

**Lithium Enolates in the Enantioselective Construction of Tetrasubstituted Carbon Centers
with Chiral Lithium Amides as Non-Covalent Stereodirecting Auxiliaries**

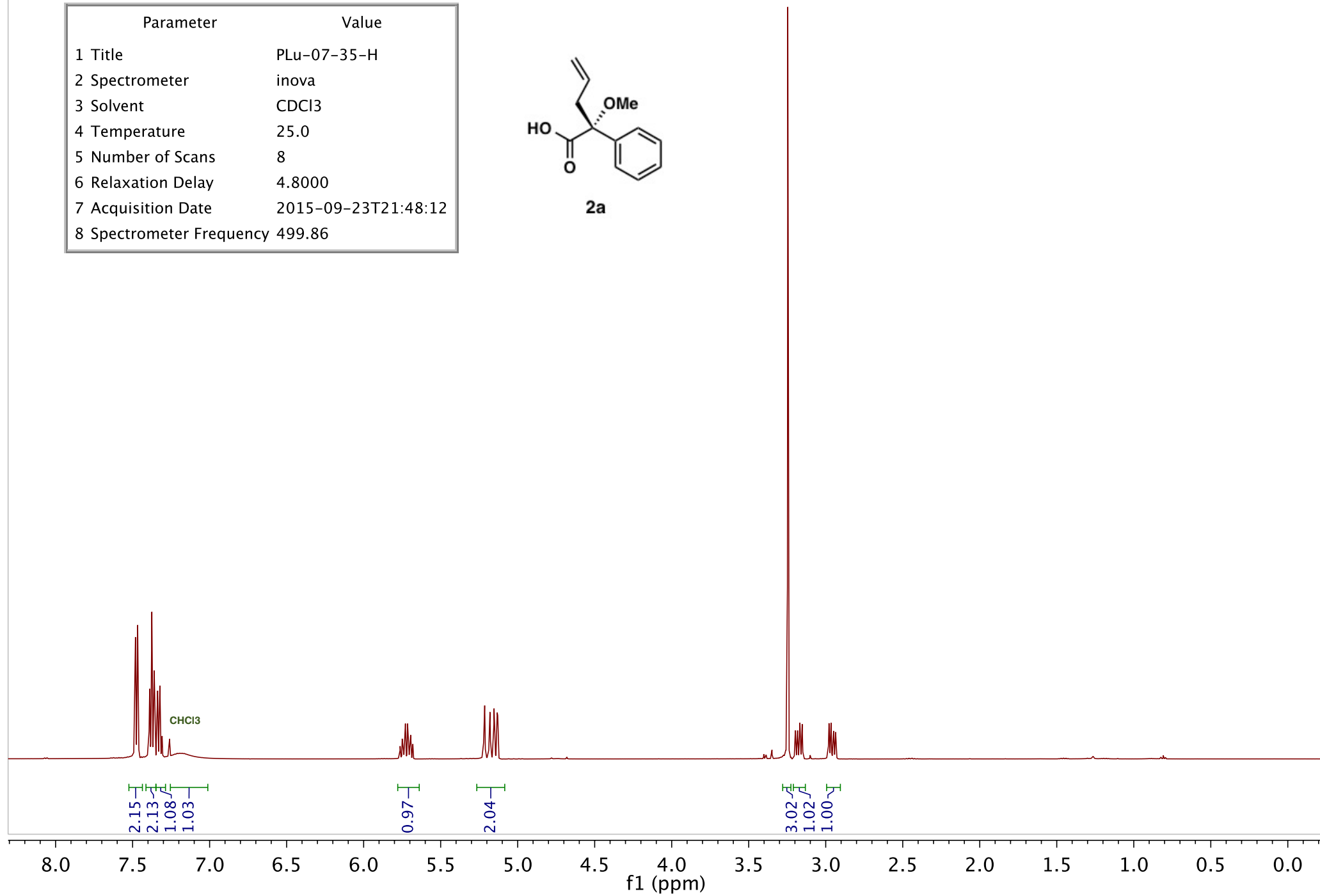
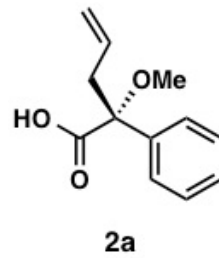
Kai Yu,[†] Ping Lu,^{†,§} Jeffrey J. Jackson,^{†,#} Thuy-Ai D. Nguyen,[†] Joseph Alvarado,^{†,¶} Craig E. Stivala,^{†,||} Yun Ma,[‡] Kyle A. Mack,[‡] Trevor W. Hayton,[†] David B. Collum,^{‡,*} Armen Zakarian^{†,*}

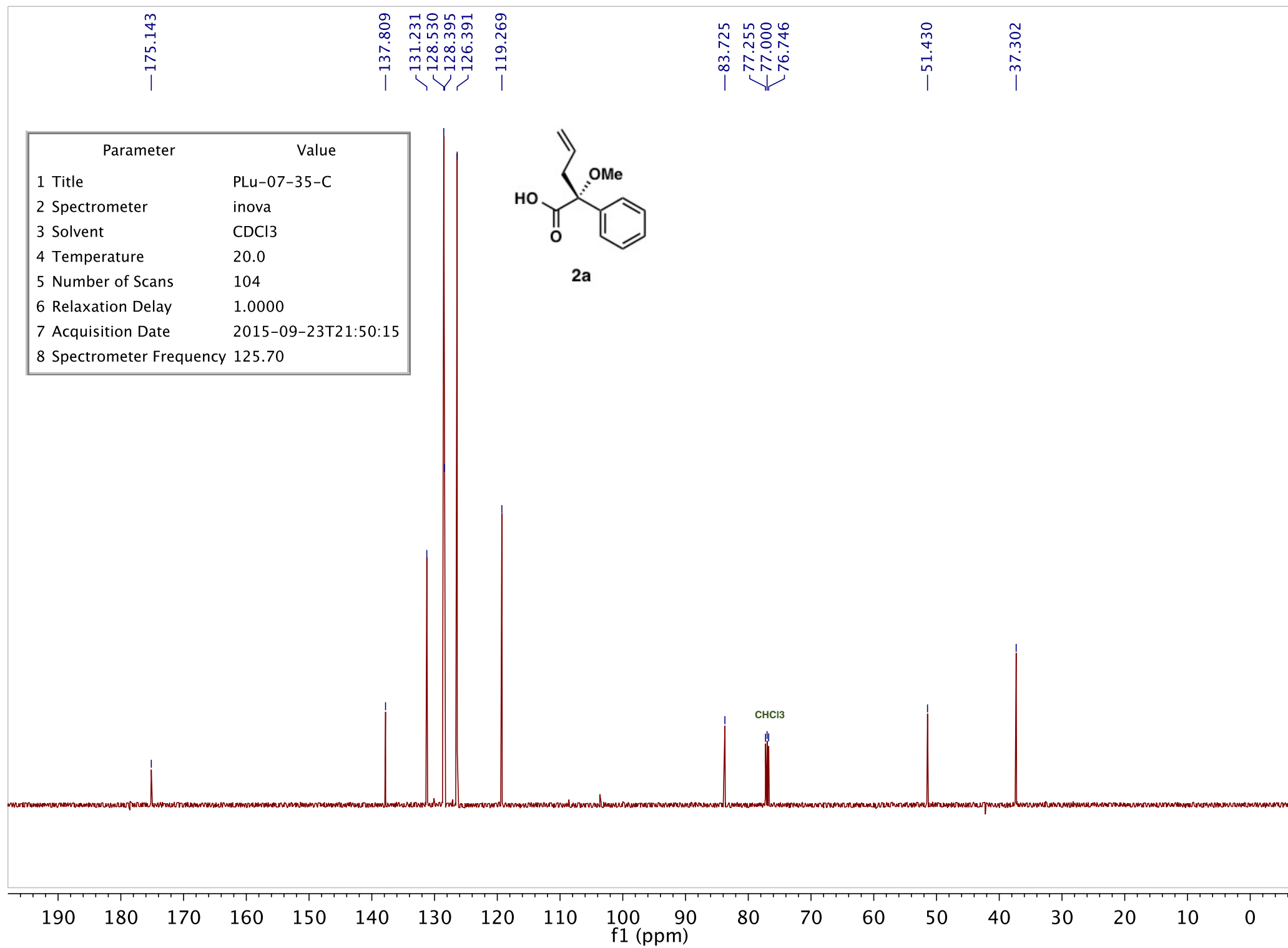
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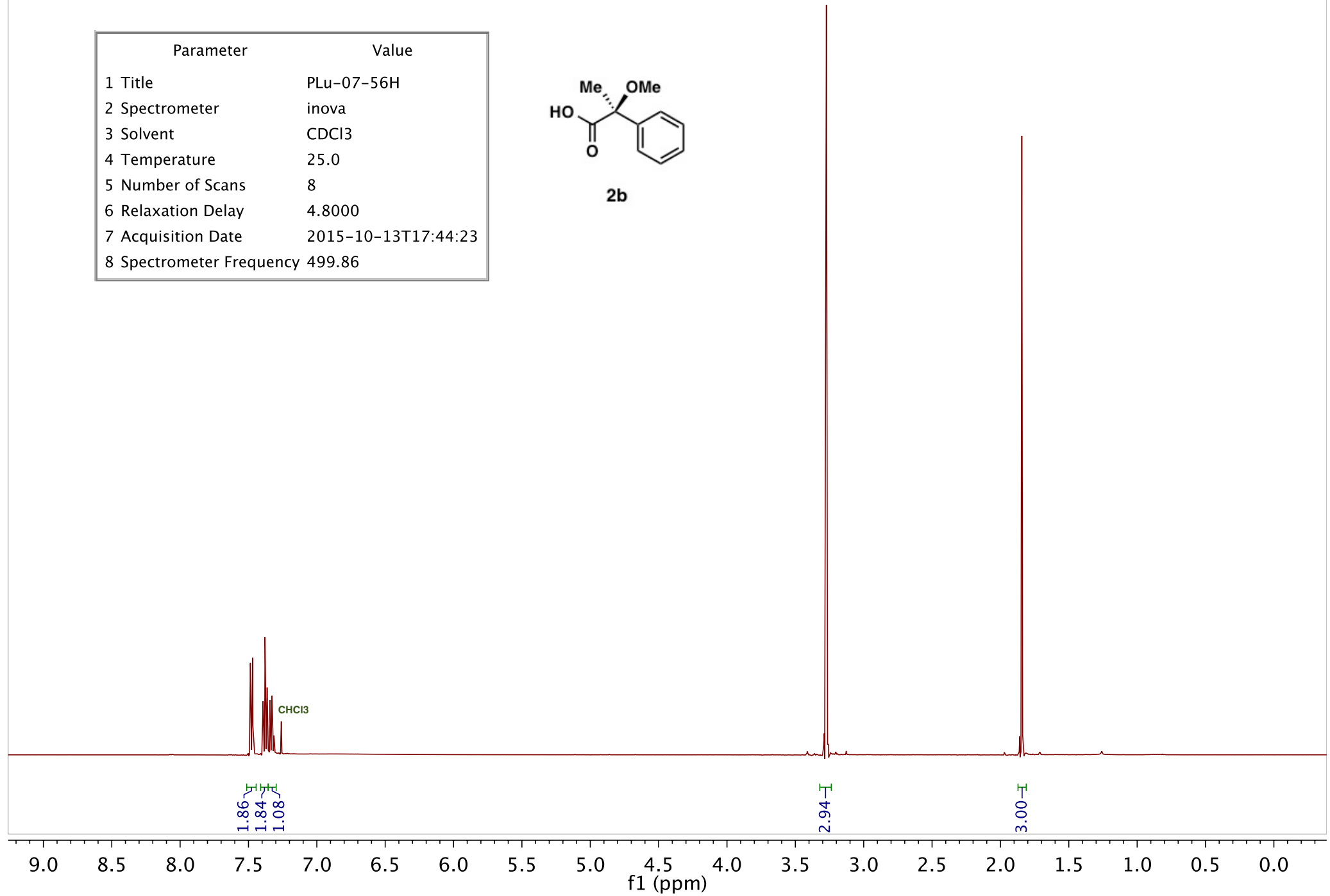
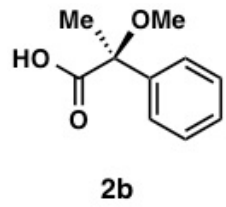
Supplementary Information

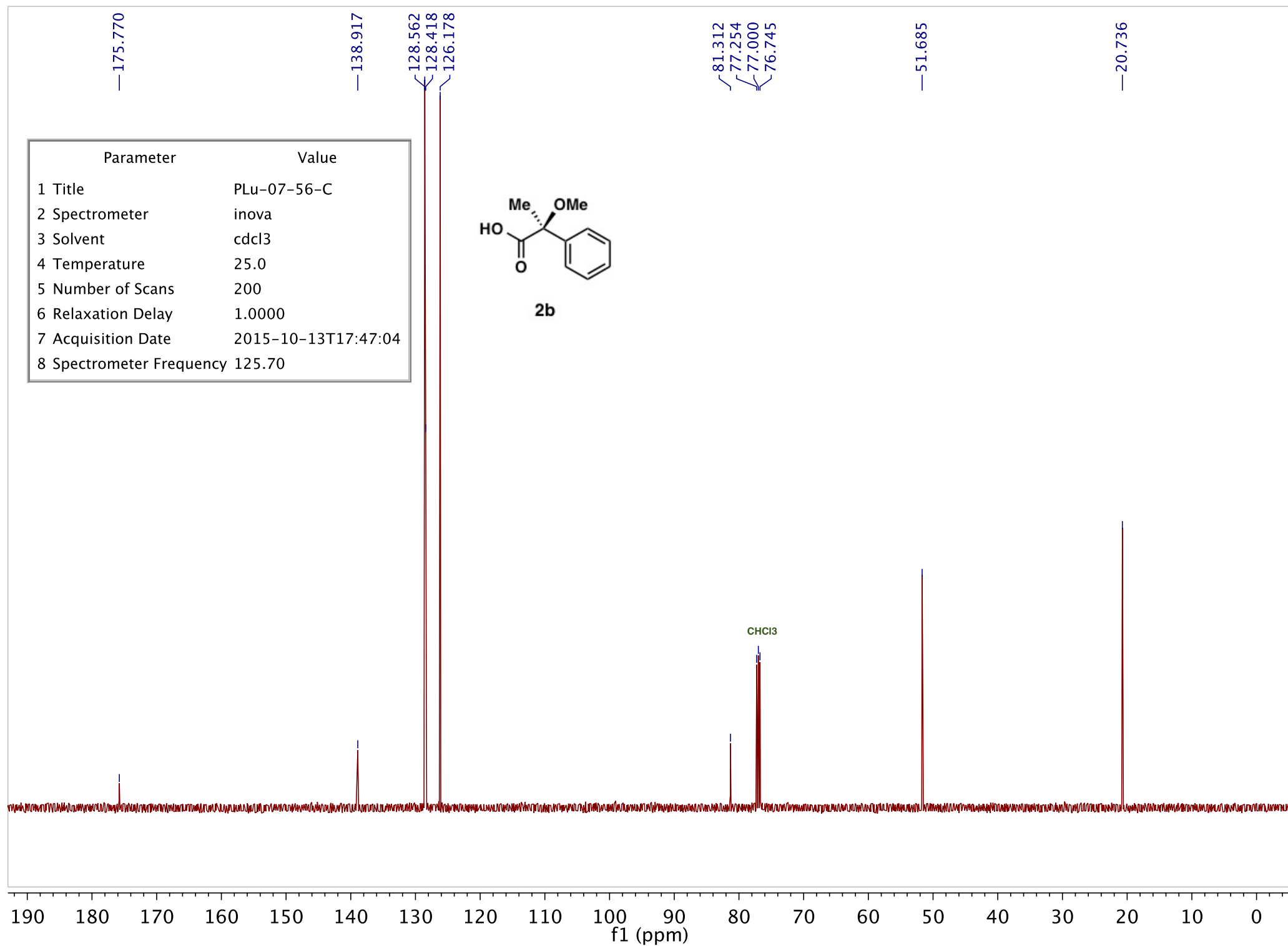
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6 Relaxation Delay	4.8000
7 Acquisition Date	2015-09-23T21:48:12
8 Spectrometer Frequency	499.86



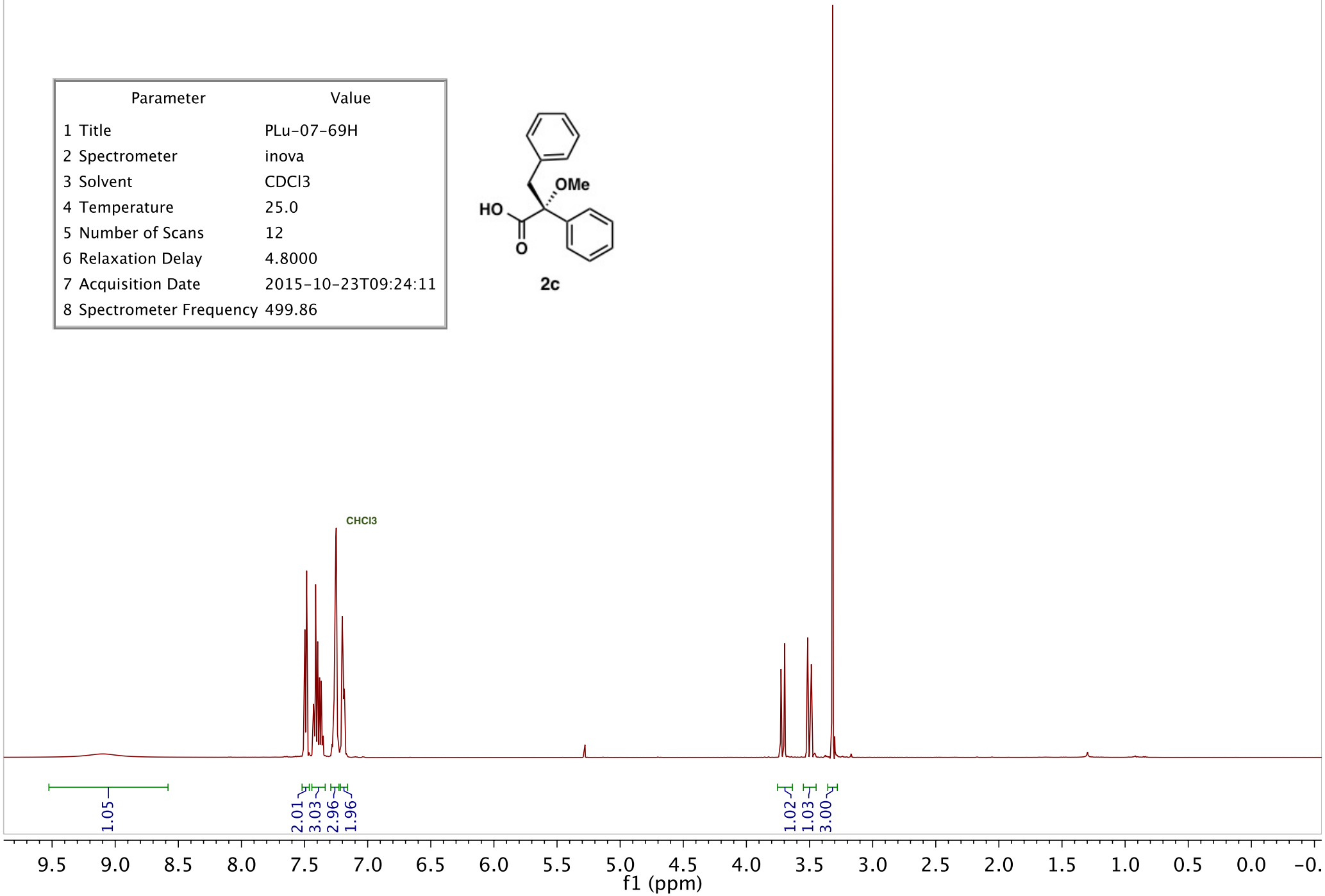
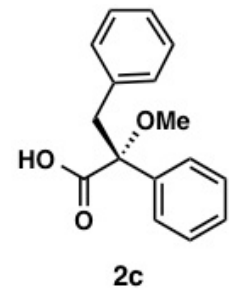


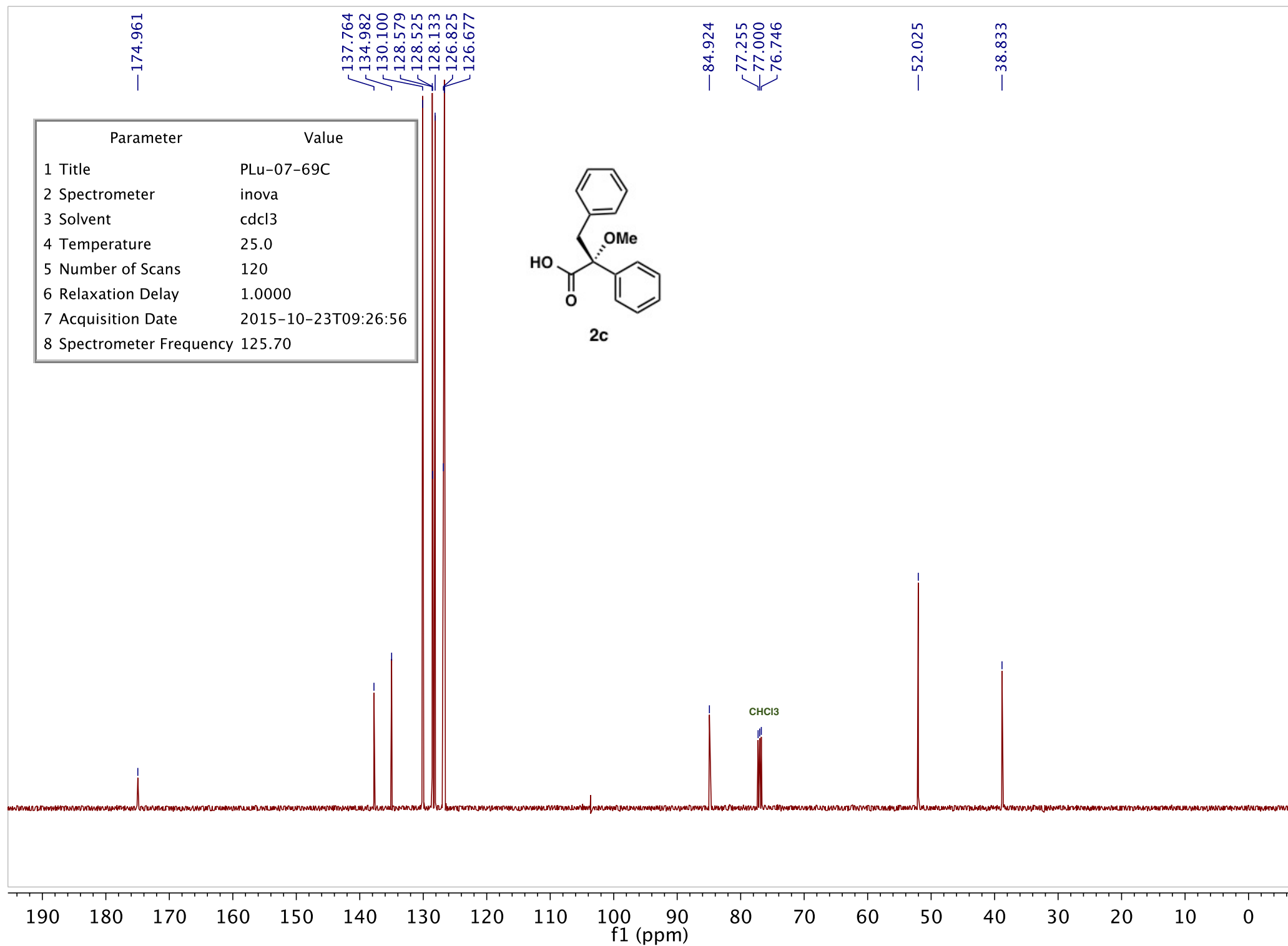
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8 Spectrometer Frequency	499.86



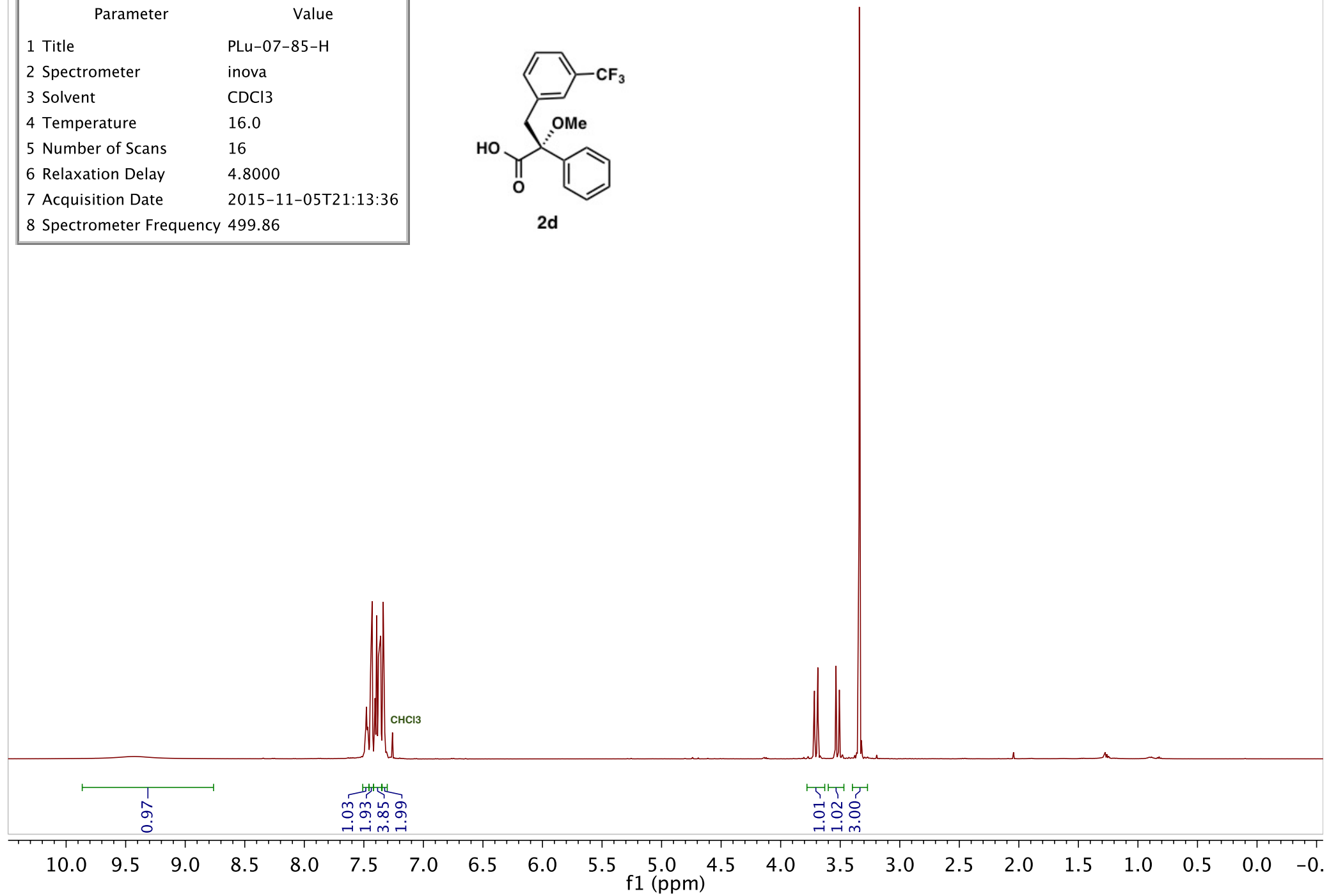
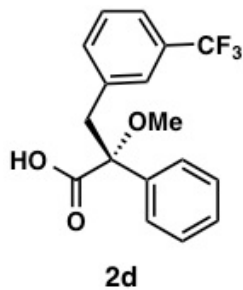


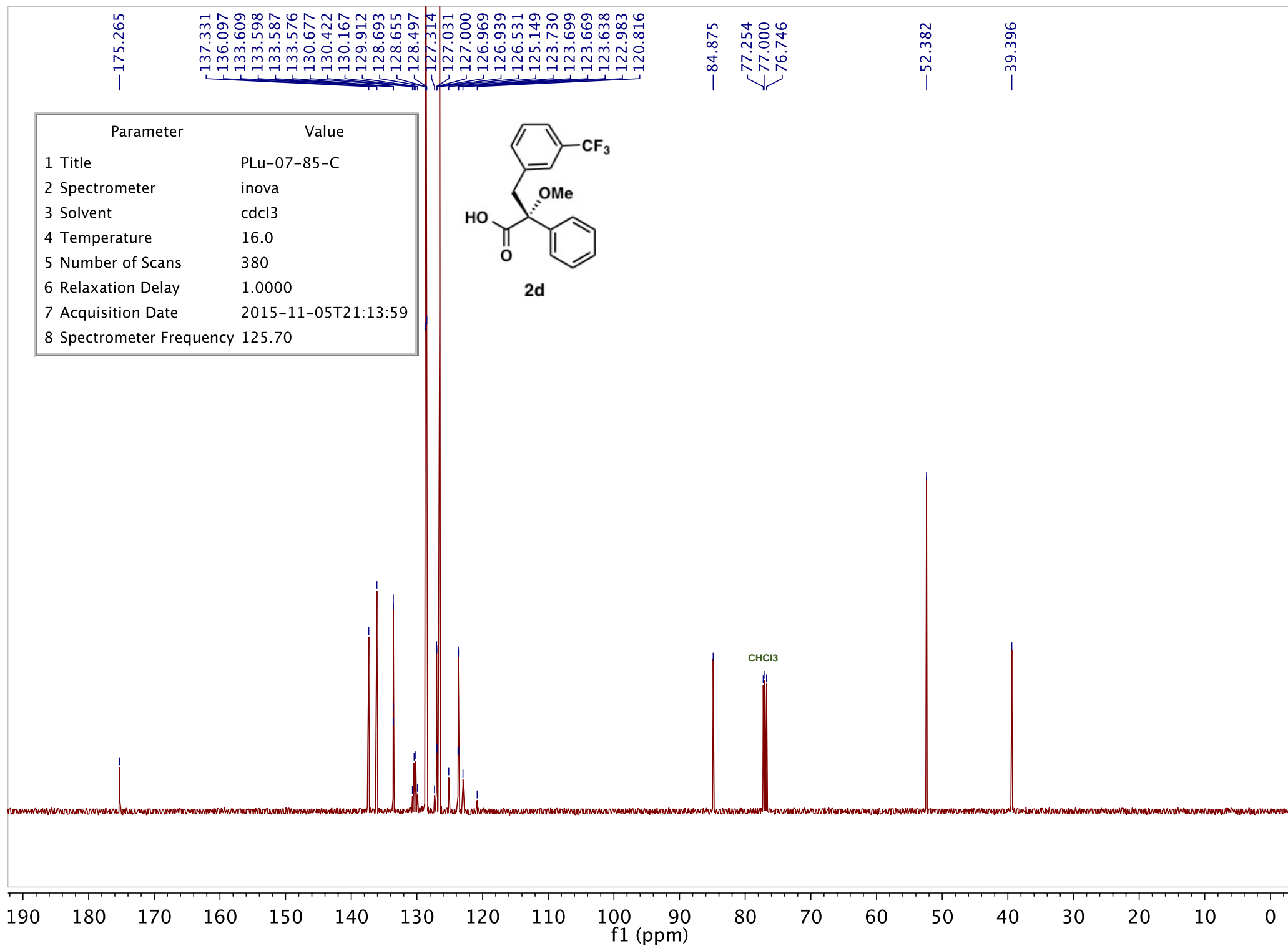
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1 Title	PLu-07-69H
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3 Solvent	CDCl3
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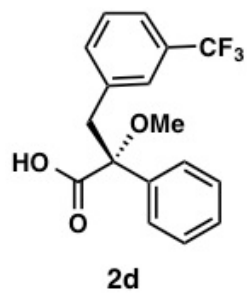


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1 Title	PLu-07-85-H
2 Spectrometer	inova
3 Solvent	CDCl3
4 Temperature	16.0
5 Number of Scans	16
6 Relaxation Delay	4.8000
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8 Spectrometer Frequency	499.86

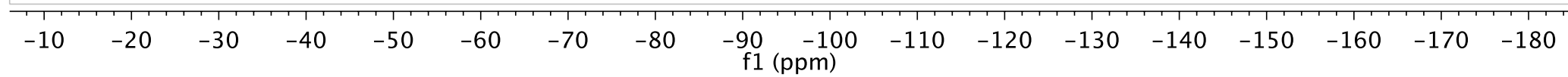




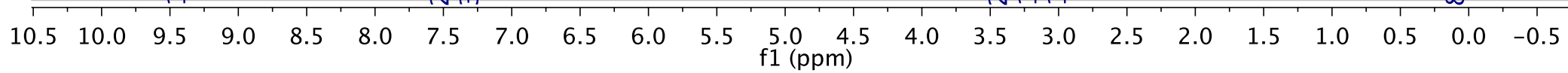
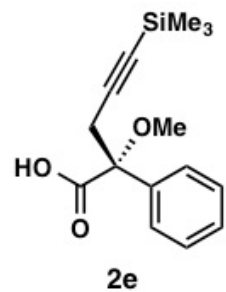
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2 Spectrometer	vnmrs
3 Solvent	cdcl3
4 Temperature	25.0
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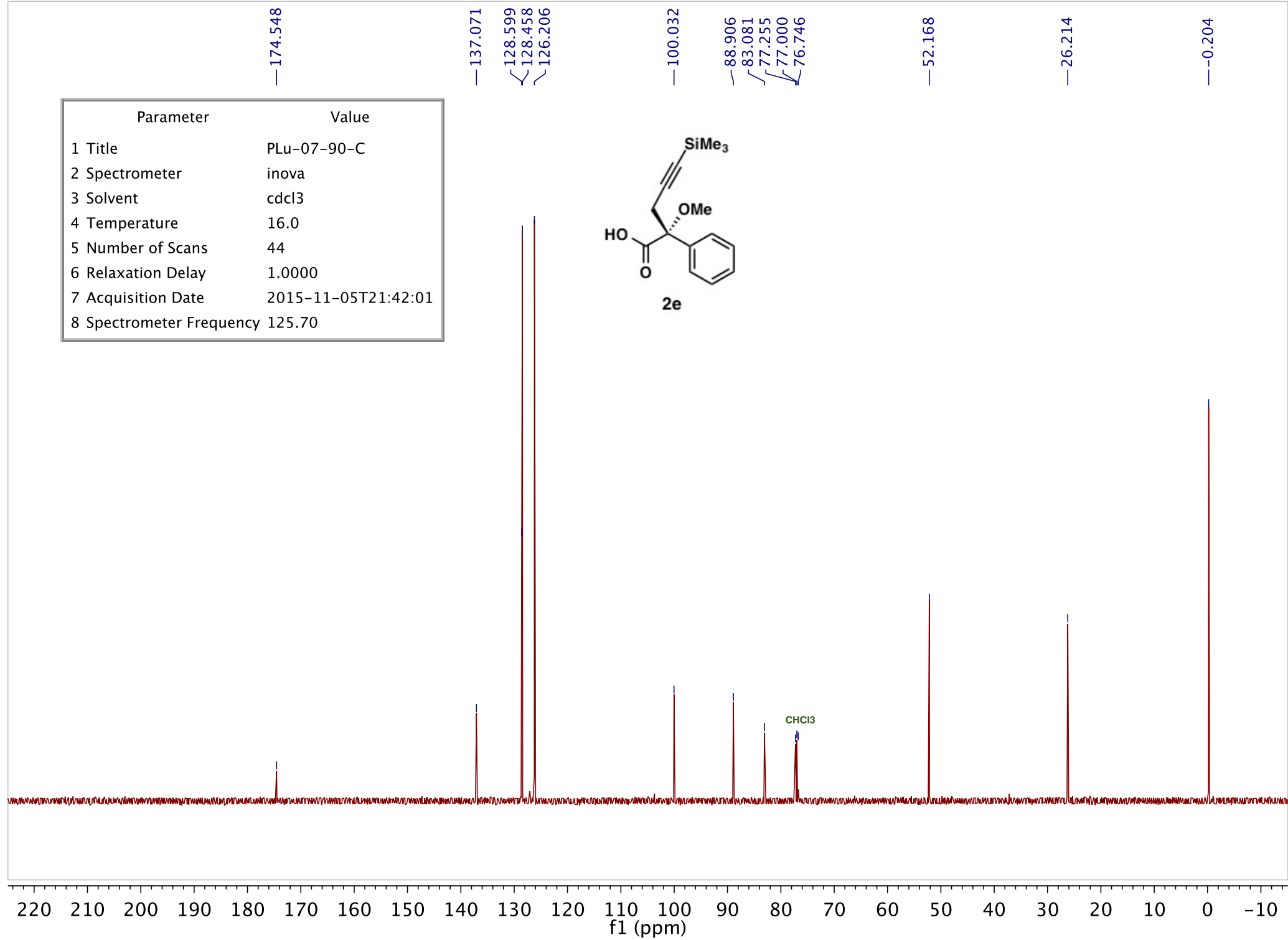
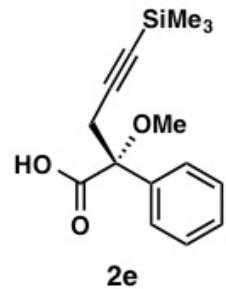
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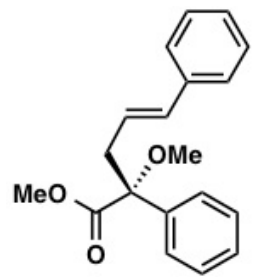
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1 Title	PLu-07-90-H
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4 Temperature	16.0
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6 Relaxation Delay	4.8000
7 Acquisition Date	2015-11-05T21:39:46
8 Spectrometer Frequency	499.86



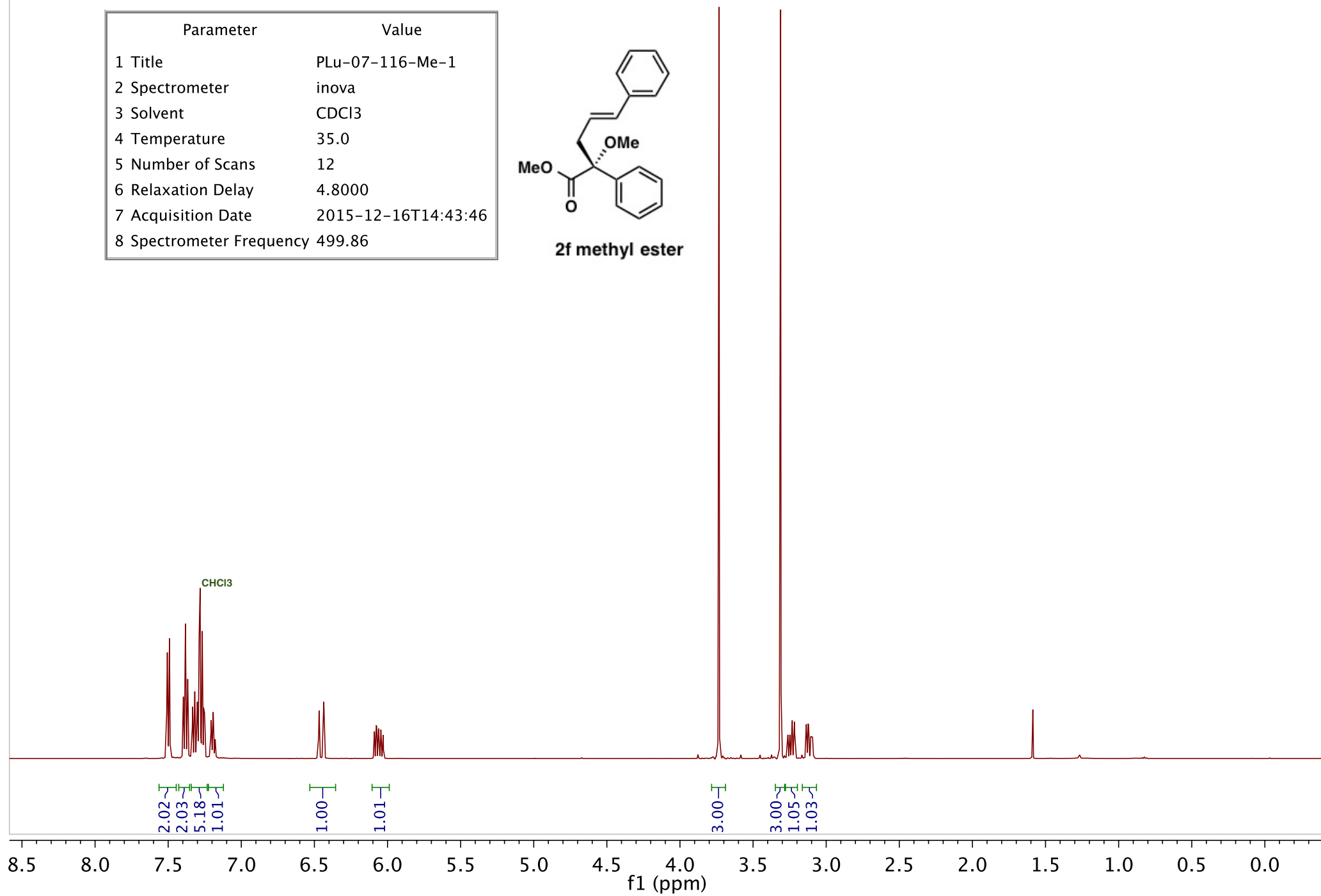
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1 Title	PLu-07-90-C
2 Spectrometer	inova
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8 Spectrometer Frequency	125.70

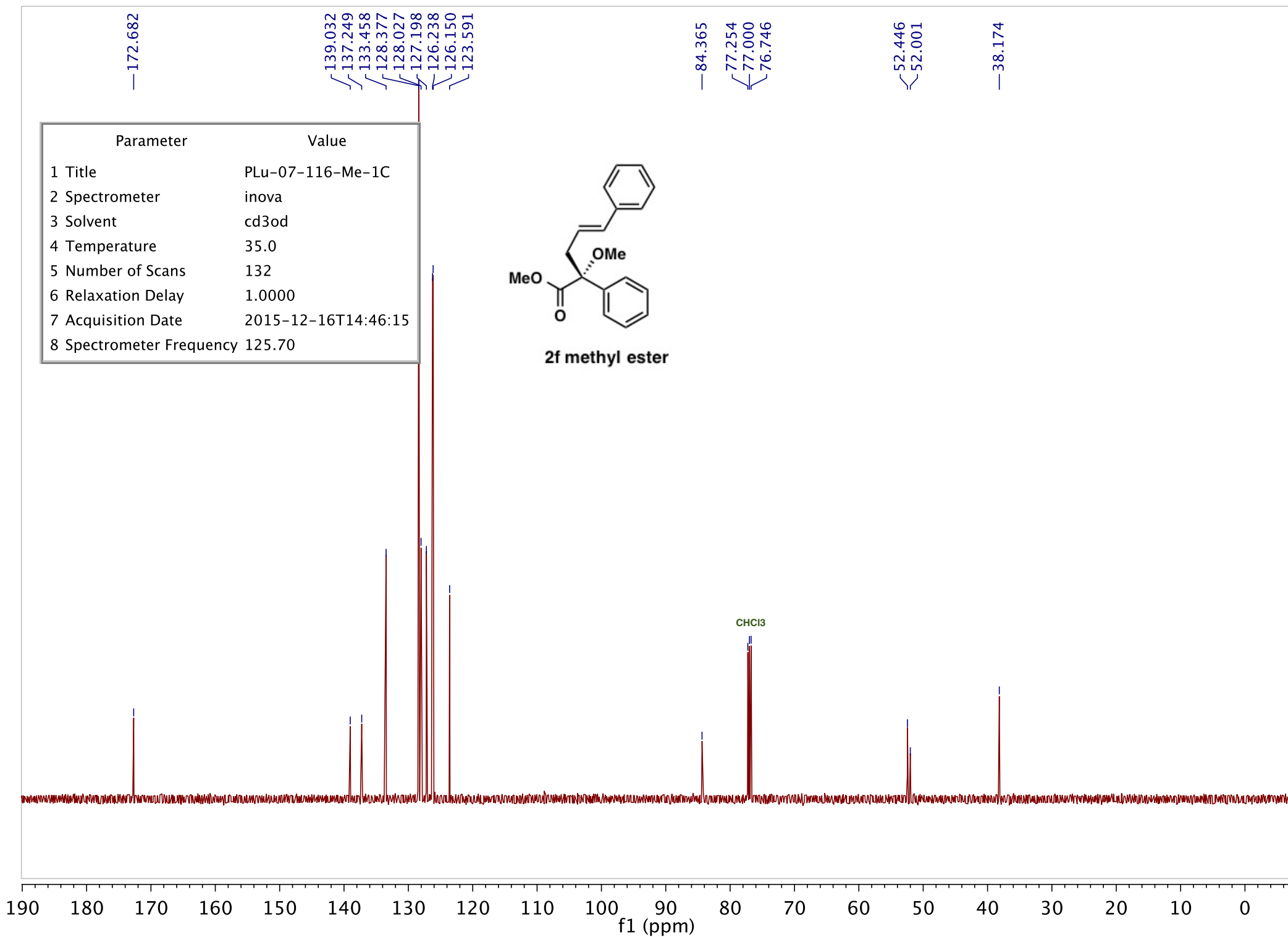


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1 Title	PLu-07-116-Me-1
2 Spectrometer	inova
3 Solvent	CDCl3
4 Temperature	35.0
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6 Relaxation Delay	4.8000
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8 Spectrometer Frequency	499.86

