

Enantioselective Total Synthesis of Batzelladine

F and Definition of Its Structure

*Frederick Cohen and Larry Overman**

Supporting Information Part 2 (47 Pages)

E. ^1H and ^{13}C NMR of new compounds: Pages S21–S67

¹³C spectrum with ¹H decoupling



Current Data Parameters
USER fcohen
NAME fc-v-285
EXPNO 2
PROCNO 1

F2 - Acquisition Parameters
Date_ 20010410
Time 21.37
INSTRUM gn500
PROBHD 5 mm broadband
PULPROG zgdc30
TD 65536
SOLVENT C6D6
NS 1690
DS 2
SWH 30303.031 Hz
FIDRES 0.462388 Hz
AQ 1.0813940 sec
RG 4597.6
DW 16.500 usec
DE 4.50 usec
TE 300.0 K
D1 0.25000000 sec
D11 0.03000000 sec

==== CHANNEL f1 =====
NUC1 13C
P1 6.25 usec
PL1 0.00 dB
SFO1 125.7464486 MHz

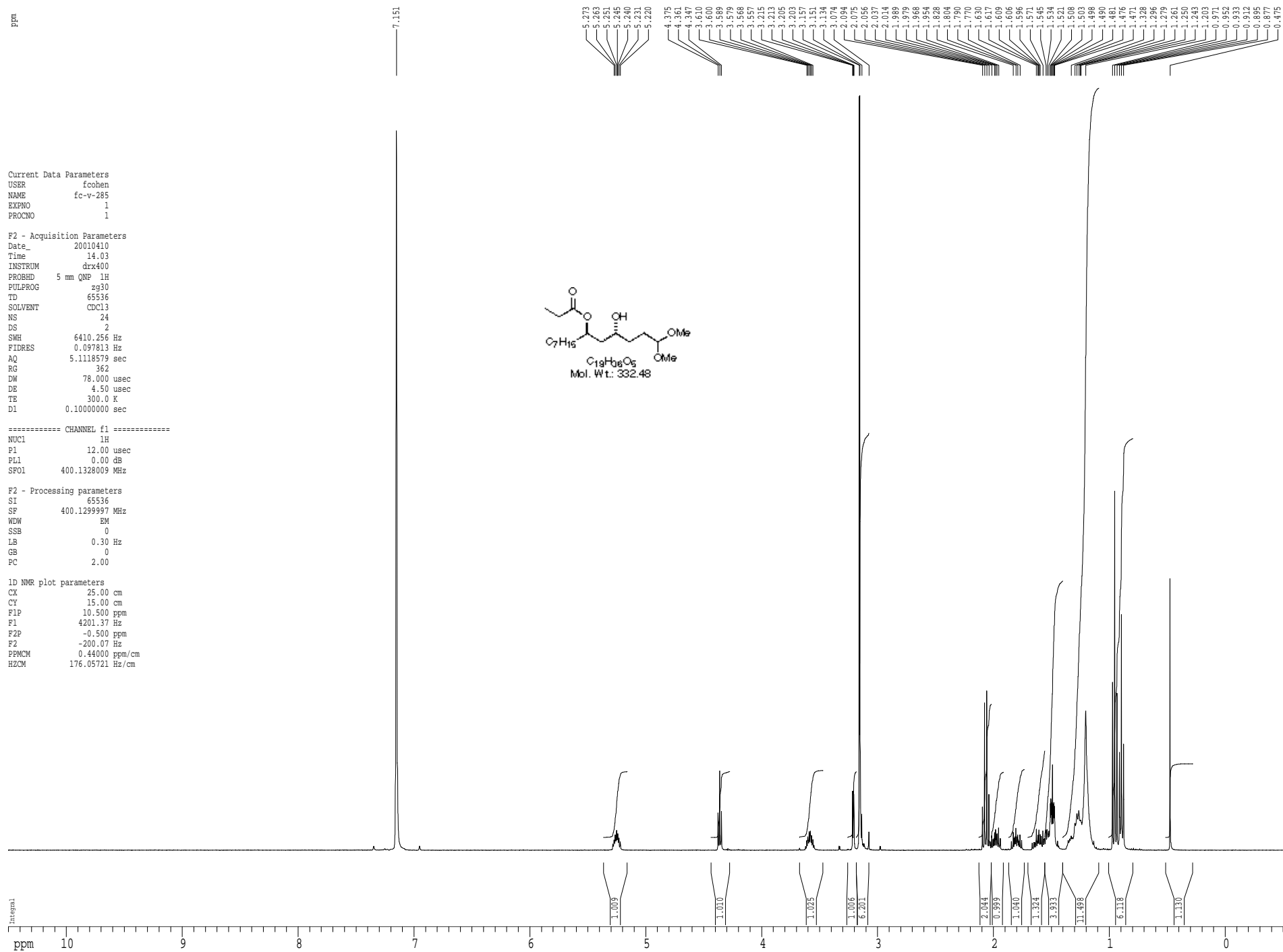
==== CHANNEL f2 =====
CPDPRG2 waltz16
NUC2 1H
PCPD2 80.00 usec
PL2 -3.00 dB
PL12 13.50 dB
SFO2 500.0335002 MHz

F2 - Processing parameters
SI 65536
SF 125.7325517 MHz
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SSB 0
LB 1.00 Hz
GB 0
PC 2.00

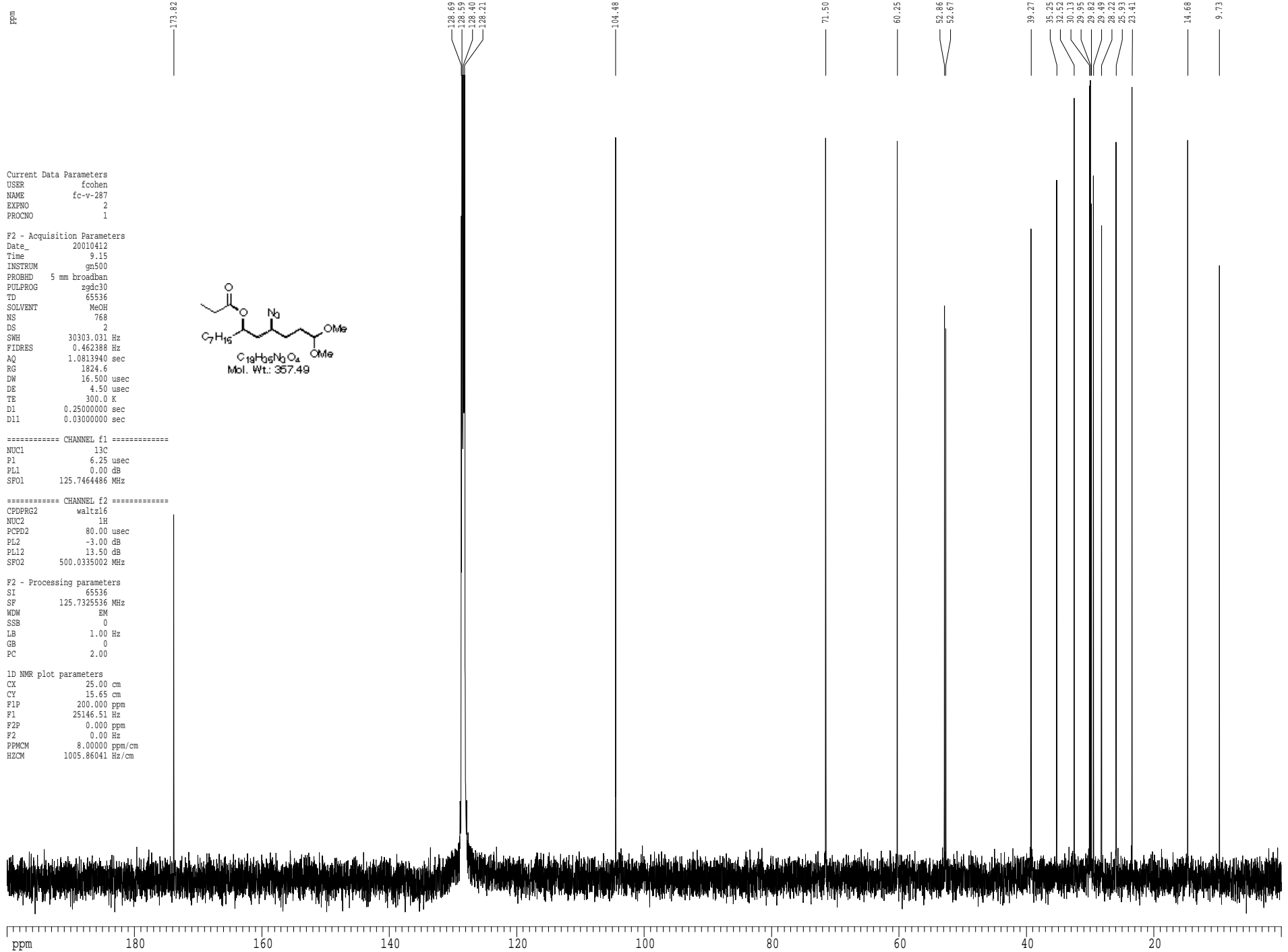
1D NMR plot parameters
CX 25.00 cm
CY 15.65 cm
FIP 200.000 ppm
F1 25146.51 Hz
F2P 0.000 ppm
F2 0.00 Hz
PPMCM 8.00000 ppm/cm
HZCM 1005.86041 Hz/cm



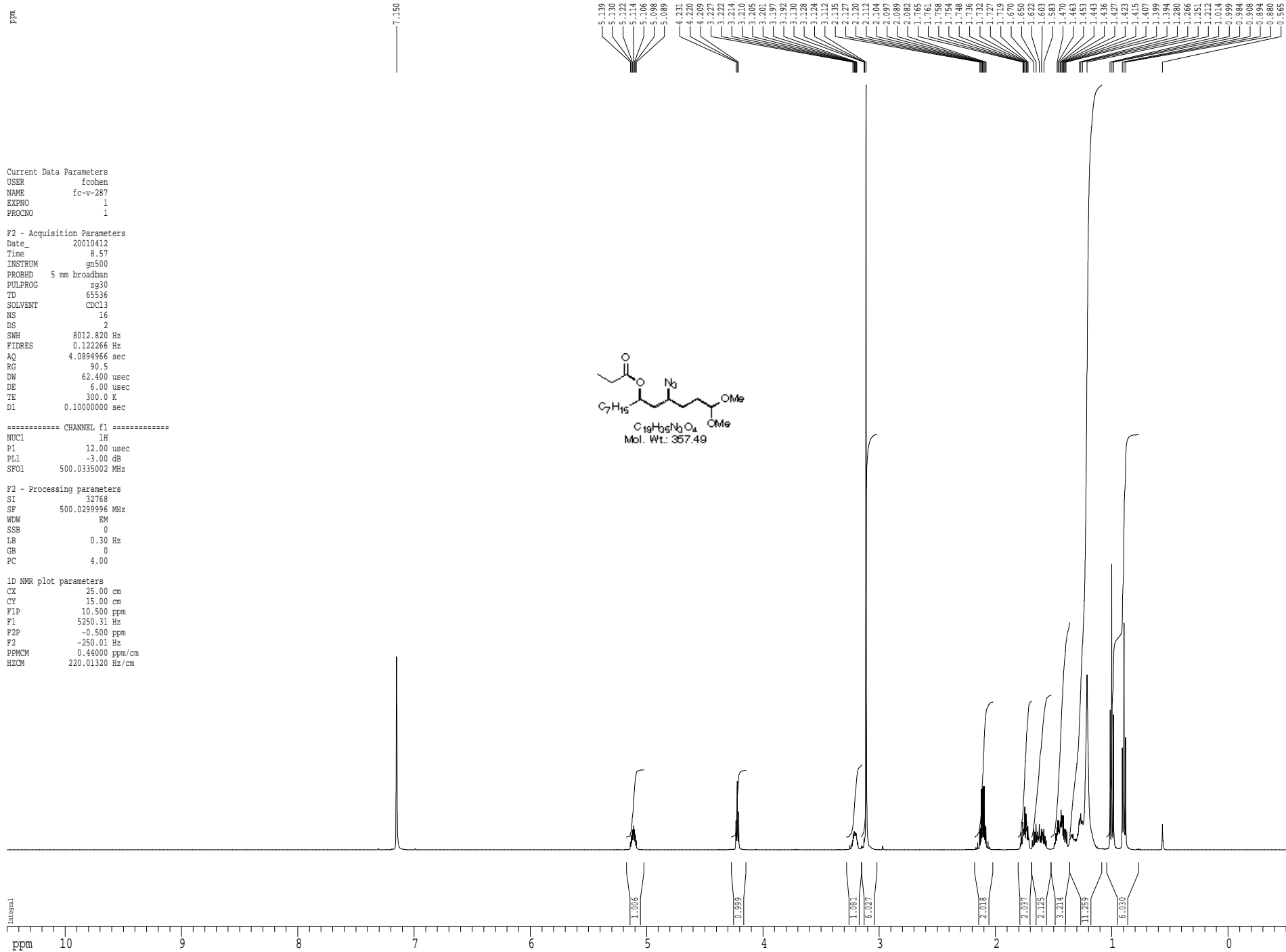
1H spectrum



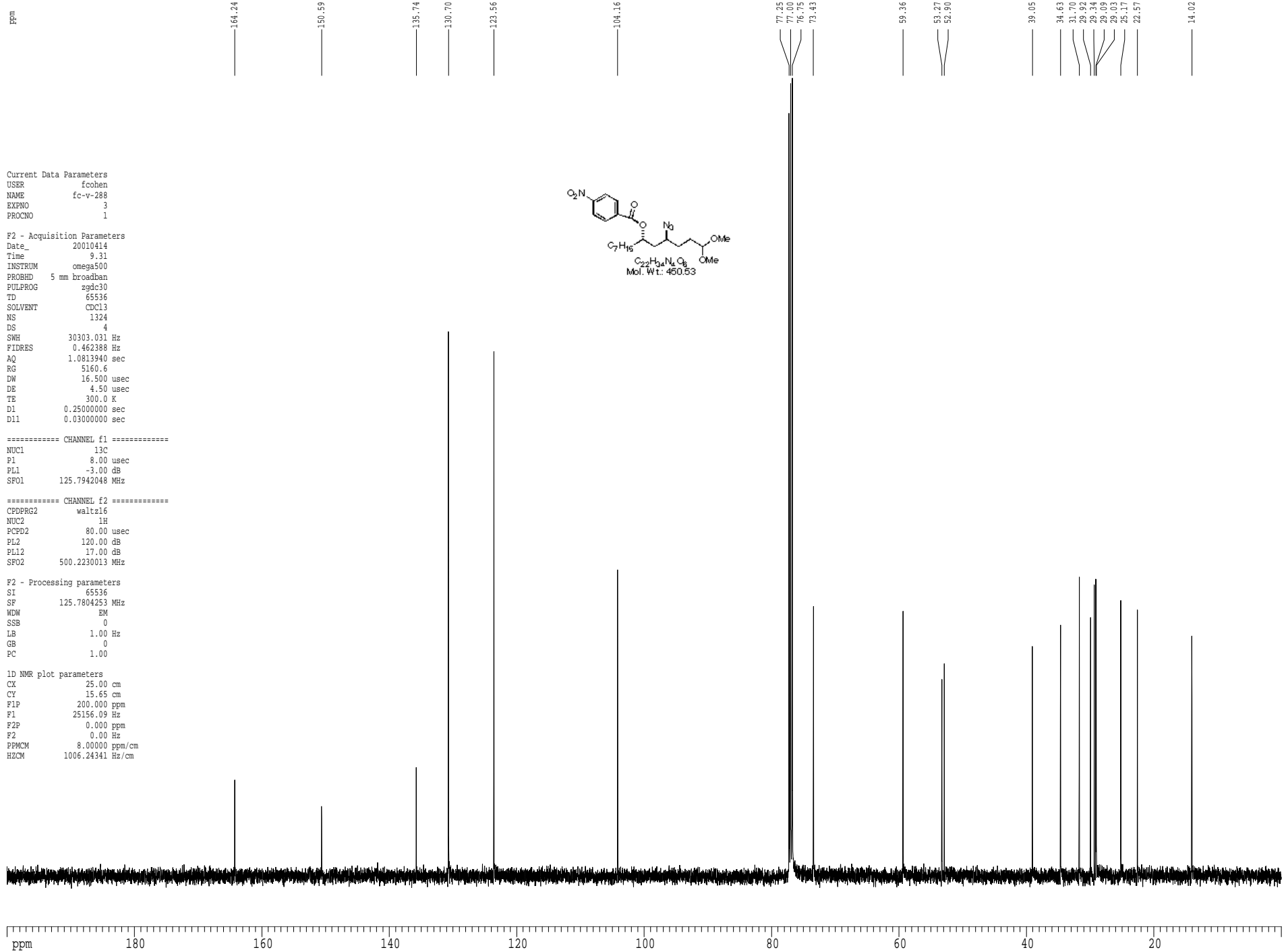
13C spectrum with 1H decoupling



1H spectrum



¹³C spectrum with ¹H decoupling



Current Data Parameters
USER fcohen
NAME fc-v-288
EXPNO 3
PROCNO 1

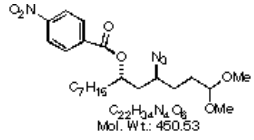
F2 - Acquisition Parameters
Date_ 20010414
Time 9.31
INSTRUM omega500
PROBHD 5 mm broadband
PULPROG zgdc30
TD 65536
SOLVENT CDCl3
NS 1324
DS 4
SWH 30303.031 Hz
FIDRES 0.462388 Hz
AQ 1.0813940 sec
RG 5160.6
DW 16.500 usec
DE 4.50 usec
TE 300.0 K
D1 0.25000000 sec
D11 0.03000000 sec

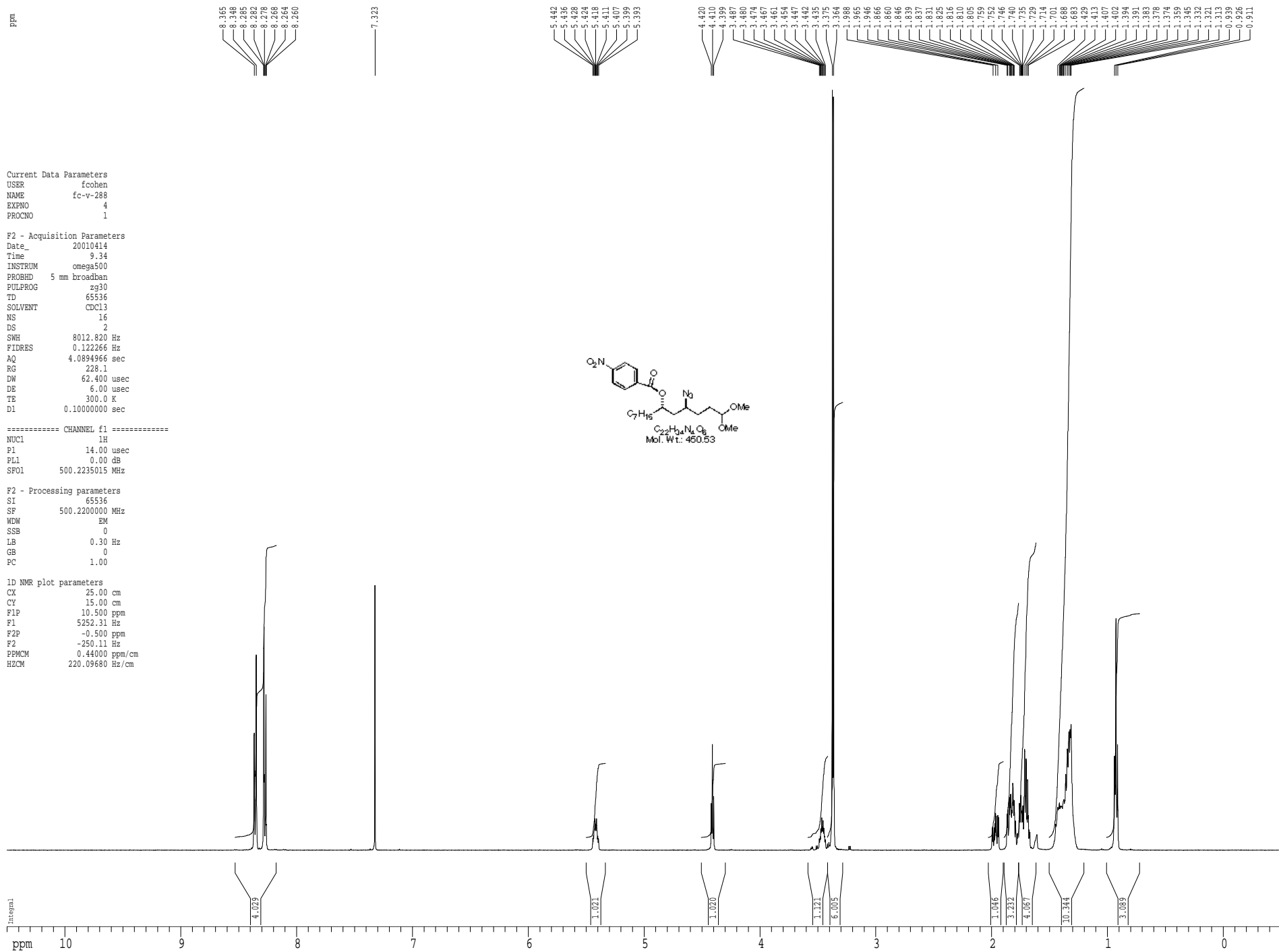
==== CHANNEL f1 =====
NUC1 13C
P1 8.00 usec
PL1 -3.00 dB
SFO1 125.7942048 MHz

==== CHANNEL f2 =====
CPDPRG2 waltz16
NUC2 1H
PCPD2 90.00 usec
PL2 120.00 dB
PL12 17.00 dB
SFO2 500.2230013 MHz

F2 - Processing parameters
SI 65536
SF 125.7804253 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.00

1D NMR plot parameters
CX 25.00 cm
CY 15.65 cm
FIP 200.000 ppm
F1 25156.09 Hz
F2P 0.000 ppm
F2 0.00 Hz
PPMCM 8.00000 ppm/cm
HZCM 1006.24341 Hz/cm



