

Electronic Supplementary Information

Synthesis and coordination chemistry of enantiopure *t*-BuMeP(O)H[†]

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Complex 9

NMR ^{31}P 161.9 MHz

CDCl_3

129.938
129.213

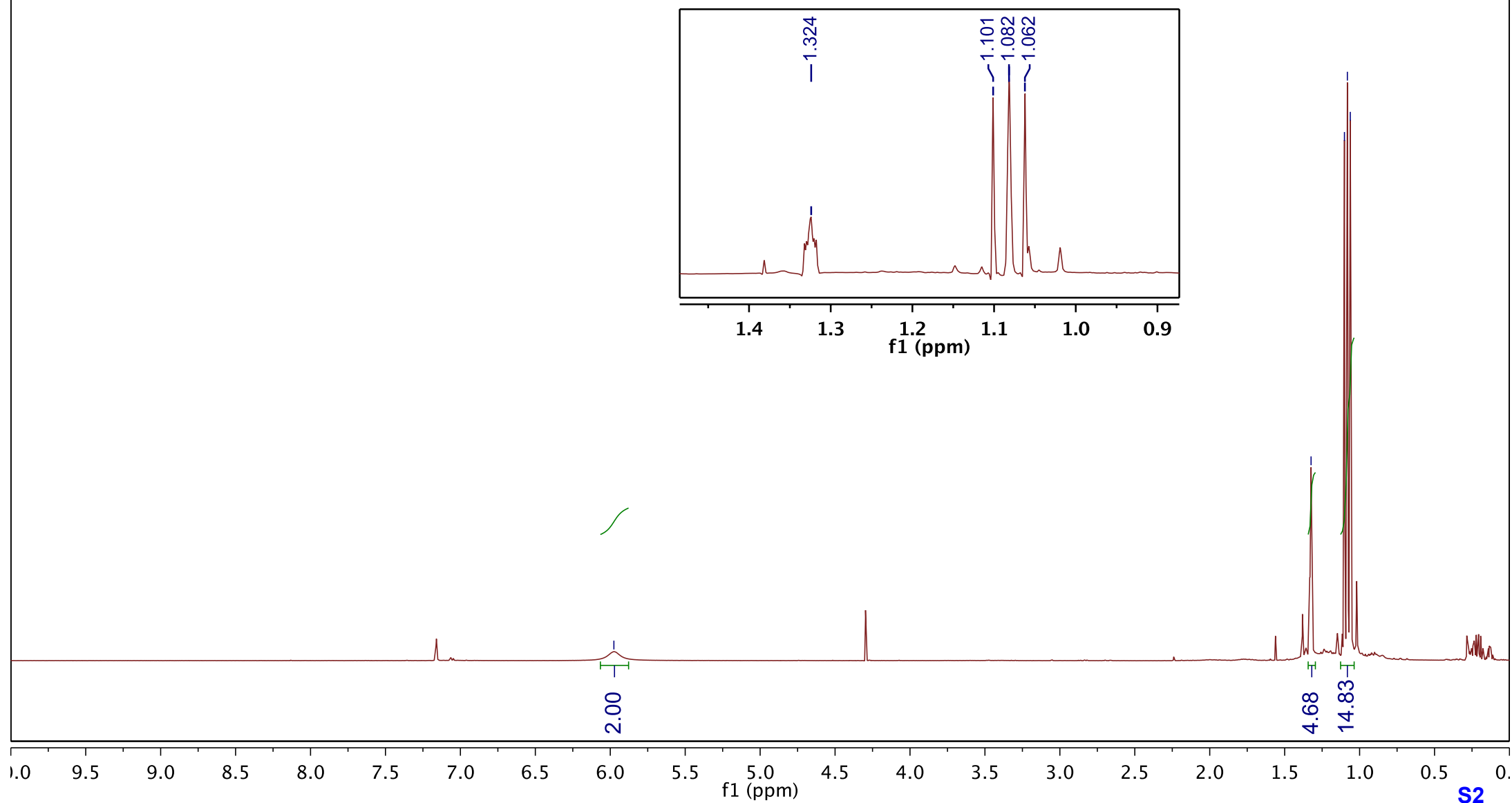
190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 -10 -20 -30 -40
f1 (ppm)

S1

Complex 9

NMR ^1H 400 MHz

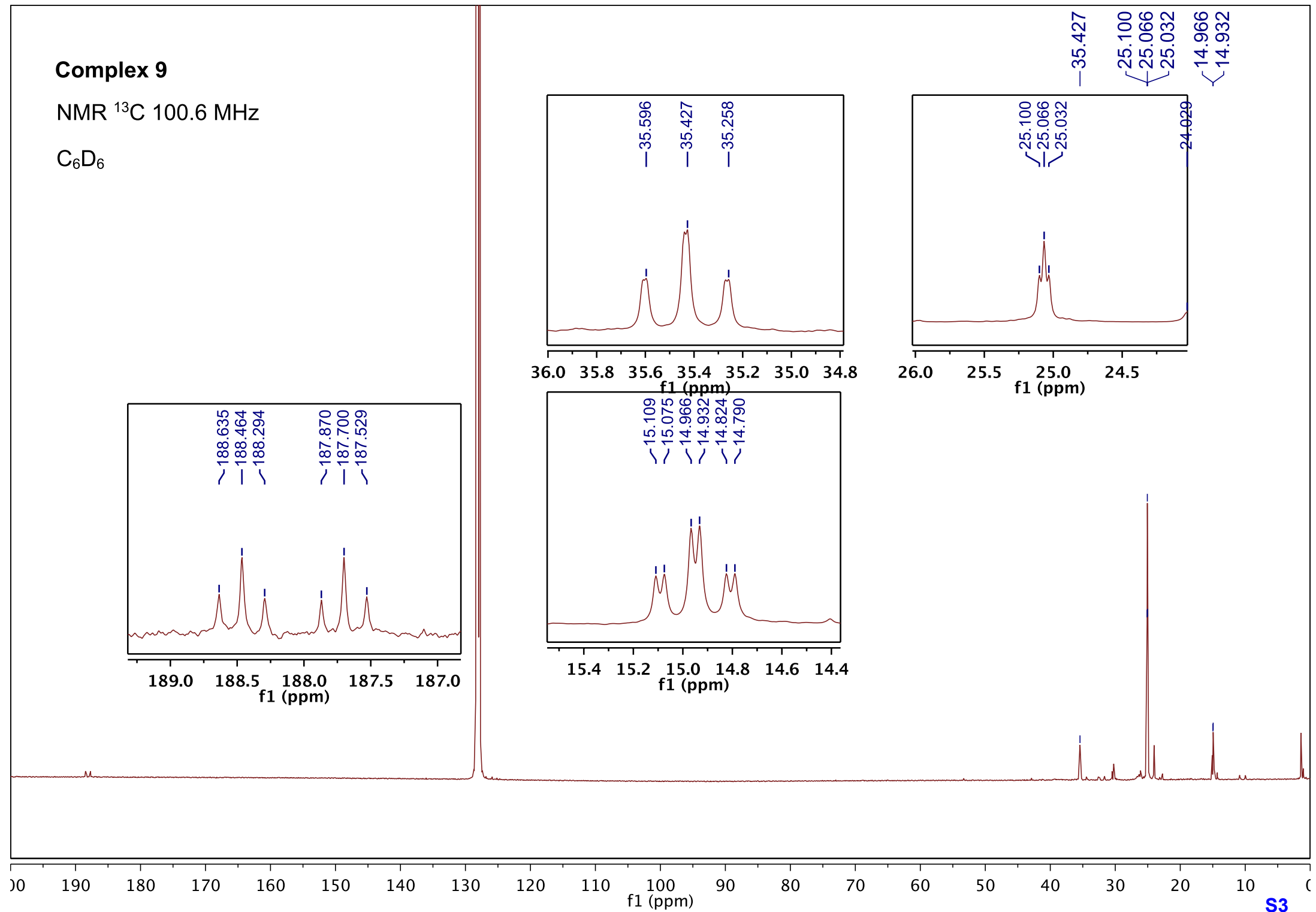
C_6D_6



Complex 9

NMR ^{13}C 100.6 MHz

C_6D_6



Complex 10

NMR ^{31}P 161.9 MHz

CDCl_3

—113.607

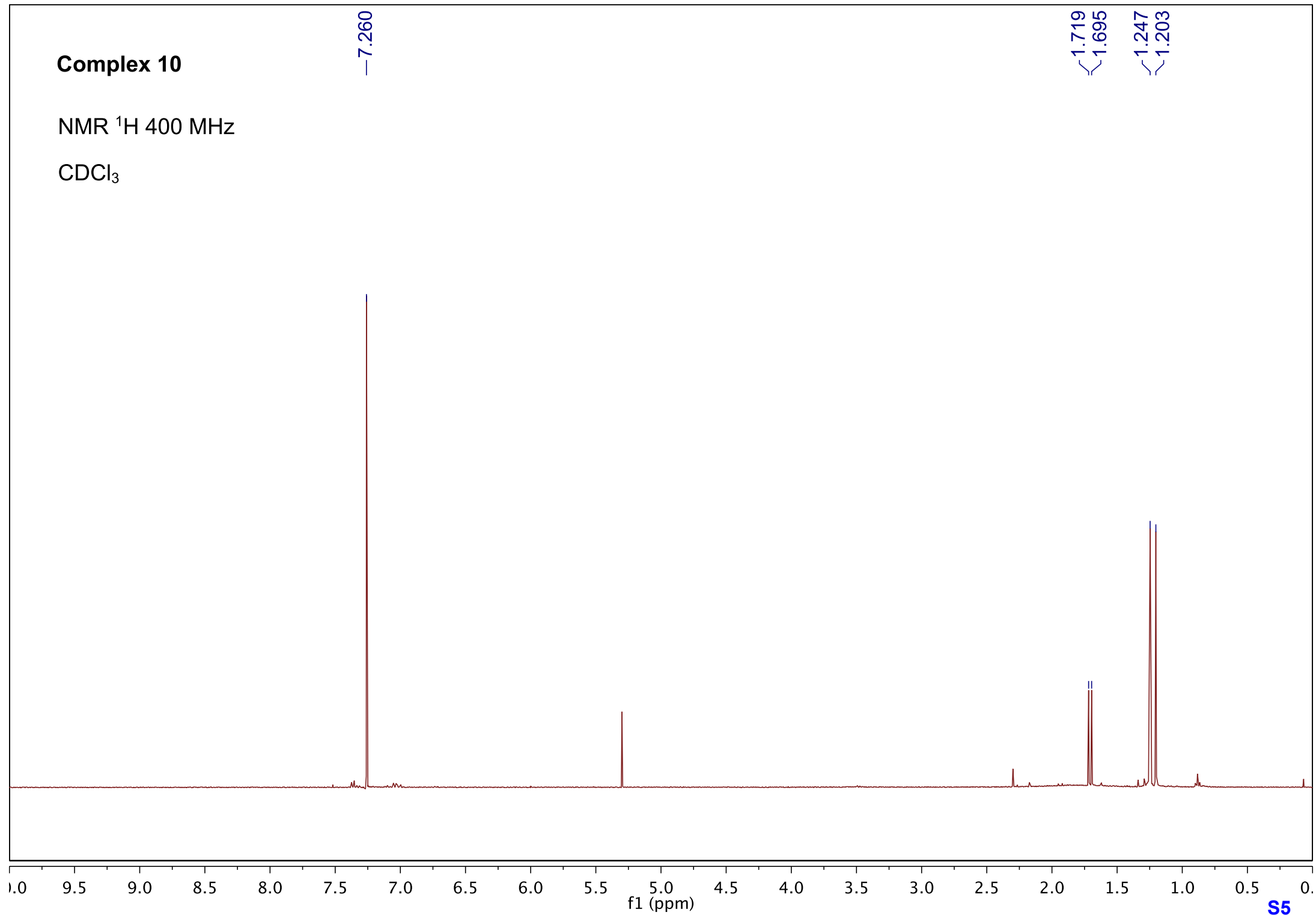
190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 -10 -20 -30 -40
f1 (ppm)