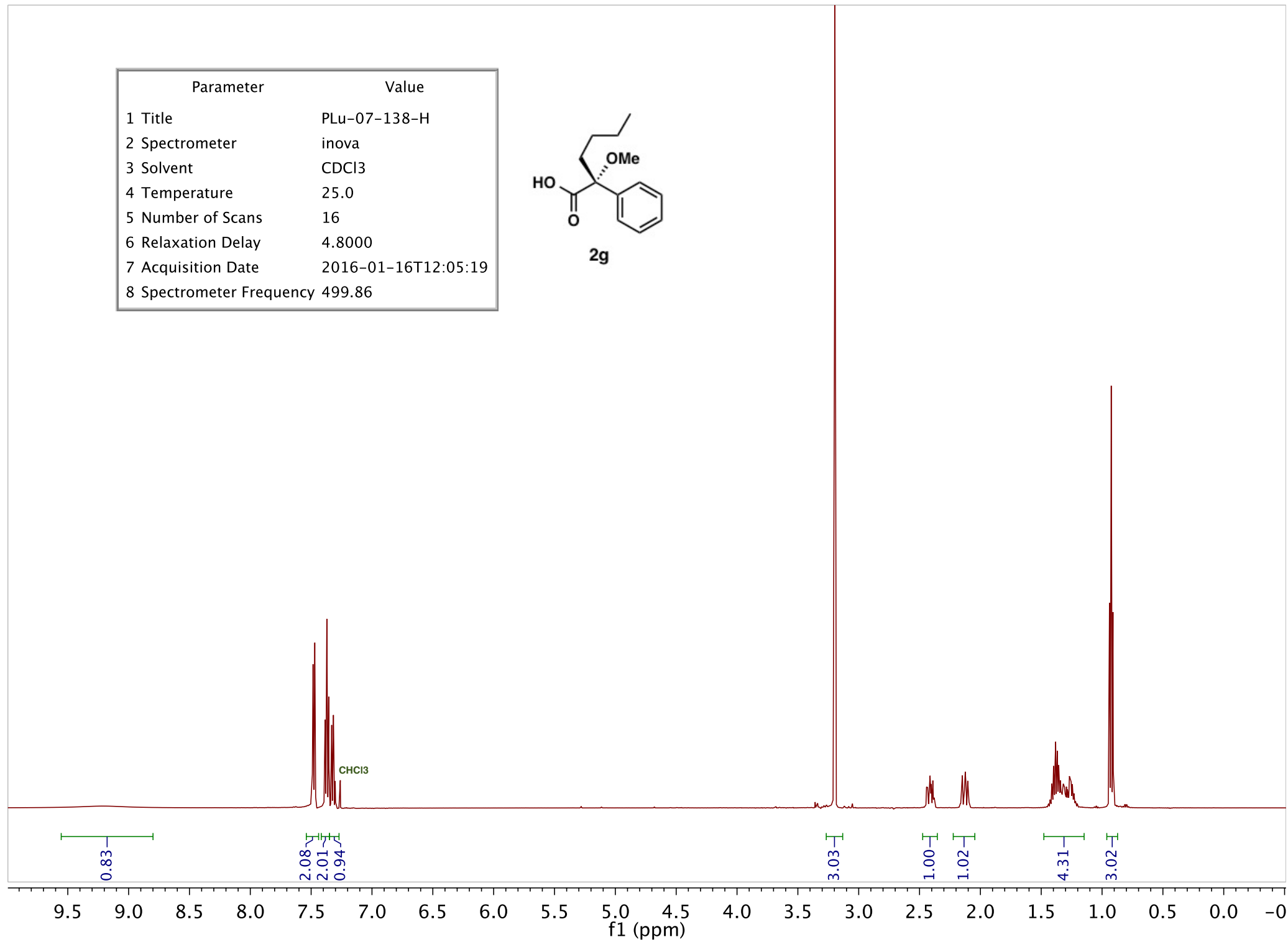
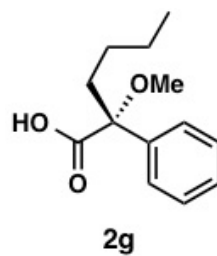


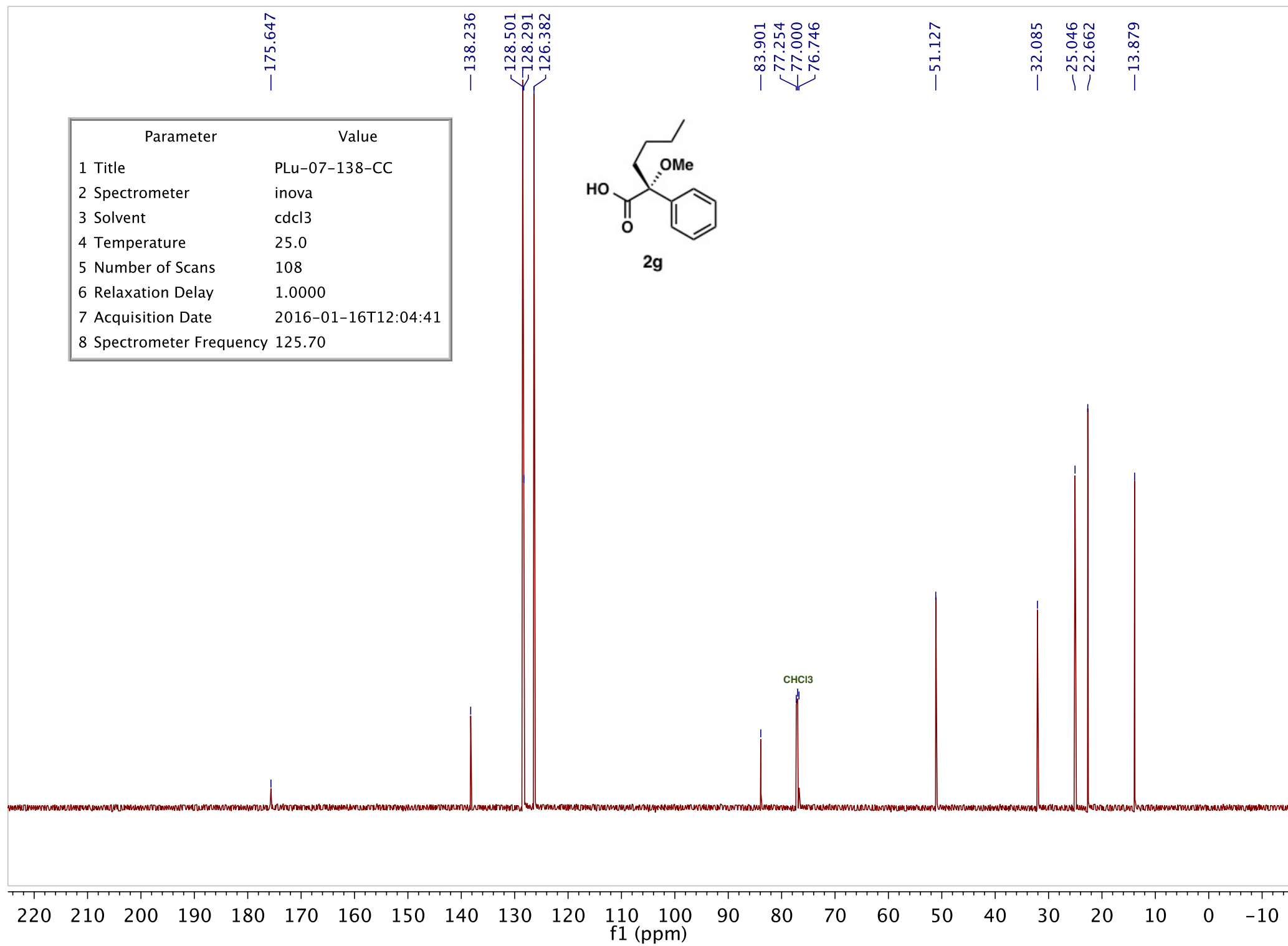
2f methyl ester



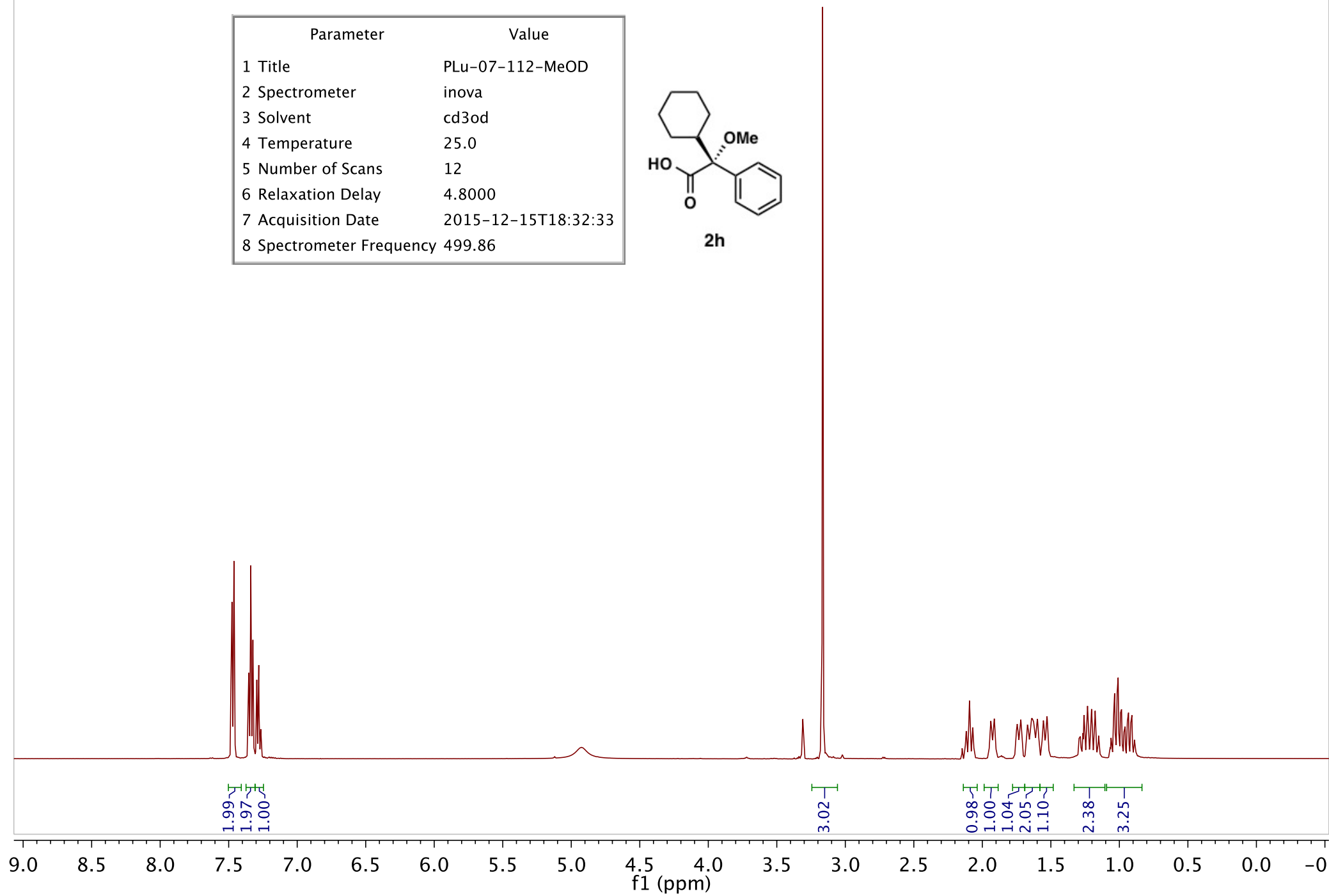
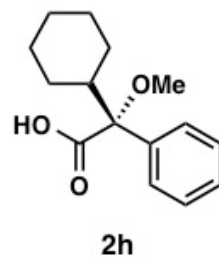


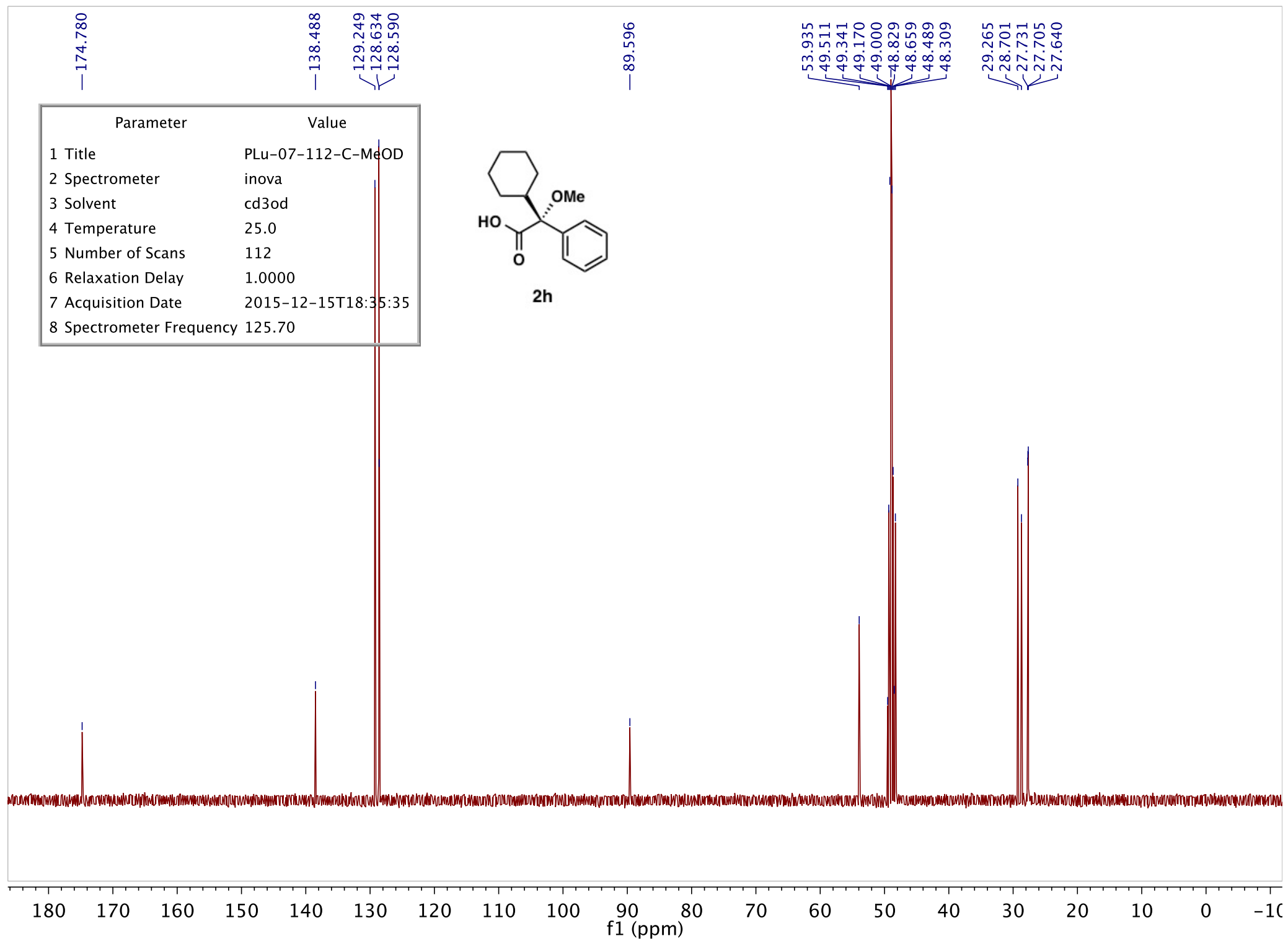
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1 Title	PLu-07-138-H
2 Spectrometer	inova
3 Solvent	CDCl3
4 Temperature	25.0
5 Number of Scans	16
6 Relaxation Delay	4.8000
7 Acquisition Date	2016-01-16T12:05:19
8 Spectrometer Frequency	499.86



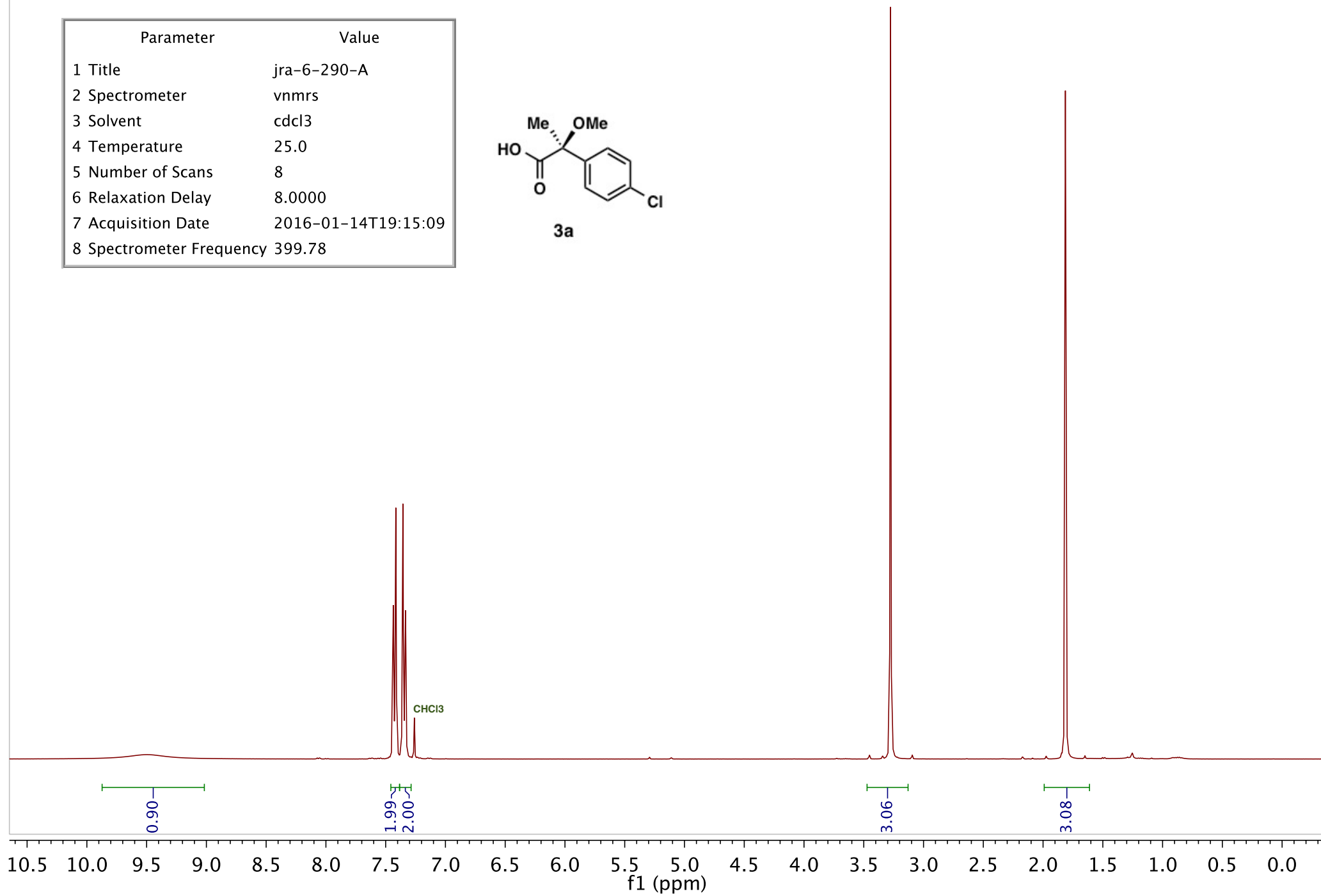
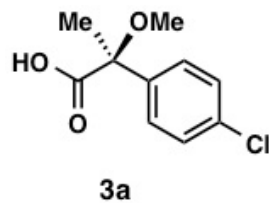


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1 Title	PLu-07-112-MeOD
2 Spectrometer	inova
3 Solvent	cd3od
4 Temperature	25.0
5 Number of Scans	12
6 Relaxation Delay	4.8000
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8 Spectrometer Frequency	499.86

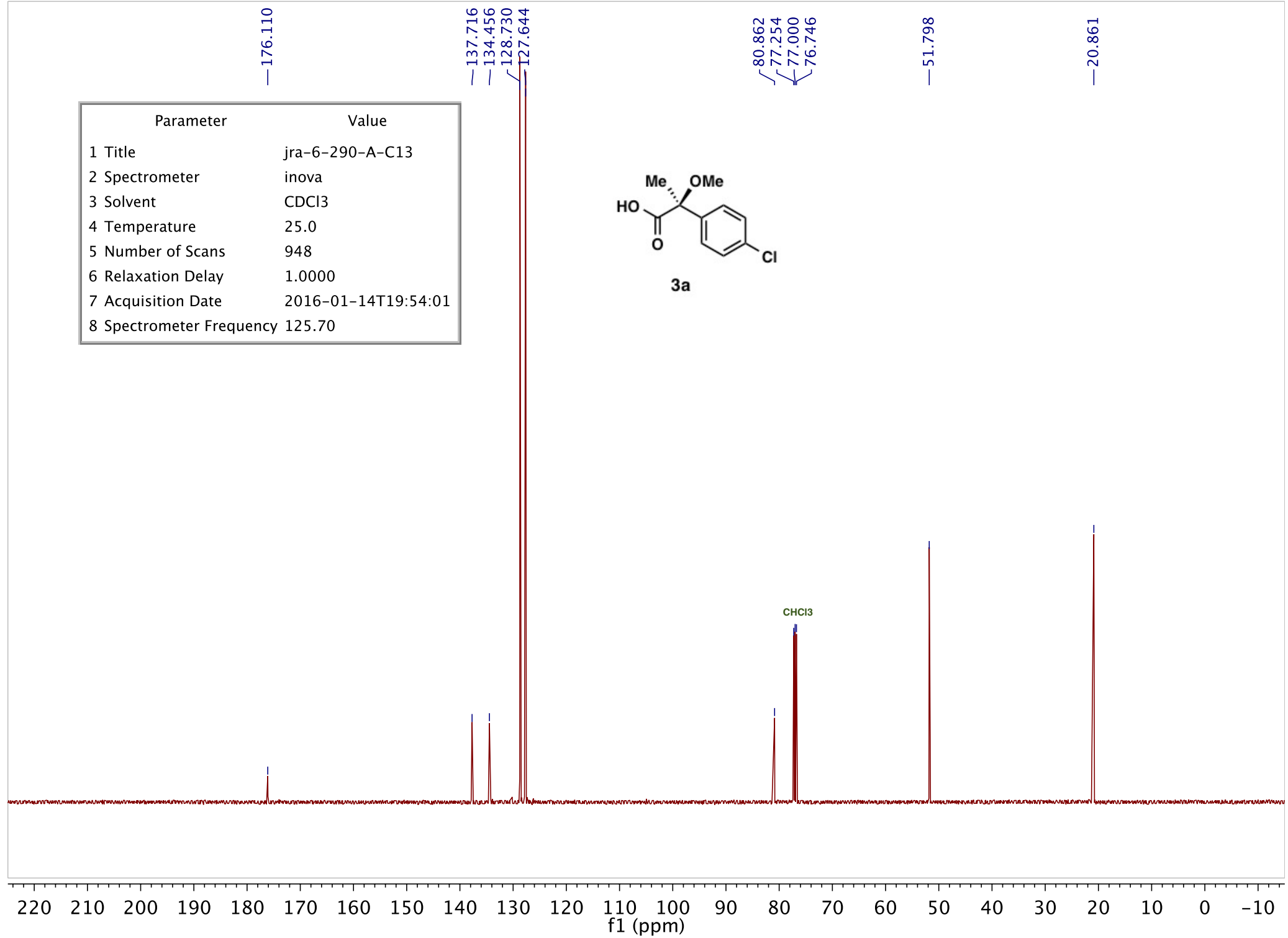
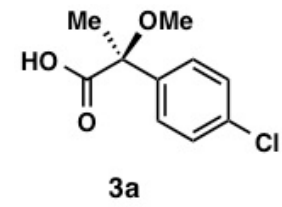




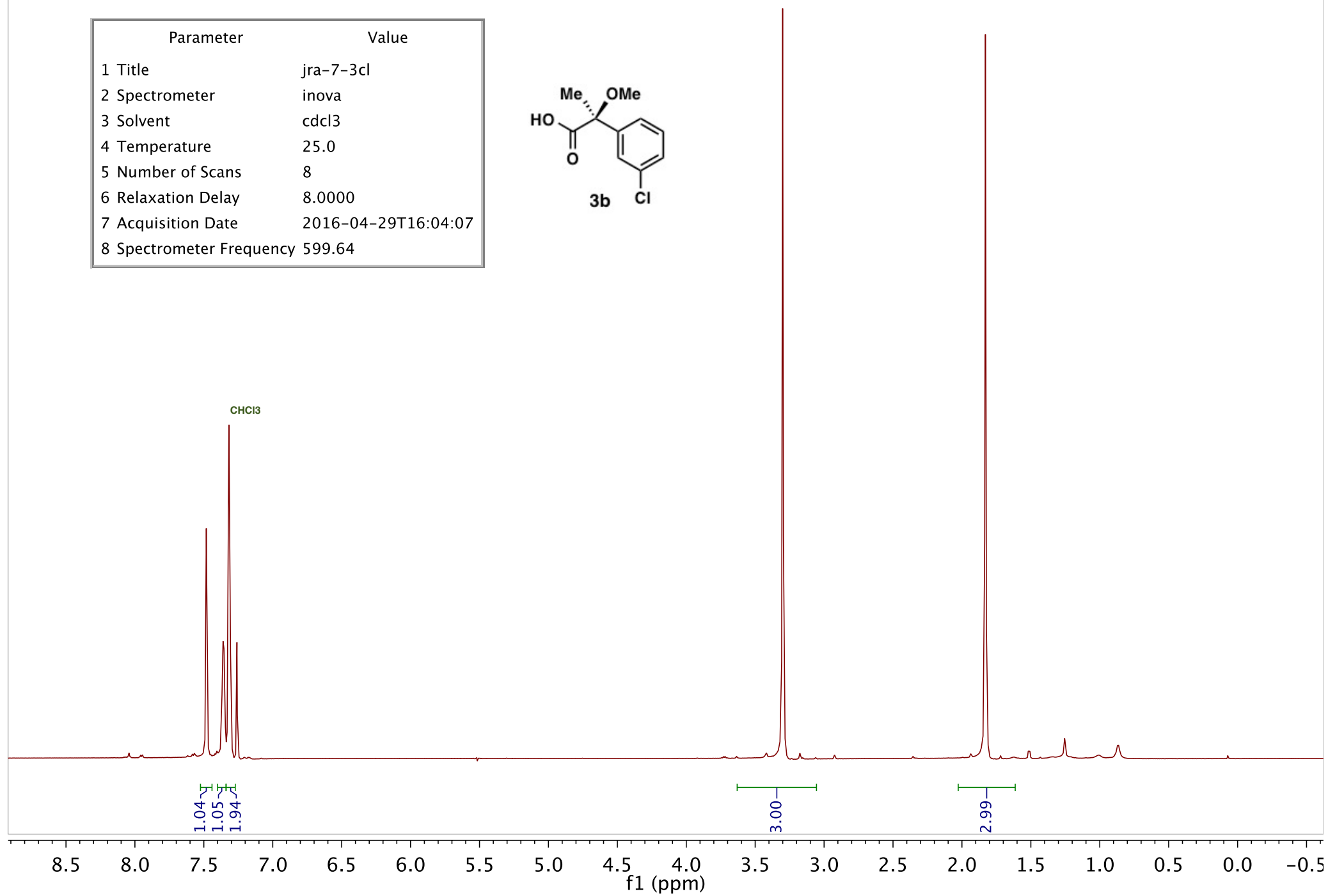
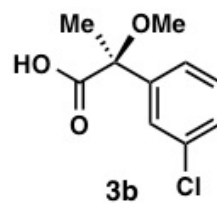
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1 Title	jra-6-290-A
2 Spectrometer	vnmrs
3 Solvent	cdcl3
4 Temperature	25.0
5 Number of Scans	8
6 Relaxation Delay	8.0000
7 Acquisition Date	2016-01-14T19:15:09
8 Spectrometer Frequency	399.78



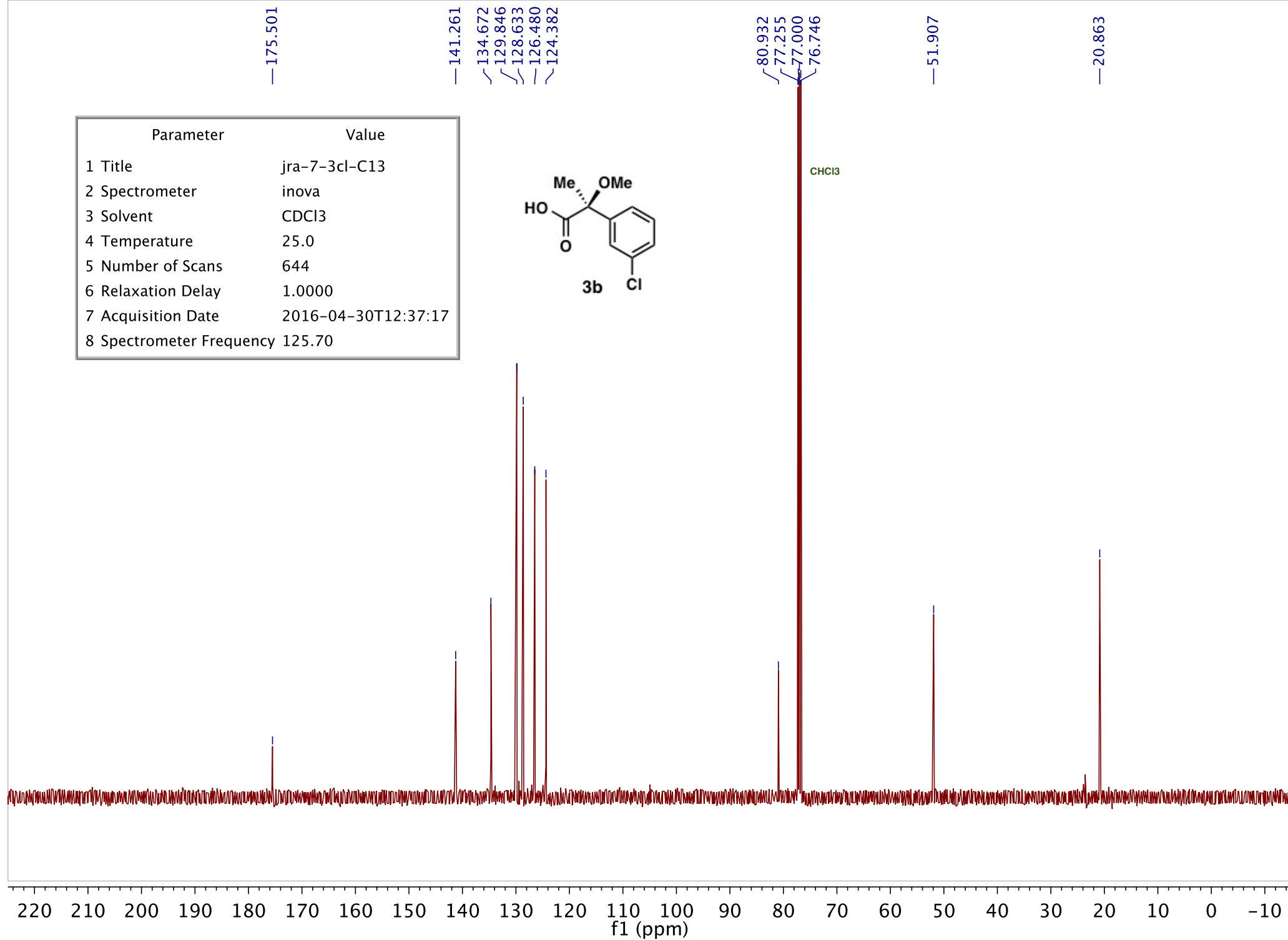
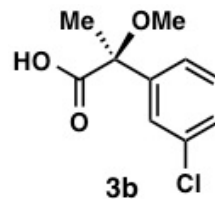
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2 Spectrometer	inova
3 Solvent	CDCl3
4 Temperature	25.0
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8 Spectrometer Frequency	125.70



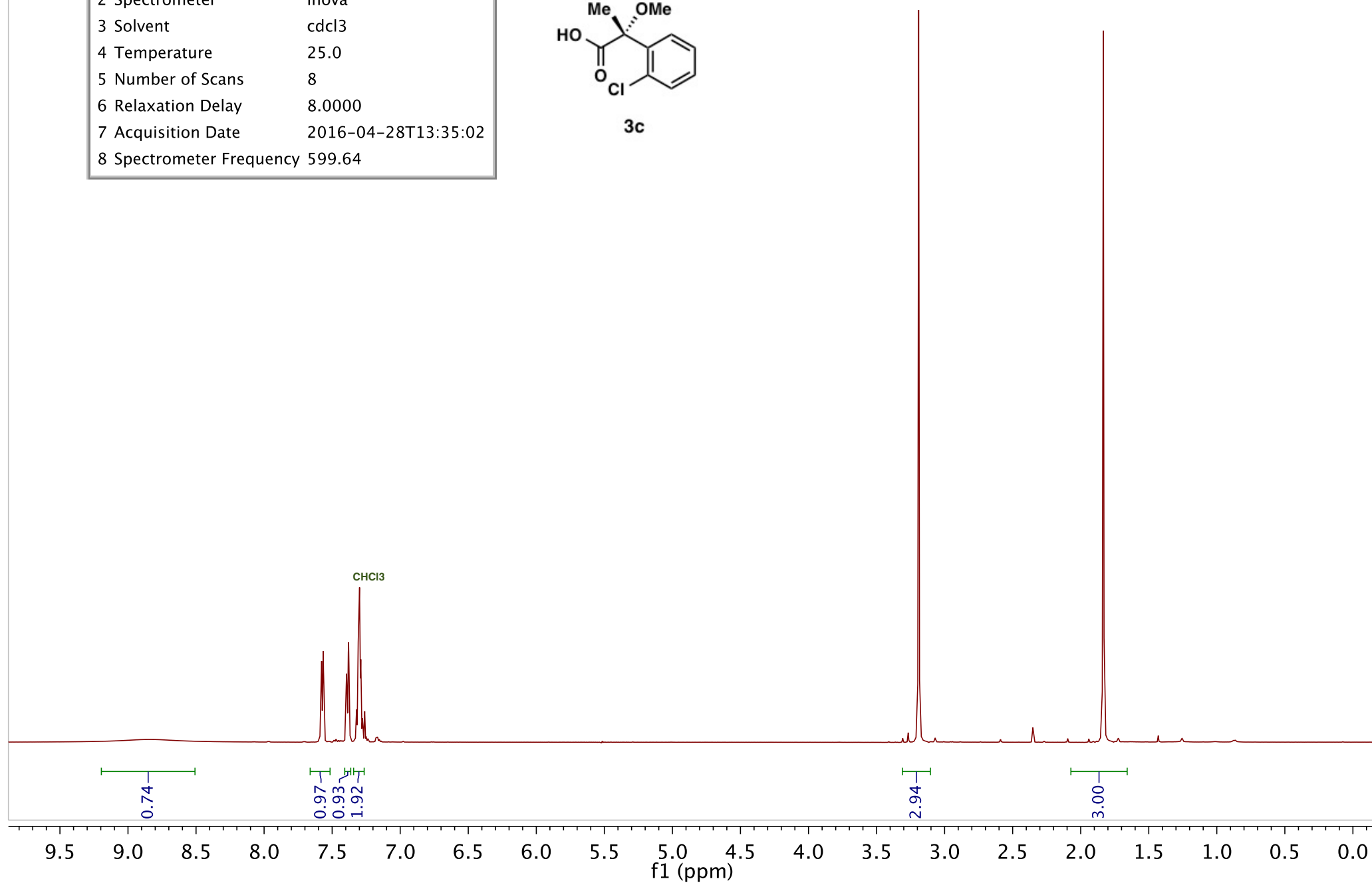
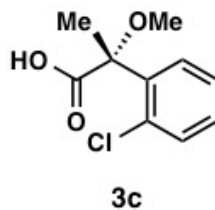
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1 Title	jra-7-3cl
2 Spectrometer	inova
3 Solvent	cdcl3
4 Temperature	25.0
5 Number of Scans	8
6 Relaxation Delay	8.0000
7 Acquisition Date	2016-04-29T16:04:07
8 Spectrometer Frequency	599.64

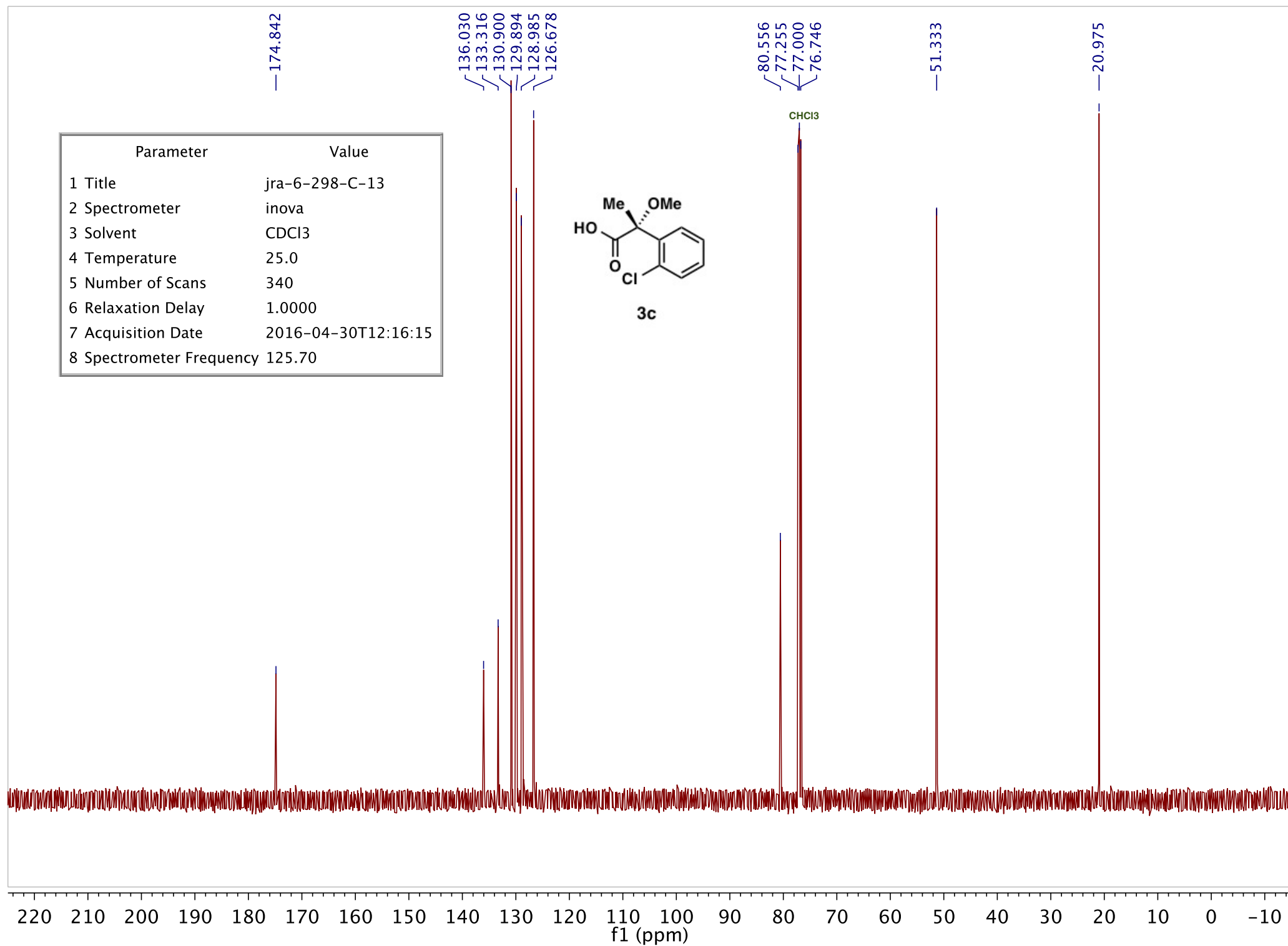


Parameter	Value
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2 Spectrometer	inova
3 Solvent	CDCl3
4 Temperature	25.0
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6 Relaxation Delay	1.0000
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8 Spectrometer Frequency	125.70

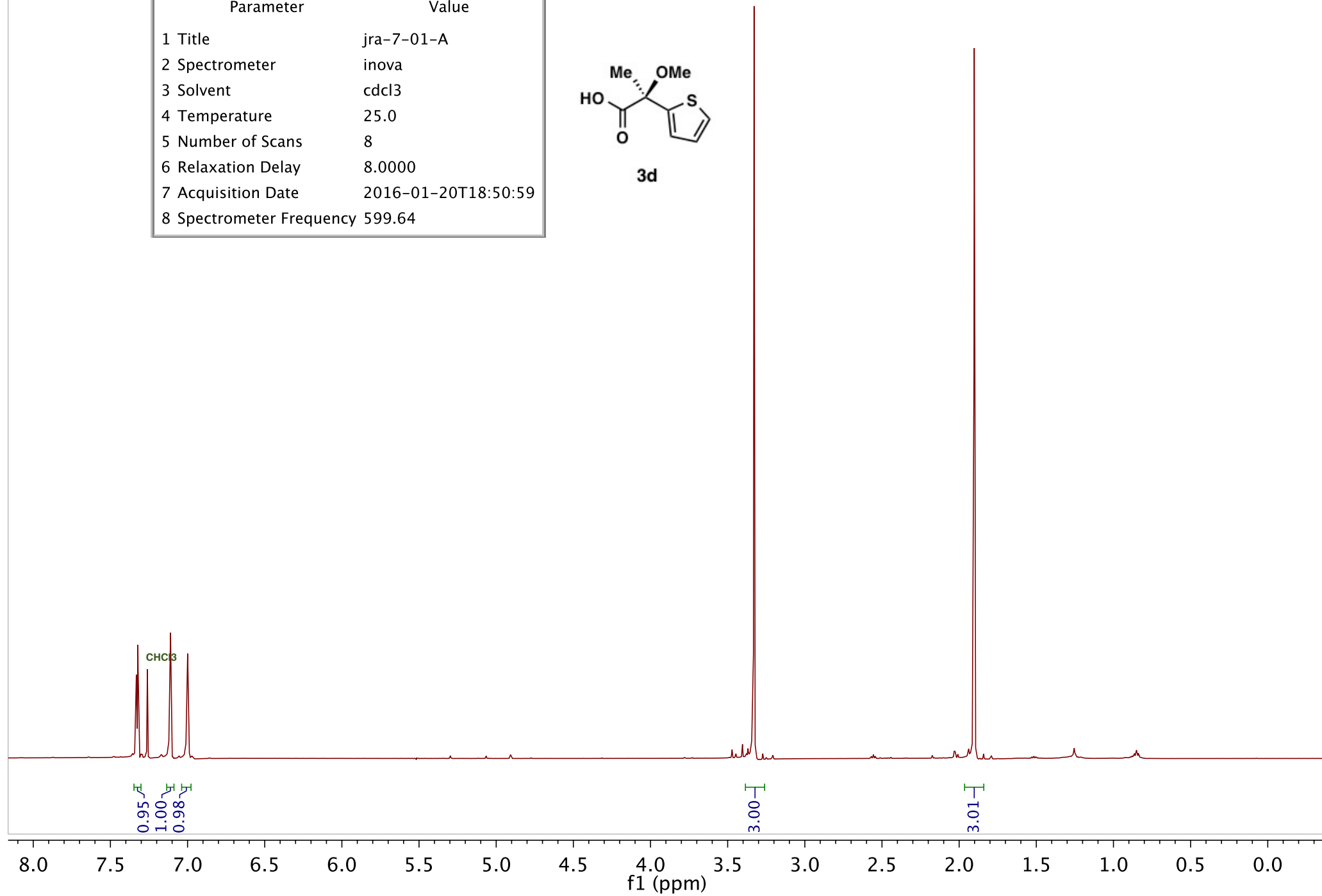
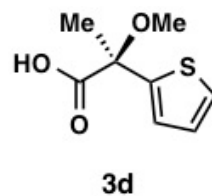


