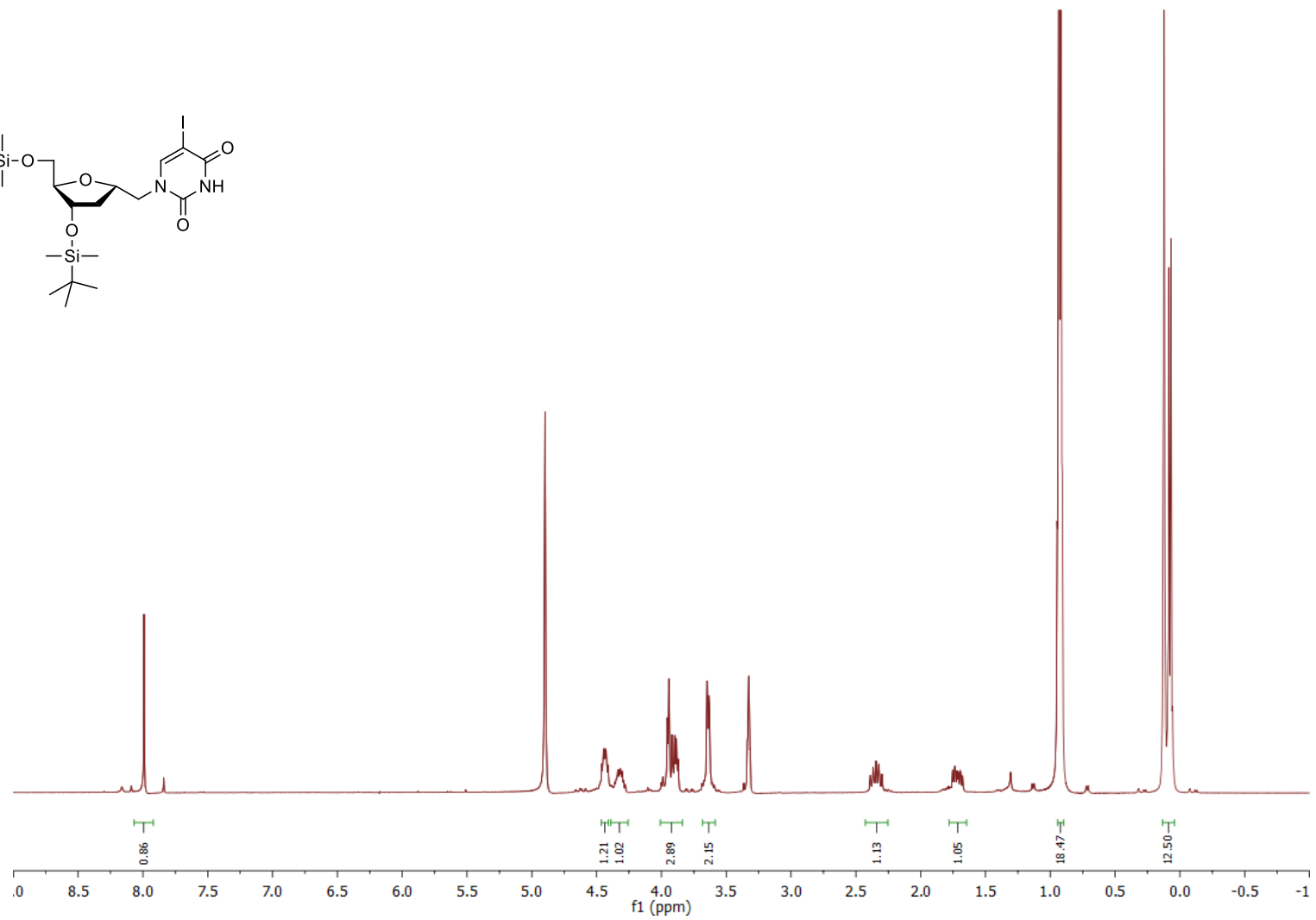
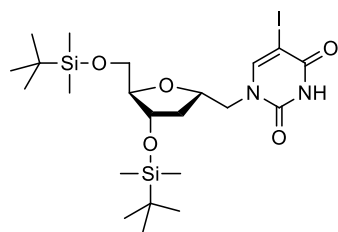
N-3 analogue of 3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1'-homo-*N*-2'-deoxy- $\alpha$ -cytidine (17e)

HMBC NMR (MeOH- $d_4$ )



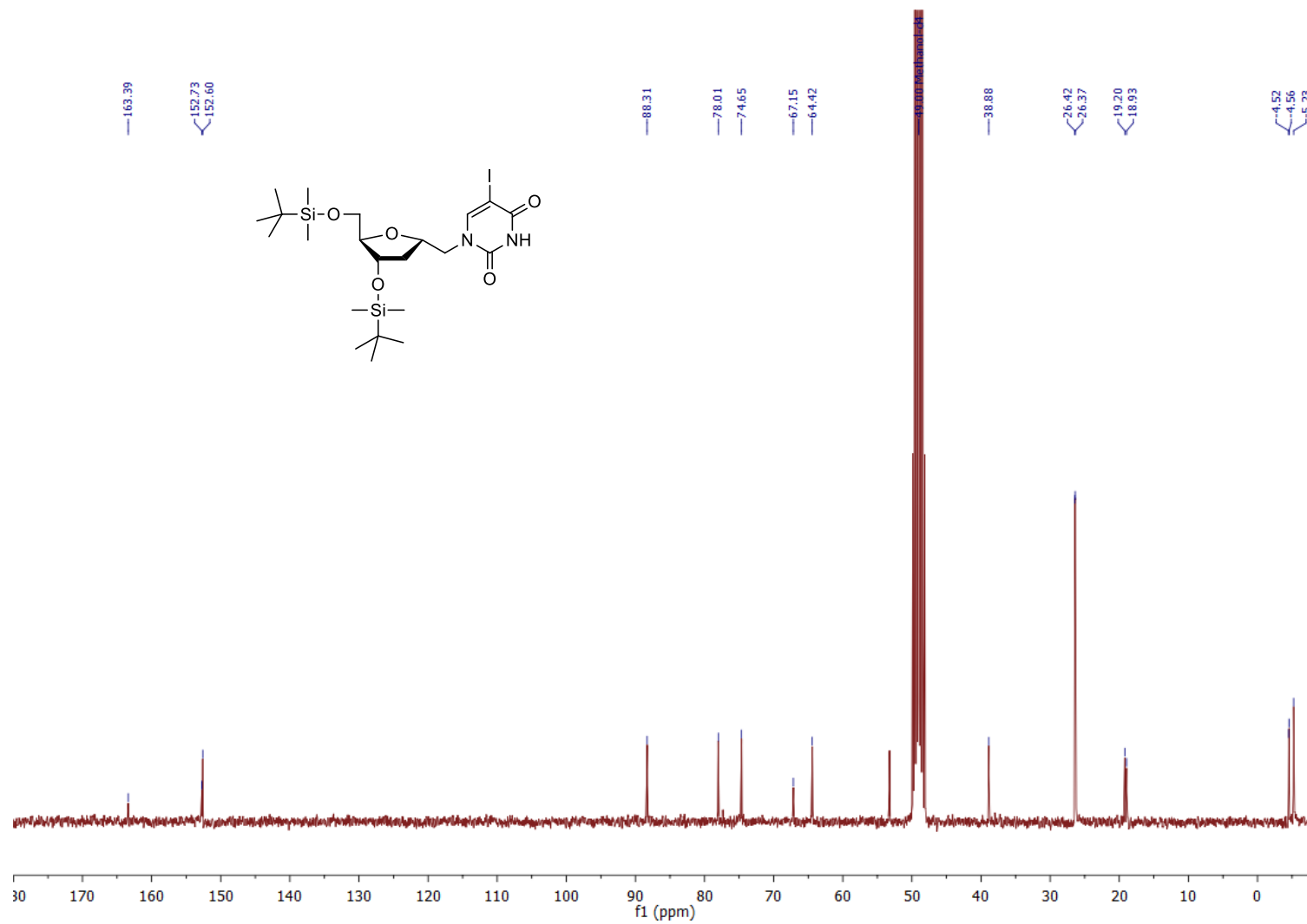
3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1'-homo-*N*-2'-deoxy- $\alpha$ -5-iodouridine (17f)

$^1\text{H}$  NMR (300.13 MHz, MeOH- $d_4$ )



3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1'-homo-*N*-2'-deoxy- $\alpha$ -5-iodouridine (17f)

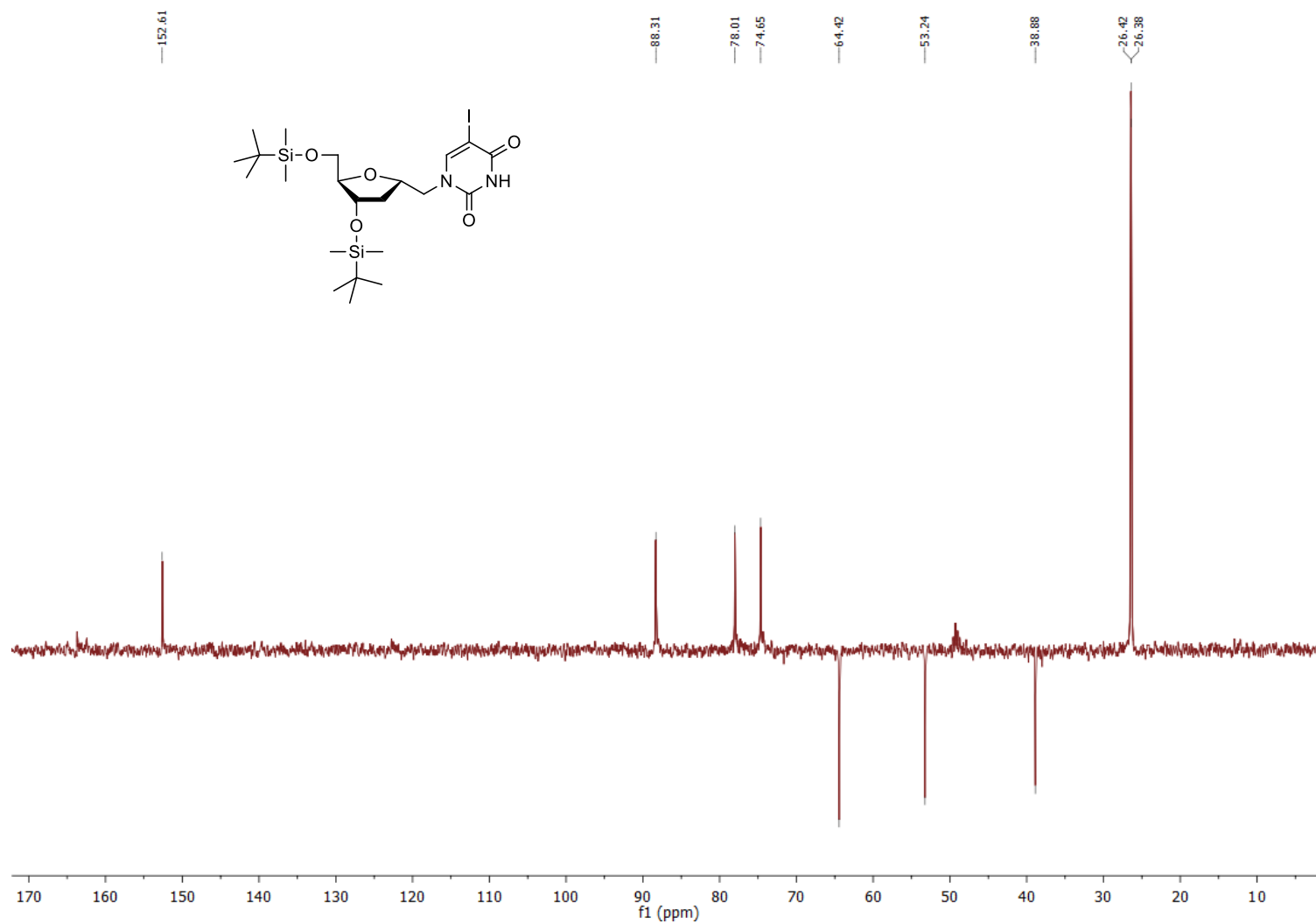
$^{13}\text{C}$  NMR (75.5 MHz, MeOH- $d_4$ )





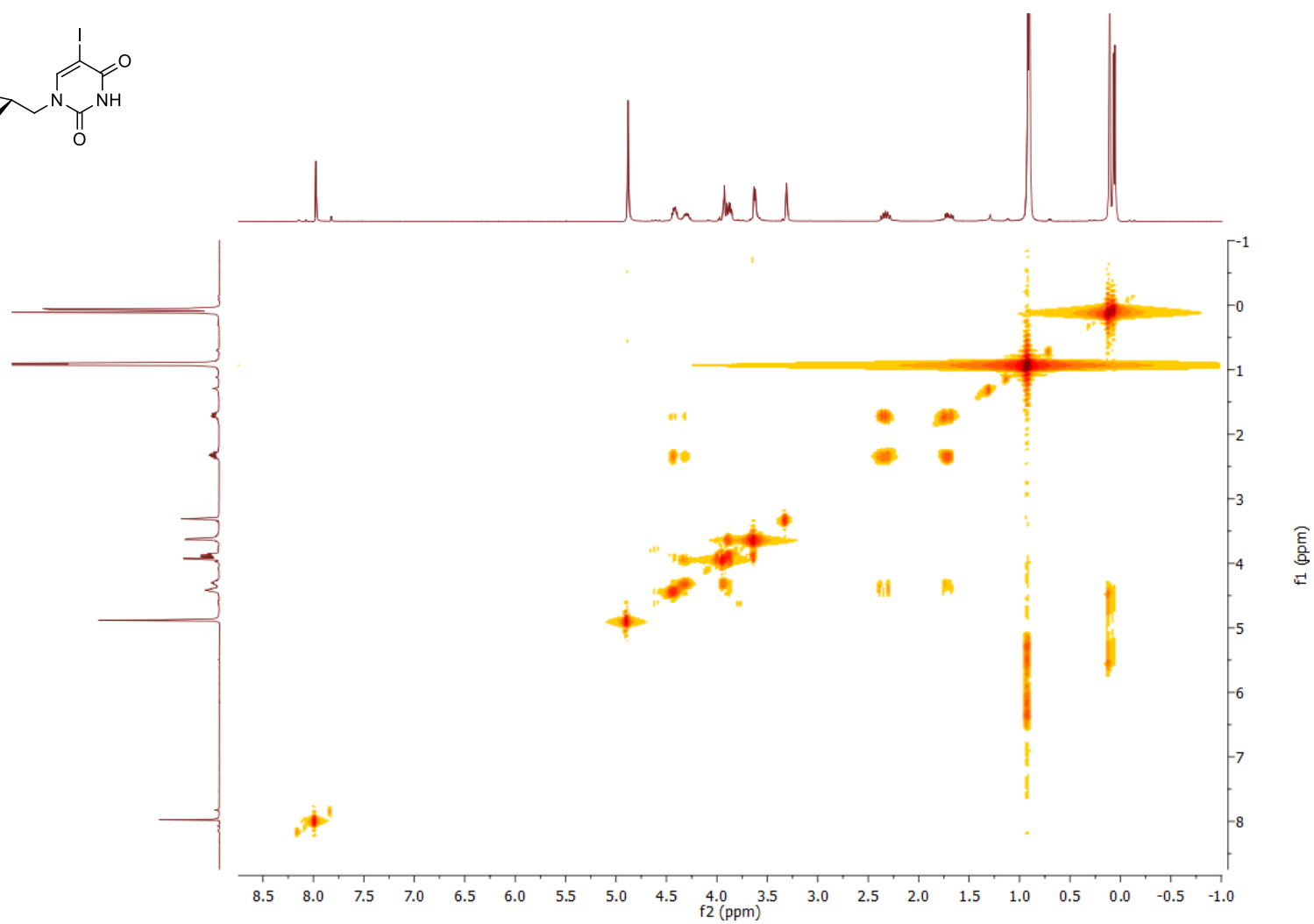
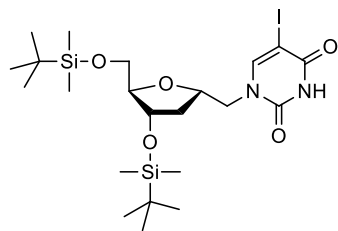
3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1'-homo-*N*-2'-deoxy- $\alpha$ -5-iodouridine (17f)

DEPT 135 NMR (75.5 MHz, MeOH- $d_4$ )



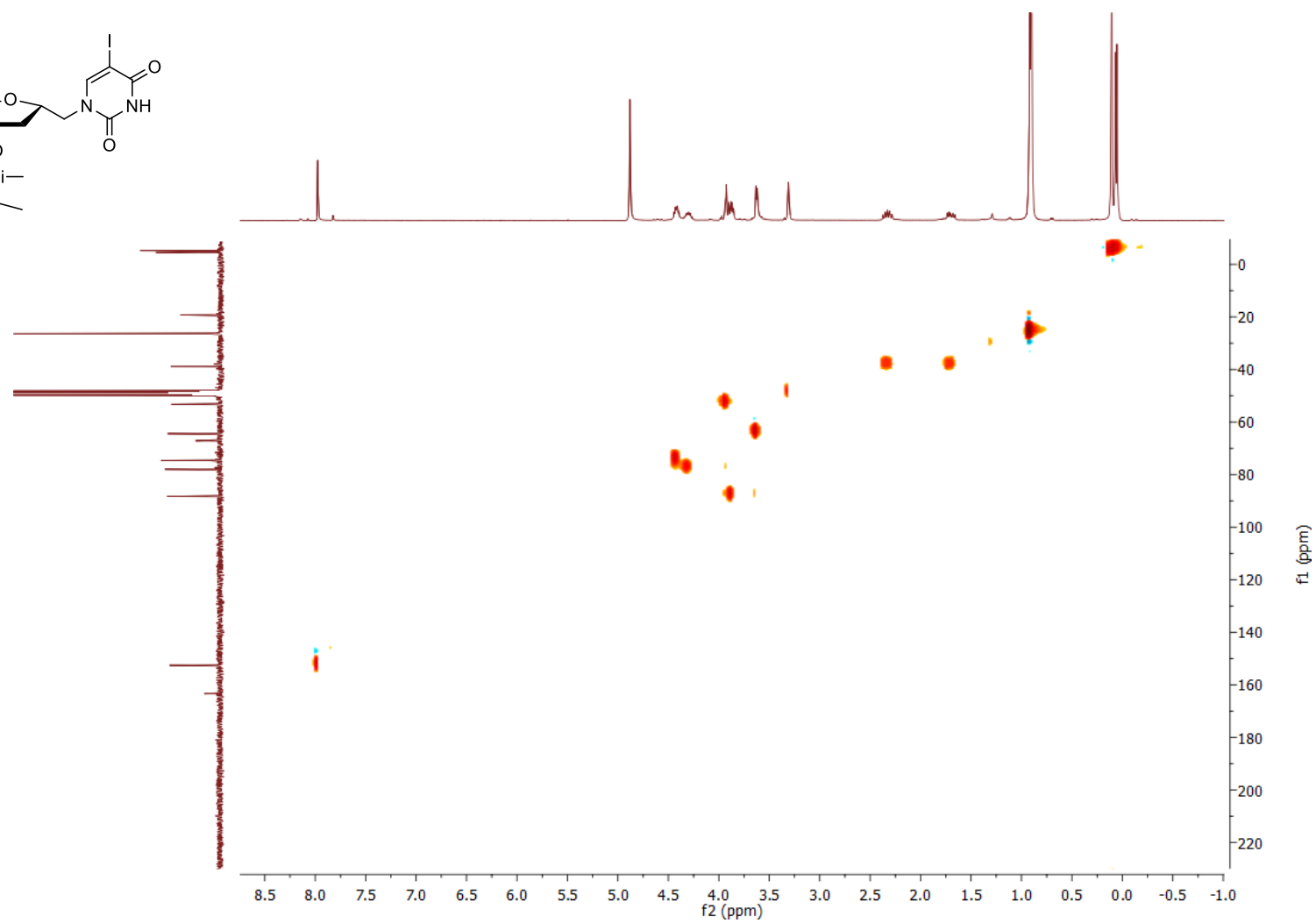
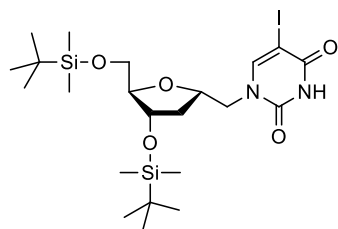
3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1'-homo-*N*-2'-deoxy- $\alpha$ -5-iodouridine (17f)

COSY NMR (MeOH-*d*<sub>4</sub>)



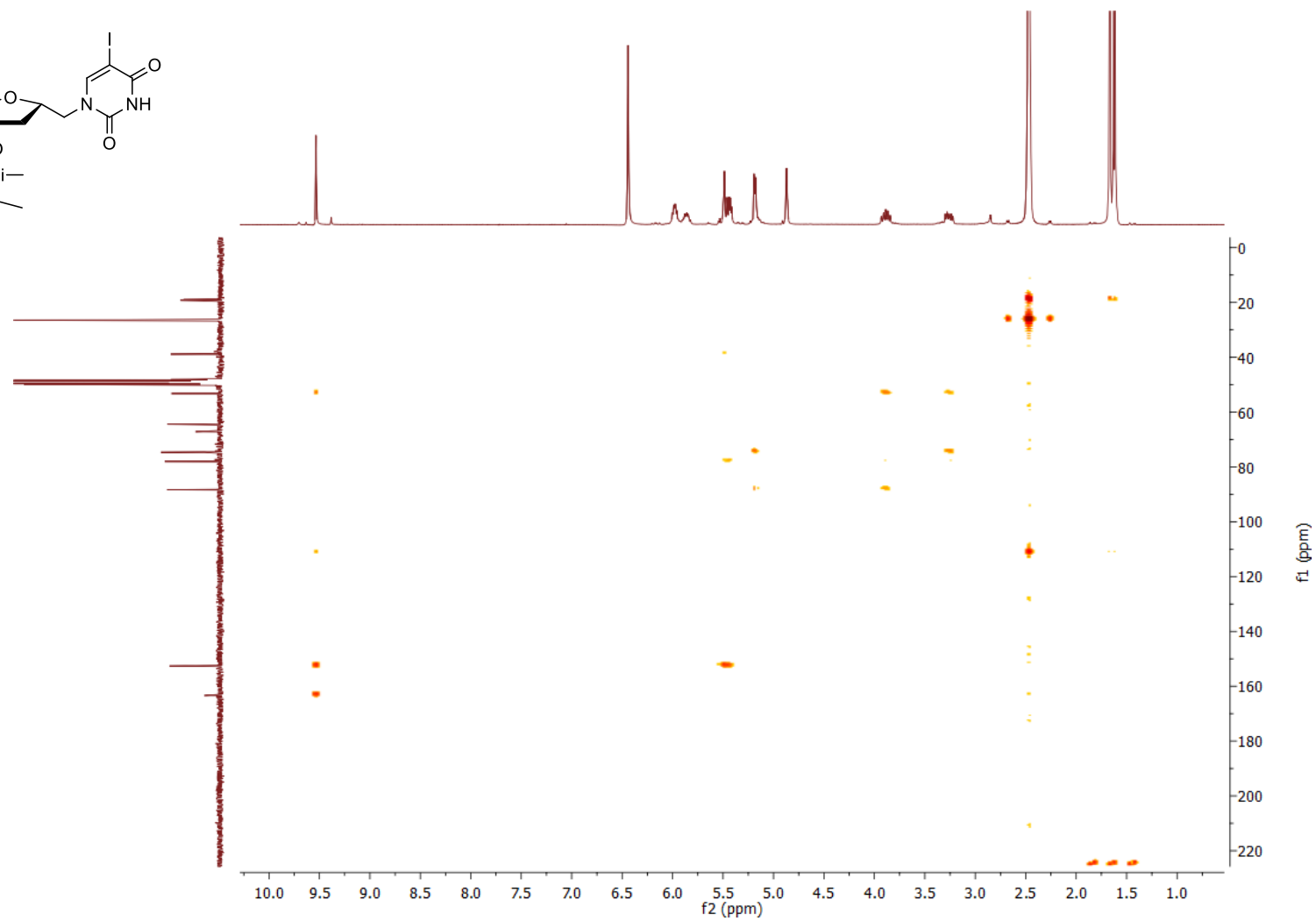
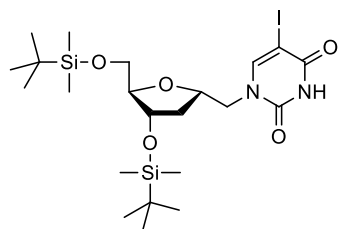
3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1'-homo-*N*-2'-deoxy- $\alpha$ -5-iodouridine (17f)

HSQC NMR (MeOH-*d*<sub>4</sub>)