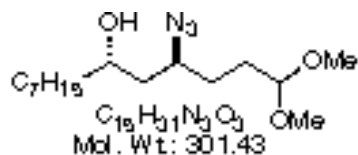
¹H spectrum

¹³C spectrum with ¹H decoupling

ppm

Current Data Parameters
 USER fcohen
 NAME fc-v-289
 EXPNO 2
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20010414
 Time 14.04
 INSTRUM omega500
 PROBHD 5 mm broadband
 PULPROG zgdc30
 TD 65536
 SOLVENT CDCl3
 NS 1292
 DS 4
 SWH 30303.031 Hz
 FIDRES 0.462388 Hz
 AQ 1.0813940 sec
 RG 3251
 DW 16.500 usec
 DE 4.500 usec
 TE 300.0 K
 D1 0.25000000 sec
 D11 0.03000000 sec

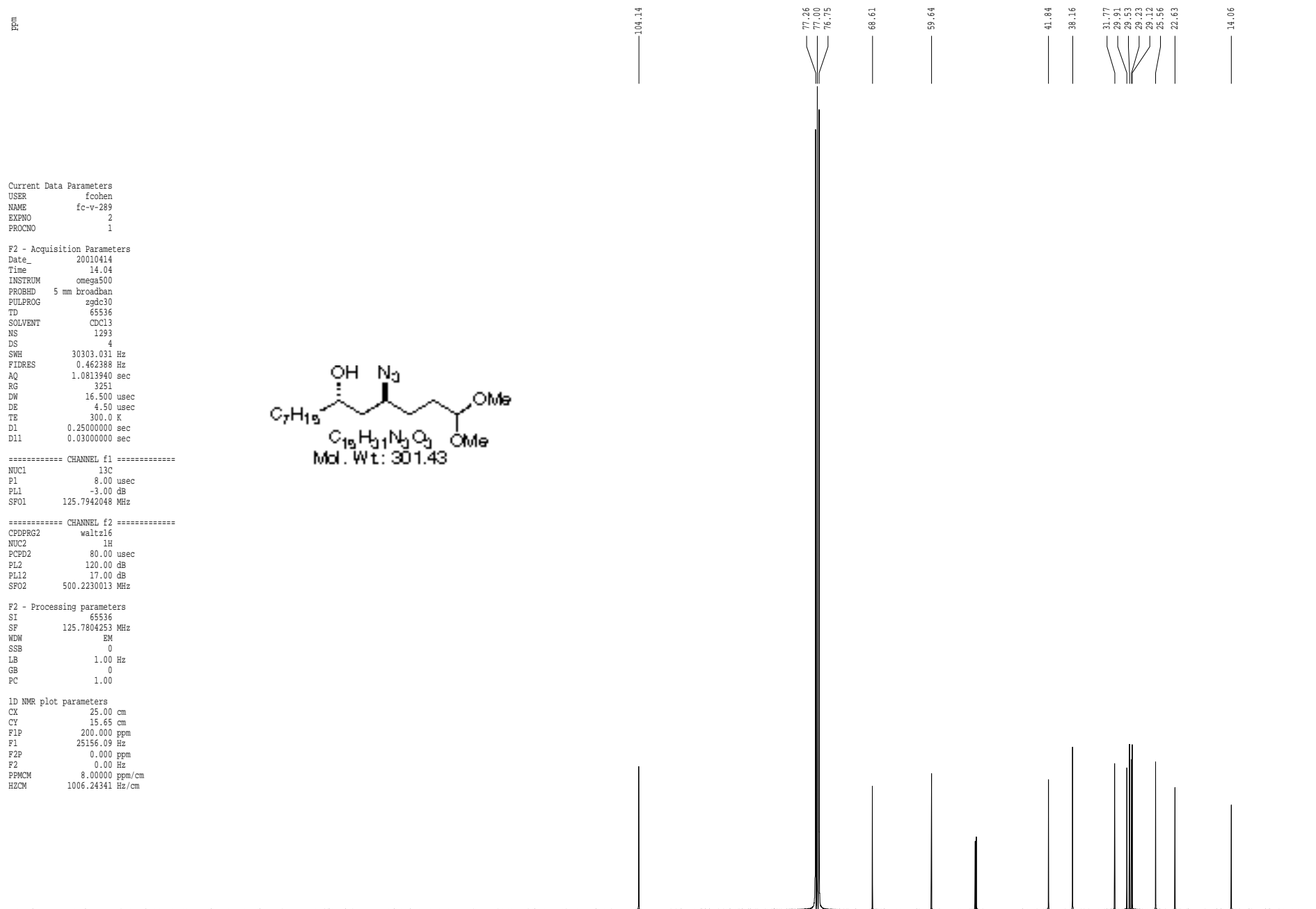


===== CHANNEL f1 =====
 NUC1 13C
 P1 8.00 usec
 PL1 -3.00 dB
 SFO1 125.7942048 MHz

===== CHANNEL f2 =====
 CPDPRG2 waltz16
 NUC2 1H
 PCPD2 90.00 usec
 PL2 120.00 dB
 PL12 17.00 dB
 SFO2 500.2230013 MHz

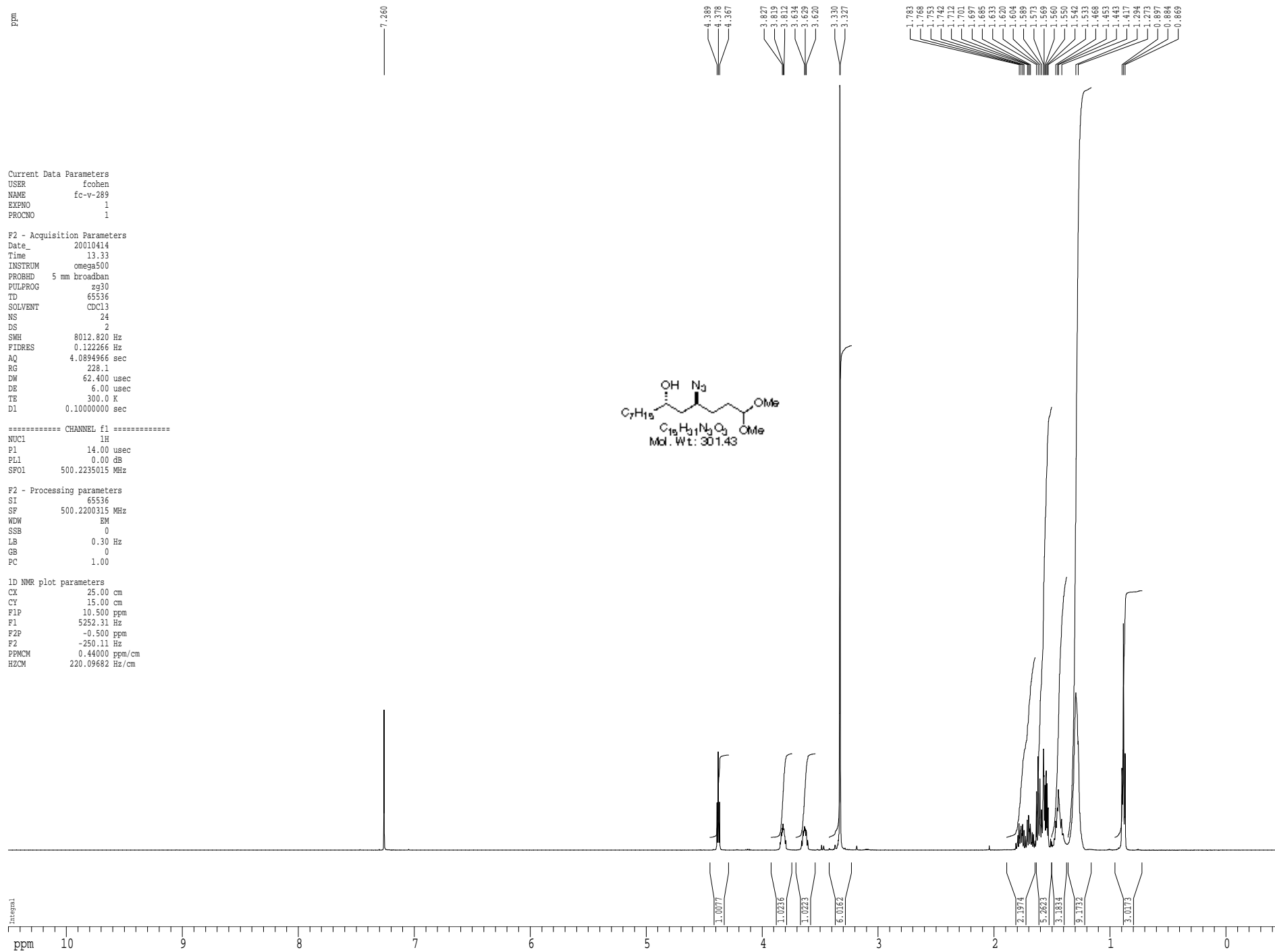
F2 - Processing parameters
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 SF 125.7804253 MHz
 WDM EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 1.00

1D NMR plot parameters
 CX 25.00 cm
 CY 15.65 cm
 FID 200.000 ppm
 F1 25156.09 Hz
 F2P 0.000 ppm
 F2 0.00 Hz
 PPMCM 8.00000 ppm/cm
 HZCM 1006.24341 Hz/cm



ppm 180 160 140 120 100 80 60 40 20

1H spectrum



¹³C spectrum with ¹H decoupling

ppm

Current Data Parameters
USER fcoben
NAME fc-v-290
EXPNO 2
PROCNO 1

F2 - Acquisition Parameters
Date_ 20010415
Time 18.08
INSTRUM gn500
PROBHD 5 mm broadband
PULPROG zgdc30
TD 65536
SOLVENT MeOH
NS 1160
DS 2
SWH 30303.031 Hz
FIDRES 0.462388 Hz
AQ 1.0813940 sec
RG 5160.6
DW 16.500 usec
DE 4.50 usec
TE 300.0 K
D1 0.25000000 sec
D11 0.03000000 sec

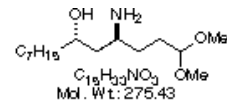
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NUC1 13C
P1 6.25 usec
PL1 0.00 dB
SFO1 125.7464486 MHz

==== CHANNEL f2 =====
CPDPRG2 waltz16
NUC2 1H
PCPD2 80.00 usec
PL2 -3.00 dB
PL12 13.50 dB
SFO2 500.0335002 MHz

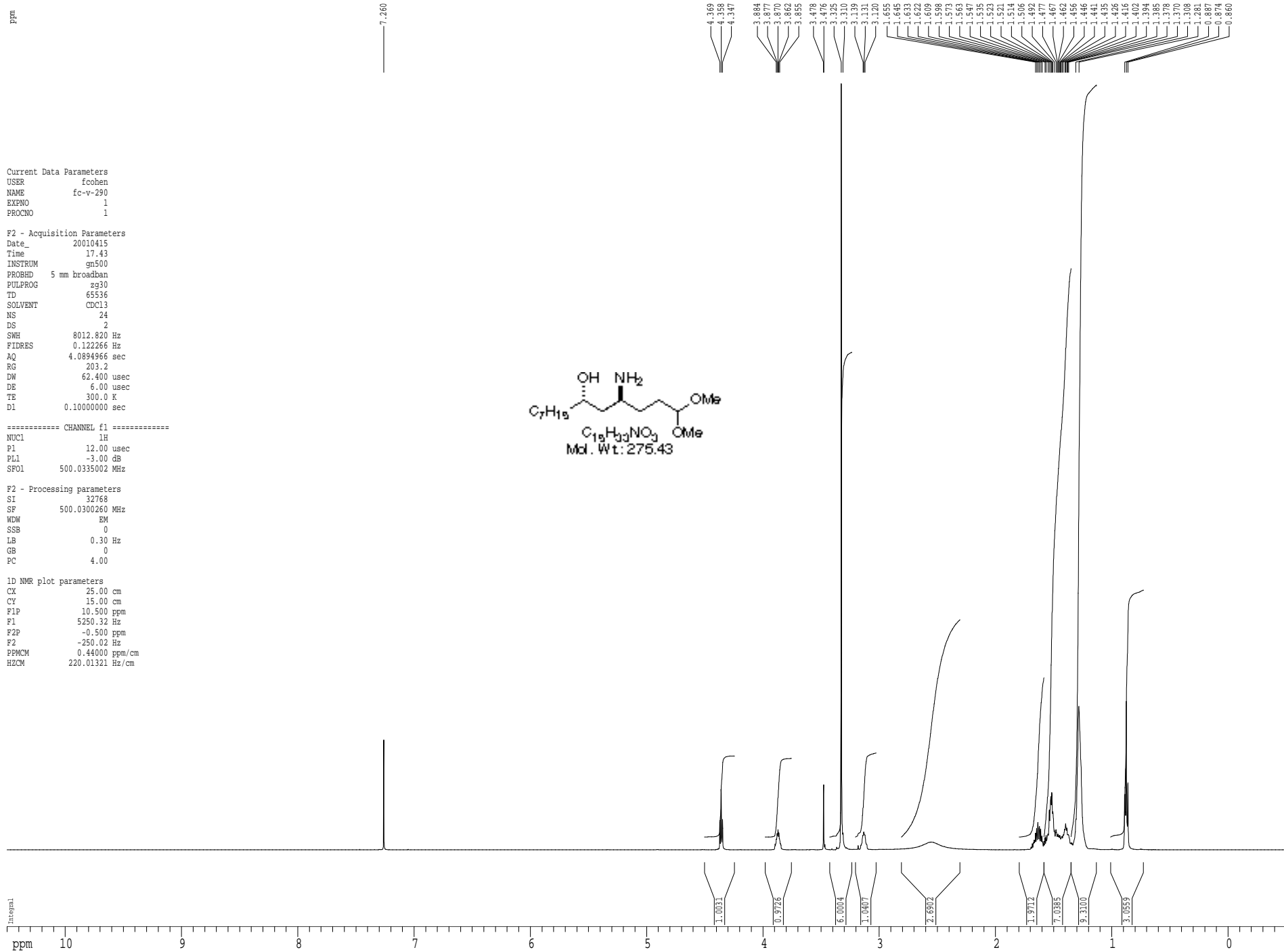
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SI 65536
SF 125.7326487 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 2.00

1D NMR plot parameters
CX 25.00 cm
CY 15.65 cm
F1P 200.000 ppm
F1 25146.53 Hz
F2P 0.000 ppm
F2 0.00 Hz
PPMCM 8.00000 ppm/cm
HZCM 1005.86121 Hz/cm

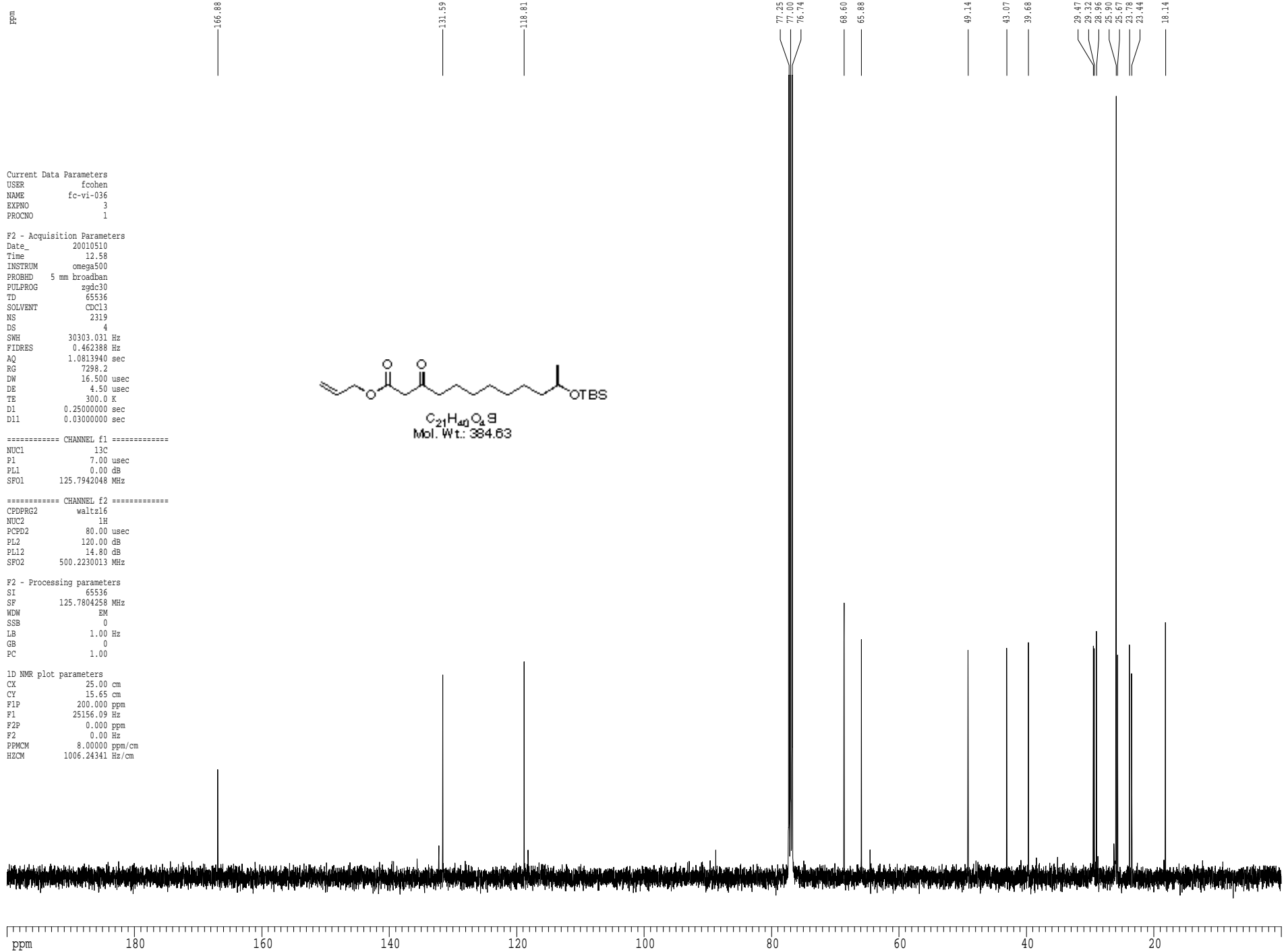
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77.25
77.00
76.75
69.34
52.98
52.92
49.02
40.96
37.76
32.47
31.83
29.72
29.47
29.30
25.88
22.65
14.07