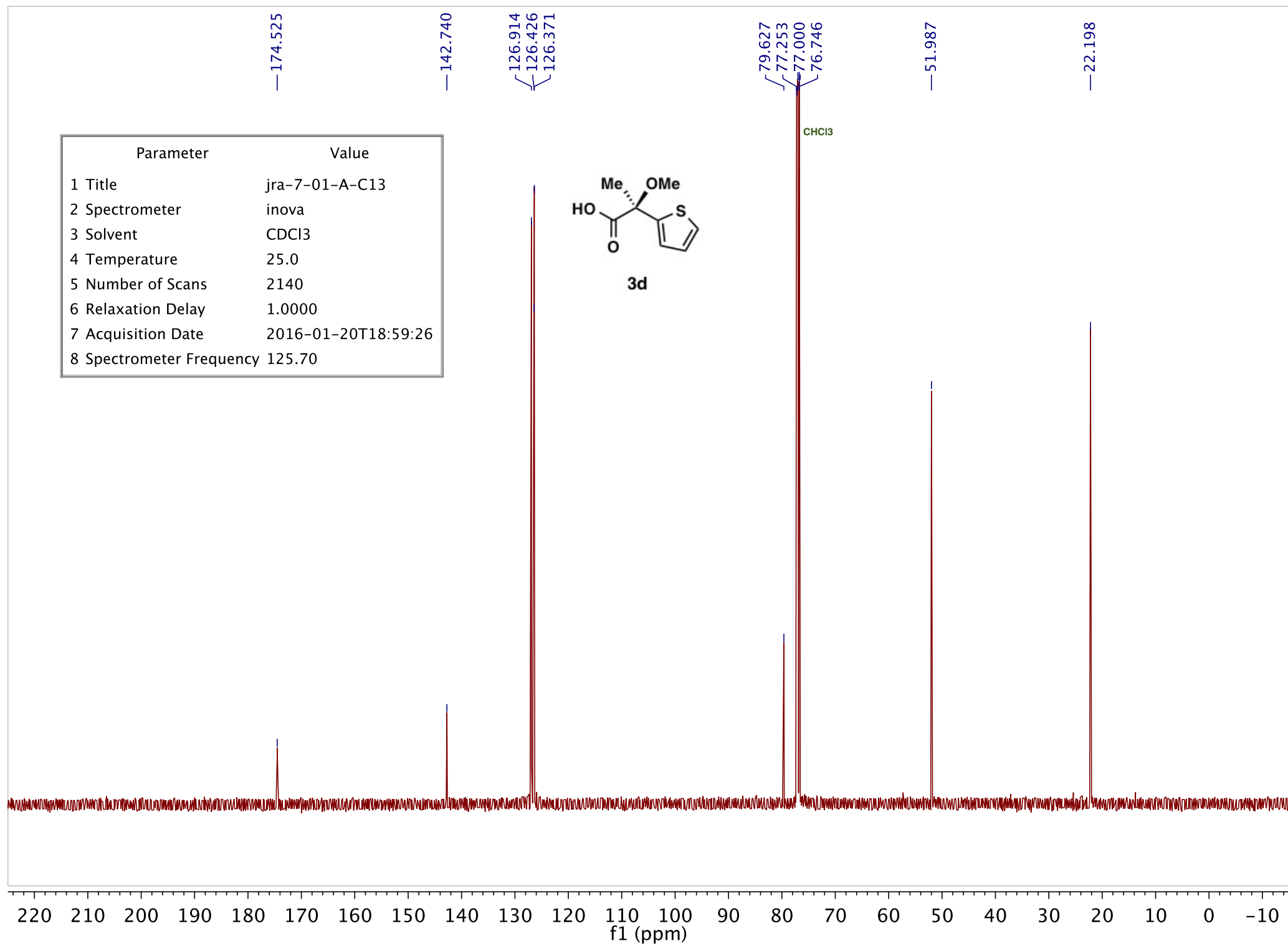
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2 Spectrometer	inova
3 Solvent	cdcl3
4 Temperature	25.0
5 Number of Scans	8
6 Relaxation Delay	8.0000
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8 Spectrometer Frequency	599.64



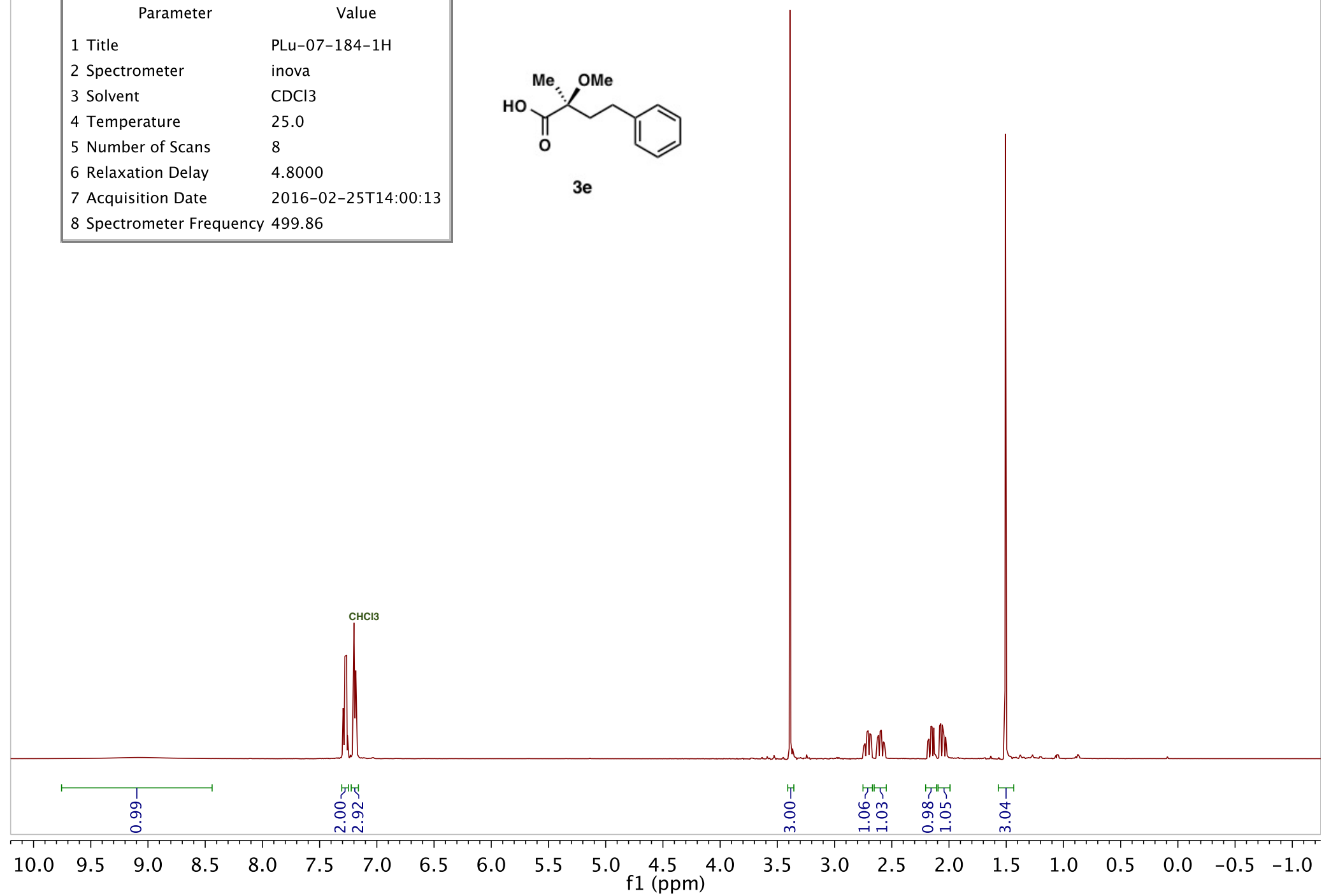
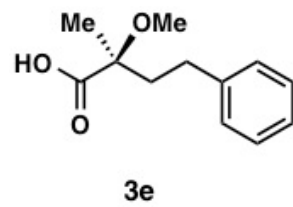


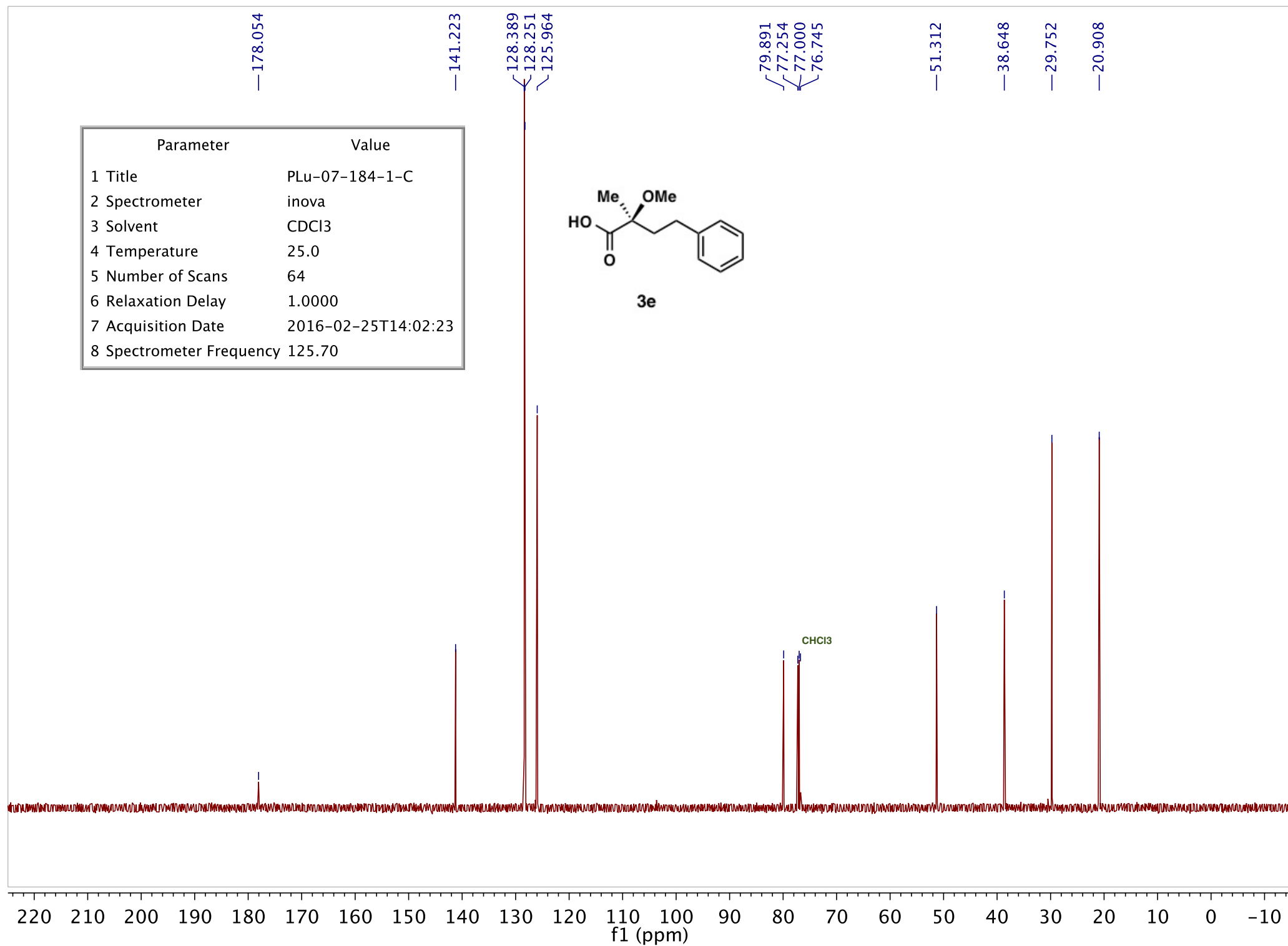
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2 Spectrometer	inova
3 Solvent	cdcl3
4 Temperature	25.0
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8 Spectrometer Frequency	599.64



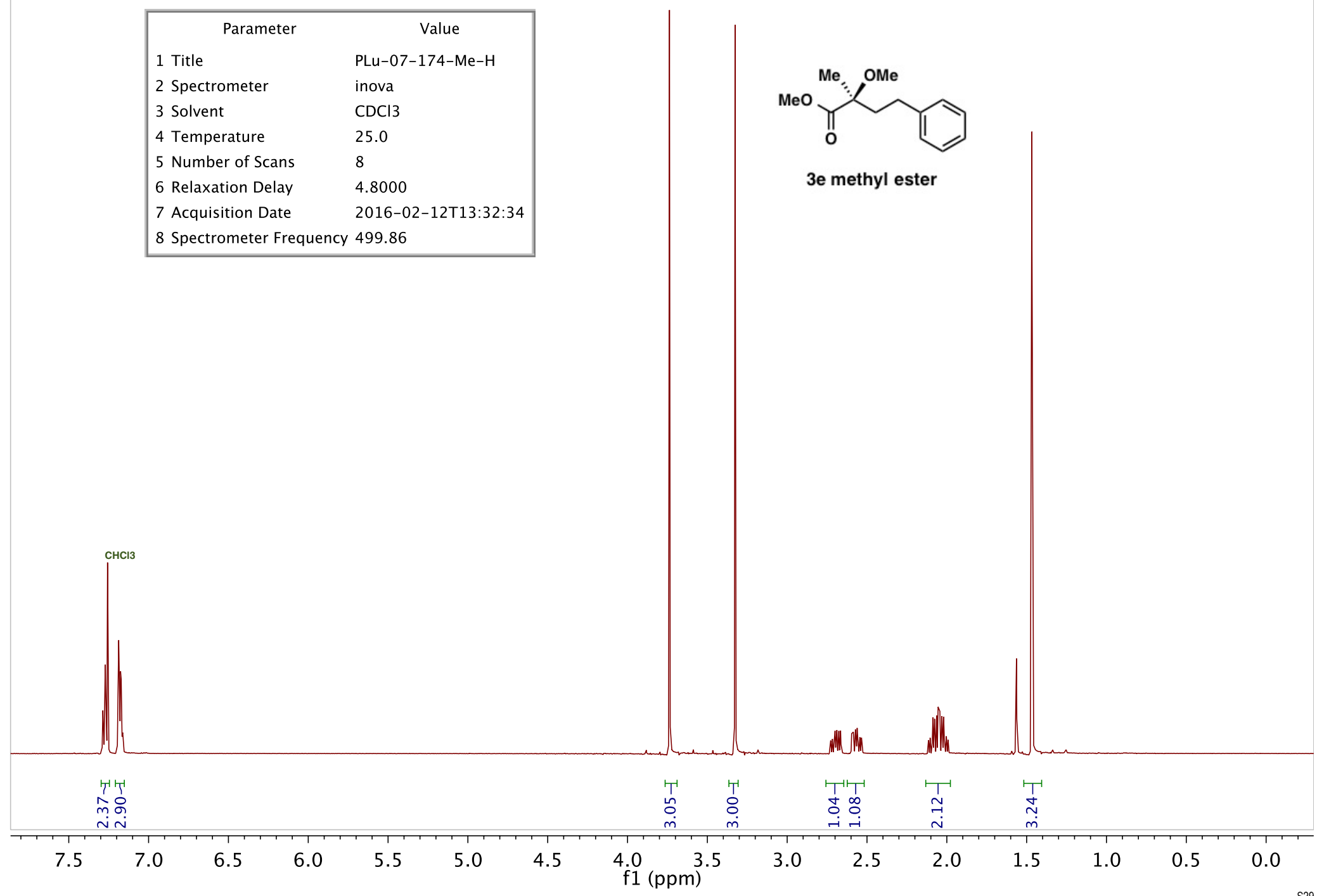
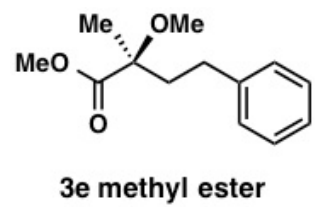


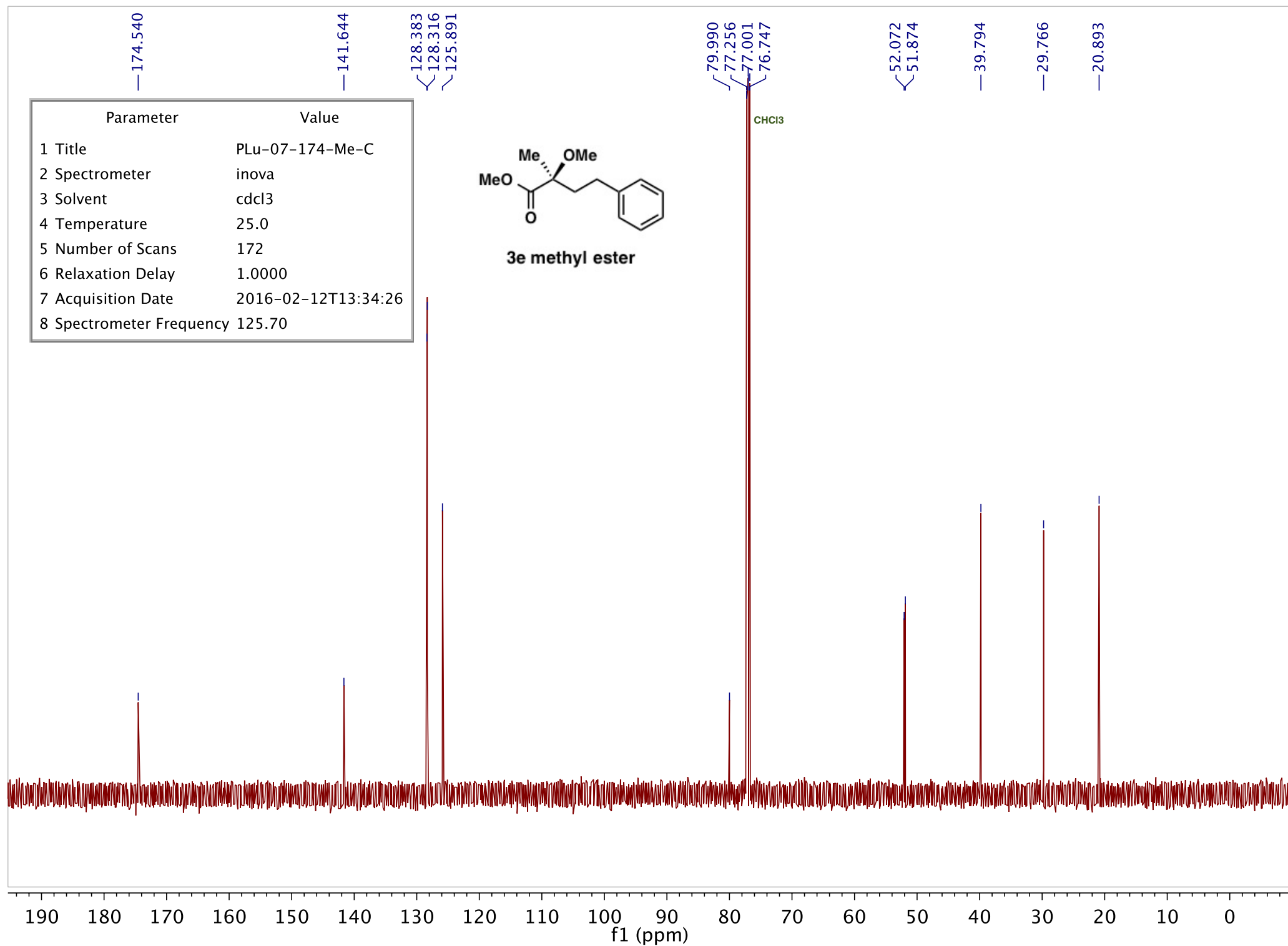
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3 Solvent	CDCl3
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8 Spectrometer Frequency	499.86



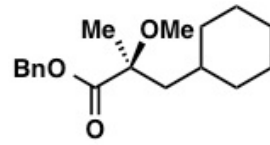


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2 Spectrometer	inova
3 Solvent	CDCl3
4 Temperature	25.0
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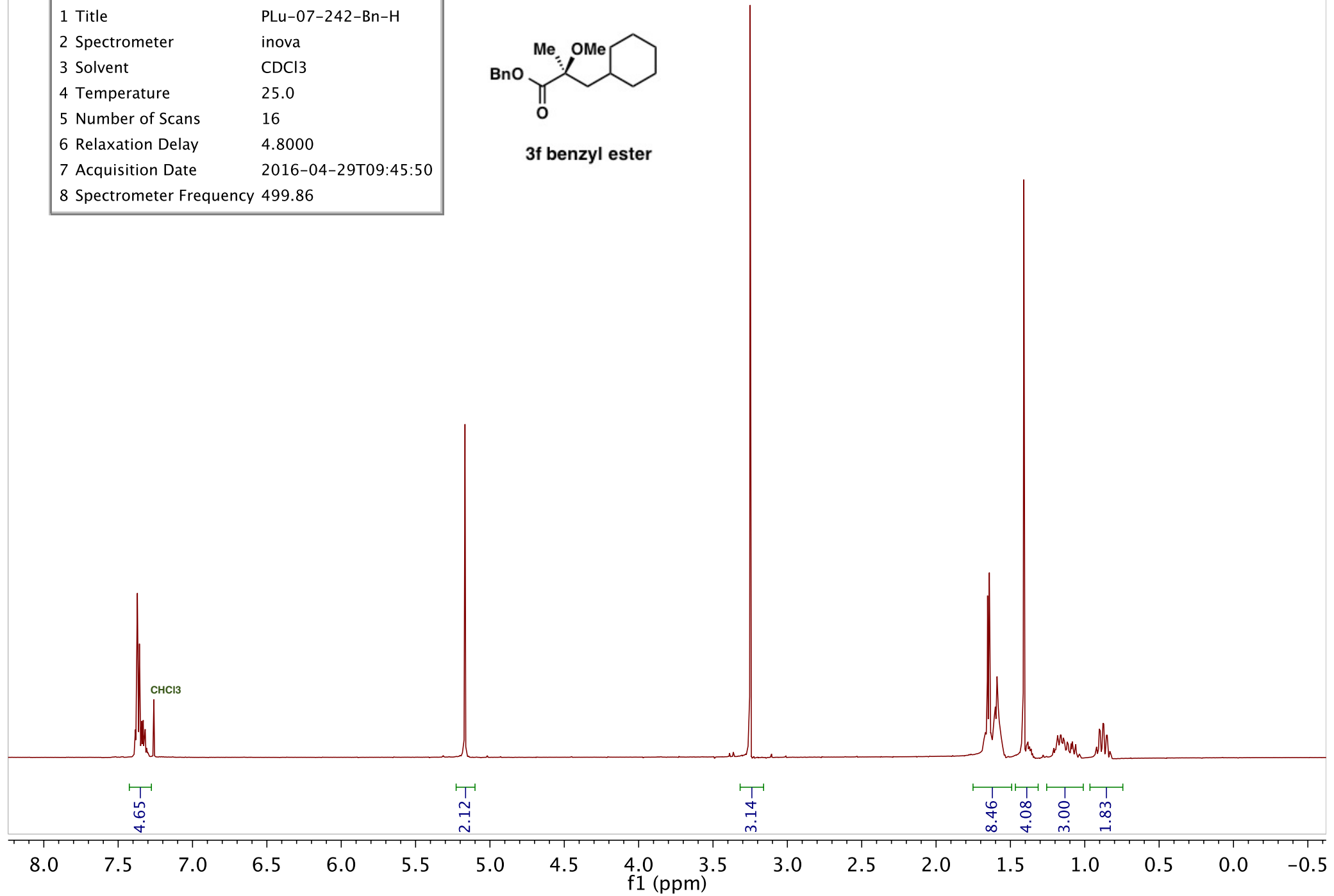


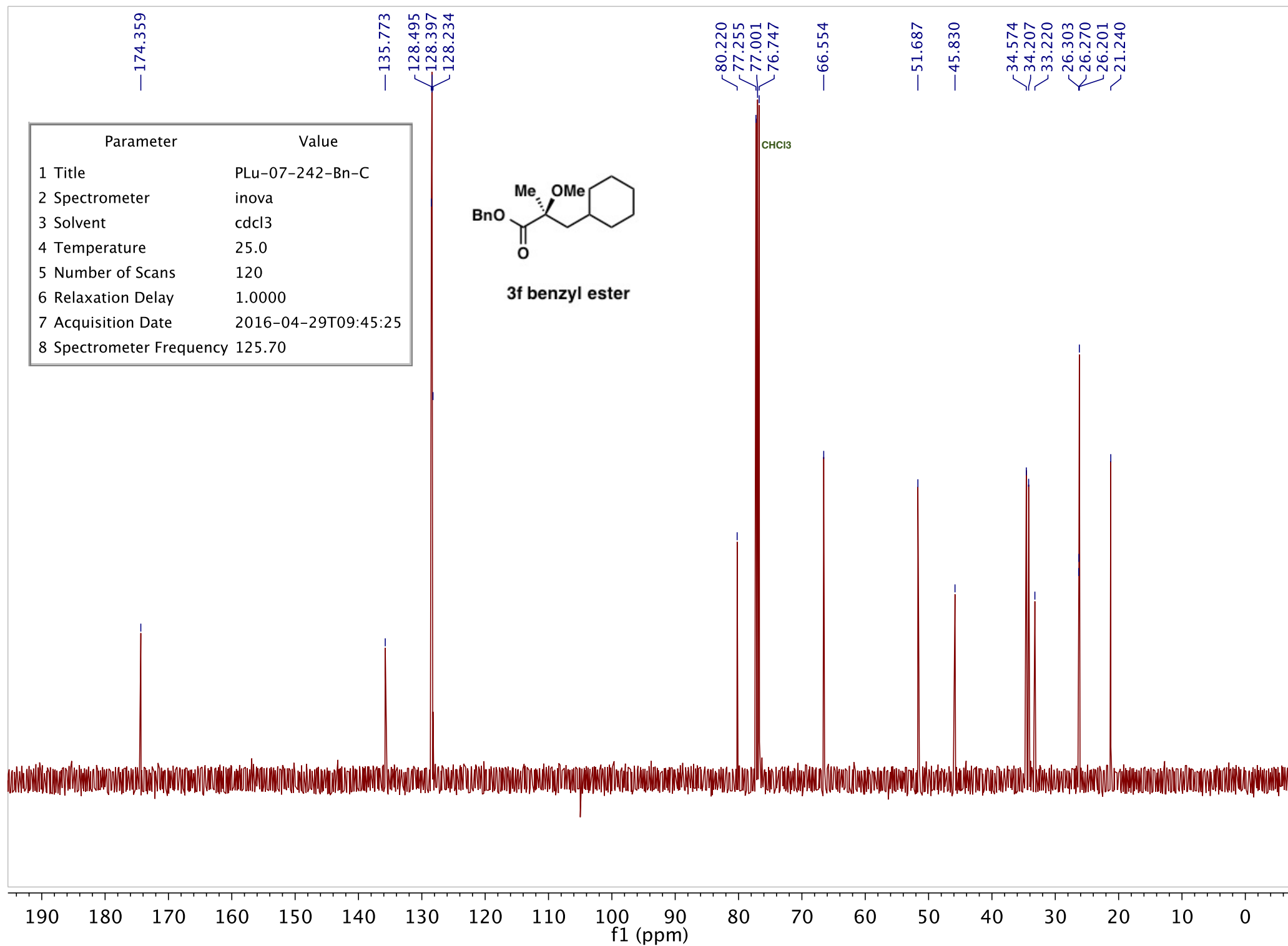


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1 Title	PLu-07-242-Bn-H
2 Spectrometer	inova
3 Solvent	CDCl3
4 Temperature	25.0
5 Number of Scans	16
6 Relaxation Delay	4.8000
7 Acquisition Date	2016-04-29T09:45:50
8 Spectrometer Frequency	499.86

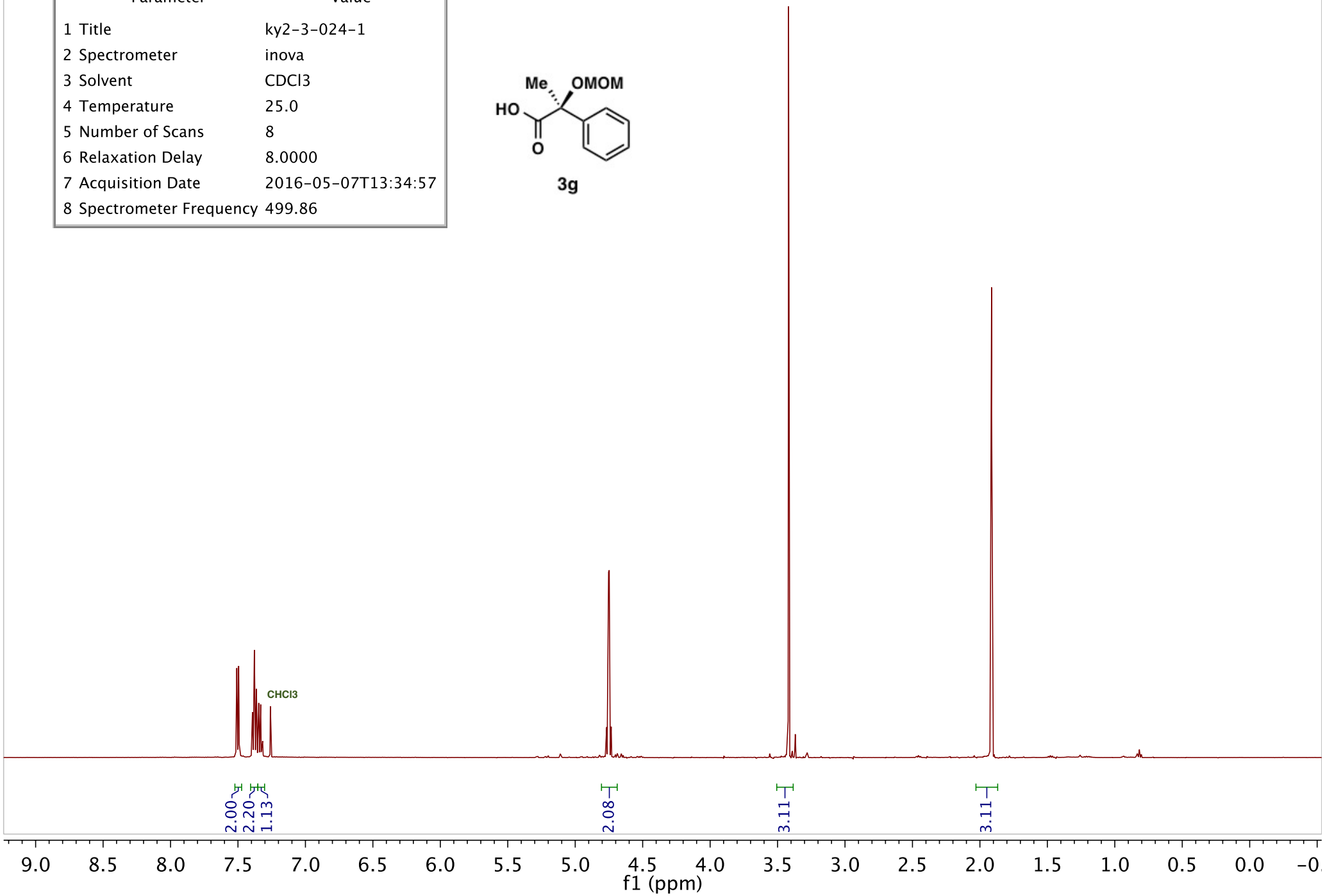
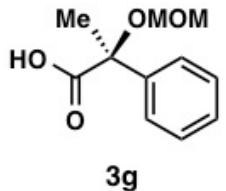


3f benzyl ester

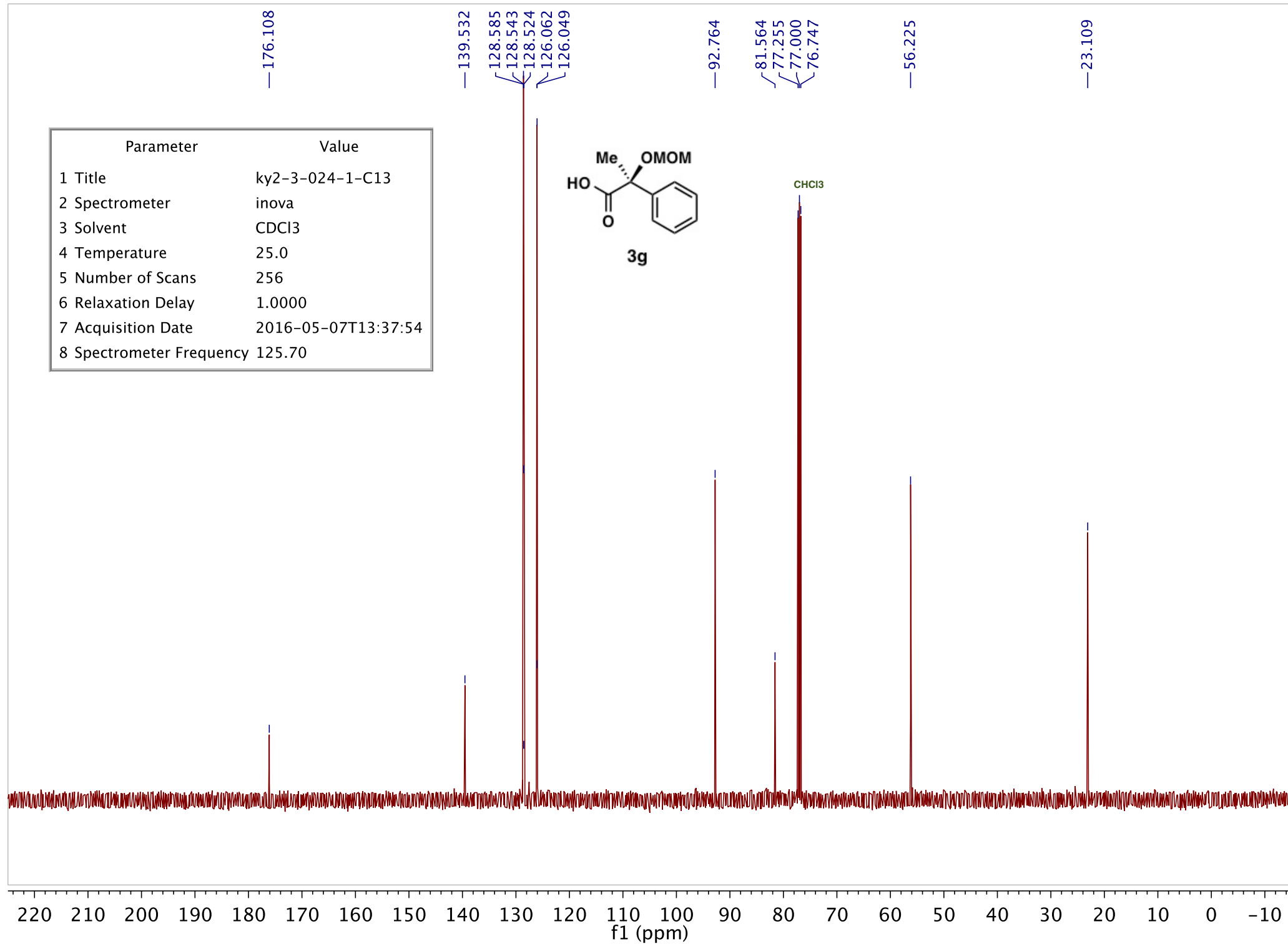
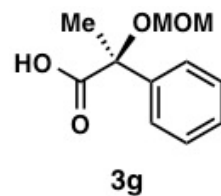




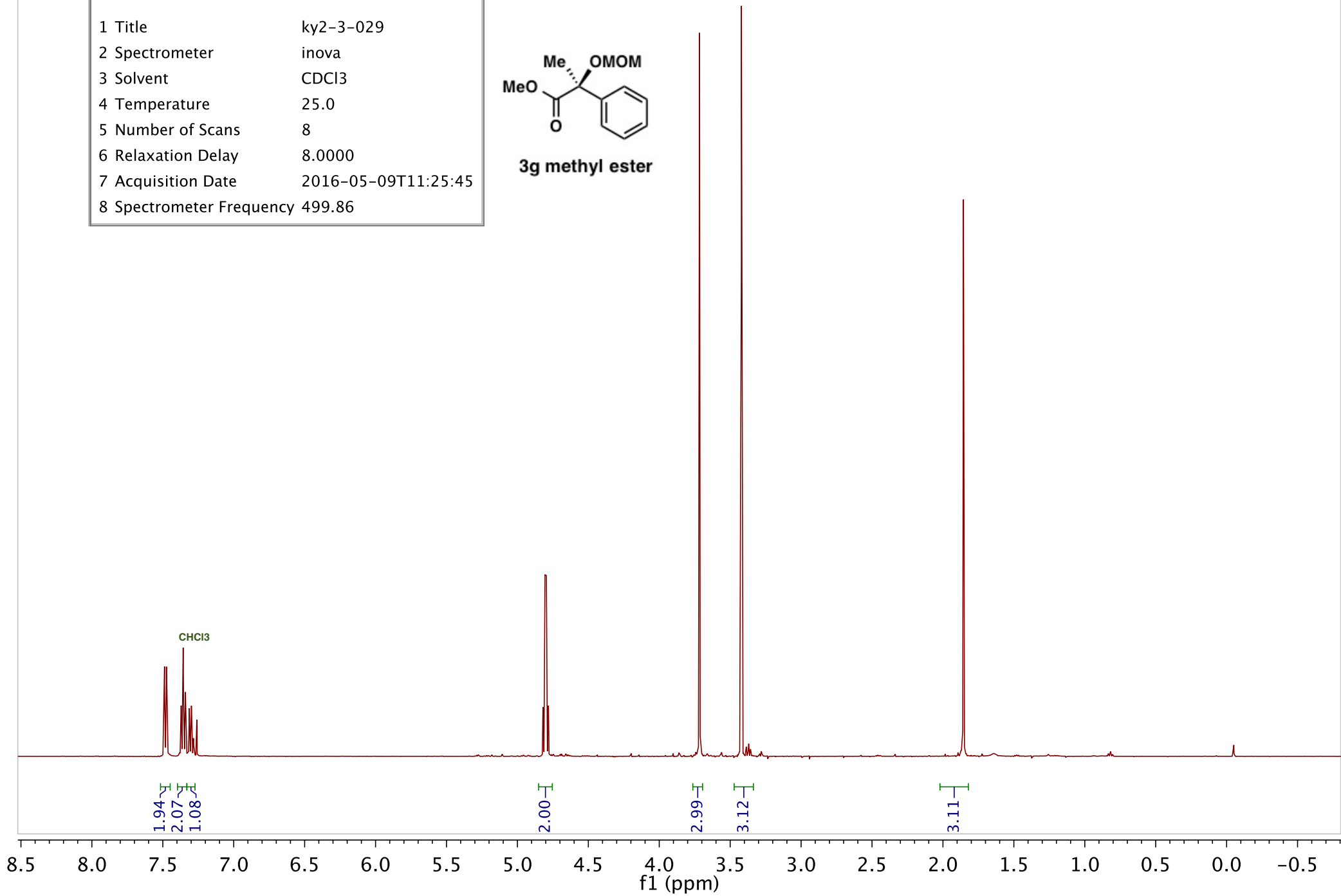
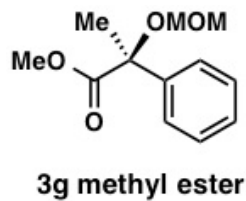
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1 Title	ky2-3-024-1
2 Spectrometer	inova
3 Solvent	CDCl3
4 Temperature	25.0
5 Number of Scans	8
6 Relaxation Delay	8.0000
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8 Spectrometer Frequency	499.86

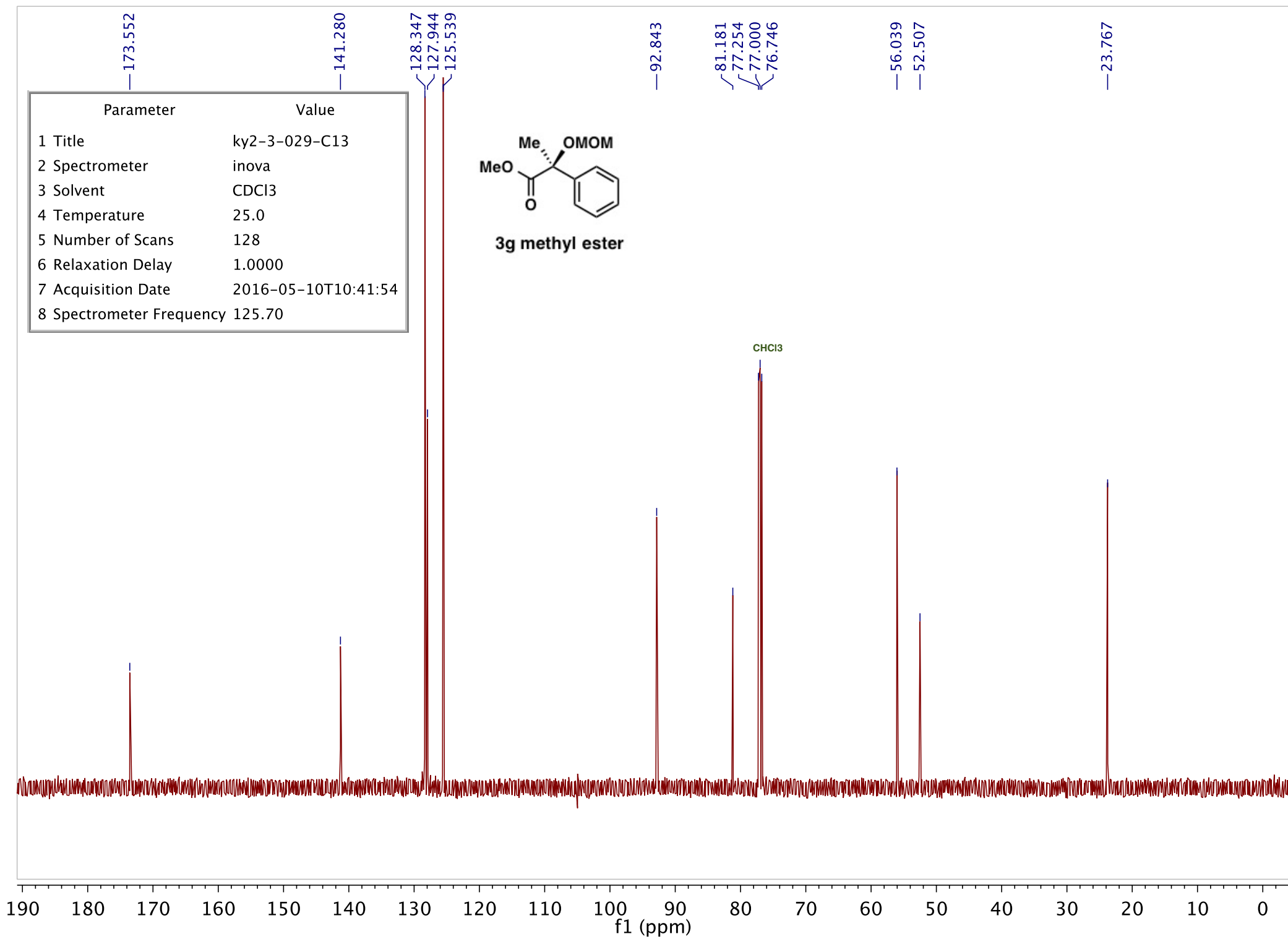


Parameter	Value
1 Title	ky2-3-024-1-C13
2 Spectrometer	inova
3 Solvent	CDCl3
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6 Relaxation Delay	1.0000
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8 Spectrometer Frequency	125.70