S4

Complex 10

NMR ^1H 400 MHz

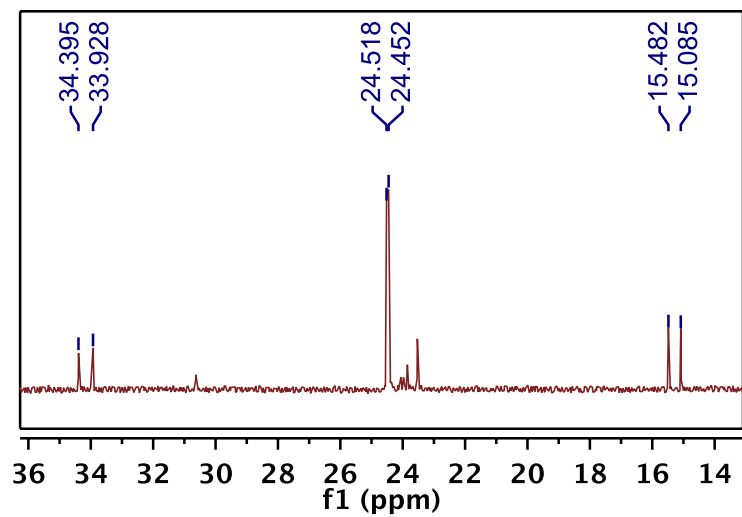
CDCl_3



Complex 10

NMR ^{13}C 100.6 MHz

CDCl_3



77.318
77.000
76.682

34.395
33.928

24.518
24.452

15.482
15.085

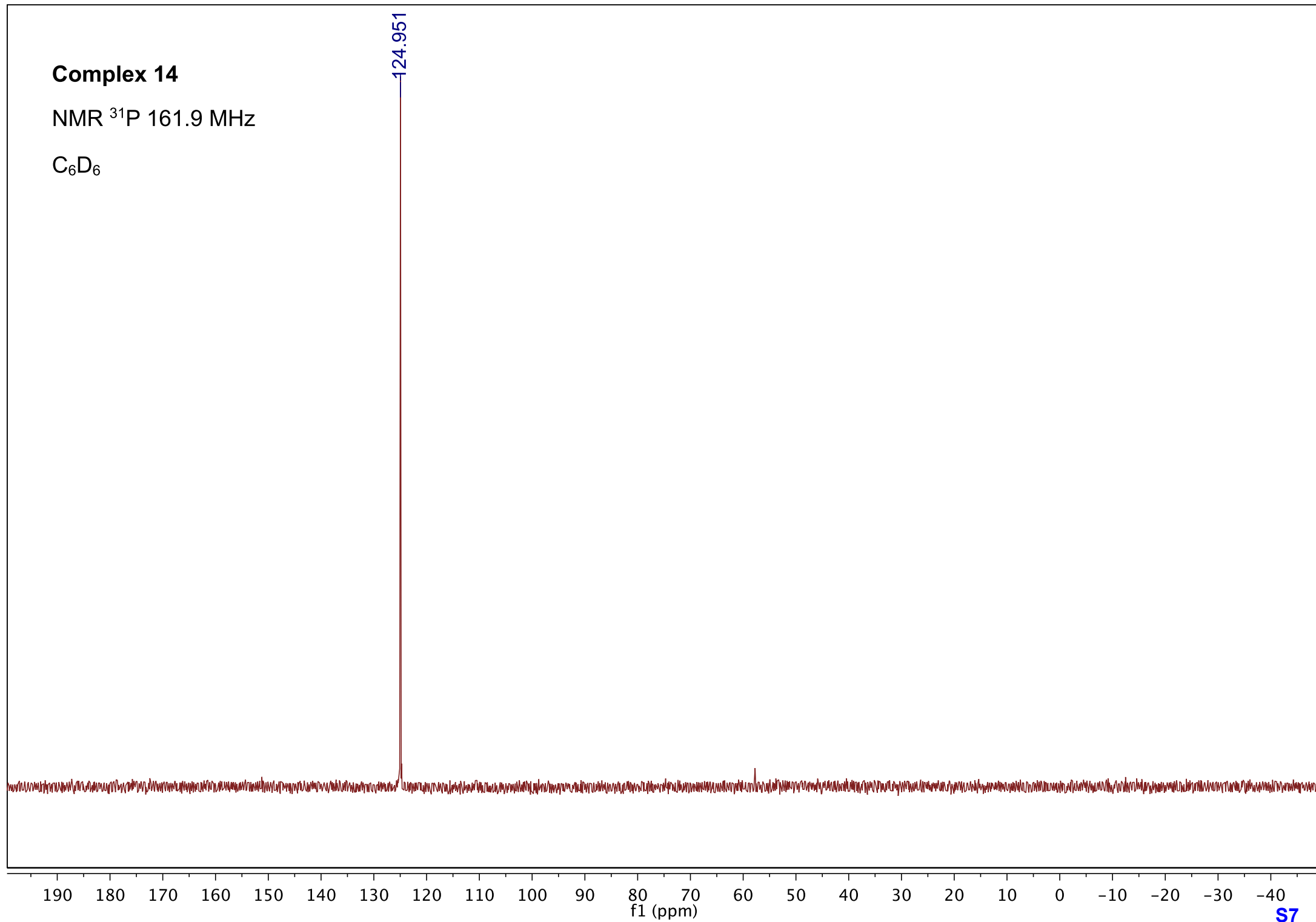
40 135 130 125 120 115 110 105 100 95 90 85 80 75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0

f1 (ppm)

Complex 14

NMR ^{31}P 161.9 MHz

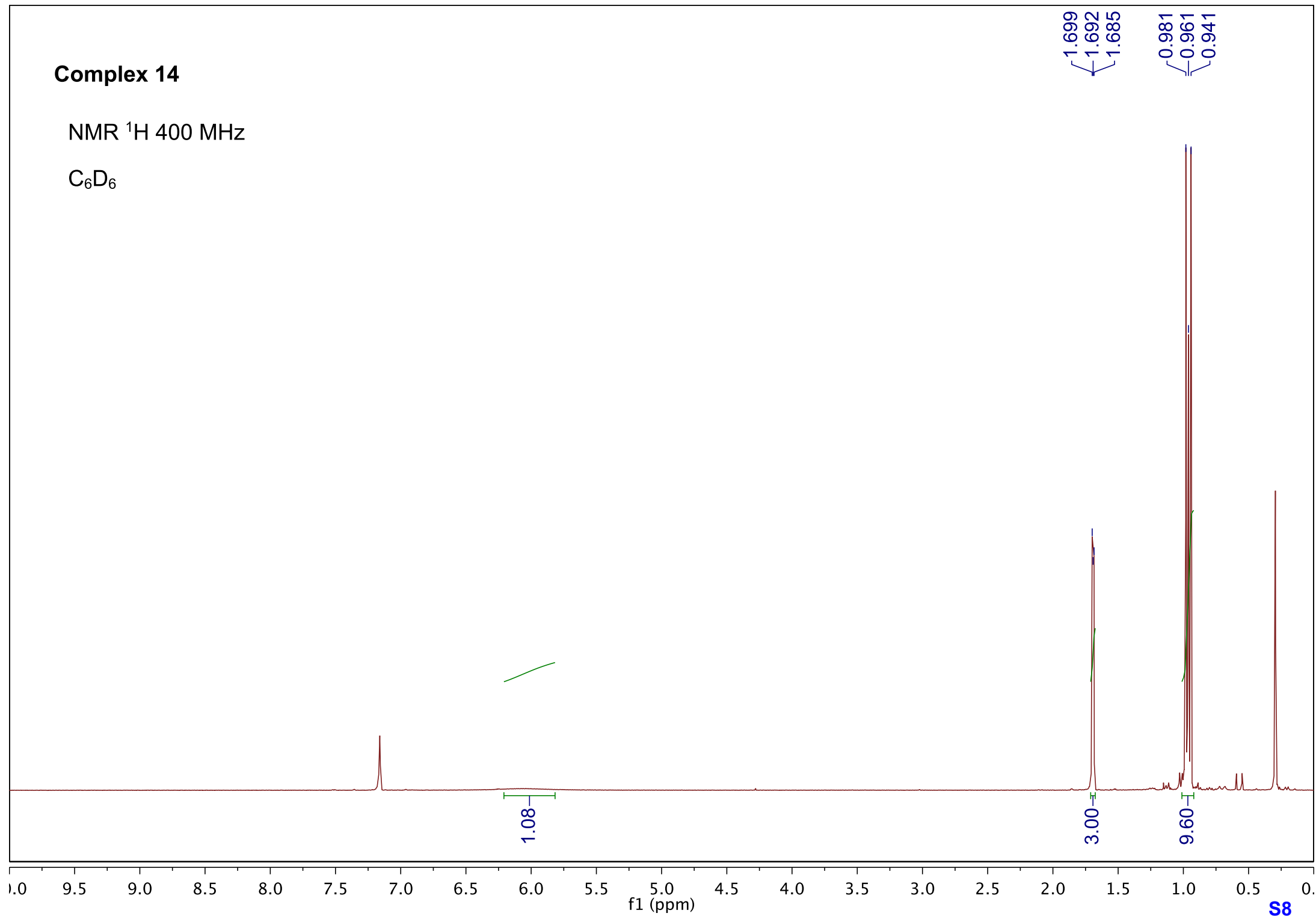
C_6D_6



Complex 14

NMR ^1H 400 MHz

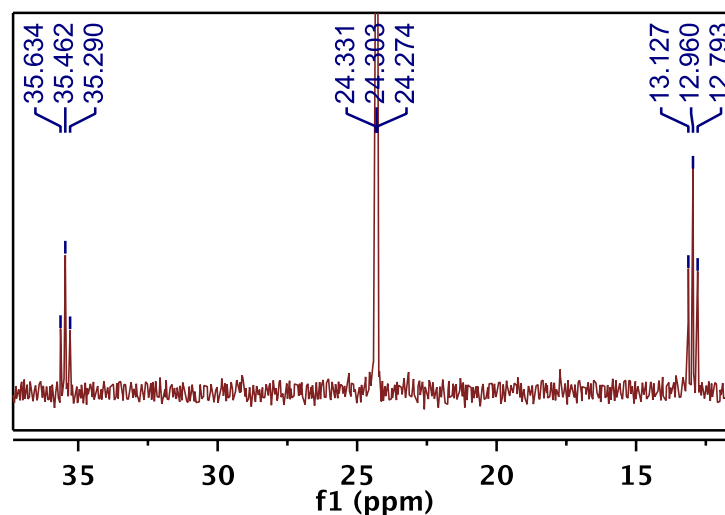
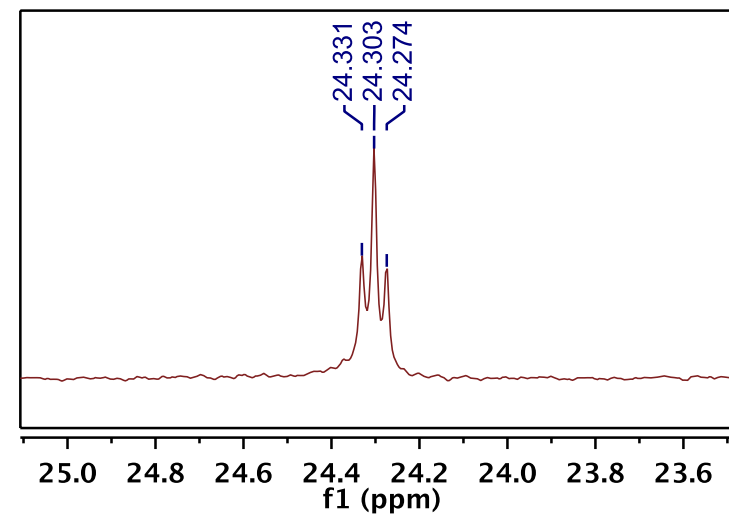
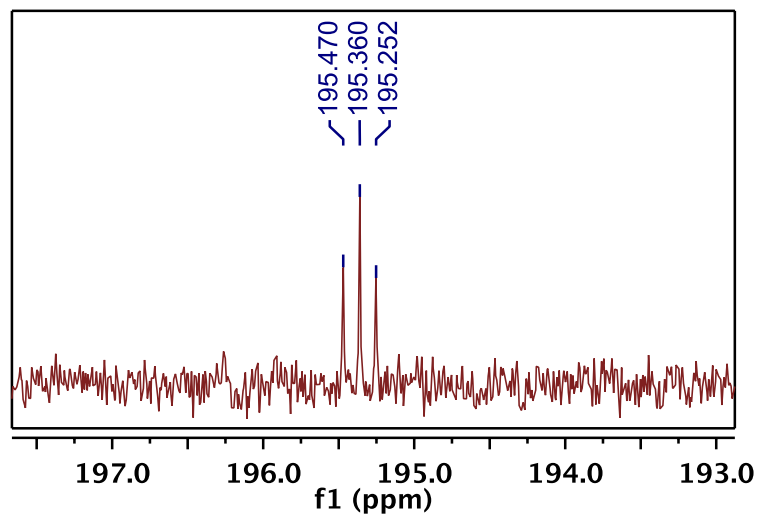
C_6D_6



Complex 14

NMR ^{13}C 100.6 MHz

C_6D_6



35.634
35.462
35.290
24.331
24.303
24.274
13.127
12.960
12.793
-1.431

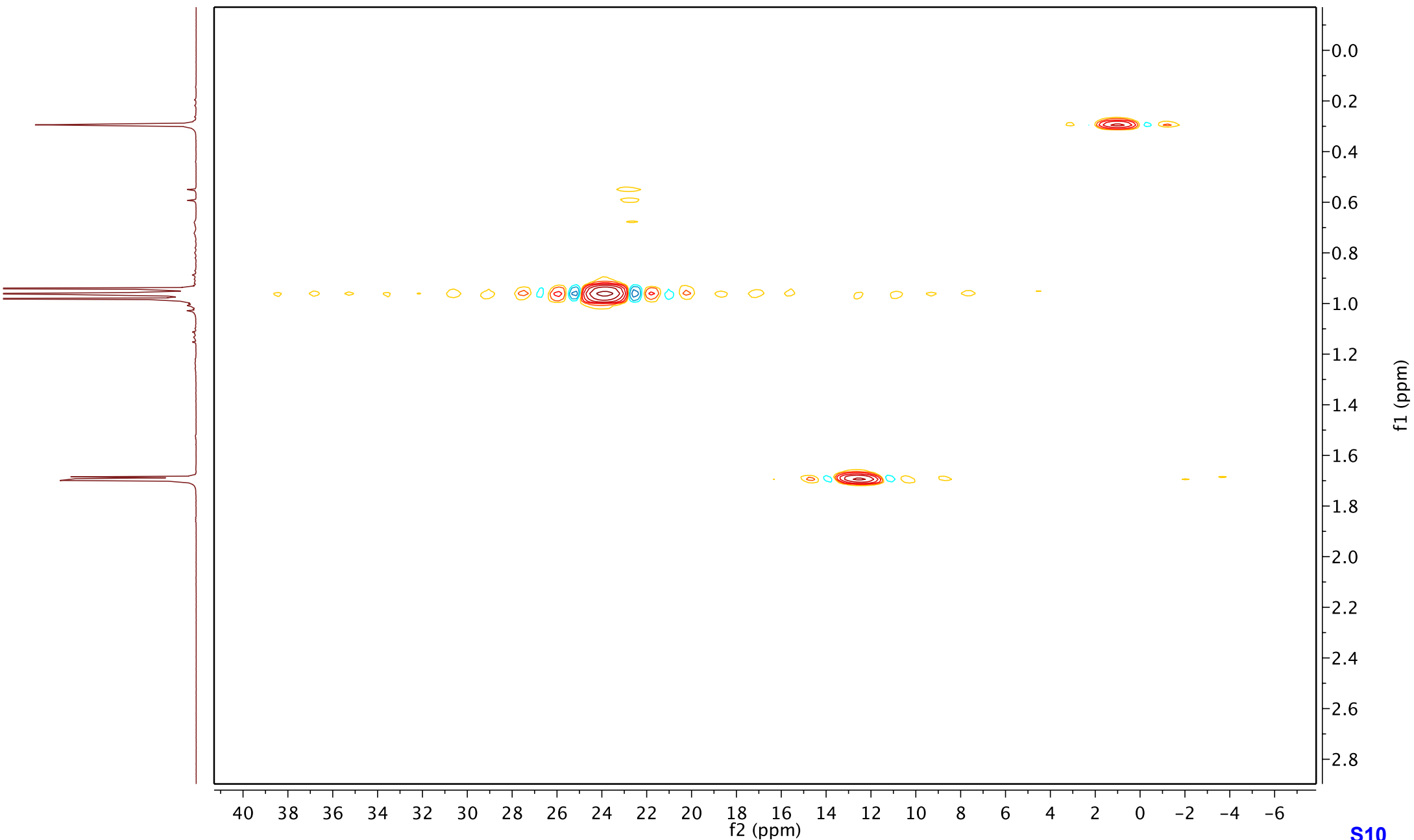
190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0

f1 (ppm)