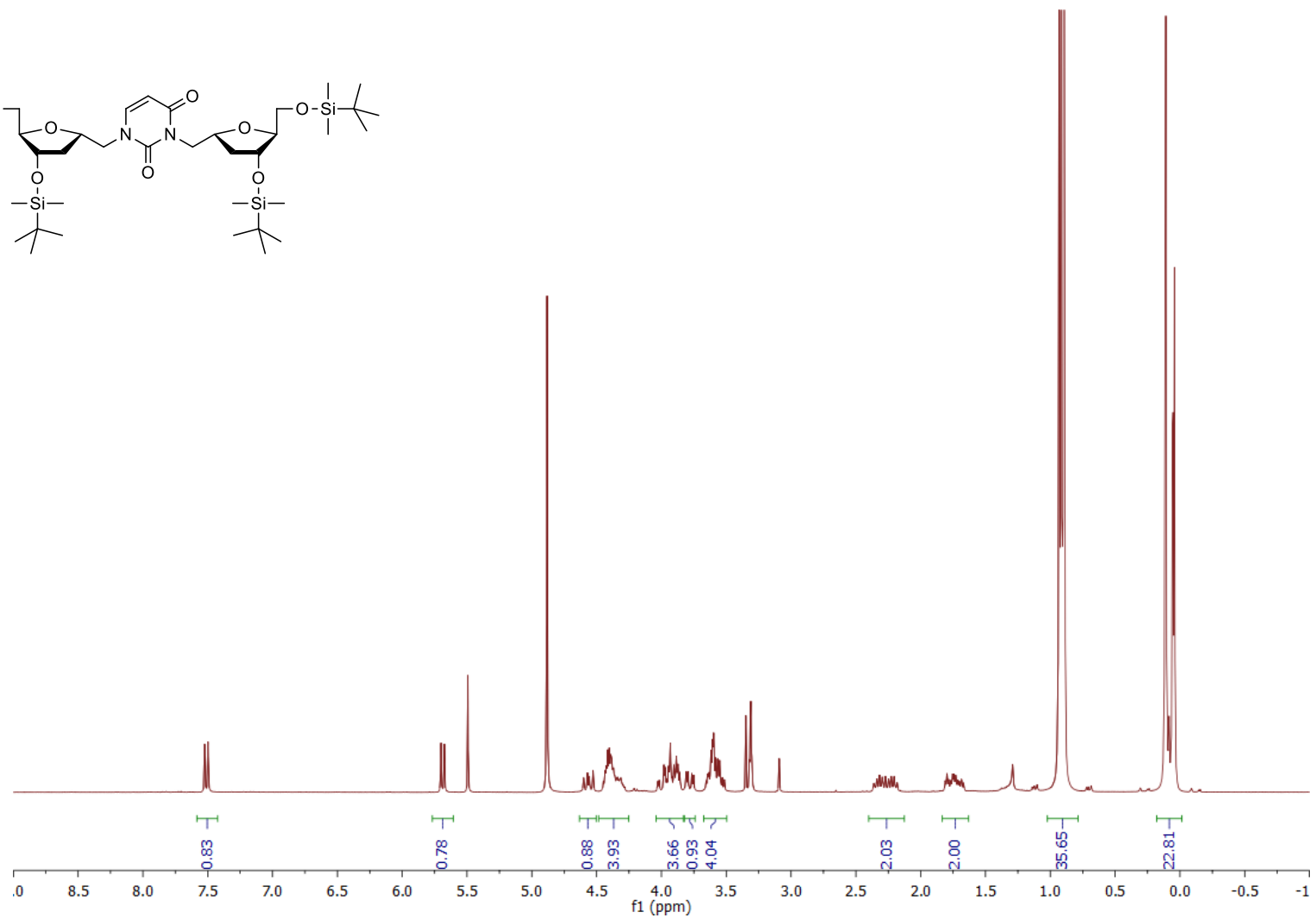
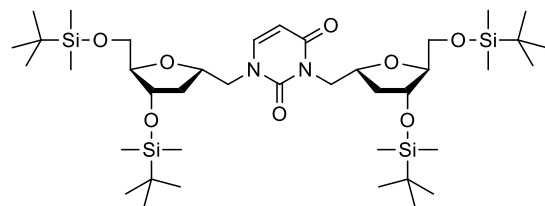
3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1'-homo-*N*-2'-deoxy- $\alpha$ -5-iodouridine (17f)

HMBC NMR (MeOH- $d_4$ )



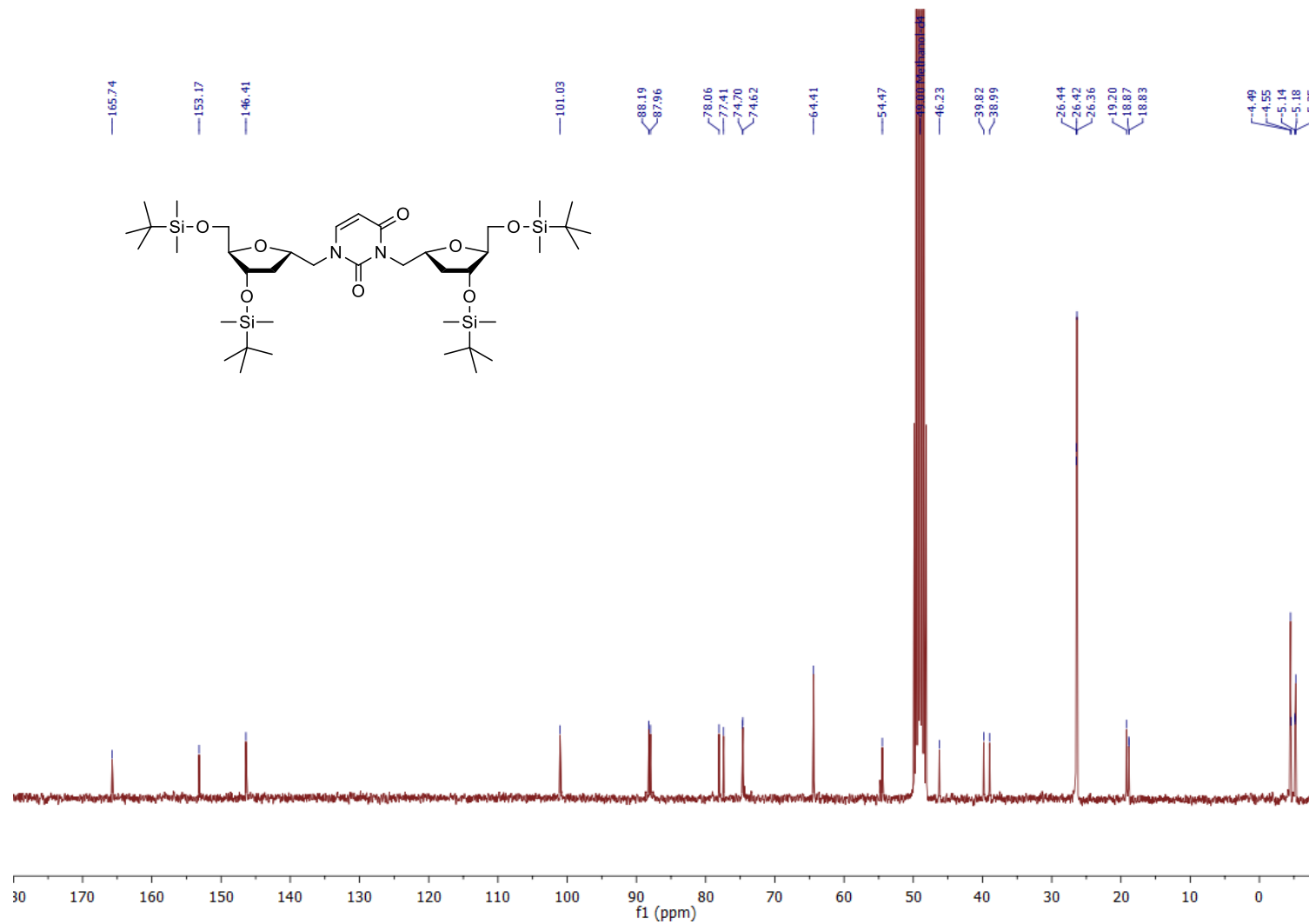
*N*<sup>1</sup>,*N*<sup>3</sup>-bis-[3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1,2-dideoxy- $\alpha$ -ribofuranosylmethyl]uracil (18b)

<sup>1</sup>H NMR (300.13 MHz, MeOH-*d*<sub>4</sub>)



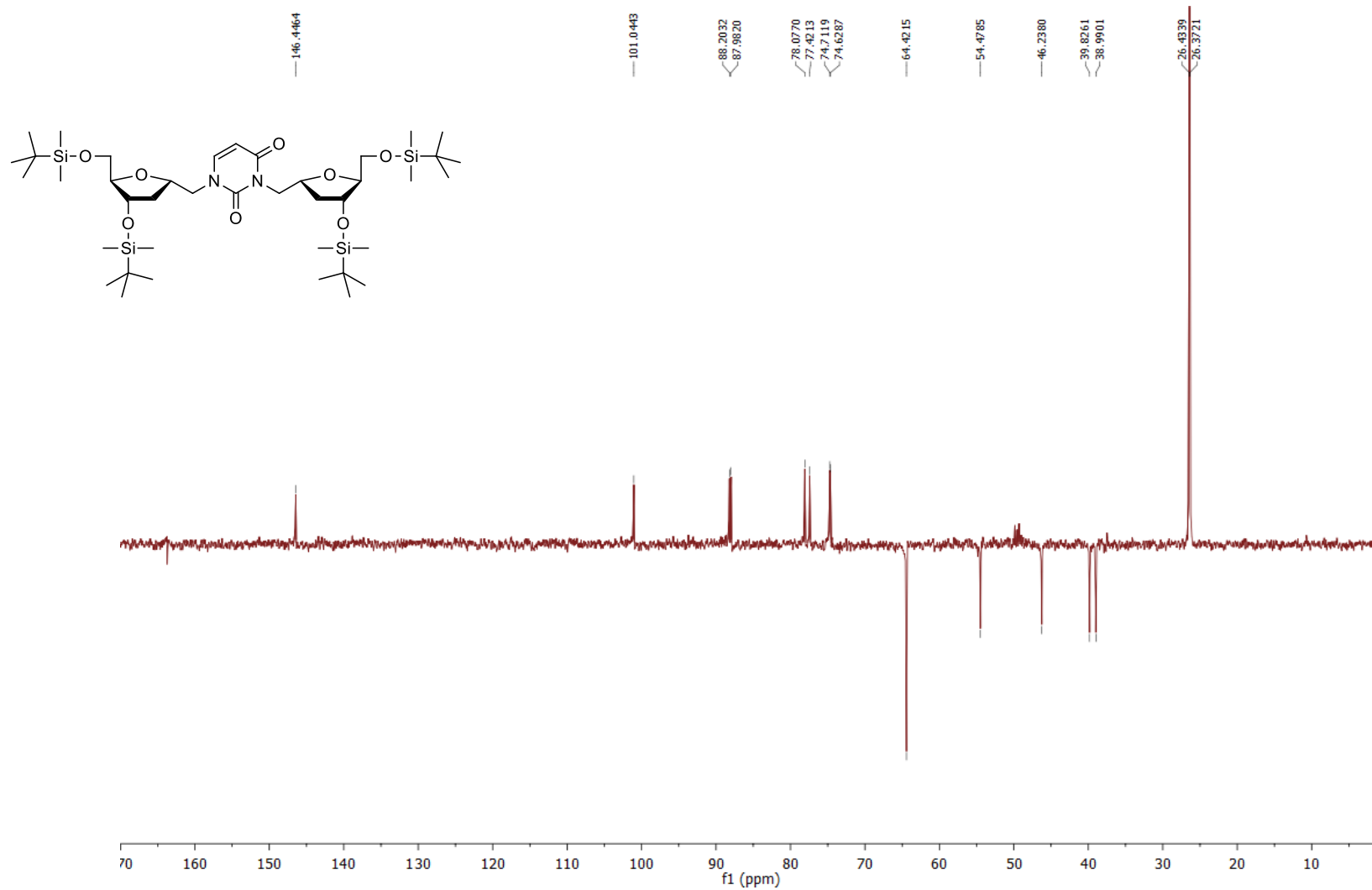
*N*<sup>1</sup>,*N*<sup>3</sup>-bis-[3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1,2-dideoxy- $\alpha$ -ribofuranosylmethyl]uracil (18b)

<sup>13</sup>C NMR (75.5 MHz, MeOH-*d*<sub>4</sub>)



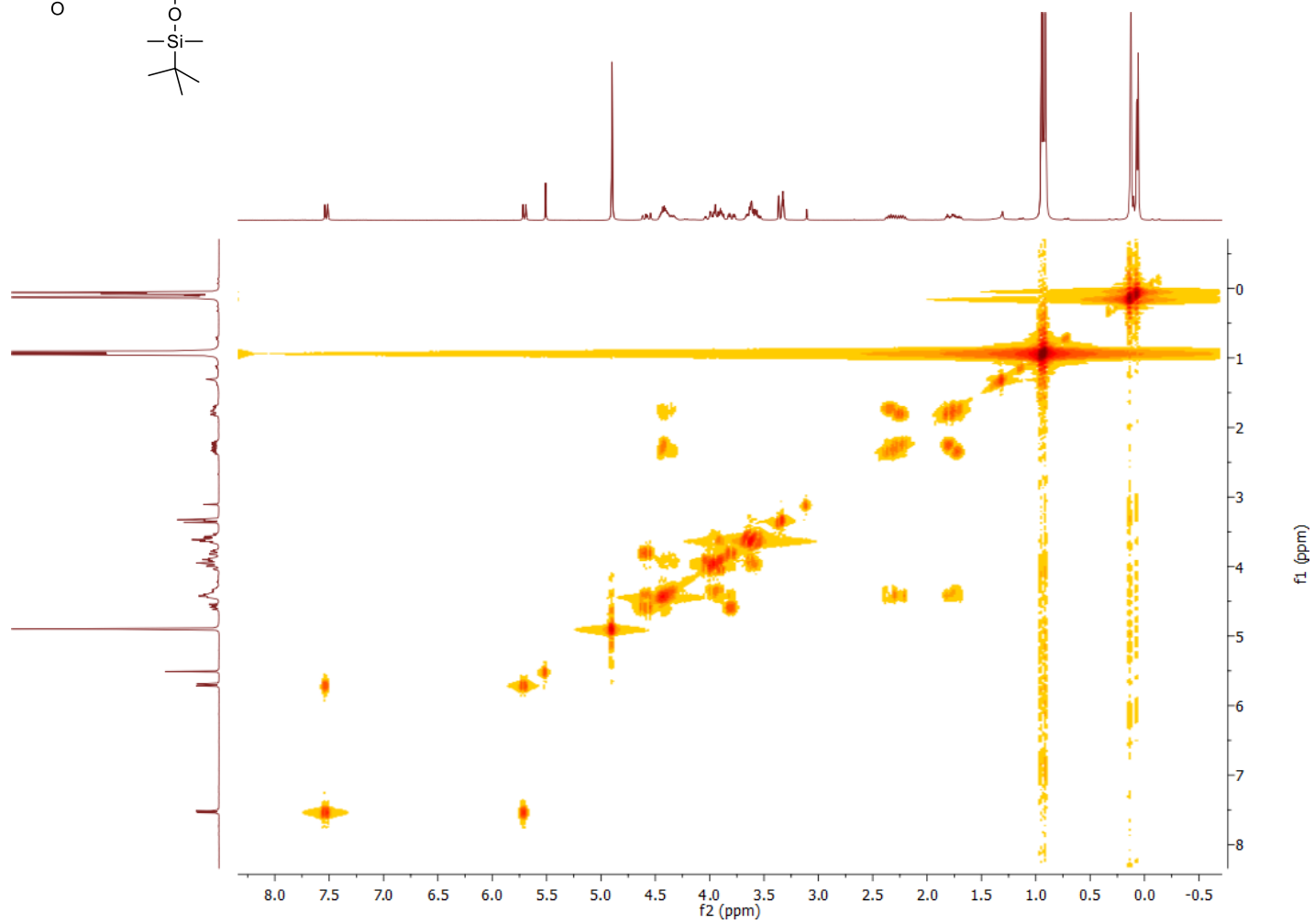
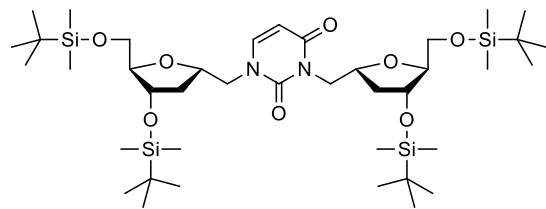
*N*<sup>1</sup>,*N*<sup>3</sup>-bis-[3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1,2-dideoxy- $\alpha$ -ribofuranosylmethyl]uracil (18b)

DEPT 135 NMR (75.5 MHz, MeOH-*d*<sub>4</sub>)



*N*<sup>1</sup>,*N*<sup>3</sup>-bis-[3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1,2-dideoxy- $\alpha$ -ribofuranosylmethyl]uracil (18b)

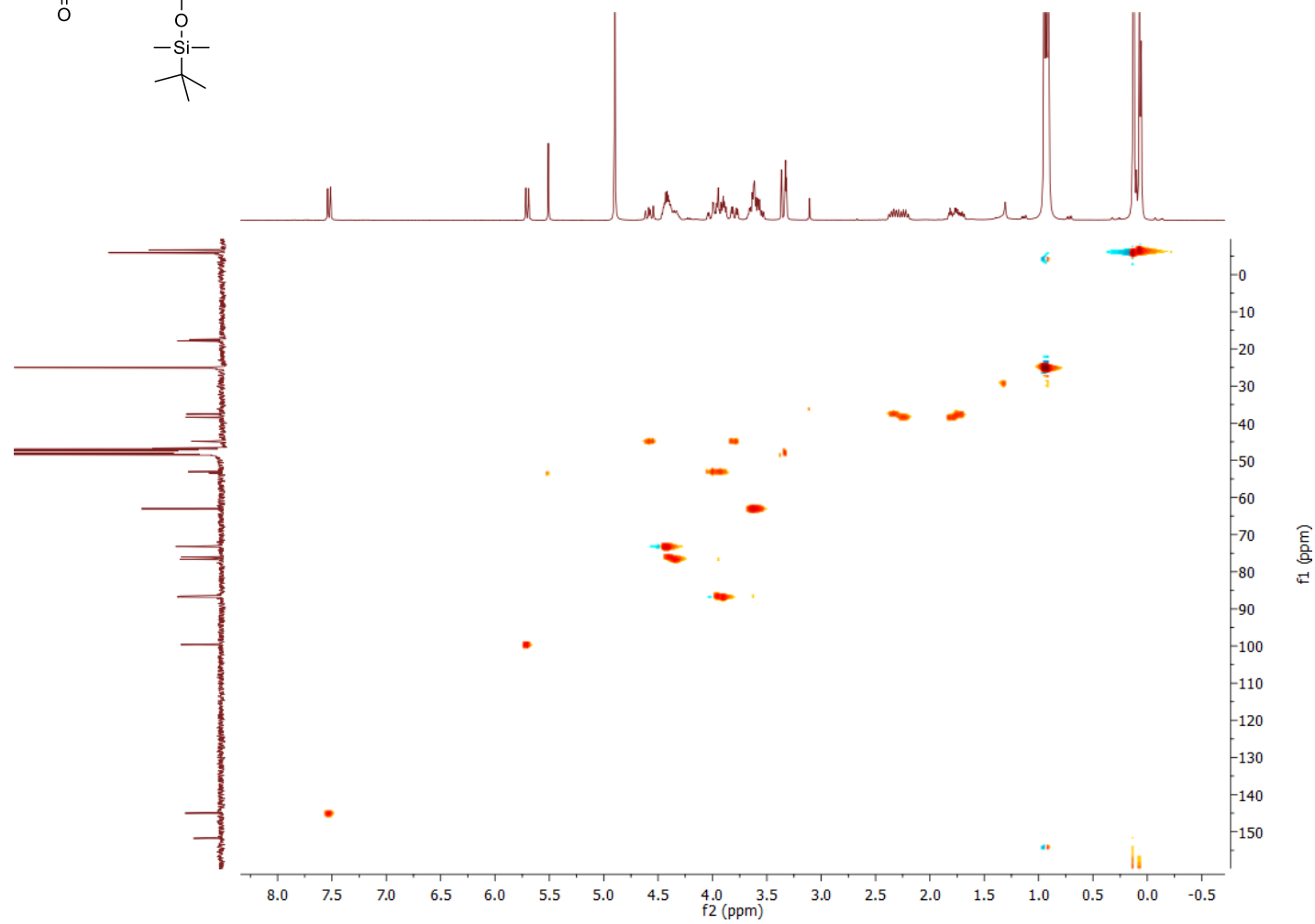
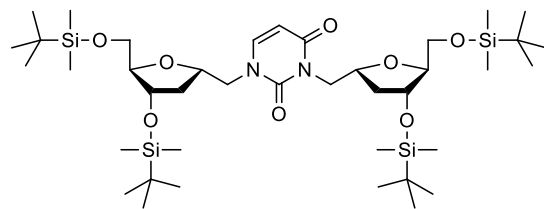
COSY NMR (MeOH-*d*<sub>4</sub>)





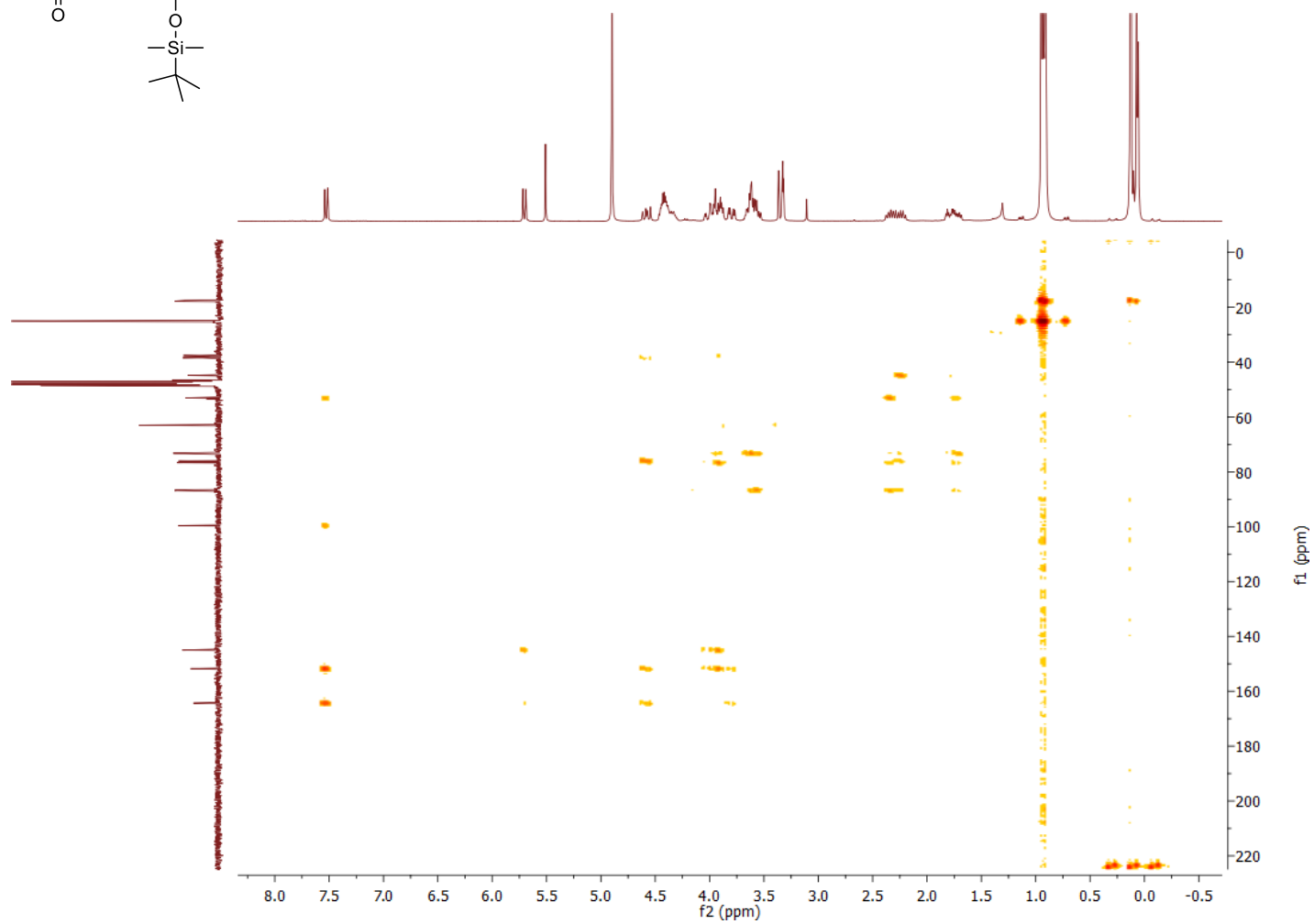
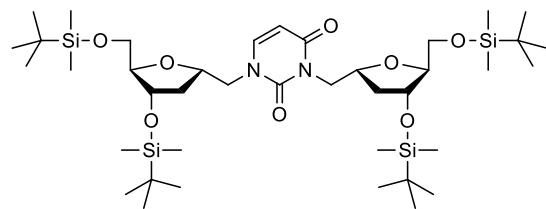
*N*<sup>1</sup>,*N*<sup>3</sup>-bis-[3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1,2-dideoxy- $\alpha$ -ribofuranosylmethyl]uracil (18b)

HSQC NMR (MeOH-*d*<sub>4</sub>)