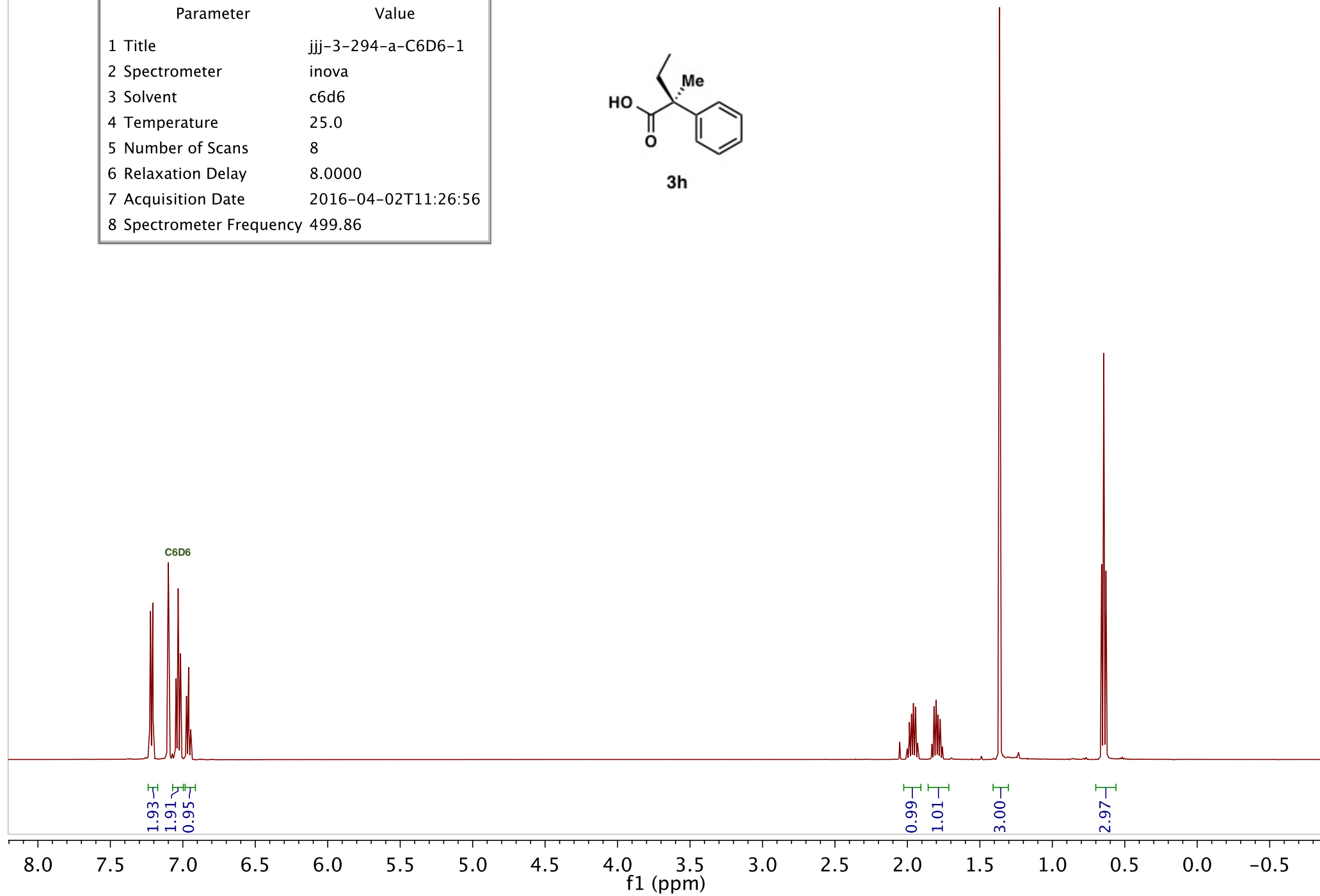
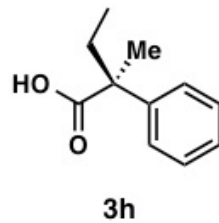


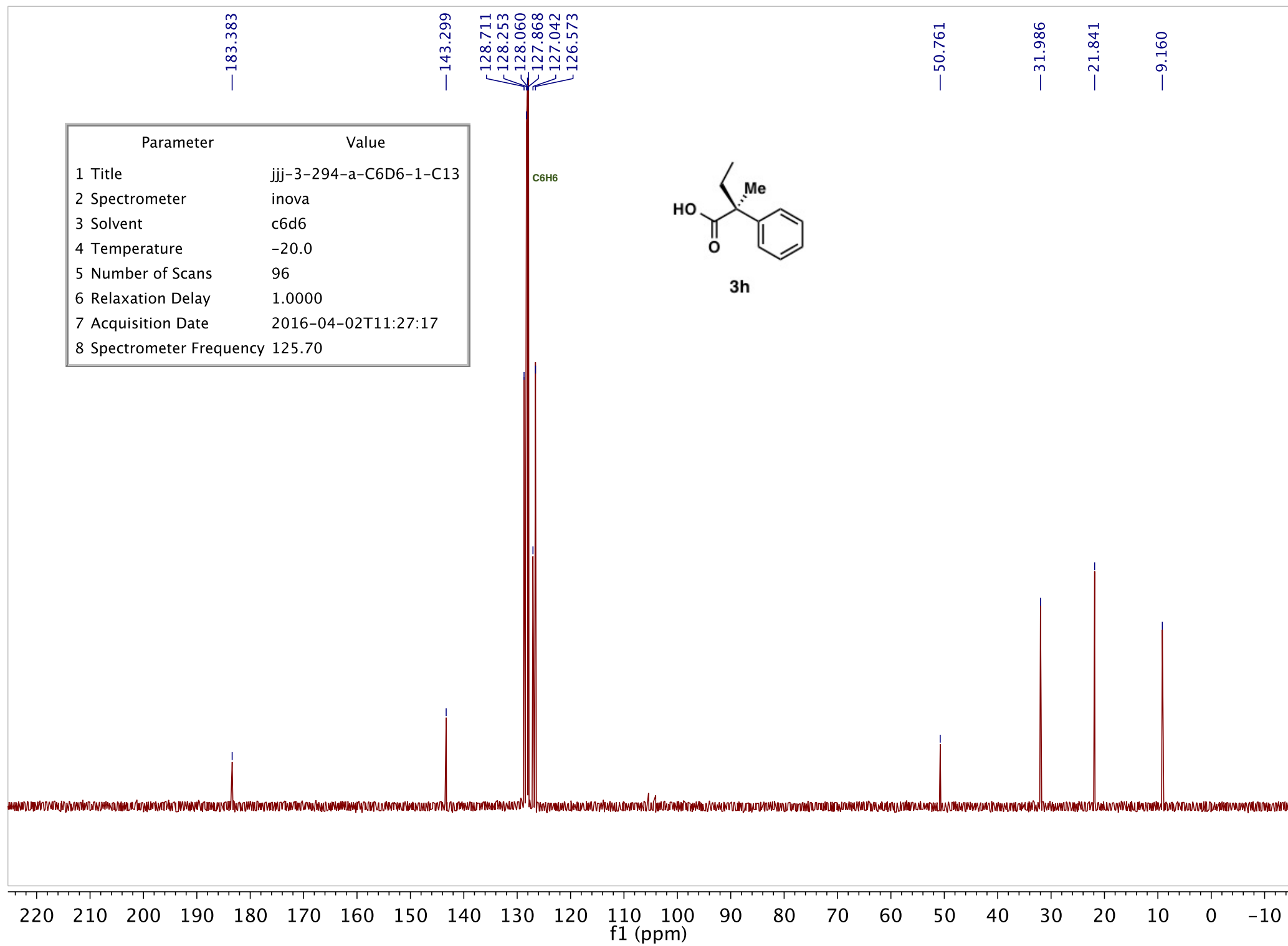
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2 Spectrometer	inova
3 Solvent	CDCl3
4 Temperature	25.0
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6 Relaxation Delay	8.0000
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8 Spectrometer Frequency	499.86



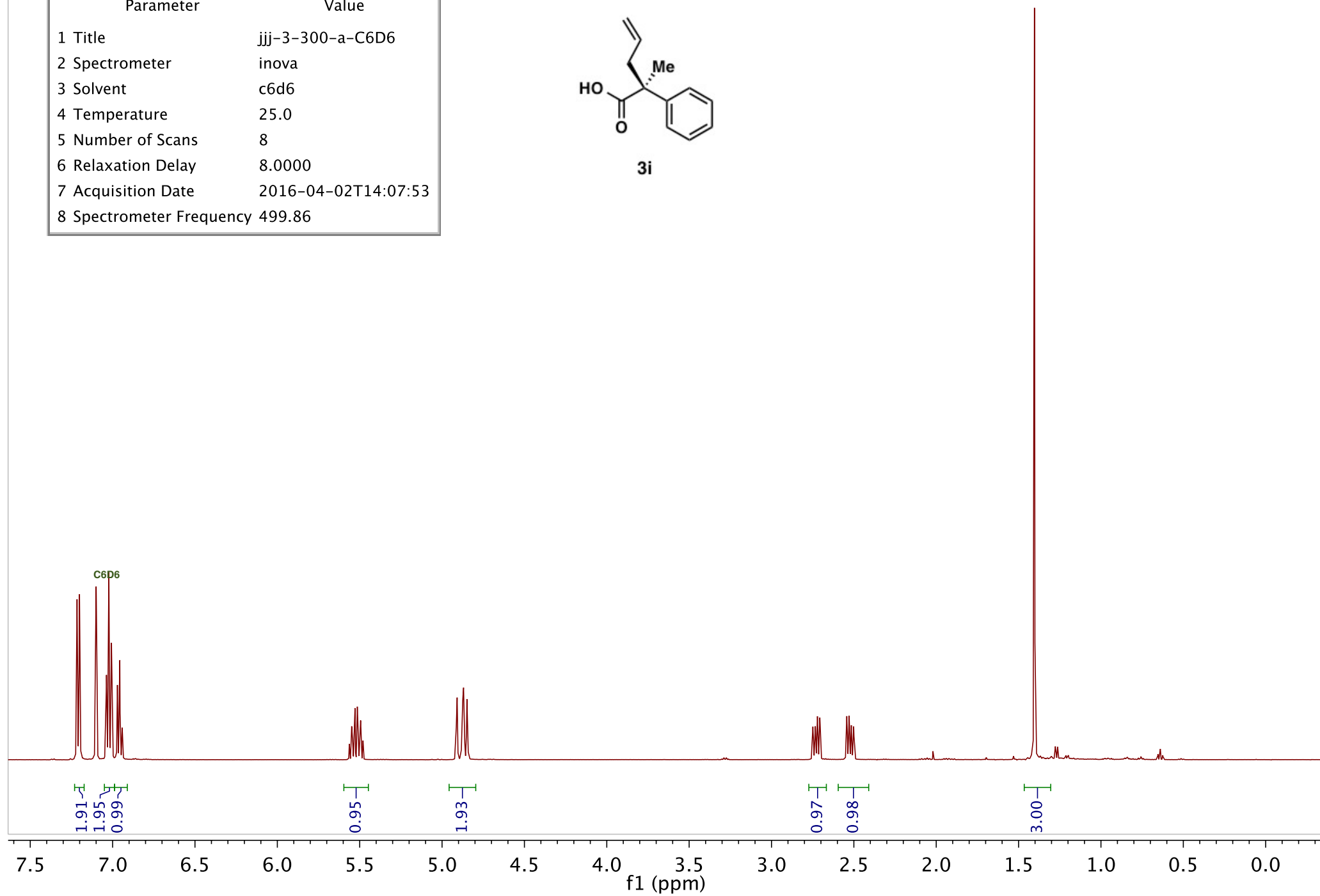
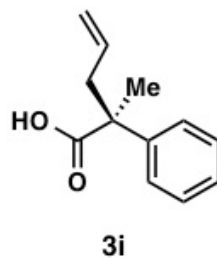


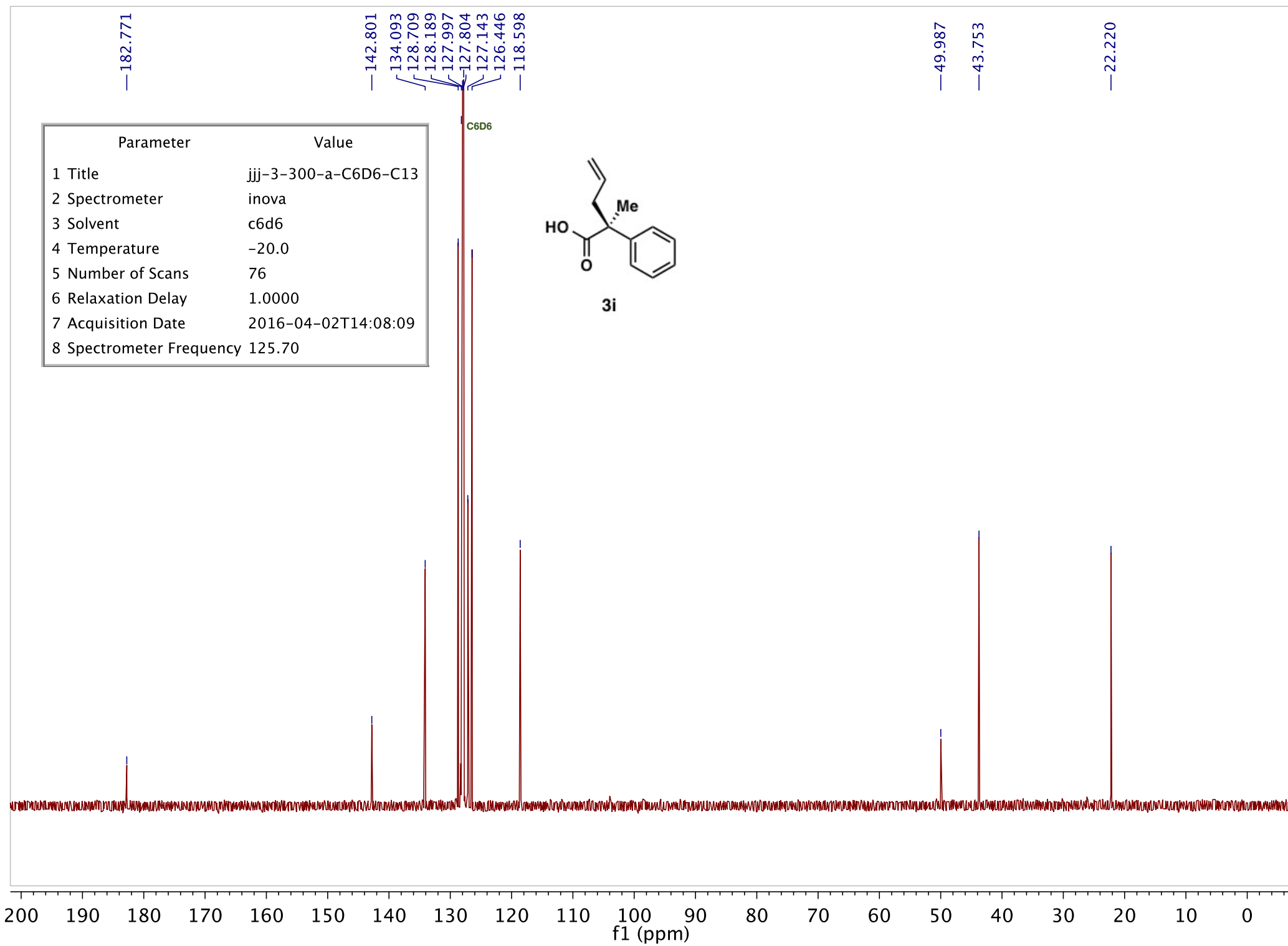
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2 Spectrometer	inova
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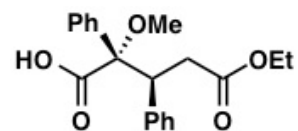


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1 Title	jjj-3-300-a-C6D6
2 Spectrometer	inova
3 Solvent	c6d6
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6 Relaxation Delay	8.0000
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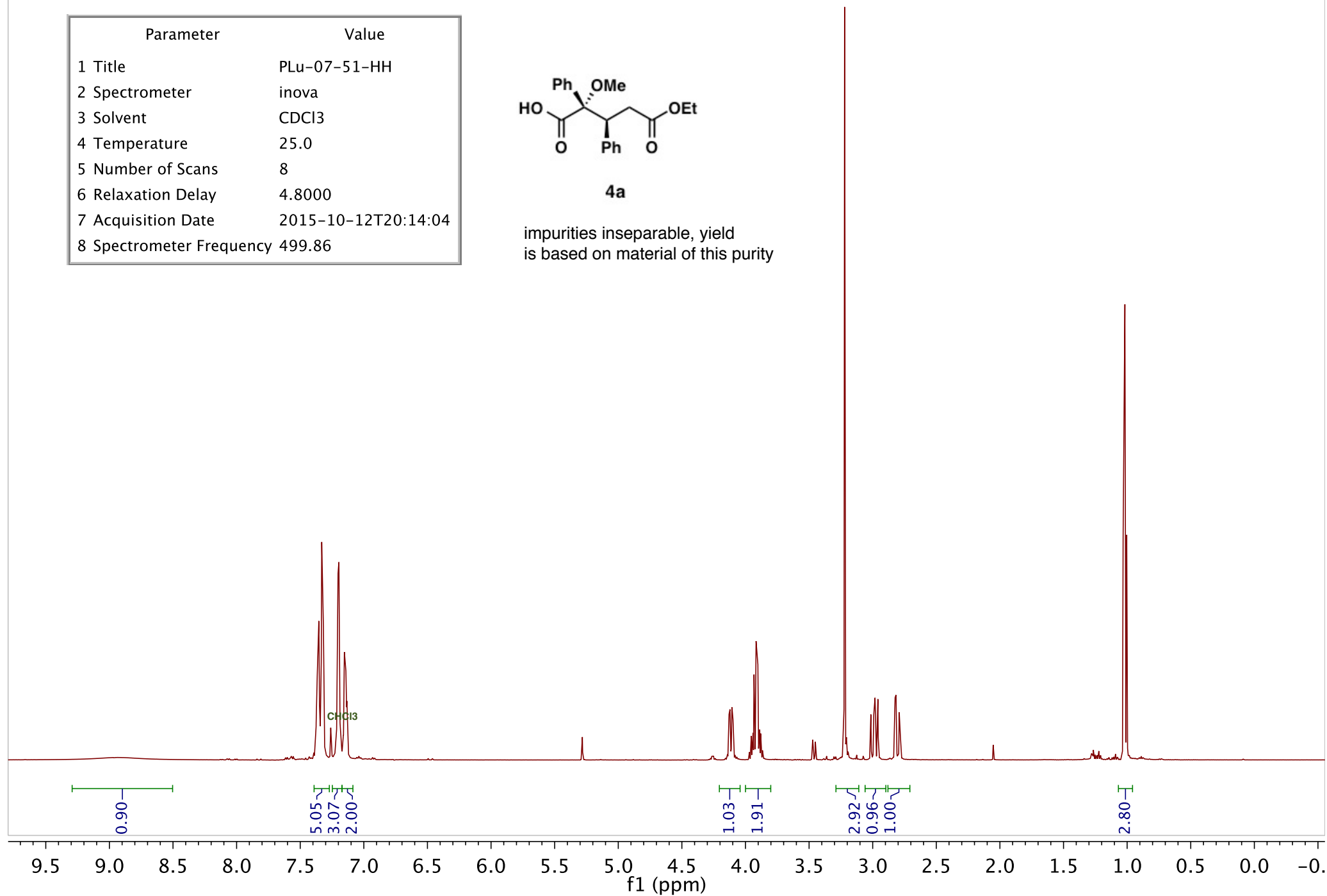


Parameter	Value
1 Title	PLu-07-51-HH
2 Spectrometer	inova
3 Solvent	CDCl3
4 Temperature	25.0
5 Number of Scans	8
6 Relaxation Delay	4.8000
7 Acquisition Date	2015-10-12T20:14:04
8 Spectrometer Frequency	499.86

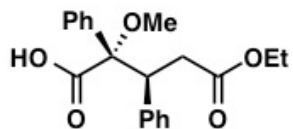


4a

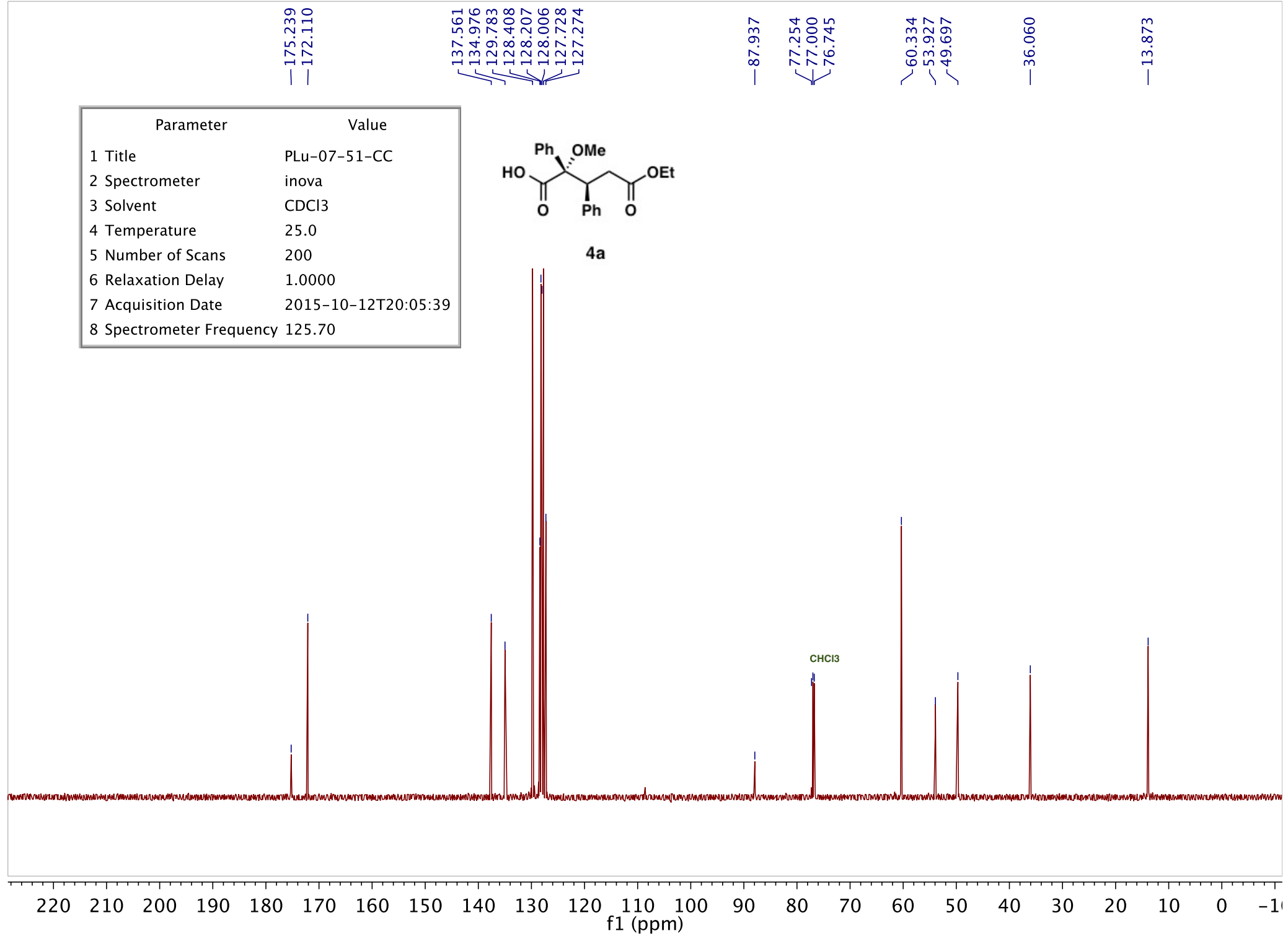
impurities inseparable, yield is based on material of this purity



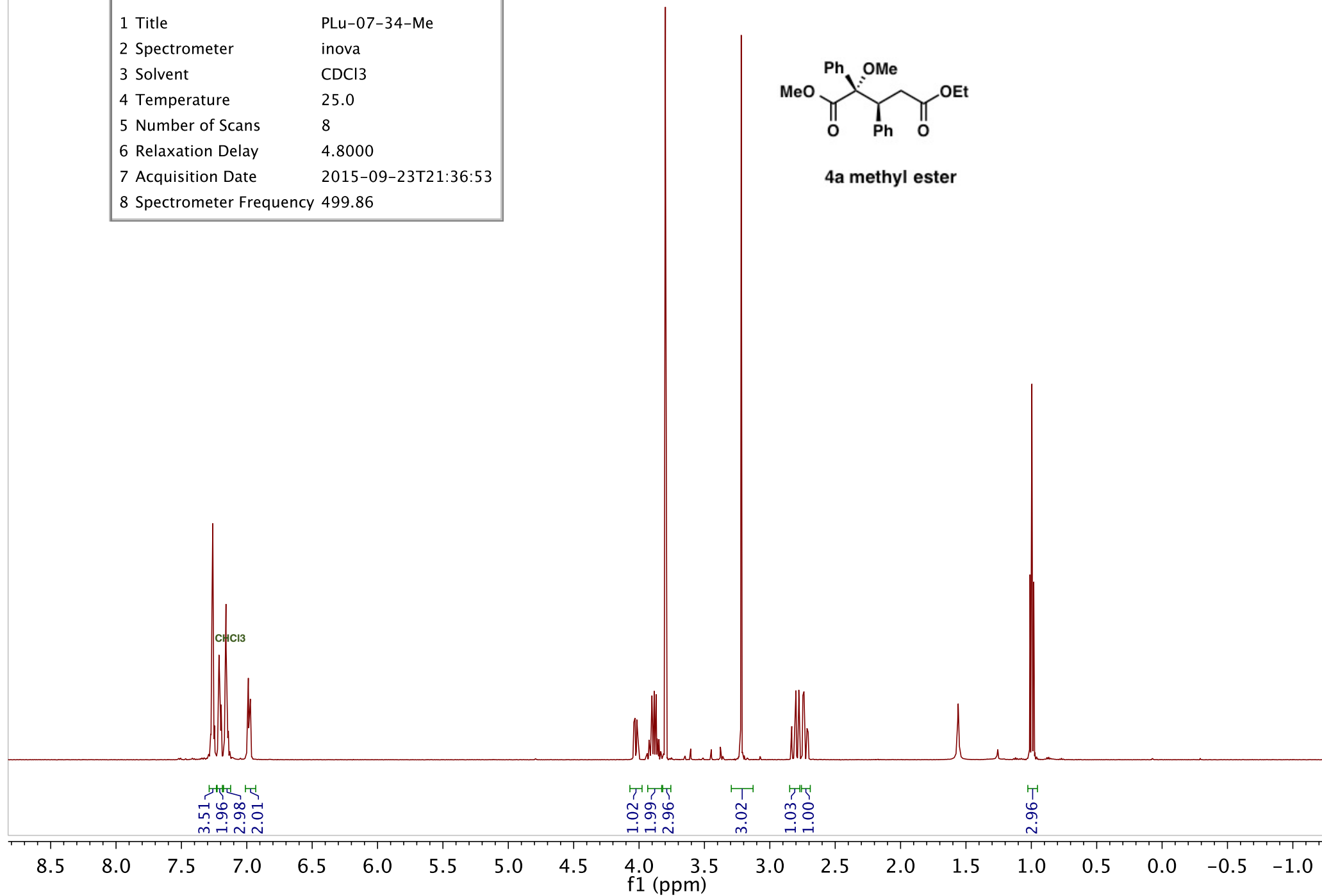
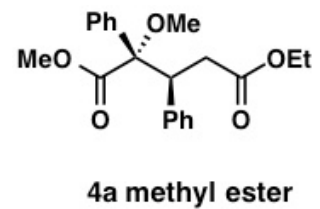
Parameter	Value
1 Title	PLu-07-51-CC
2 Spectrometer	inova
3 Solvent	CDCl3
4 Temperature	25.0
5 Number of Scans	200
6 Relaxation Delay	1.0000
7 Acquisition Date	2015-10-12T20:05:39
8 Spectrometer Frequency	125.70



4a



Parameter	Value
1 Title	PLu-07-34-Me
2 Spectrometer	inova
3 Solvent	CDCl3
4 Temperature	25.0
5 Number of Scans	8
6 Relaxation Delay	4.8000
7 Acquisition Date	2015-09-23T21:36:53
8 Spectrometer Frequency	499.86



171.996
171.670

137.912
135.664
129.921
128.282
127.950
127.597
127.484
127.090

88.447

77.253
77.000
76.746

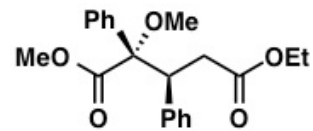
60.146

54.388
51.888
51.170

35.697

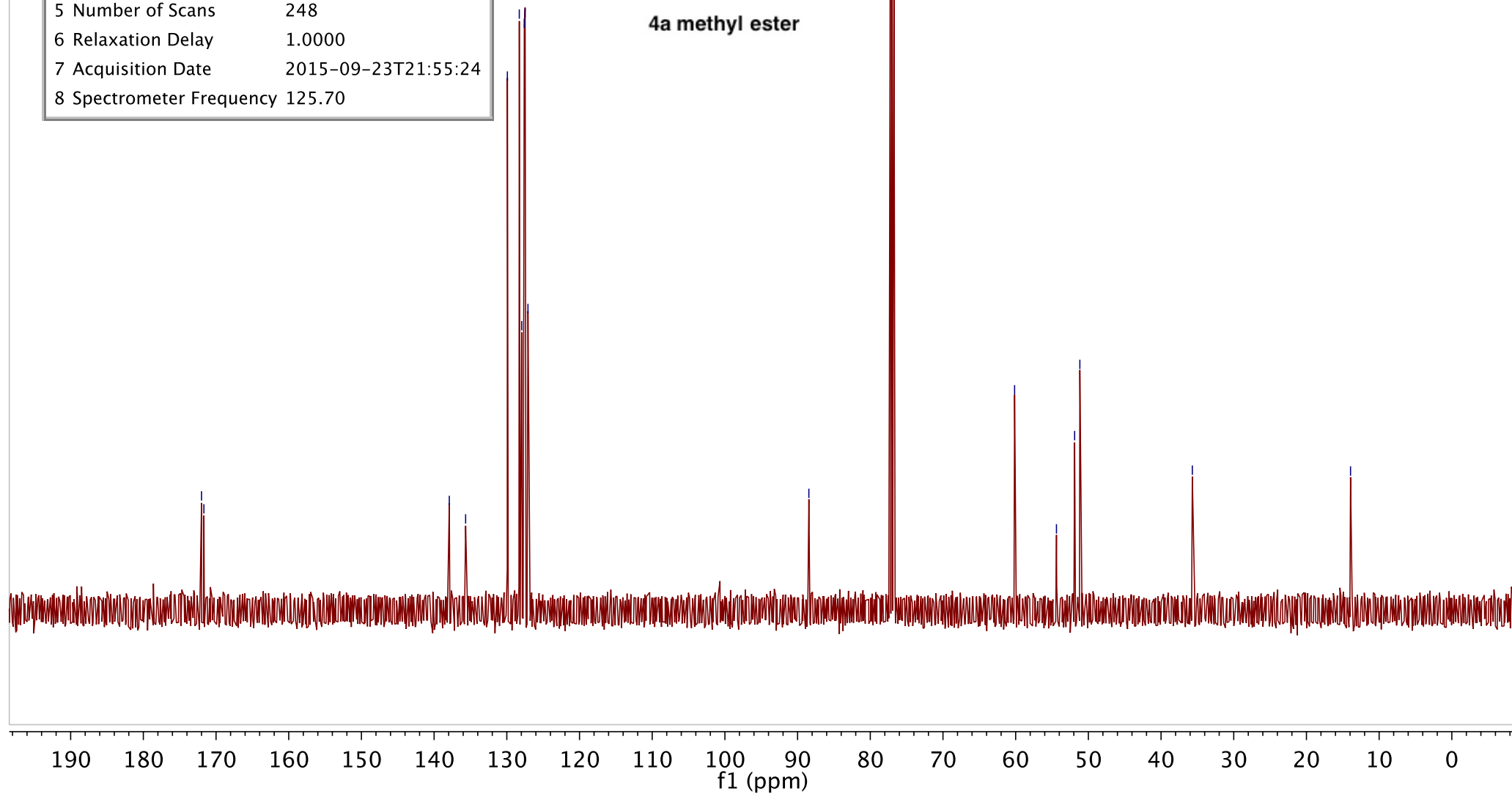
13.933

Parameter	Value
1 Title	PLu-07-34-Me-CC
2 Spectrometer	inova
3 Solvent	CDCl3
4 Temperature	20.0
5 Number of Scans	248
6 Relaxation Delay	1.0000
7 Acquisition Date	2015-09-23T21:55:24
8 Spectrometer Frequency	125.70

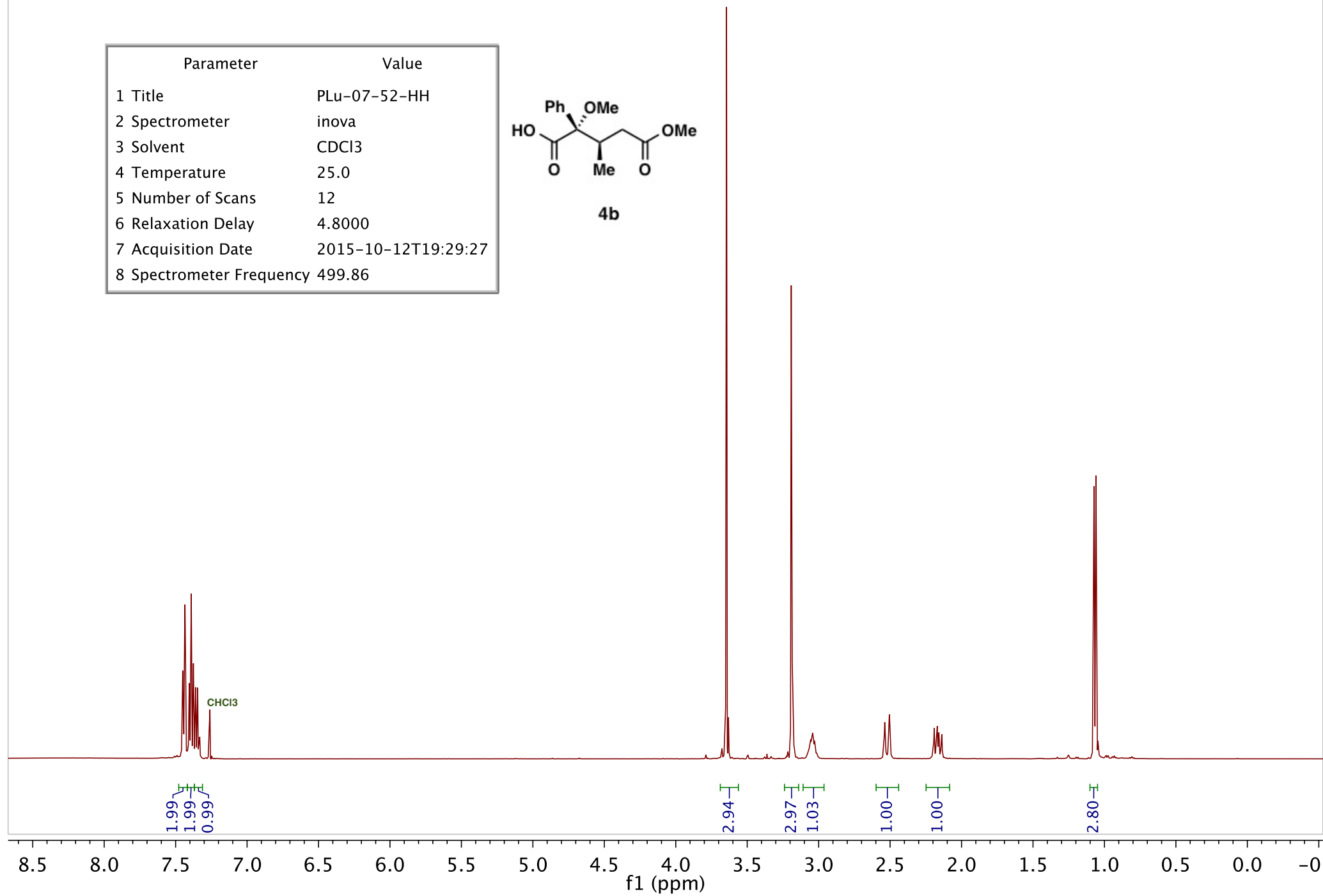
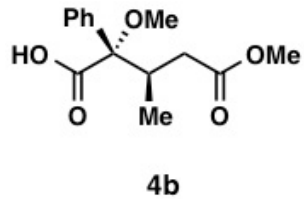


4a methyl ester

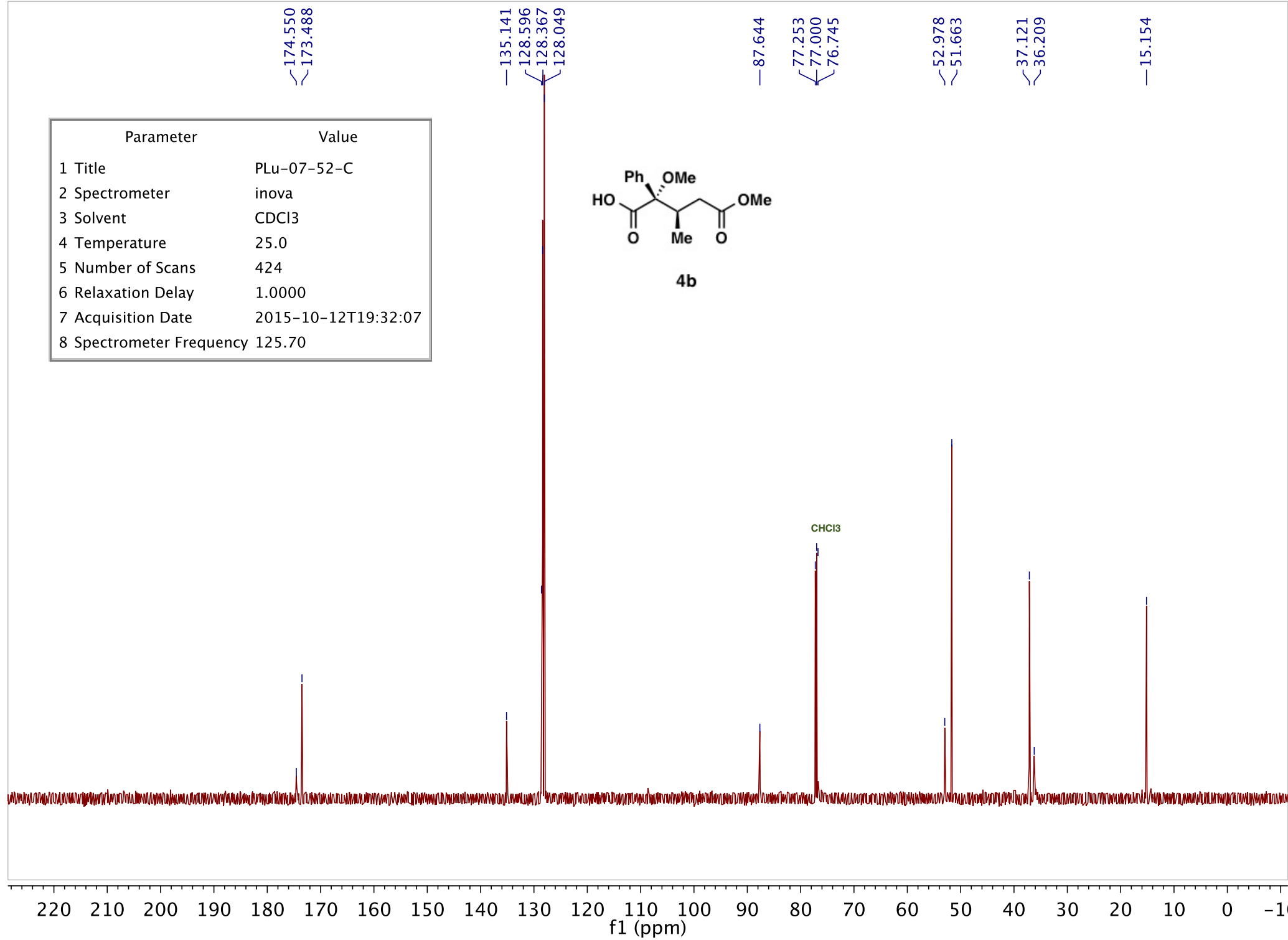
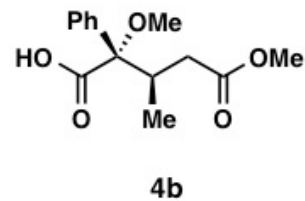
CHCl3



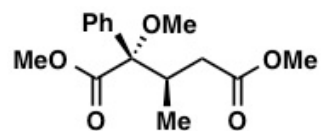
Parameter	Value
1 Title	PLu-07-52-HH
2 Spectrometer	inova
3 Solvent	CDCl3
4 Temperature	25.0
5 Number of Scans	12
6 Relaxation Delay	4.8000
7 Acquisition Date	2015-10-12T19:29:27
8 Spectrometer Frequency	499.86