Complex 14

gHSQC 400 MHz

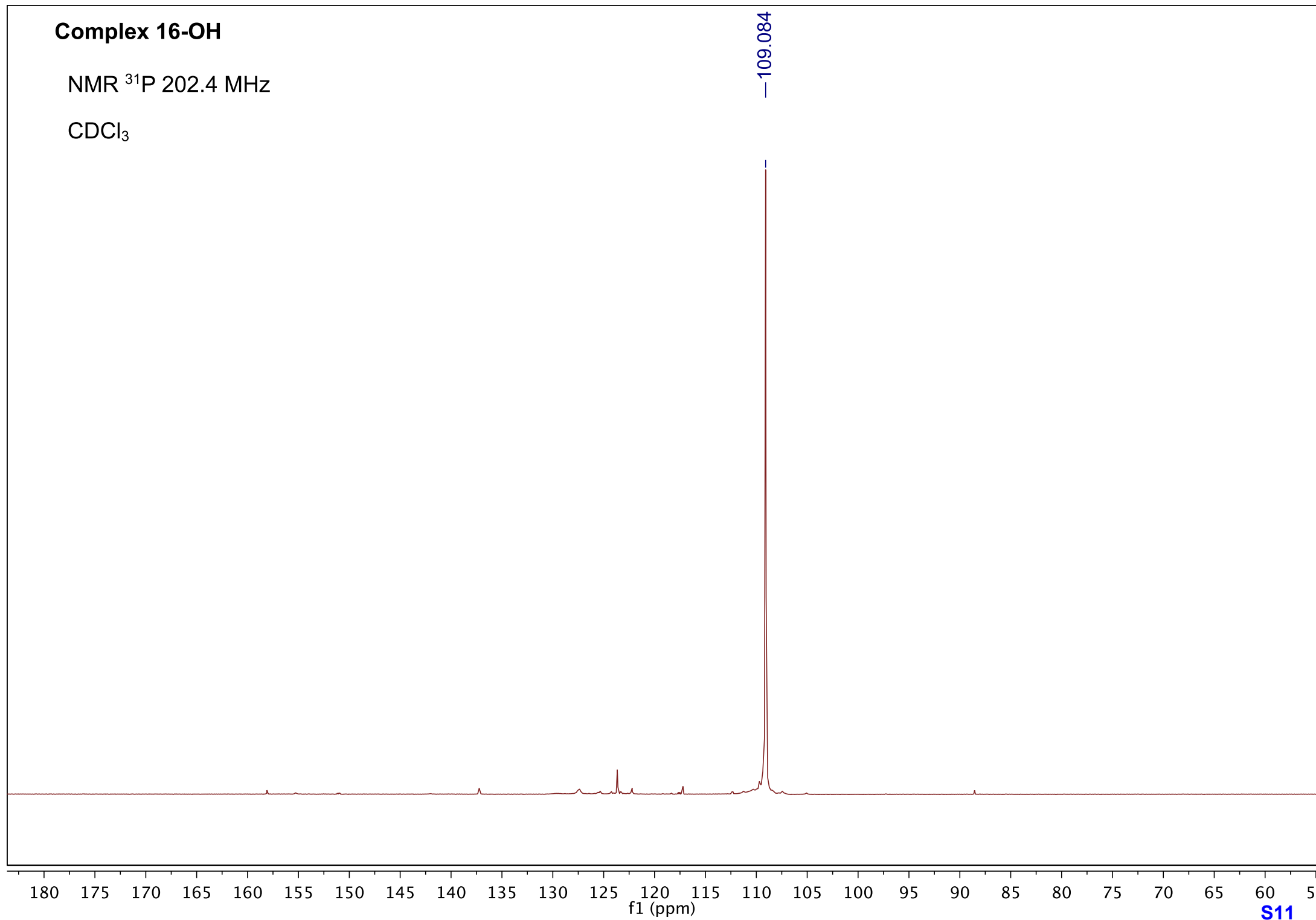
C₆D₆



Complex 16-OH

NMR ^{31}P 202.4 MHz

CDCl_3



Complex 16-OH

NMR ^1H 400 MHz

CDCl_3

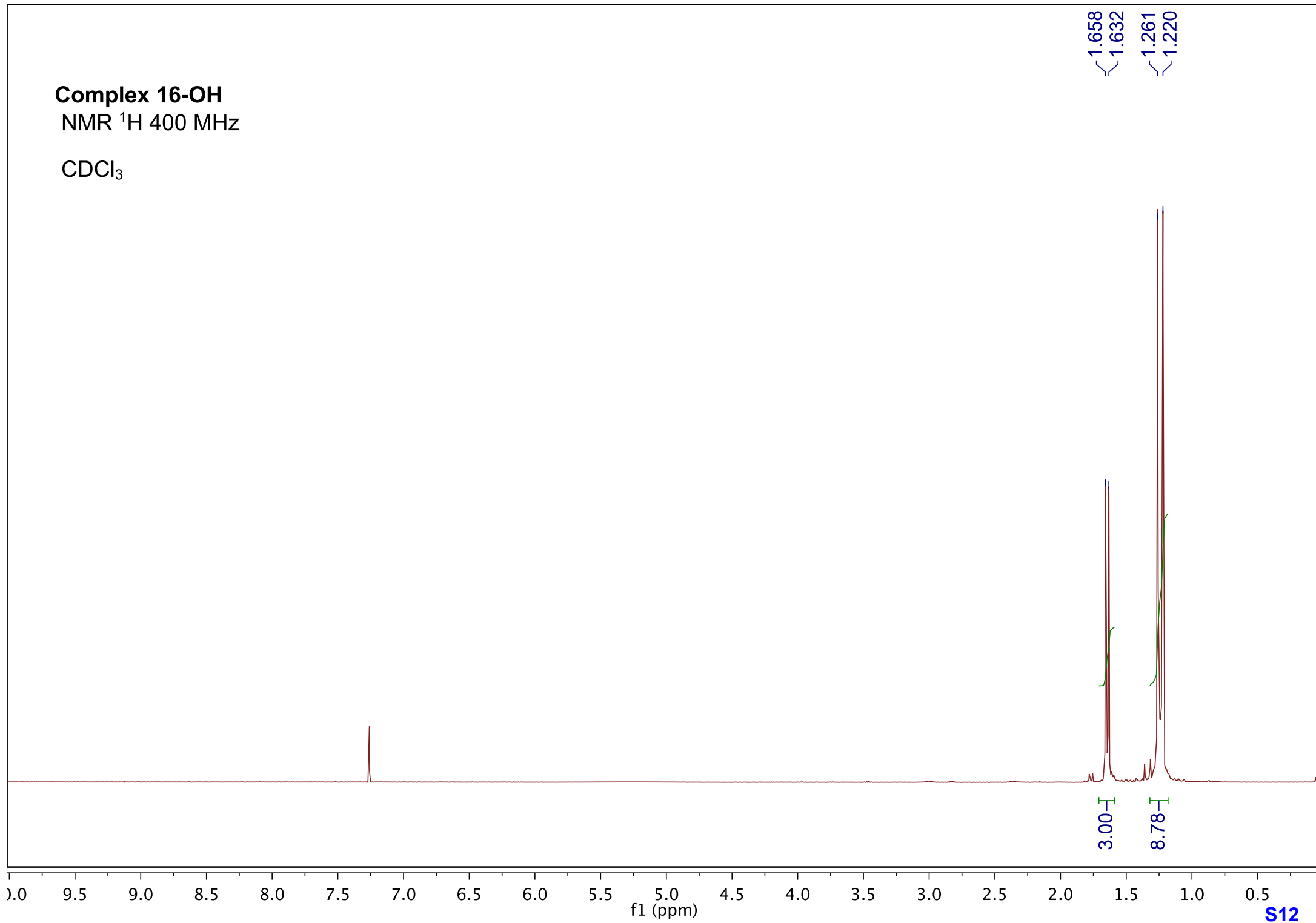
1.658
1.632
1.261
1.220

3.00

8.78

f1 (ppm)