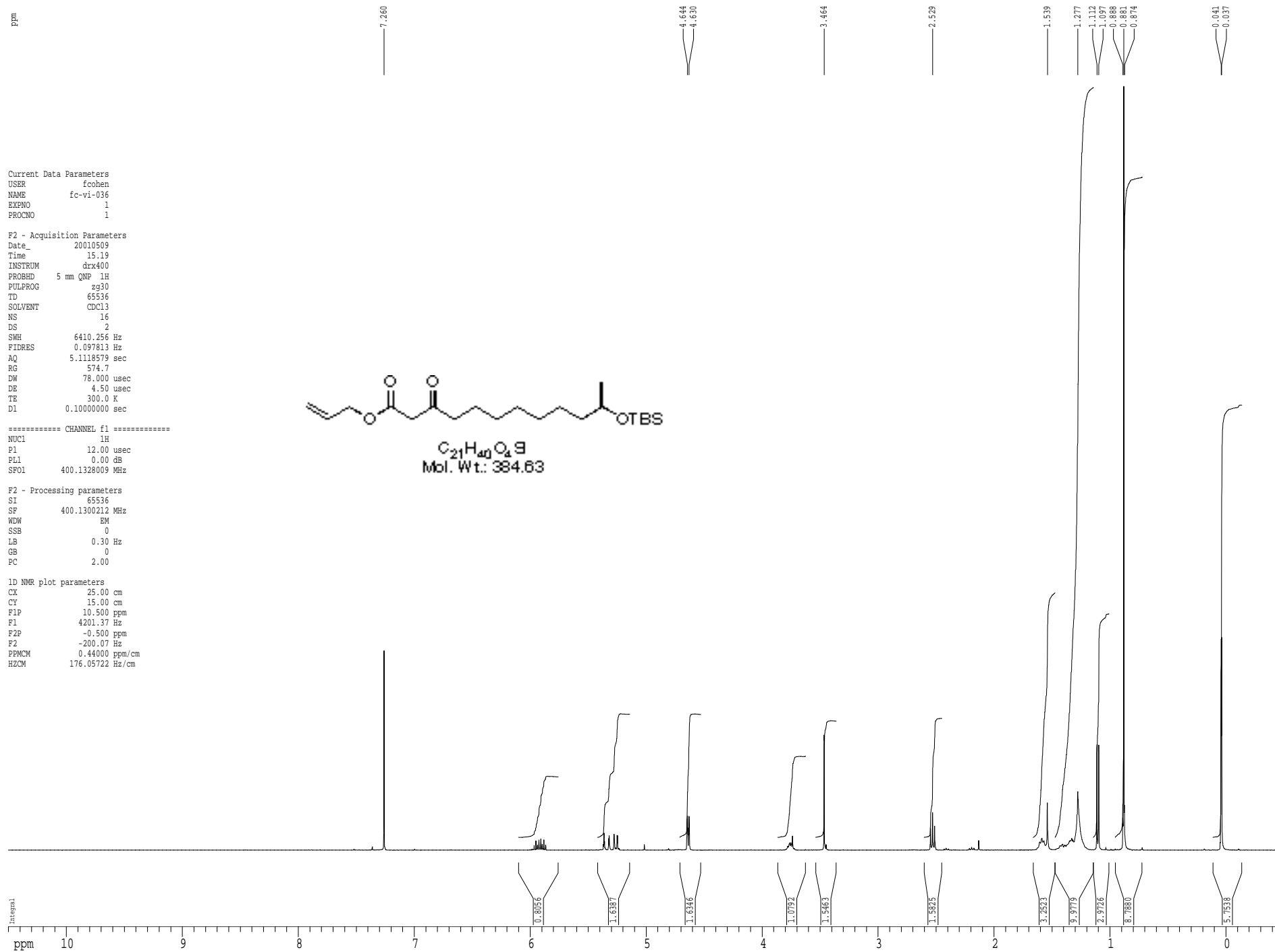
1H spectrum



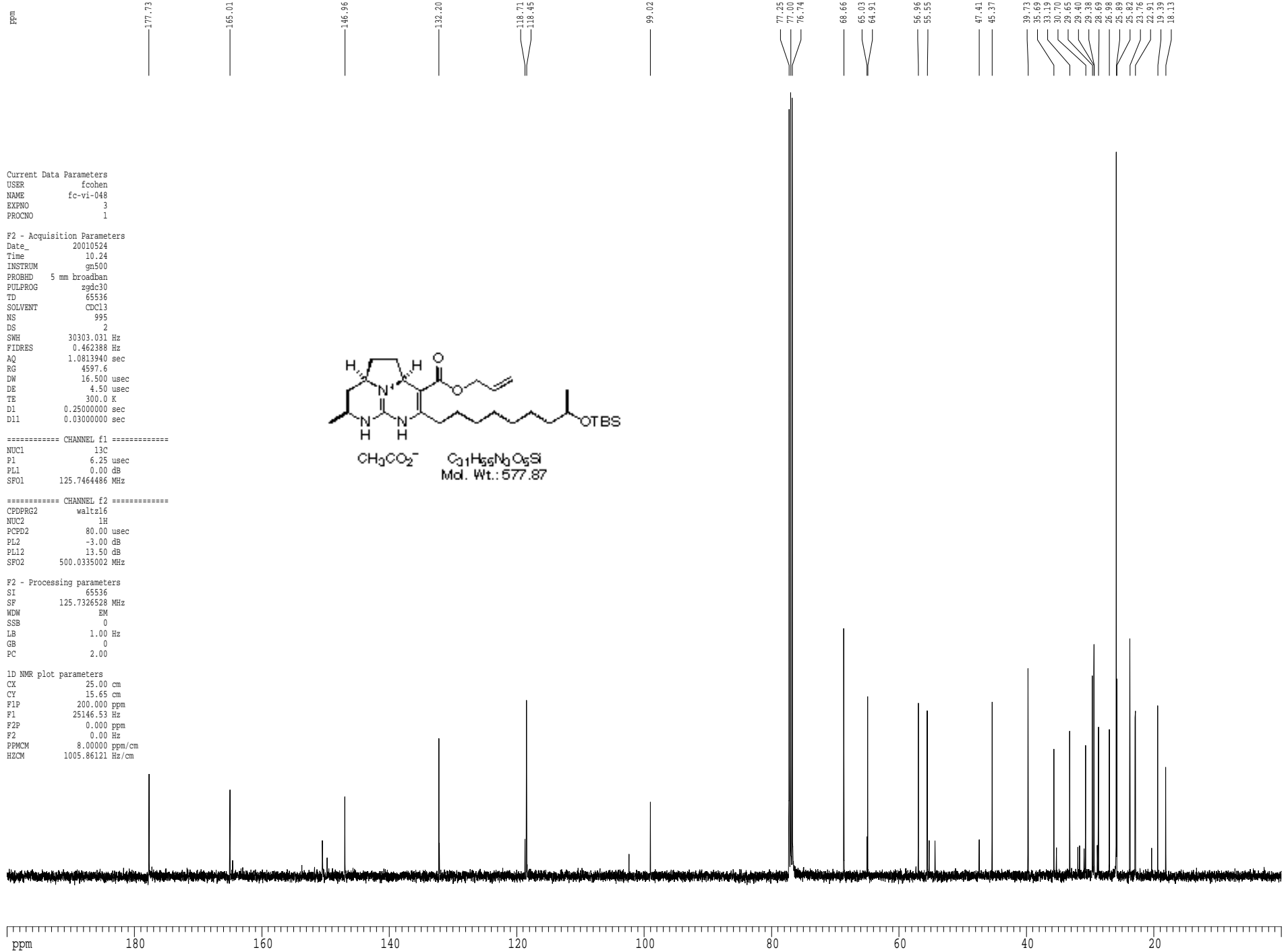
¹³C spectrum with ¹H decoupling

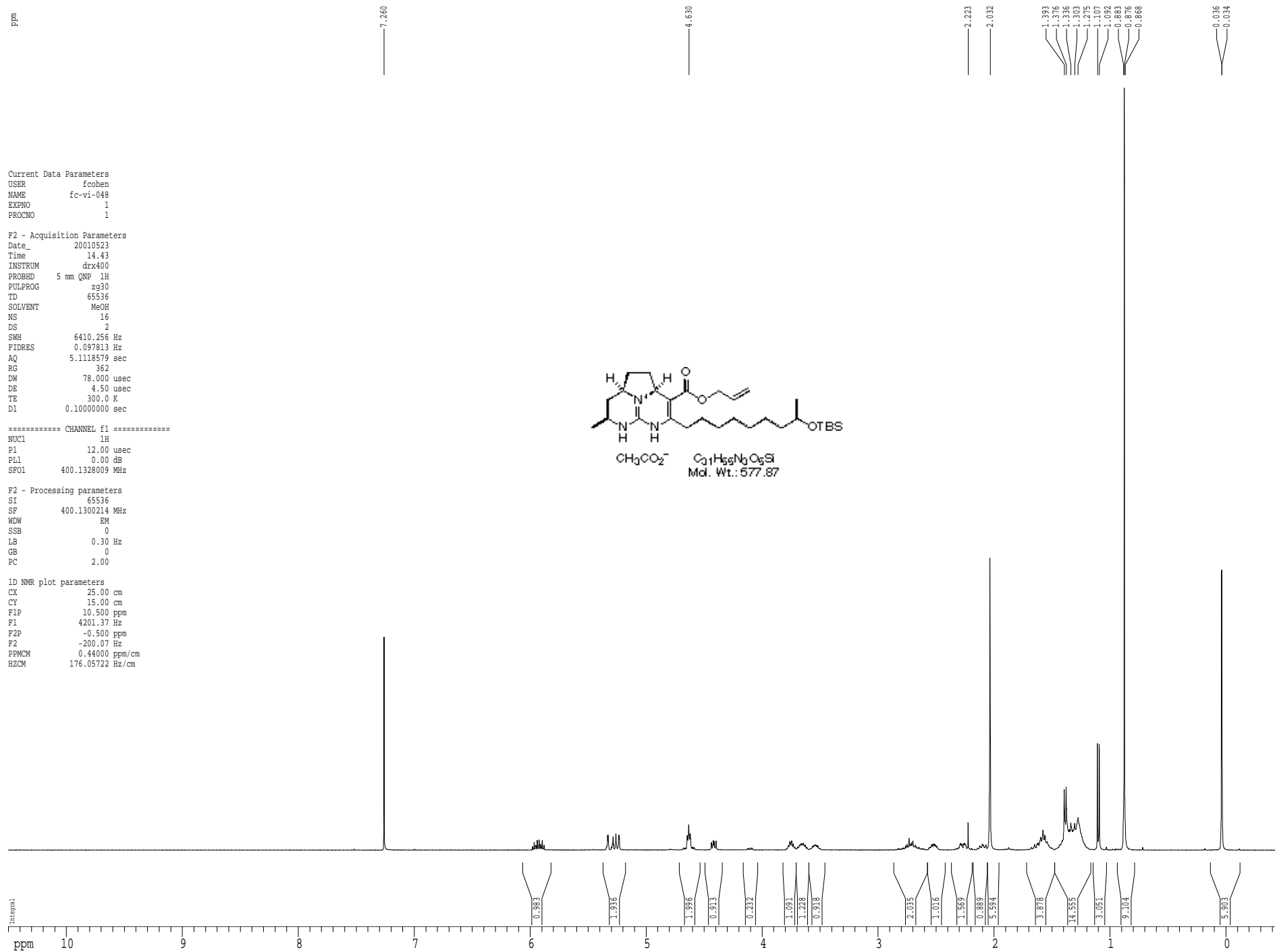


1H spectrum

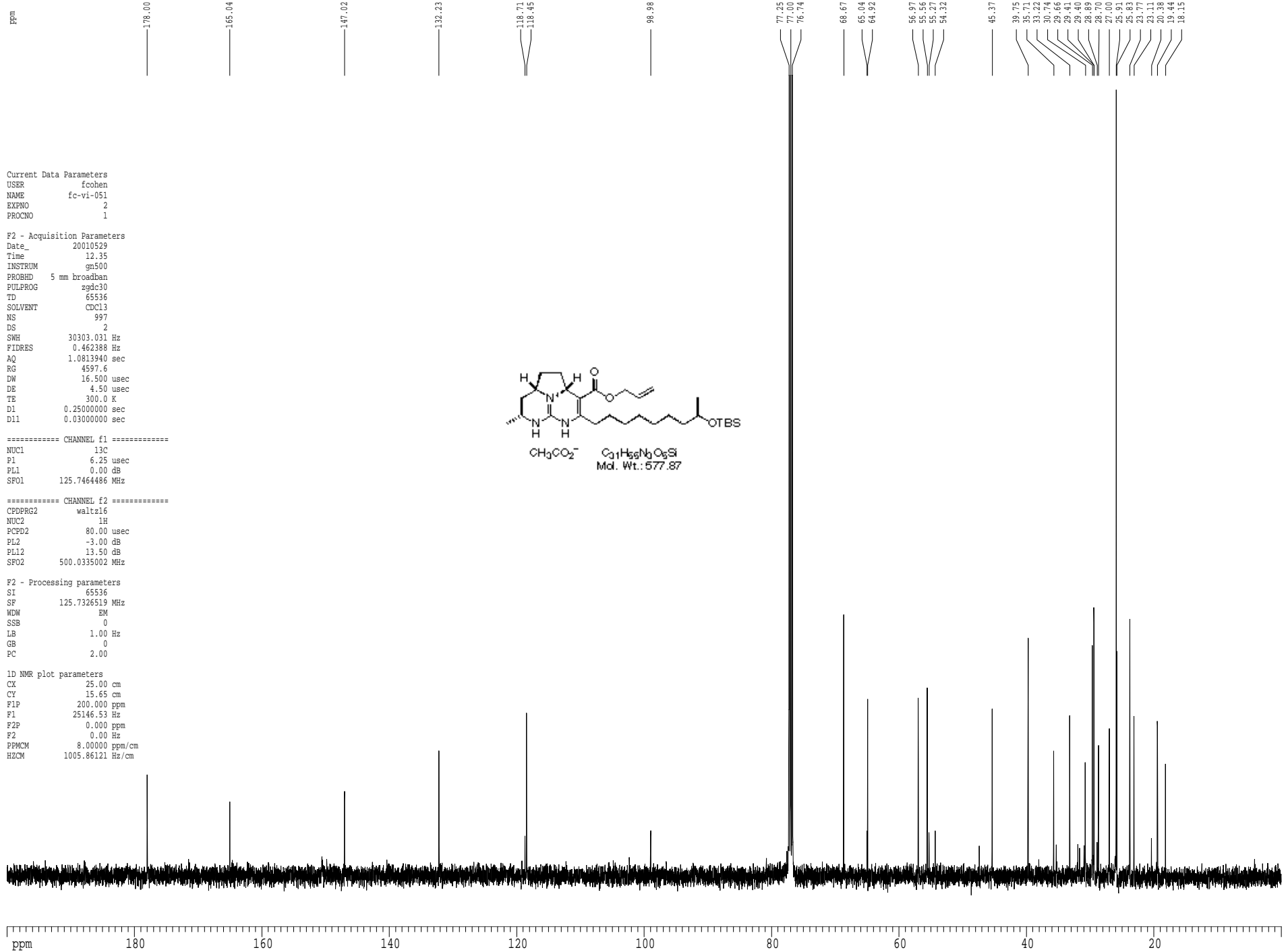


¹³C spectrum with ¹H decoupling



^1H spectrum

¹³C spectrum with 1H decoupling



Current Data Parameters
 USER fcohen
 NAME fc-vi-051
 EXPNO 2
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20010529
 Time 12.35
 INSTRUM gn500
 PROBHD 5 mm broadband
 PULPROG zgdc30
 TD 65536
 SOLVENT CDCl3
 NS 997
 DS 2
 SWH 30303.031 Hz
 FIDRES 0.462388 Hz
 AQ 1.0813940 sec
 RG 4597.6
 DW 16.500 usec
 DE 4.50 usec
 TE 300.0 K
 D1 0.25000000 sec
 D11 0.03000000 sec

===== CHANNEL f1 =====
 NUC1 13C
 P1 6.25 usec
 PL1 0.00 dB
 SFO1 125.7464486 MHz

===== CHANNEL f2 =====
 CPDPRG2 waltz16
 NUC2 1H
 PCPD2 80.00 usec
 PL2 -3.00 dB
 PL12 13.50 dB
 SFO2 500.0335002 MHz

F2 - Processing parameters
 SI 65536
 SF 125.7326519 MHz
 WDM EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 2.00

1D NMR plot parameters
 CX 25.00 cm
 CY 15.65 cm
 FID 200.000 ppm
 F1 25146.53 Hz
 F2P 0.000 ppm
 F2 0.00 Hz
 PPMCM 8.00000 ppm/cm
 HZCM 1005.86121 Hz/cm

¹H spectrum

ppm

Current Data Parameters
 USER fcohen
 NAME fc-vi-051
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20010529
 Time 12.11
 INSTRUM gn500
 PROBHD 5 mm broadband
 PULPROG zg30
 TD 65536
 SOLVENT CDCl3
 NS 8
 DS 2
 SWH 8012.820 Hz
 FIDRES 0.122266 Hz
 AQ 4.0894966 sec
 RG 203.2
 DW 62.400 usec
 DE 6.00 usec
 TE 300.0 K
 D1 0.10000000 sec

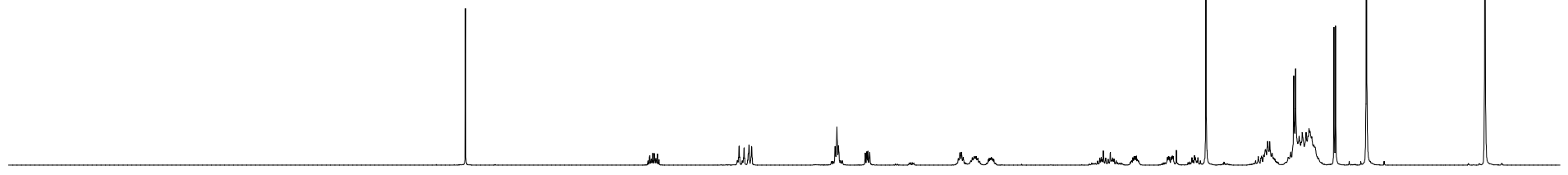
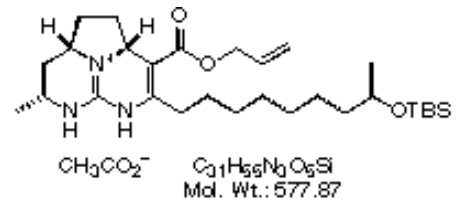
===== CHANNEL f1 =====
 NUC1 ¹H
 P1 12.00 usec
 PL1 -3.00 dB
 SFO1 500.0335002 MHz

F2 - Processing parameters
 SI 32768
 SF 500.0300260 MHz
 WDW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 4.00

1D NMR plot parameters
 CX 25.00 cm
 CY 15.00 cm
 F1P 10.500 ppm
 F1 5250.32 Hz
 F2P -0.500 ppm
 F2 -250.02 Hz
 PPMCM 0.44000 ppm/cm
 HZCM 220.01321 Hz/cm

7.260

5.321
5.318
5.286
5.284
5.251
5.249
5.231
4.638
4.636
4.629
4.626
4.624
4.617
4.615
4.425
4.414
4.406
4.394
3.753
3.741
2.736
2.686
2.218
2.009
1.587
1.571
1.571
1.566
1.407
1.387
1.382
1.374
1.370
1.349
1.326
1.300
1.285
1.277
1.271
1.258
1.244
1.101
1.089
1.077
0.871
0.866
0.032
0.030



Integral

ppm

10 9 8 7 6 5 4 3 2 1 0

0.902
1.830
1.912
0.831
1.042
1.200
0.823
1.921
0.965
1.298
0.992
4.213
3.838
14.531
3.001
9.056
5.914

¹³C spectrum with 1H decoupling

ppm

151.06

```

Current Data Parameters
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NAME          fc-vi-052
EXPNO         3
PROCNO        1

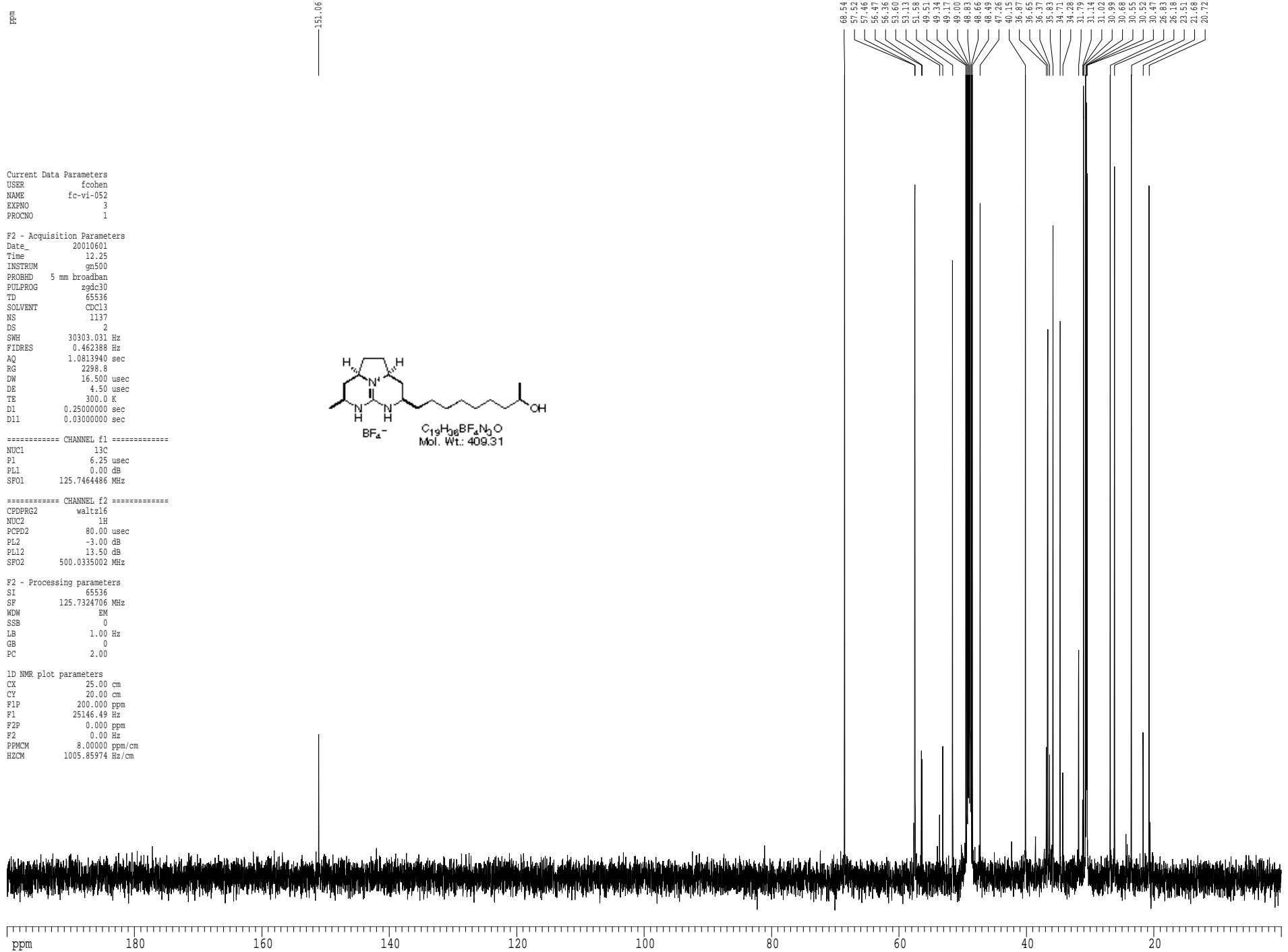
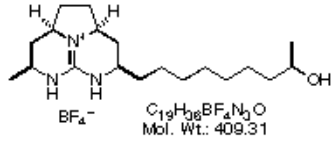
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Date_         20010601
Time          12.25
INSTRUM       gn500
PROBHD        5 mm broadband
PULPROG       zgdc30
TD            65536
SOLVENT       CDCl3
NS            1137
DS            2
SWH           30303.031 Hz
FIDRES        0.462388 Hz
AQ            1.0813940 sec
RG            2298.8
DW            16.500 usec
DE            4.50 usec
TE            300.0 K
D1            0.25000000 sec
D11           0.03000000 sec

===== CHANNEL f1 =====
NUC1          13C
P1            6.25 usec
PL1           0.00 dB
SFO1         125.7464486 MHz

===== CHANNEL f2 =====
CPDPRG2       waltz16
NUC2          1H
PCPD2         80.00 usec
PL2           -3.00 dB
PL12          13.50 dB
SFO2         500.0335002 MHz

F2 - Processing parameters
SI            65536
SF           125.7324706 MHz
WDM           EM
SSB           0
LB            1.00 Hz
GB            0
PC            2.00

1D NMR plot parameters
CX            25.00 cm
CY            20.00 cm
FIP           200.000 ppm
F1            25146.49 Hz
F2P           0.000 ppm
F2            0.00 Hz
PPMCM         8.00000 ppm/cm
HZCM          1005.85974 Hz/cm
    
```



ppm

180

160

140

120

100

80

60

40

20

1H spectrum

ppm

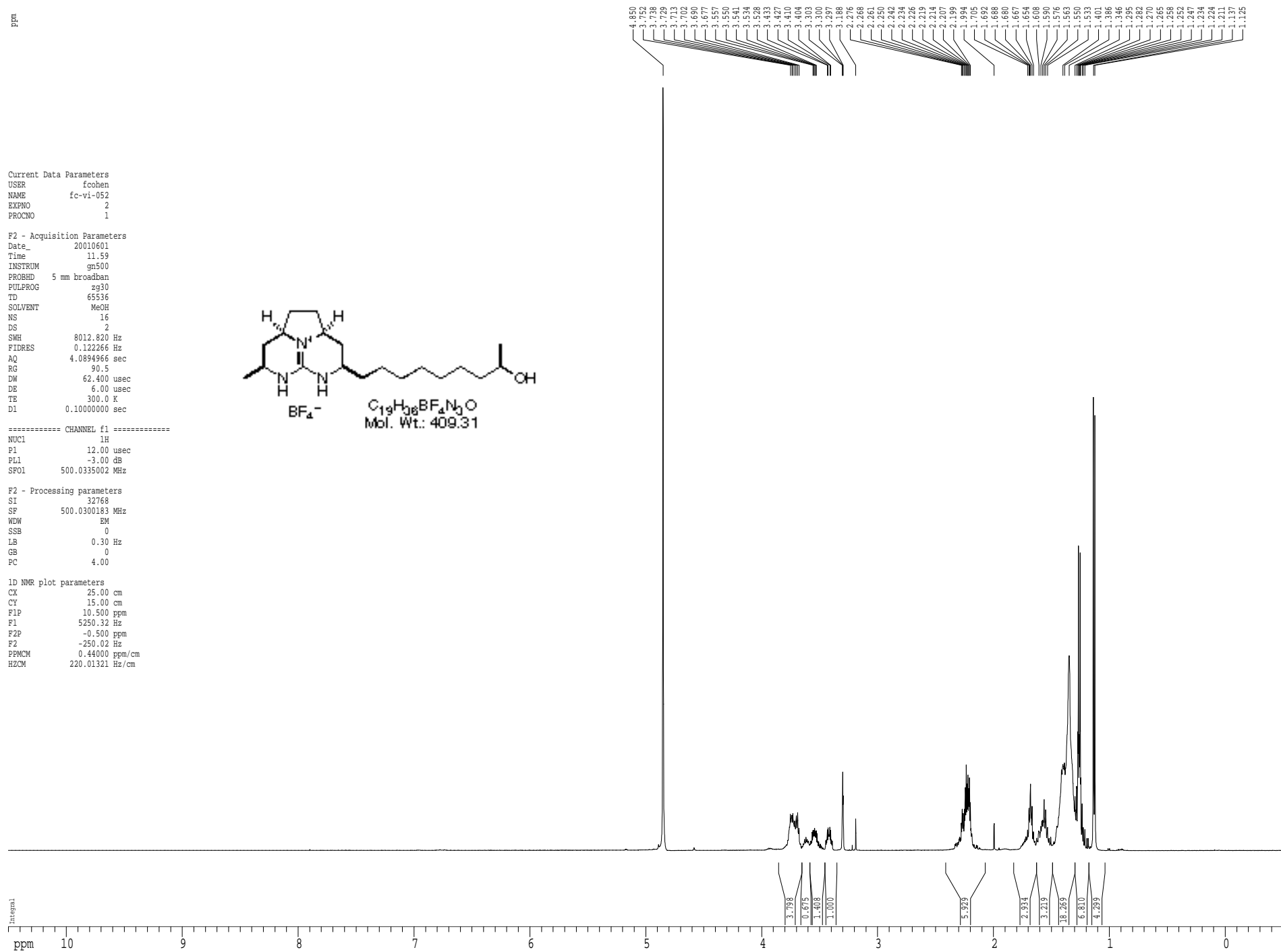
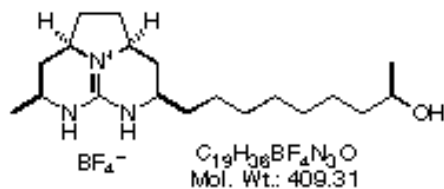
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 NAME fc-vi-052
 EXPNO 2
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20010601
 Time 11.59
 INSTRUM gn500
 PROBHD 5 mm broadban
 PULPROG zg30
 TD 65536
 SOLVENT MeOH
 NS 16
 DS 2
 SWH 8012.820 Hz
 FIDRES 0.122266 Hz
 AQ 4.0894966 sec
 RG 90.5
 DW 62.400 usec
 DE 6.00 usec
 TE 300.0 K
 D1 0.10000000 sec