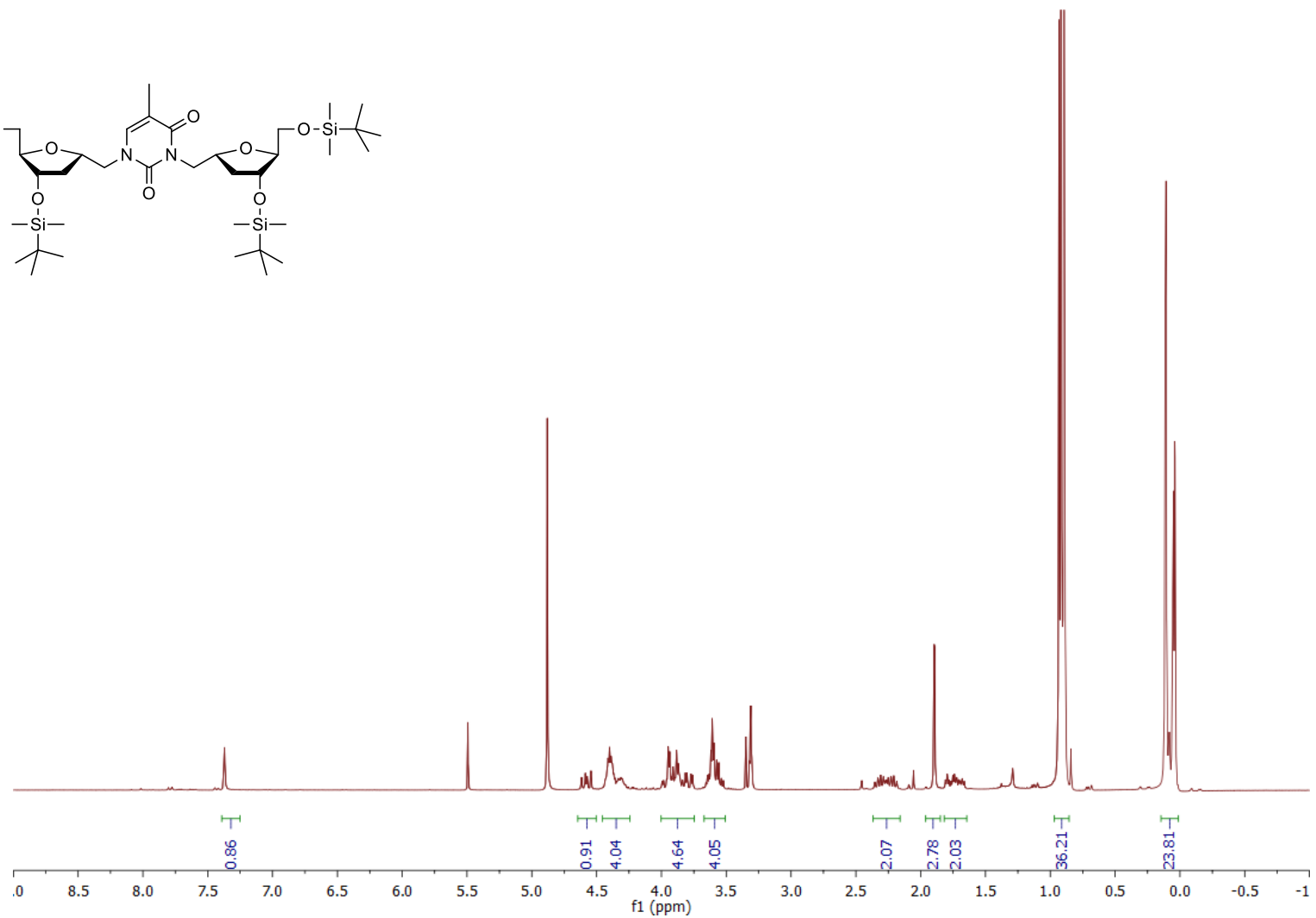
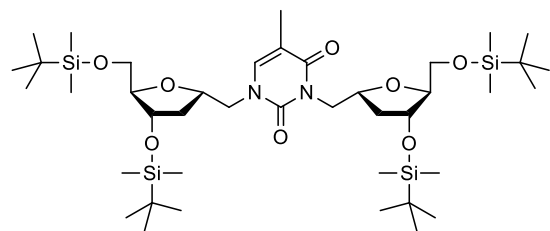
*N*<sup>1</sup>,*N*<sup>3</sup>-bis-[3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1,2-dideoxy- $\alpha$ -ribofuranosylmethyl]uracil (18b)

HMBC NMR (MeOH-*d*<sub>4</sub>)



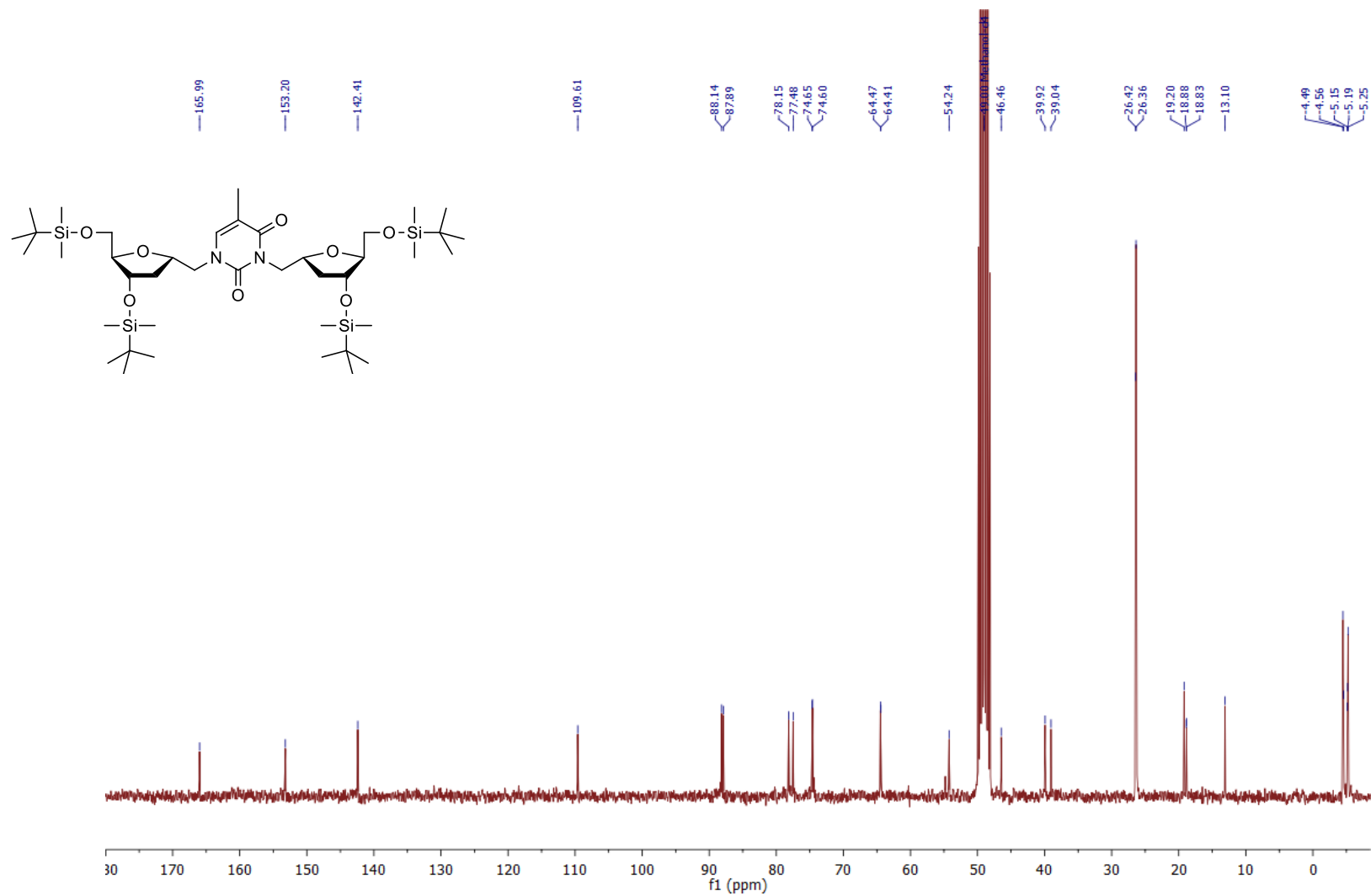
*N*<sup>1</sup>,*N*<sup>3</sup>-bis-[3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1,2-dideoxy- $\alpha$ -ribofuranosylmethyl]thymine (18c)

<sup>1</sup>H NMR (300.13 MHz, MeOH-*d*<sub>4</sub>)



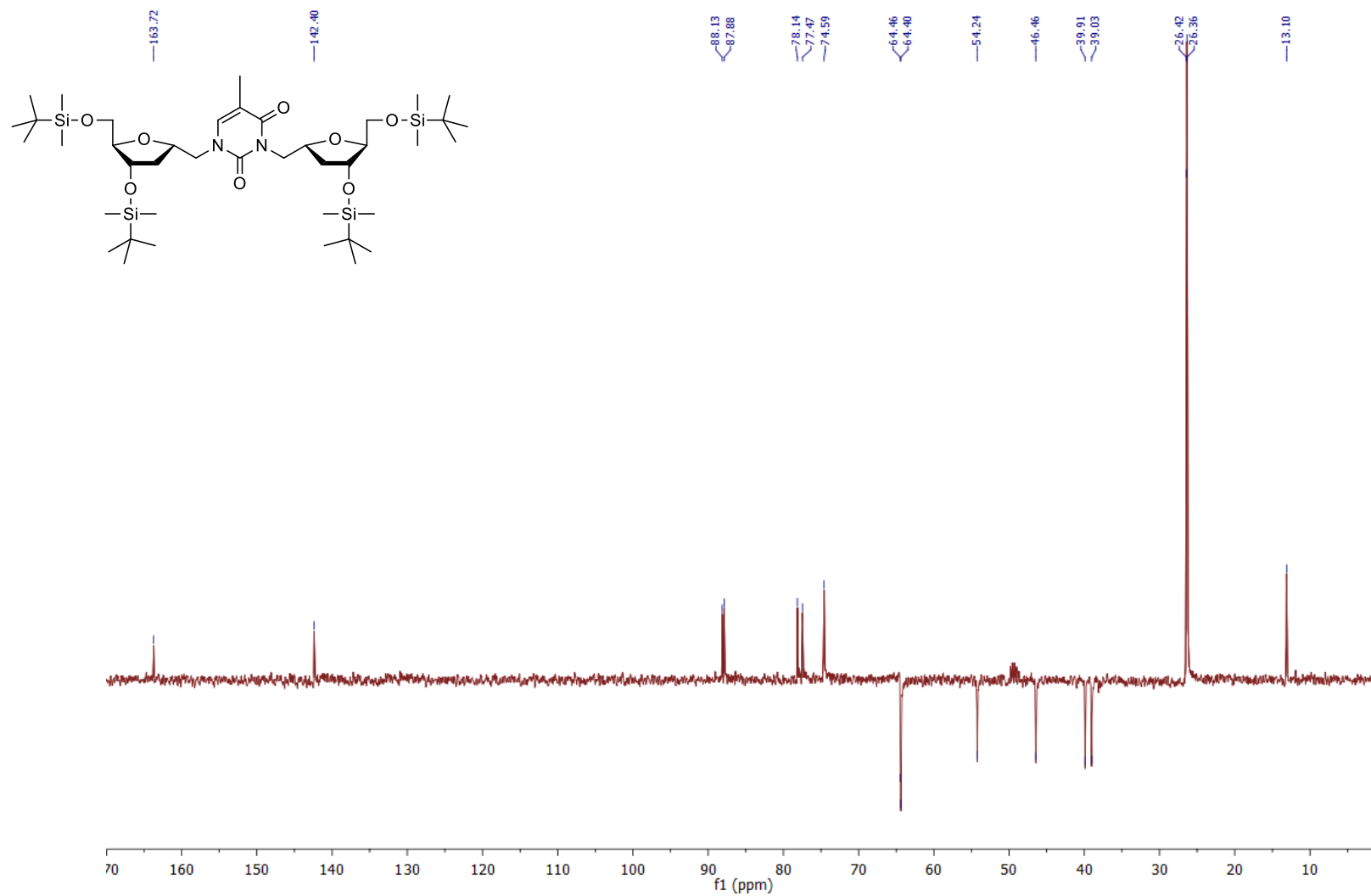
***N*<sup>1</sup>,*N*<sup>3</sup>-bis-[3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1,2-dideoxy- $\alpha$ -ribofuranosylmethyl]thymine (18c)**

<sup>13</sup>C NMR (75.5 MHz, MeOH-*d*<sub>4</sub>)



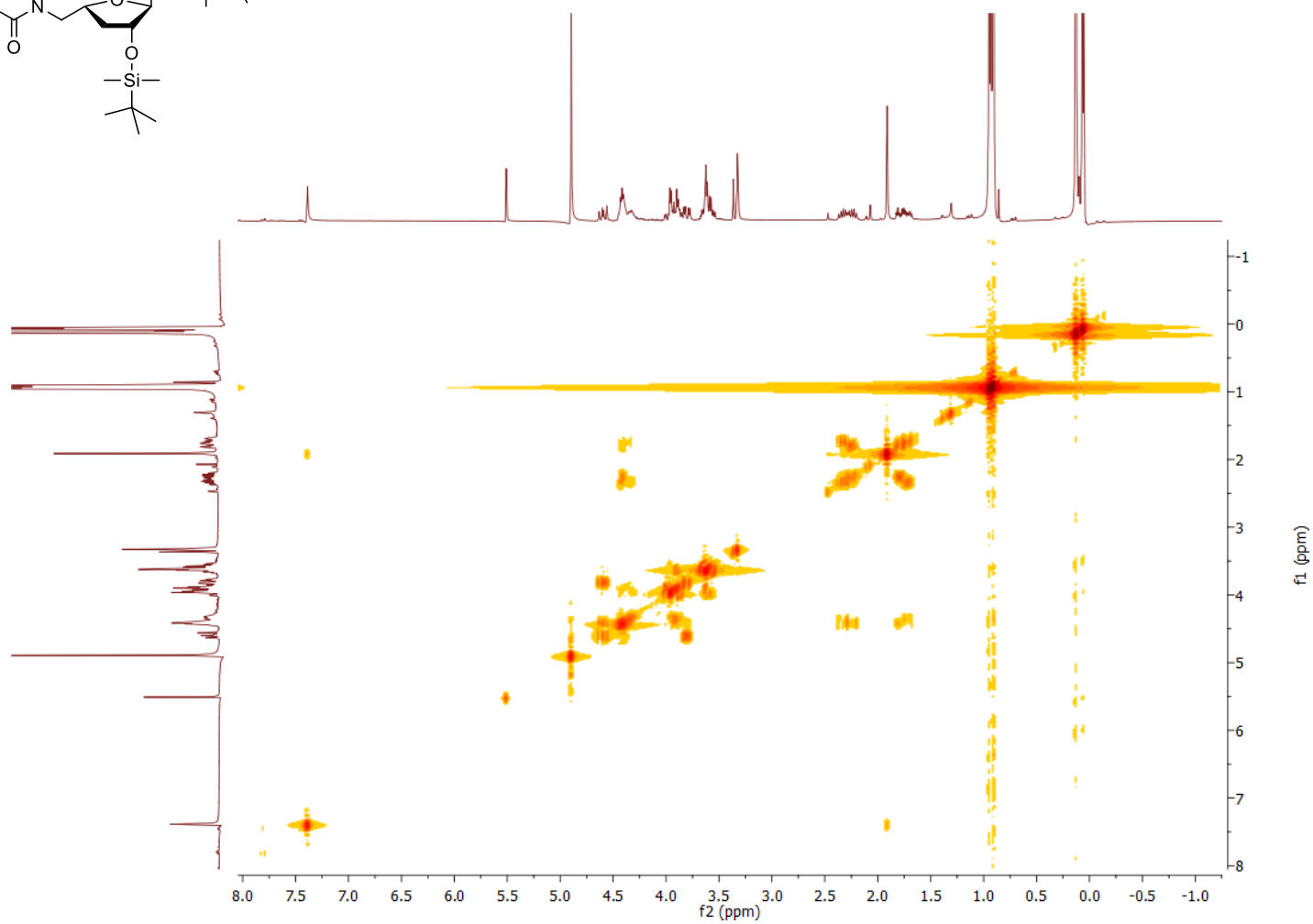
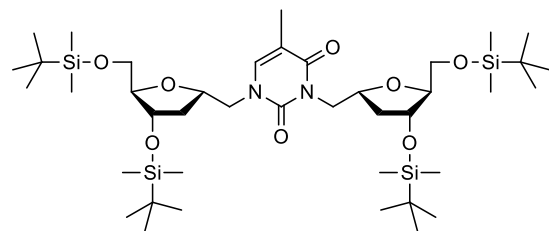
*N*<sup>1</sup>,*N*<sup>3</sup>-bis-[3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1,2-dideoxy- $\alpha$ -ribofuranosylmethyl]thymine (18c)

DEPT 135 NMR (75.5 MHz, MeOH-*d*<sub>4</sub>)



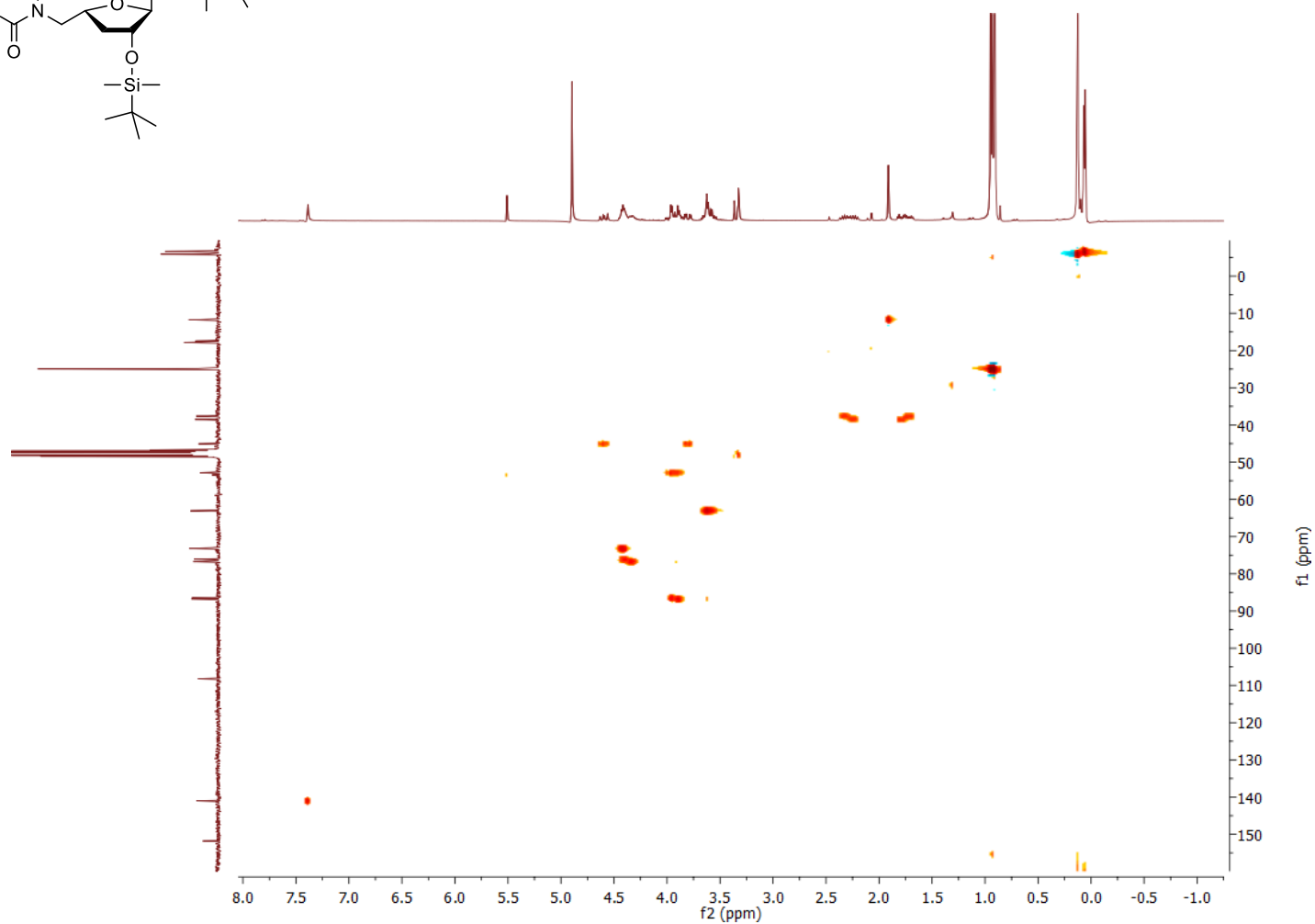
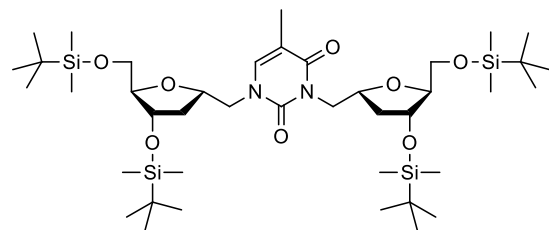
*N*<sup>1</sup>,*N*<sup>3</sup>-bis-[3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1,2-dideoxy- $\alpha$ -ribofuranosylmethyl]thymine (18c)

COSY NMR (MeOH-*d*<sub>4</sub>)



***N*<sup>1</sup>,*N*<sup>3</sup>-bis-[3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1,2-dideoxy- $\alpha$ -ribofuranosylmethyl]thymine (18c)**

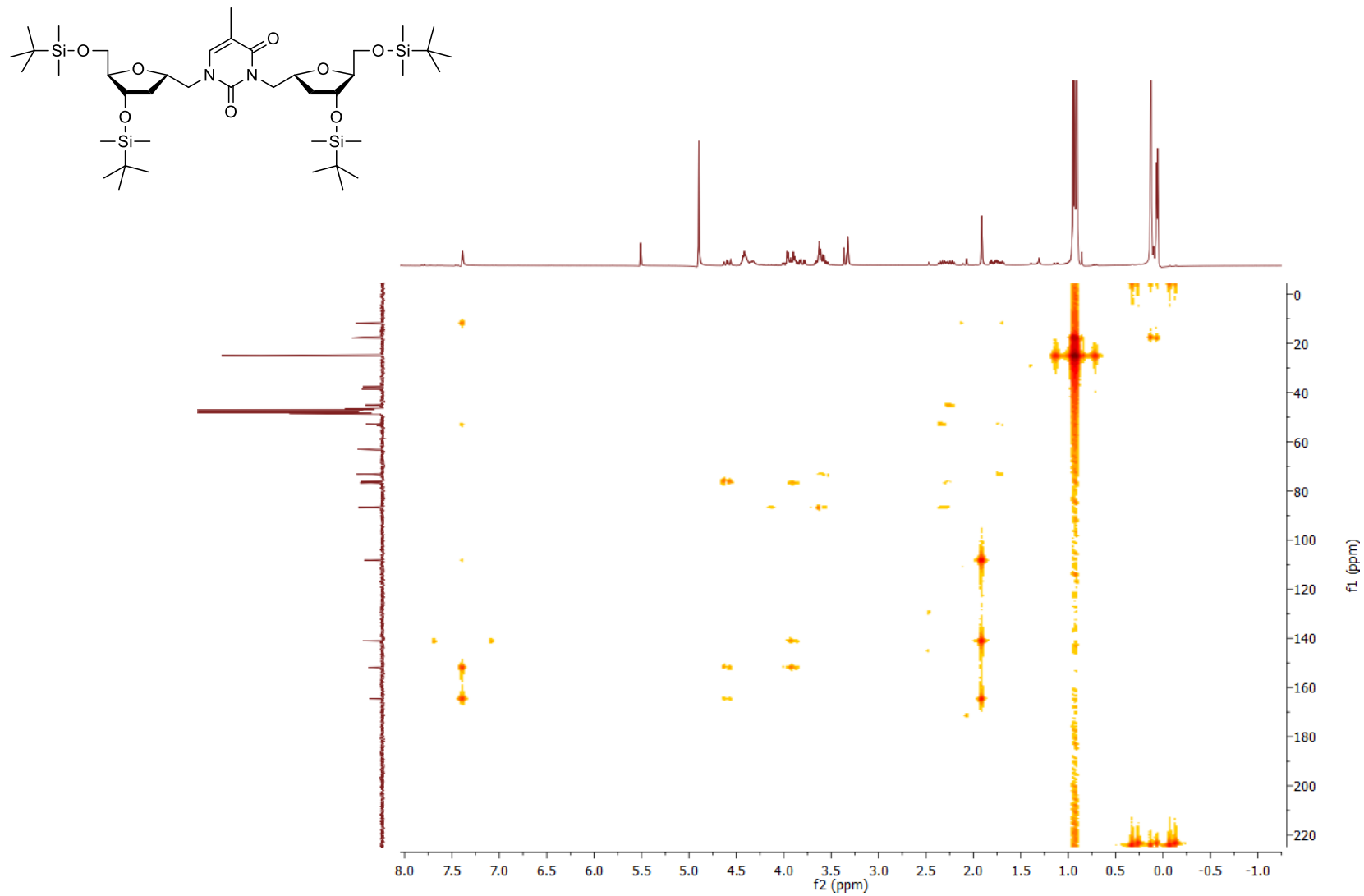
HSQC (75.5 MHz, MeOH-*d*<sub>4</sub>)



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*N*<sup>1</sup>,*N*<sup>3</sup>-bis-[3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1,2-dideoxy- $\alpha$ -ribofuranosylmethyl]thymine (18c)