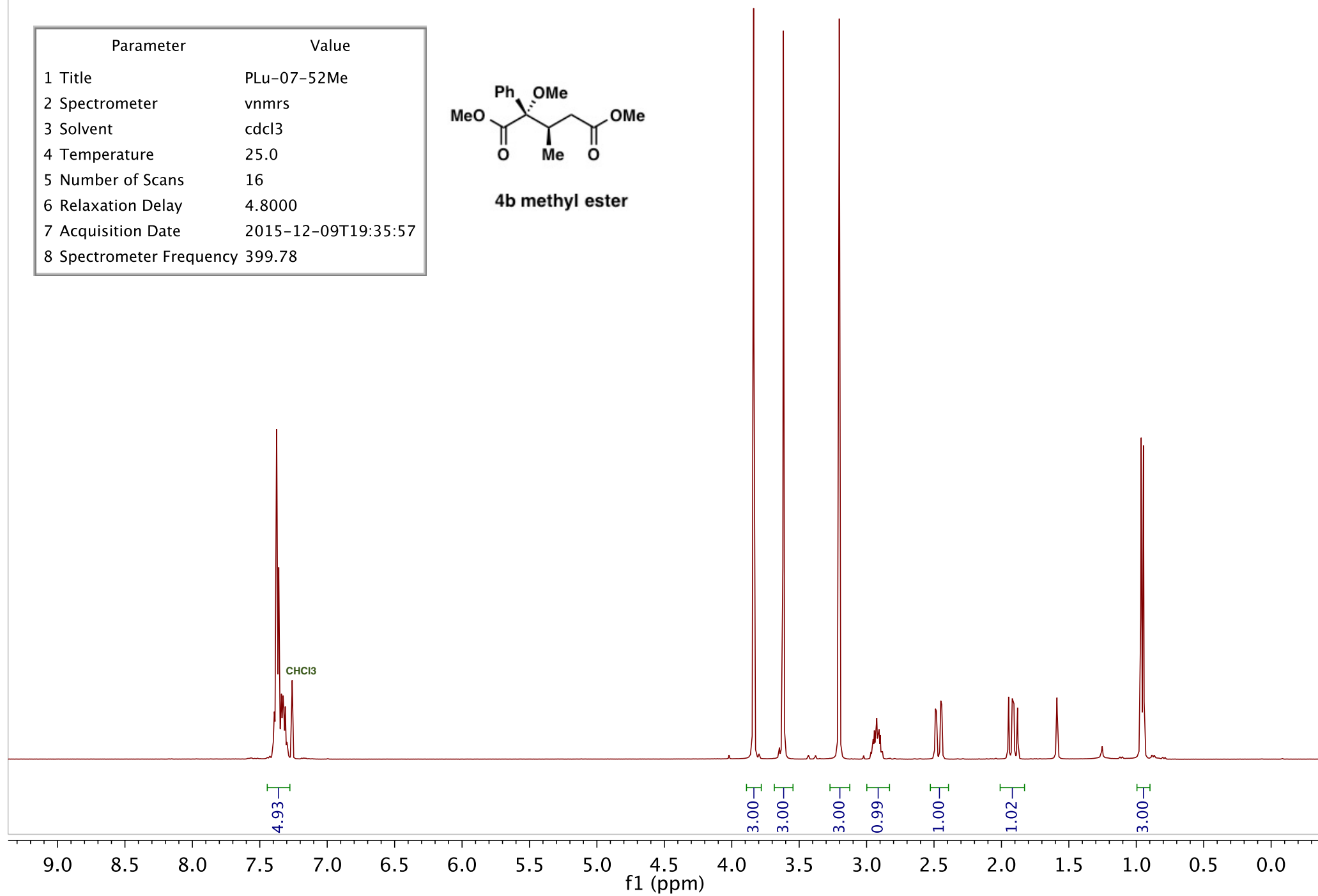
Parameter	Value
1 Title	PLu-07-52-C
2 Spectrometer	inova
3 Solvent	CDCl3
4 Temperature	25.0
5 Number of Scans	424
6 Relaxation Delay	1.0000
7 Acquisition Date	2015-10-12T19:32:07
8 Spectrometer Frequency	125.70

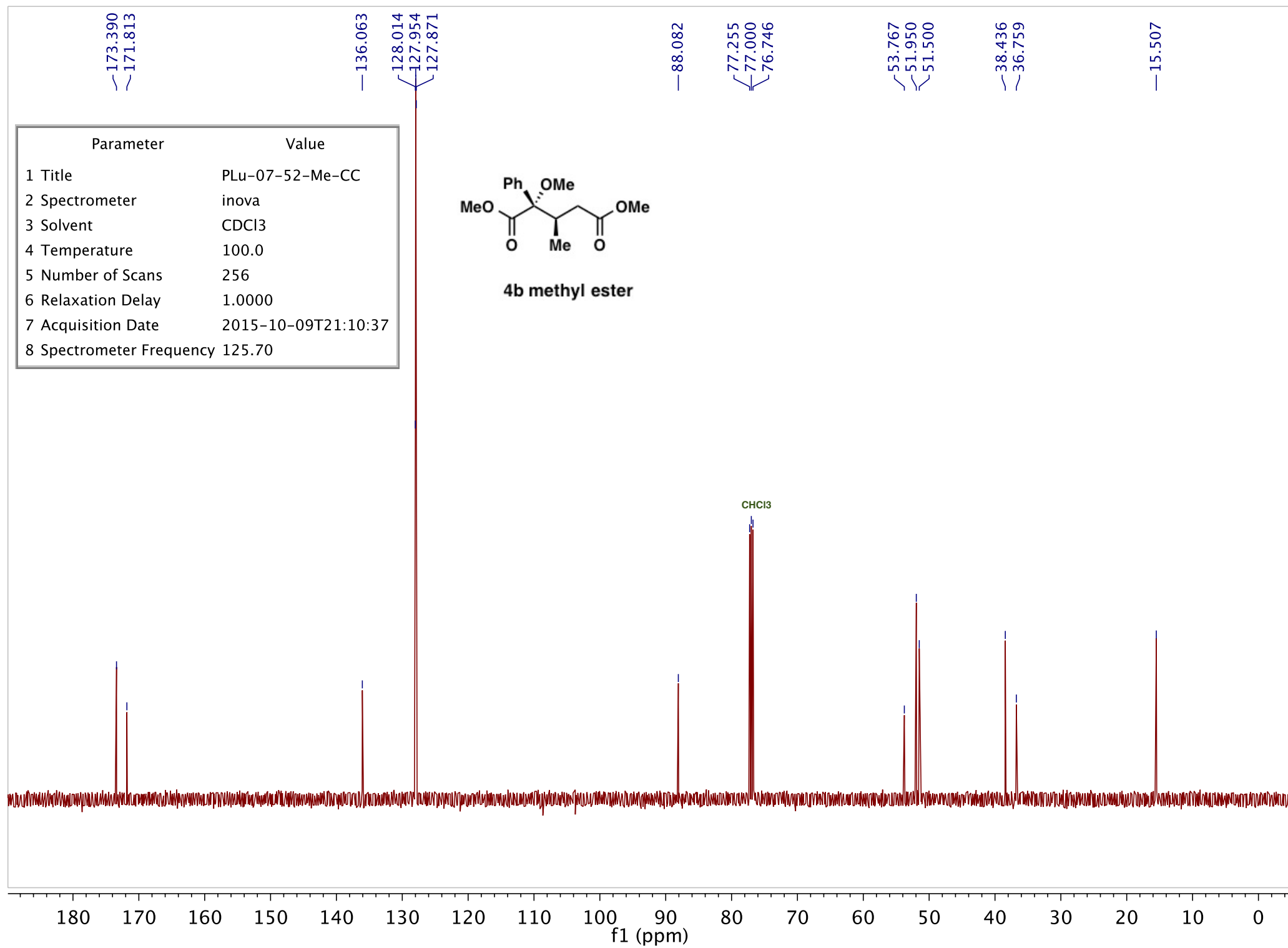


Parameter	Value
1 Title	PLu-07-52Me
2 Spectrometer	vnmrs
3 Solvent	cdcl3
4 Temperature	25.0
5 Number of Scans	16
6 Relaxation Delay	4.8000
7 Acquisition Date	2015-12-09T19:35:57
8 Spectrometer Frequency	399.78

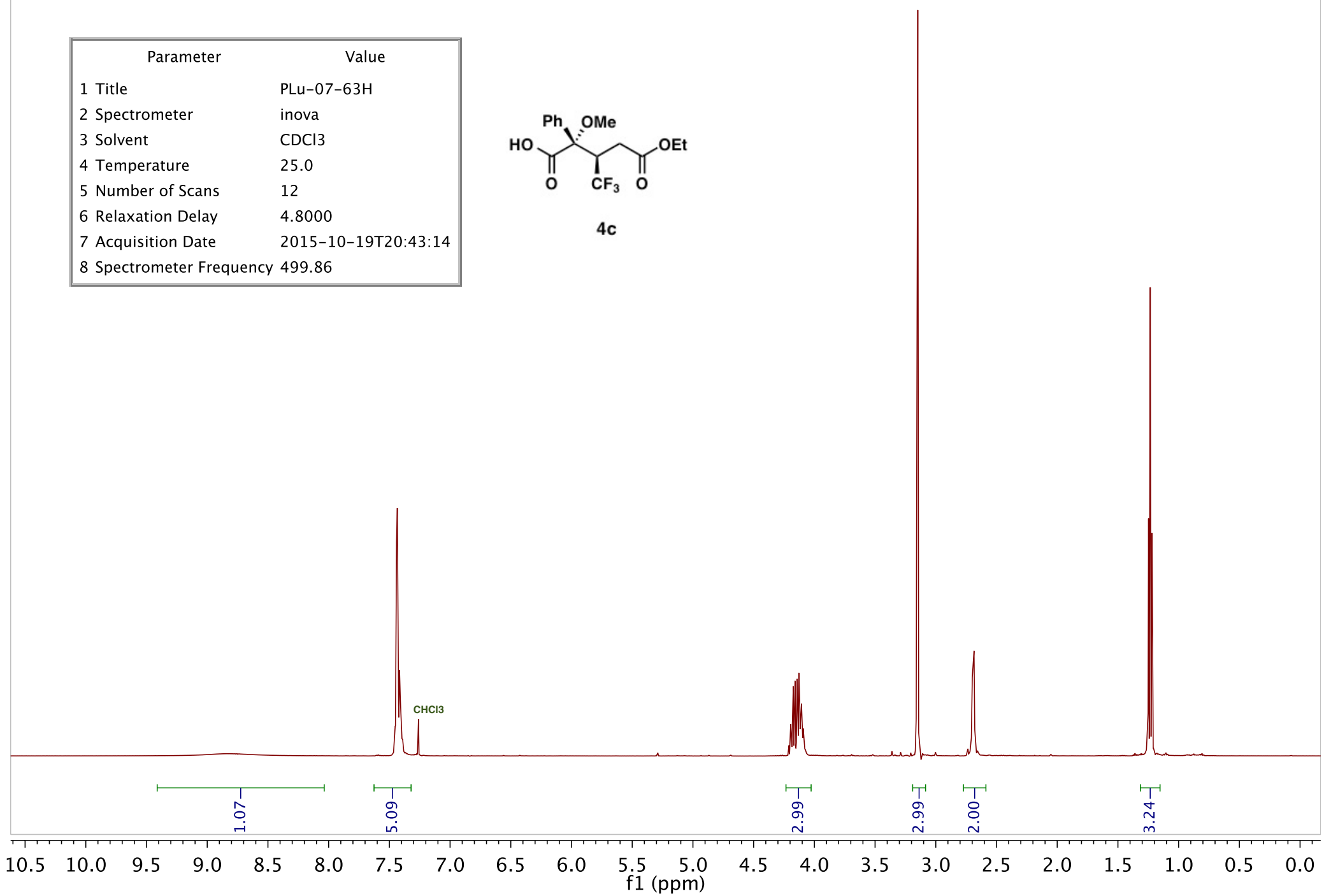
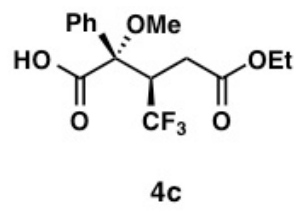


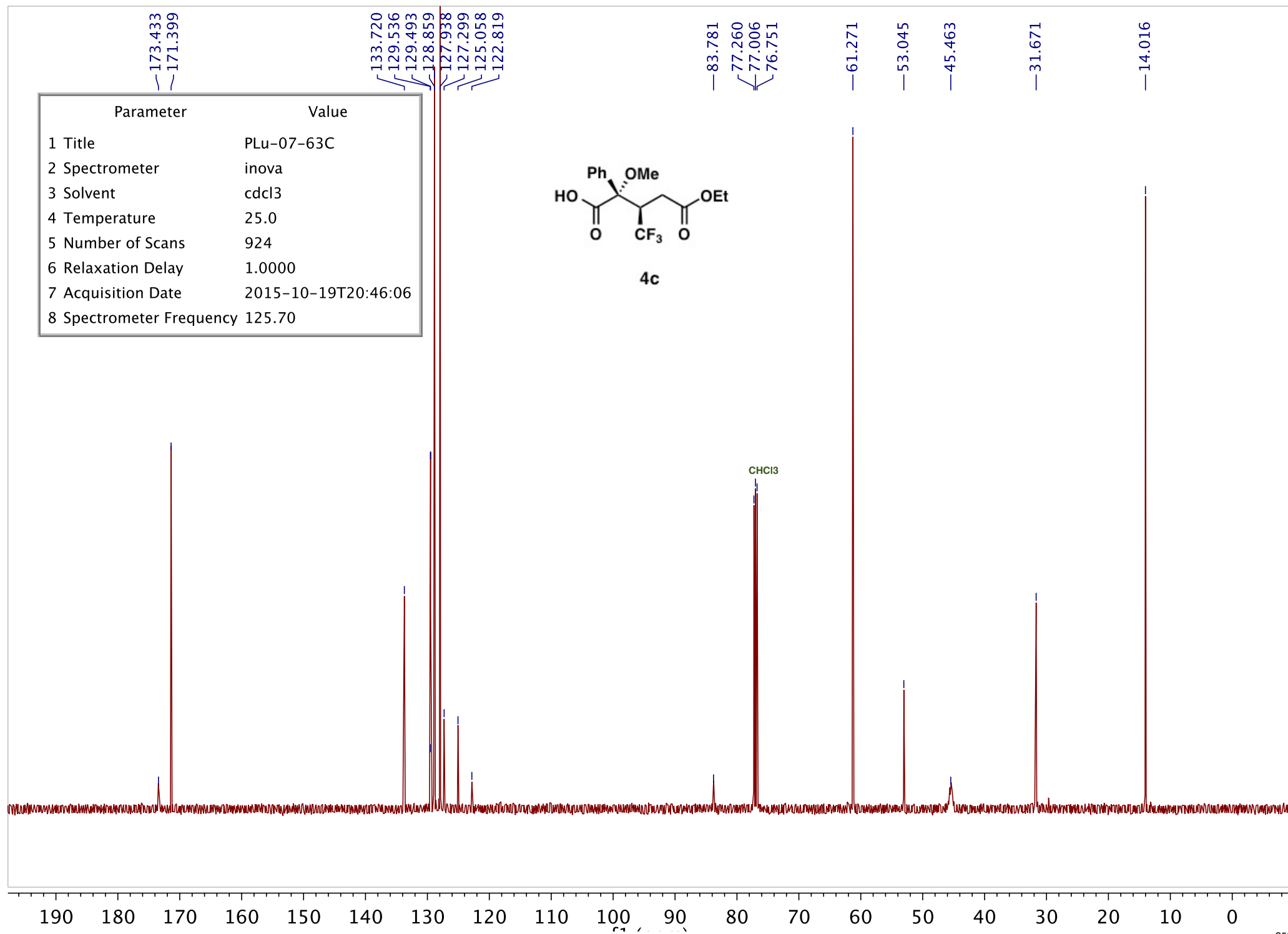
4b methyl ester





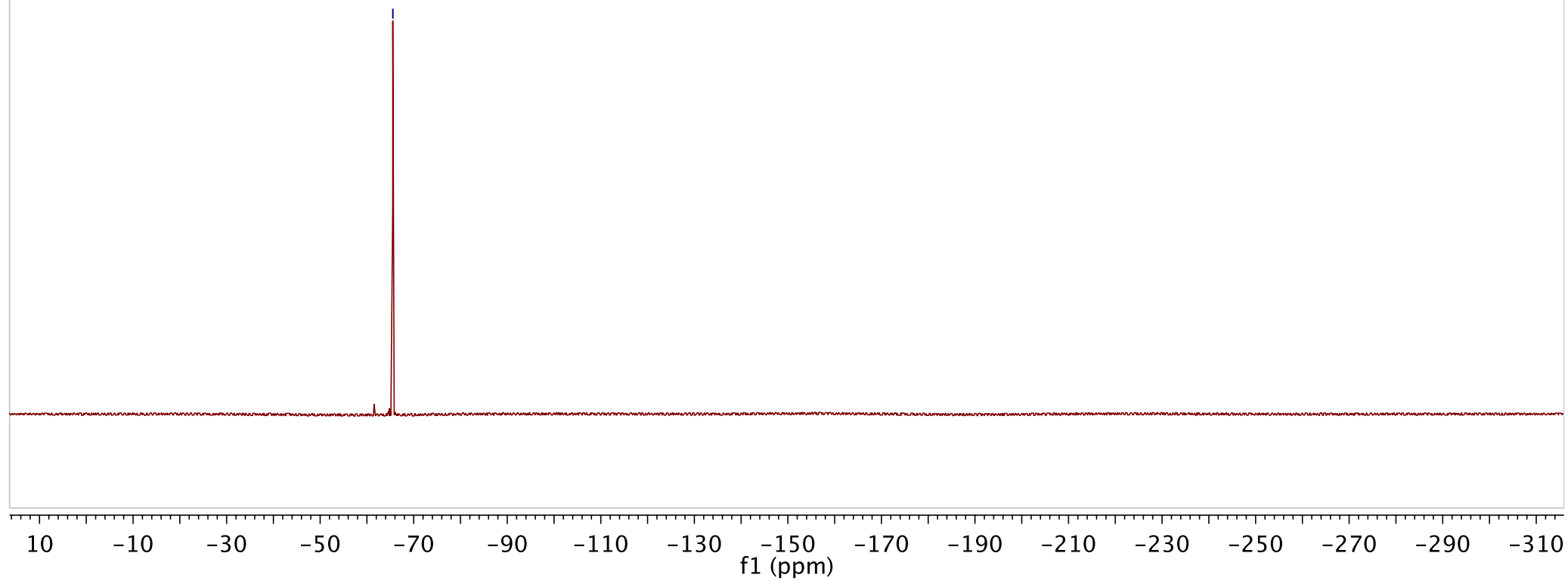
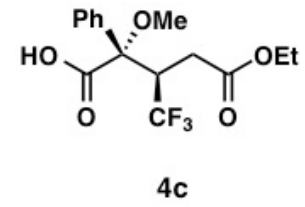
Parameter	Value
1 Title	PLu-07-63H
2 Spectrometer	inova
3 Solvent	CDCl3
4 Temperature	25.0
5 Number of Scans	12
6 Relaxation Delay	4.8000
7 Acquisition Date	2015-10-19T20:43:14
8 Spectrometer Frequency	499.86



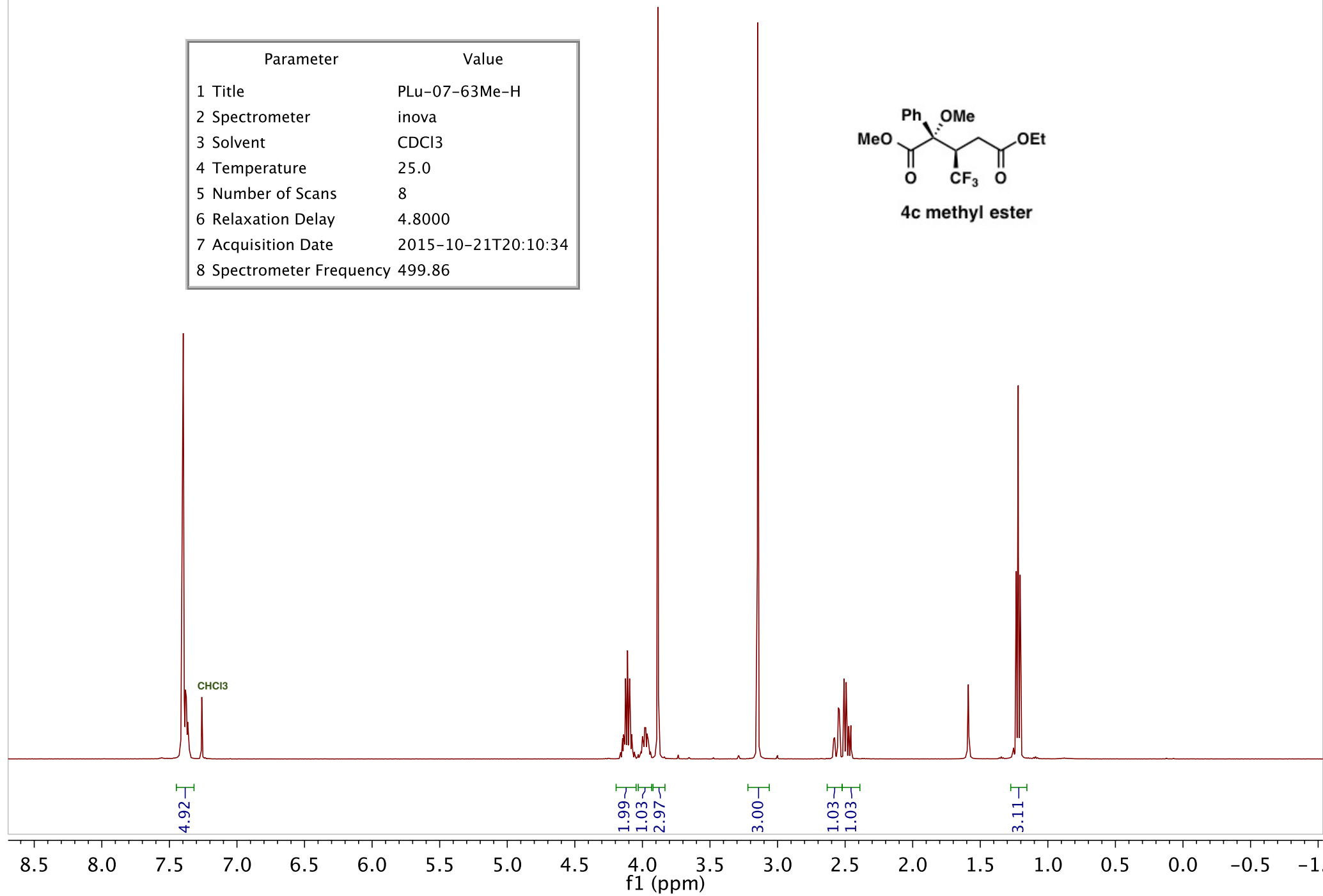
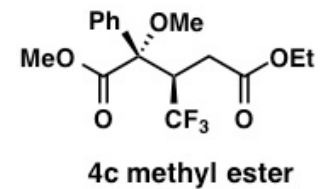


65.529
65.552

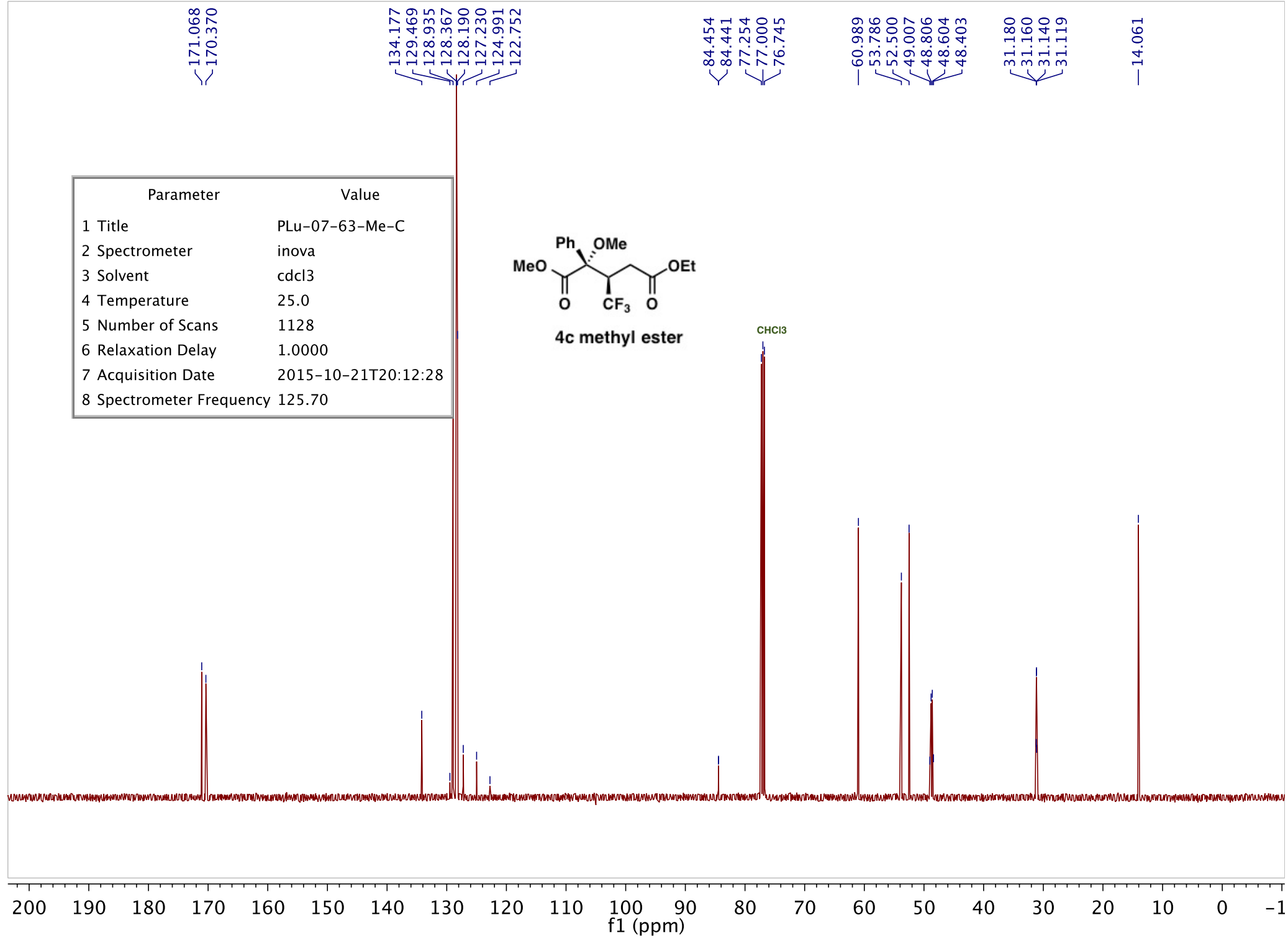
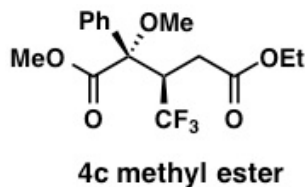
Parameter	Value
1 Title	PLu-07-63-F
2 Spectrometer	vnmrs
3 Solvent	CDCl3
4 Temperature	30.0
5 Number of Scans	12
6 Relaxation Delay	4.8000
7 Acquisition Date	2015-10-19T13:33:50
8 Spectrometer Frequency	376.11



Parameter	Value
1 Title	PLu-07-63Me-H
2 Spectrometer	inova
3 Solvent	CDCl3
4 Temperature	25.0
5 Number of Scans	8
6 Relaxation Delay	4.8000
7 Acquisition Date	2015-10-21T20:10:34
8 Spectrometer Frequency	499.86

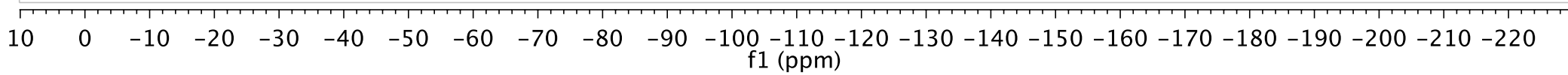
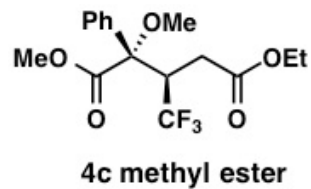


Parameter	Value
1 Title	PLu-07-63-Me-C
2 Spectrometer	inova
3 Solvent	cdcl3
4 Temperature	25.0
5 Number of Scans	1128
6 Relaxation Delay	1.0000
7 Acquisition Date	2015-10-21T20:12:28
8 Spectrometer Frequency	125.70

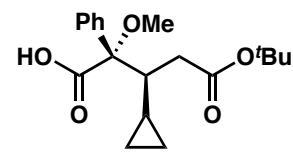


-64.738
-64.761

Parameter	Value
1 Title	PLu-07-63-Me-F
2 Spectrometer	vnmrs
3 Solvent	CDCl3
4 Temperature	30.0
5 Number of Scans	12
6 Relaxation Delay	4.8000
7 Acquisition Date	2015-10-21T21:07:57
8 Spectrometer Frequency	376.11



Parameter	Value
1 Title	PLu-07-87-H
2 Spectrometer	inova
3 Solvent	CDCl3
4 Temperature	16.0
5 Number of Scans	12
6 Relaxation Delay	4.8000
7 Acquisition Date	2015-11-05T21:29:52
8 Spectrometer Frequency	499.86



4d

7.514
7.511
7.507
7.500
7.497
7.495
7.403
7.400
7.396
7.391
7.388
7.386
7.382
7.374
7.371
7.370
7.366
7.359
7.356
7.353
7.347
7.342
7.327

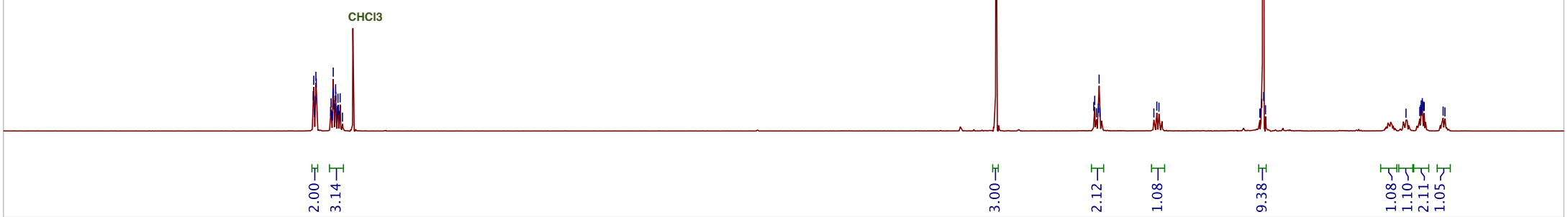
3.140

2.513
2.507
2.495
2.482
2.479
2.474
2.128
2.109
2.095

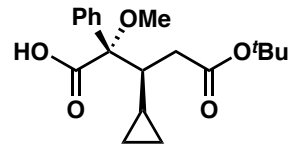
1.449
1.444
1.436
1.429
1.424
1.412

0.512
0.474
0.419
0.415
0.412
0.408
0.406
0.398
0.274
0.263

5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0 -0



Parameter	Value
1 Title	PLu-07-87-C
2 Spectrometer	inova
3 Solvent	cdcl3
4 Temperature	16.0
5 Number of Scans	120
6 Relaxation Delay	1.0000
7 Acquisition Date	2015-11-04T20:31:34
8 Spectrometer Frequency	125.70



4d

—175.646
—172.742

—135.019
128.586
128.110
127.834

—87.983
80.285
77.254
77.000
76.745

—53.231

—46.277

—37.366

—27.990

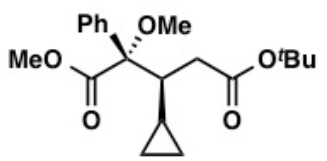
—12.568

—4.385
—2.805

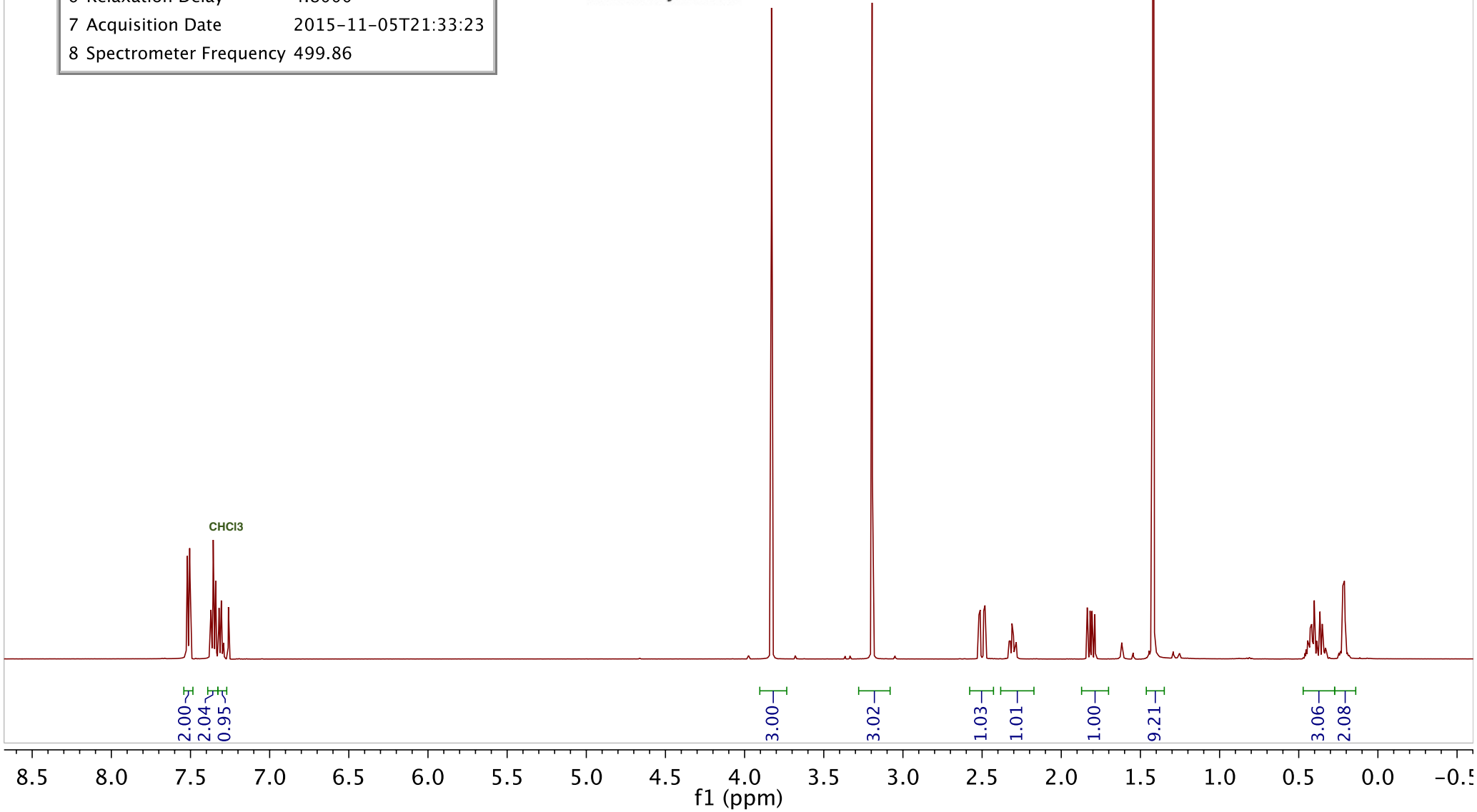
220 210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 -10
f1 (ppm)

CHCl3

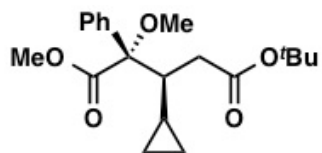
Parameter	Value
1 Title	PLu-07-87-Me
2 Spectrometer	inova
3 Solvent	CDCl3
4 Temperature	16.0
5 Number of Scans	12
6 Relaxation Delay	4.8000
7 Acquisition Date	2015-11-05T21:33:23
8 Spectrometer Frequency	499.86



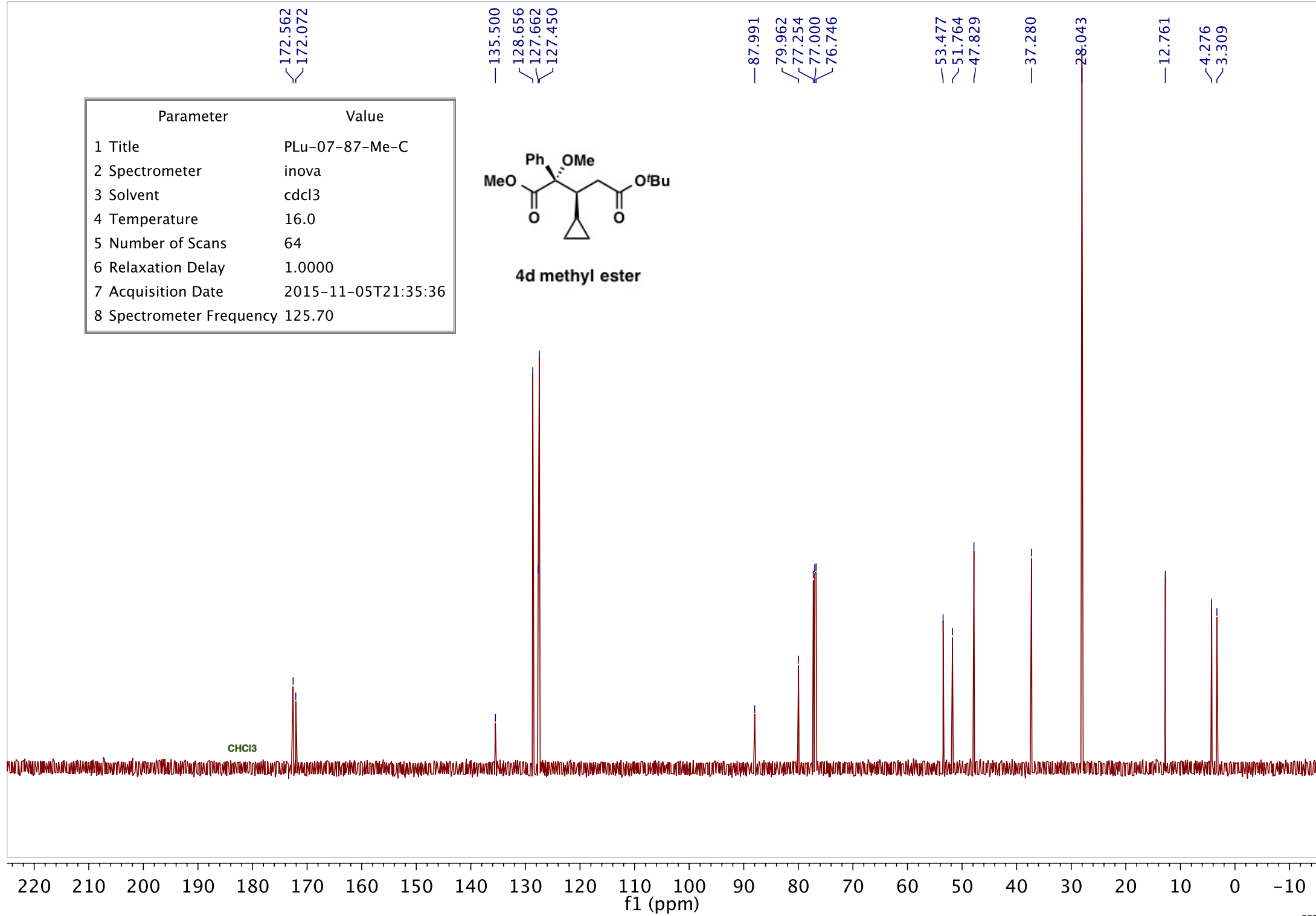
4d methyl ester



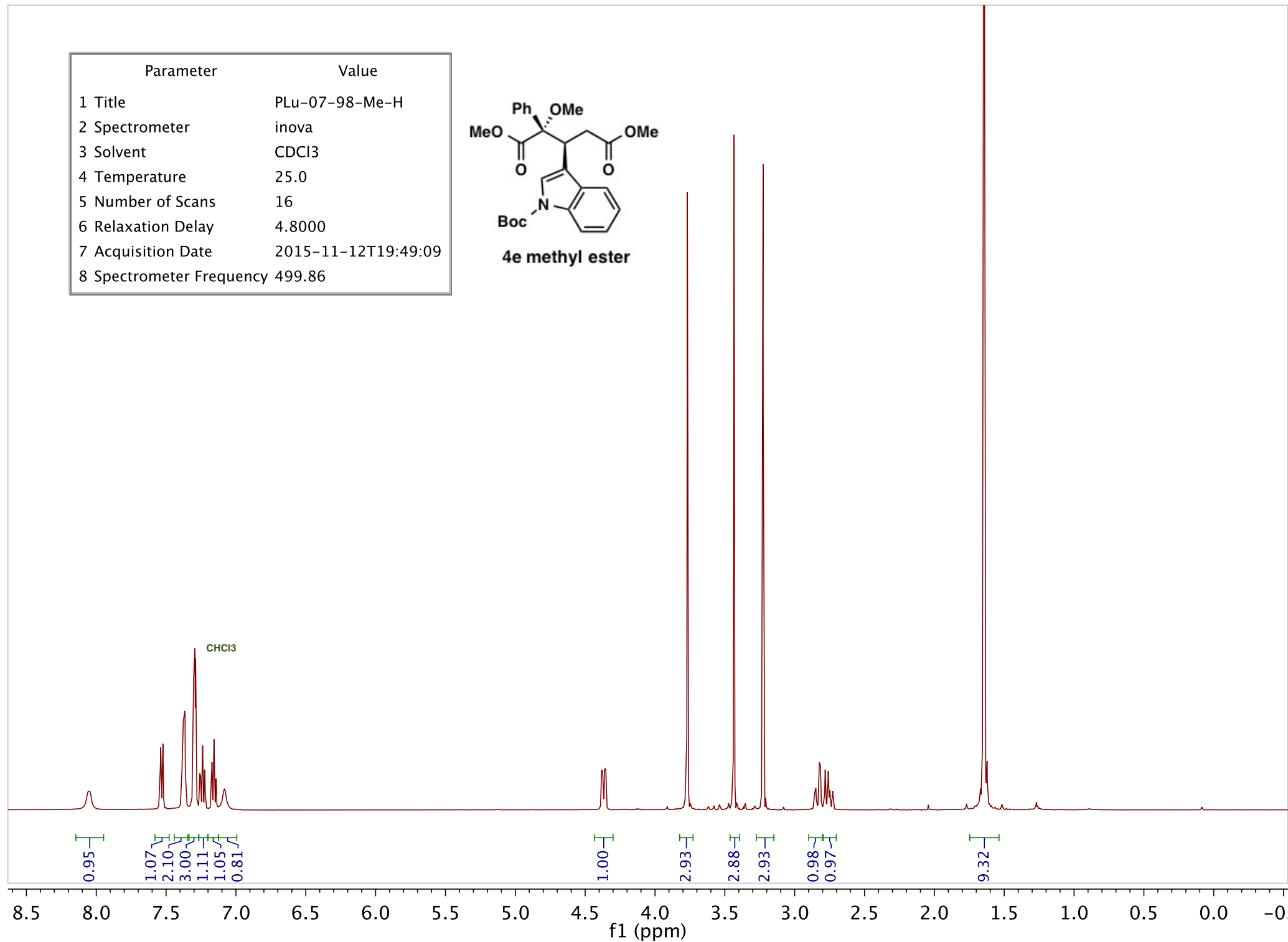
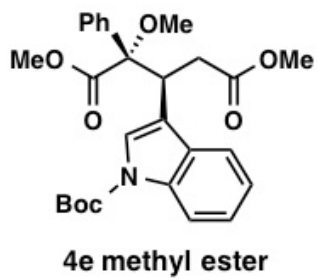
Parameter	Value
1 Title	PLu-07-87-Me-C
2 Spectrometer	inova
3 Solvent	cdCl3
4 Temperature	16.0
5 Number of Scans	64
6 Relaxation Delay	1.0000
7 Acquisition Date	2015-11-05T21:35:36
8 Spectrometer Frequency	125.70