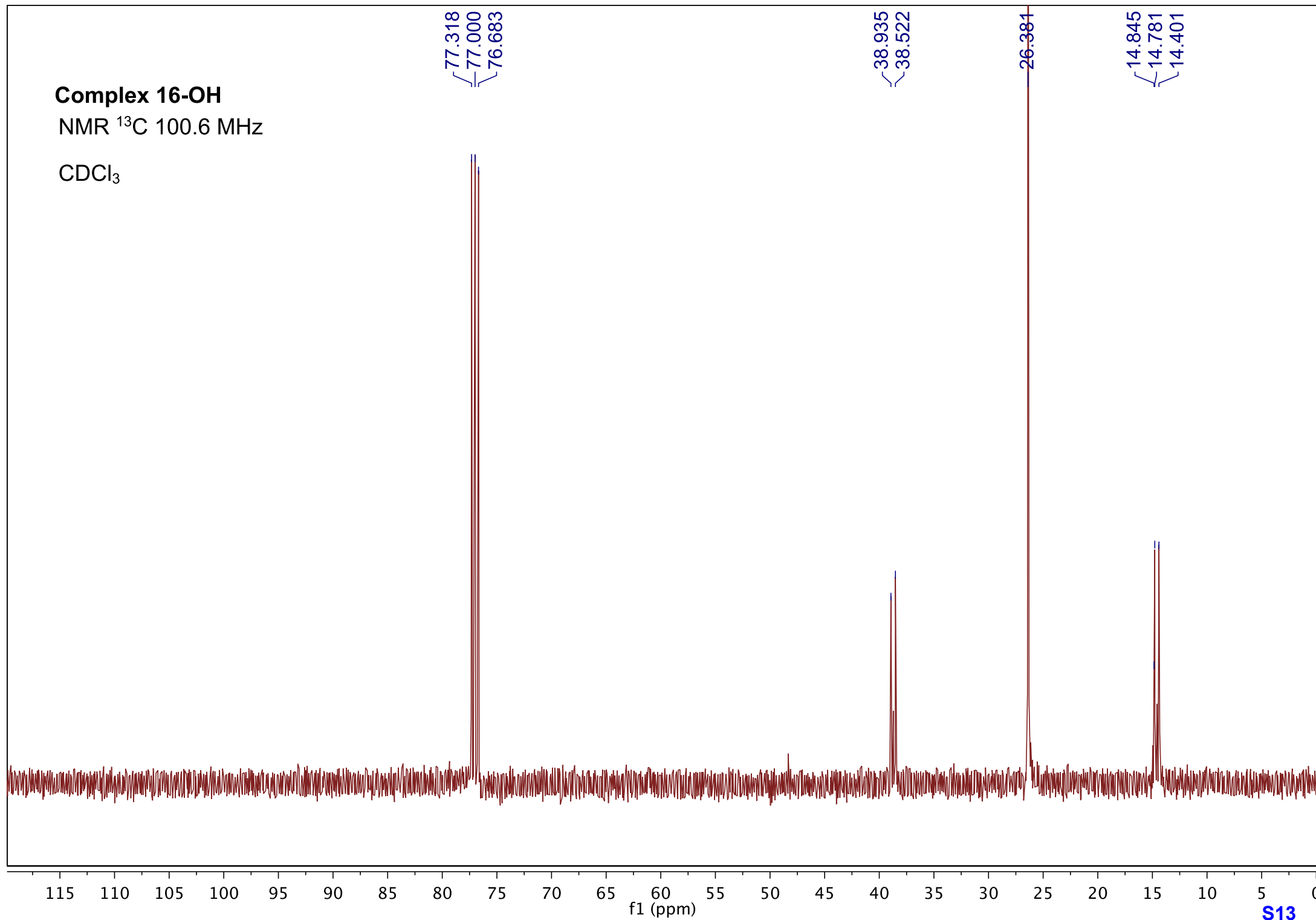
S12



Complex 16-OH

NMR ^{13}C 100.6 MHz

CDCl_3

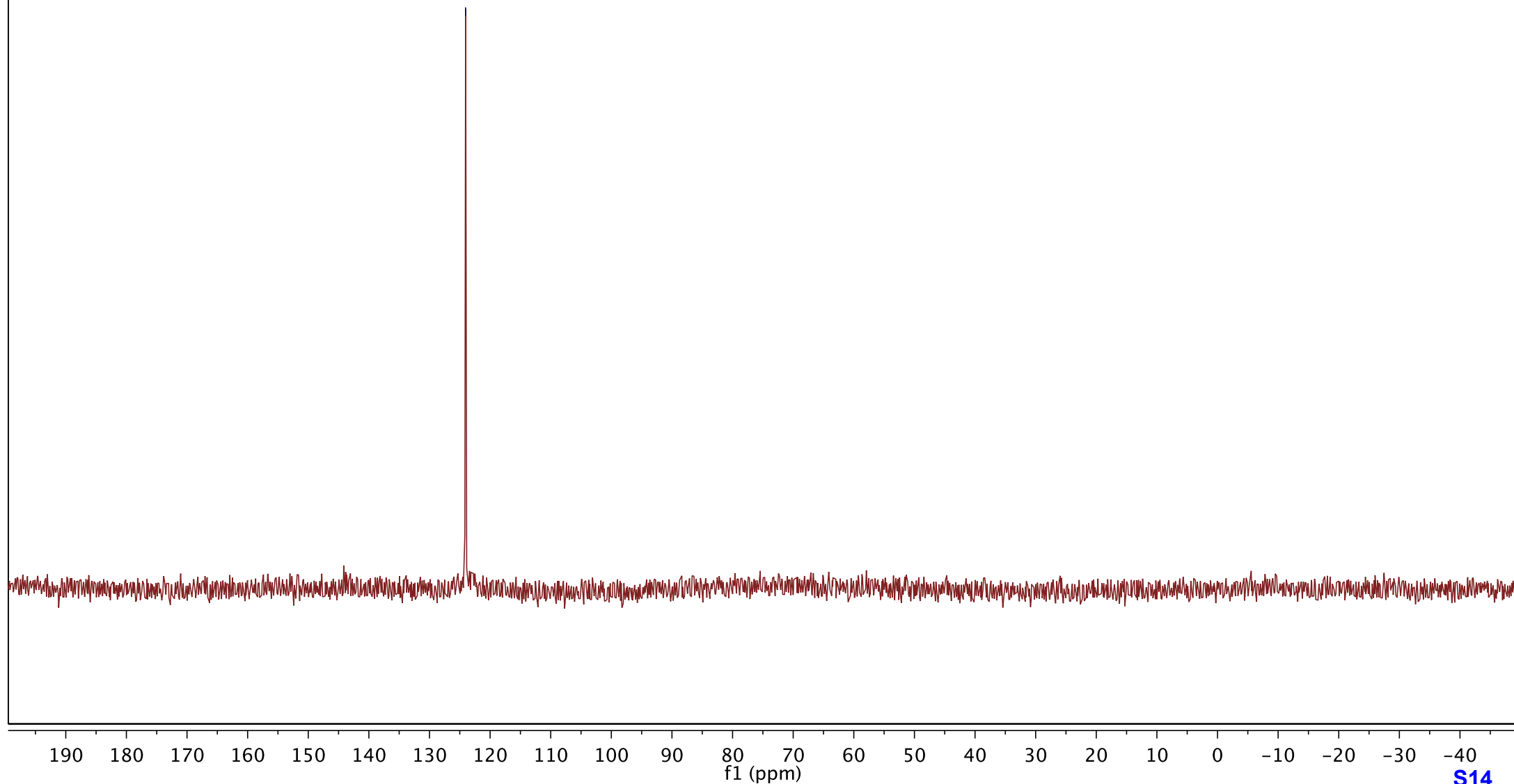


Complex 16-BF₂

NMR ³¹P 161.9 MHz

CDCl₃

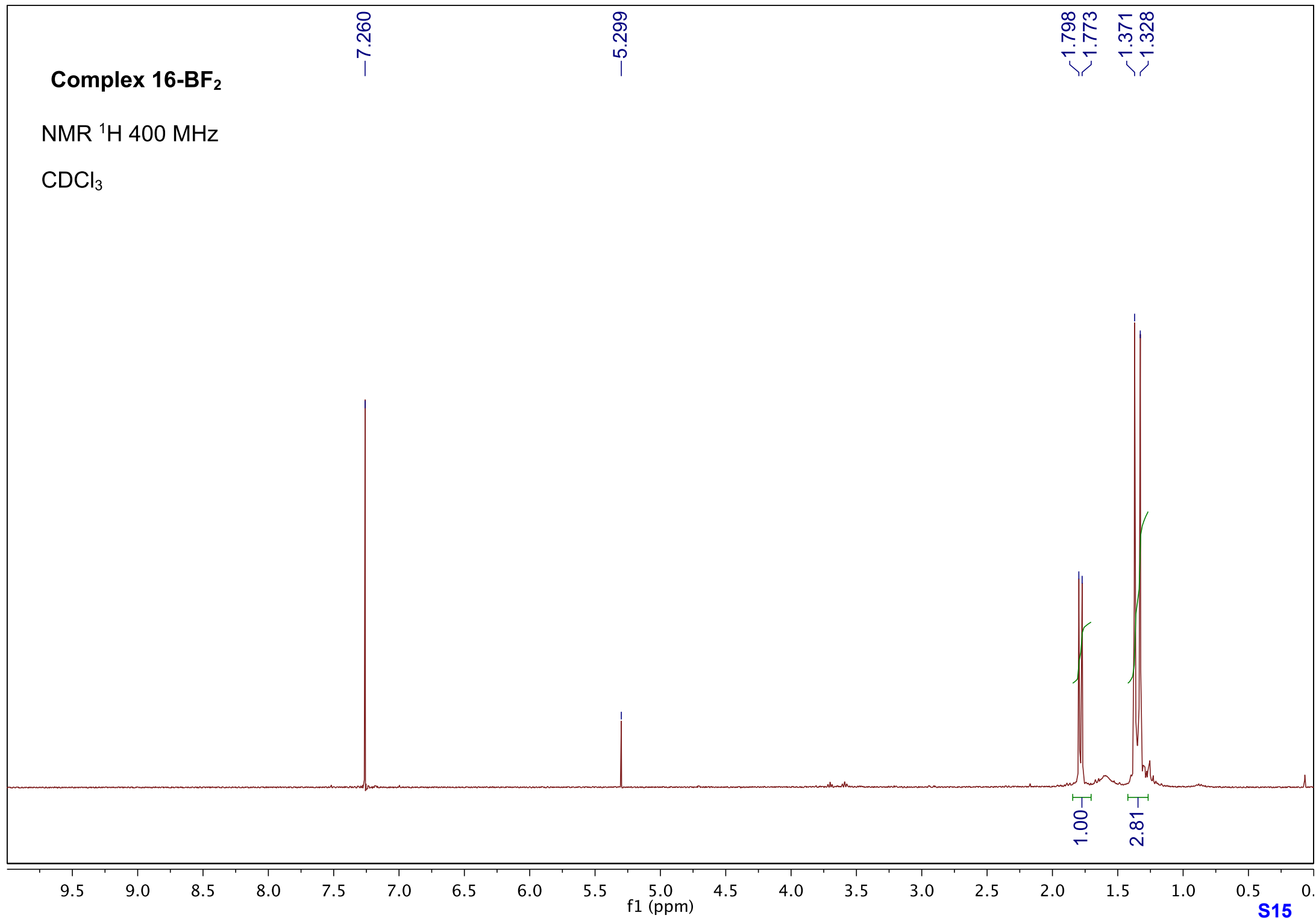
—124.046



Complex 16-BF₂

NMR ¹H 400 MHz

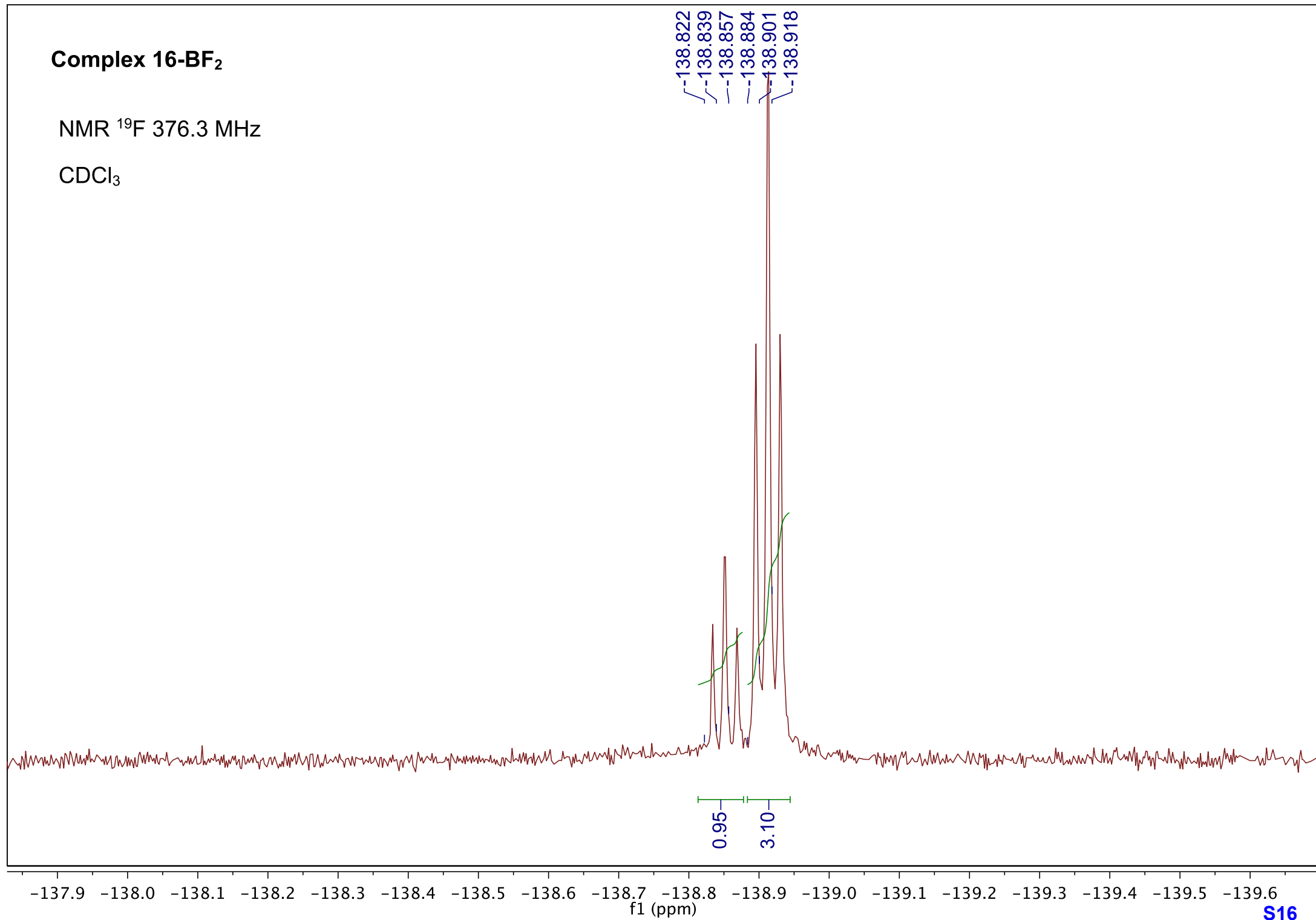
CDCl₃



Complex 16-BF₂

NMR ¹⁹F 376.3 MHz

CDCl₃



Complex 16-BF₂
NMR ¹³C 100.6 MHz

CDCl₃

39.918
39.516

29.692

26.134

15.284
14.830

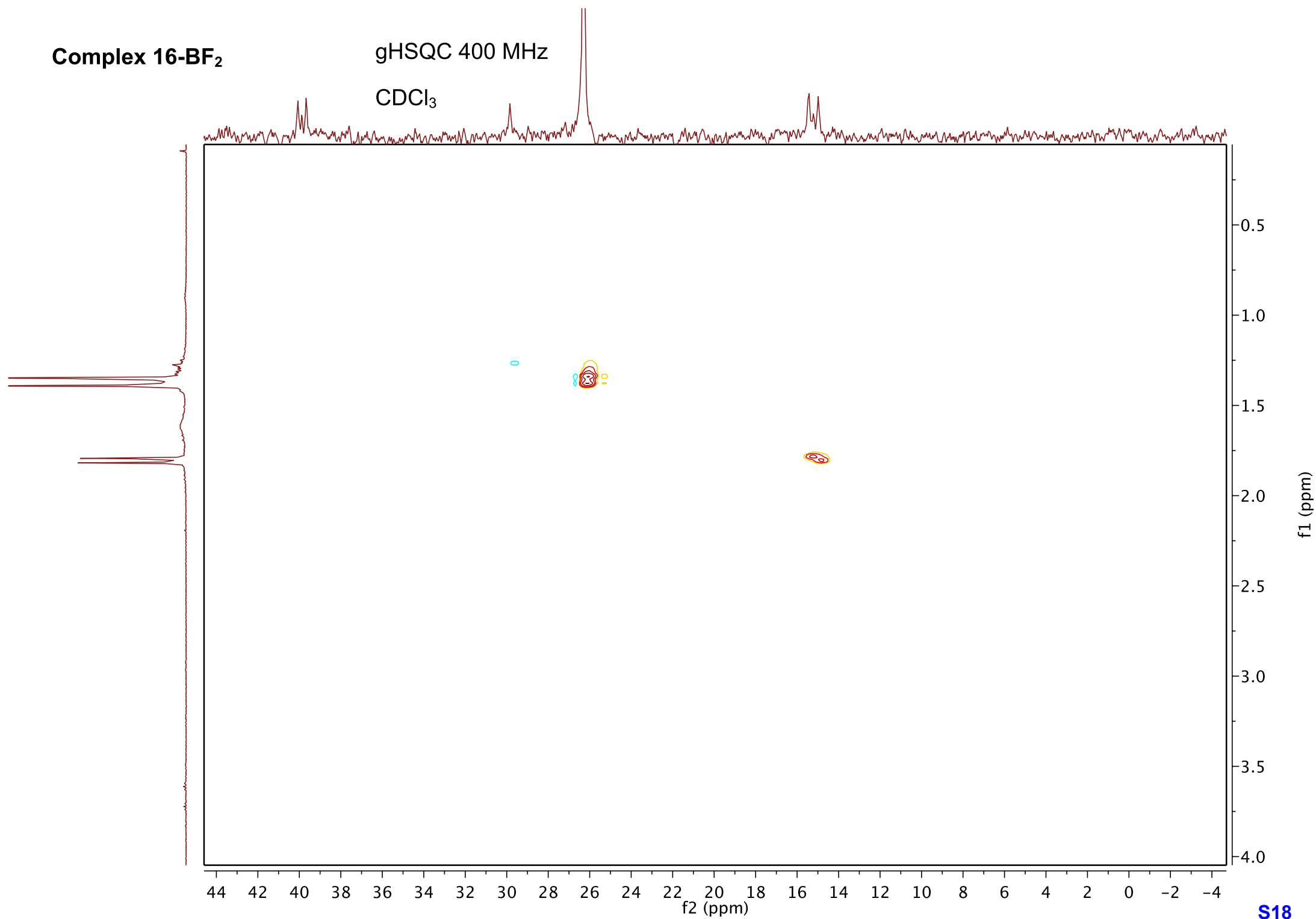
100 95 90 85 80 75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0

f1 (ppm)