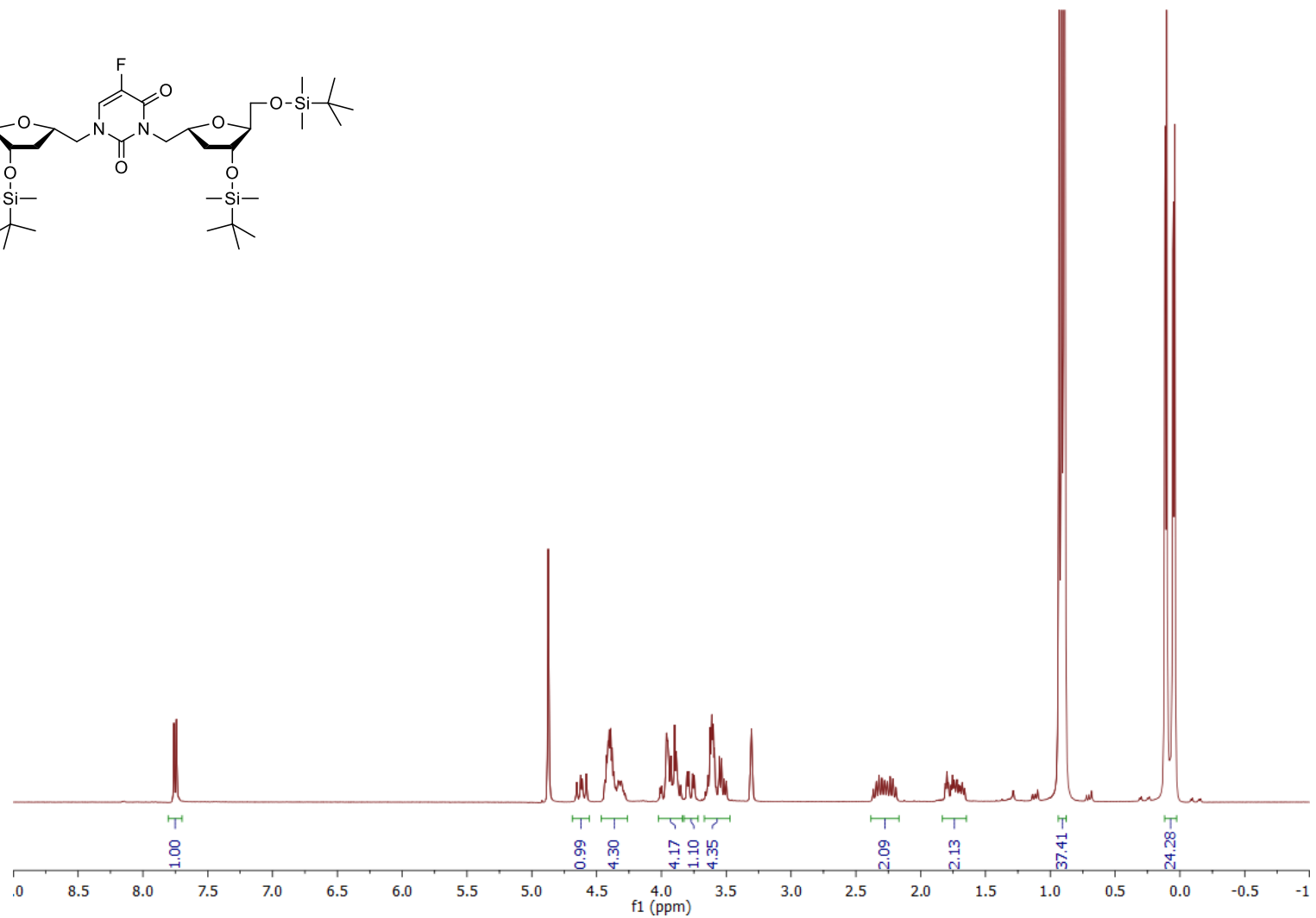
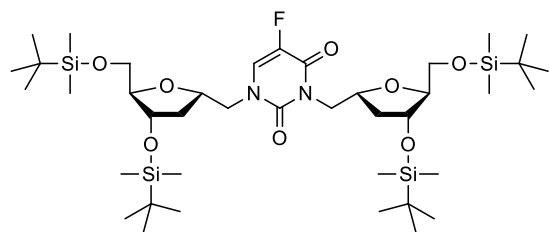
HMBC (MeOH-*d*<sub>4</sub>)





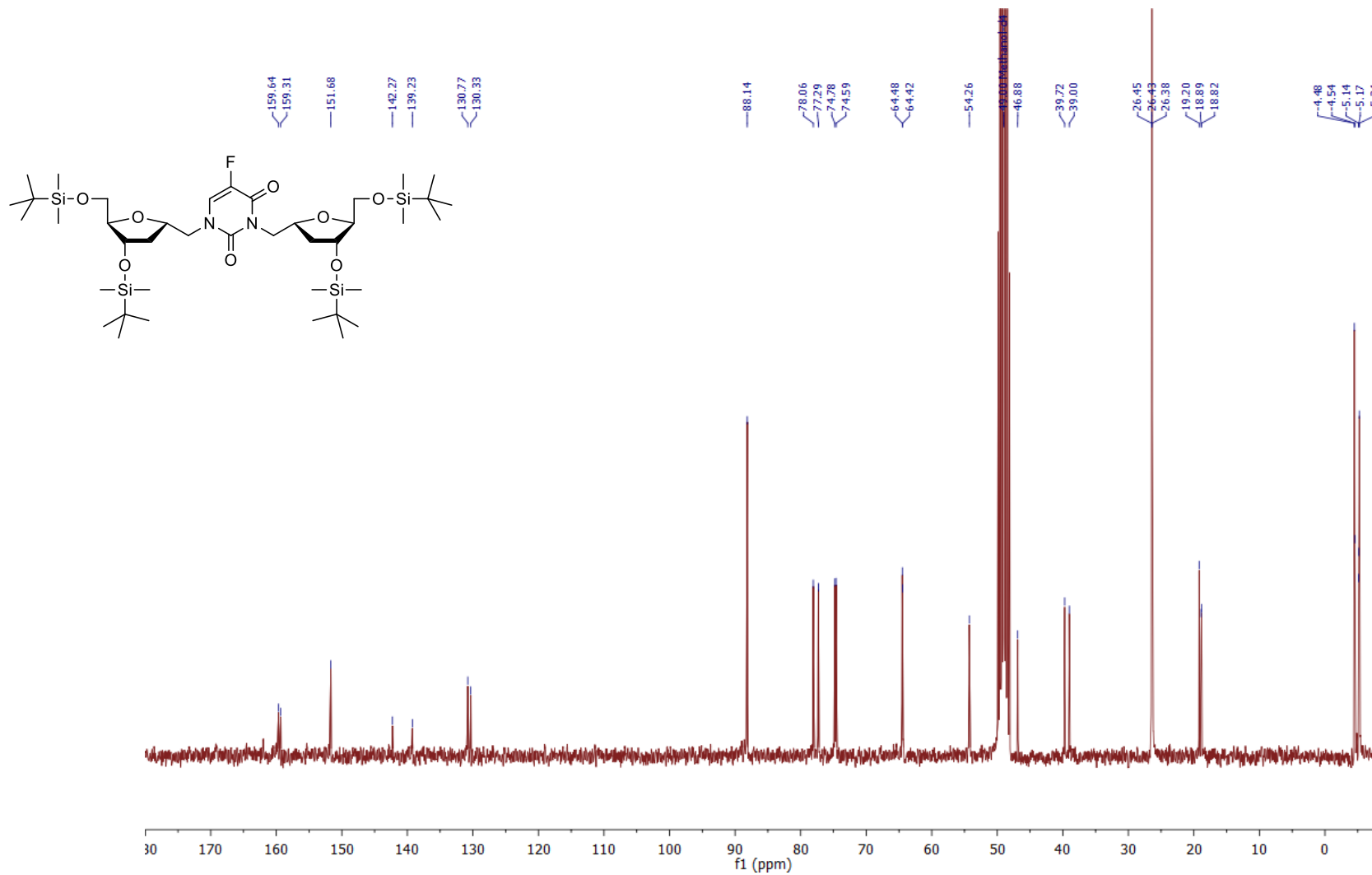
*N*<sup>1</sup>,*N*<sup>3</sup>-bis-[3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1,2-dideoxy- $\alpha$ -ribofuranosylmethyl]-5-fluorouracil (18d)

<sup>1</sup>H NMR (300.13 MHz, MeOH-*d*<sub>4</sub>)



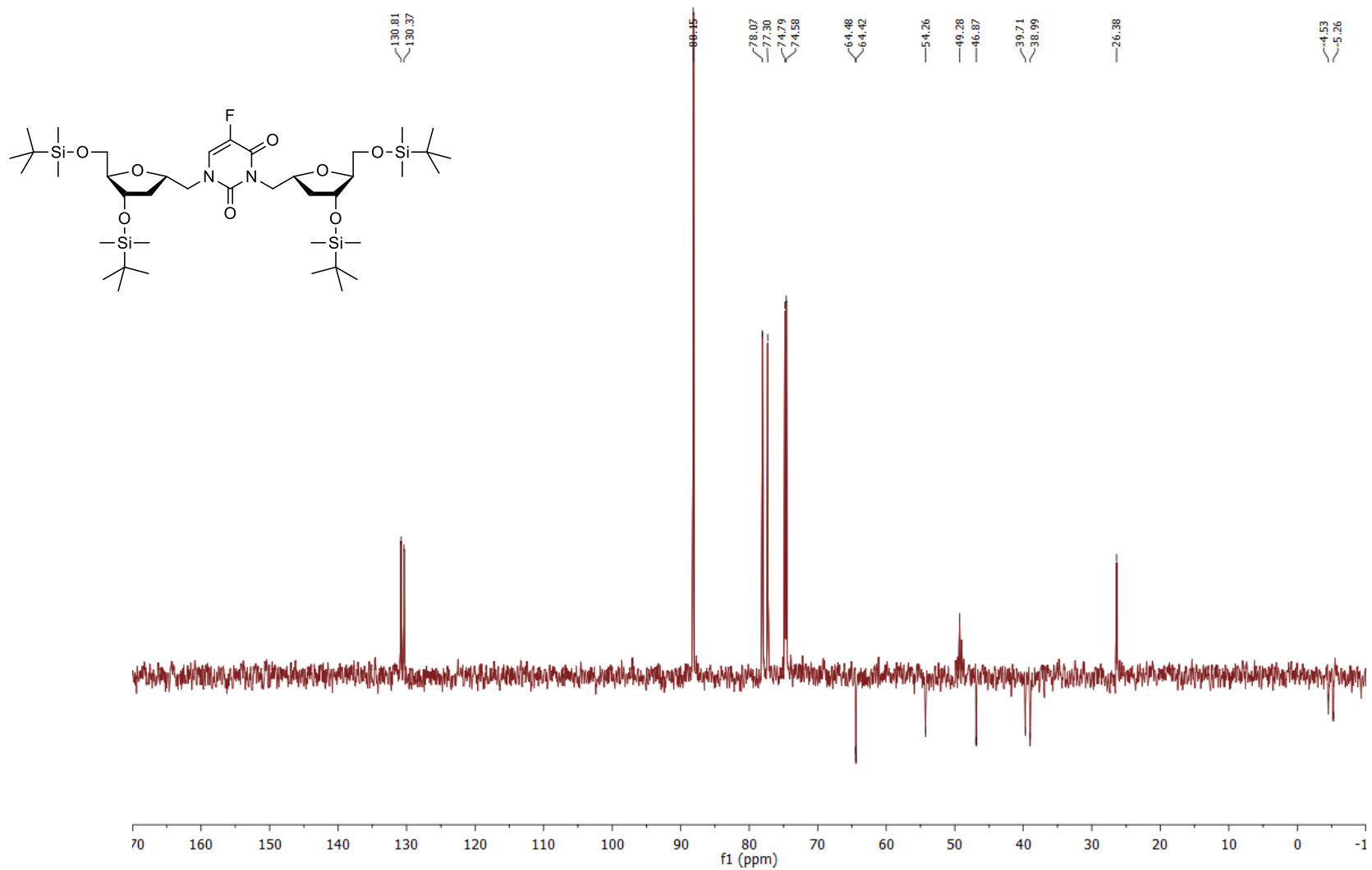
***N*<sup>1</sup>,*N*<sup>3</sup>-bis-[3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1,2-dideoxy- $\alpha$ -ribofuranosylmethyl]-5-fluorouracil (18d)**

<sup>13</sup>C NMR (75.5 MHz, MeOH-*d*<sub>4</sub>)



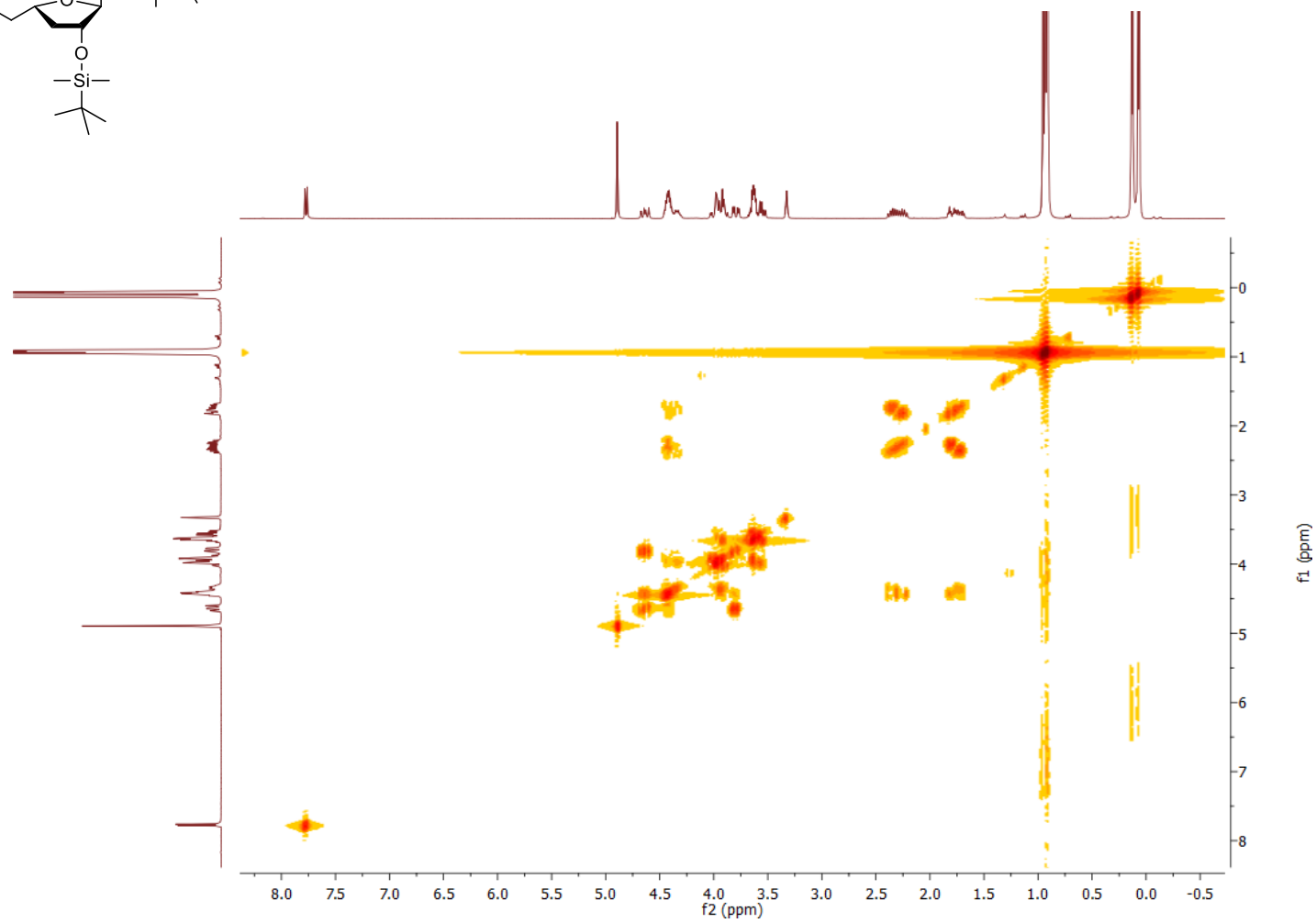
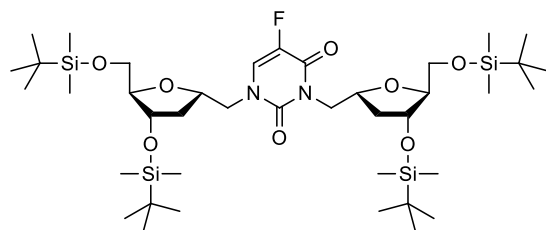
***N*<sup>1</sup>,*N*<sup>3</sup>-bis-[3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1,2-dideoxy- $\alpha$ -ribofuranosylmethyl]-5-fluorouracil (18d)**

DEPT 135 NMR (75.5 MHz, MeOH-*d*<sub>4</sub>)



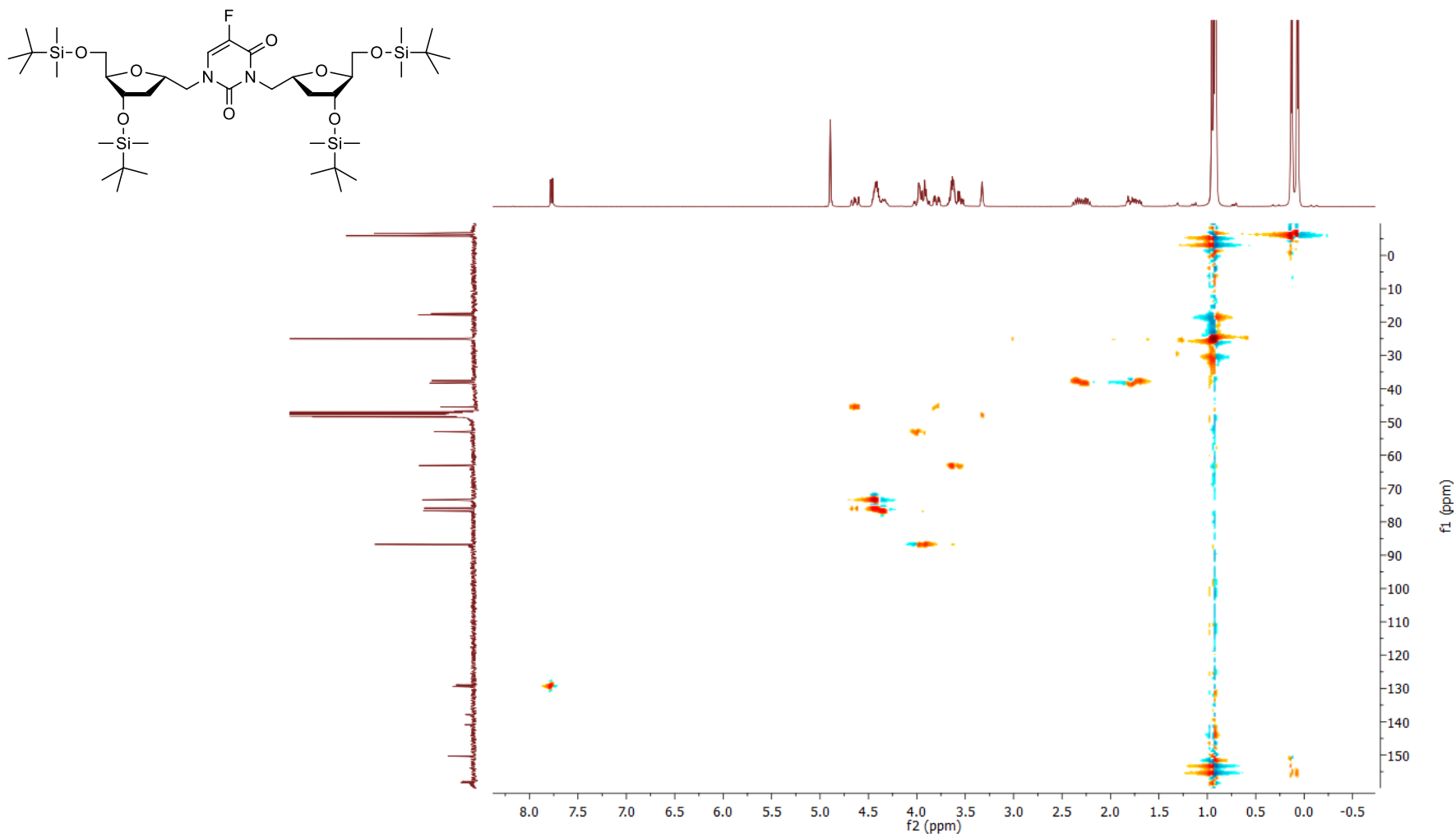
*N*<sup>1</sup>,*N*<sup>3</sup>-bis-[3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1,2-dideoxy- $\alpha$ -ribofuranosylmethyl]-5-fluorouracil (18d)

COSY NMR (MeOH-*d*<sub>4</sub>)



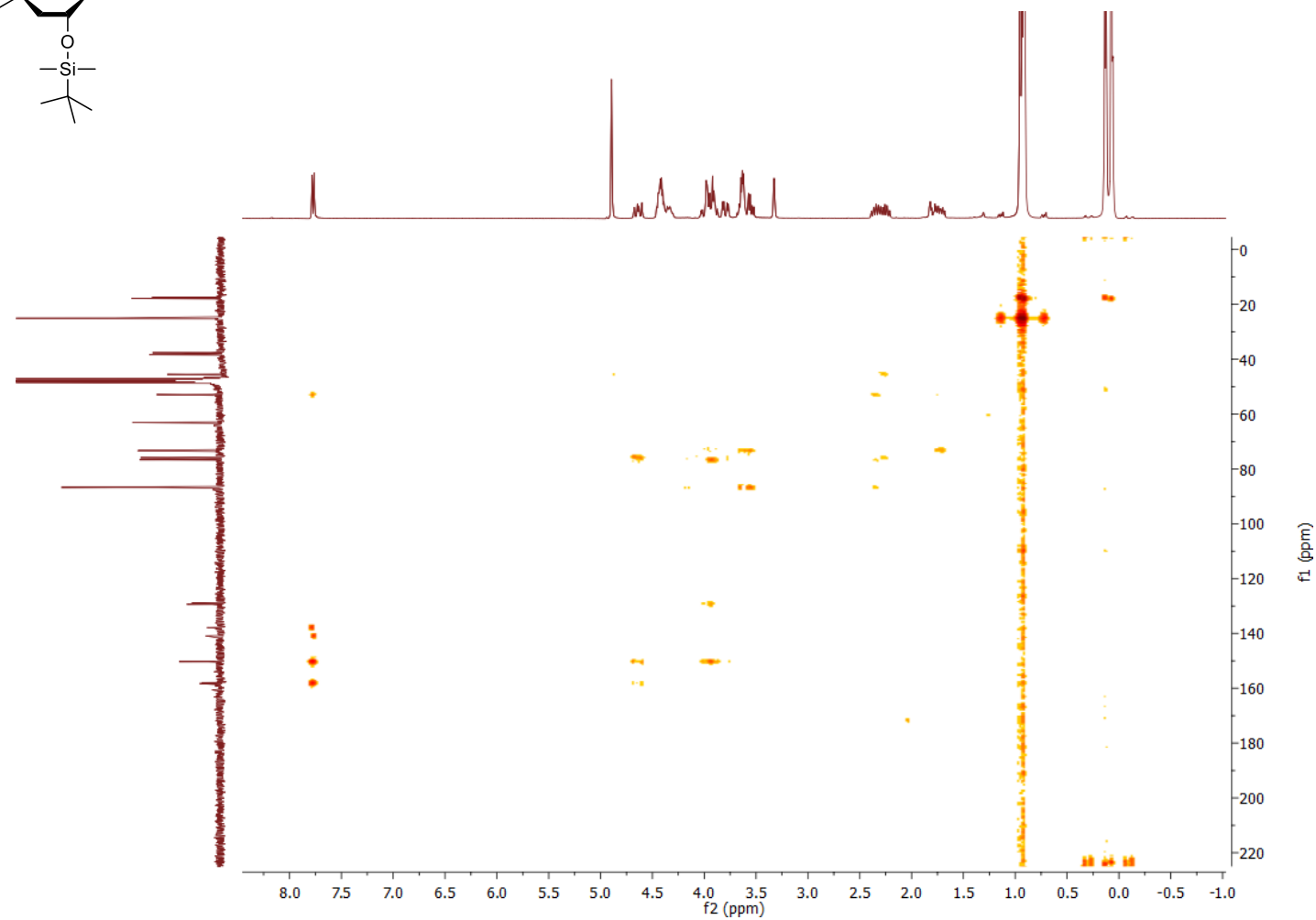
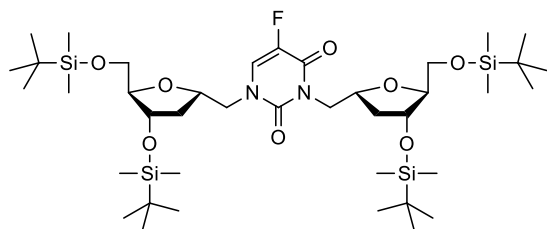
*N*<sup>1</sup>,*N*<sup>3</sup>-bis-[3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1,2-dideoxy- $\alpha$ -ribofuranosylmethyl]-5-fluorouracil (18d)

HSQC NMR (MeOH-*d*<sub>4</sub>)



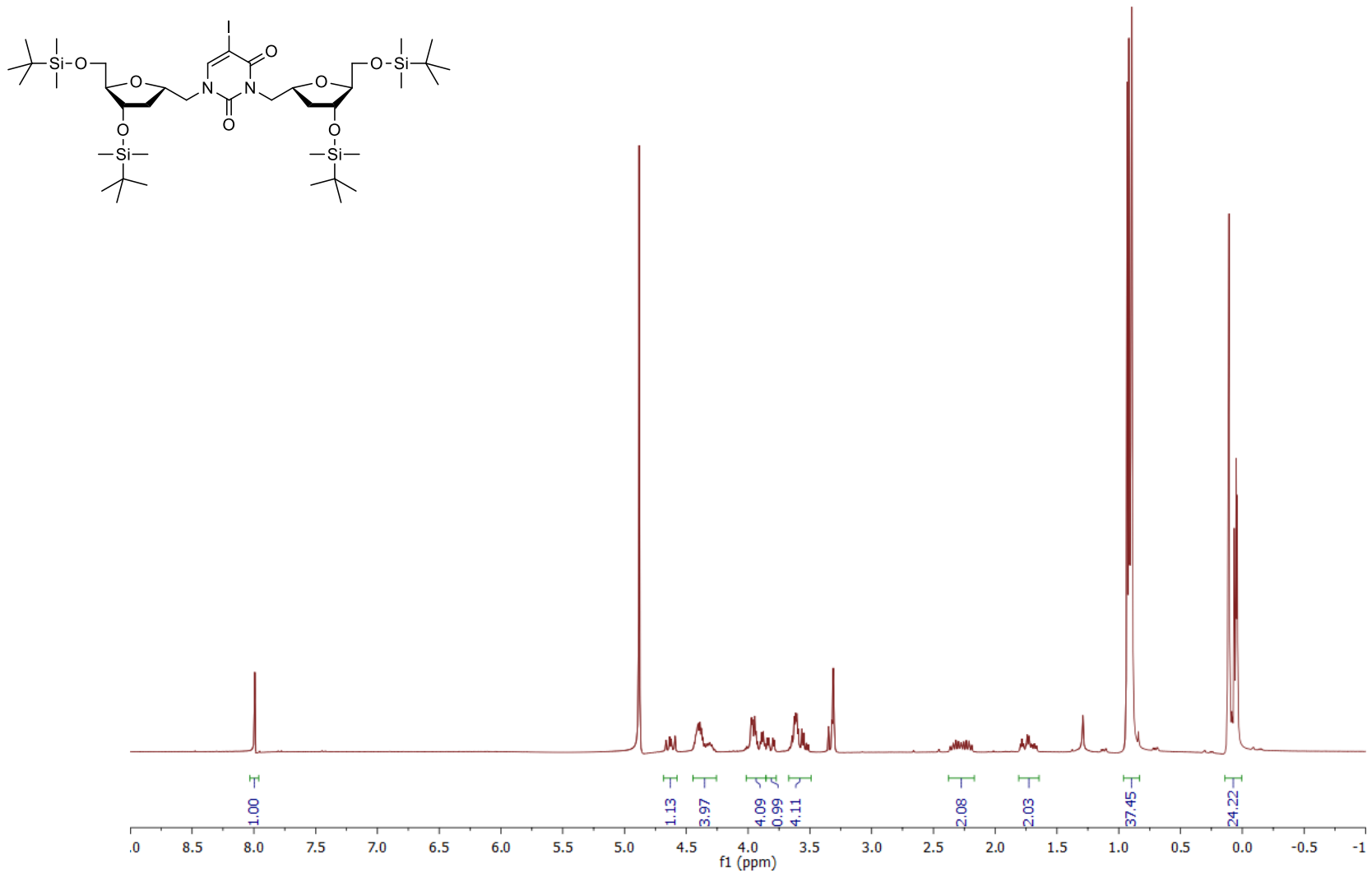
*N*<sup>1</sup>,*N*<sup>3</sup>-bis-[3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1,2-dideoxy- $\alpha$ -ribofuranosylmethyl]-5-fluorouracil (18d)