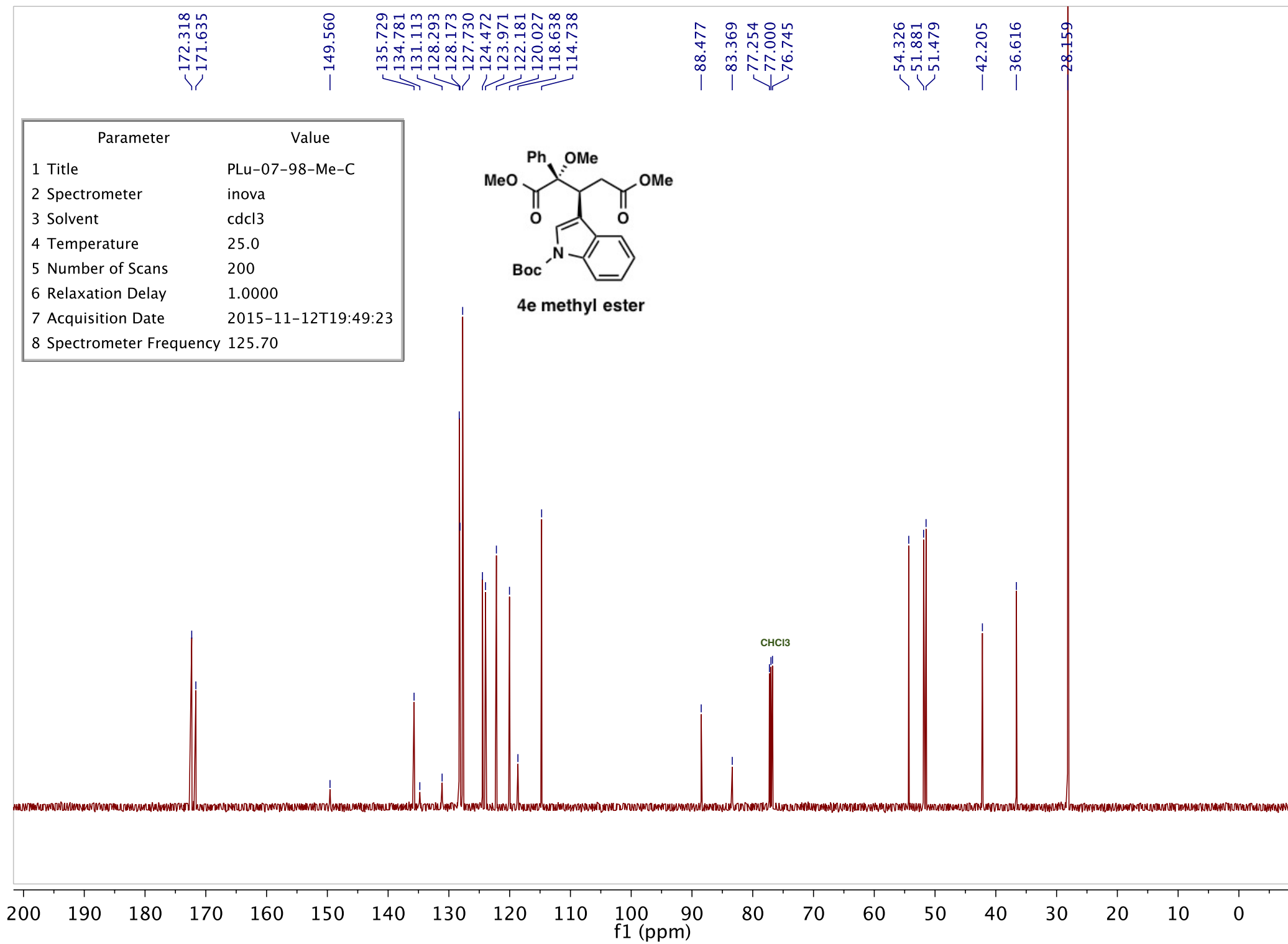


4d methyl ester

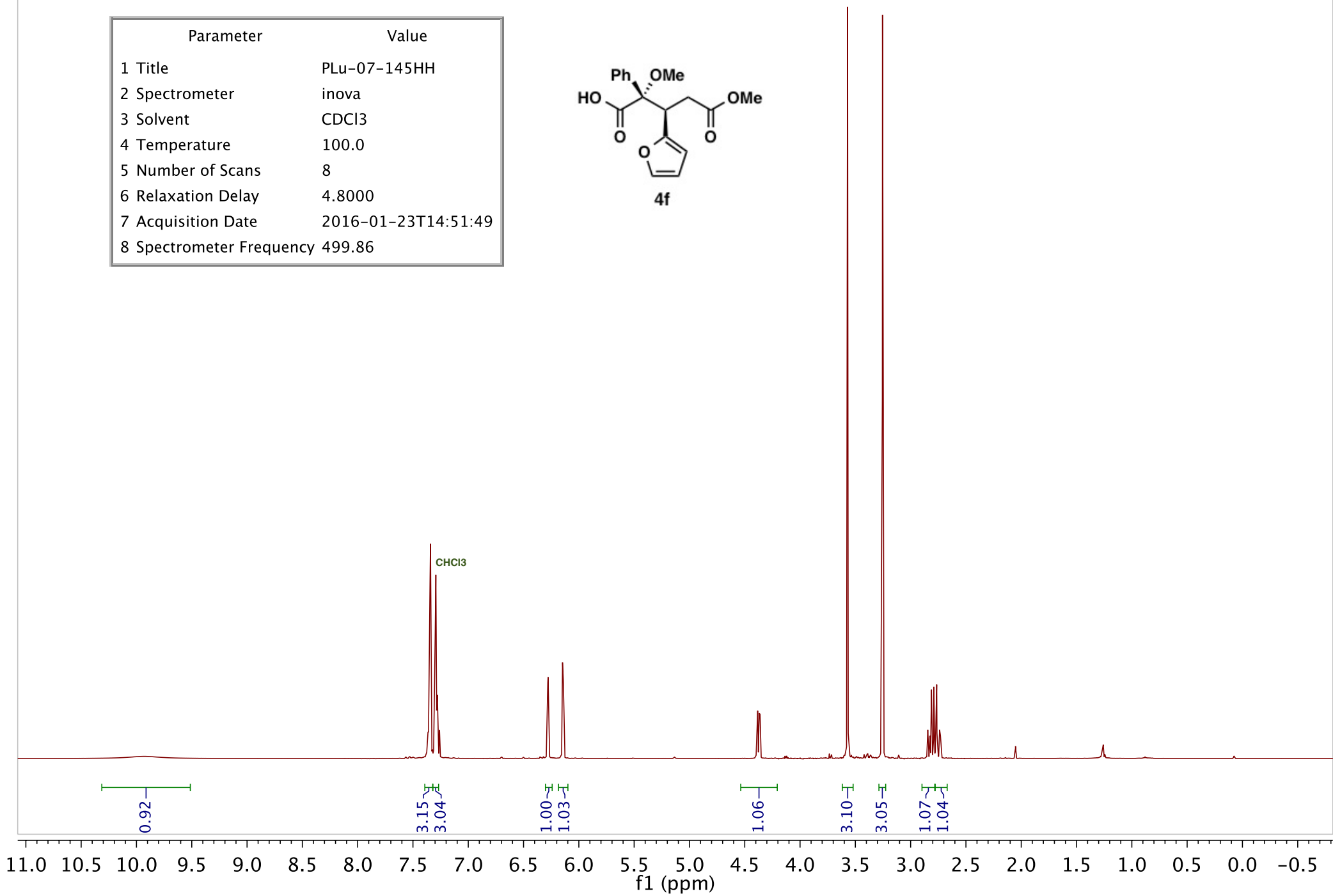
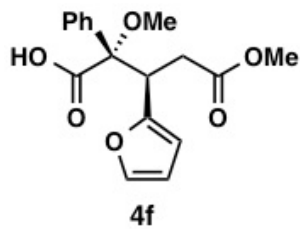


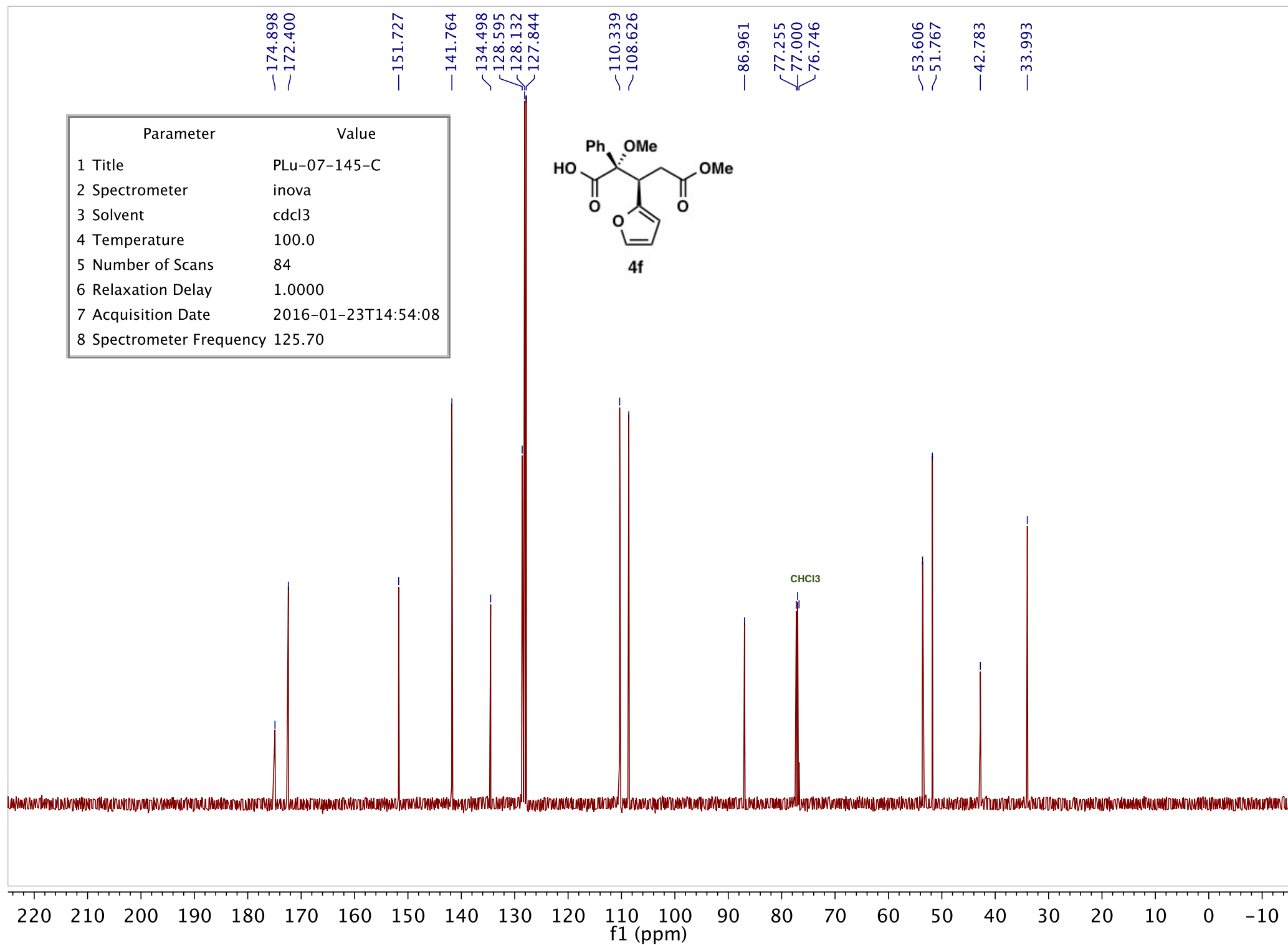
Parameter	Value
1 Title	PLu-07-98-Me-H
2 Spectrometer	inova
3 Solvent	CDCl3
4 Temperature	25.0
5 Number of Scans	16
6 Relaxation Delay	4.8000
7 Acquisition Date	2015-11-12T19:49:09
8 Spectrometer Frequency	499.86



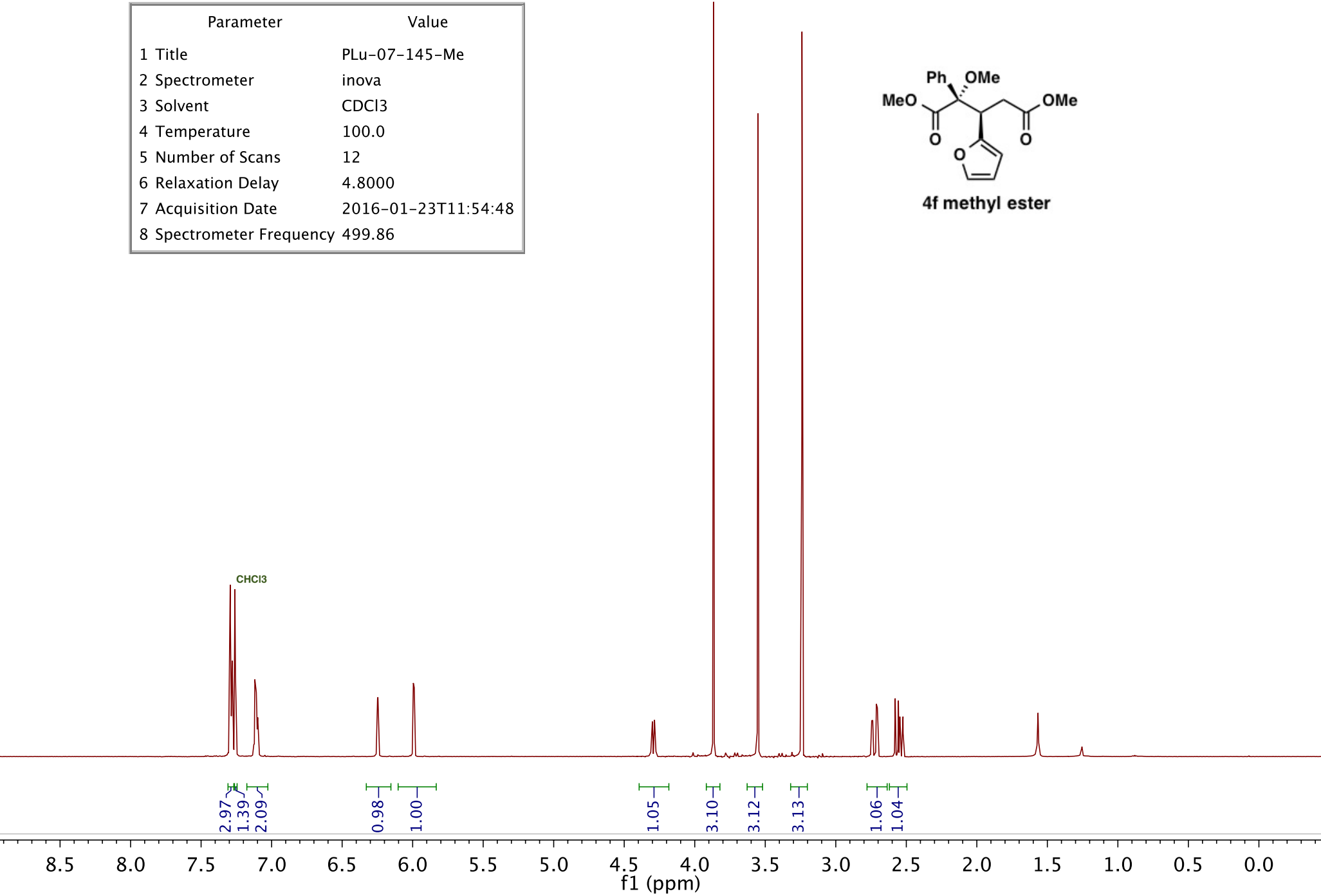
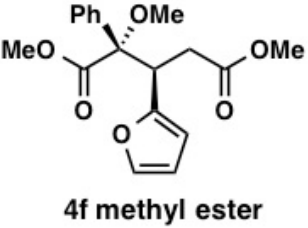


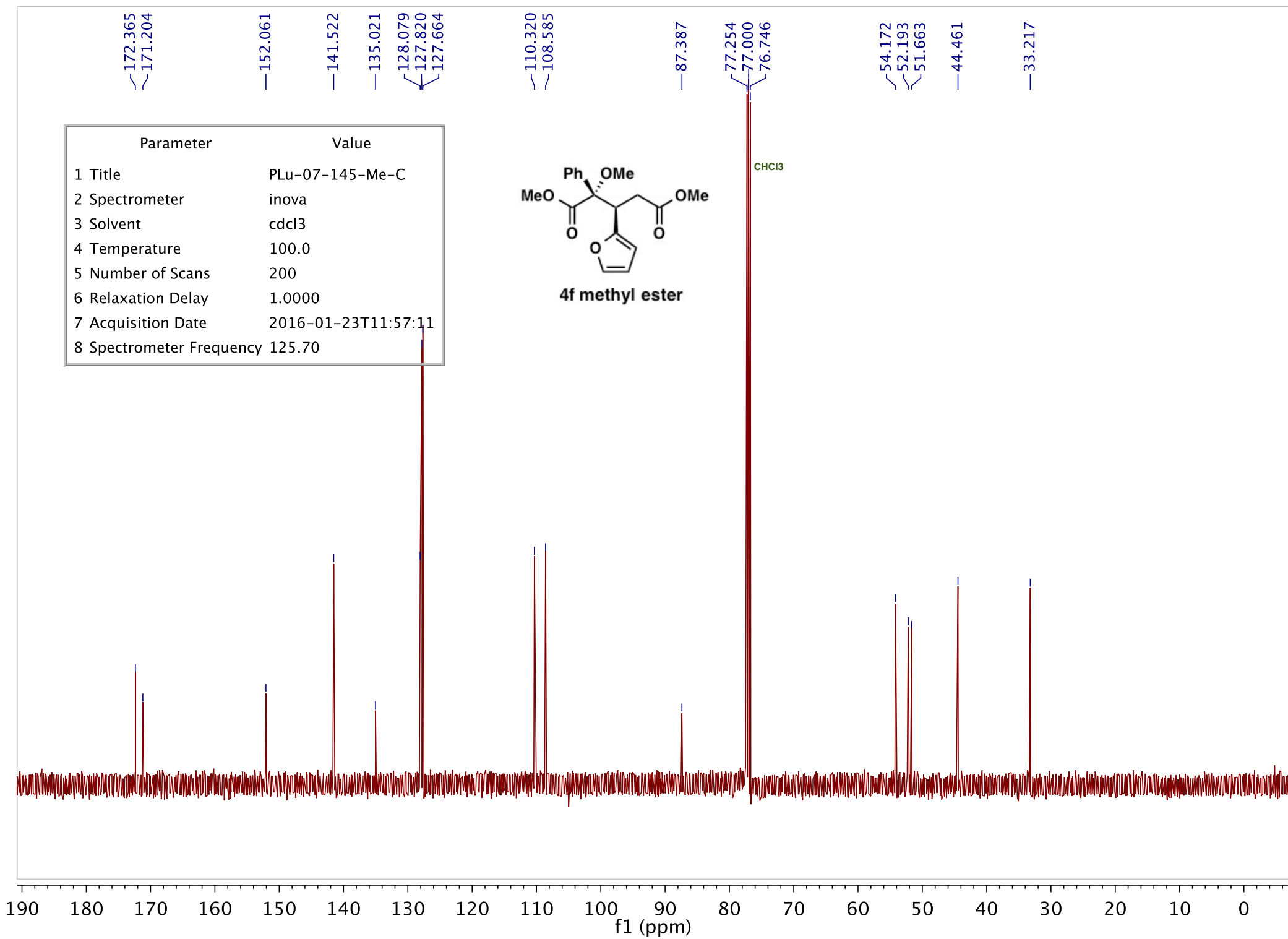
Parameter	Value
1 Title	PLu-07-145HH
2 Spectrometer	inova
3 Solvent	CDCl3
4 Temperature	100.0
5 Number of Scans	8
6 Relaxation Delay	4.8000
7 Acquisition Date	2016-01-23T14:51:49
8 Spectrometer Frequency	499.86



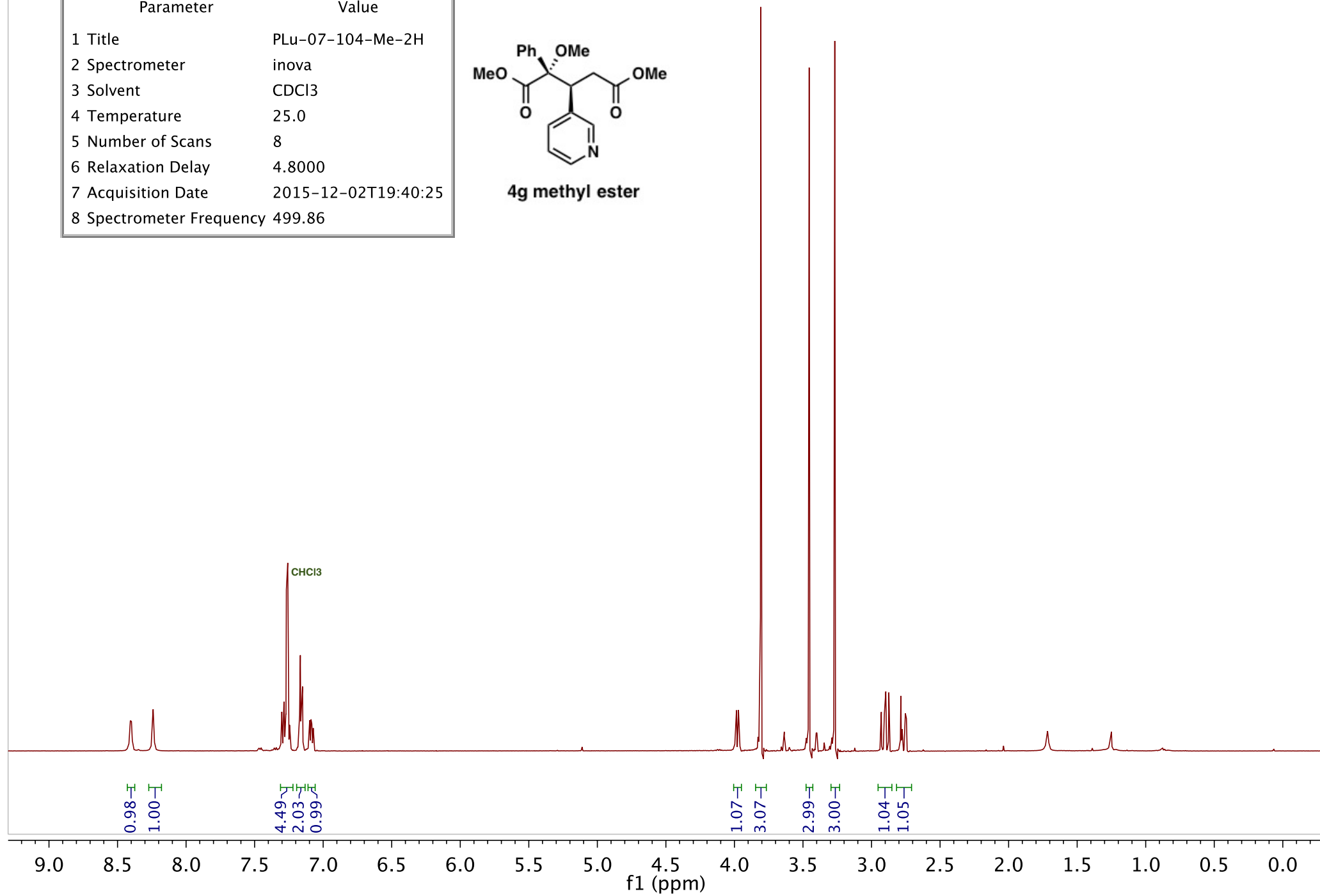
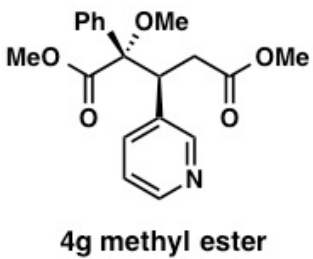


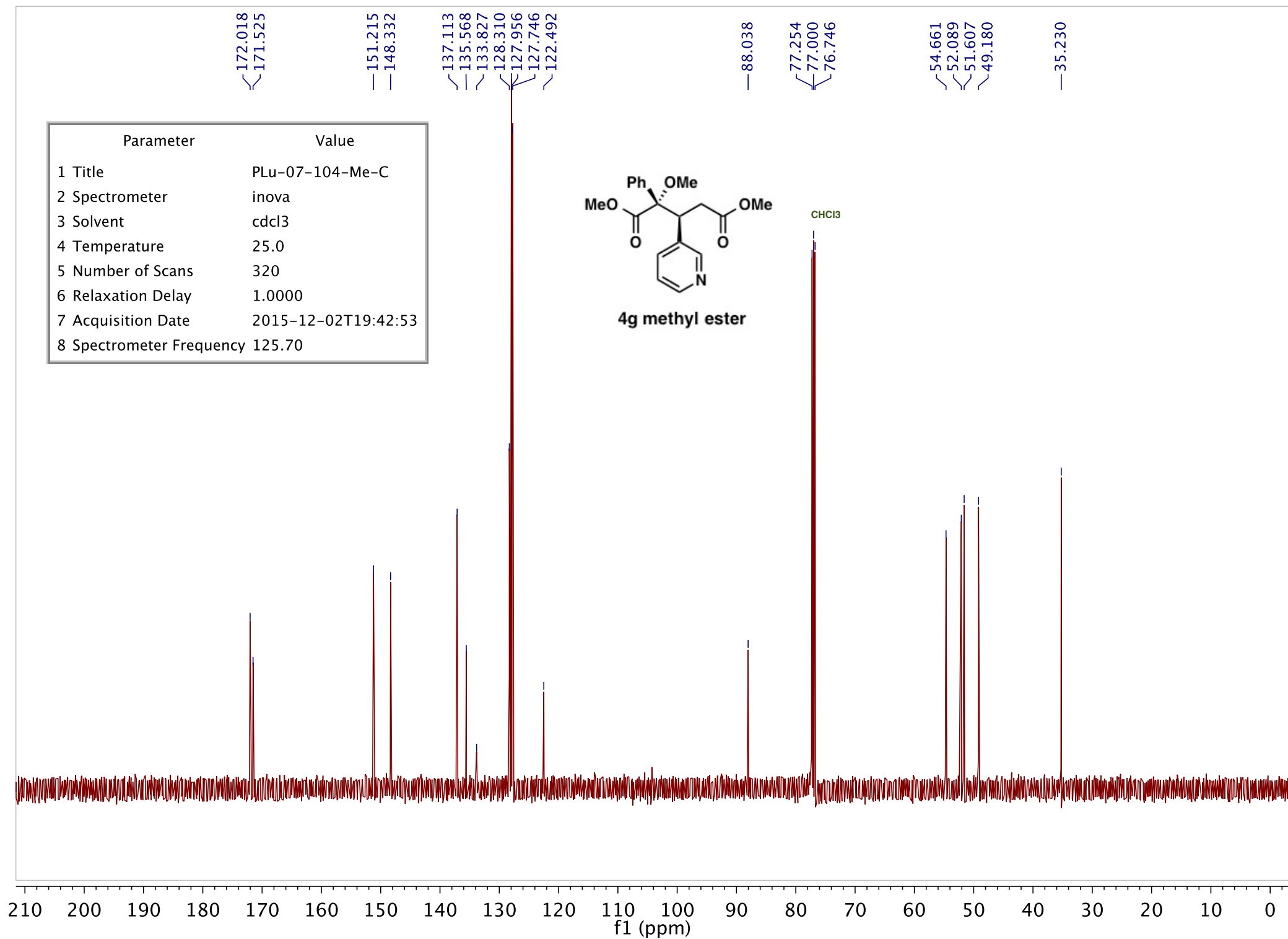
Parameter	Value
1 Title	PLu-07-145-Me
2 Spectrometer	inova
3 Solvent	CDCl3
4 Temperature	100.0
5 Number of Scans	12
6 Relaxation Delay	4.8000
7 Acquisition Date	2016-01-23T11:54:48
8 Spectrometer Frequency	499.86



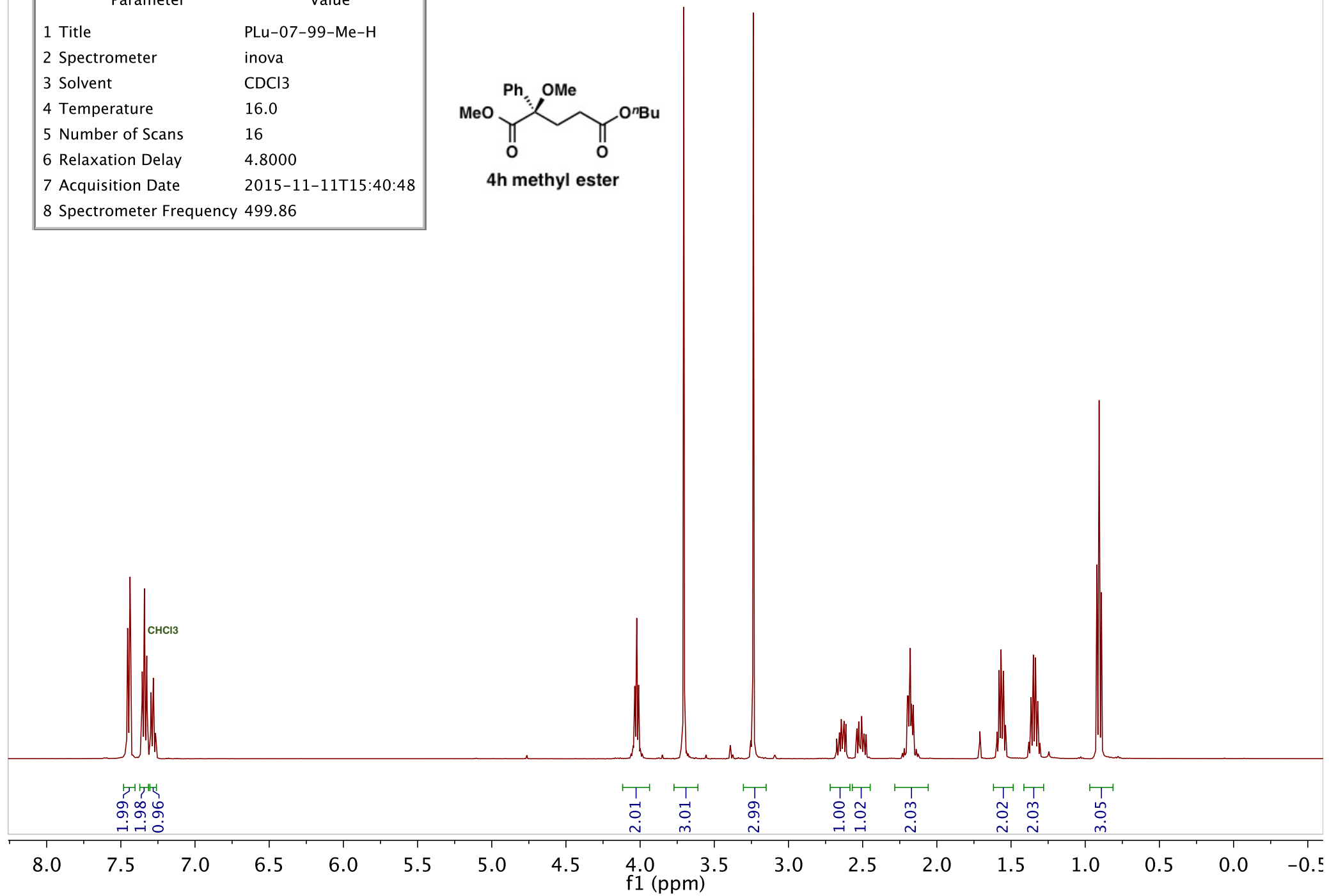
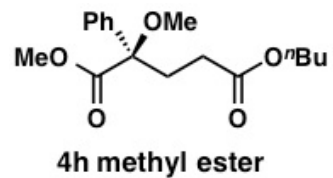


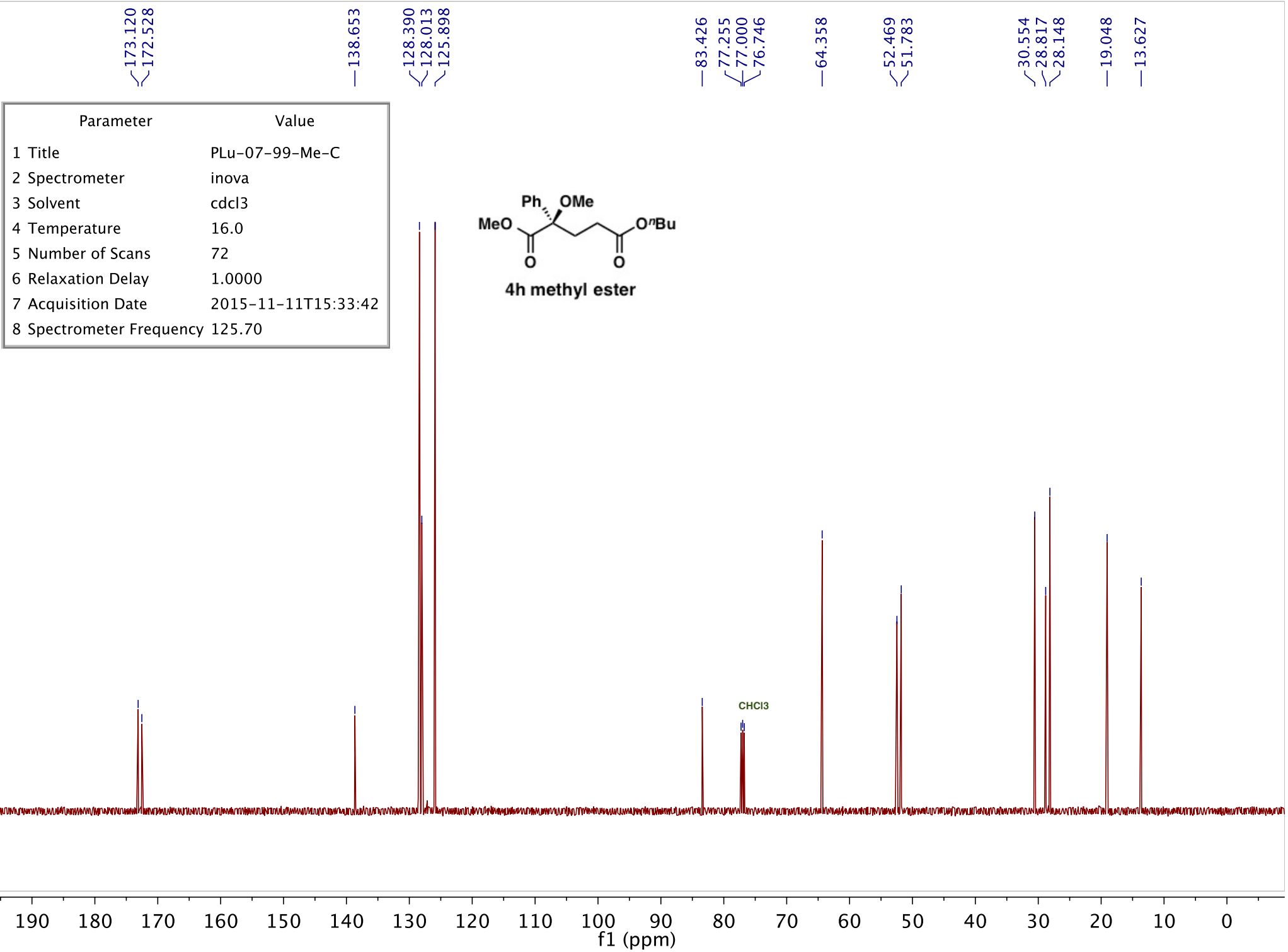
Parameter	Value
1 Title	PLu-07-104-Me-2H
2 Spectrometer	inova
3 Solvent	CDCl3
4 Temperature	25.0
5 Number of Scans	8
6 Relaxation Delay	4.8000
7 Acquisition Date	2015-12-02T19:40:25
8 Spectrometer Frequency	499.86



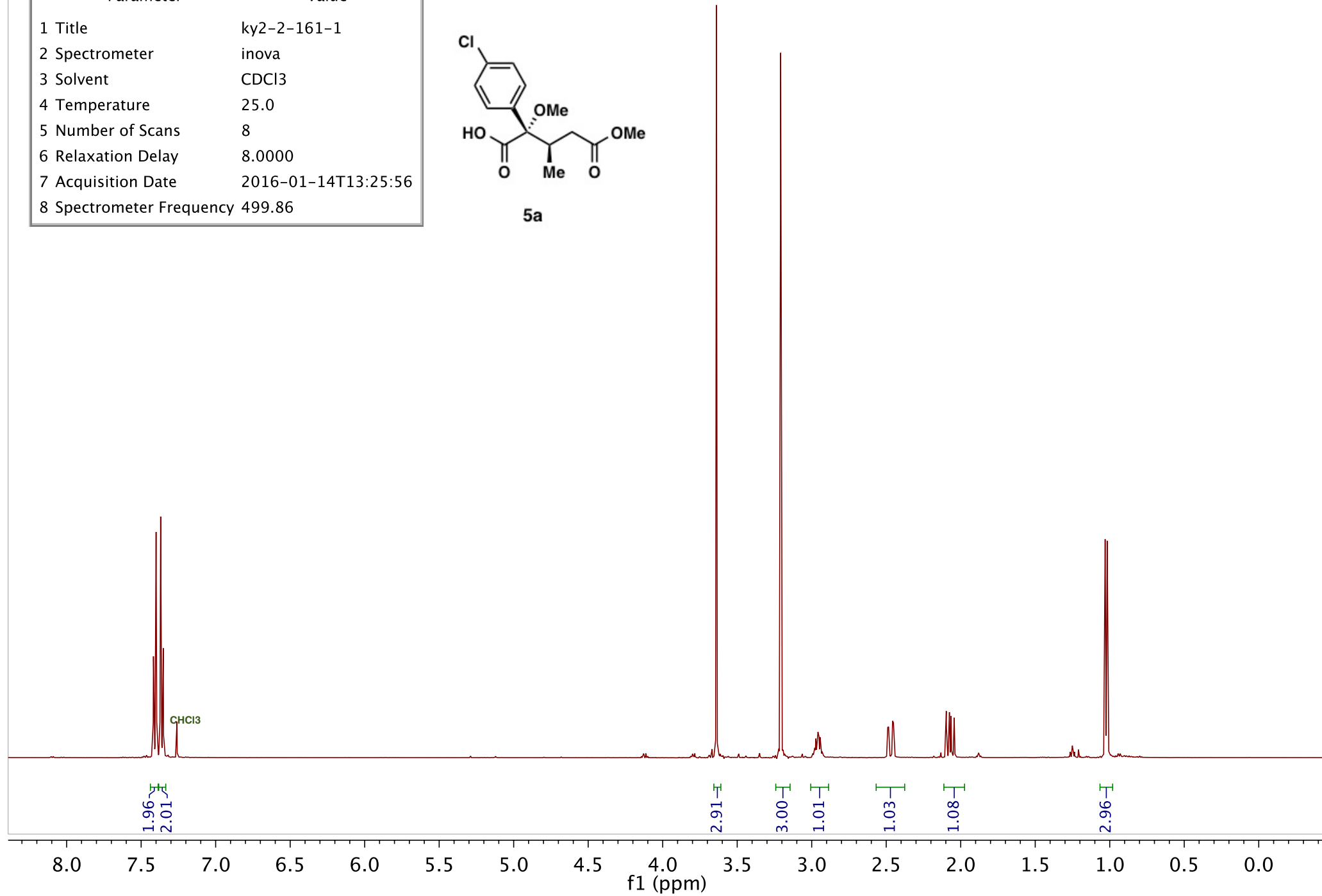
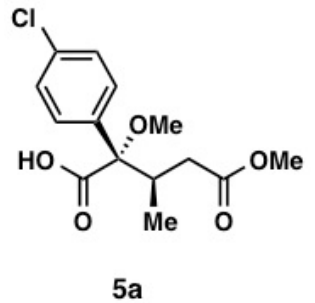


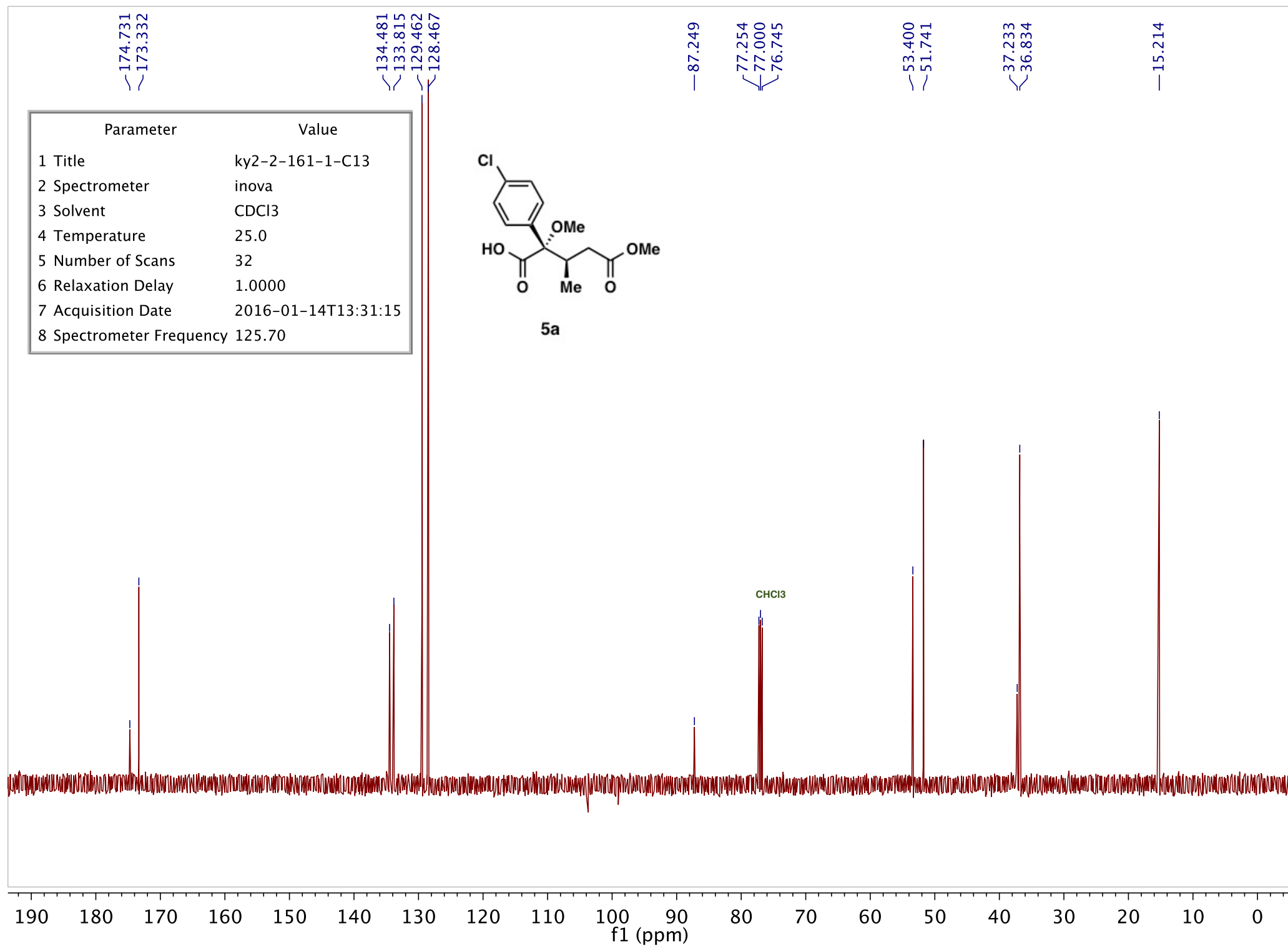
Parameter	Value
1 Title	PLu-07-99-Me-H
2 Spectrometer	inova
3 Solvent	CDCl3
4 Temperature	16.0
5 Number of Scans	16
6 Relaxation Delay	4.8000
7 Acquisition Date	2015-11-11T15:40:48
8 Spectrometer Frequency	499.86