===== CHANNEL f1 =====
 NUC1 1H
 P1 12.00 usec
 PL1 -3.00 dB
 SFO1 500.0335002 MHz

F2 - Processing parameters
 SI 32768
 SF 500.0300183 MHz
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 SSB 0
 LB 0.30 Hz
 GB 0
 PC 4.00

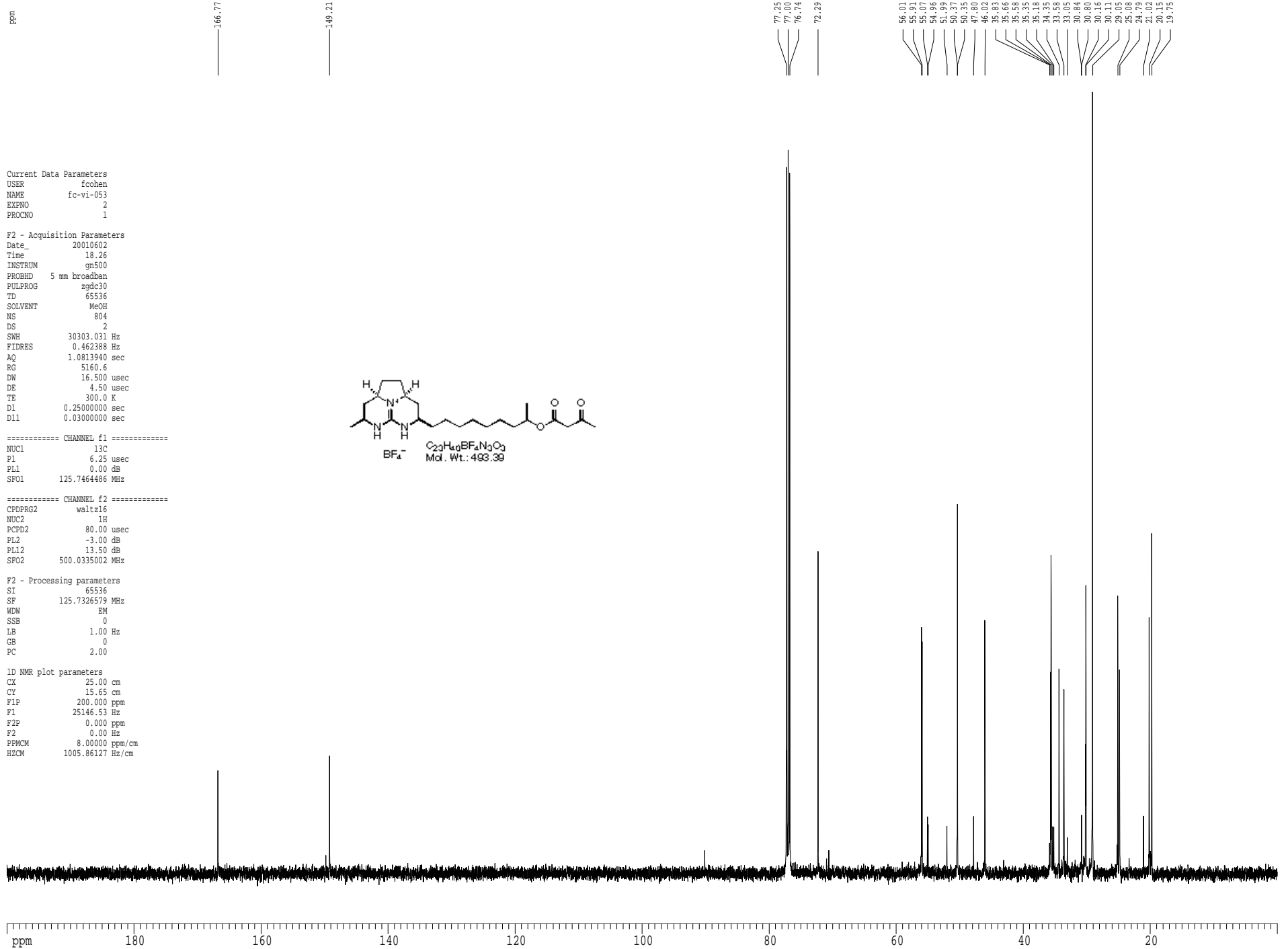
1D NMR plot parameters
 CX 25.00 cm
 CY 15.00 cm
 F1P 10.500 ppm
 F1 5250.32 Hz
 F2P -0.500 ppm
 F2 -250.02 Hz
 PPMCM 0.44000 ppm/cm
 HZCM 220.01321 Hz/cm



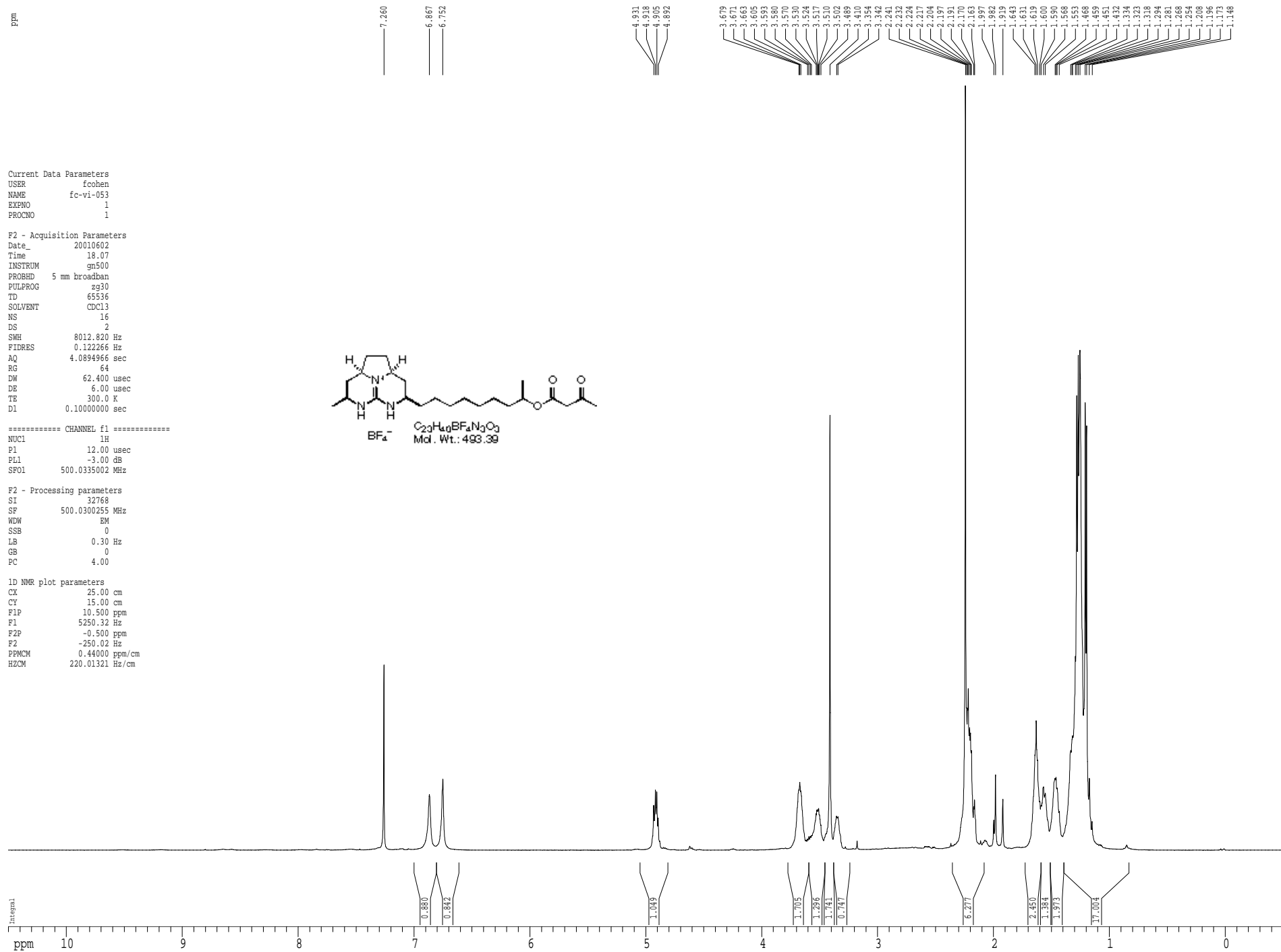
Integral

ppm

¹³C spectrum with ¹H decoupling



1H spectrum



¹³C spectrum with ¹H decoupling

ppm

151.07

Current Data Parameters
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NAME fc-vi-054
EXPNO 2
PROCNO 1

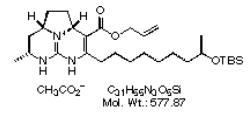
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Date_ 20010604
Time 15.25
INSTRUM gn500
PROBHD 5 mm broadband
PULPROG zgdc30
TD 65536
SOLVENT CDCl3
NS 910
DS 2
SWH 30303.031 Hz
FIDRES 0.462388 Hz
AQ 1.0813940 sec
RG 4597.6
DW 16.500 usec
DE 4.50 usec
TE 300.0 K
D1 0.25000000 sec
D11 0.03000000 sec

==== CHANNEL f1 =====
NUC1 13C
P1 6.25 usec
PL1 0.00 dB
SFO1 125.7464486 MHz

==== CHANNEL f2 =====
CPDPRG2 waltz16
NUC2 1H
PCPD2 80.00 usec
PL2 -3.00 dB
PL12 13.50 dB
SFO2 500.0335002 MHz

F2 - Processing parameters
SI 65536
SF 125.7324692 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 2.00

1D NMR plot parameters
CX 25.00 cm
CY 15.65 cm
F1P 200.000 ppm
F1 25146.49 Hz
F2P 0.000 ppm
F2 0.00 Hz
PPMCM 8.00000 ppm/cm
HZCM 1005.85974 Hz/cm



68.54
57.52
57.47
56.48
56.37
51.18
51.13
50.15
49.31
49.17
49.10
48.83
48.66
48.49
47.27
40.15
36.86
36.66
36.38
35.83
34.71
34.29
31.79
31.02
30.99
30.67
30.53
30.46
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28.51
23.51
21.67
20.72



ppm 180 160 140 120 100 80 60 40 20

1H spectrum

ppm

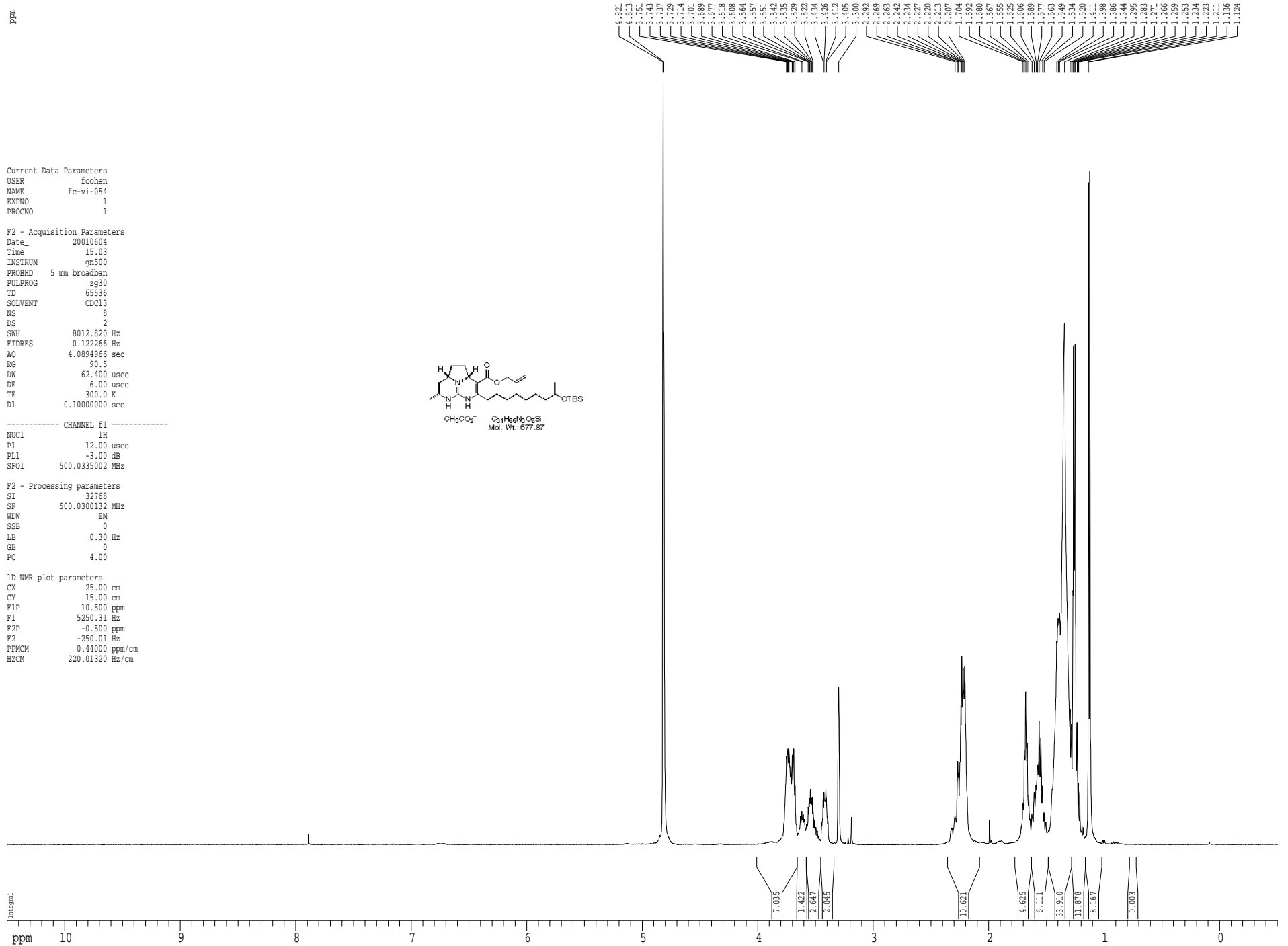
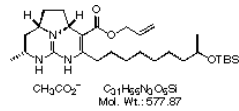
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USER fcoben
NAME fc-vi-054
EXPNO 1
PROCNO 1

F2 - Acquisition Parameters
Date_ 20010604
Time 15.03
INSTRUM gn500
PROBHD 5 mm broadband
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 8
DS 2
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894966 sec
RG 90.5
DW 62.400 usec
DE 6.00 usec
TE 300.0 K
D1 0.10000000 sec

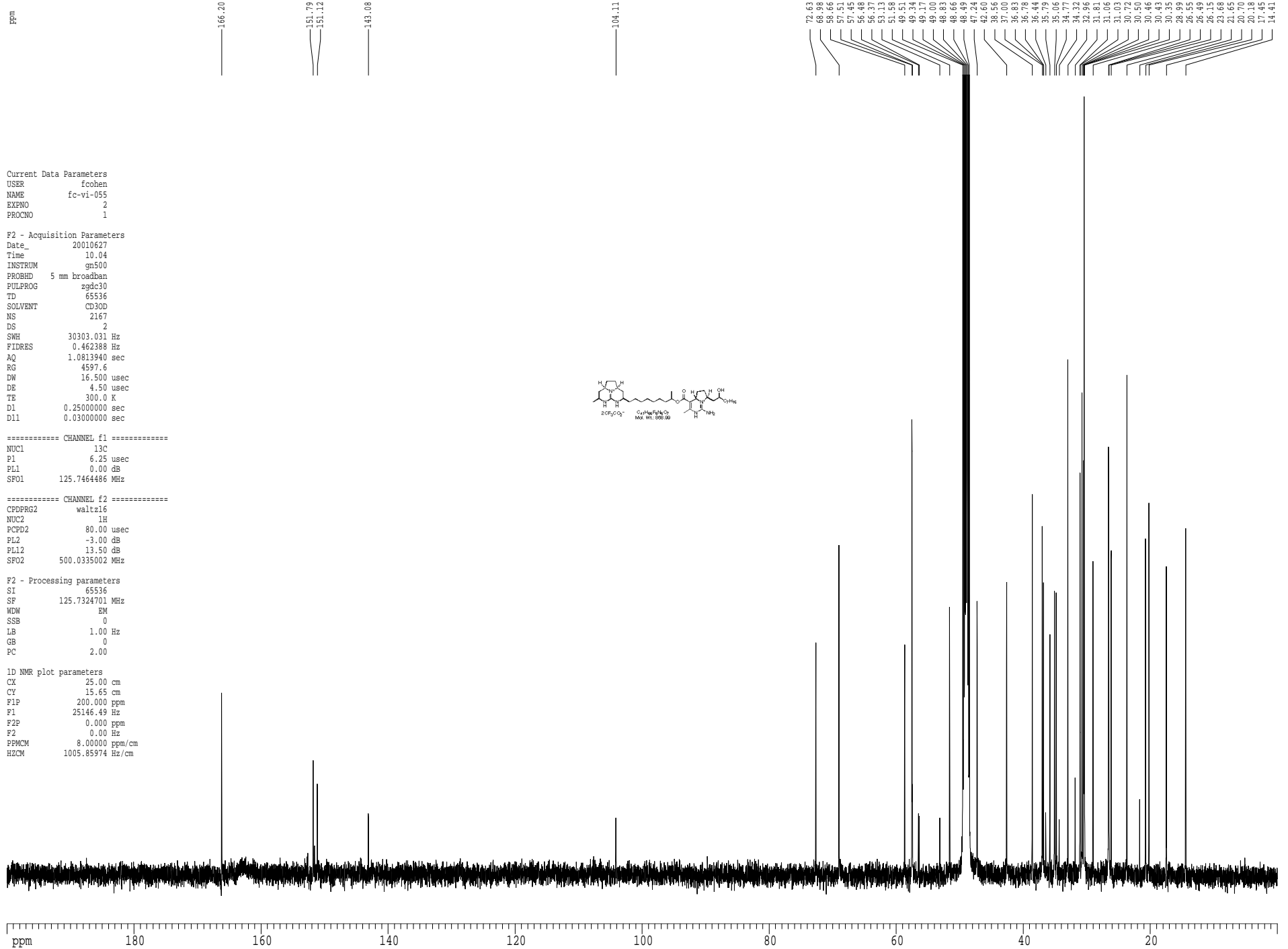
===== CHANNEL f1 =====
NUC1 1H
P1 12.00 usec
PL1 -3.00 dB
SFO1 500.0335002 MHz

F2 - Processing parameters
SI 32768
SF 500.0300132 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 4.00

1D NMR plot parameters
CX 25.00 cm
CY 15.00 cm
F1P 10.500 ppm
F1 5250.31 Hz
F2P -0.500 ppm
F2 -250.01 Hz
PPMCM 0.44000 ppm/cm
HZCM 220.01320 Hz/cm



¹³C spectrum with ¹H decoupling



Current Data Parameters
USER fcoben
NAME fc-vi-055
EXPNO 2
PROCNO 1

F2 - Acquisition Parameters
Date_ 20010627
Time 10.04
INSTRUM gn500
PROBHD 5 mm broadband
PULPROG zgdc30
TD 65536
SOLVENT CD3OD
NS 2167
DS 2
SWH 30303.031 Hz
FIDRES 0.462388 Hz
AQ 1.0813940 sec
RG 4597.6
DW 16.500 usec
DE 4.500 usec
TE 300.0 K
D1 0.25000000 sec
D11 0.03000000 sec