HMBC NMR (MeOH-*d*<sub>4</sub>)



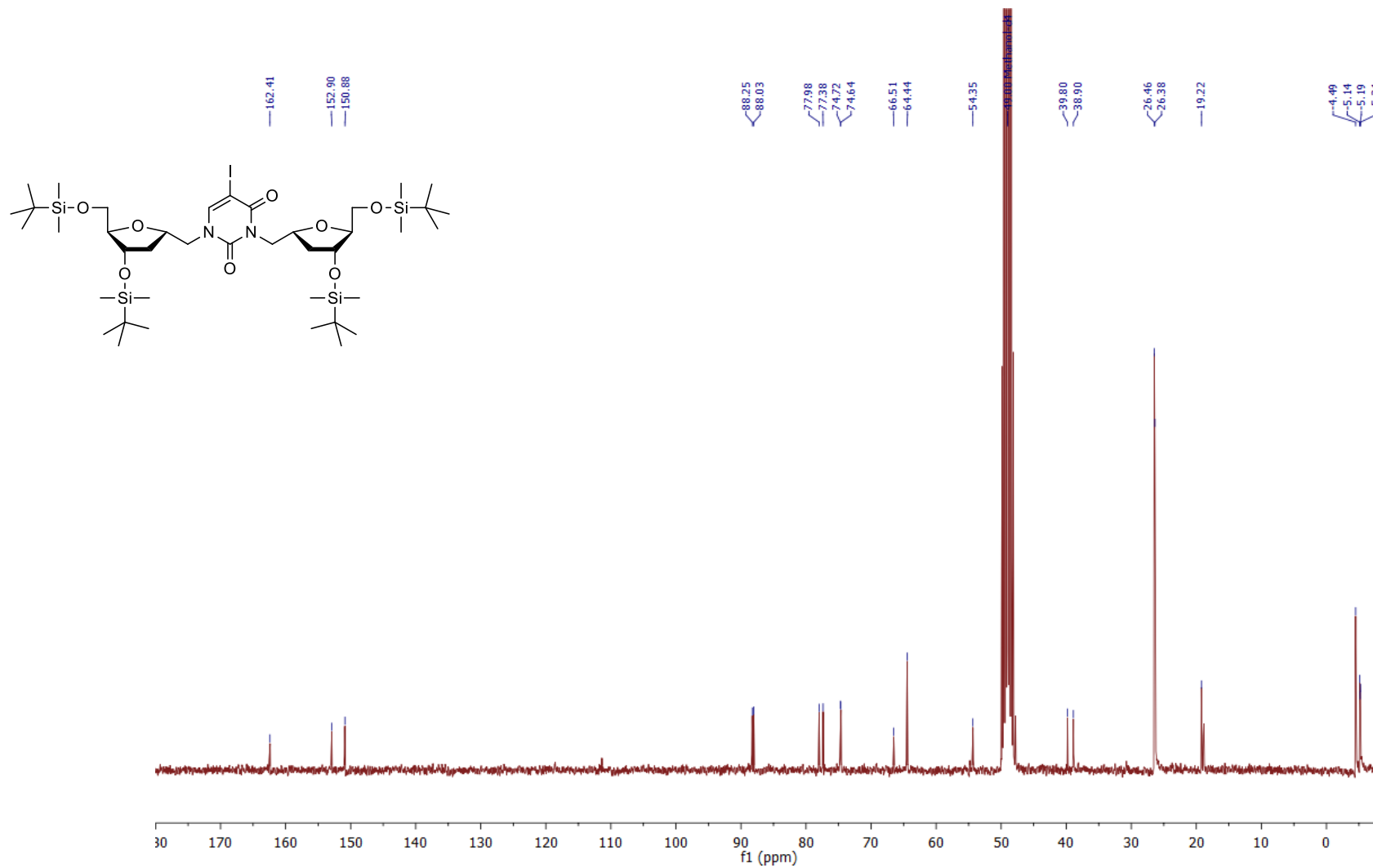
*N*<sup>1</sup>,*N*<sup>3</sup>-bis-[3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1,2-dideoxy- $\alpha$ -ribofuranosylmethyl]-5-iodouracil (18f)

<sup>1</sup>H NMR (300.13 MHz, MeOH-*d*<sub>4</sub>)



***N*<sup>1</sup>,*N*<sup>3</sup>-bis-[3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1,2-dideoxy- $\alpha$ -ribofuranosylmethyl]-5-iodouracil (18f)**

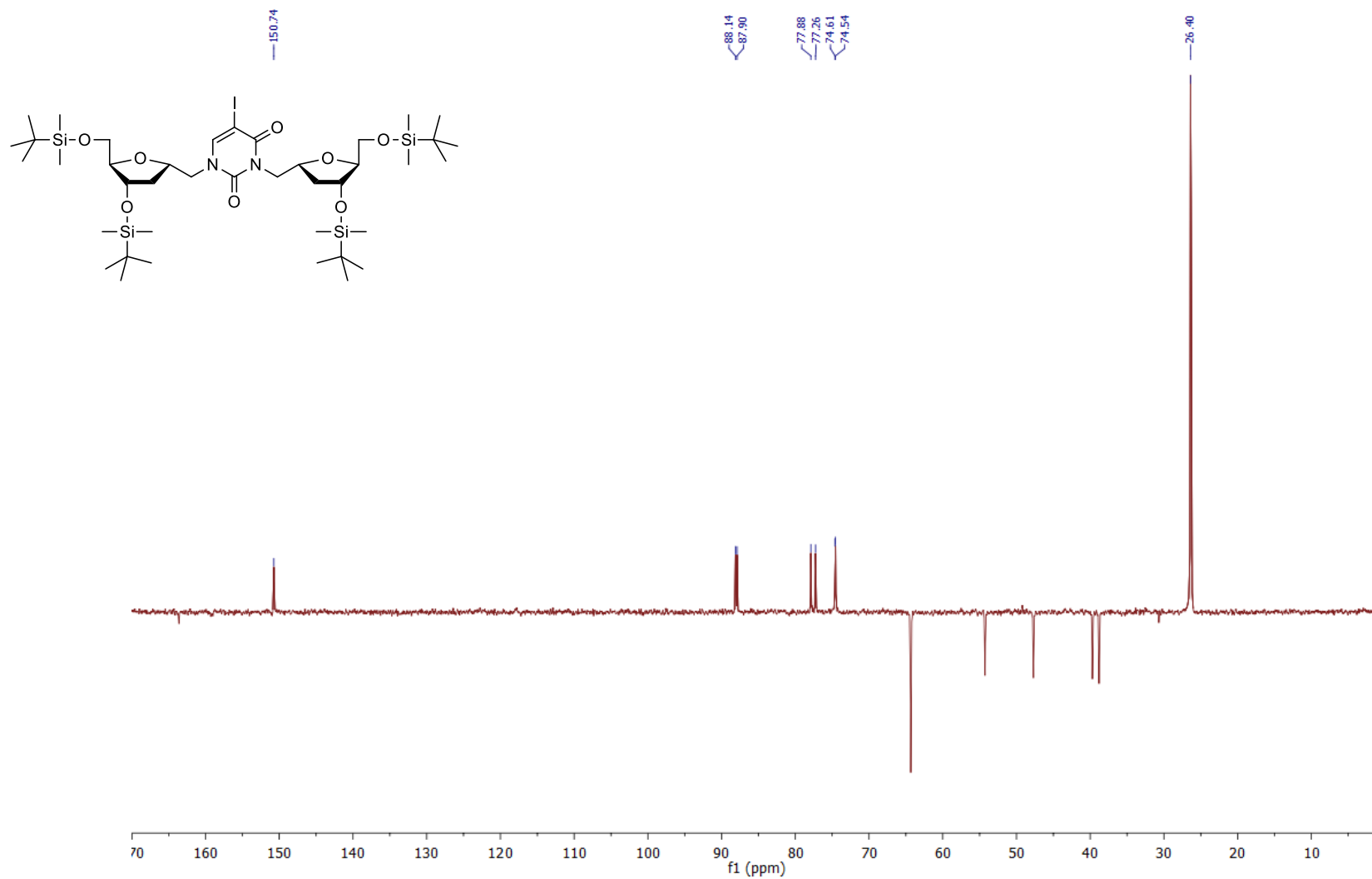
<sup>13</sup>C NMR (75.5 MHz, MeOH-*d*<sub>4</sub>)





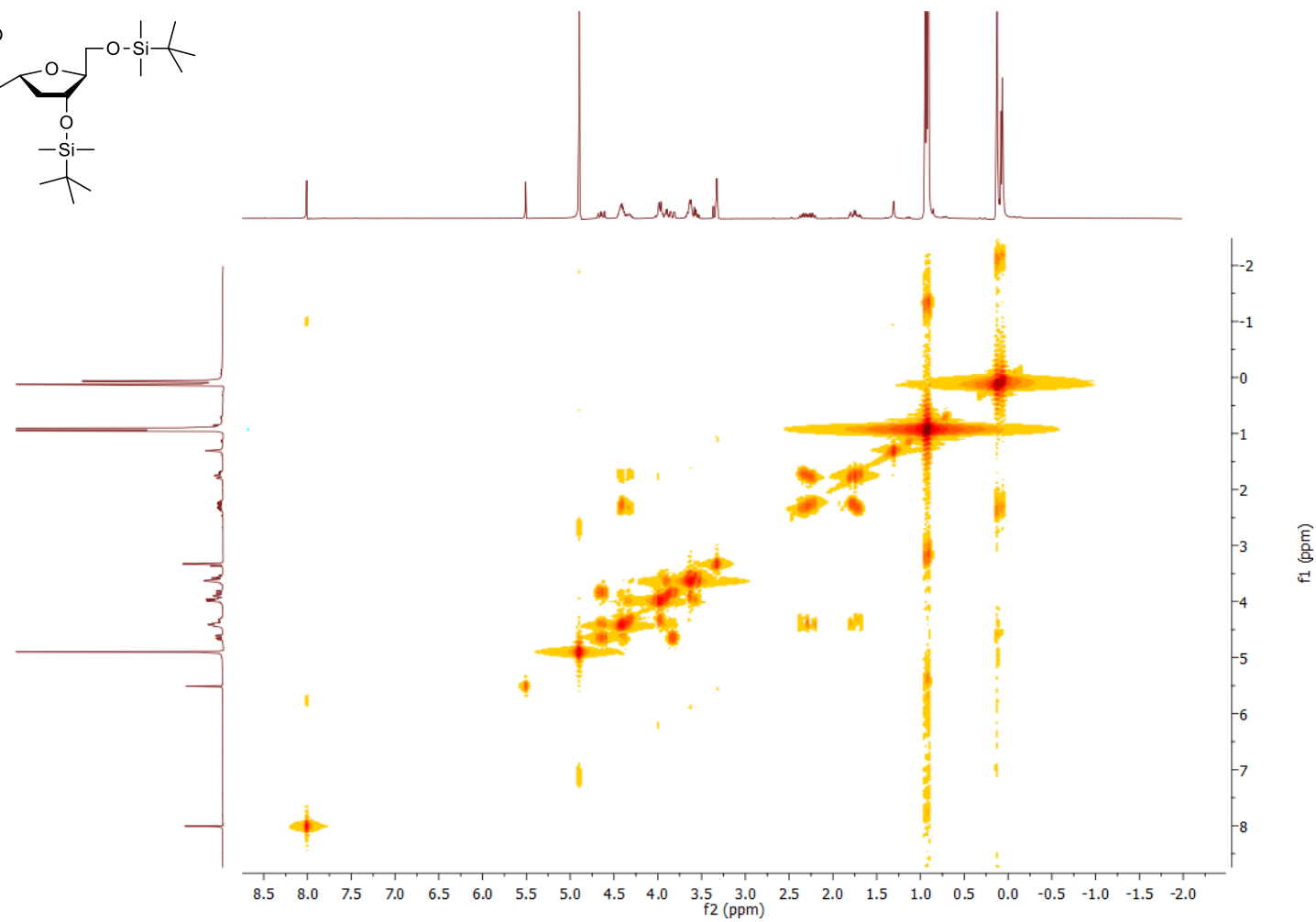
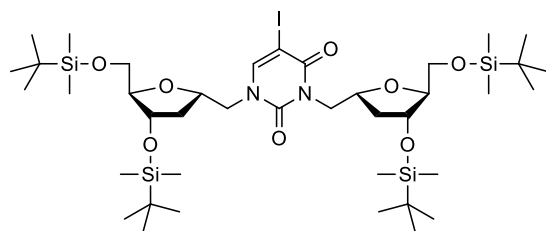
*N*<sup>1</sup>,*N*<sup>3</sup>-bis-[3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1,2-dideoxy- $\alpha$ -ribofuranosylmethyl]-5-iodouracil (18f)

DEPT 135 NMR (75.5 MHz, MeOH-*d*<sub>4</sub>)



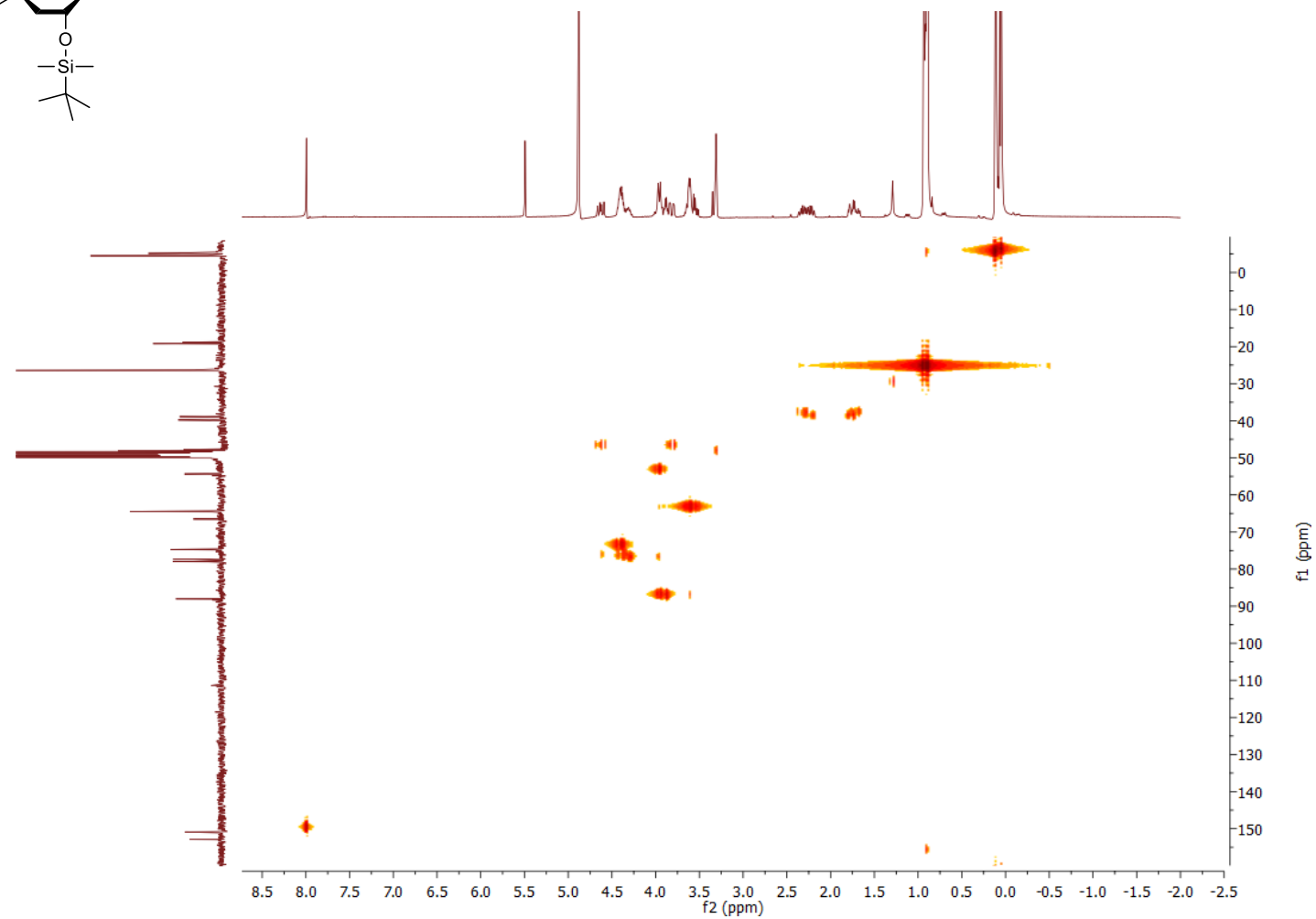
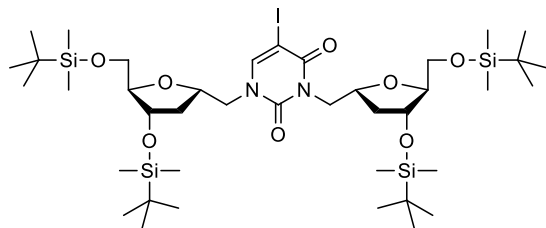
*N*<sup>1</sup>,*N*<sup>3</sup>-bis-[3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1,2-dideoxy- $\alpha$ -ribofuranosylmethyl]-5-iodouracil (18f)

COSY NMR (MeOH-*d*<sub>4</sub>)



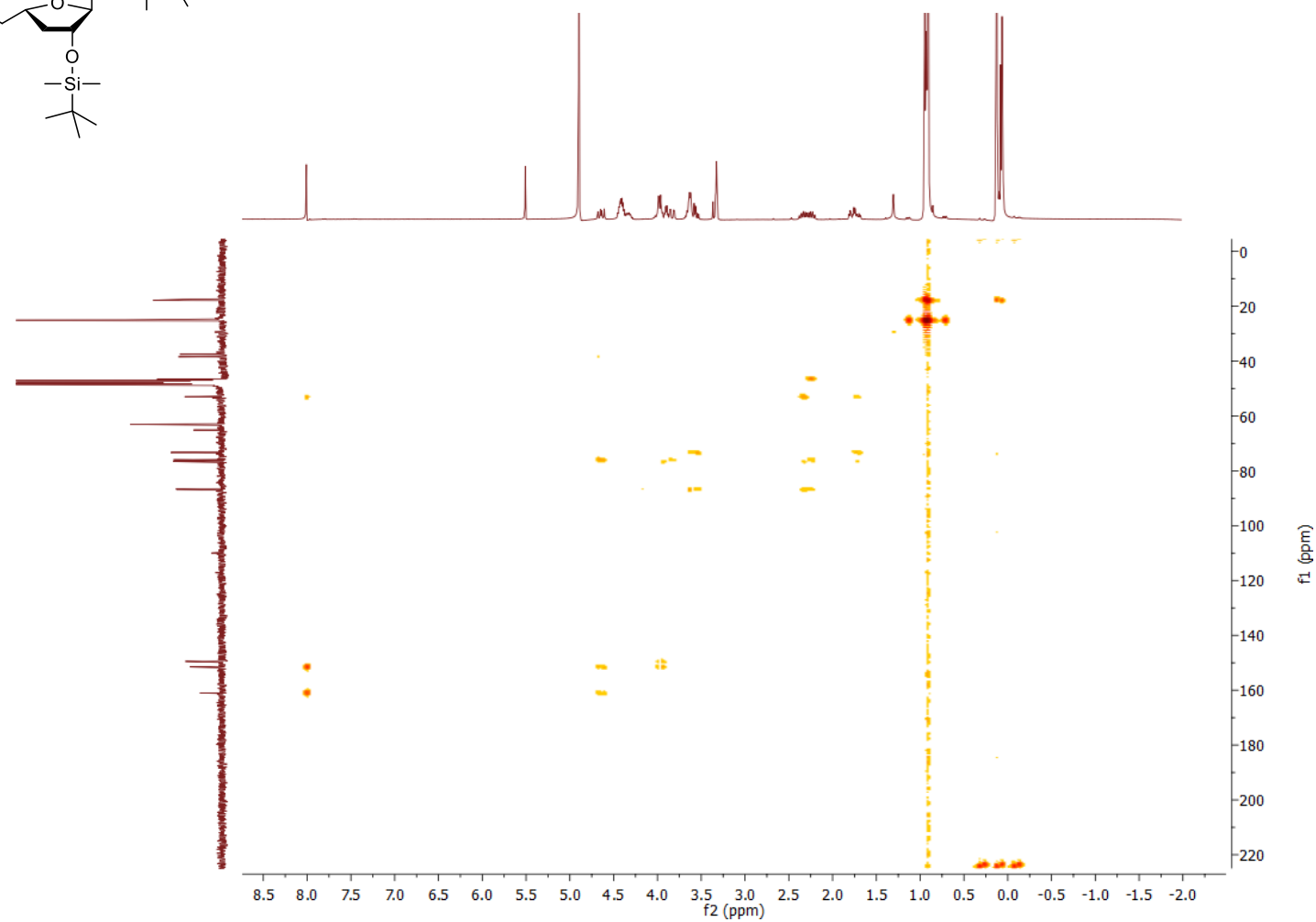
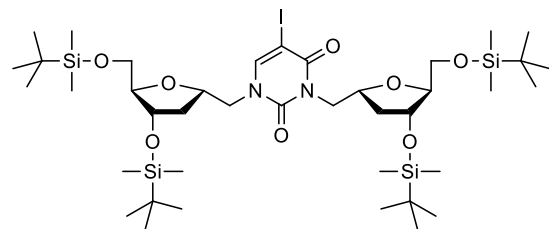
*N*<sup>1</sup>,*N*<sup>3</sup>-bis-[3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1,2-dideoxy- $\alpha$ -ribofuranosylmethyl]-5-iodouracil (18f)

HSQC NMR (MeOH-*d*<sub>4</sub>)



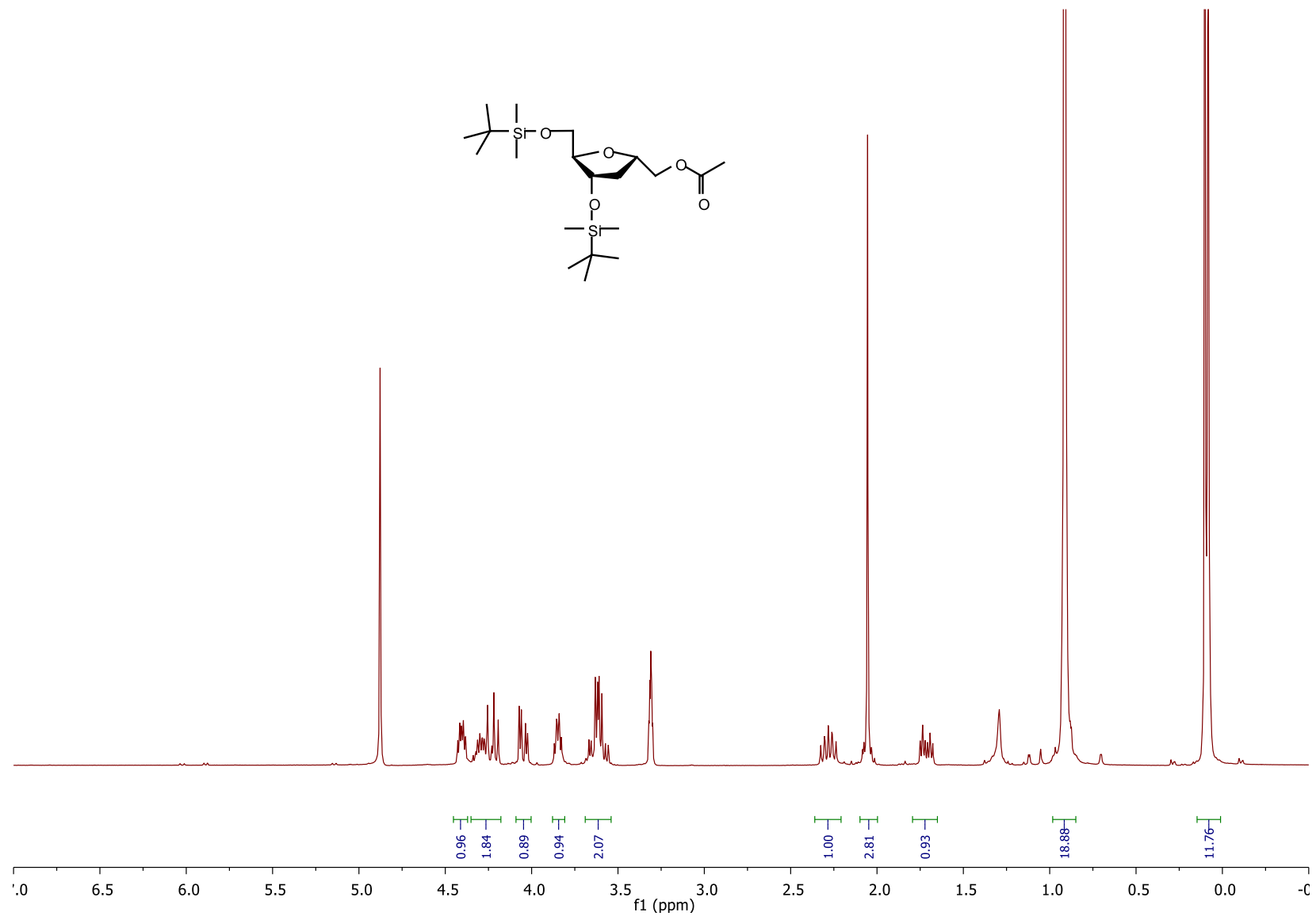
*N*<sup>1</sup>,*N*<sup>3</sup>-bis-[3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1,2-dideoxy- $\alpha$ -ribofuranosylmethyl]-5-iodouracil (18f)