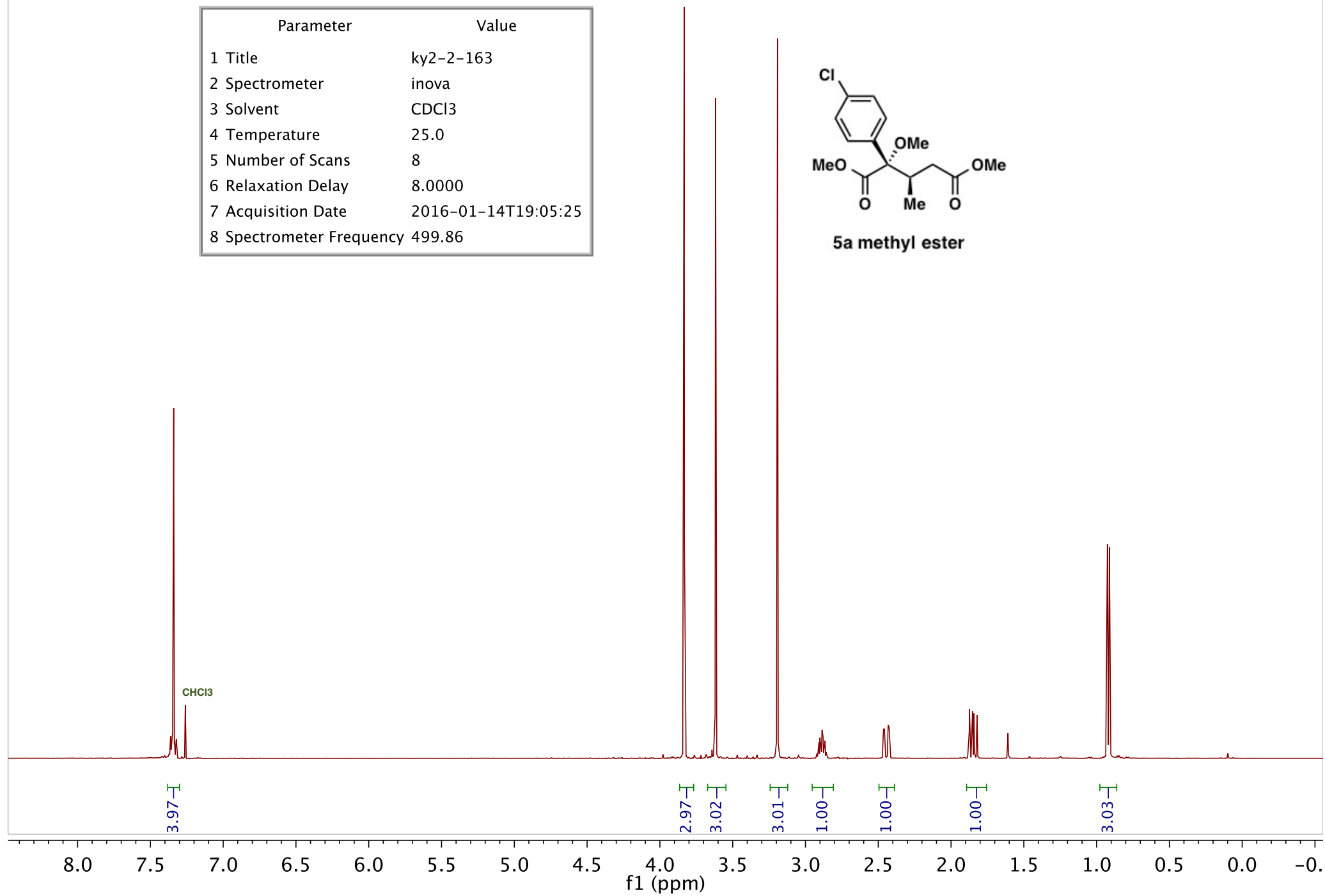
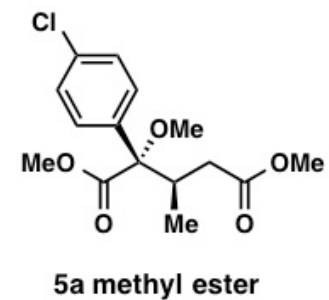


Parameter	Value
1 Title	ky2-2-161-1
2 Spectrometer	inova
3 Solvent	CDCl3
4 Temperature	25.0
5 Number of Scans	8
6 Relaxation Delay	8.0000
7 Acquisition Date	2016-01-14T13:25:56
8 Spectrometer Frequency	499.86

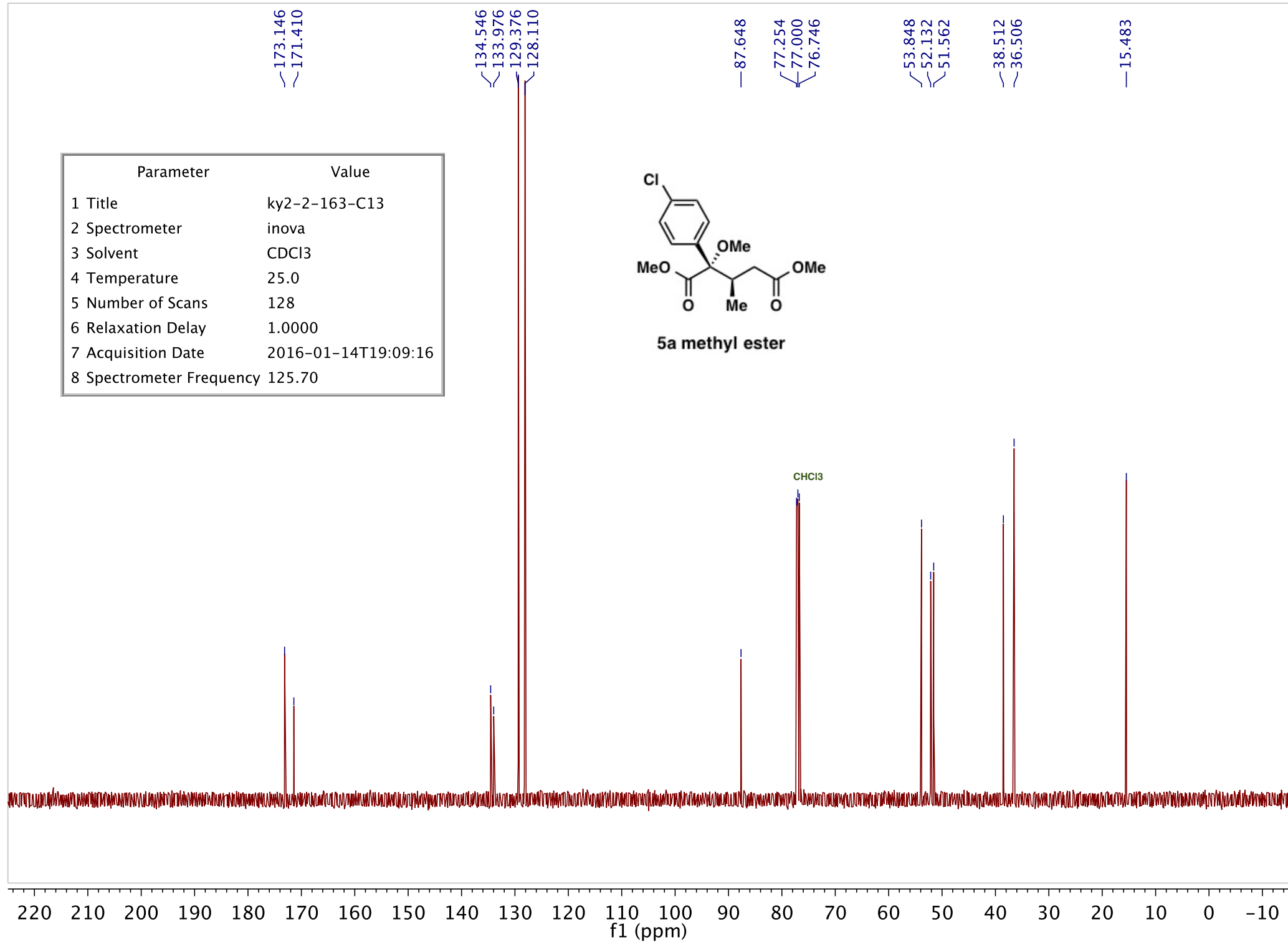
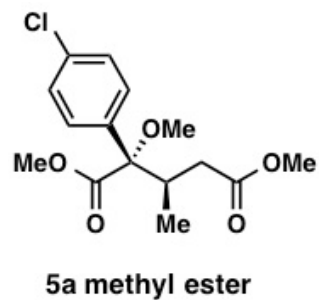




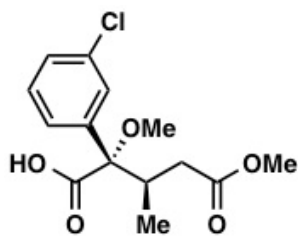
Parameter	Value
1 Title	ky2-2-163
2 Spectrometer	inova
3 Solvent	CDCl3
4 Temperature	25.0
5 Number of Scans	8
6 Relaxation Delay	8.0000
7 Acquisition Date	2016-01-14T19:05:25
8 Spectrometer Frequency	499.86



Parameter	Value
1 Title	ky2-2-163-C13
2 Spectrometer	inova
3 Solvent	CDCl3
4 Temperature	25.0
5 Number of Scans	128
6 Relaxation Delay	1.0000
7 Acquisition Date	2016-01-14T19:09:16
8 Spectrometer Frequency	125.70

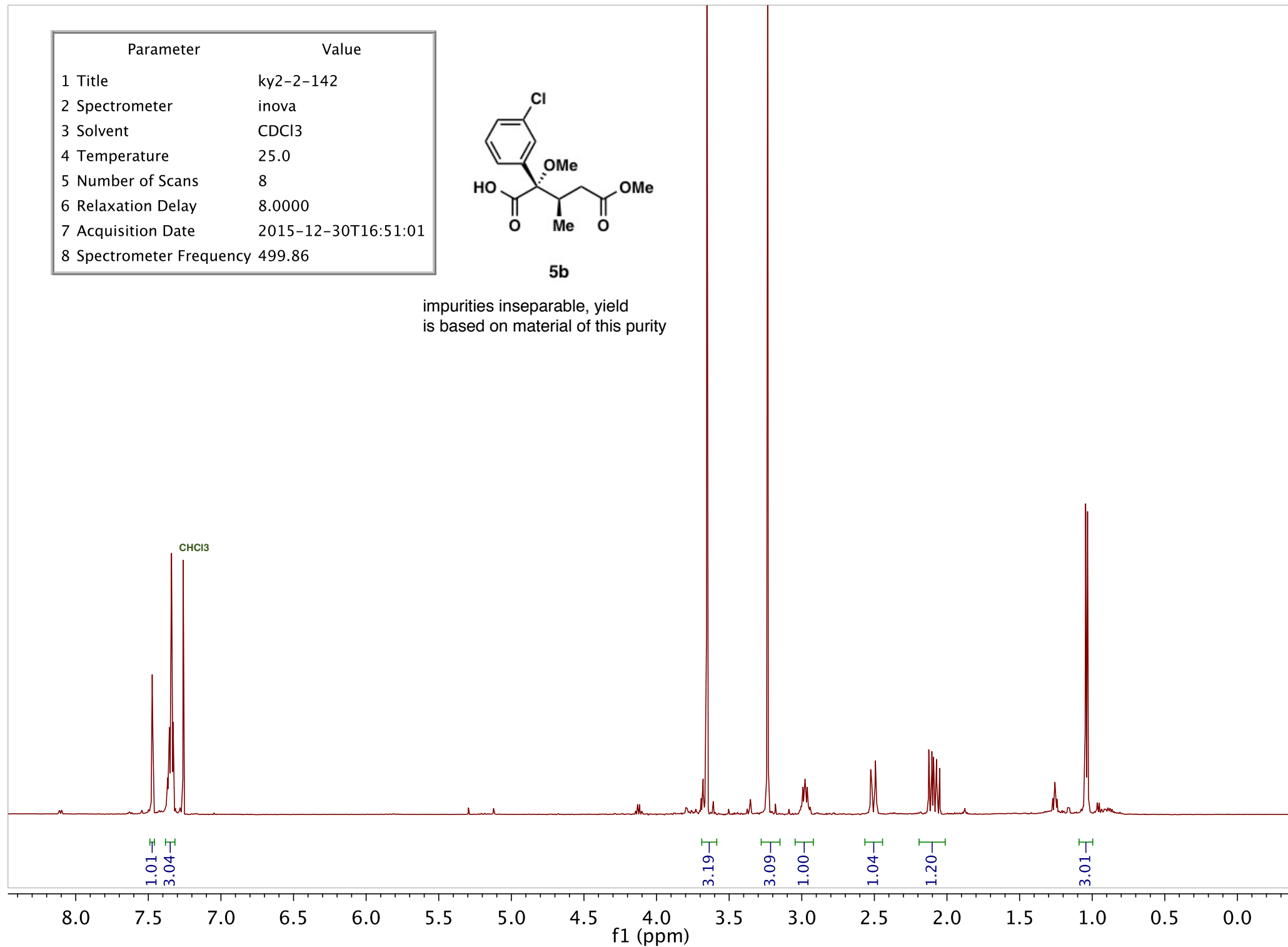


Parameter	Value
1 Title	ky2-2-142
2 Spectrometer	inova
3 Solvent	CDCl3
4 Temperature	25.0
5 Number of Scans	8
6 Relaxation Delay	8.0000
7 Acquisition Date	2015-12-30T16:51:01
8 Spectrometer Frequency	499.86

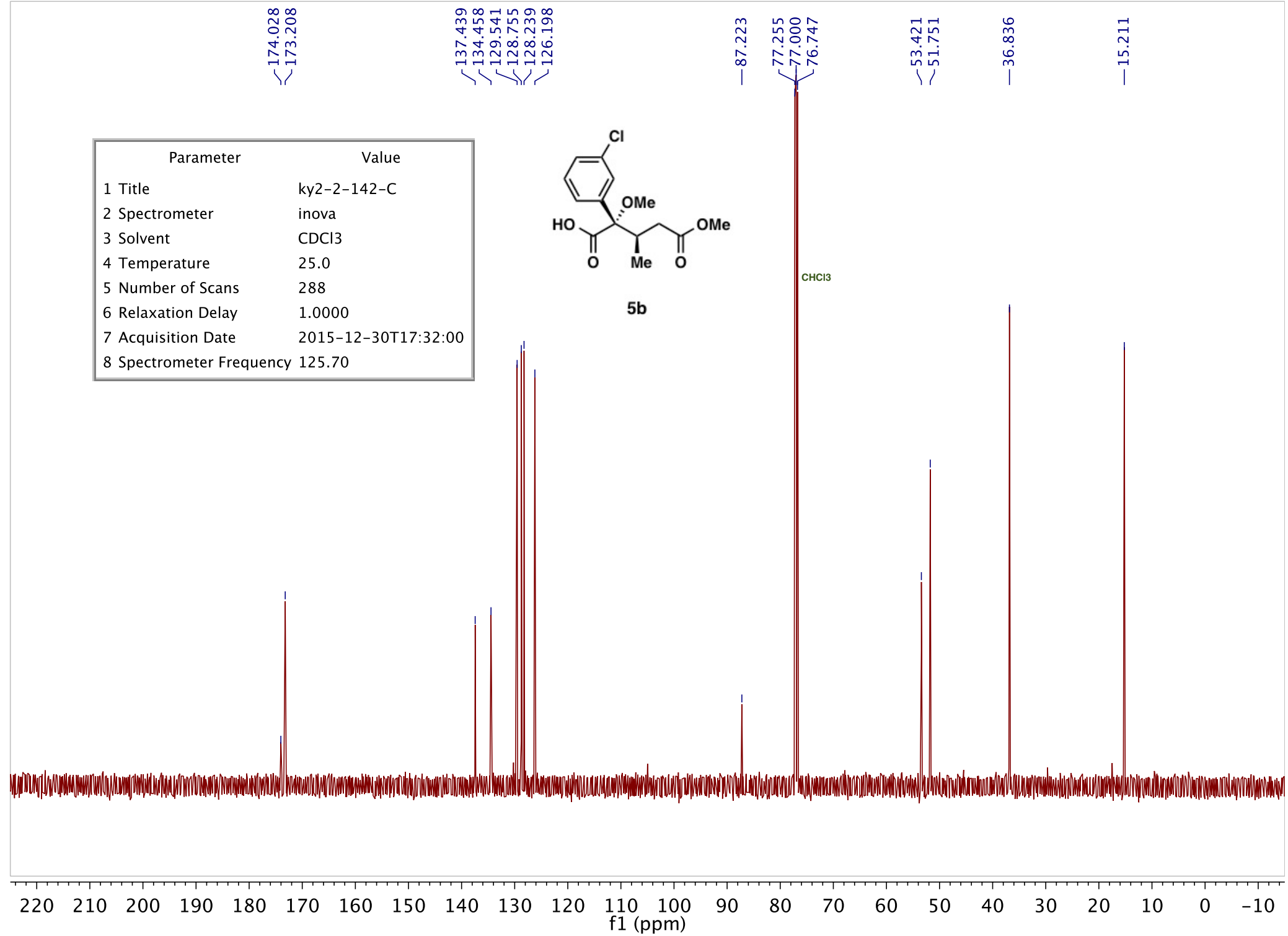
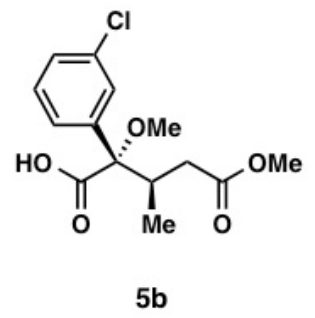


5b

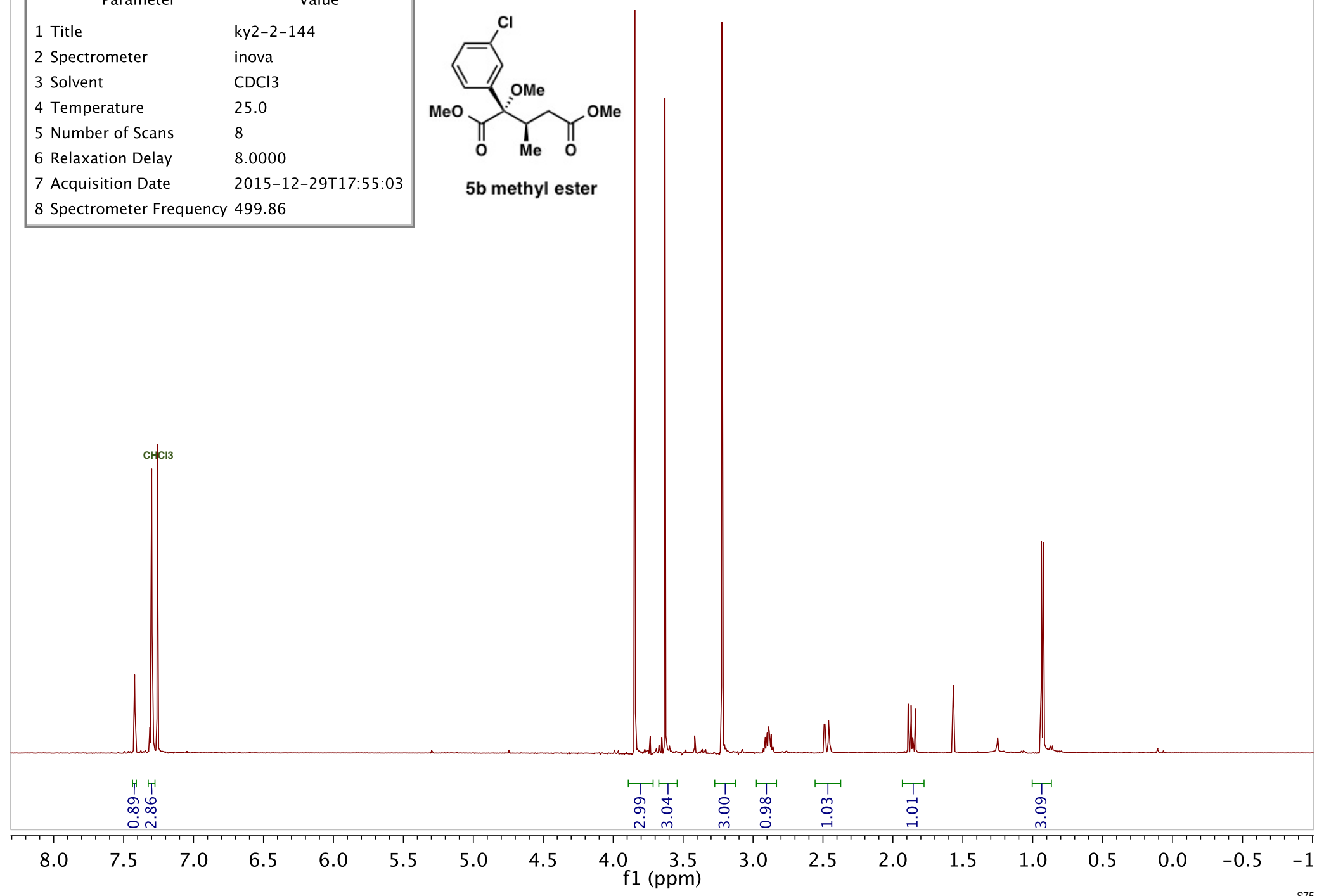
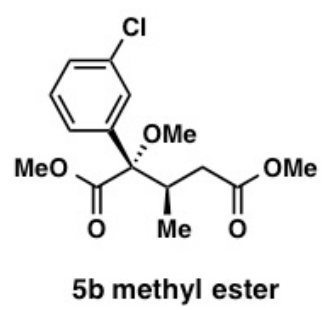
impurities inseparable, yield is based on material of this purity



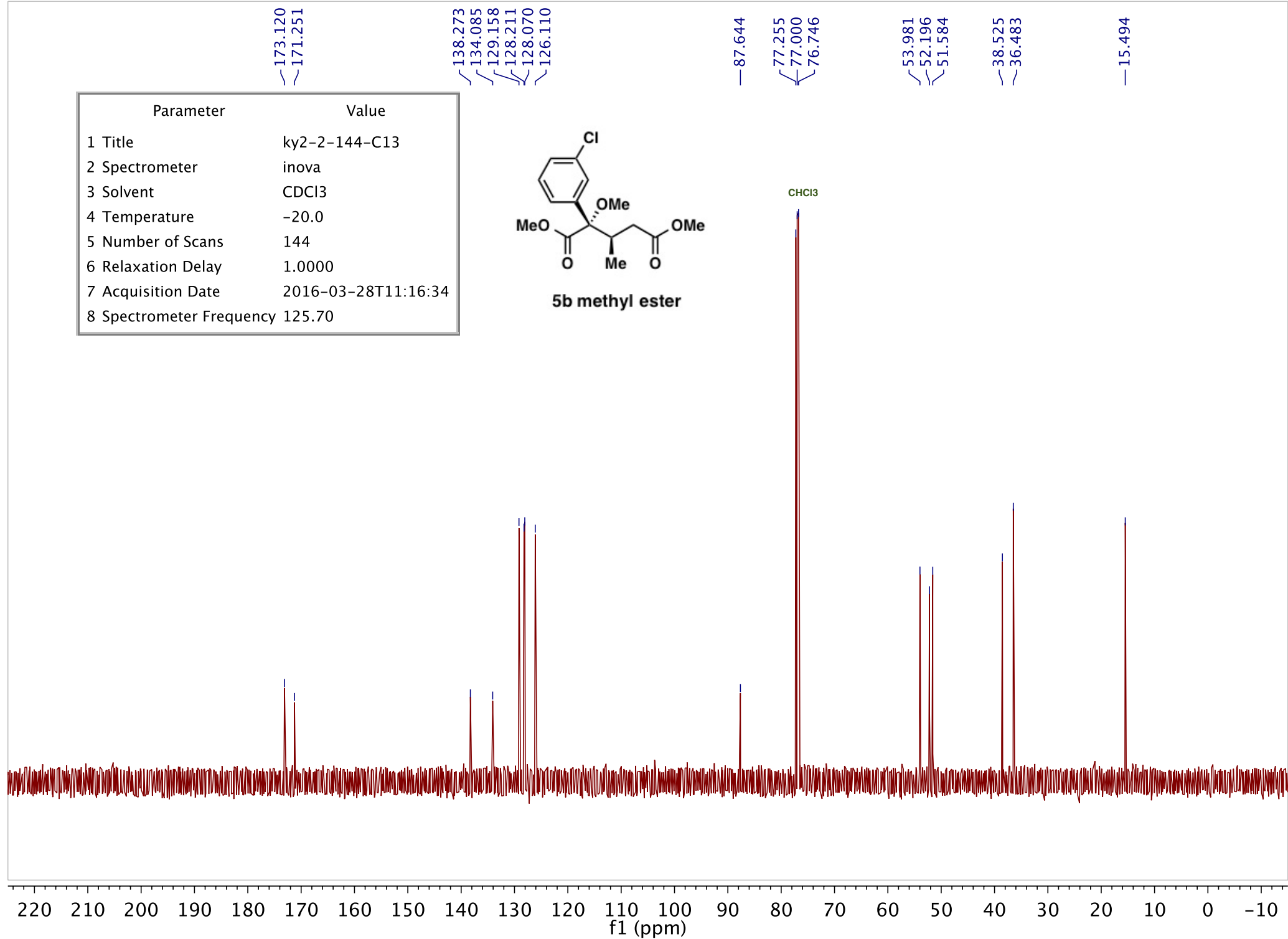
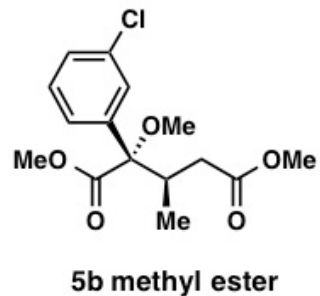
Parameter	Value
1 Title	ky2-2-142-C
2 Spectrometer	inova
3 Solvent	CDCl3
4 Temperature	25.0
5 Number of Scans	288
6 Relaxation Delay	1.0000
7 Acquisition Date	2015-12-30T17:32:00
8 Spectrometer Frequency	125.70



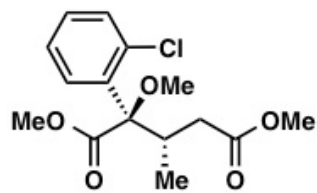
Parameter	Value
1 Title	ky2-2-144
2 Spectrometer	inova
3 Solvent	CDCl3
4 Temperature	25.0
5 Number of Scans	8
6 Relaxation Delay	8.0000
7 Acquisition Date	2015-12-29T17:55:03
8 Spectrometer Frequency	499.86



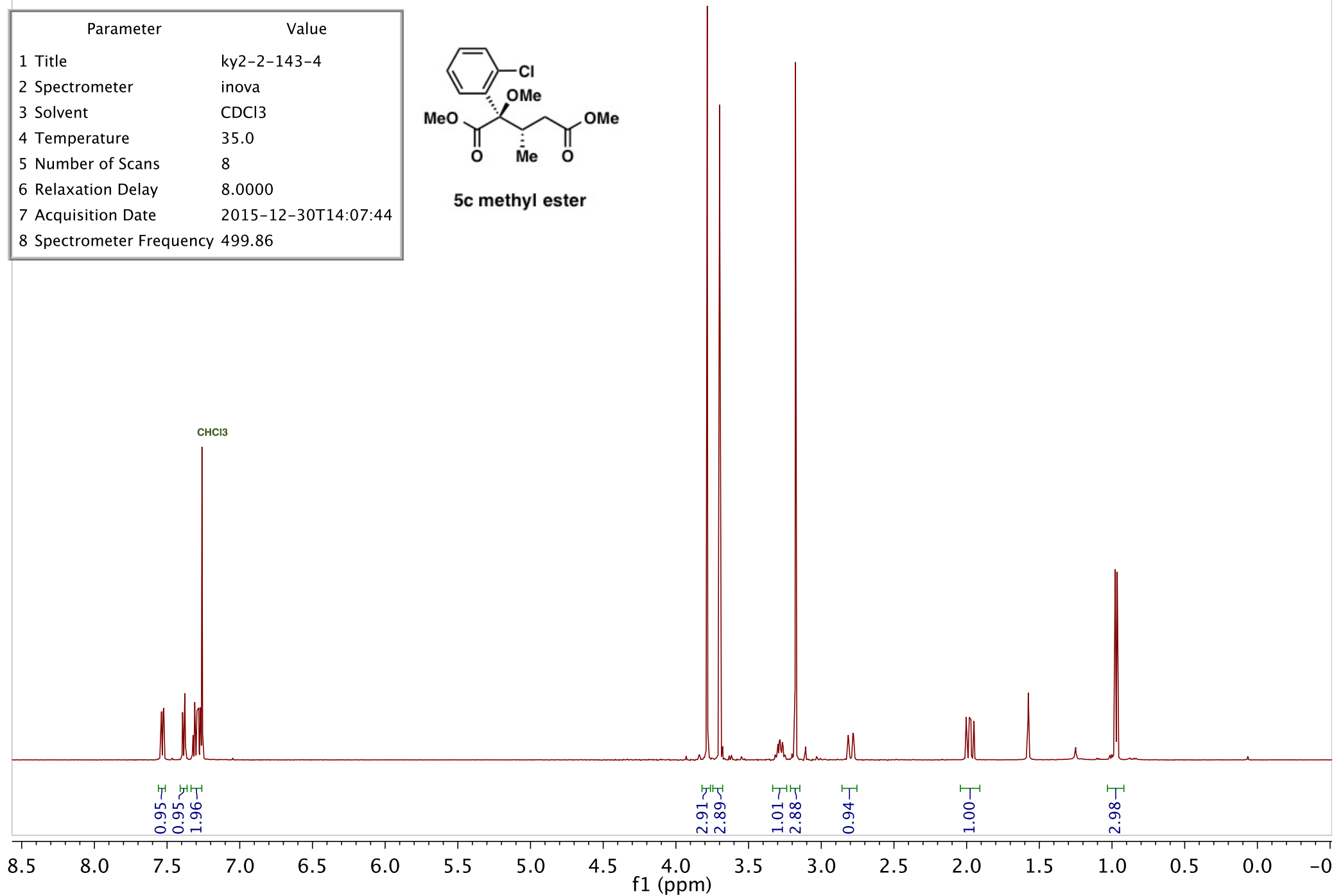
Parameter	Value
1 Title	ky2-2-144-C13
2 Spectrometer	inova
3 Solvent	CDCl3
4 Temperature	-20.0
5 Number of Scans	144
6 Relaxation Delay	1.0000
7 Acquisition Date	2016-03-28T11:16:34
8 Spectrometer Frequency	125.70



Parameter	Value
1 Title	ky2-2-143-4
2 Spectrometer	inova
3 Solvent	CDCl3
4 Temperature	35.0
5 Number of Scans	8
6 Relaxation Delay	8.0000
7 Acquisition Date	2015-12-30T14:07:44
8 Spectrometer Frequency	499.86



5c methyl ester



173.556
170.610

135.165
133.780
131.180
129.505
129.326
126.362

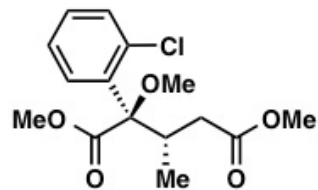
85.277
77.254
77.000
76.746

52.246
52.212
51.699

37.207
33.728

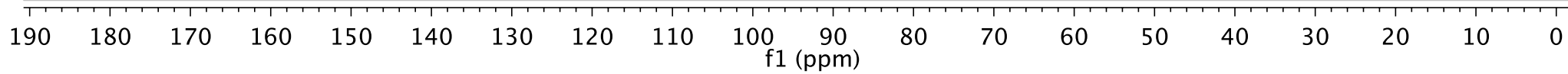
15.665

Parameter	Value
1 Title	ky2-2-143-C13
2 Spectrometer	inova
3 Solvent	CDCl3
4 Temperature	-20.0
5 Number of Scans	1300
6 Relaxation Delay	1.0000
7 Acquisition Date	2016-03-28T13:15:37
8 Spectrometer Frequency	125.70

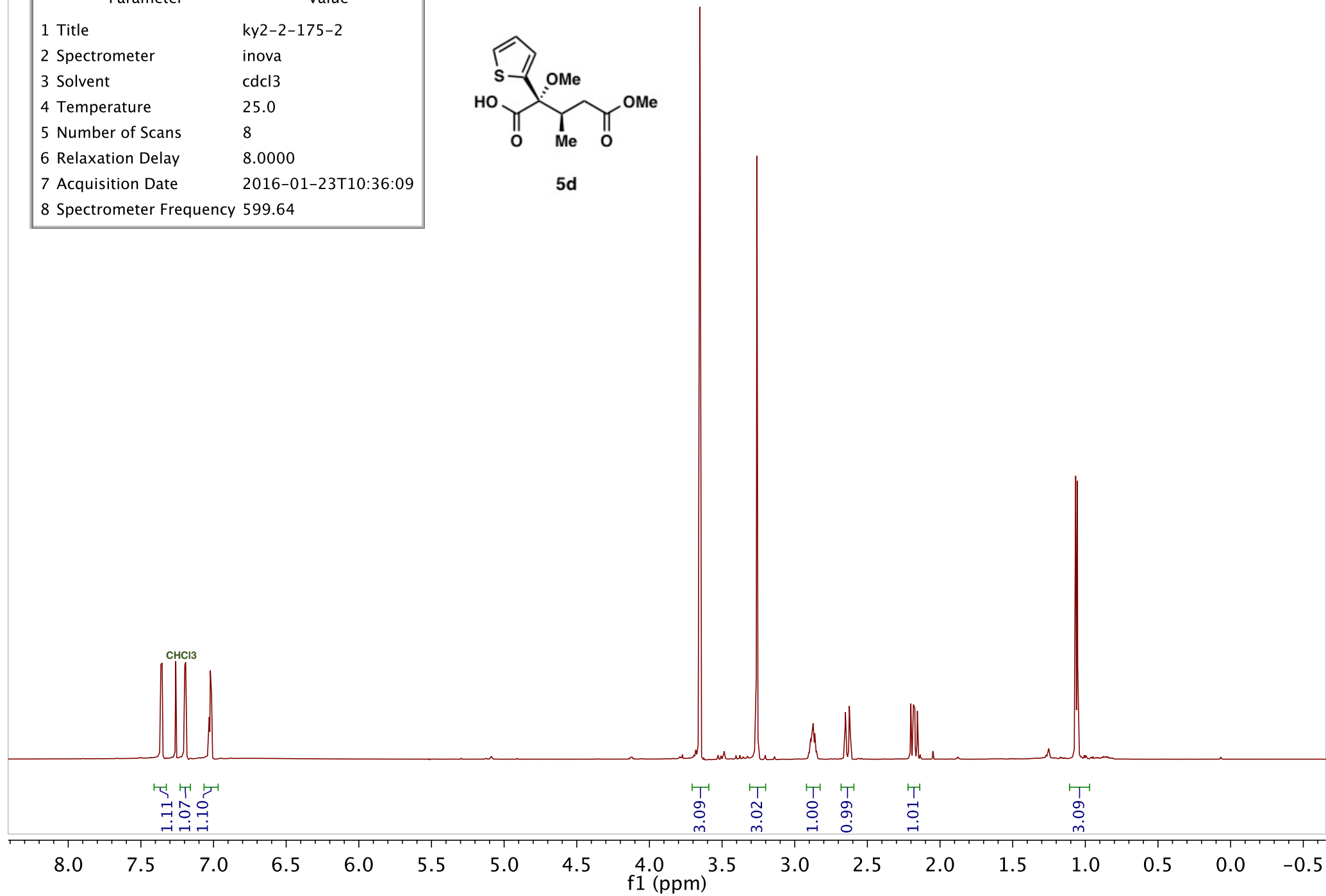
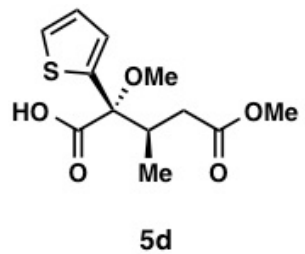


5c methyl ester

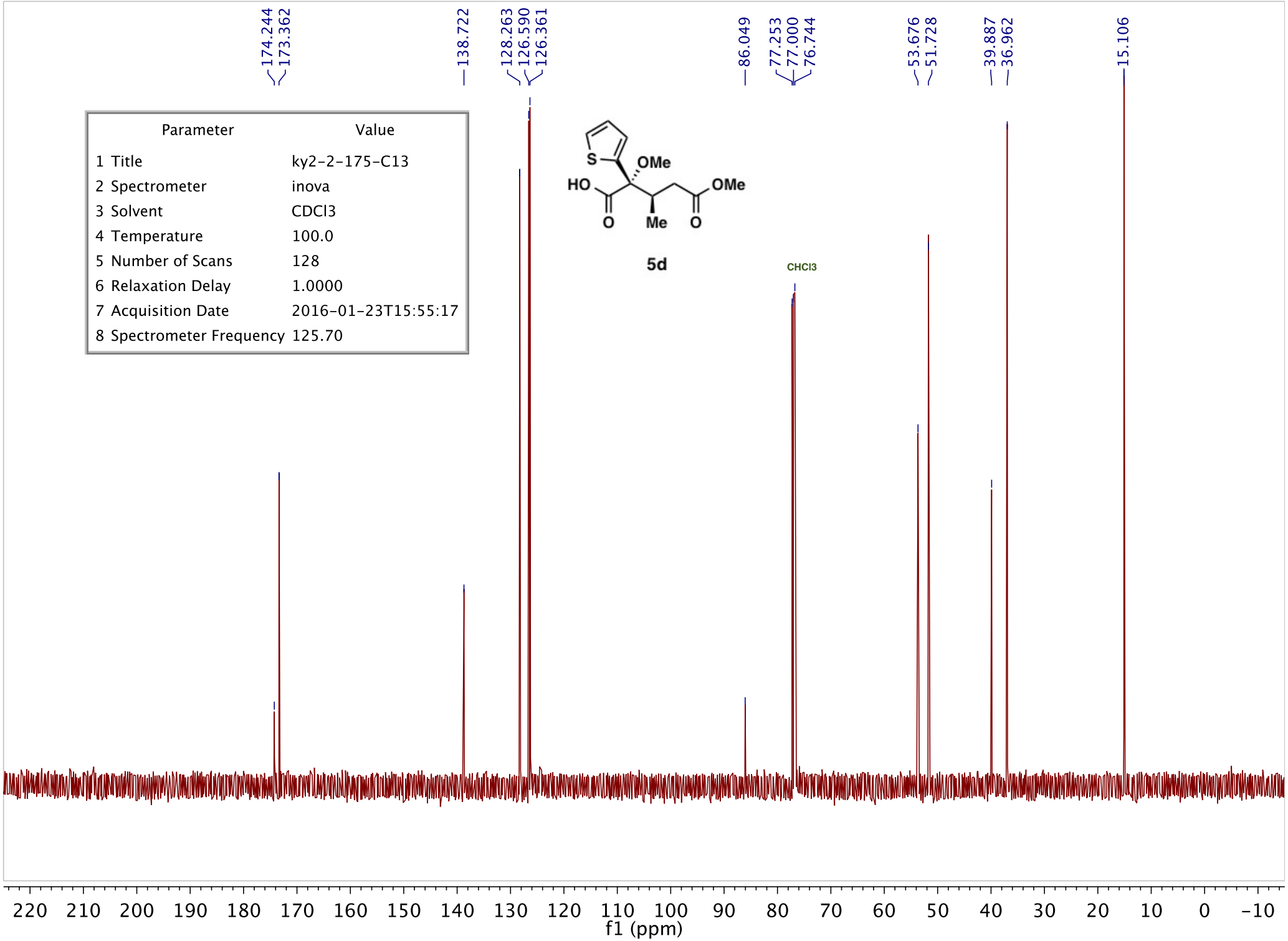
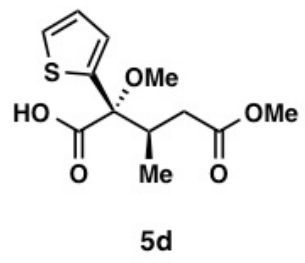
CHCl3



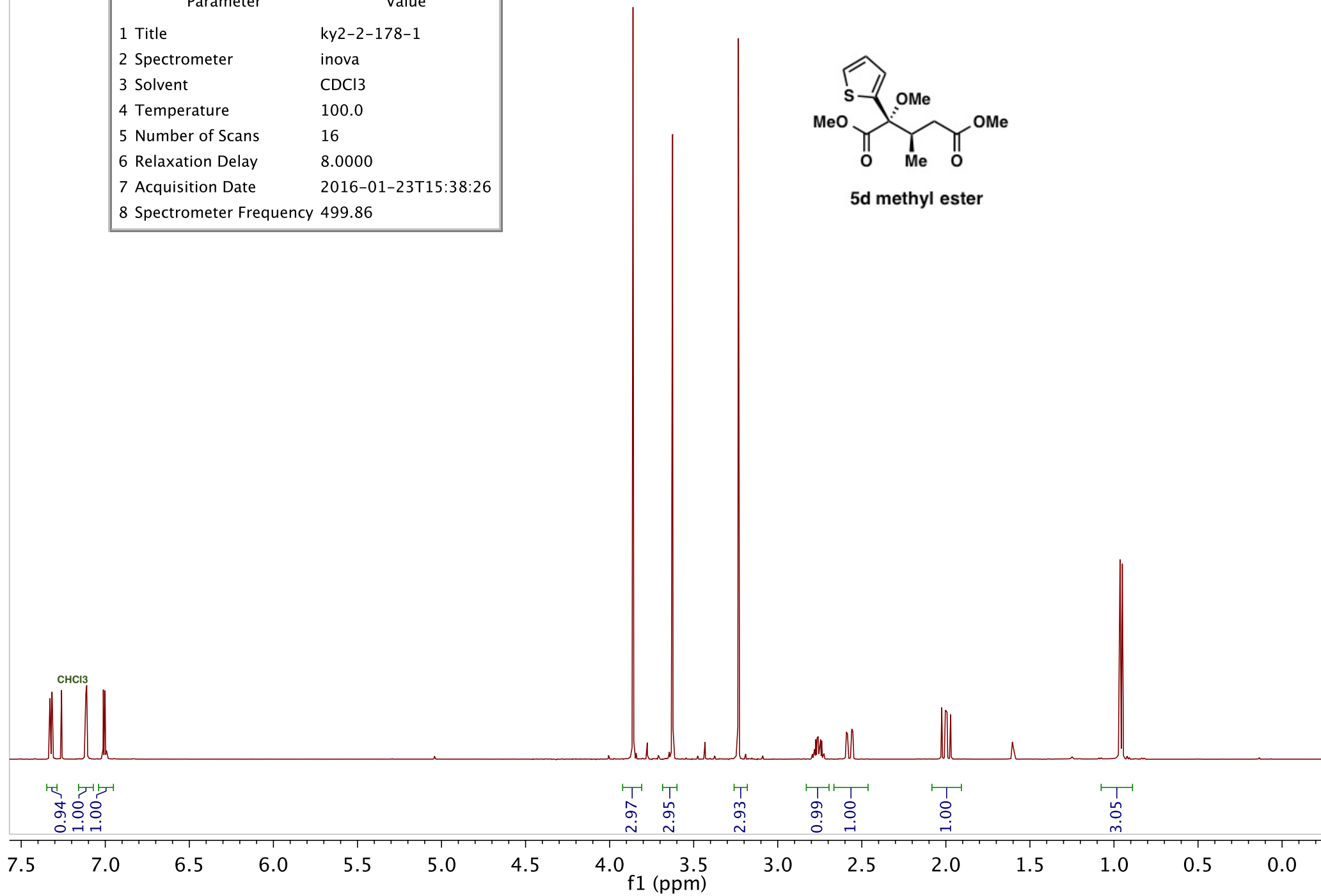
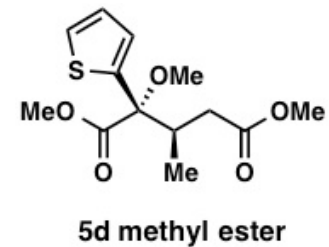
Parameter	Value
1 Title	ky2-2-175-2
2 Spectrometer	inova
3 Solvent	cdcl3
4 Temperature	25.0
5 Number of Scans	8
6 Relaxation Delay	8.0000
7 Acquisition Date	2016-01-23T10:36:09
8 Spectrometer Frequency	599.64



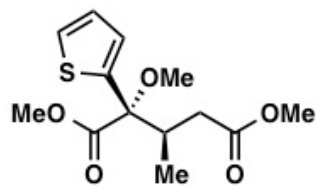
Parameter	Value
1 Title	ky2-2-175-C13
2 Spectrometer	inova
3 Solvent	CDCl3
4 Temperature	100.0
5 Number of Scans	128
6 Relaxation Delay	1.0000
7 Acquisition Date	2016-01-23T15:55:17
8 Spectrometer Frequency	125.70