==== CHANNEL f1 =====
NUC1 13C
P1 6.25 usec
PL1 0.00 dB
SFO1 125.7464486 MHz

==== CHANNEL f2 =====
CPDPRG2 waltz16
NUC2 1H
PCPD2 80.00 usec
PL2 -3.00 dB
PL12 13.50 dB
SFO2 500.0335002 MHz

F2 - Processing parameters
SI 65536
SF 125.7324701 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 2.00

1D NMR plot parameters
CX 25.00 cm
CY 15.65 cm
FID 200.000 ppm
F1 25146.49 Hz
F2P 0.000 ppm
F2 0.00 Hz
PPMCM 8.00000 ppm/cm
HZCM 1005.85974 Hz/cm

¹H spectrum

ppm

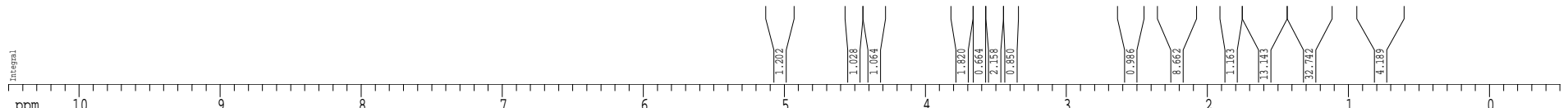
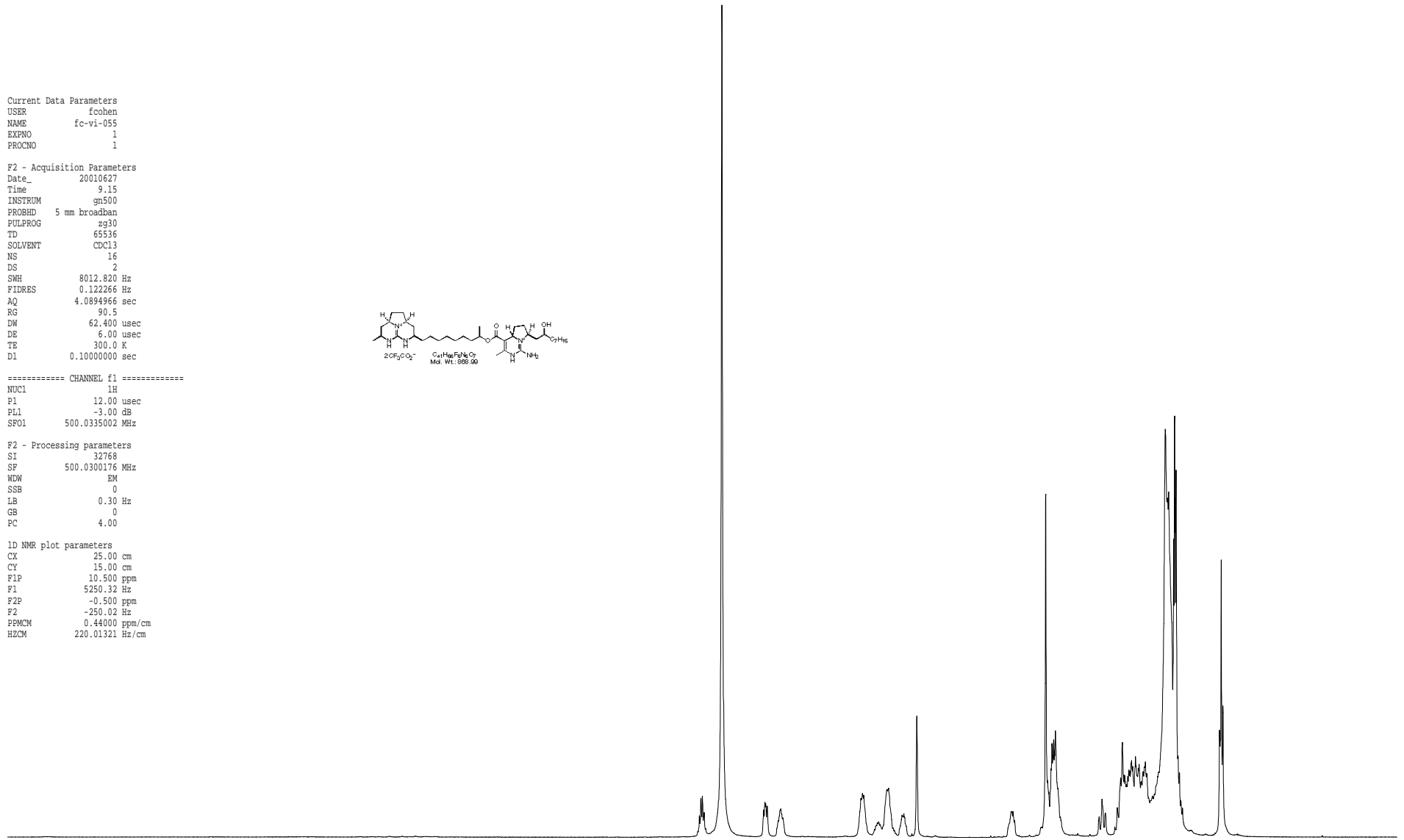
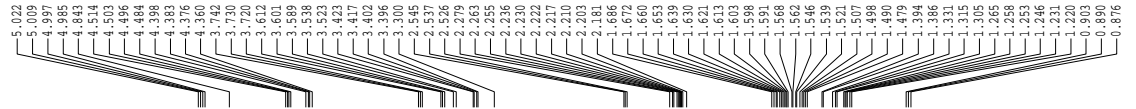
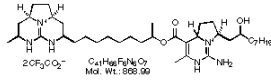
Current Data Parameters
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NAME fc-vi-055
EXPNO 1
PROCNO 1

F2 - Acquisition Parameters
Date_ 20010627
Time 9.15
INSTRUM gn500
PROBHD 5 mm broadband
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894966 sec
RG 90.5
DW 62.400 usec
DE 6.000 usec
TE 300.0 K
D1 0.10000000 sec

===== CHANNEL f1 =====
NUC1 1H
P1 12.00 usec
PL1 -3.00 dB
SFO1 500.0335002 MHz

F2 - Processing parameters
SI 32768
SF 500.0300176 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 4.00

1D NMR plot parameters
CX 25.00 cm
CY 15.00 cm
F1P 10.500 ppm
F1 5250.32 Hz
F2P -0.500 ppm
F2 -250.02 Hz
PPMCM 0.44000 ppm/cm
HZCM 220.01321 Hz/cm



¹³C spectrum with ¹H decoupling

ppm

166.75

149.22

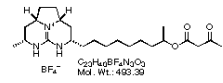
77.26
77.20
77.00
76.75
72.25

55.98
55.87
50.34
50.29
45.97

35.65
35.56
34.32
33.55
30.14
30.09
30.07
29.03
25.06
24.83
24.76
20.13
19.73

Current Data Parameters
USER fcohen
NAME fc-vi-056
EXPNO 2
PROCNO 1

F2 - Acquisition Parameters
Date_ 20010607
Time 11.54
INSTRUM gn500
PROBHD 5 mm broadband
PULPROG zgdc30
TD 65536
SOLVENT CDCl3
NS 1000
DS 2
SWH 30303.031 Hz
FIDRES 0.462388 Hz
AQ 1.0813940 sec
RG 4597.6
DW 16.500 usec
DE 4.50 usec
TE 300.0 K
D1 0.25000000 sec
D11 0.03000000 sec

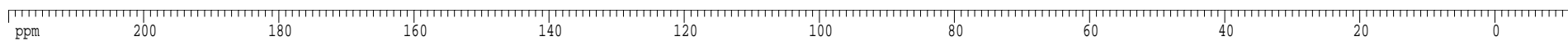


==== CHANNEL f1 =====
NUC1 13C
P1 6.25 usec
PL1 0.00 dB
SFO1 125.7464486 MHz

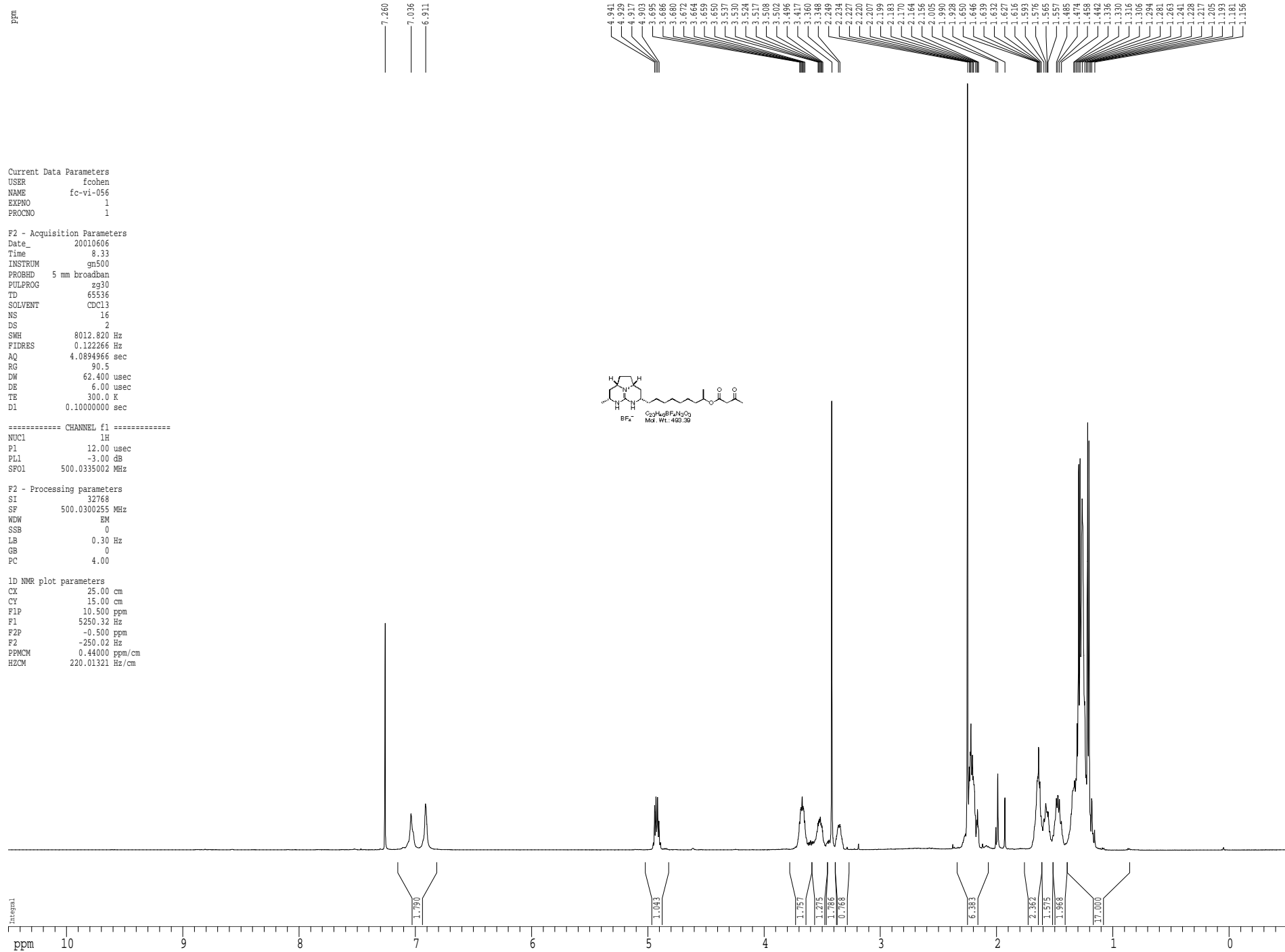
==== CHANNEL f2 =====
CPDPRG2 waltz16
NUC2 1H
PCPD2 80.00 usec
PL2 -3.00 dB
PL12 13.50 dB
SFO2 500.0335002 MHz

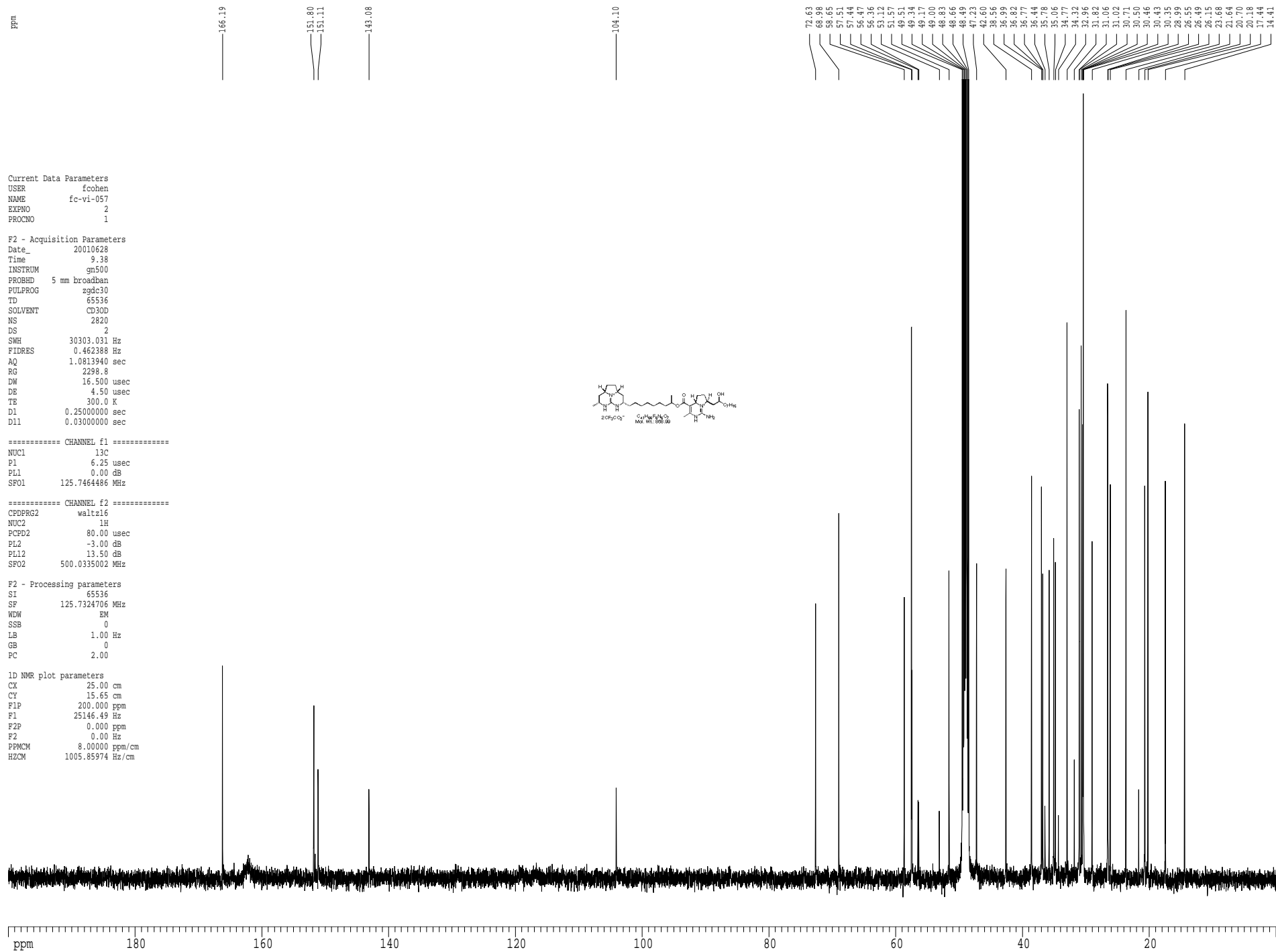
F2 - Processing parameters
SI 65536
SF 125.7326598 MHz
WDM EM
SSB 0
LB 1.00 Hz
GB 0
PC 2.00

1D NMR plot parameters
CX 25.00 cm
CY 15.65 cm
FID 220.000 ppm
F1 27661.19 Hz
F2P -10.838 ppm
F2 -1362.72 Hz
PPMCM 9.23353 ppm/cm
HZCM 1160.95605 Hz/cm

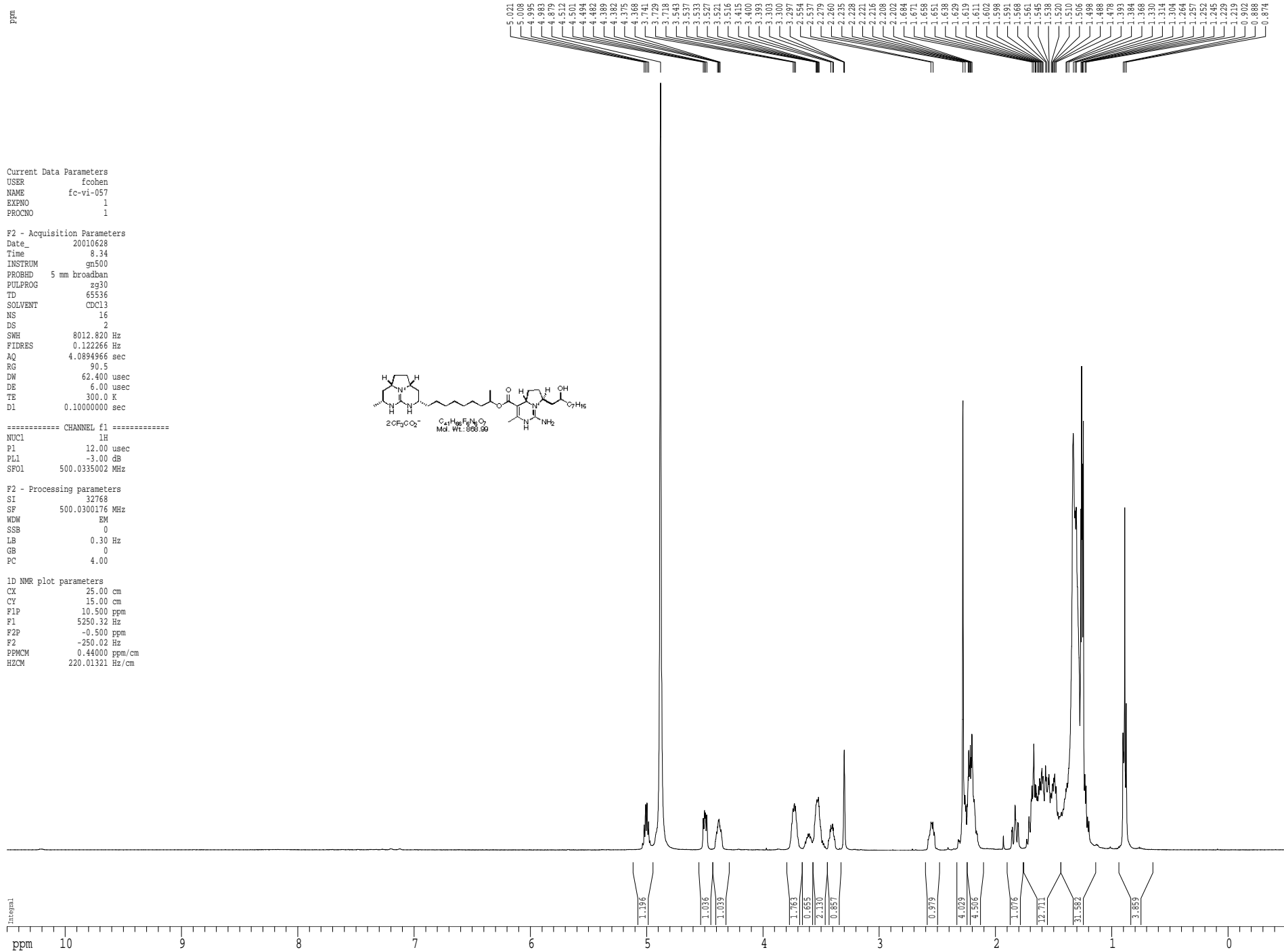


1H spectrum

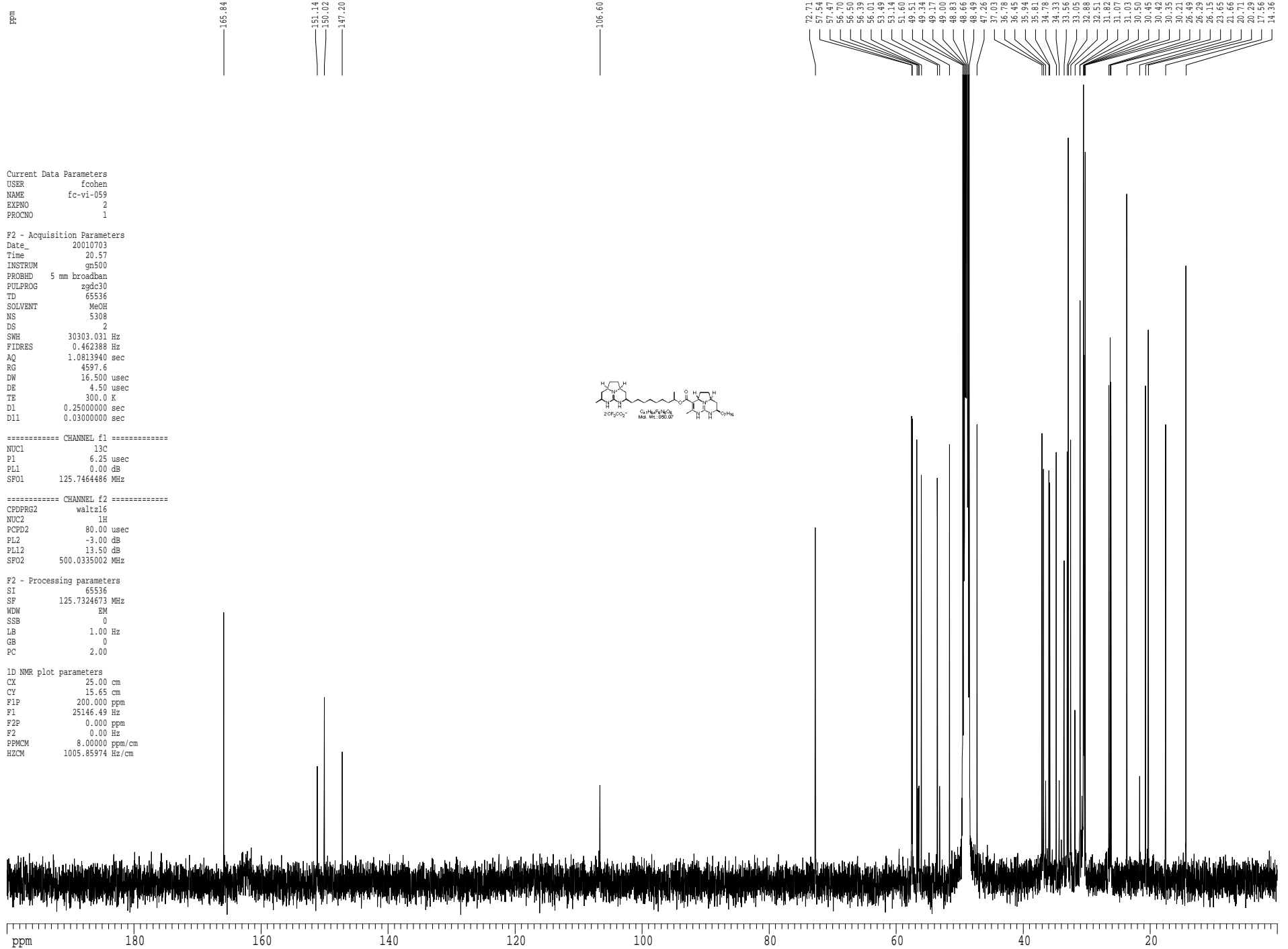


¹³C spectrum with ¹H decoupling

1H spectrum



¹³C spectrum with ¹H decoupling



Current Data Parameters
 USER fcoben
 NAME fc-vi-059
 EXPNO 2
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20010703
 Time 20.57
 INSTRUM gn500
 PROBHD 5 mm broadband
 PULPROG zgdc30
 TD 65536
 SOLVENT MeOH
 NS 5308
 DS 2
 SWH 30303.031 Hz
 FIDRES 0.462388 Hz
 AQ 1.0813940 sec
 RG 4597.6
 DW 16.500 usec
 DE 4.50 usec
 TE 300.0 K
 D1 0.25000000 sec
 D11 0.03000000 sec