Complex 16-BF₂

gHSQC 400 MHz

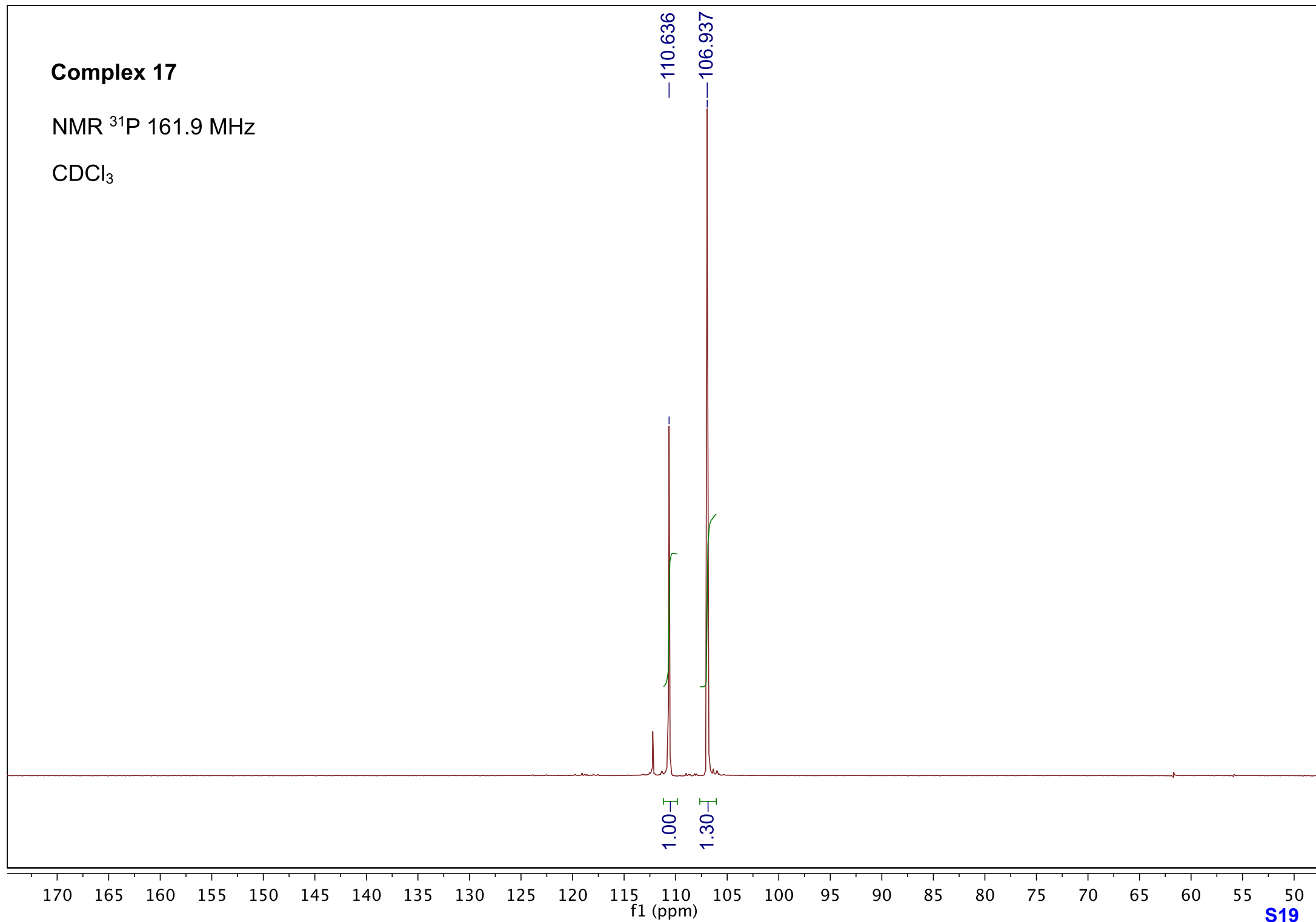
CDCl₃



Complex 17

NMR ^{31}P 161.9 MHz

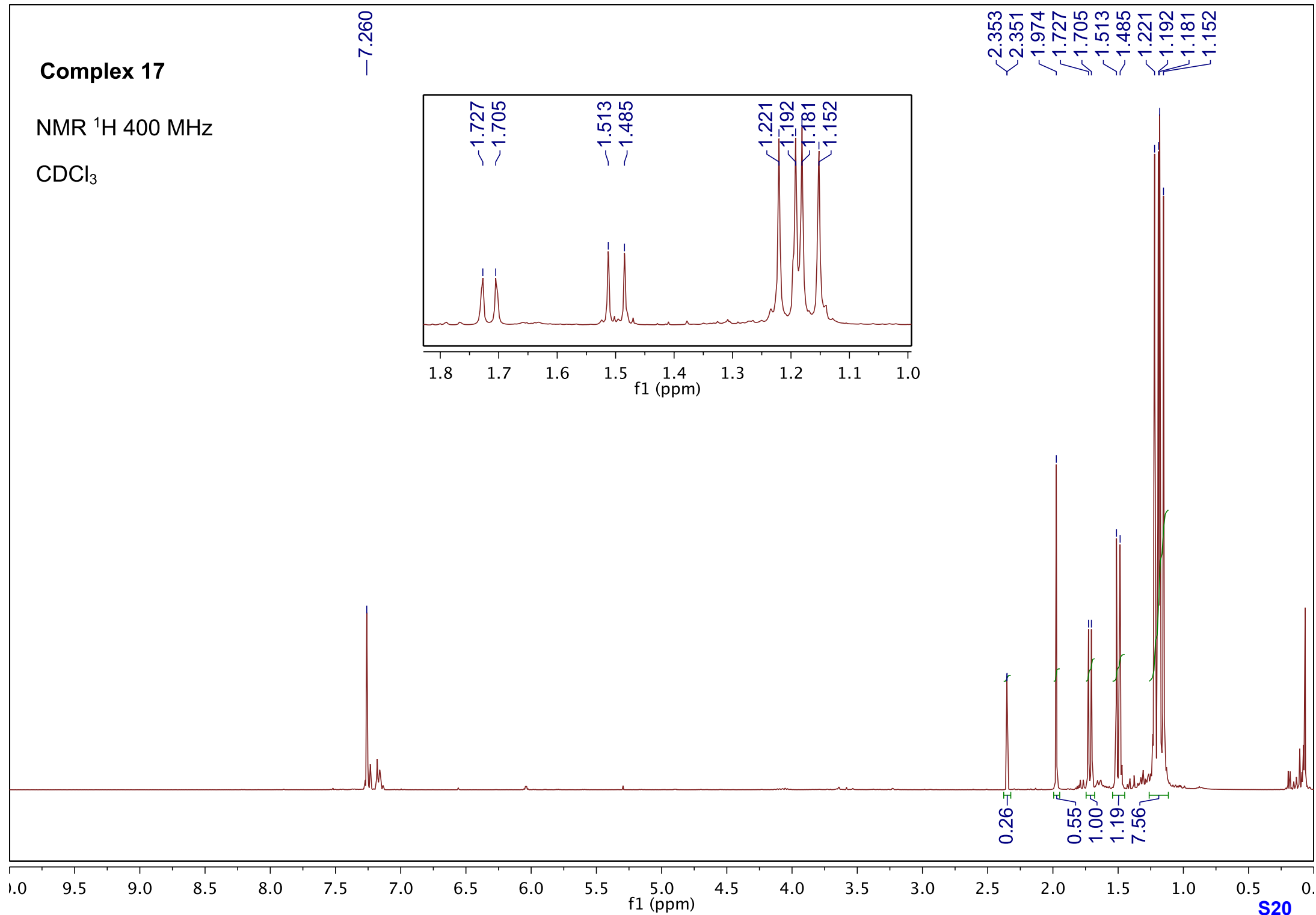
CDCl_3



Complex 17

NMR ^1H 400 MHz

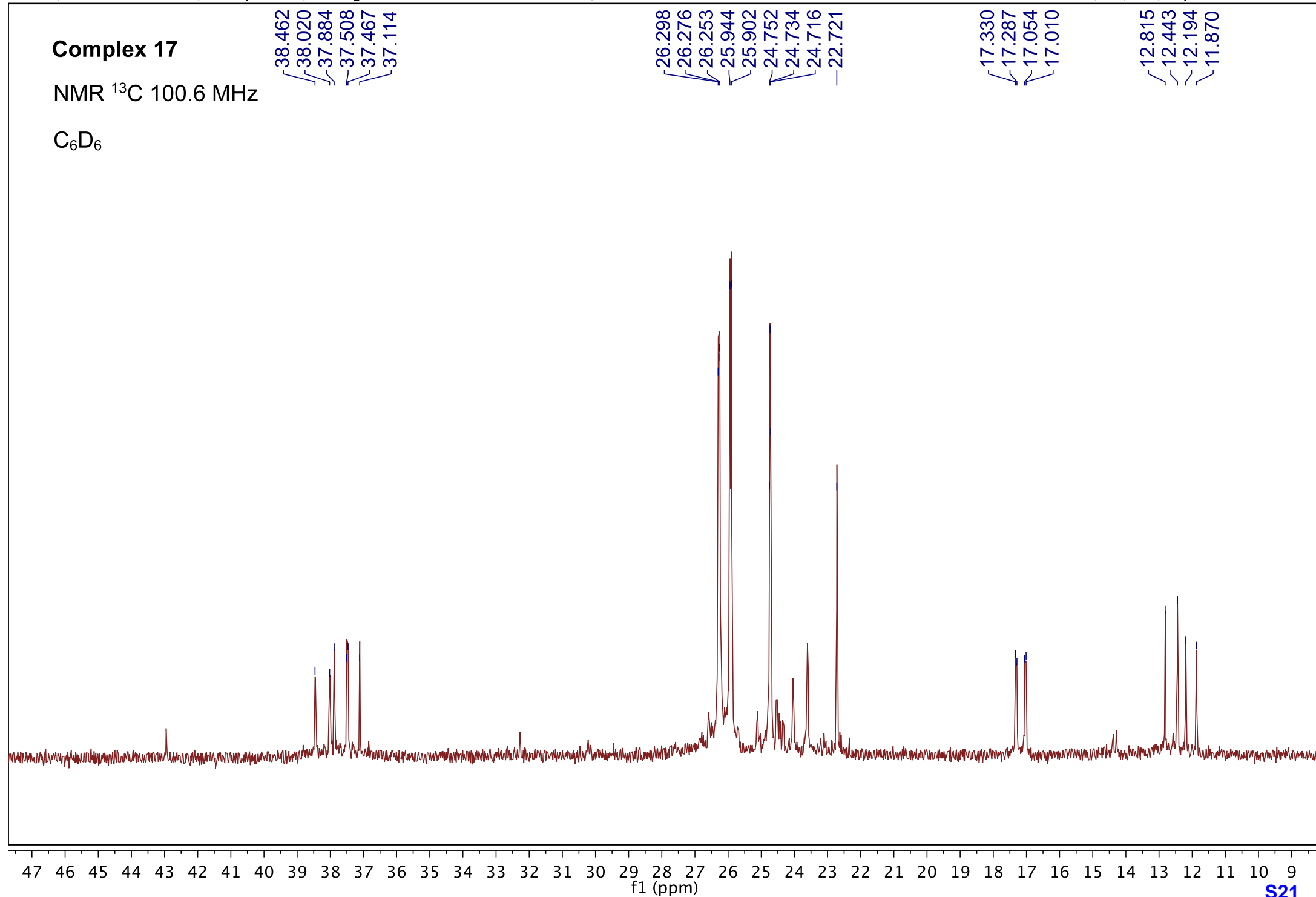
CDCl_3



Complex 17

NMR ^{13}C 100.6 MHz

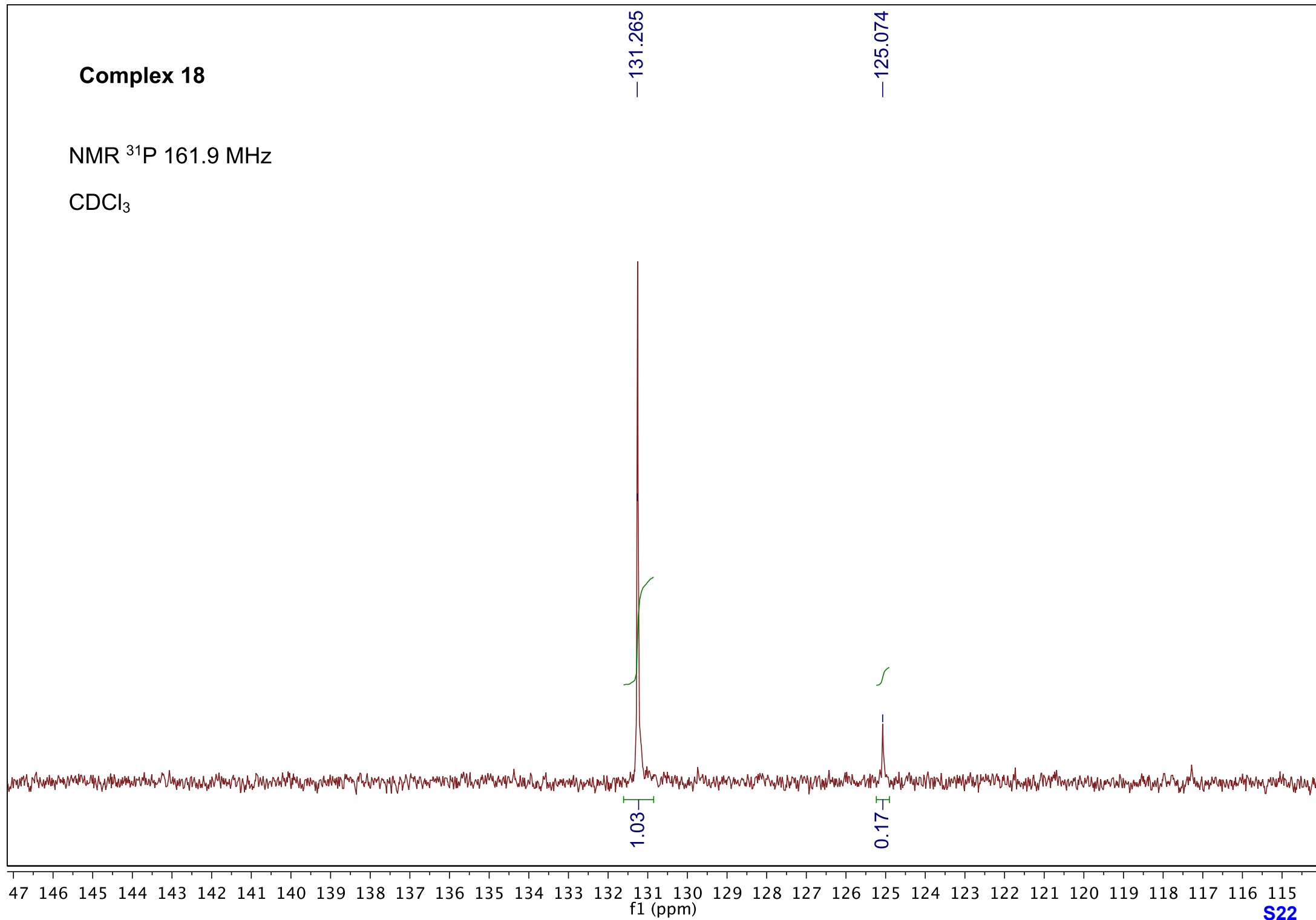
C_6D_6



Complex 18

NMR ^{31}P 161.9 MHz

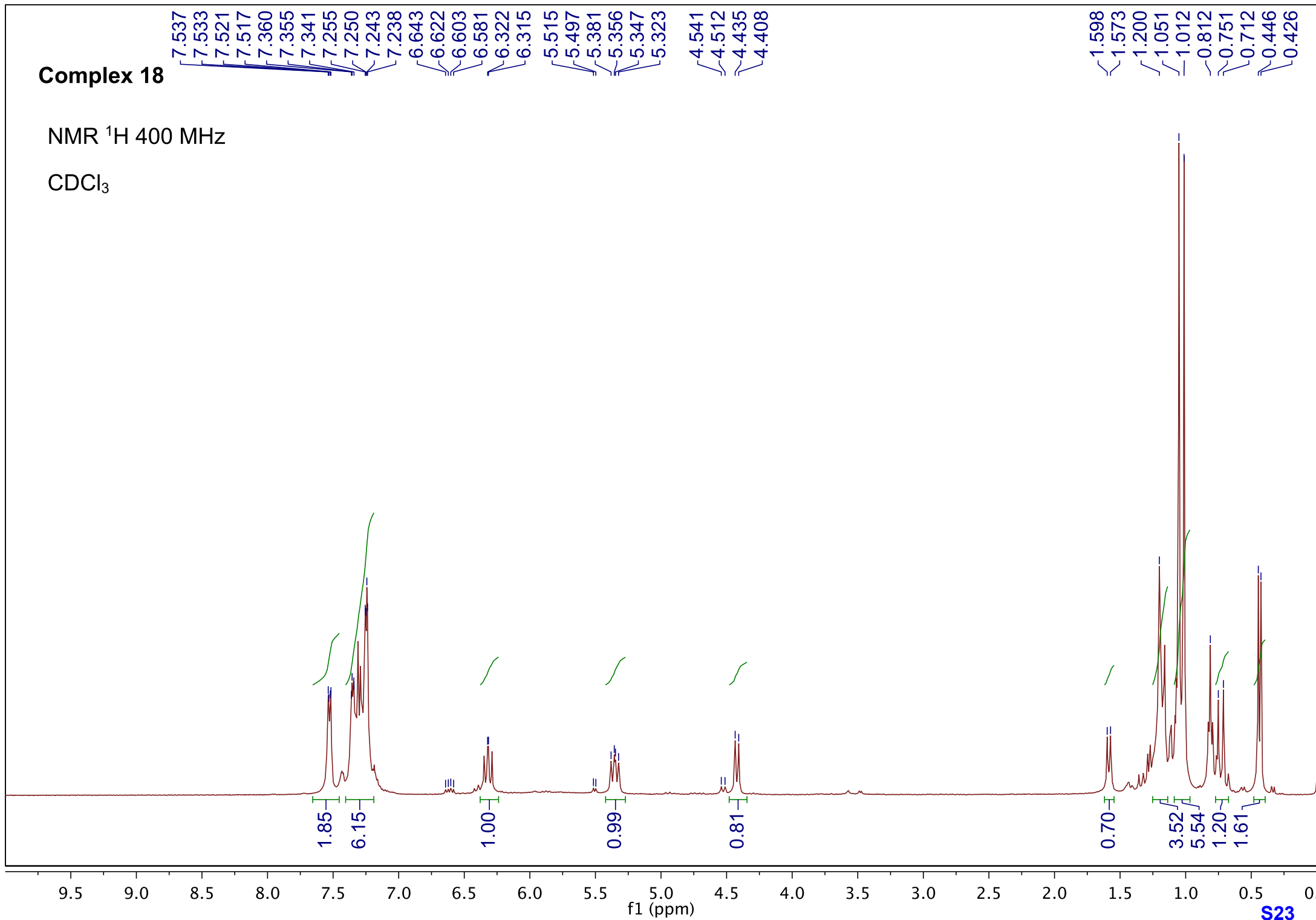
CDCl_3



Complex 18

NMR ^1H 400 MHz

CDCl_3



Complex 18

NMR ^{13}C 100.6 MHz

CDCl_3

129.104
128.491
128.078
127.438
126.127

38.975
38.760
38.551

26.405

14.810
14.429

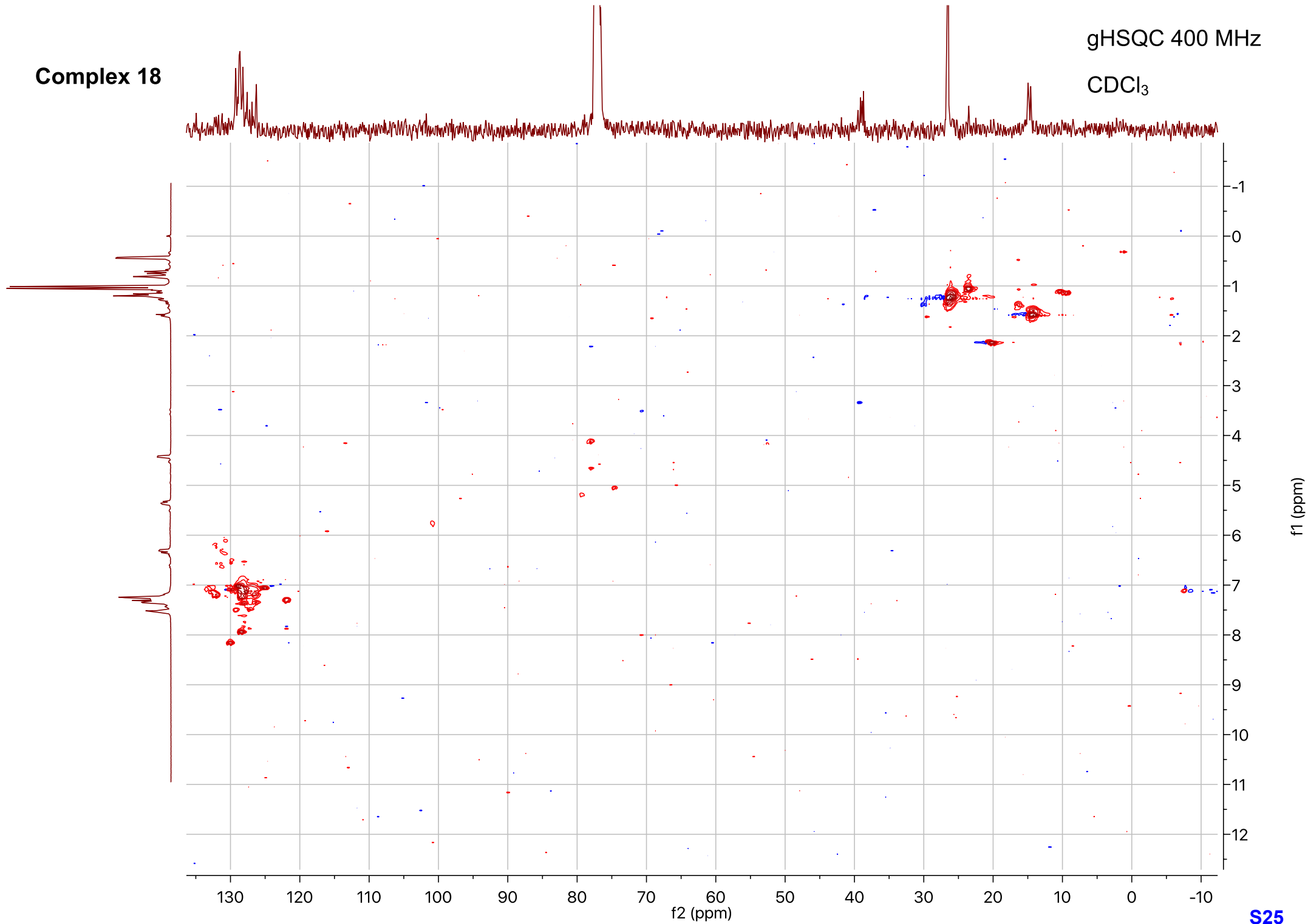
50 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0

f1 (ppm)