HMBC NMR (MeOH-*d*<sub>4</sub>)



3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1,2-dideoxy-1 $\alpha$ -((acetoxy)methyl)-*D*-ribofuranose (19)

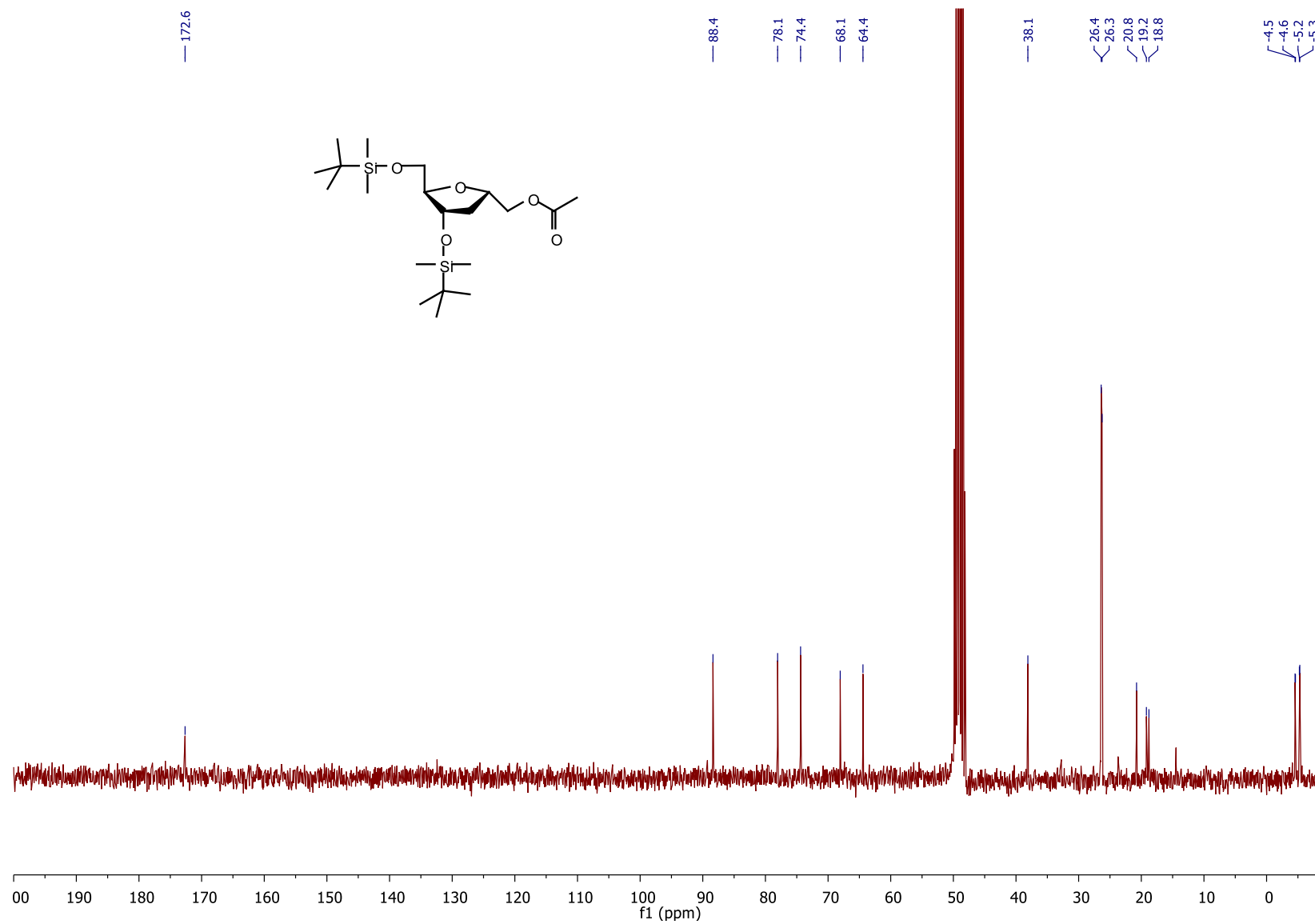
$^1\text{H}$  NMR (300.13 MHz,  $\text{MeOH-}d_4$ )



S125

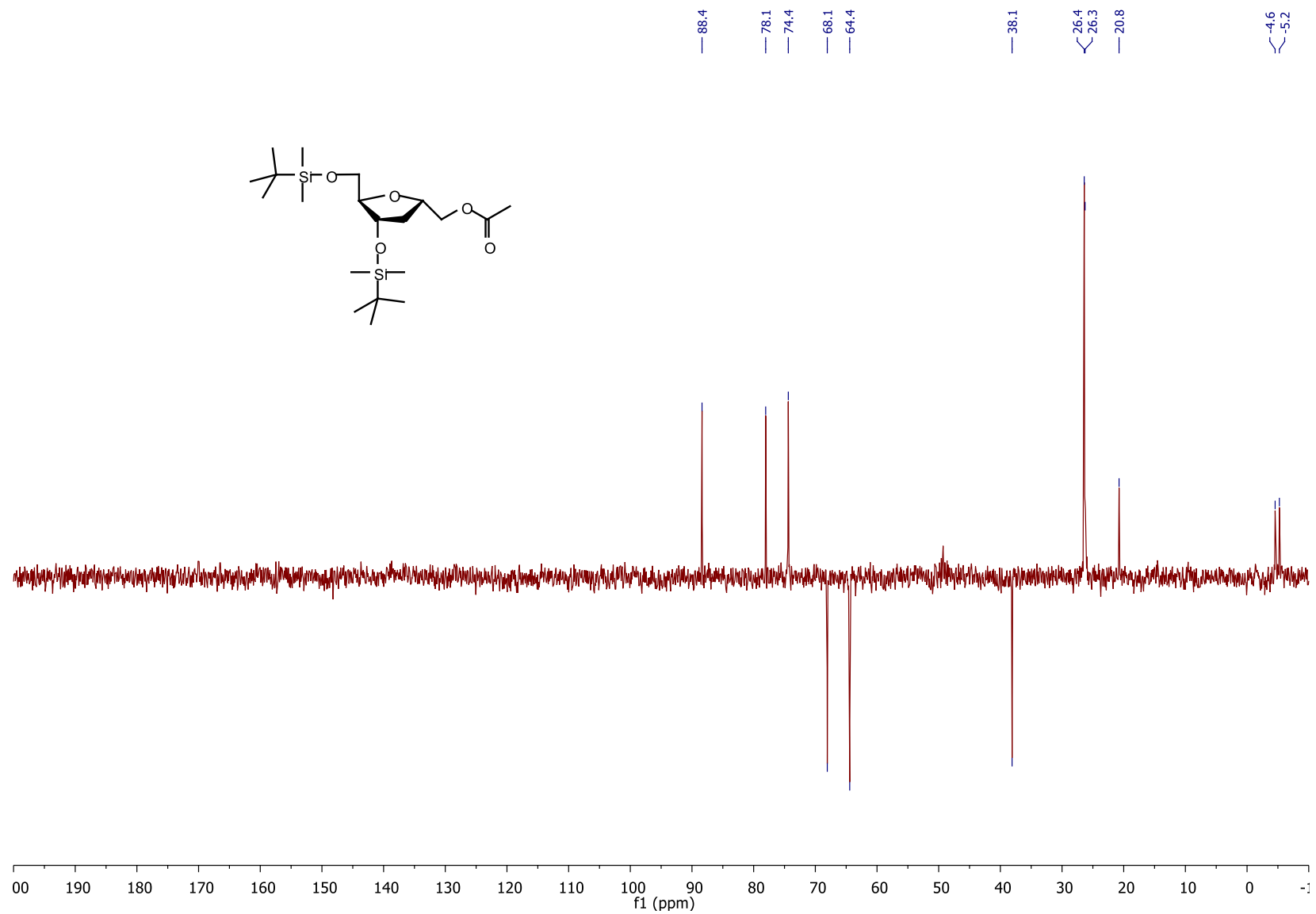
### 3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1,2-dideoxy-1 $\alpha$ -((acetoxy)methyl)-*D*-ribofuranose (19)

$^{13}\text{C}$  NMR (75.5 MHz,  $\text{MeOH-}d_4$ )



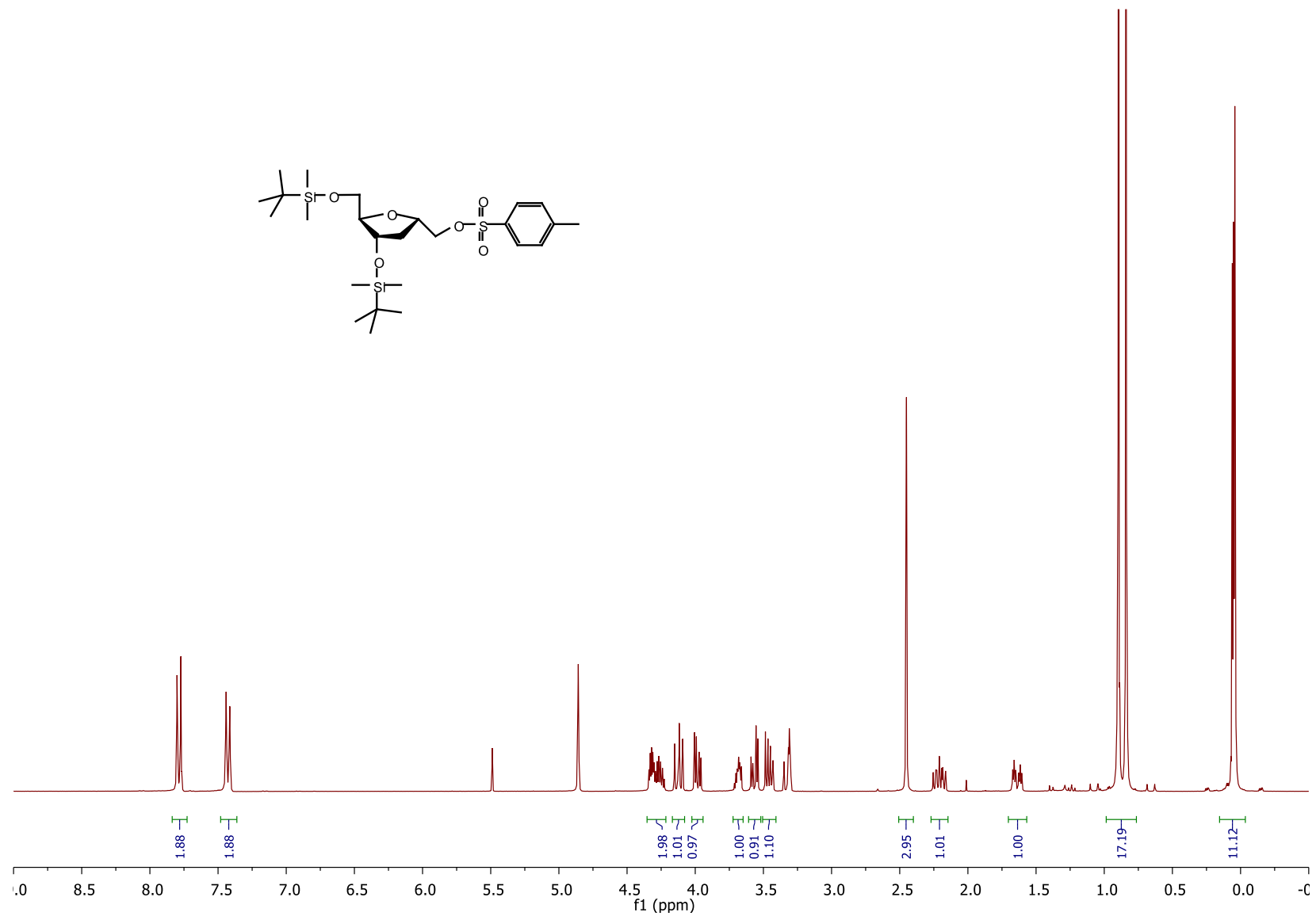
3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1,2-dideoxy-1 $\alpha$ -((acetoxy)methyl)-*D*-ribofuranose (19)

DEPT NMR (75.5 MHz, MeOH-*d*<sub>4</sub>)



3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1,2-dideoxy-1 $\alpha$ -((tosyloxy)methyl)-*D*-ribofuranose (20)

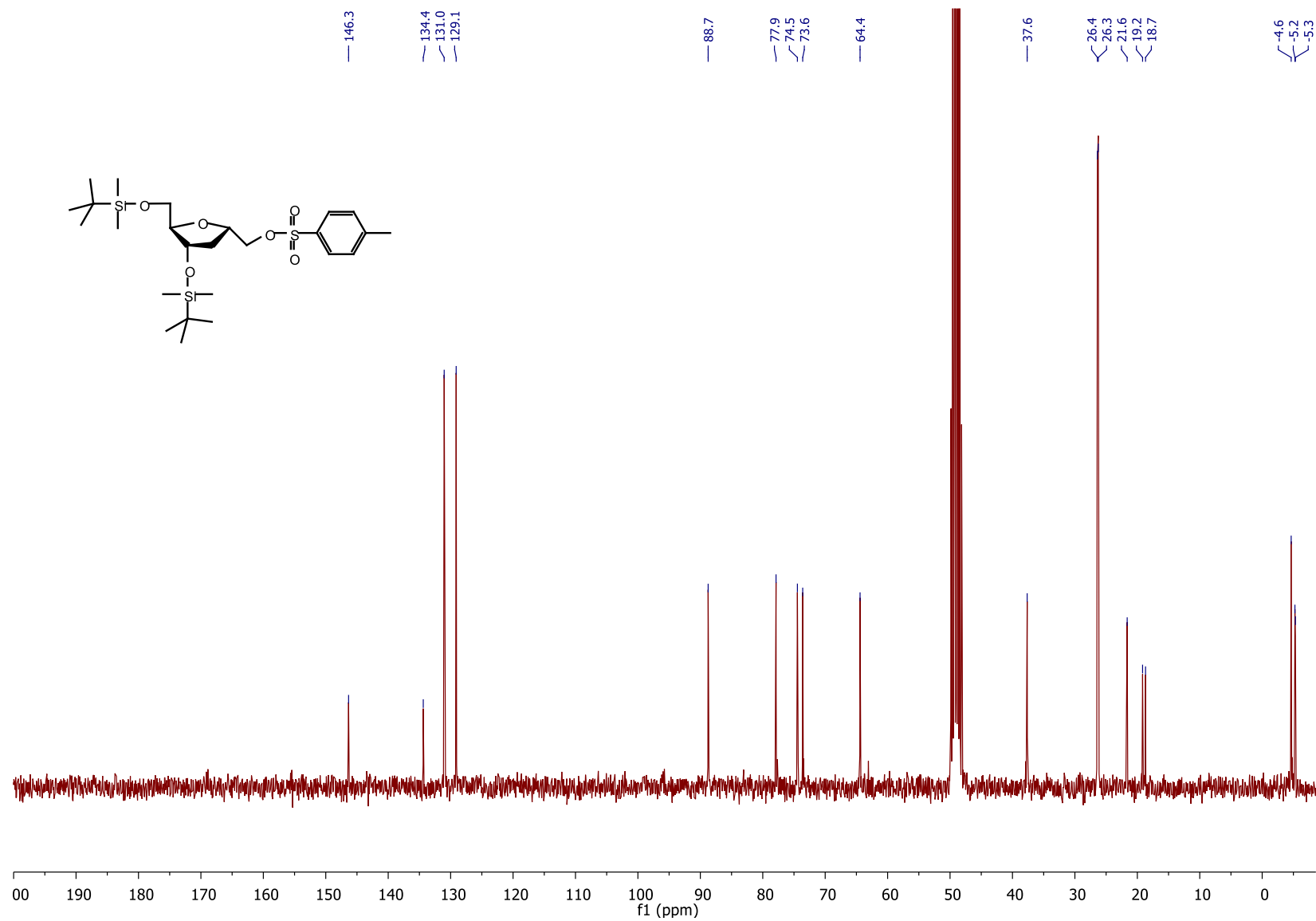
$^1\text{H}$  NMR (300.13 MHz,  $\text{MeOH-}d_4$ )





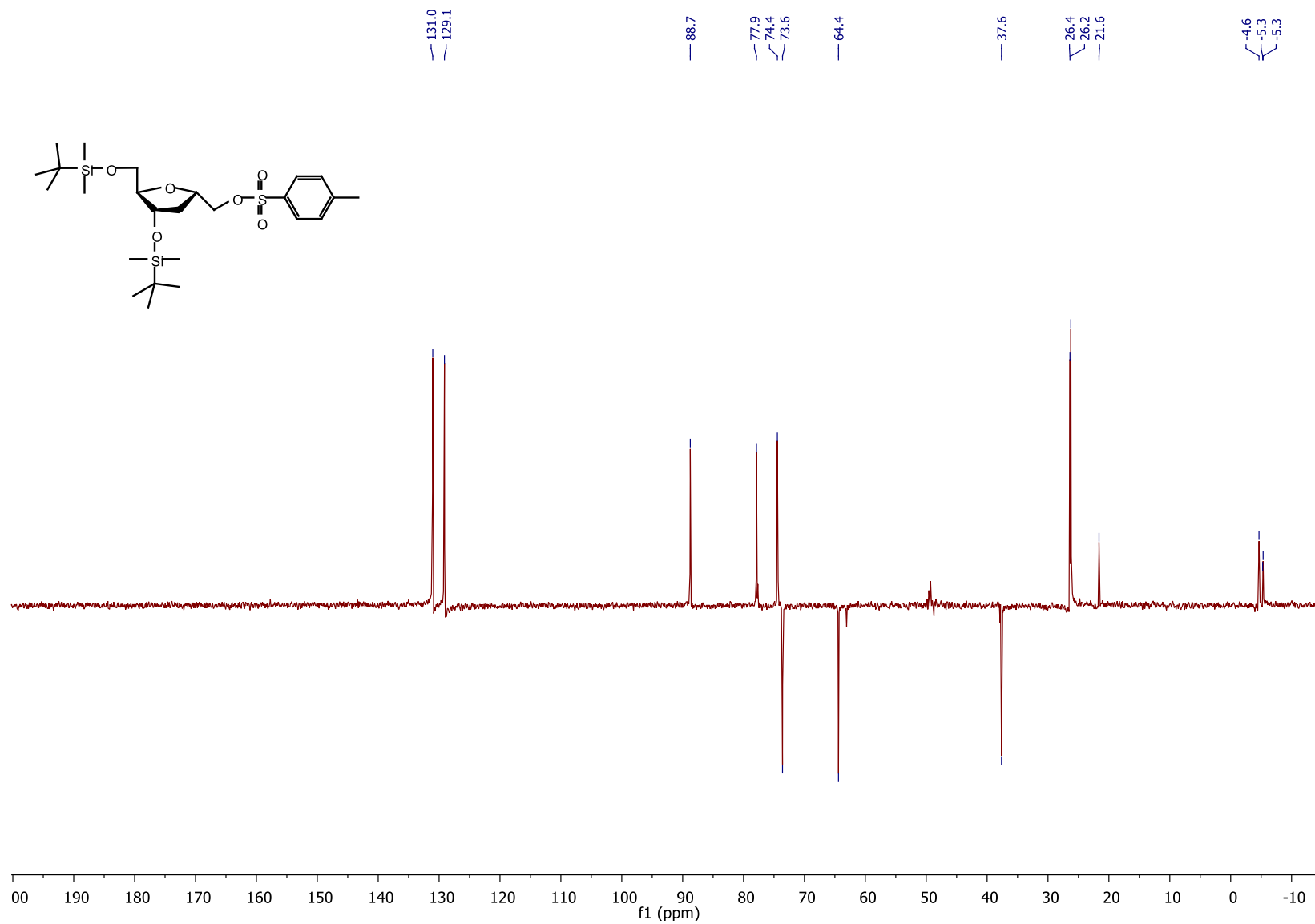
3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1,2-dideoxy-1 $\alpha$ -((tosyloxy)methyl)-*D*-ribofuranose (20)

$^{13}\text{C}$  NMR (75.5 MHz,  $\text{MeOH-}d_4$ )



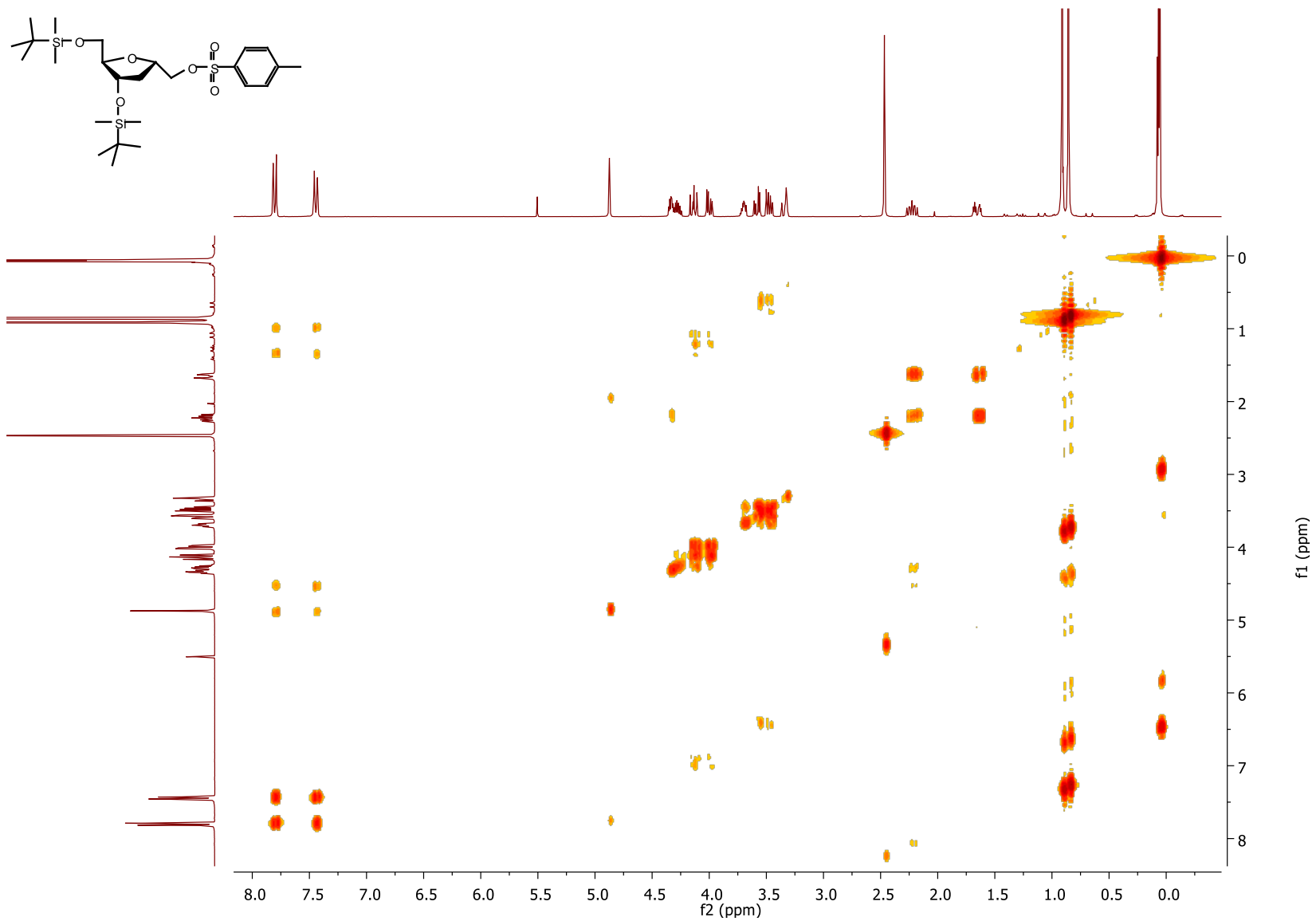
3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1,2-dideoxy-1 $\alpha$ -((tosyloxy)methyl)-*D*-ribofuranose (20)

DEPT NMR (75.5 MHz, MeOH-*d*<sub>4</sub>)