==== CHANNEL f1 =====
 NUC1 13C
 P1 6.25 usec
 PL1 0.00 dB
 SFO1 125.7464486 MHz

==== CHANNEL f2 =====
 CPDPRG2 waltz16
 NUC2 1H
 PCPD2 80.00 usec
 PL2 -3.00 dB
 PL12 13.50 dB
 SFO2 500.0335002 MHz

F2 - Processing parameters
 SI 65536
 SF 125.7324673 MHz
 WDM EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 2.00

1D NMR plot parameters
 CX 25.00 cm
 CY 15.65 cm
 FID 200.000 ppm
 F1 25146.49 Hz
 F2P 0.000 ppm
 F2 0.00 Hz
 PPMCM 8.00000 ppm/cm
 HZCM 1005.85974 Hz/cm

1H spectrum

ppm

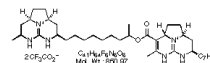
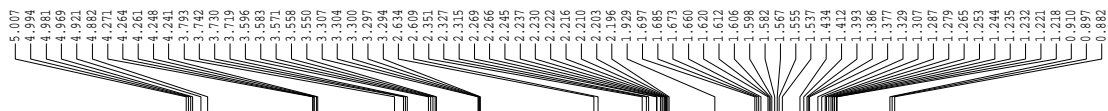
Current Data Parameters
 USER fcobhen
 NAME fc-vi-059
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20010703
 Time 10.07
 INSTRUM gn500
 PROBHD 5 mm broadband
 PULPROG zg30
 TD 65536
 SOLVENT MeOH
 NS 64
 DS 2
 SWH 8012.820 Hz
 FIDRES 0.122266 Hz
 AQ 4.0894966 sec
 RG 203.2
 DW 62.400 usec
 DE 6.00 usec
 TE 300.0 K
 D1 0.10000000 sec

===== CHANNEL f1 =====
 NUC1 1H
 P1 12.00 usec
 PL1 -3.00 dB
 SFO1 500.0335002 MHz

F2 - Processing parameters
 SI 32768
 SF 500.0300129 MHz
 WDW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 4.00

1D NMR plot parameters
 CX 25.00 cm
 CY 15.00 cm
 F1P 10.500 ppm
 F1 5250.31 Hz
 F2P -0.500 ppm
 F2 -250.01 Hz
 PPMCM 0.44000 ppm/cm
 HZCM 220.01320 Hz/cm



Integral

ppm

10

9

8

7

6

5

4

3

2

1

0

0

1.156

0.981

2.933

2.915

0.883

0.993

2.397

3.337

3.246

1.171

3.837

6.087

34.585

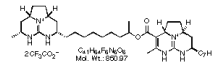
3.966

¹³C spectrum with ¹H decoupling



Current Data Parameters
 USER fcohen
 NAME fc-vi-062
 EXPNO 2
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20010704
 Time 9.45
 INSTRUM gn500
 PROBHD 5 mm broadband
 PULPROG zgdc30
 TD 65536
 SOLVENT MeOH
 NS 4652
 DS 2
 SWH 30303.031 Hz
 FIDRES 0.462388 Hz
 AQ 1.0813940 sec
 RG 4597.6
 DW 16.500 usec
 DE 4.50 usec
 TE 300.0 K
 D1 0.25000000 sec
 D11 0.03000000 sec

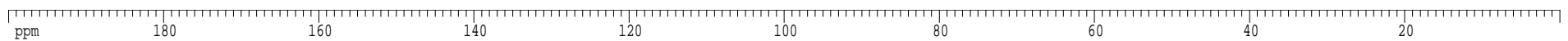


==== CHANNEL f1 =====
 NUC1 13C
 P1 6.25 usec
 PL1 0.00 dB
 SFO1 125.7464486 MHz

==== CHANNEL f2 =====
 CPDPRG2 waltz16
 NUC2 1H
 PCPD2 80.00 usec
 PL2 -3.00 dB
 PL12 13.50 dB
 SFO2 500.0335002 MHz

F2 - Processing parameters
 SI 65536
 SF 125.7324673 MHz
 WDM EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 2.00

1D NMR plot parameters
 CX 25.00 cm
 CY 15.65 cm
 FID 200.000 ppm
 F1 25146.49 Hz
 F2P 0.000 ppm
 F2 0.00 Hz
 PPMCM 8.00000 ppm/cm
 HZCM 1005.85974 Hz/cm



1H spectrum

ppm

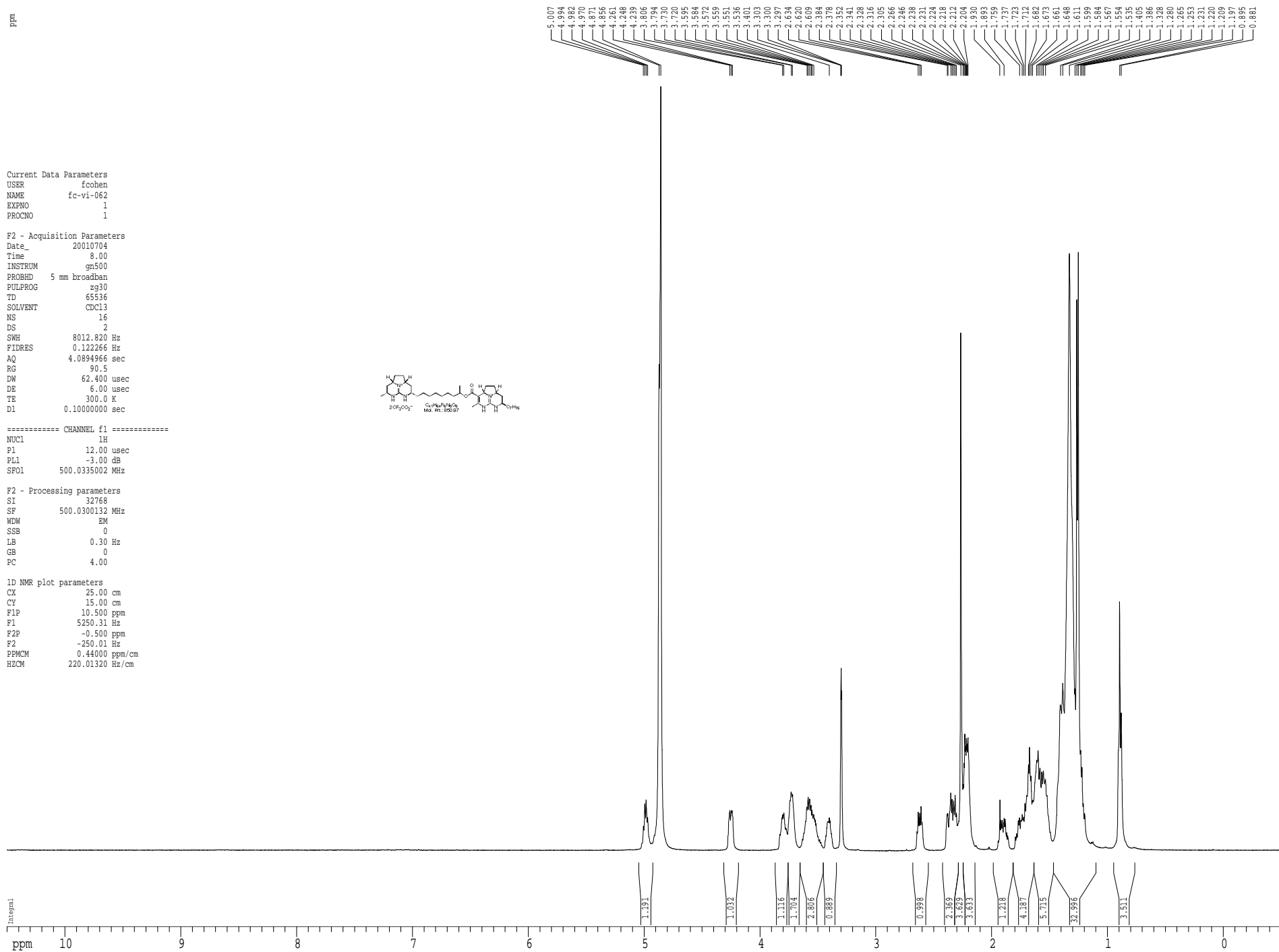
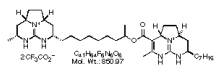
Current Data Parameters
 USER fcoben
 NAME fc-vi-062
 EXPNO 1
 PROCNO 1

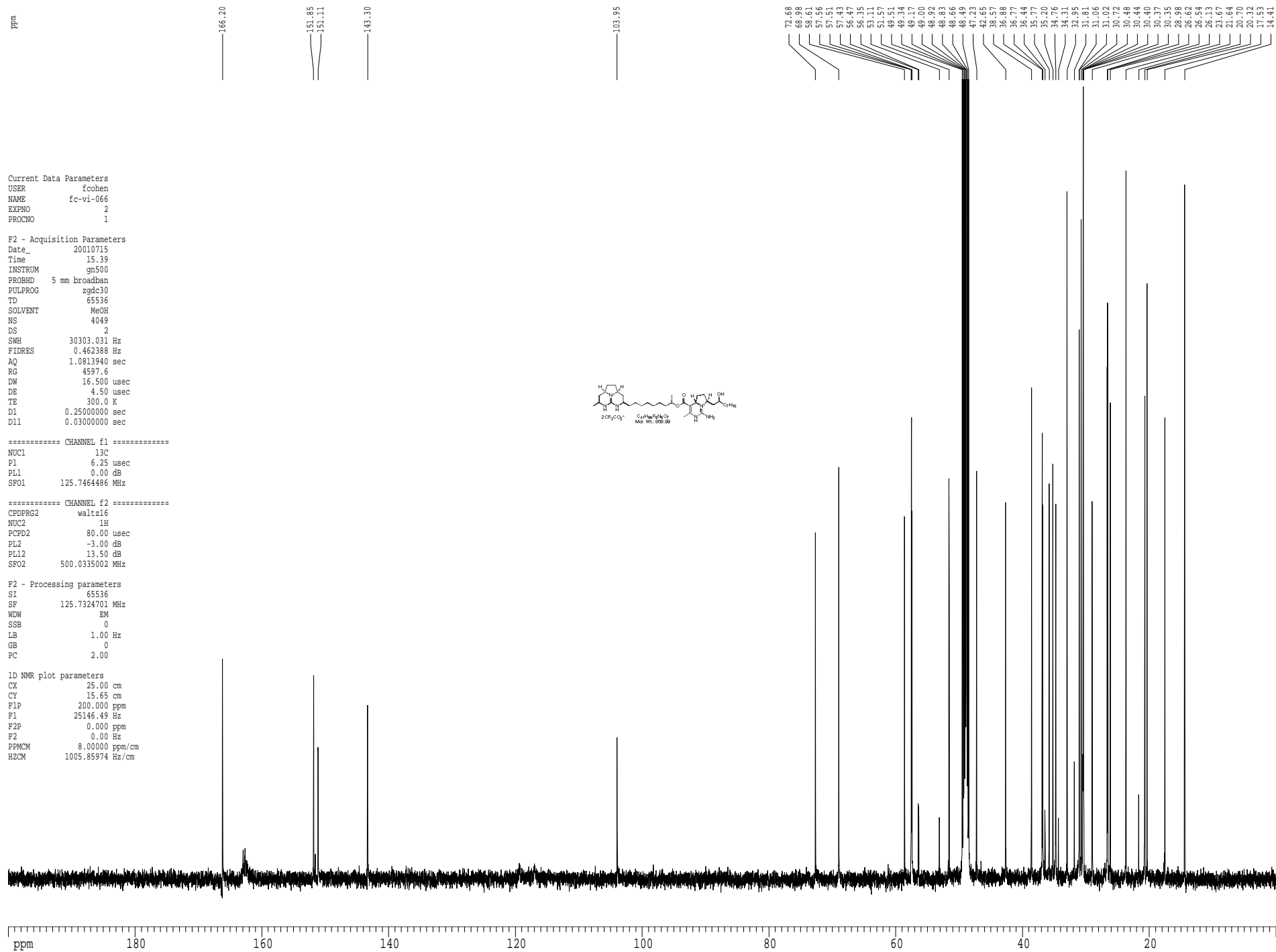
F2 - Acquisition Parameters
 Date_ 20010704
 Time 8.00
 INSTRUM gn500
 PROBHD 5 mm broadband
 PULPROG zg30
 TD 65536
 SOLVENT CDCl3
 NS 16
 DS 2
 SWH 8012.820 Hz
 FIDRES 0.122266 Hz
 AQ 4.0894966 sec
 RG 90.5
 DW 62.400 usec
 DE 6.000 usec
 TE 300.0 K
 D1 0.10000000 sec

===== CHANNEL f1 =====
 NUC1 1H
 P1 12.00 usec
 PL1 -3.00 dB
 SFO1 500.0335002 MHz

F2 - Processing parameters
 SI 32768
 SF 500.0300132 MHz
 WDW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 4.00

1D NMR plot parameters
 CX 25.00 cm
 CY 15.00 cm
 F1P 10.500 ppm
 F1 5250.31 Hz
 F2P -0.500 ppm
 F2 -250.01 Hz
 PPMCM 0.44000 ppm/cm
 HZCM 220.01320 Hz/cm



¹³C spectrum with ¹H decoupling

¹H spectrum

ppm

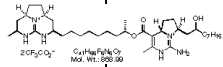
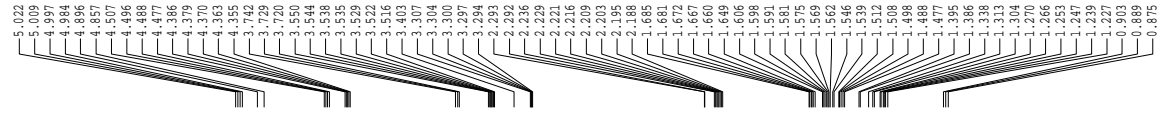
Current Data Parameters
USER fcohen
NAME fc-vi-066
EXPNO 1
PROCNO 1

F2 - Acquisition Parameters
Date_ 20010715
Time 14.08
INSTRUM gn500
PROBHD 5 mm broadband
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 8
DS 2
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894966 sec
RG 64
DW 62.400 usec
DE 6.00 usec
TE 300.0 K
D1 0.10000000 sec

===== CHANNEL f1 =====
NUC1 1H
P1 12.00 usec
PL1 -3.00 dB
SFO1 500.0335002 MHz

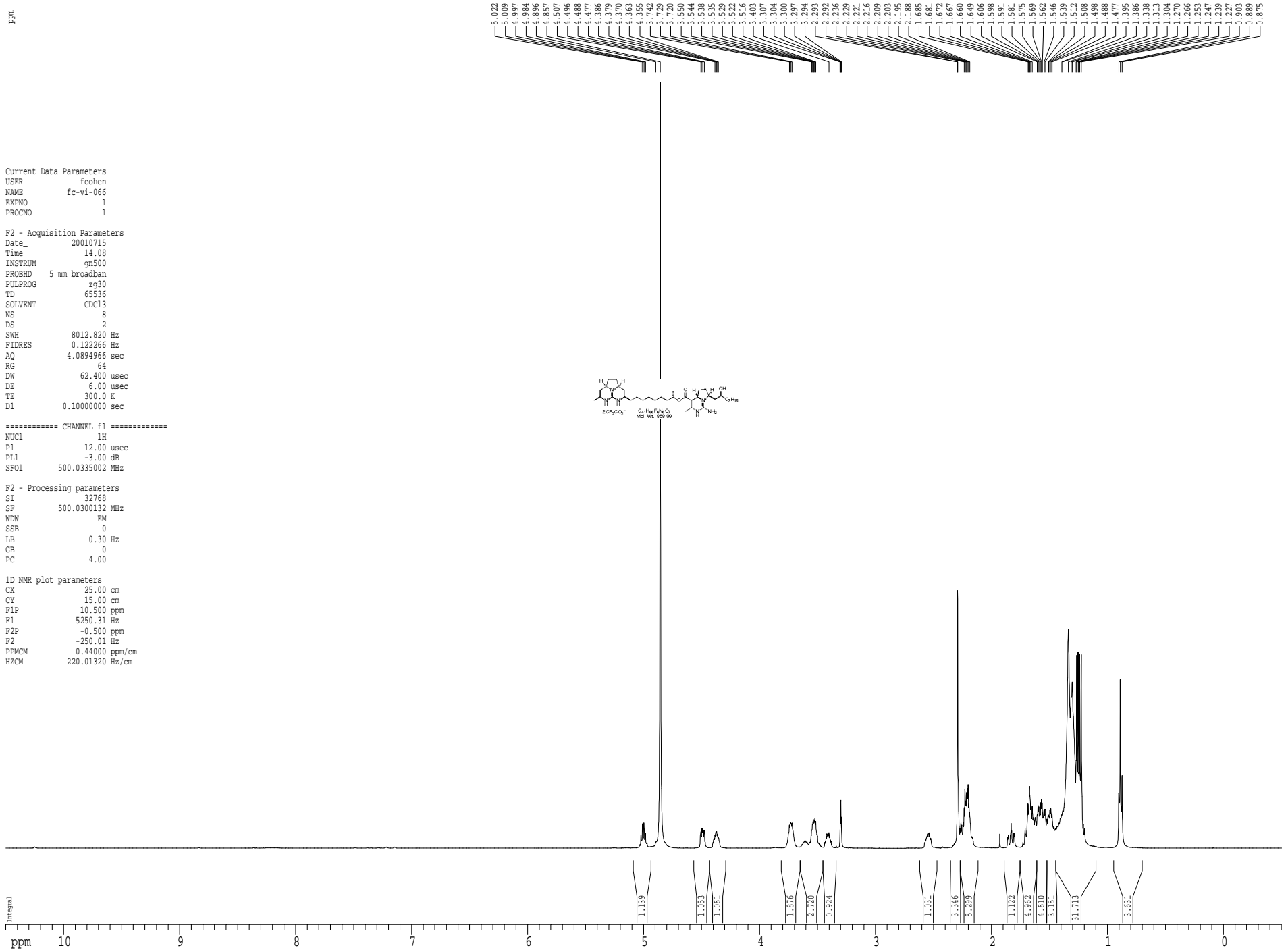
F2 - Processing parameters
SI 32768
SF 500.0300132 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 4.00

1D NMR plot parameters
CX 25.00 cm
CY 15.00 cm
F1P 10.500 ppm
F1 5250.31 Hz
F2P -0.500 ppm
F2 -250.01 Hz
PPMCM 0.44000 ppm/cm
HZCM 220.01320 Hz/cm



Integral

ppm

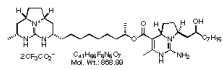


¹³C spectrum with ¹H decoupling



Current Data Parameters
USER fcohen
NAME fc-vi-069a
EXPNO 2
PROCNO 1

F2 - Acquisition Parameters
Date_ 20010718
Time 21.38
INSTRUM gn500
PROBHD 5 mm broadband
PULPROG zgdc30
TD 65536
SOLVENT MeOH
NS 3397
DS 2
SWH 30303.031 Hz
FIDRES 0.462388 Hz
AQ 1.0813940 sec
RG 2298.8
DW 16.500 usec
DE 4.50 usec
TE 300.0 K
D1 0.25000000 sec
D11 0.03000000 sec

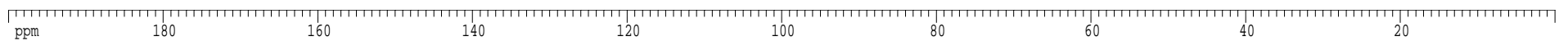


==== CHANNEL f1 =====
NUC1 13C
P1 6.25 usec
PL1 0.00 dB
SFO1 125.7464486 MHz

==== CHANNEL f2 =====
CPDPRG2 waltz16
NUC2 1H
PCPD2 80.00 usec
PL2 -3.00 dB
PL12 13.50 dB
SFO2 500.0335002 MHz

F2 - Processing parameters
SI 65536
SF 125.7324687 MHz
WDM EM
SSB 0
LB 1.00 Hz
GB 0
PC 2.00

1D NMR plot parameters
CX 25.00 cm
CY 15.65 cm
FIDP 200.000 ppm
F1 25146.49 Hz
F2P 0.000 ppm
F2 0.00 Hz
PPMCM 8.00000 ppm/cm
HZCM 1005.85974 Hz/cm



ppm

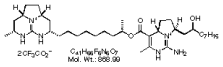
Current Data Parameters
 USER fcohen
 NAME fc-vi-069a
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20010718
 Time 7.49
 INSTRUM gn500
 PROBHD 5 mm broadband
 PULPROG zg30
 TD 65536
 SOLVENT MeOH
 NS 64
 DS 2
 SWH 8012.820 Hz
 FIDRES 0.122266 Hz
 AQ 4.0894966 sec
 RG 181
 DW 62.400 usec
 DE 6.000 usec
 TE 300.0 K
 D1 0.10000000 sec