Complex 18

gHSQC 400 MHz

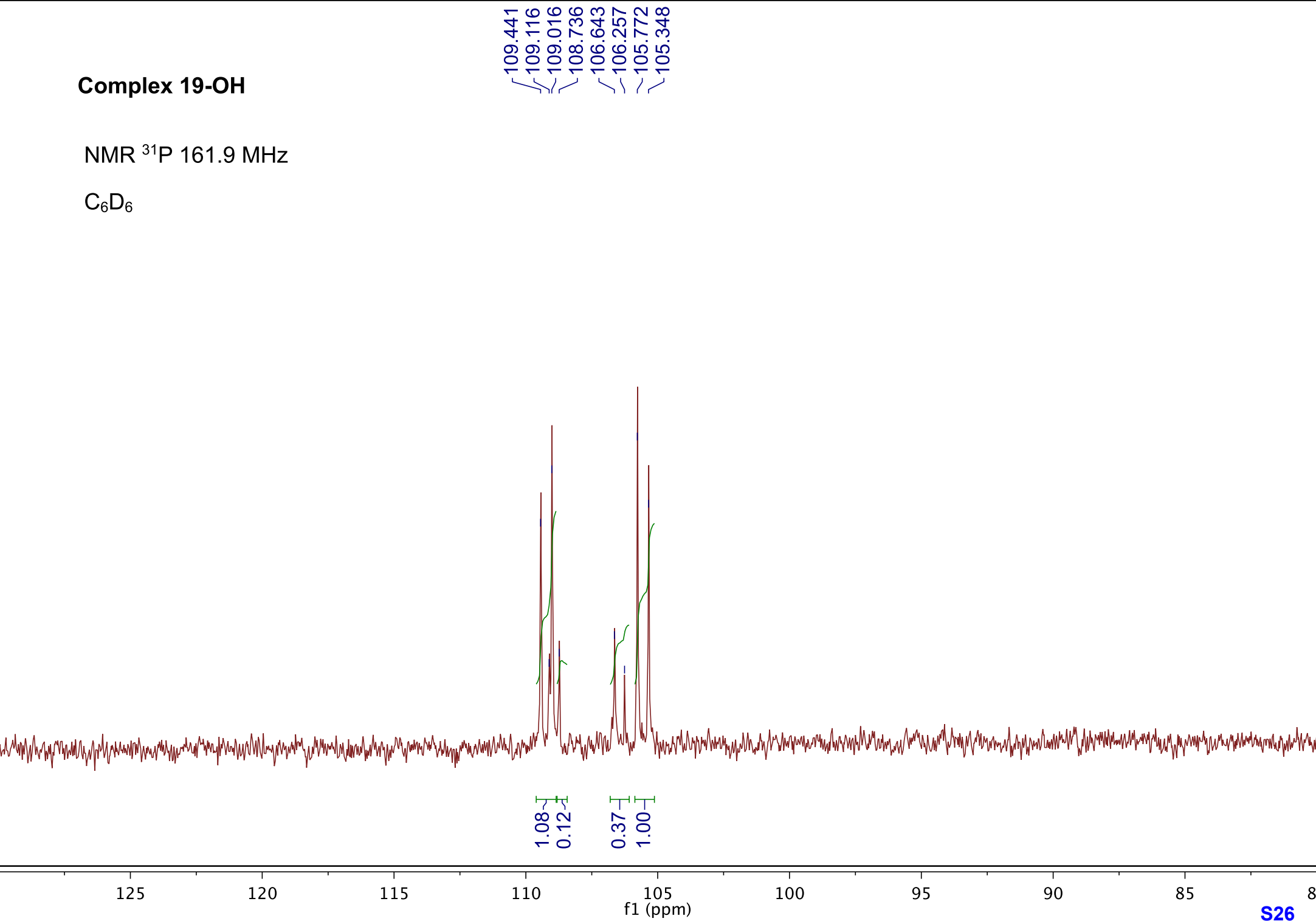
CDCl₃



Complex 19-OH

NMR ³¹P 161.9 MHz

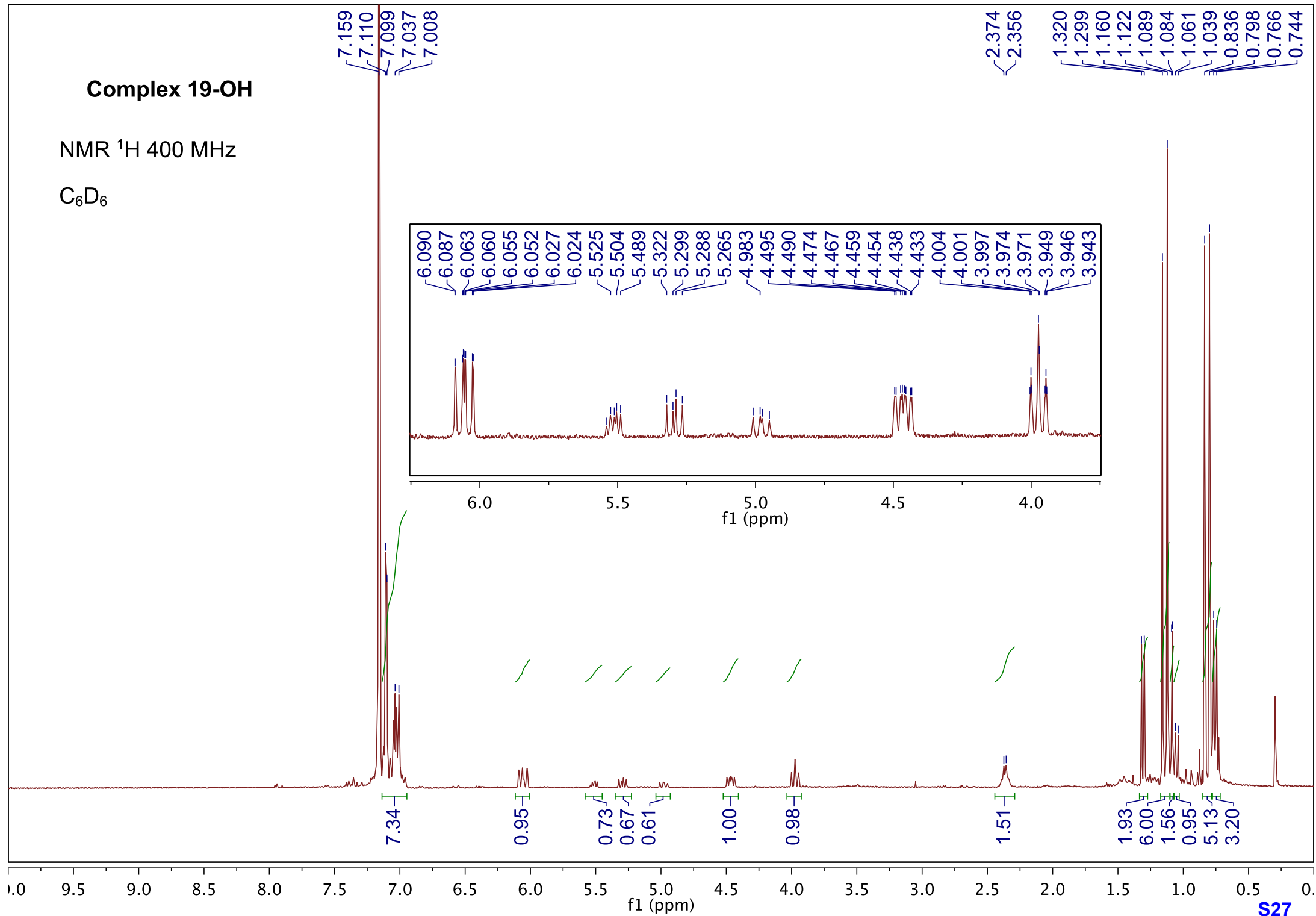
C₆D₆



Complex 19-OH

NMR ^1H 400 MHz

C_6D_6



Complex 19-OH

NMR ^{13}C 100.6 MHz

CDCl_3

128.747
128.586
126.976

—113.427

—109.143

91.397
91.348
91.129
91.085

77.317

69.589
69.263

—45.779

39.157
38.961

25.832
25.783
25.427
25.369

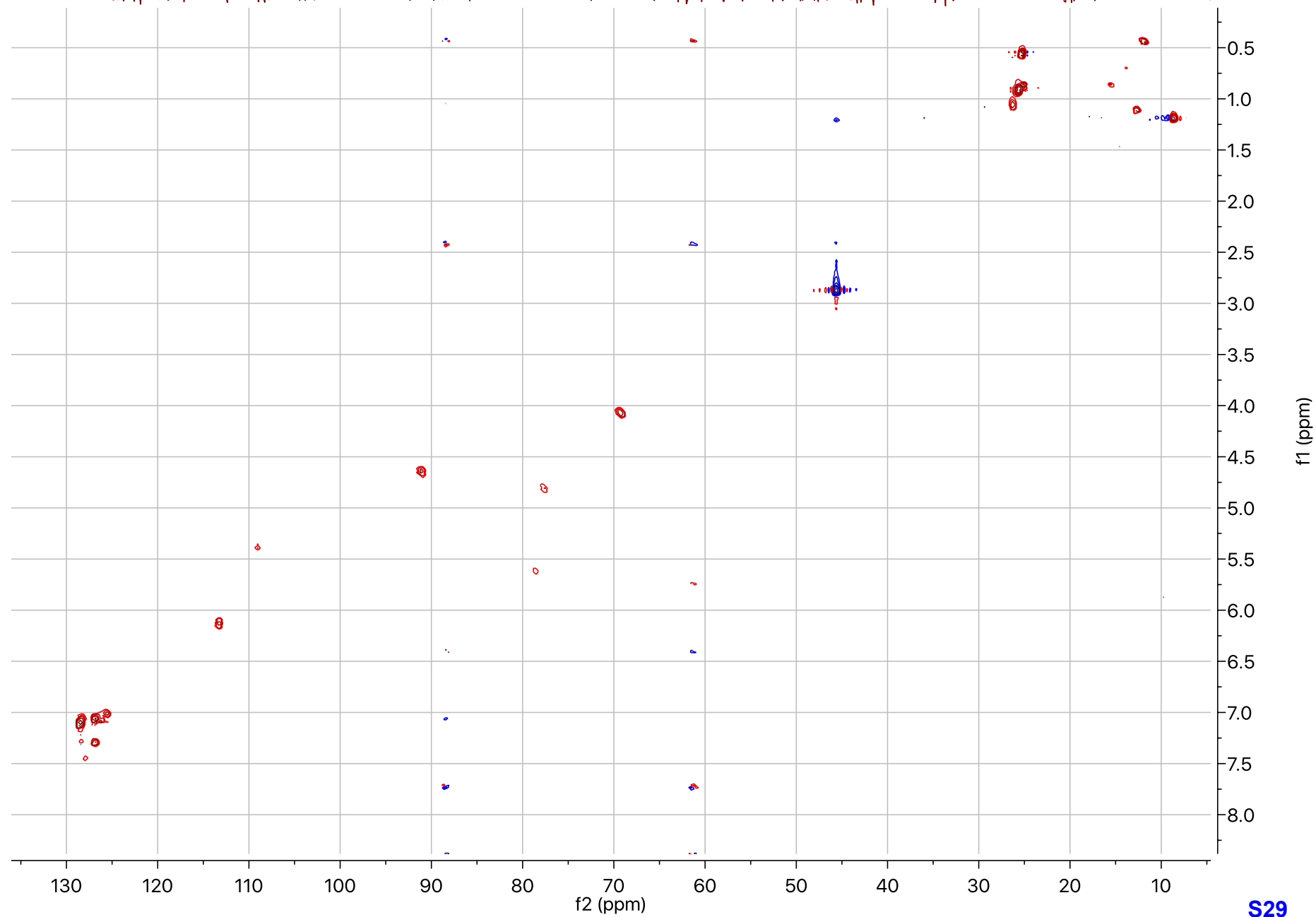
—8.846

50 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0

f1 (ppm)