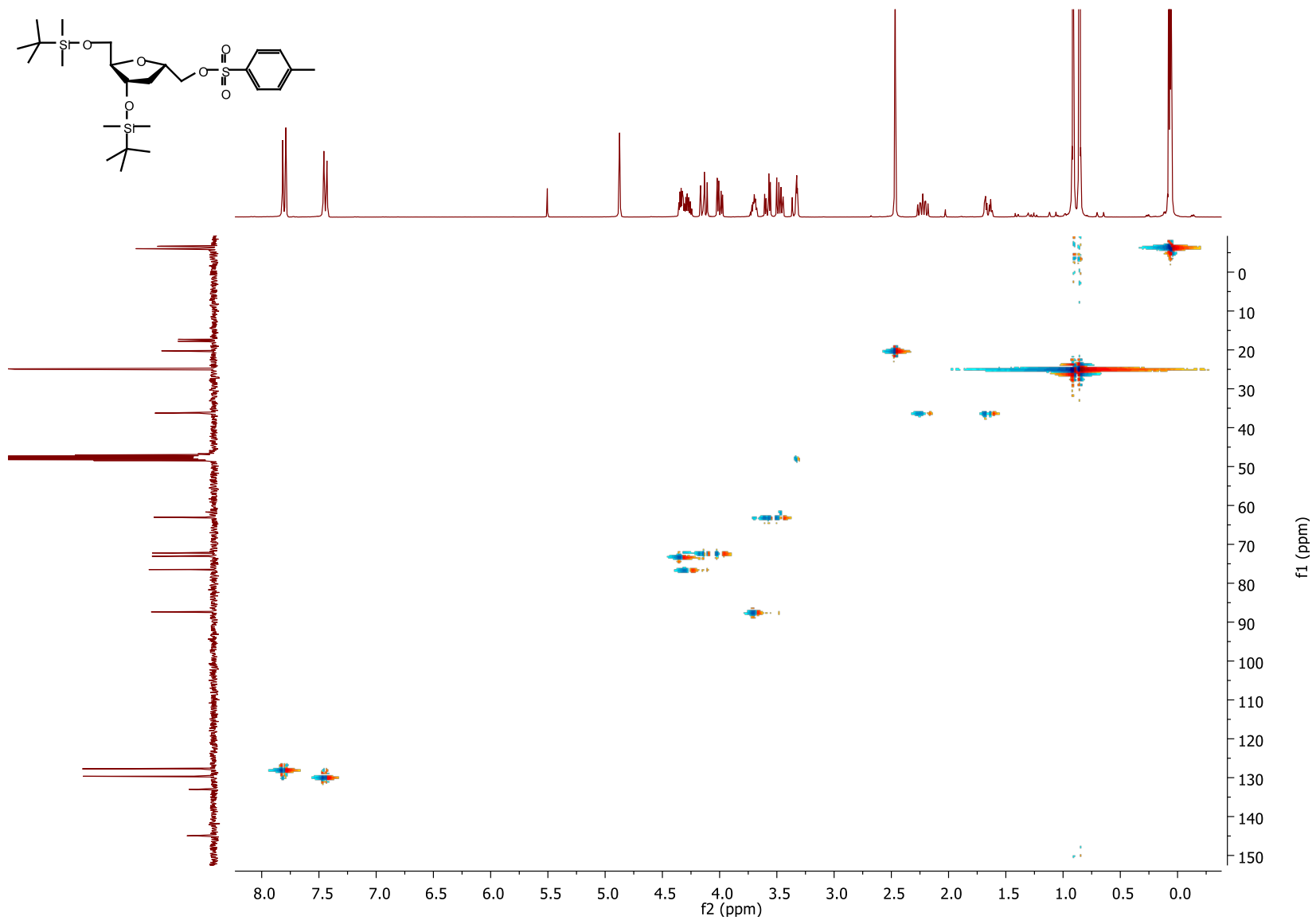
3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1,2-dideoxy-1 $\alpha$ -((tosyloxy)methyl)-*D*-ribofuranose (20)

COSY NMR (MeOH-*d*<sub>4</sub>)



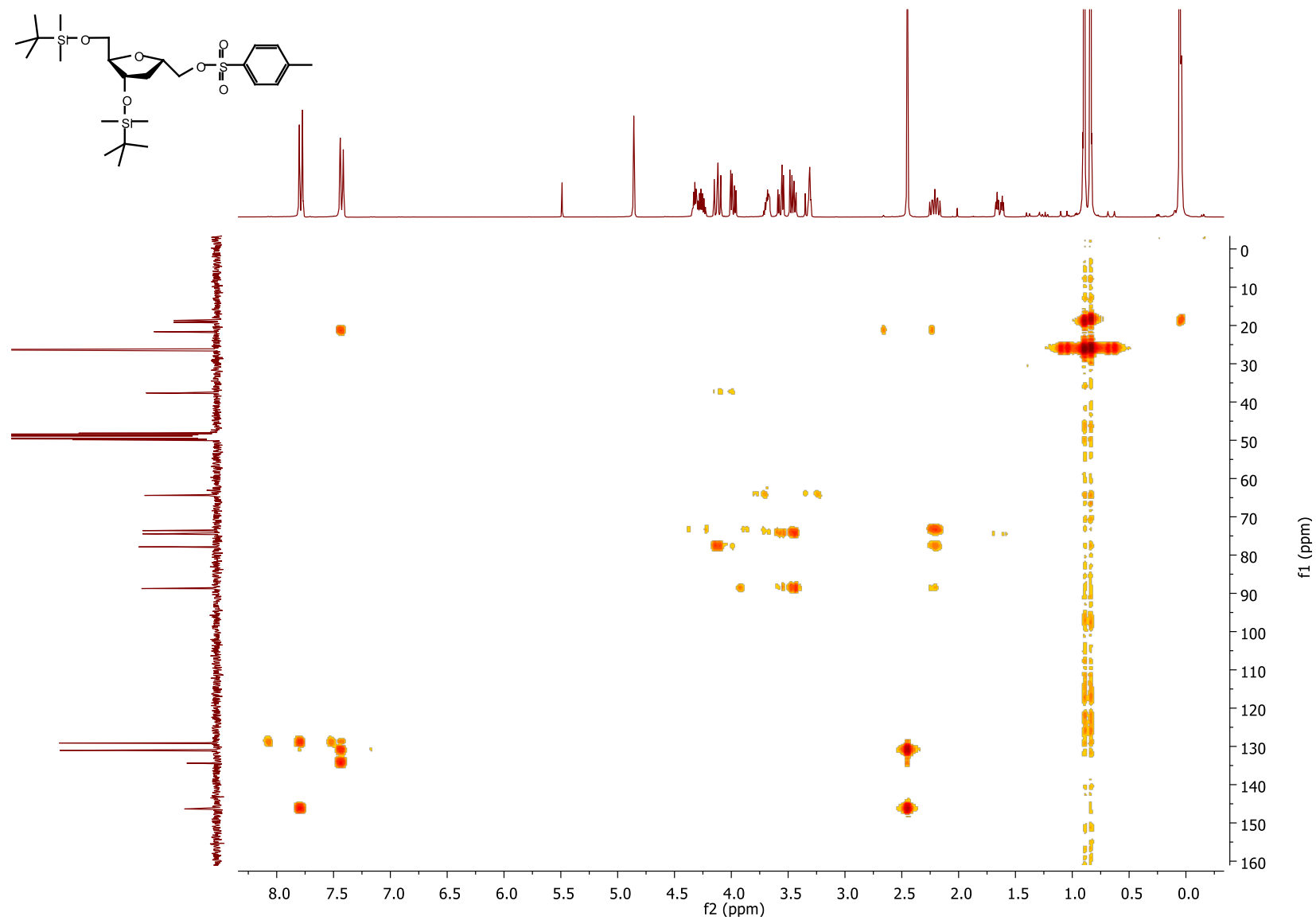
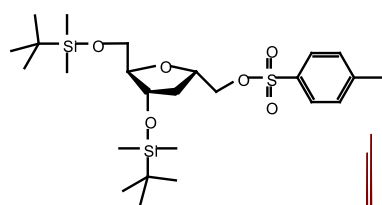
3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1,2-dideoxy-1 $\alpha$ -((tosyloxy)methyl)-*D*-ribofuranose (20)

HSQC NMR (MeOH- $d_4$ )



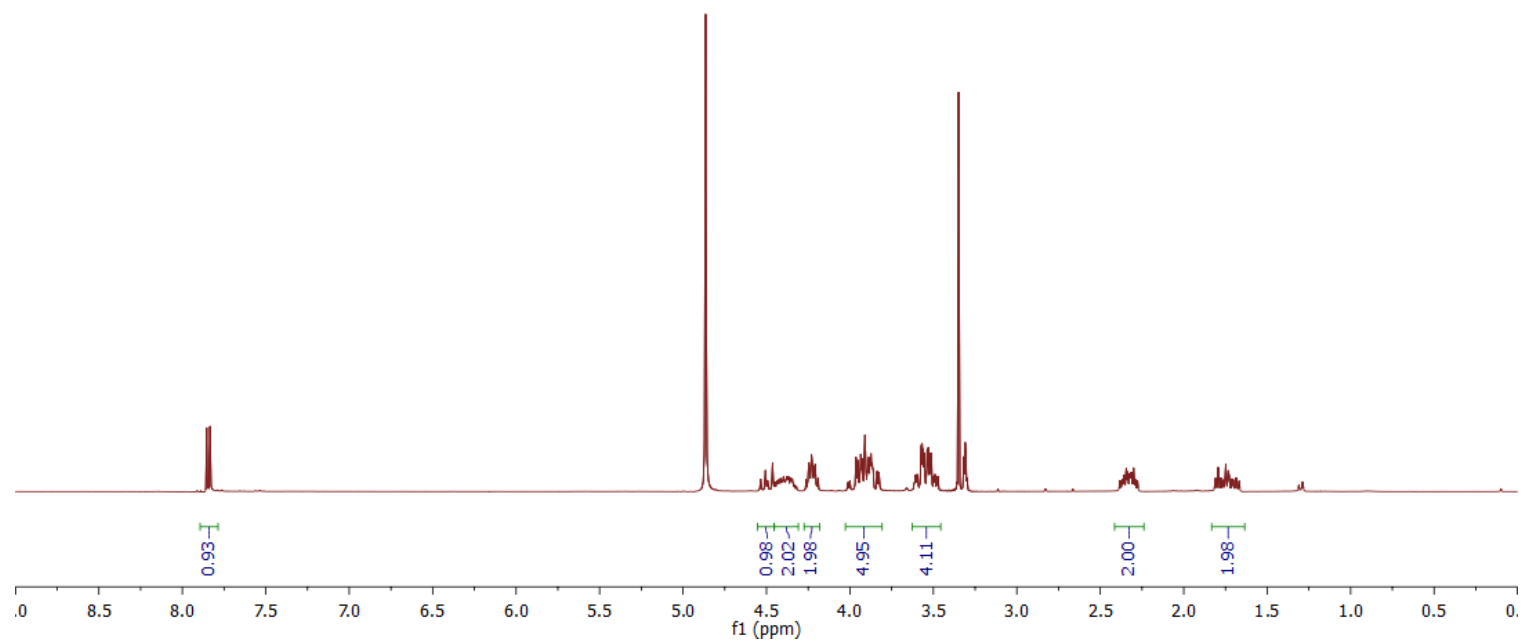
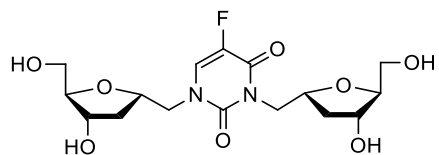
3,5-bis-*O*-(*tert*-Butyldimethylsilyl)-1,2-dideoxy-1 $\alpha$ -((tosyloxy)methyl)-*D*-ribofuranose (20)

HMBC NMR (MeOH- $d_4$ )



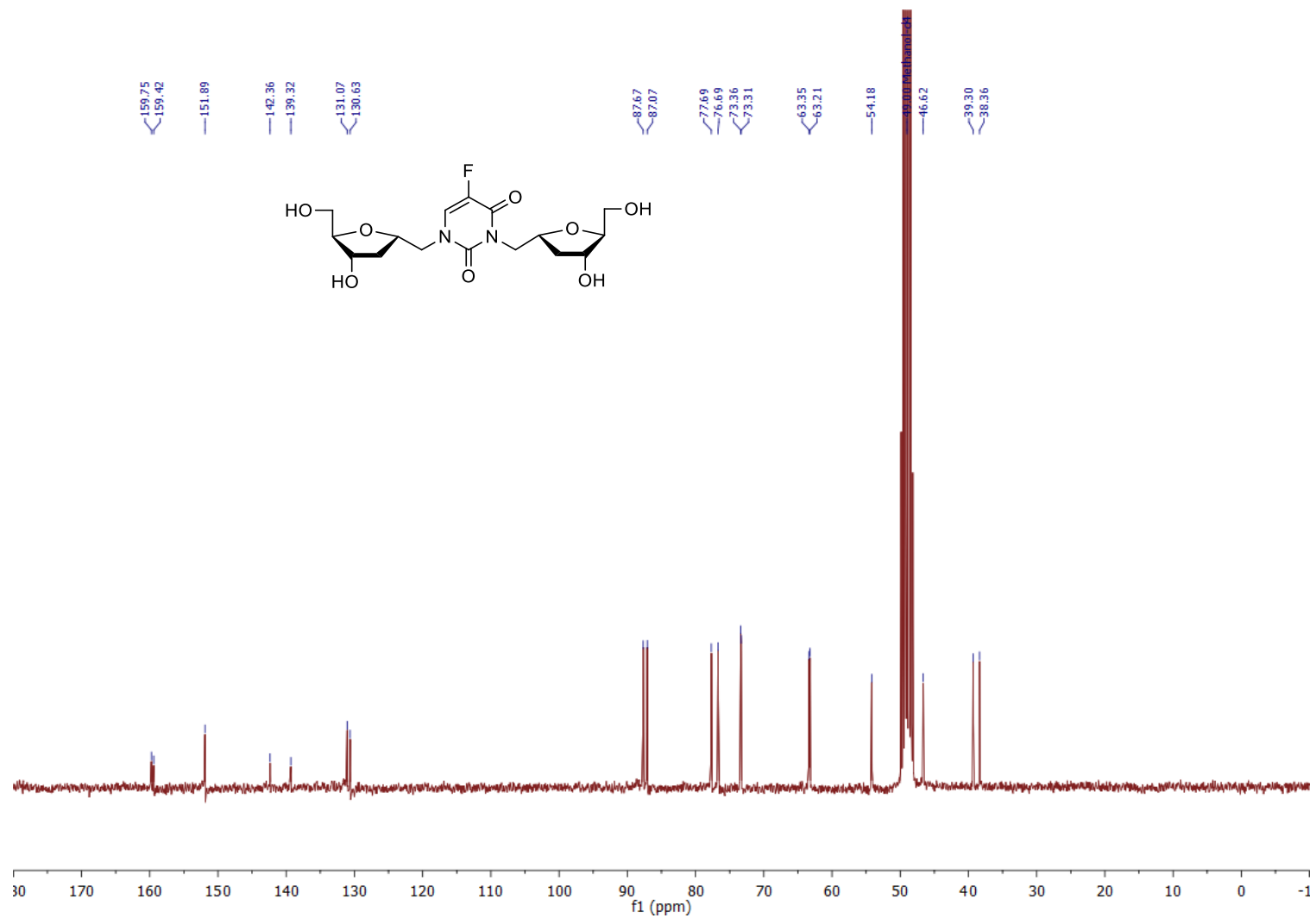
*N*<sup>1</sup>,*N*<sup>3</sup>-bis-(1,2-Dideoxy- $\alpha$ -ribofuranosylmethyl)-5-fluorouracil (21d)

<sup>1</sup>H NMR (300.13 MHz, MeOH-*d*<sub>4</sub>)



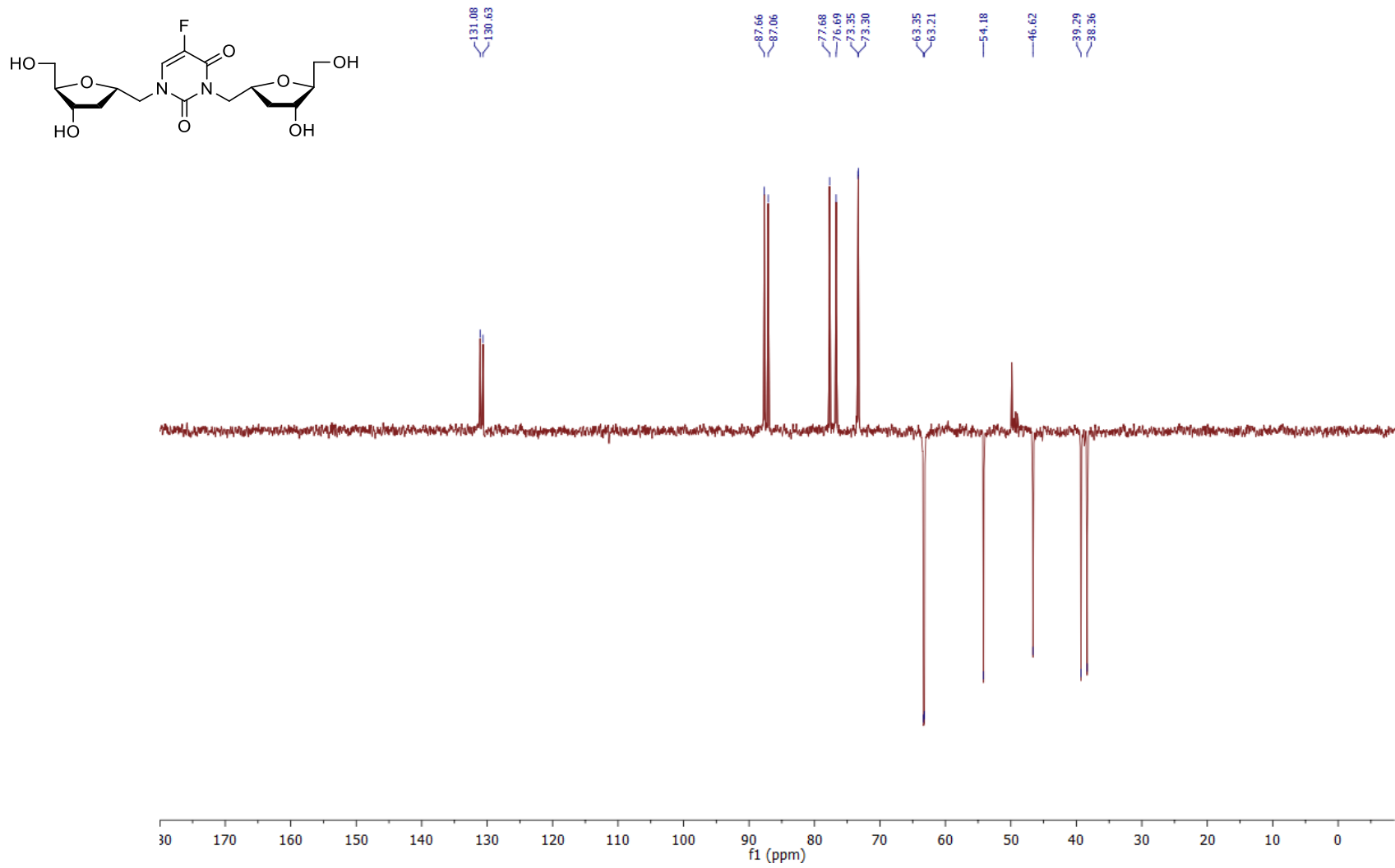
***N*<sup>1</sup>,*N*<sup>3</sup>-bis-(1,2-Dideoxy- $\alpha$ -ribofuranosylmethyl)-5-fluorouracil (21d)**

<sup>13</sup>C NMR (75.5 MHz, MeOH-*d*<sub>4</sub>)



*N*<sup>1</sup>,*N*<sup>3</sup>-bis-(1,2-Dideoxy- $\alpha$ -ribofuranosylmethyl)-5-fluorouracil (21d)

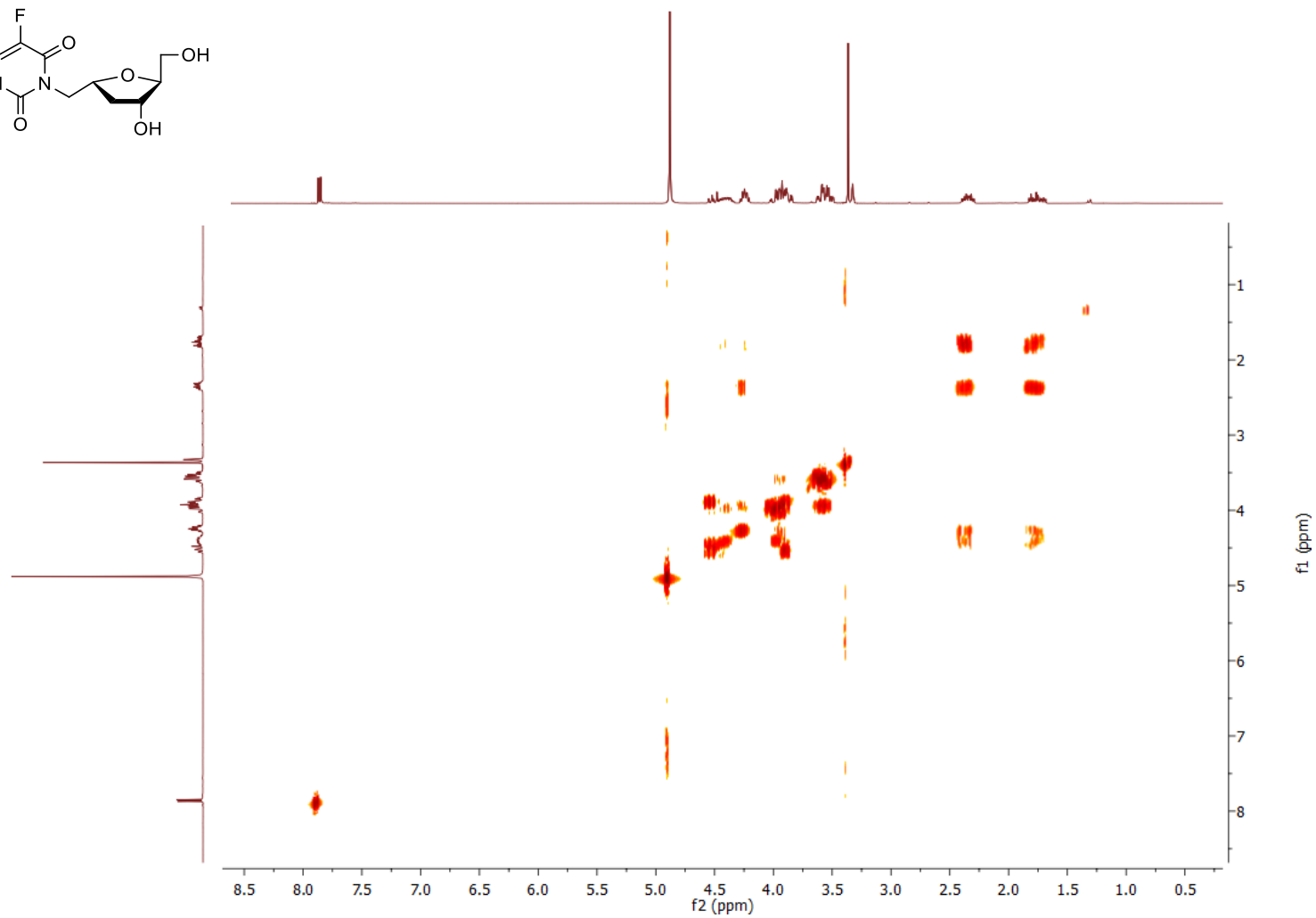
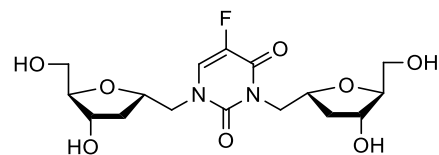
DEPT 135 NMR (75.5 MHz, MeOH-*d*<sub>4</sub>)





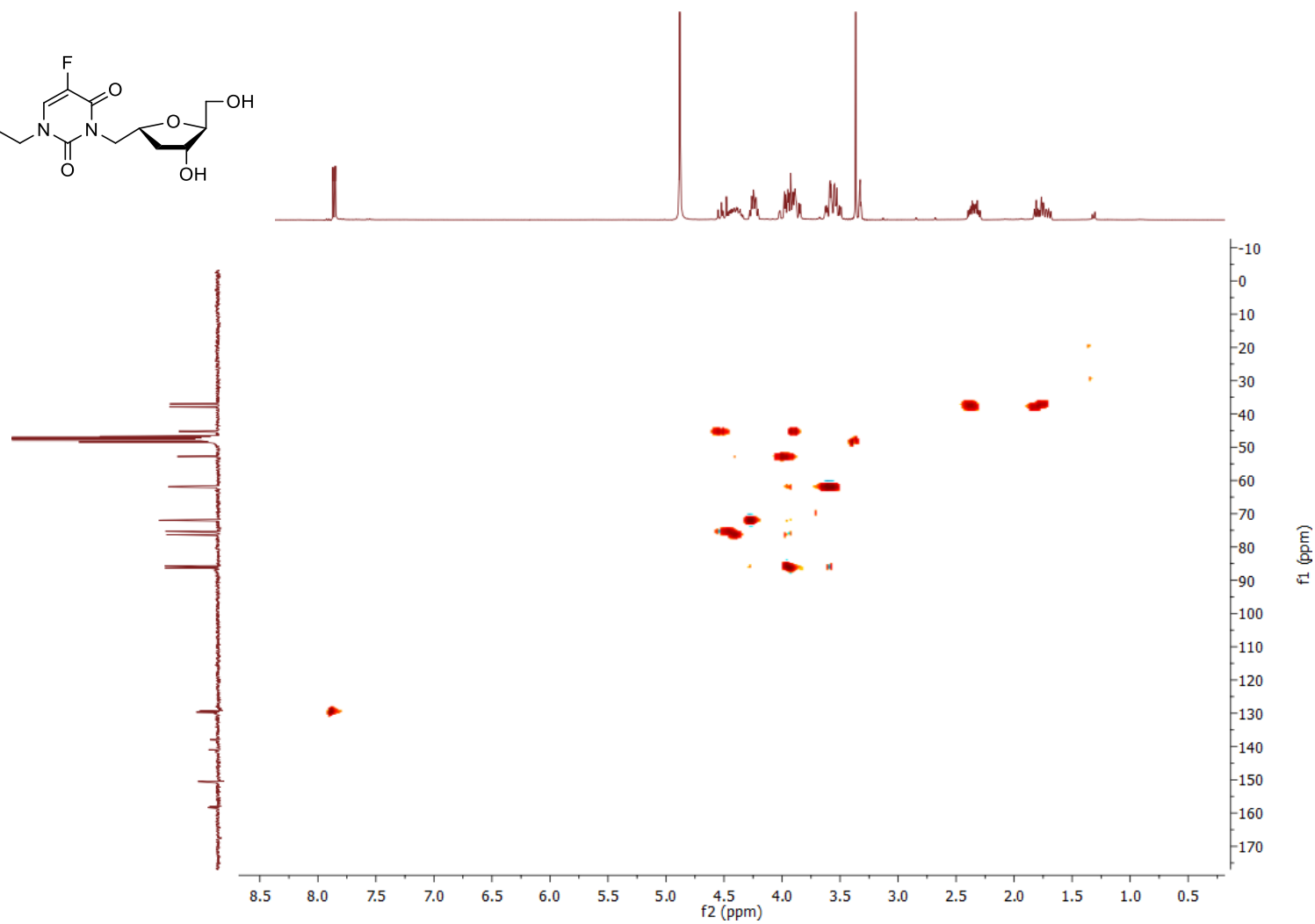
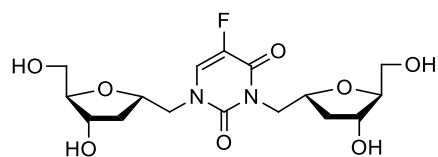
*N*<sup>1</sup>,*N*<sup>3</sup>-bis-(1,2-Dideoxy- $\alpha$ -ribofuranosylmethyl)-5-fluorouracil (21d)