===== CHANNEL f1 =====
 NUC1 1H
 P1 12.00 usec
 PL1 -3.00 dB
 SFO1 500.0335002 MHz

F2 - Processing parameters
 SI 32768
 SF 500.0300134 MHz
 WDW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 4.00

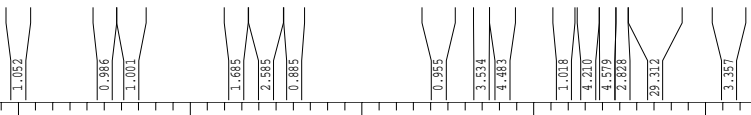
1D NMR plot parameters
 CX 25.00 cm
 CY 15.00 cm
 F1P 10.500 ppm
 F1 5250.31 Hz
 F2P -0.500 ppm
 F2 -250.01 Hz
 PPMCM 0.44000 ppm/cm
 HZCM 220.01320 Hz/cm



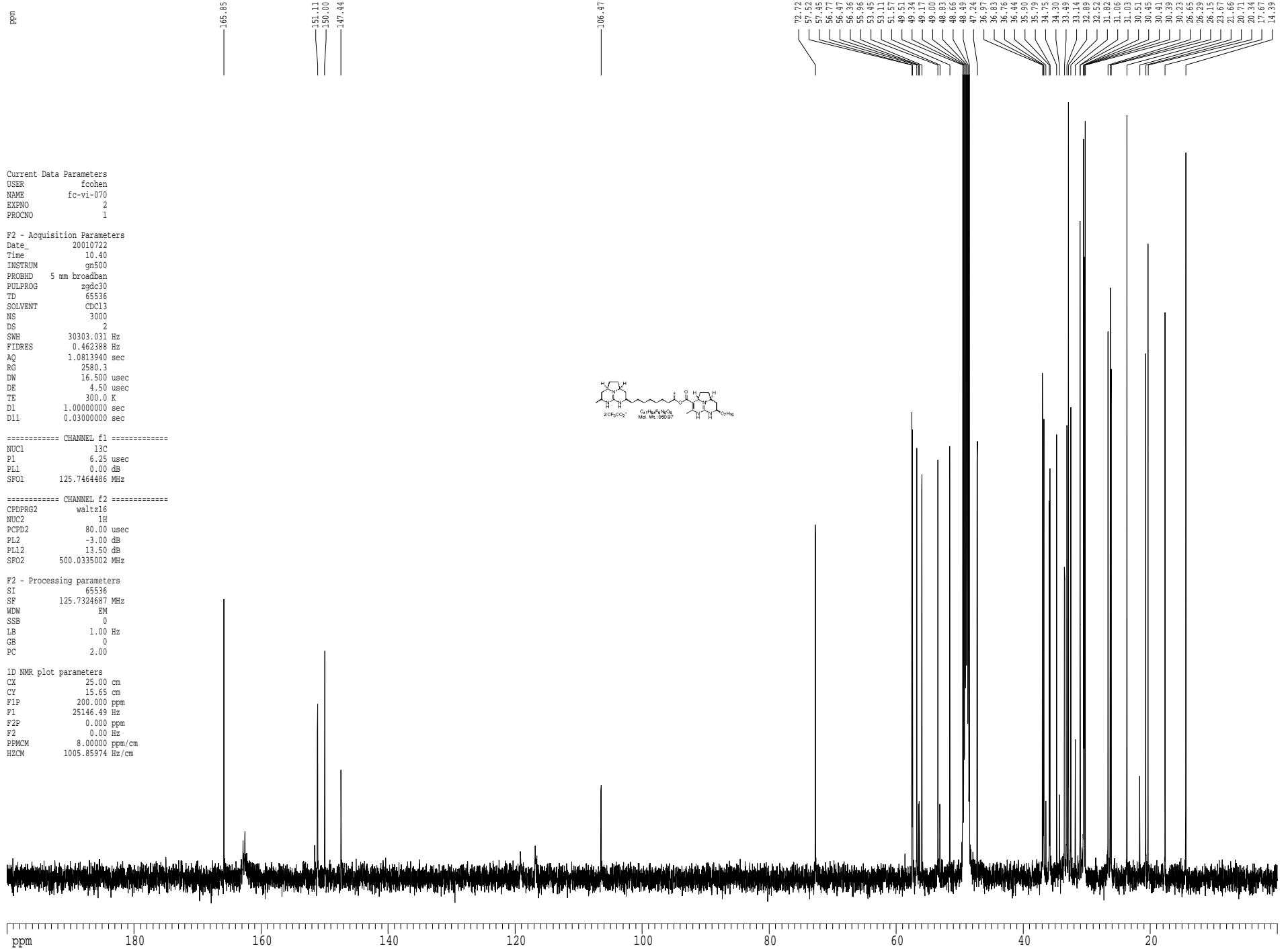
5.026
5.013
5.000
4.988
4.917
4.877
4.515
4.504
4.497
4.484
4.386
4.379
4.371
4.364
4.355
3.745
3.733
3.722
3.537
3.530
3.524
3.517
3.513
3.495
3.307
3.303
3.300
3.297
3.294
2.537
2.290
2.288
2.278
2.271
2.269
2.243
2.234
2.227
2.220
2.216
2.208
2.193
2.187
1.928
1.688
1.686
1.682
1.672
1.664
1.652
1.601
1.594
1.587
1.570
1.564
1.558
1.542
1.512
1.498
1.490
1.479
1.392
1.340
1.306
1.272
1.267
1.260
1.258
1.238
1.230
1.228
0.995
0.892
0.877

Integral

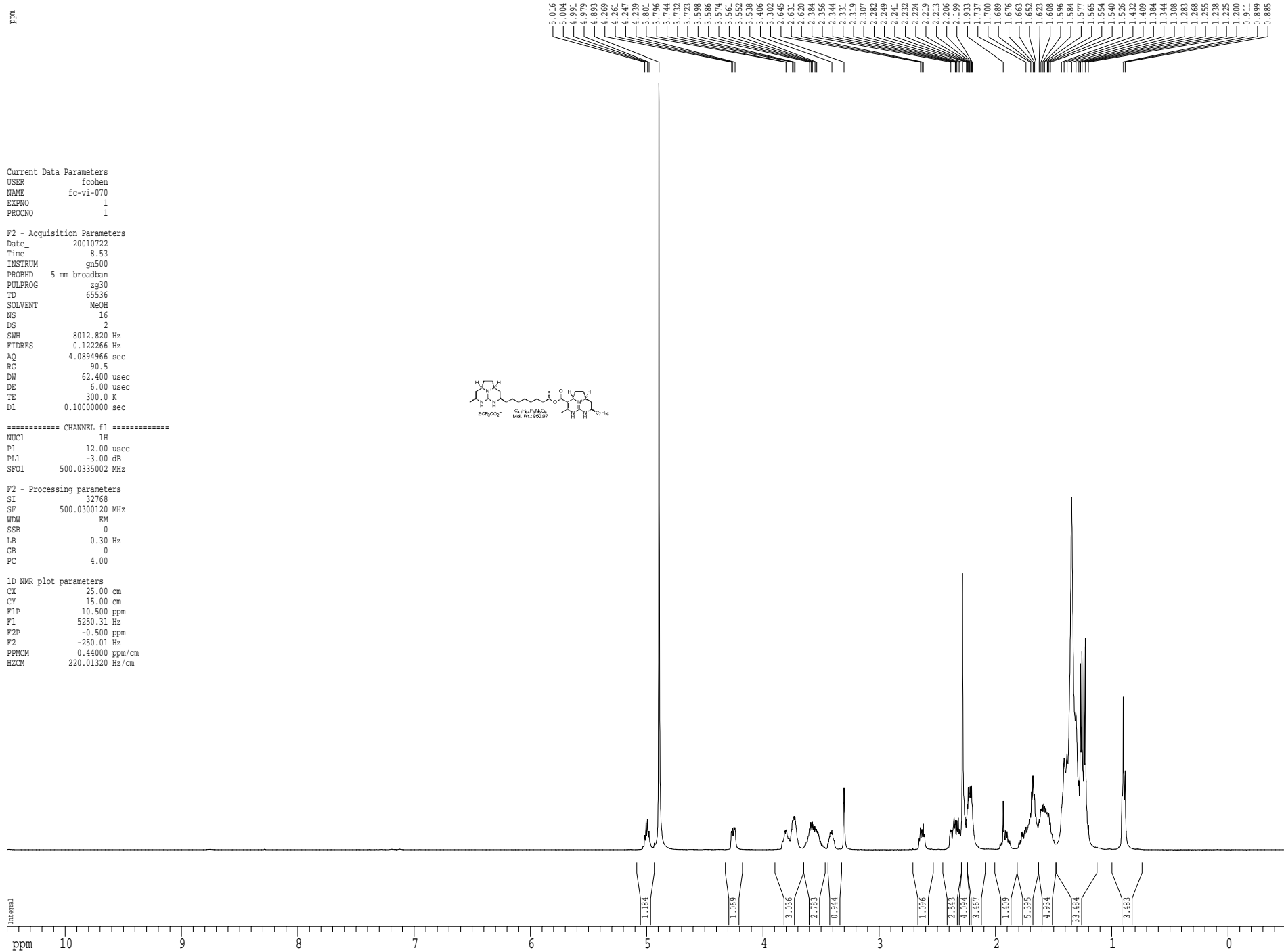
ppm



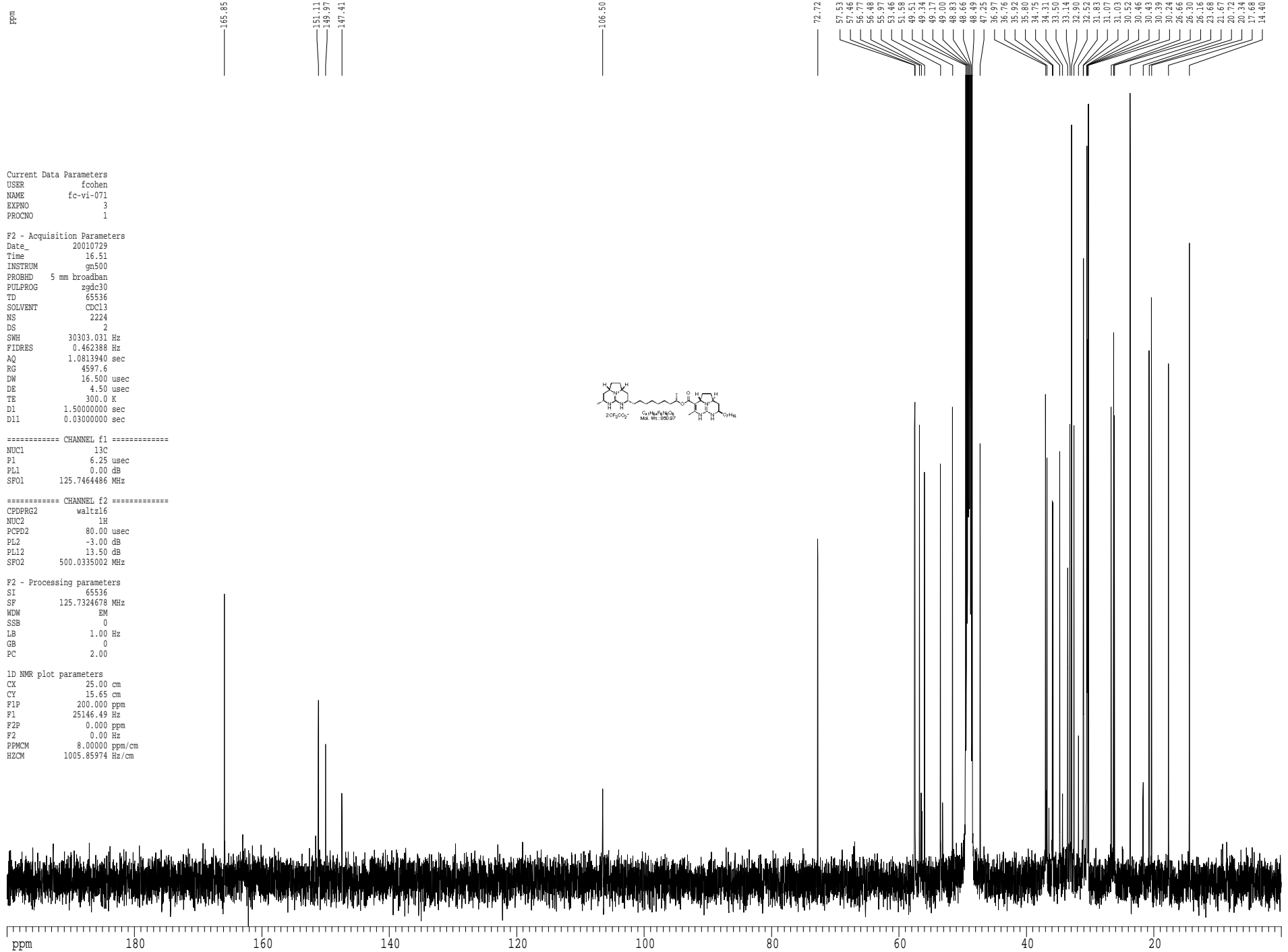
¹³C spectrum with ¹H decoupling



1H spectrum



¹³C spectrum with ¹H decoupling



Current Data Parameters
USER fcohen
NAME fc-vi-071
EXPNO 3
PROCNO 1

F2 - Acquisition Parameters
Date_ 20010729
Time 16.51
INSTRUM gn500
PROBHD 5 mm broadband
PULPROG zgdc30
TD 65536
SOLVENT CDCl3
NS 2224
DS 2
SWH 30303.031 Hz
FIDRES 0.462388 Hz
AQ 1.0813940 sec
RG 4597.6
DW 16.500 usec
DE 4.50 usec
TE 300.0 K
D1 1.50000000 sec
D11 0.03000000 sec

==== CHANNEL f1 =====
NUC1 13C
P1 6.25 usec
PL1 0.00 dB
SFO1 125.7464486 MHz

==== CHANNEL f2 =====
CPDPRG2 waltz16
NUC2 1H
PCPD2 80.00 usec
PL2 -3.00 dB
PL12 13.50 dB
SFO2 500.0335002 MHz

F2 - Processing parameters
SI 65536
SF 125.7324678 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 2.00

1D NMR plot parameters
CX 25.00 cm
CY 15.65 cm
F1P 200.000 ppm
F1 25146.49 Hz
F2P 0.000 ppm
F2 0.00 Hz
PPMCM 8.00000 ppm/cm
HZCM 1005.85974 Hz/cm

¹H spectrum

ppm

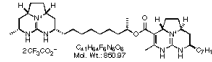
Current Data Parameters
USER fcohen
NAME fc-vi-071
EXPNO 2
PROCNO 1

F2 - Acquisition Parameters
Date_ 20010729
Time 15.13
INSTRUM gn500
PROBHD 5 mm broadband
PULPROG zg30
TD 65536
SOLVENT MeOH
NS 16
DS 2
SWH 8012.820 Hz
FIDRES 0.122266 Hz
AQ 4.0894966 sec
RG 90.5
DW 62.400 usec
DE 6.000 usec
TE 300.0 K
D1 0.10000000 sec

===== CHANNEL f1 =====
NUC1 ¹H
P1 12.00 usec
PL1 -3.00 dB
SFO1 500.0335002 MHz

F2 - Processing parameters
SI 32768
SF 500.0300125 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 4.00

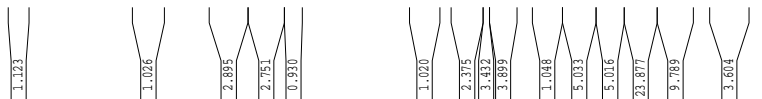
1D NMR plot parameters
CX 25.00 cm
CY 15.00 cm
F1P 10.500 ppm
F1 5250.31 Hz
F2P -0.500 ppm
F2 -250.01 Hz
PPMCM 0.44000 ppm/cm
HZCM 220.01320 Hz/cm



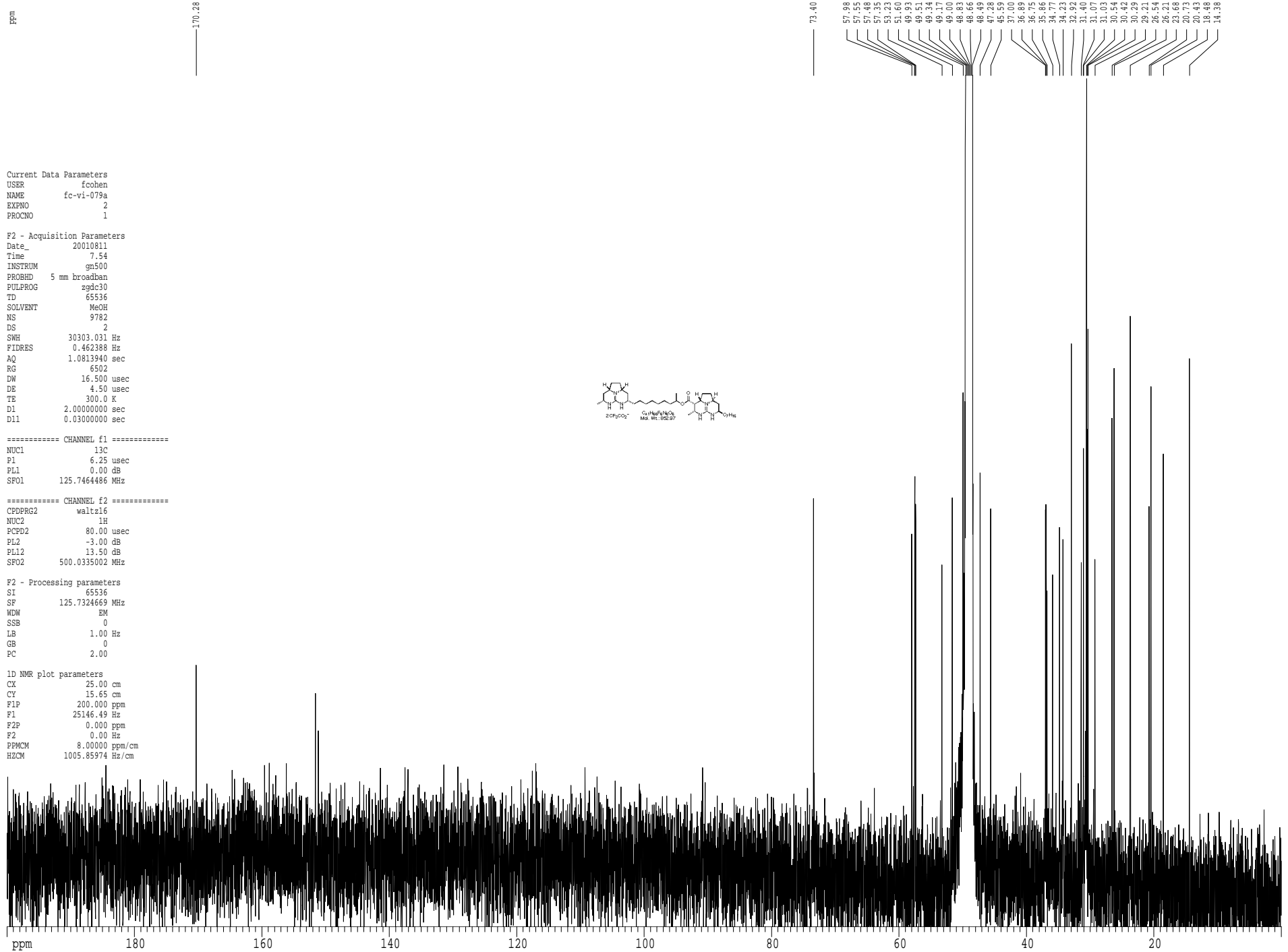
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5.004
4.991
4.977
4.963
4.949
4.935
4.921
4.907
4.893
4.879
4.865
4.851
4.837
4.823
4.809
4.795
4.781
4.767
4.753
4.739
4.725
4.711
4.697
4.683
4.669
4.655
4.641
4.627
4.613
4.599
4.585
4.571
4.557
4.543
4.529
4.515
4.501
4.487
4.473
4.459
4.445
4.431
4.417
4.403
4.389
4.375
4.361
4.347
4.333
4.319
4.305
4.291
4.277
4.263
4.249
4.235
4.221
4.207
4.193
4.179
4.165
4.151
4.137
4.123
4.109
4.095
4.081
4.067
4.053
4.039
4.025
4.011
4.000
3.986
3.972
3.958
3.944
3.930
3.916
3.902
3.888
3.874
3.860
3.846
3.832
3.818
3.804
3.790
3.776
3.762
3.748
3.734
3.720
3.706
3.692
3.678
3.664
3.650
3.636
3.622
3.608
3.594
3.580
3.566
3.552
3.538
3.524
3.510
3.496
3.482
3.468
3.454
3.440
3.426
3.412
3.398
3.384
3.370
3.356
3.342
3.328
3.314
3.300
3.286
3.272
3.258
3.244
3.230
3.216
3.202
3.188
3.174
3.160
3.146
3.132
3.118
3.104
3.090
3.076
3.062
3.048
3.034
3.020
3.006
2.992
2.978
2.964
2.950
2.936
2.922
2.908
2.894
2.880
2.866
2.852
2.838
2.824
2.810
2.796
2.782
2.768
2.754
2.740
2.726
2.712
2.698
2.684
2.670
2.656
2.642
2.628
2.614
2.600
2.586
2.572
2.558
2.544
2.530
2.516
2.502
2.488
2.474
2.460
2.446
2.432
2.418
2.404
2.390
2.376
2.362
2.348
2.334
2.320
2.306
2.292
2.278
2.264
2.250
2.236
2.222
2.208
2.194
2.180
2.166
2.152
2.138
2.124
2.110
2.096
2.082
2.068
2.054
2.040
2.026
2.012
2.000
1.986
1.972
1.958
1.944
1.930
1.916
1.902
1.888
1.874
1.860
1.846
1.832
1.818
1.804
1.790
1.776
1.762
1.748
1.734
1.720
1.706
1.692
1.678
1.664
1.650
1.636
1.622
1.608
1.594
1.580
1.566
1.552
1.538
1.524
1.510
1.496
1.482
1.468
1.454
1.440
1.426
1.412
1.398
1.384
1.370
1.356
1.342
1.328
1.314
1.300
1.286
1.272
1.258
1.244
1.230
1.216
1.202
1.188
1.174
1.160
1.146
1.132
1.118
1.104
1.090
1.076
1.062
1.048
1.034
1.020
1.006
0.992
0.978
0.964
0.950
0.936
0.922
0.908
0.894
0.880
0.866
0.852
0.838
0.824
0.810
0.796
0.782
0.768
0.754
0.740
0.726
0.712
0.698
0.684
0.670
0.656
0.642
0.628
0.614
0.600
0.586
0.572
0.558
0.544
0.530
0.516
0.502
0.488
0.474
0.460
0.446
0.432
0.418
0.404
0.390
0.376
0.362
0.348
0.334
0.320
0.306
0.292
0.278
0.264
0.250
0.236
0.222
0.208
0.194
0.180
0.166
0.152
0.138
0.124
0.110
0.096
0.082
0.068
0.054
0.040
0.026
0.012
0.000