Complex 19-OH

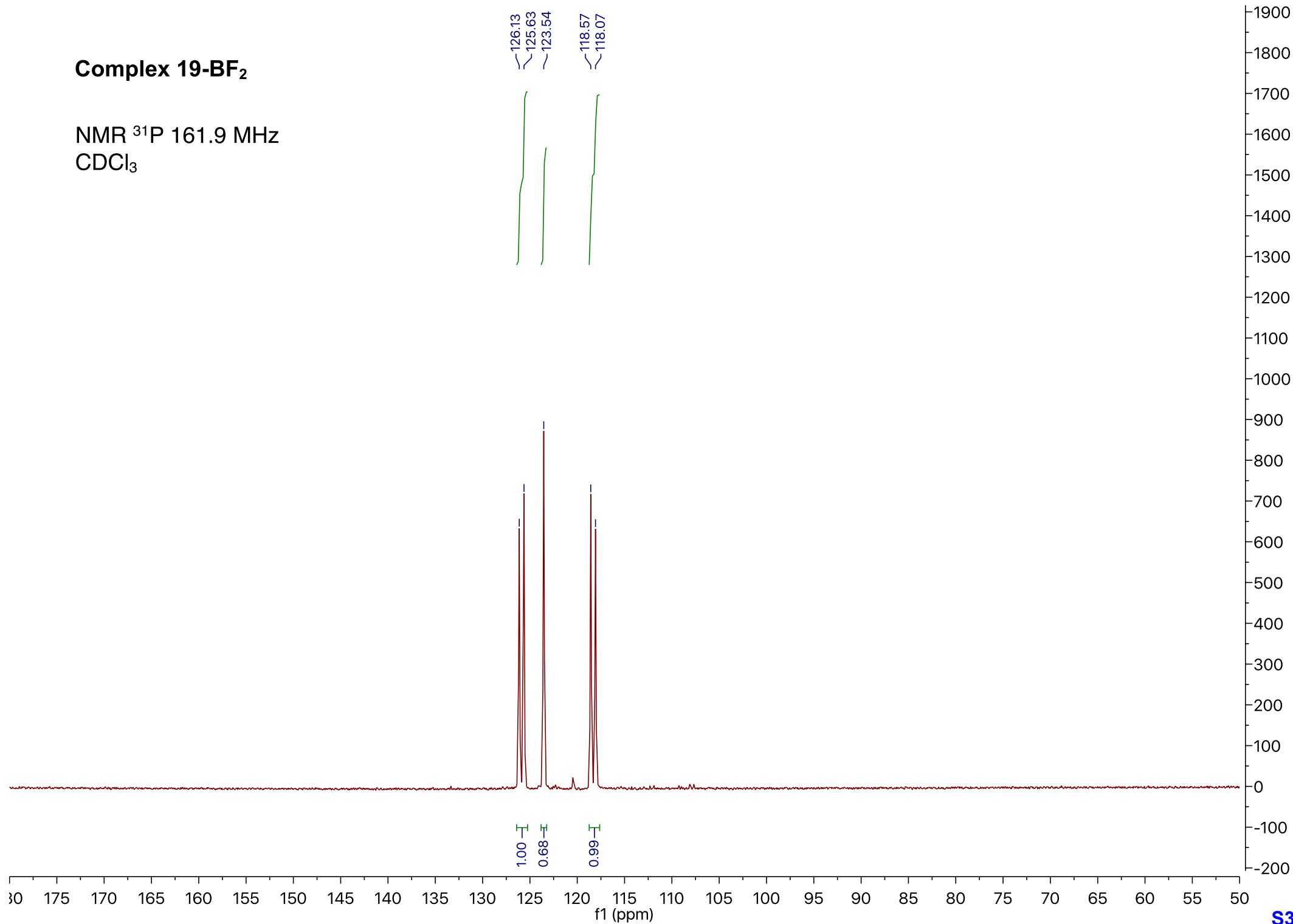
gHSQC 400 MHz



Complex 19-BF₂

NMR ³¹P 161.9 MHz

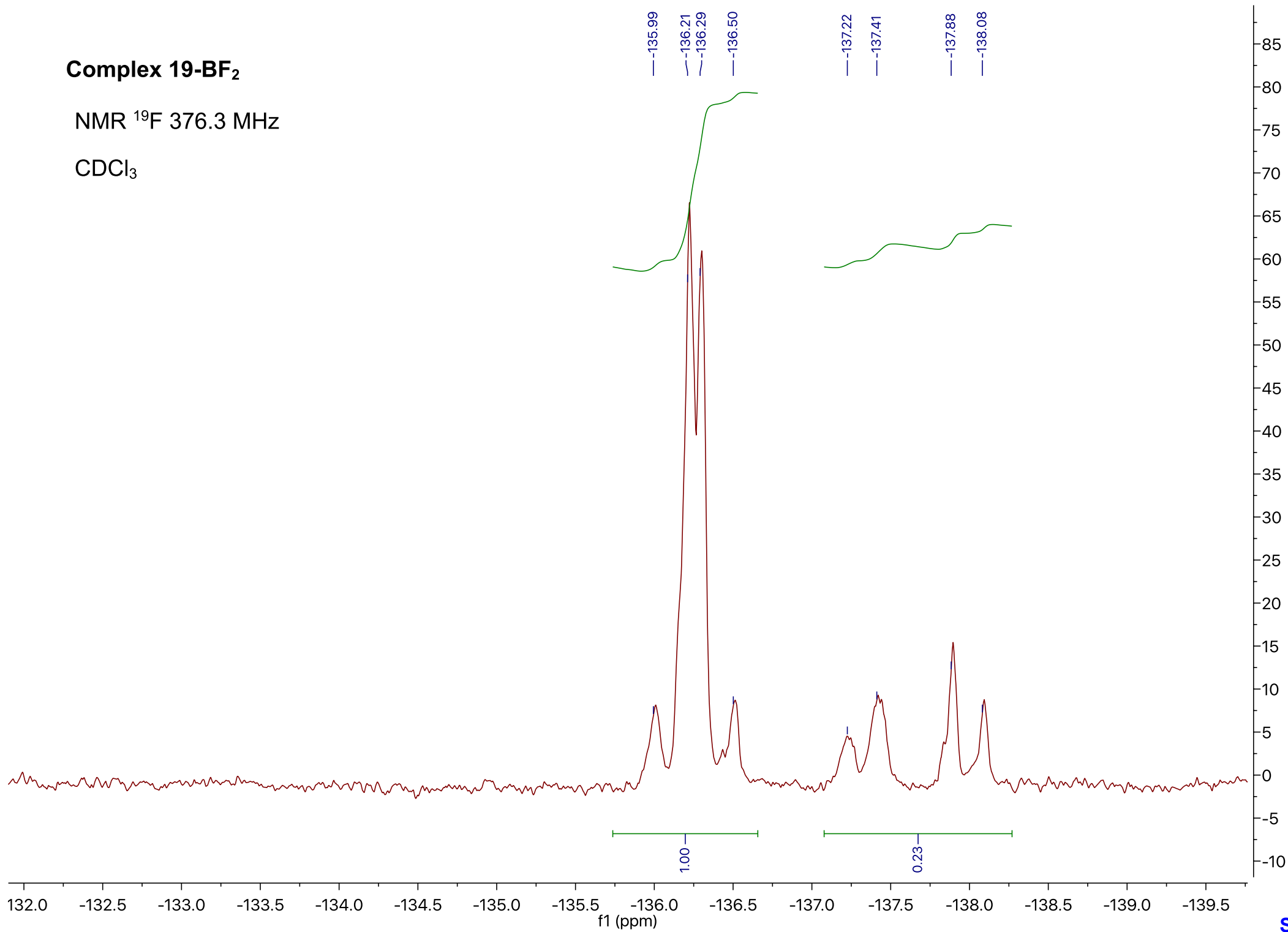
CDCl₃



Complex 19-BF₂

NMR ¹⁹F 376.3 MHz

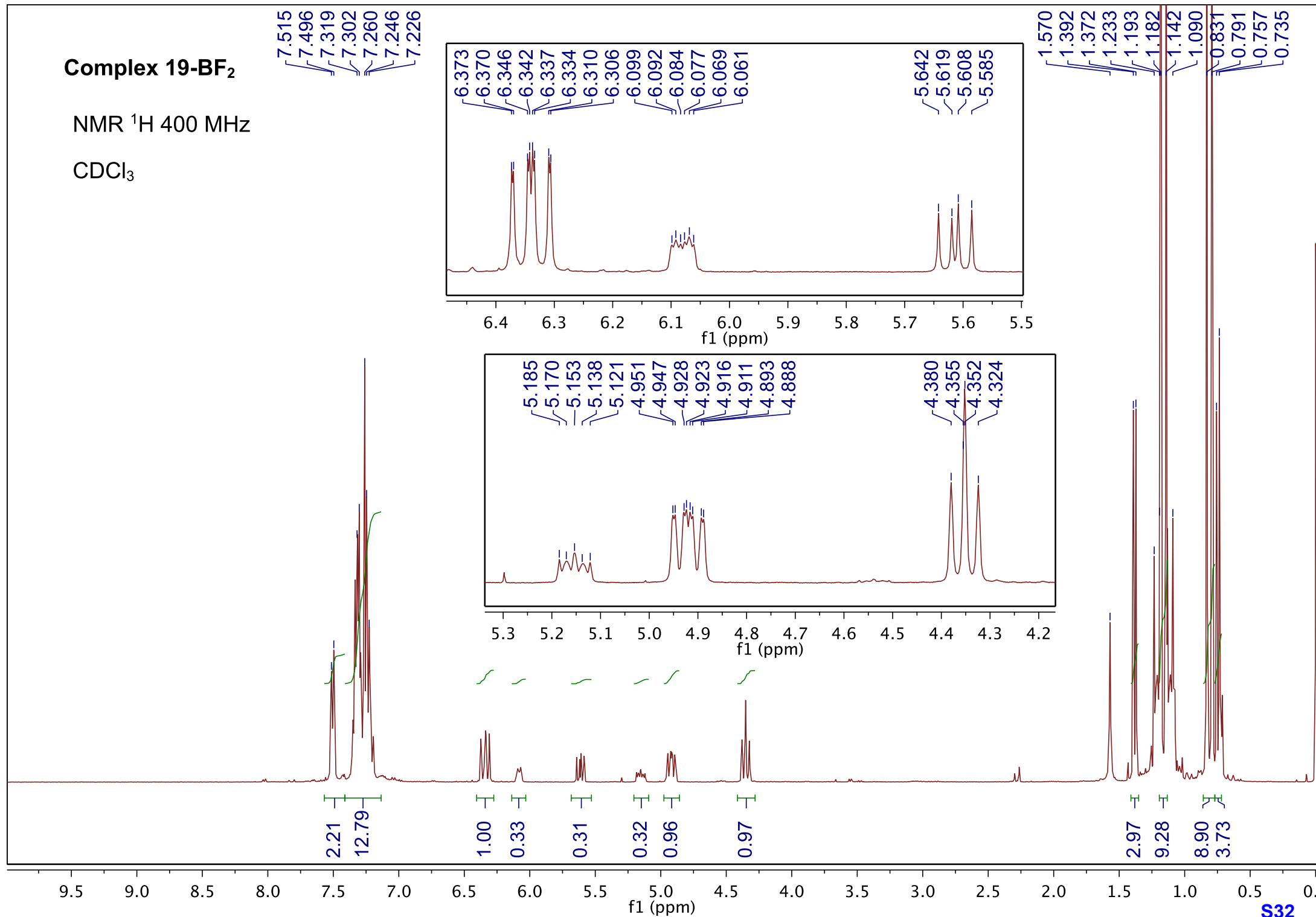
CDCl₃

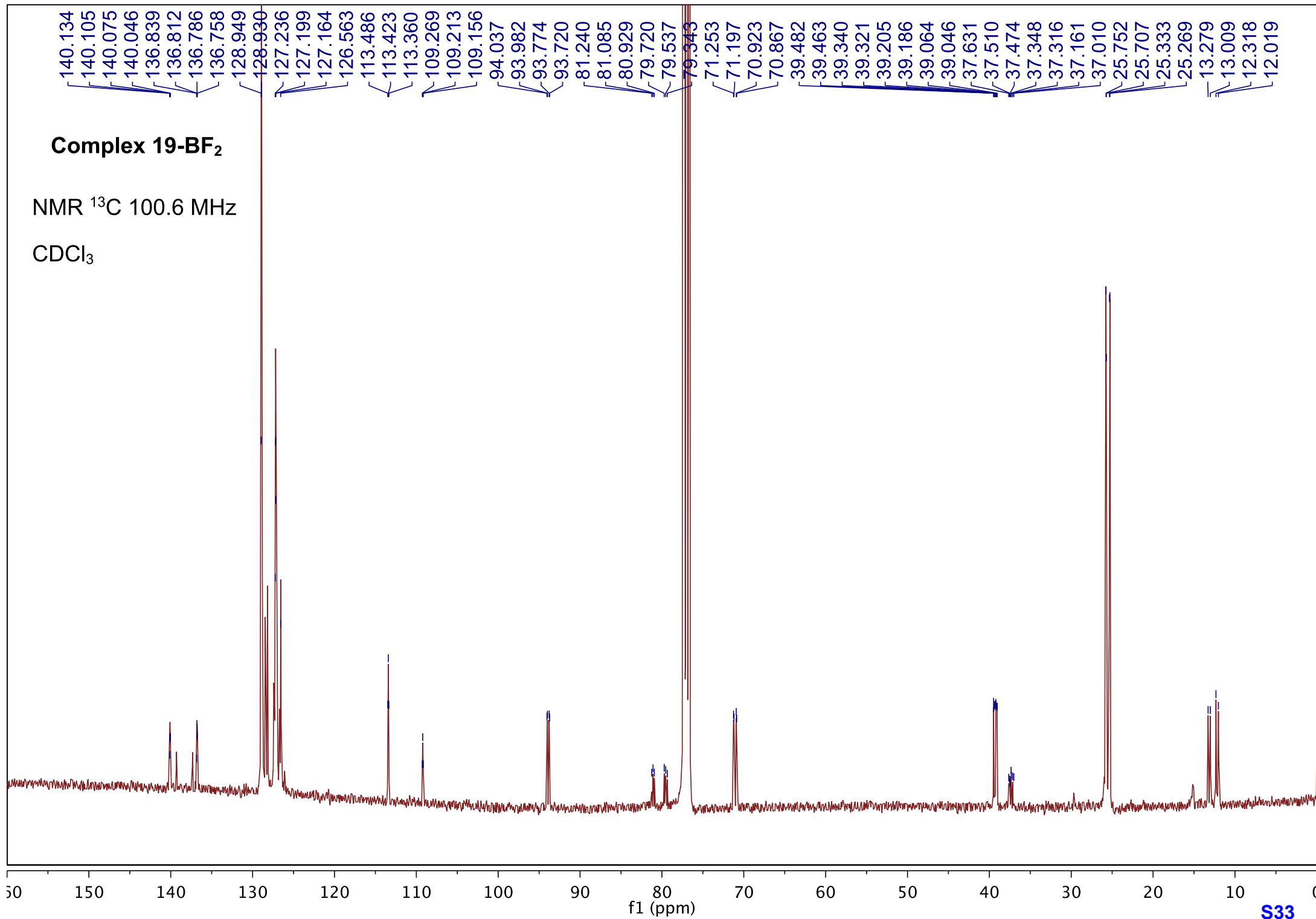


Complex 19-BF₂

NMR ¹H 400 MHz

CDCl₃