COSY NMR (MeOH-*d*<sub>4</sub>)



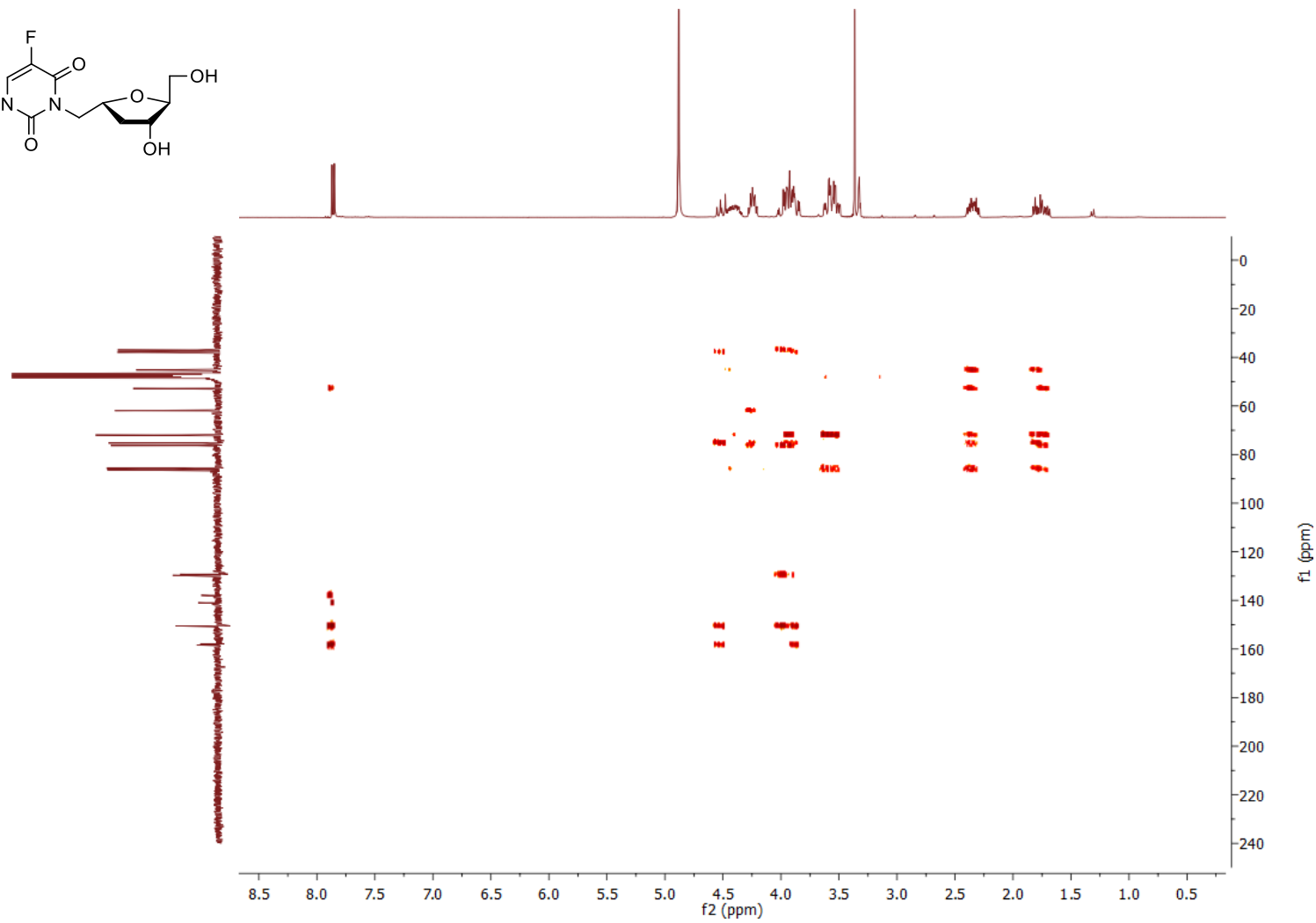
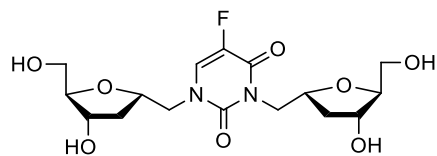
*N*<sup>1</sup>,*N*<sup>3</sup>-bis-(1,2-Dideoxy- $\alpha$ -ribofuranosylmethyl)-5-fluorouracil (21d)

HSQC NMR (MeOH-*d*<sub>4</sub>)



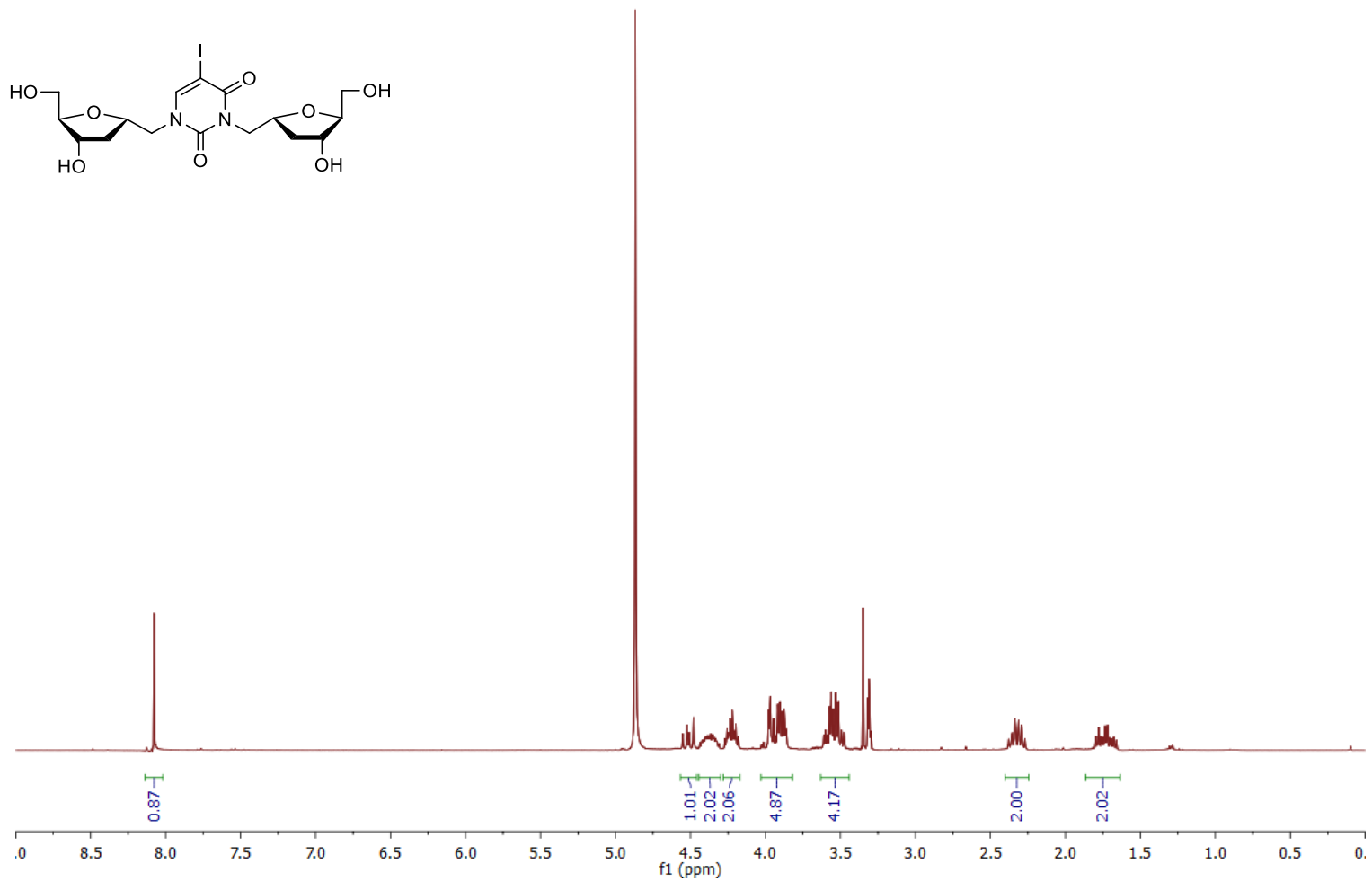
*N*<sup>1</sup>,*N*<sup>3</sup>-bis-(1,2-Dideoxy- $\alpha$ -ribofuranosylmethyl)-5-fluorouracil (21d)

HMBC NMR (MeOH-*d*<sub>4</sub>)



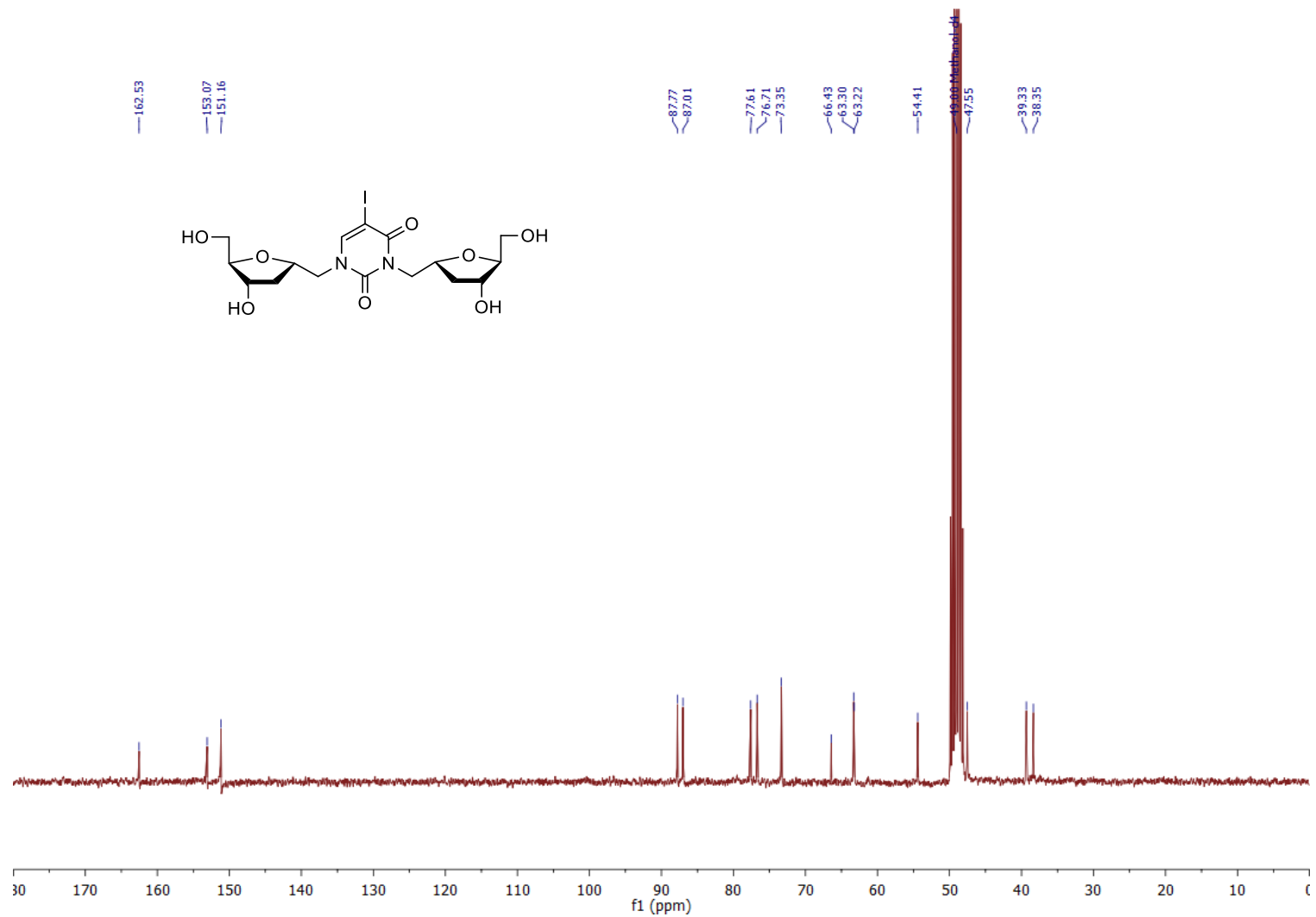
*N*<sup>1</sup>,*N*<sup>3</sup>-bis-(1,2-Dideoxy- $\alpha$ -ribofuranosylmethyl)-5-iodouracil (21f)

<sup>1</sup>H NMR (300.13 MHz, MeOH-*d*<sub>4</sub>)



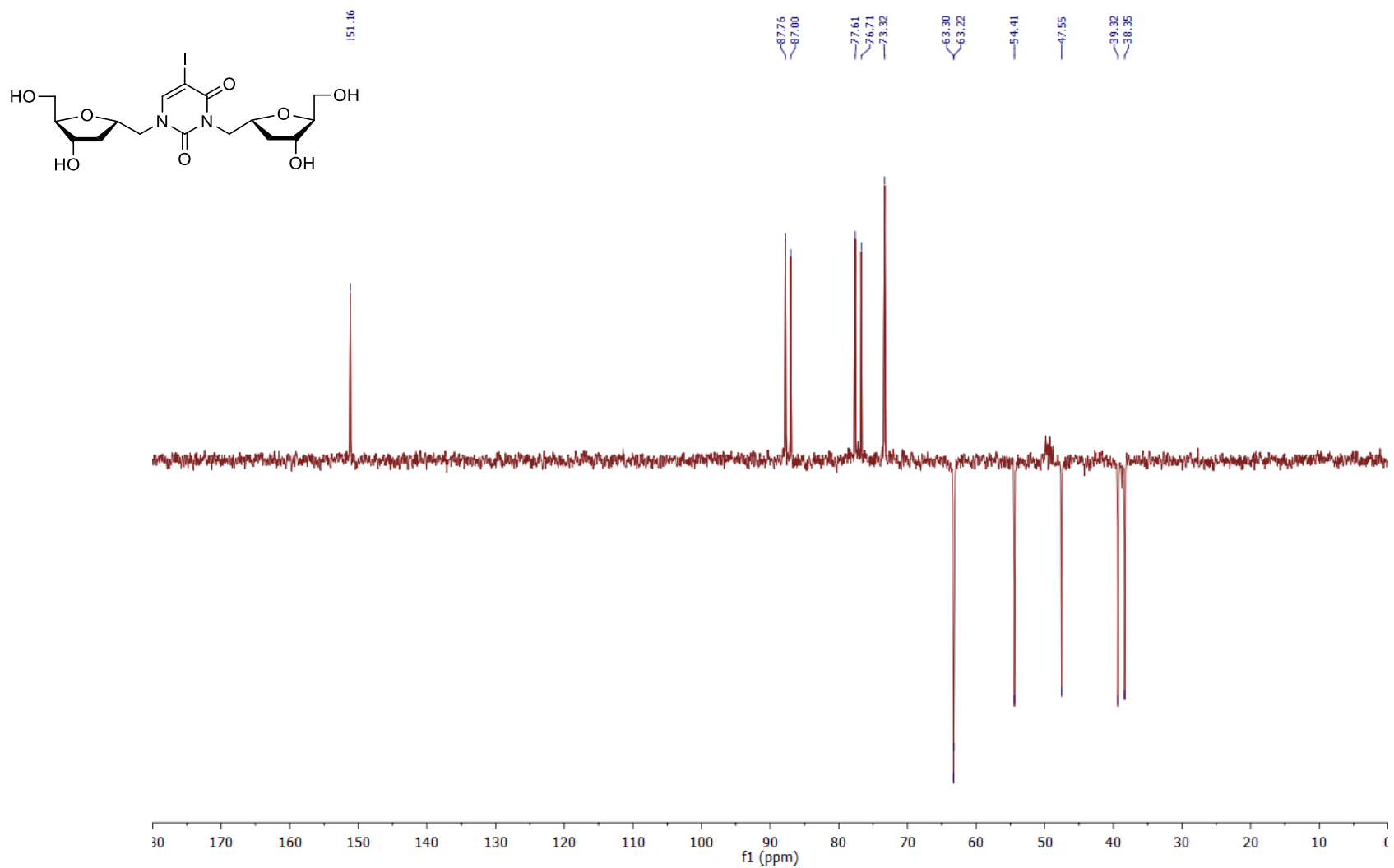
*N*<sup>1</sup>,*N*<sup>3</sup>-bis-(1,2-Dideoxy- $\alpha$ -ribofuranosylmethyl)-5-iodouracil (21f)

<sup>13</sup>C NMR (75.5 MHz, MeOH-*d*<sub>4</sub>)



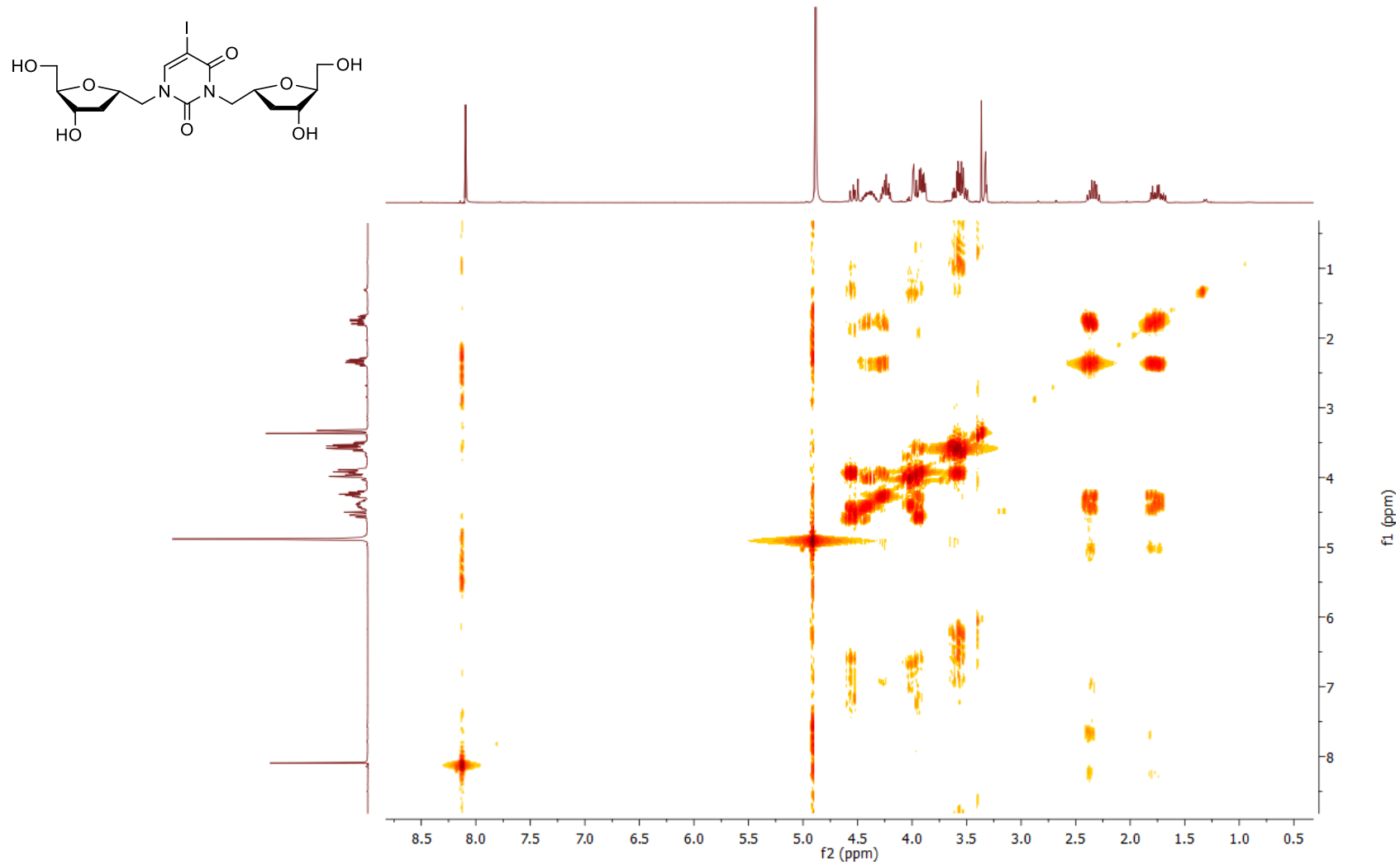
*N*<sup>1</sup>,*N*<sup>3</sup>-bis-(1,2-Dideoxy- $\alpha$ -ribofuranosylmethyl)-5-iodouracil (21f)

DEPT 135 NMR (75.5 MHz, MeOH-*d*<sub>4</sub>)



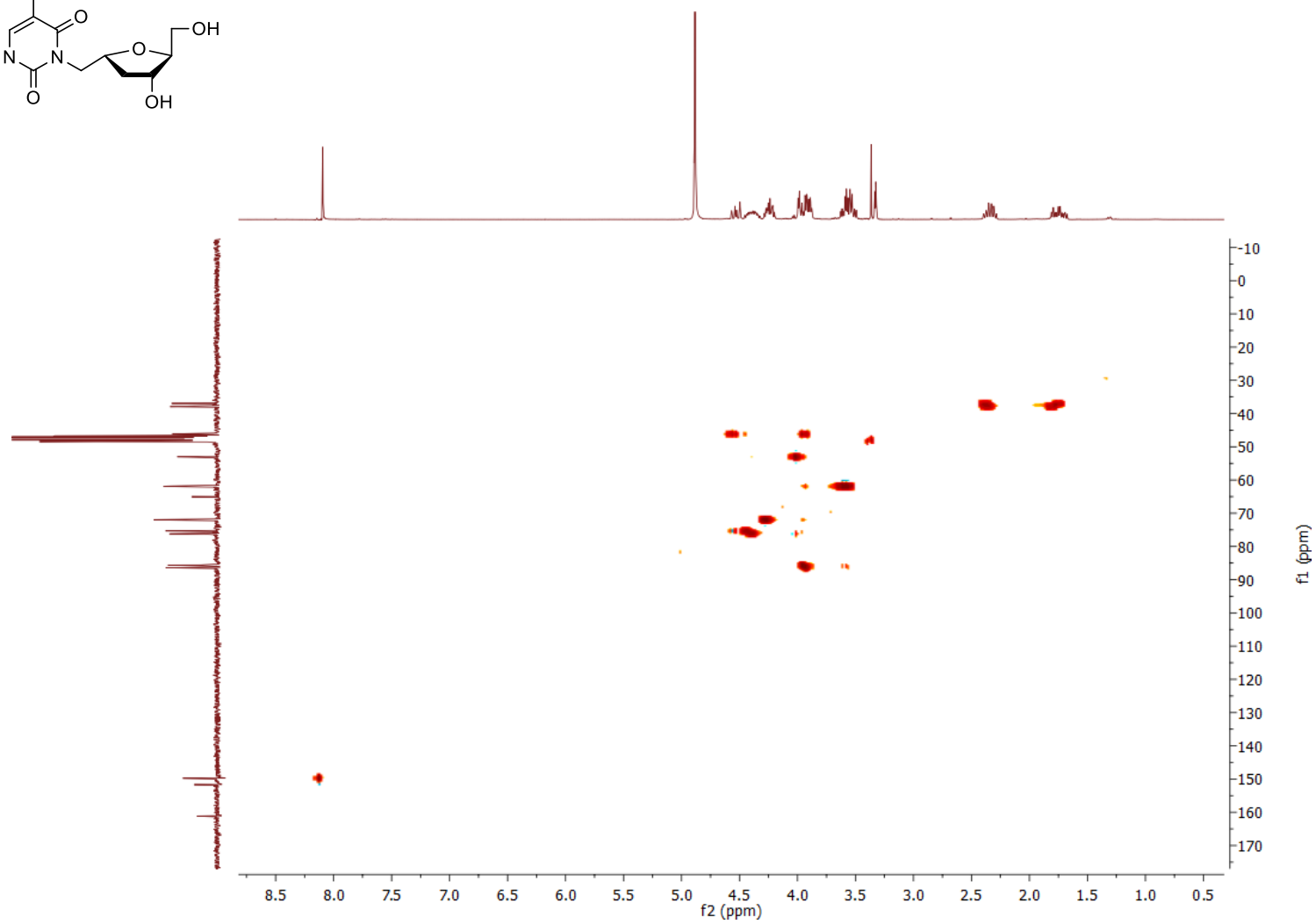
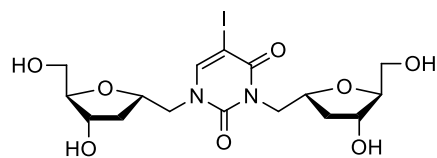
*N*<sup>1</sup>,*N*<sup>3</sup>-bis-(1,2-Dideoxy- $\alpha$ -ribofuranosylmethyl)-5-iodouracil (21f)

COSY NMR (MeOH-*d*<sub>4</sub>)



*N*<sup>1</sup>,*N*<sup>3</sup>-bis-(1,2-Dideoxy- $\alpha$ -ribofuranosylmethyl)-5-iodouracil (21f)

HSQC NMR (MeOH-*d*<sub>4</sub>)





*N*<sup>1</sup>,*N*<sup>3</sup>-bis-(1,2-Dideoxy- $\alpha$ -ribofuranosylmethyl)-5-iodouracil (21f)

HMBC NMR (MeOH-*d*<sub>4</sub>)