Integral

ppm



¹³C spectrum with ¹H decoupling

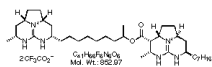


¹H spectrum

ppm

Current Data Parameters
 USER fcohen
 NAME fc-vi-079a
 EXPNO 1
 PROCNO 1

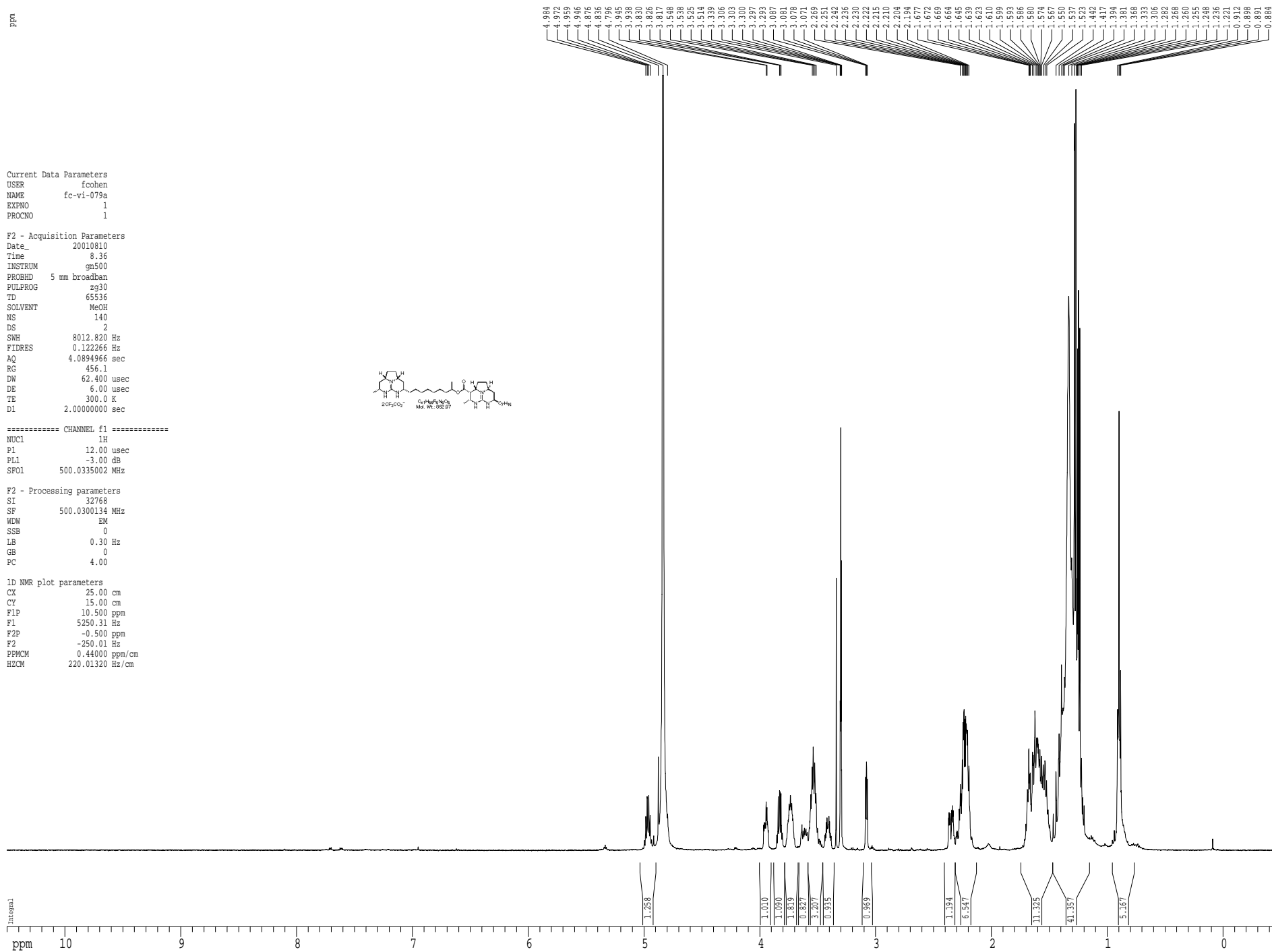
F2 - Acquisition Parameters
 Date_ 20010810
 Time 8.36
 INSTRUM gn500
 PROBHD 5 mm broadband
 PULPROG zg30
 TD 65536
 SOLVENT MeOH
 NS 140
 DS 2
 SWH 8012.820 Hz
 FIDRES 0.122266 Hz
 AQ 4.0894966 sec
 RG 456.1
 DW 62.400 usec
 DE 6.000 usec
 TE 300.0 K
 D1 2.00000000 sec



===== CHANNEL f1 =====
 NUC1 1H
 P1 12.00 usec
 PL1 -3.00 dB
 SF01 500.0335002 MHz

F2 - Processing parameters
 SI 32768
 SF 500.0300134 MHz
 WDW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 4.00

1D NMR plot parameters
 CX 25.00 cm
 CY 15.00 cm
 F1P 10.500 ppm
 F1 5250.31 Hz
 F2P -0.500 ppm
 F2 -250.01 Hz
 PPMCM 0.44000 ppm/cm
 HZCM 220.01320 Hz/cm

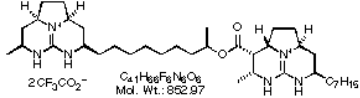


¹³C spectrum with ¹H decoupling



Current Data Parameters
 USER fcohen
 NAME fc-vi-081a
 EXPNO 2
 PROCNO 1

F2 - Acquisition Parameters
 Date_ 20010812
 Time 7.41
 INSTRUM gn500
 PROBHD 5 mm broadband
 PULPROG zgdc30
 TD 65536
 SOLVENT MeOH
 NS 22000
 DS 2
 SWH 30303.031 Hz
 FIDRES 0.462388 Hz
 AQ 1.0813940 sec
 RG 4597.6
 DW 16.500 usec
 DE 4.50 usec
 TE 300.0 K
 D1 0.25000000 sec
 D11 0.03000000 sec

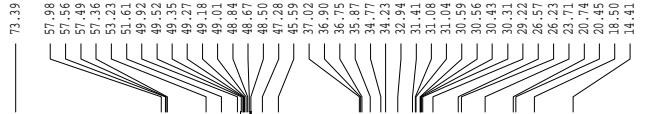
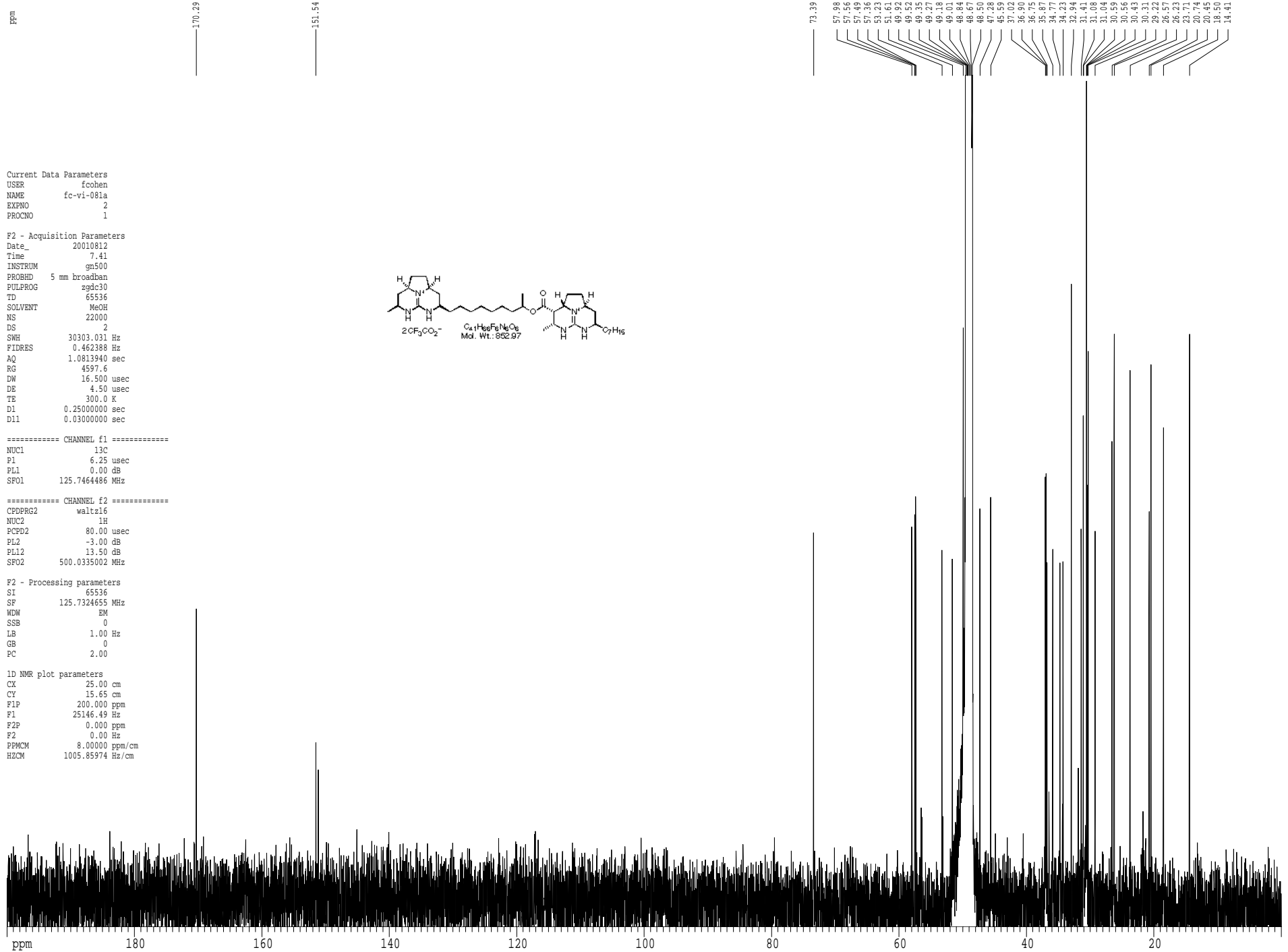


===== CHANNEL f1 =====
 NUC1 13C
 P1 6.25 usec
 PL1 0.00 dB
 SFO1 125.7464486 MHz

===== CHANNEL f2 =====
 CPDPRG2 waltz16
 NUC2 1H
 PCPD2 80.00 usec
 PL2 -3.00 dB
 PL12 13.50 dB
 SPO2 500.0335002 MHz

F2 - Processing parameters
 SI 65536
 SF 125.7324655 MHz
 WDM EM
 SSB 0
 LB 1.00 Hz
 GB 0
 PC 2.00

1D NMR plot parameters
 CX 25.00 cm
 CY 15.65 cm
 FIP 200.000 ppm
 F1 25146.49 Hz
 F2P 0.000 ppm
 F2 0.00 Hz
 PPMCM 8.00000 ppm/cm
 HZCM 1005.85974 Hz/cm



1H spectrum

ppm

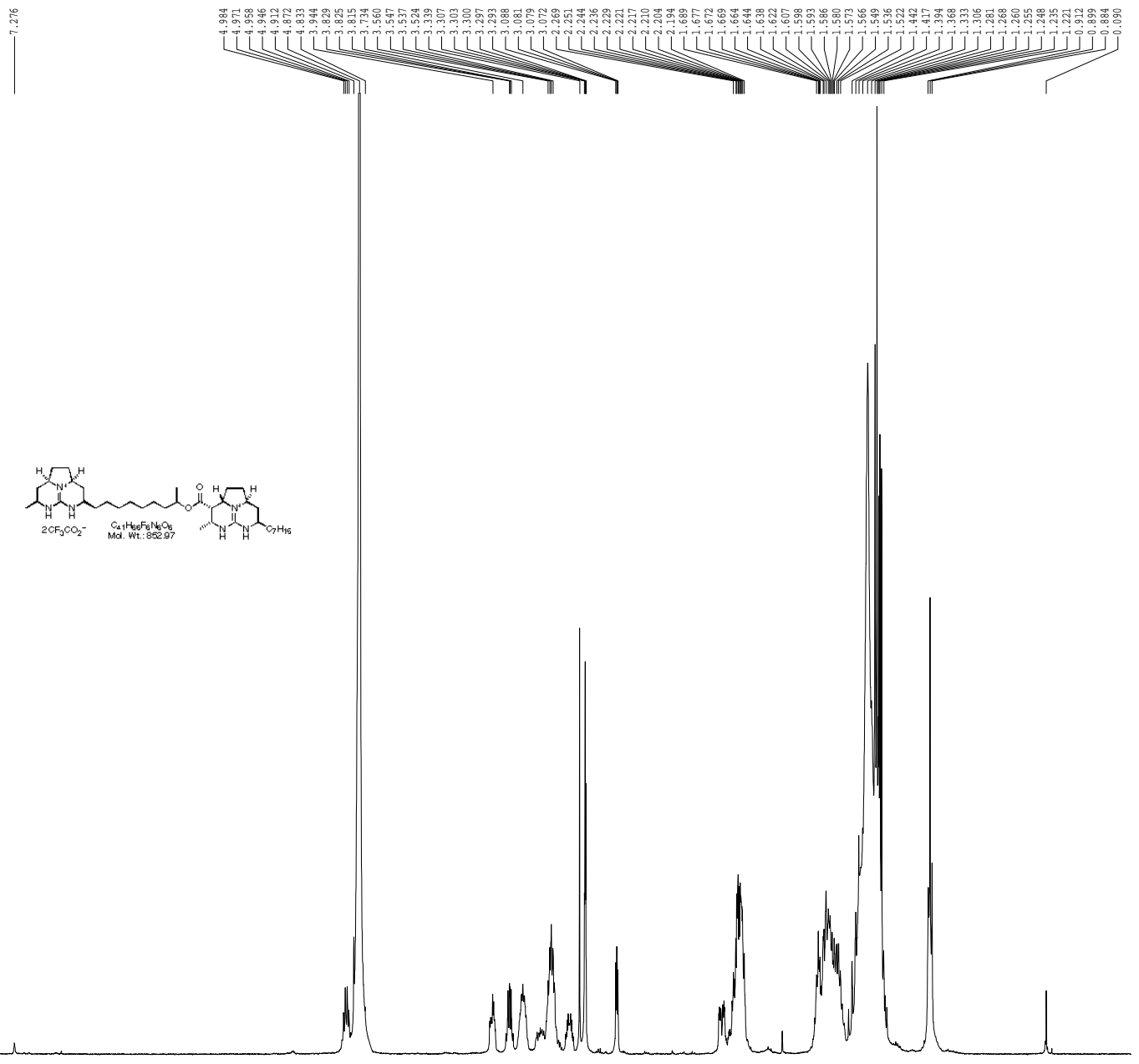
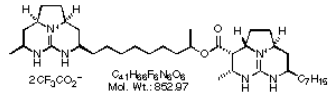
Current Data Parameters
 USER fcohen
 NAME fc-vi-081a
 EXPNO 1
 PROCNO 1

F2 - Acquisition Parameters
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 Time 23.29
 INSTRUM gn500
 PROBHD 5 mm broadband
 PULPROG zg30
 TD 65536
 SOLVENT CDCl3
 NS 128
 DS 2
 SWH 8012.820 Hz
 FIDRES 0.122266 Hz
 AQ 4.0894966 sec
 RG 456.1
 DW 62.400 usec
 DE 6.00 usec
 TE 300.0 K
 D1 1.00000000 sec

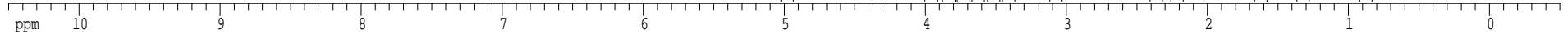
===== CHANNEL f1 =====
 NUC1 1H
 P1 12.00 usec
 PL1 -3.00 dB
 SFO1 500.0335002 MHz

F2 - Processing parameters
 SI 32768
 SF 500.0300134 MHz
 WDW EM
 SSB 0
 LB 0.30 Hz
 GB 0
 PC 4.00

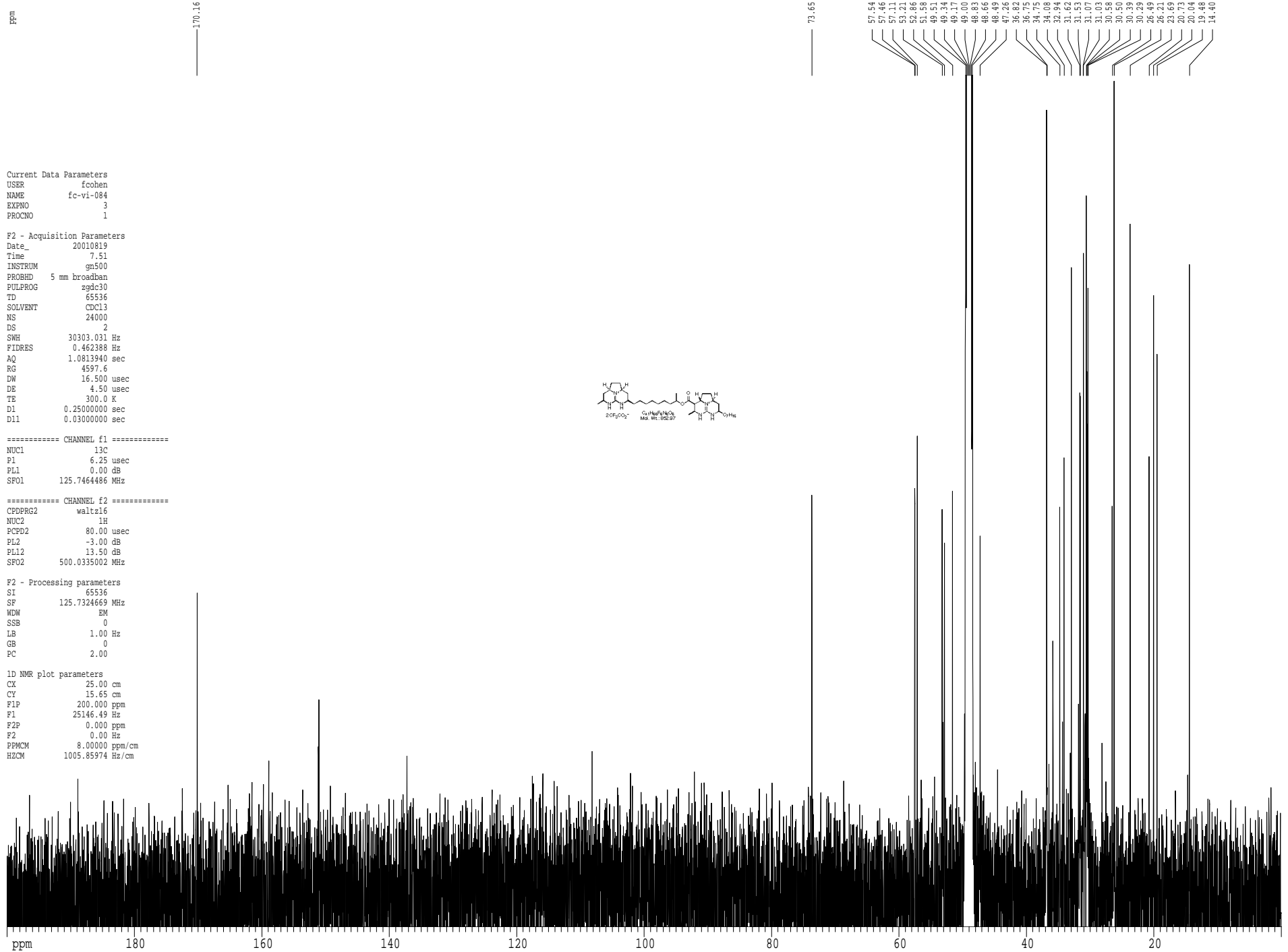
1D NMR plot parameters
 CX 25.00 cm
 CY 15.00 cm
 F1P 10.500 ppm
 F1 5250.31 Hz
 F2P -0.500 ppm
 F2 -250.01 Hz
 PPMCM 0.44000 ppm/cm
 HZCM 220.01320 Hz/cm



Integral



¹³C spectrum with ¹H decoupling



Current Data Parameters
USER fcohen
NAME fc-vi-084
EXPNO 3
PROCNO 1

F2 - Acquisition Parameters
Date_ 20010819
Time 7.51
INSTRUM gn500
PROBHD 5 mm broadband
PULPROG zgdc30
TD 65536
SOLVENT CDCl3
NS 24000
DS 2
SWH 30303.031 Hz
FIDRES 0.462388 Hz
AQ 1.0813940 sec
RG 4597.6
DW 16.500 usec
DE 4.50 usec
TE 300.0 K
D1 0.25000000 sec
D11 0.03000000 sec

==== CHANNEL f1 =====
NUC1 13C
P1 6.25 usec
PL1 0.00 dB
SFO1 125.746486 MHz

==== CHANNEL f2 =====
CPDPRG2 waltz16
NUC2 1H
PCPD2 80.00 usec
PL2 -3.00 dB
PL12 13.50 dB
SFO2 500.0335002 MHz

F2 - Processing parameters
SI 65536
SF 125.7324669 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 2.00

1D NMR plot parameters
CX 25.00 cm
CY 15.65 cm
FIP 200.000 ppm
F1 25146.49 Hz
F2P 0.000 ppm
F2 0.00 Hz
PPMCM 8.00000 ppm/cm
HZCM 1005.85974 Hz/cm

1H spectrum