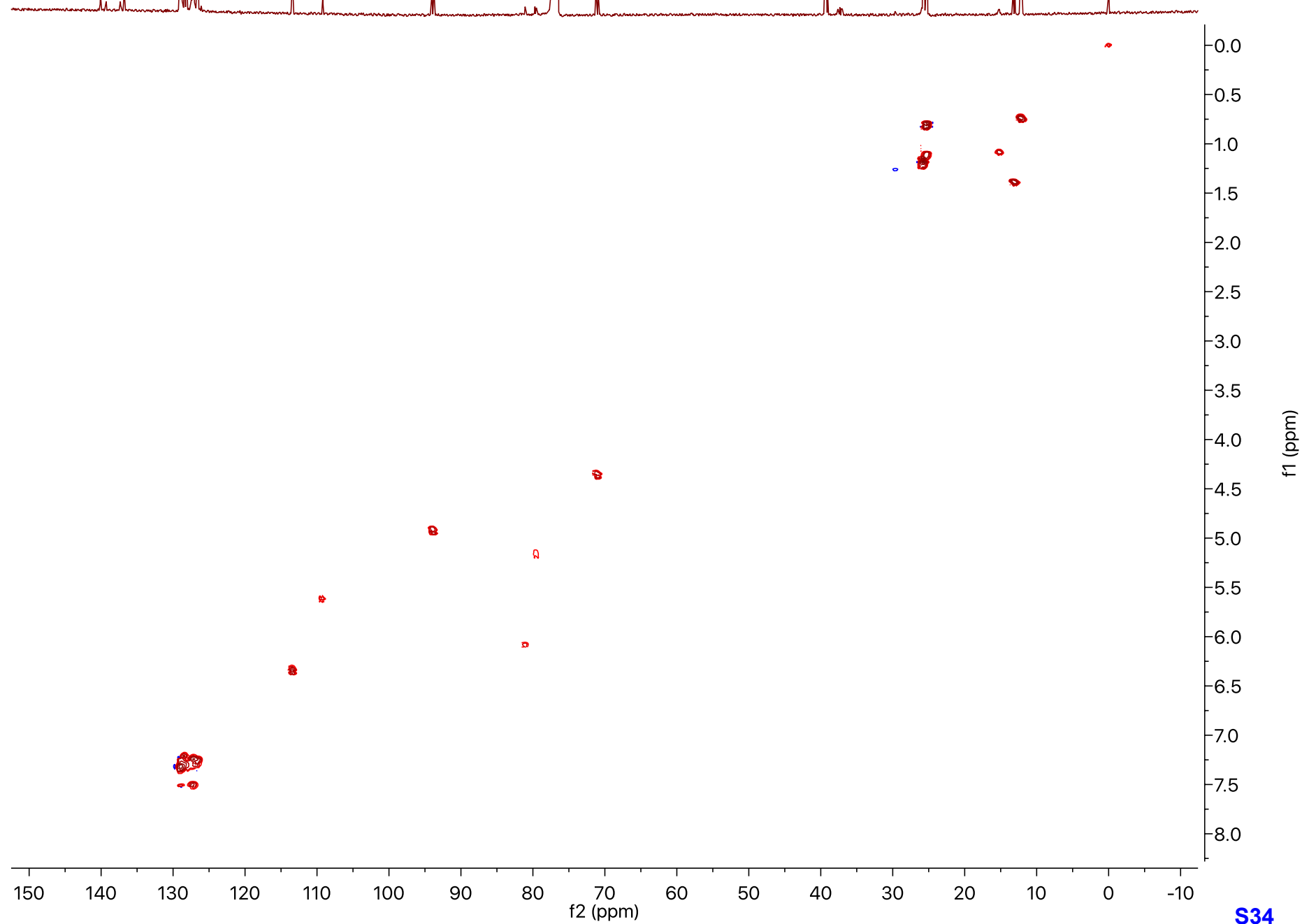




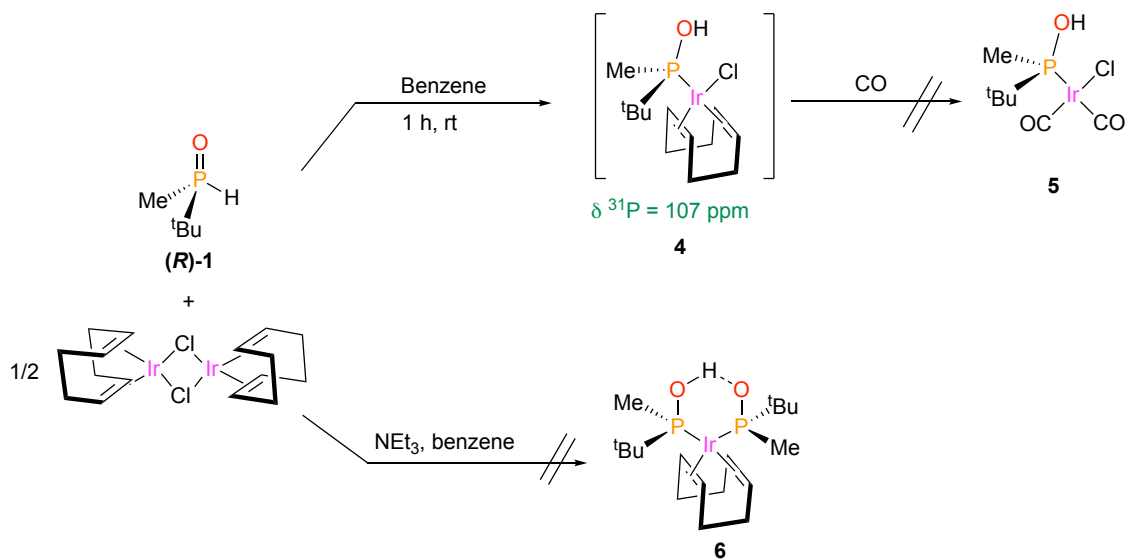
Complex 19-BF₂

gHSQC 400 MHz

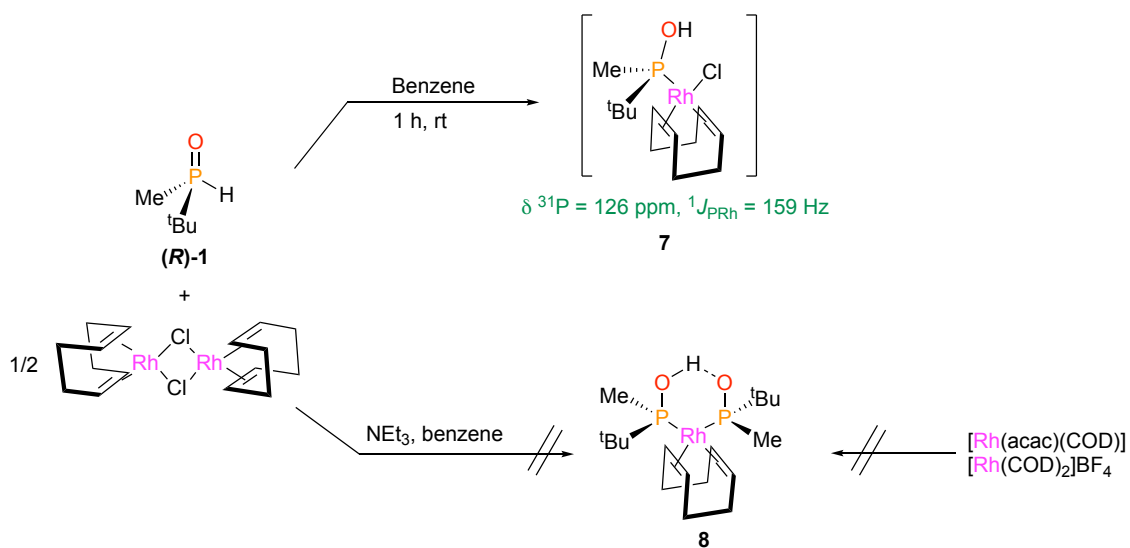
CDCl₃



Complexation studies of **1** to Ir and Rh moieties



Scheme S1. Attempts to obtain Ir-SPO complexes.



Scheme S2. Attempts to obtain Rh-SPO complexes.