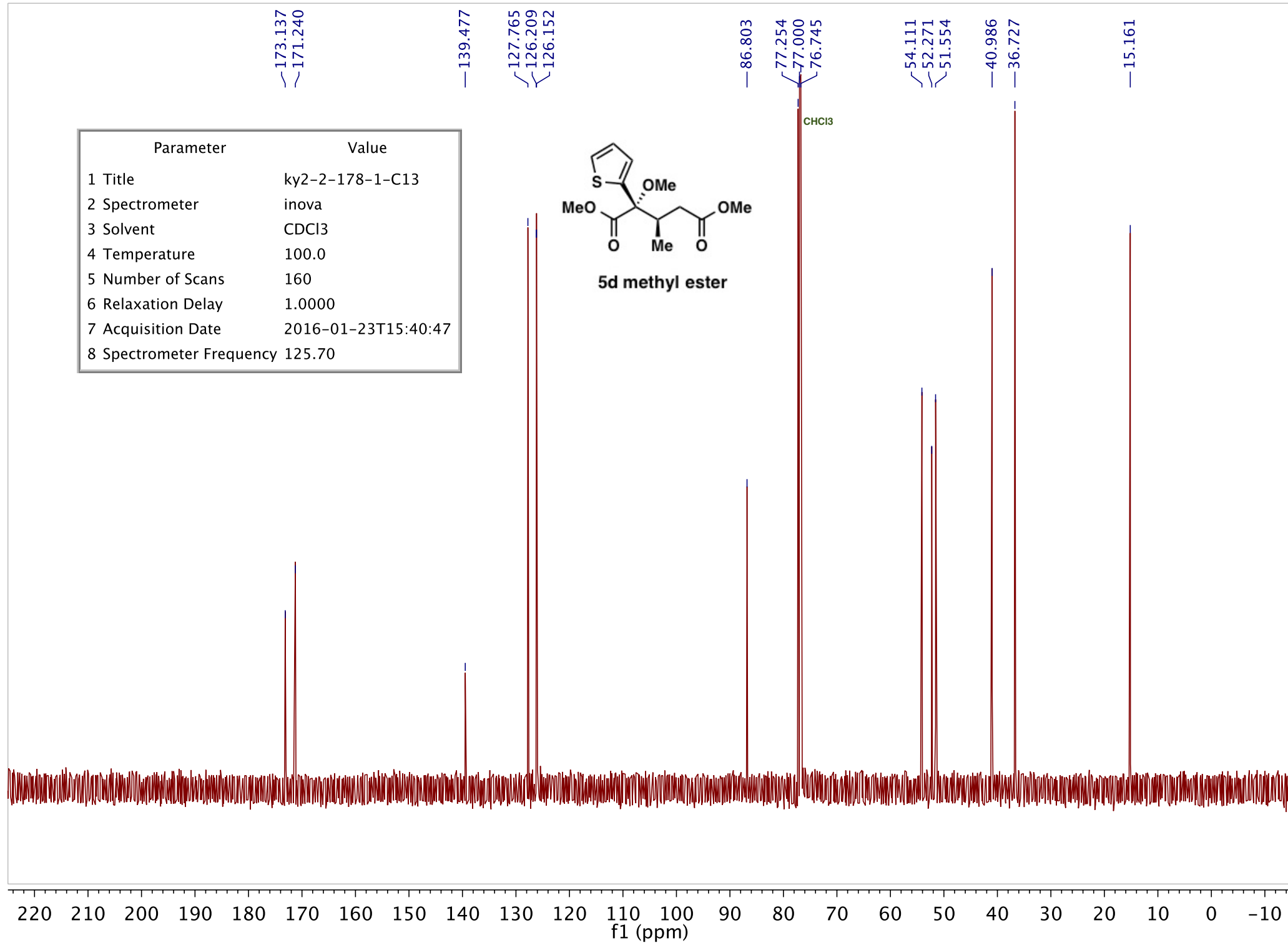
Parameter	Value
1 Title	ky2-2-178-1
2 Spectrometer	inova
3 Solvent	CDCl3
4 Temperature	100.0
5 Number of Scans	16
6 Relaxation Delay	8.0000
7 Acquisition Date	2016-01-23T15:38:26
8 Spectrometer Frequency	499.86



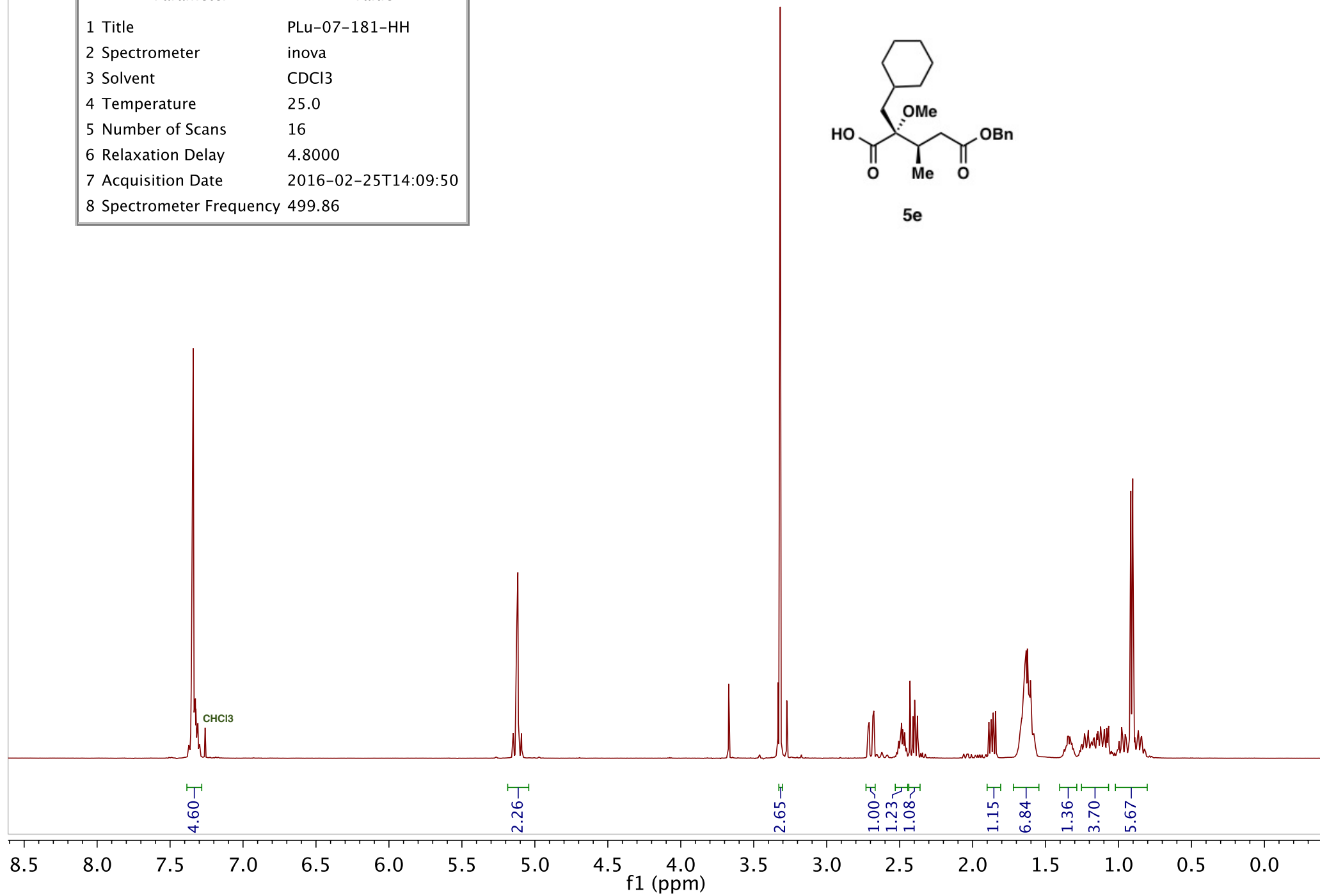
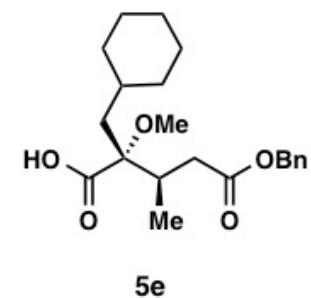
Parameter	Value
1 Title	ky2-2-178-1-C13
2 Spectrometer	inova
3 Solvent	CDCl3
4 Temperature	100.0
5 Number of Scans	160
6 Relaxation Delay	1.0000
7 Acquisition Date	2016-01-23T15:40:47
8 Spectrometer Frequency	125.70

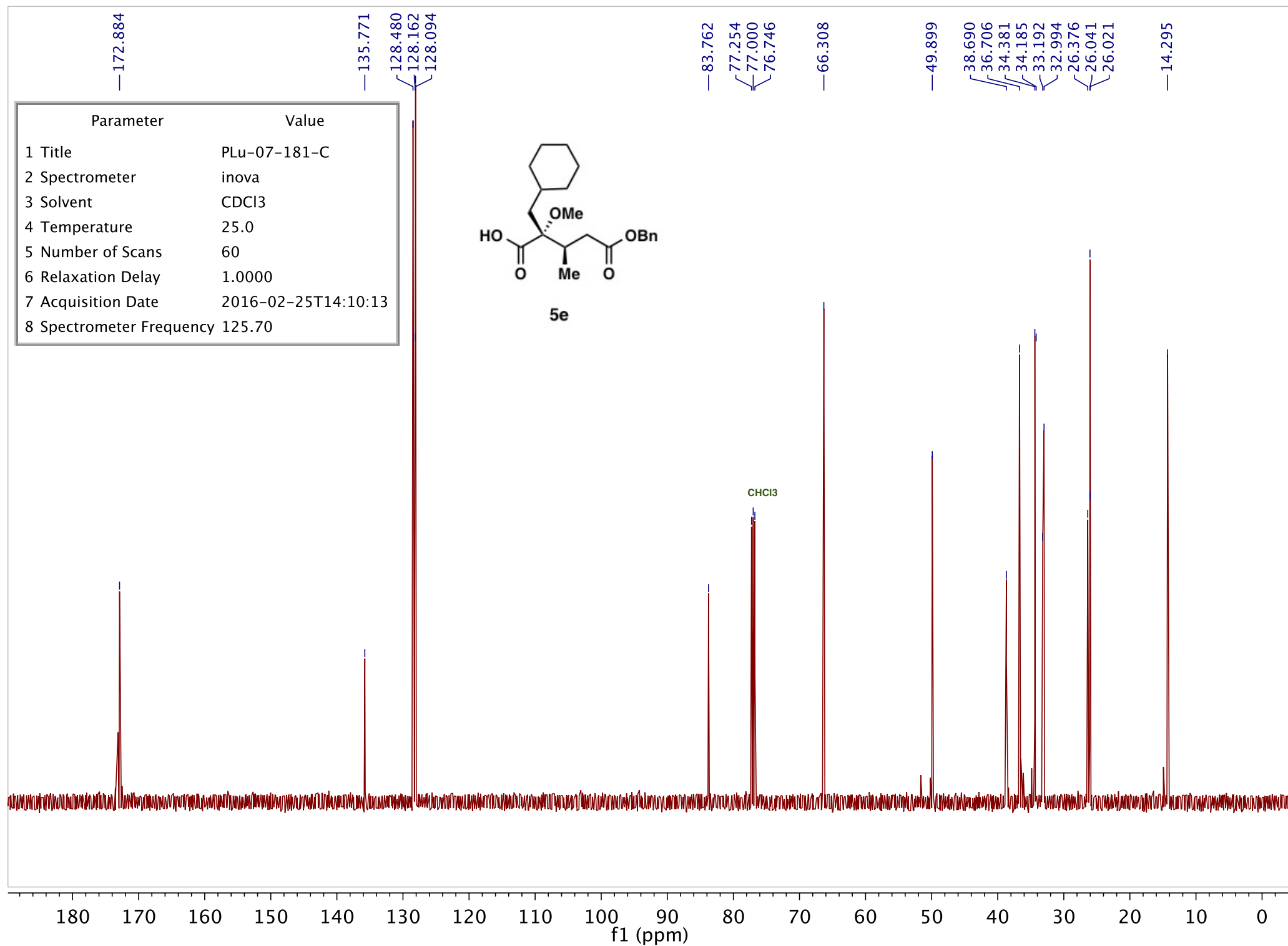


5d methyl ester

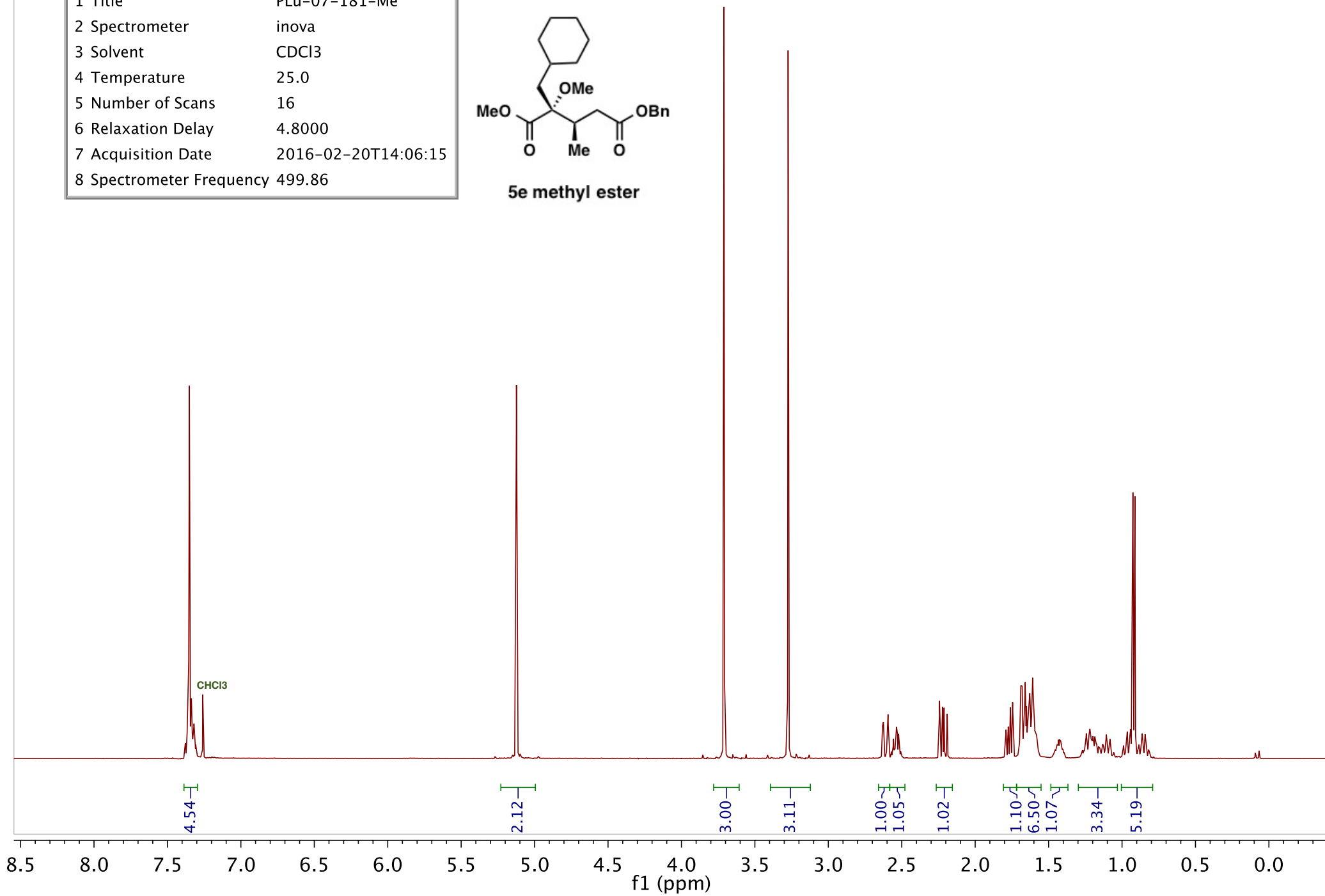
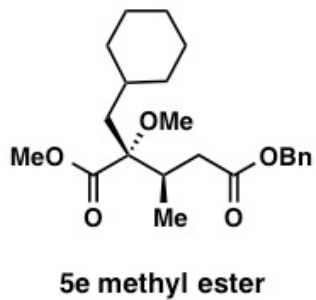


Parameter	Value
1 Title	PLu-07-181-HH
2 Spectrometer	inova
3 Solvent	CDCl3
4 Temperature	25.0
5 Number of Scans	16
6 Relaxation Delay	4.8000
7 Acquisition Date	2016-02-25T14:09:50
8 Spectrometer Frequency	499.86

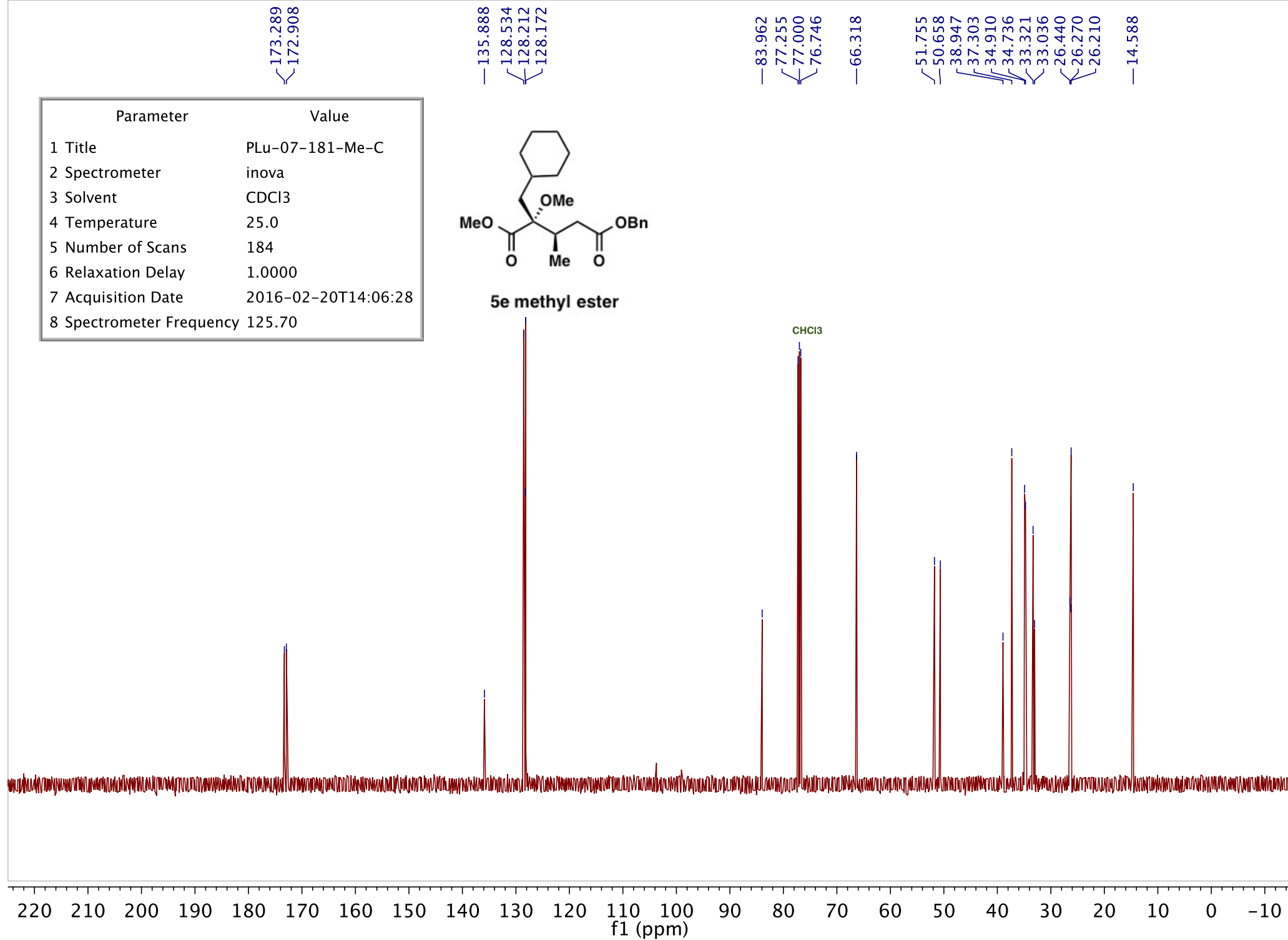
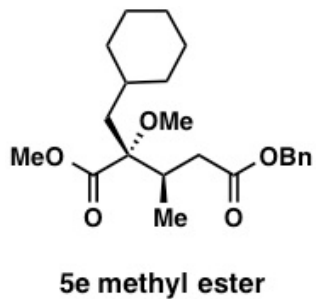




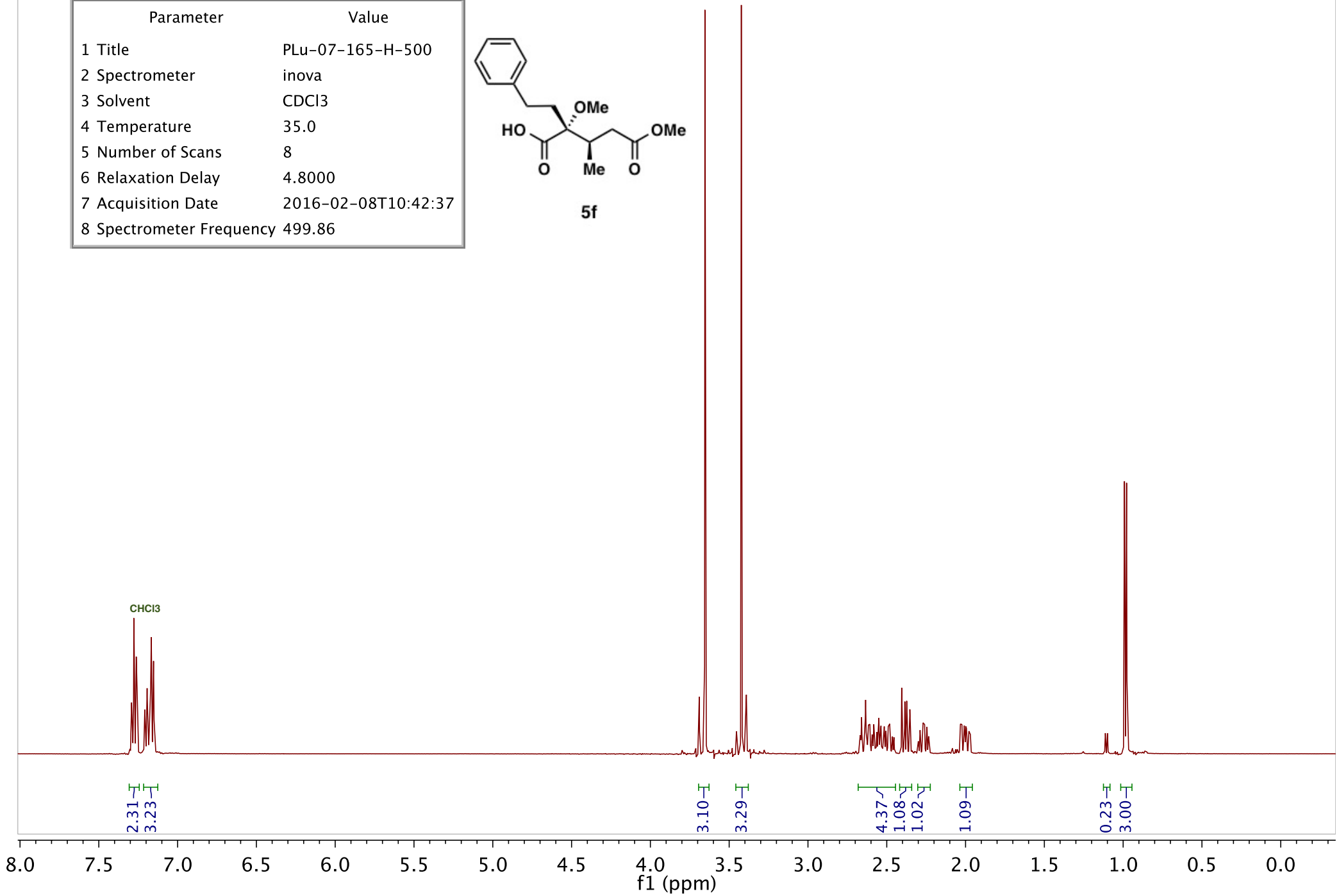
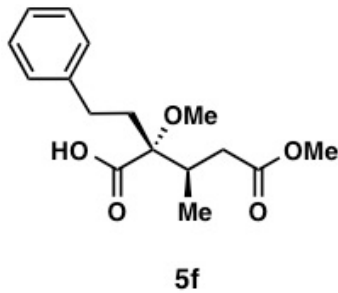
Parameter	Value
1 Title	PLu-07-181-Me
2 Spectrometer	inova
3 Solvent	CDCl3
4 Temperature	25.0
5 Number of Scans	16
6 Relaxation Delay	4.8000
7 Acquisition Date	2016-02-20T14:06:15
8 Spectrometer Frequency	499.86



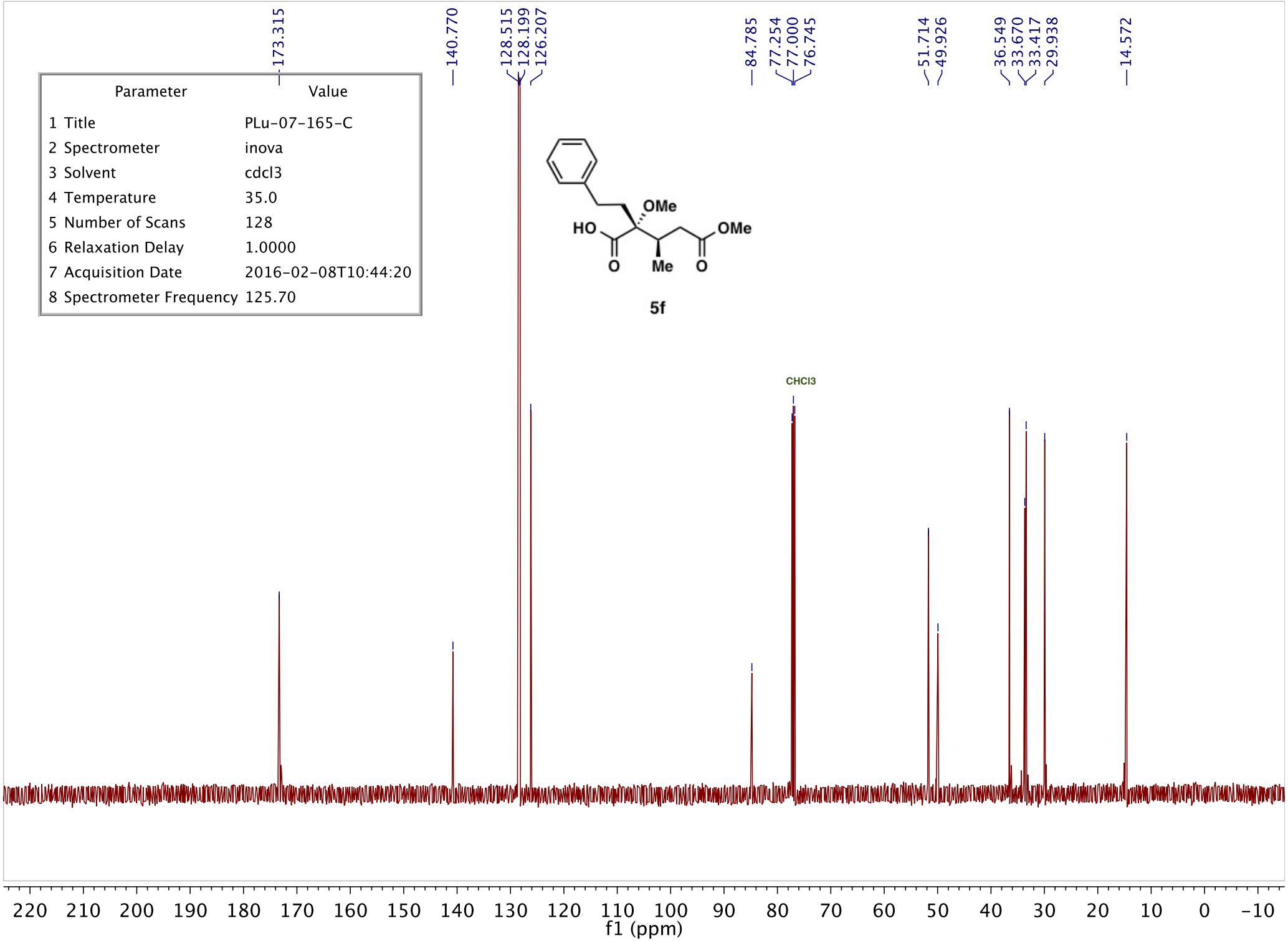
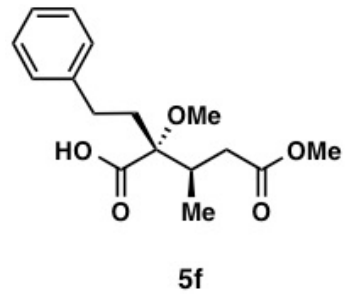
Parameter	Value
1 Title	PLu-07-181-Me-C
2 Spectrometer	inova
3 Solvent	CDCl3
4 Temperature	25.0
5 Number of Scans	184
6 Relaxation Delay	1.0000
7 Acquisition Date	2016-02-20T14:06:28
8 Spectrometer Frequency	125.70



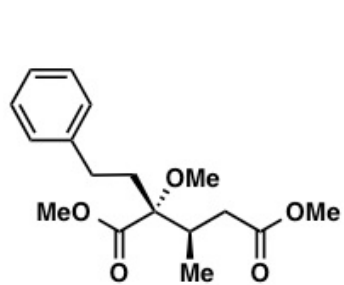
Parameter	Value
1 Title	PLu-07-165-H-500
2 Spectrometer	inova
3 Solvent	CDCl3
4 Temperature	35.0
5 Number of Scans	8
6 Relaxation Delay	4.8000
7 Acquisition Date	2016-02-08T10:42:37
8 Spectrometer Frequency	499.86



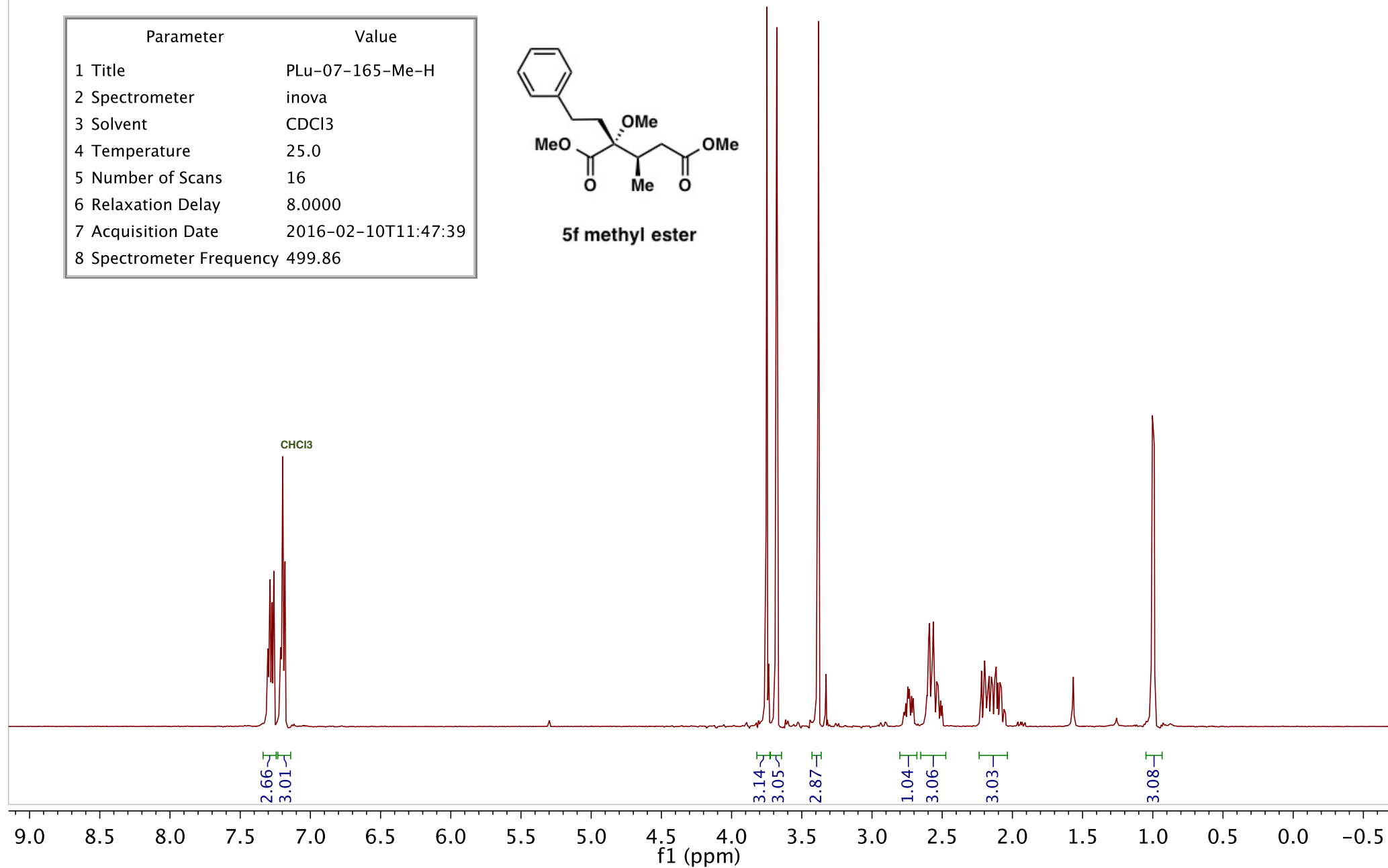
Parameter	Value
1 Title	PLu-07-165-C
2 Spectrometer	inova
3 Solvent	cdcl3
4 Temperature	35.0
5 Number of Scans	128
6 Relaxation Delay	1.0000
7 Acquisition Date	2016-02-08T10:44:20
8 Spectrometer Frequency	125.70



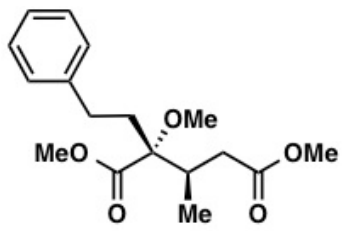
Parameter	Value
1 Title	PLu-07-165-Me-H
2 Spectrometer	inova
3 Solvent	CDCl3
4 Temperature	25.0
5 Number of Scans	16
6 Relaxation Delay	8.0000
7 Acquisition Date	2016-02-10T11:47:39
8 Spectrometer Frequency	499.86



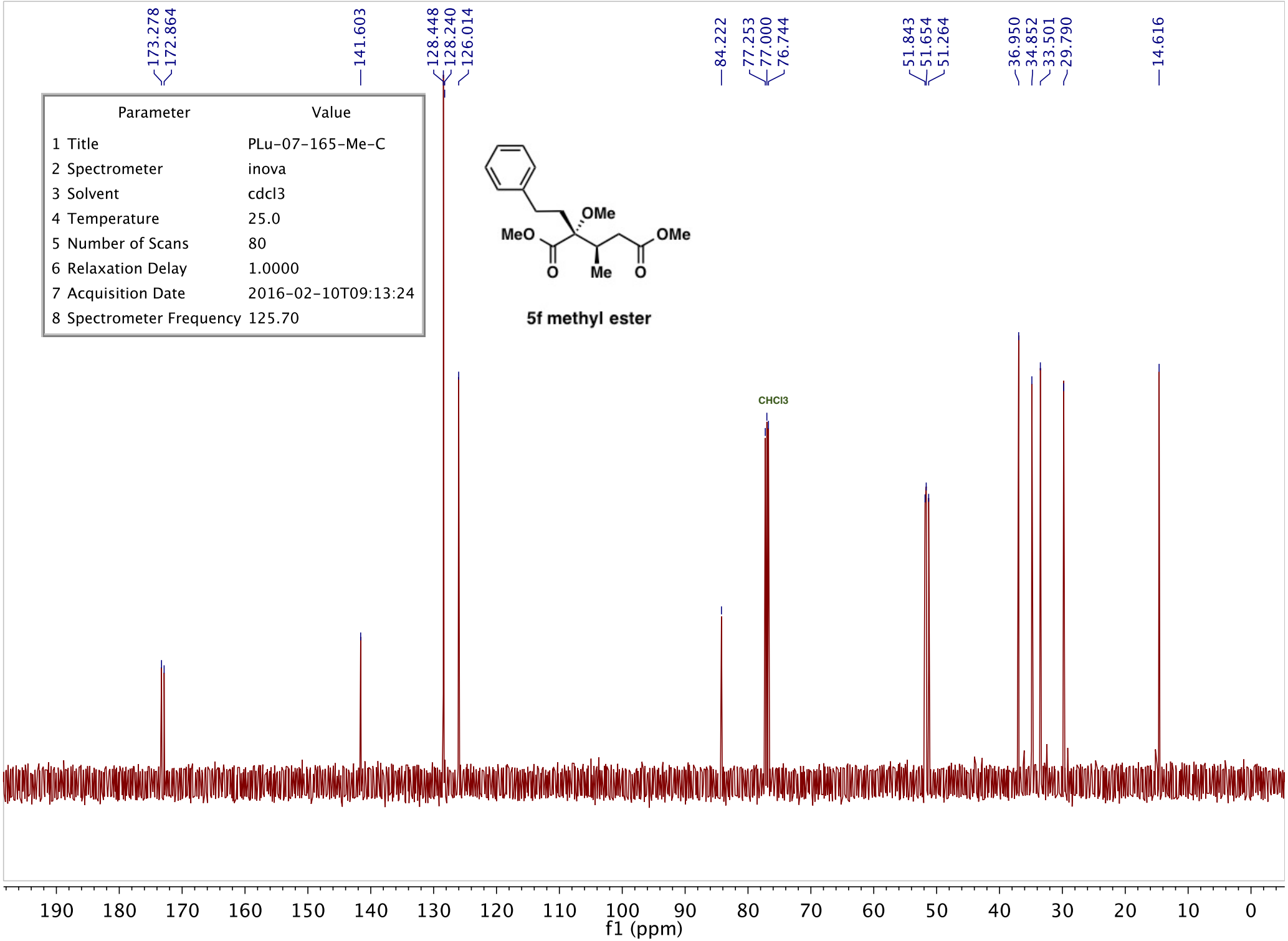
5f methyl ester



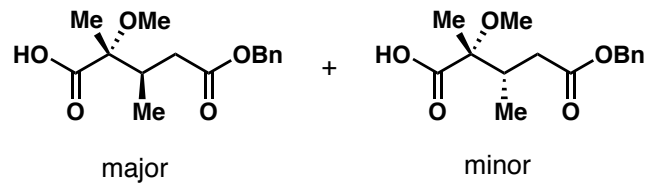
Parameter	Value
1 Title	PLu-07-165-Me-C
2 Spectrometer	inova
3 Solvent	cdcl3
4 Temperature	25.0
5 Number of Scans	80
6 Relaxation Delay	1.0000
7 Acquisition Date	2016-02-10T09:13:24
8 Spectrometer Frequency	125.70



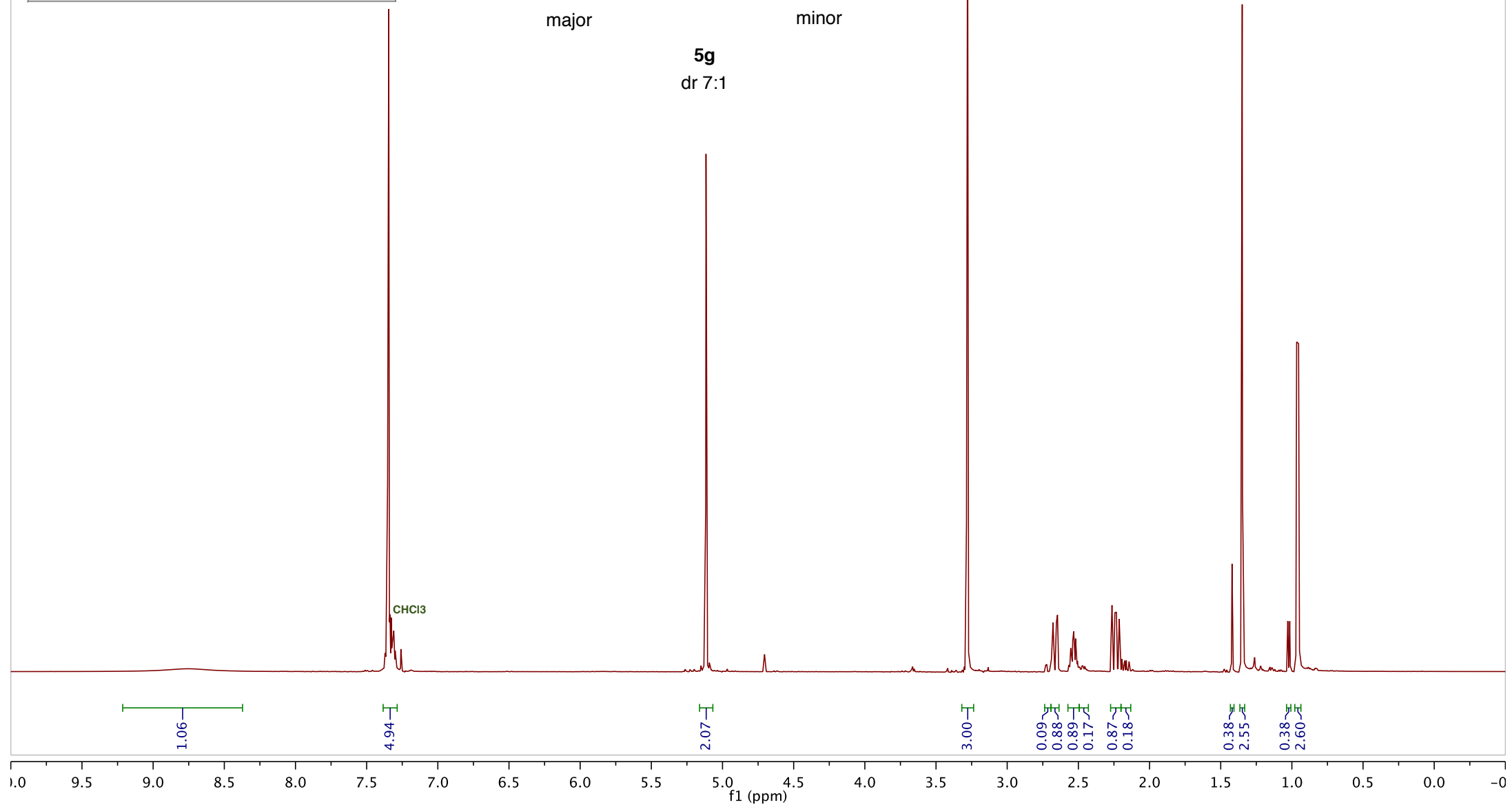
5f methyl ester



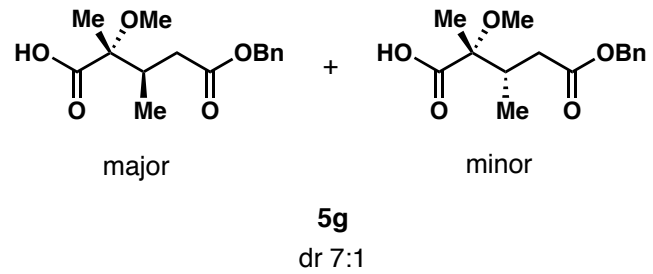
Parameter	Value
1 Title	PLu-07-188-1H
2 Spectrometer	inova
3 Solvent	CDCl3
4 Temperature	25.0
5 Number of Scans	16
6 Relaxation Delay	4.8000
7 Acquisition Date	2016-03-01T17:04:41
8 Spectrometer Frequency	499.86



5g
dr 7:1



Parameter	Value
1 Title	PLu-07-188-1C
2 Spectrometer	inova
3 Solvent	CDCl3
4 Temperature	25.0
5 Number of Scans	108
6 Relaxation Delay	1.0000
7 Acquisition Date	2016-03-01T17:05:11
8 Spectrometer Frequency	125.70



—177.714
—172.868

—135.809
—128.461
—128.446
—128.139
—128.117

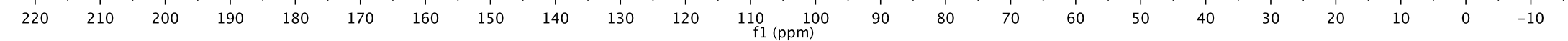
—82.247
—81.915

—66.300
—66.267

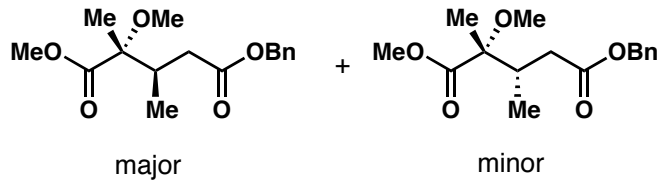
—51.941
—51.851

—37.716
—37.096
—36.320
—36.264

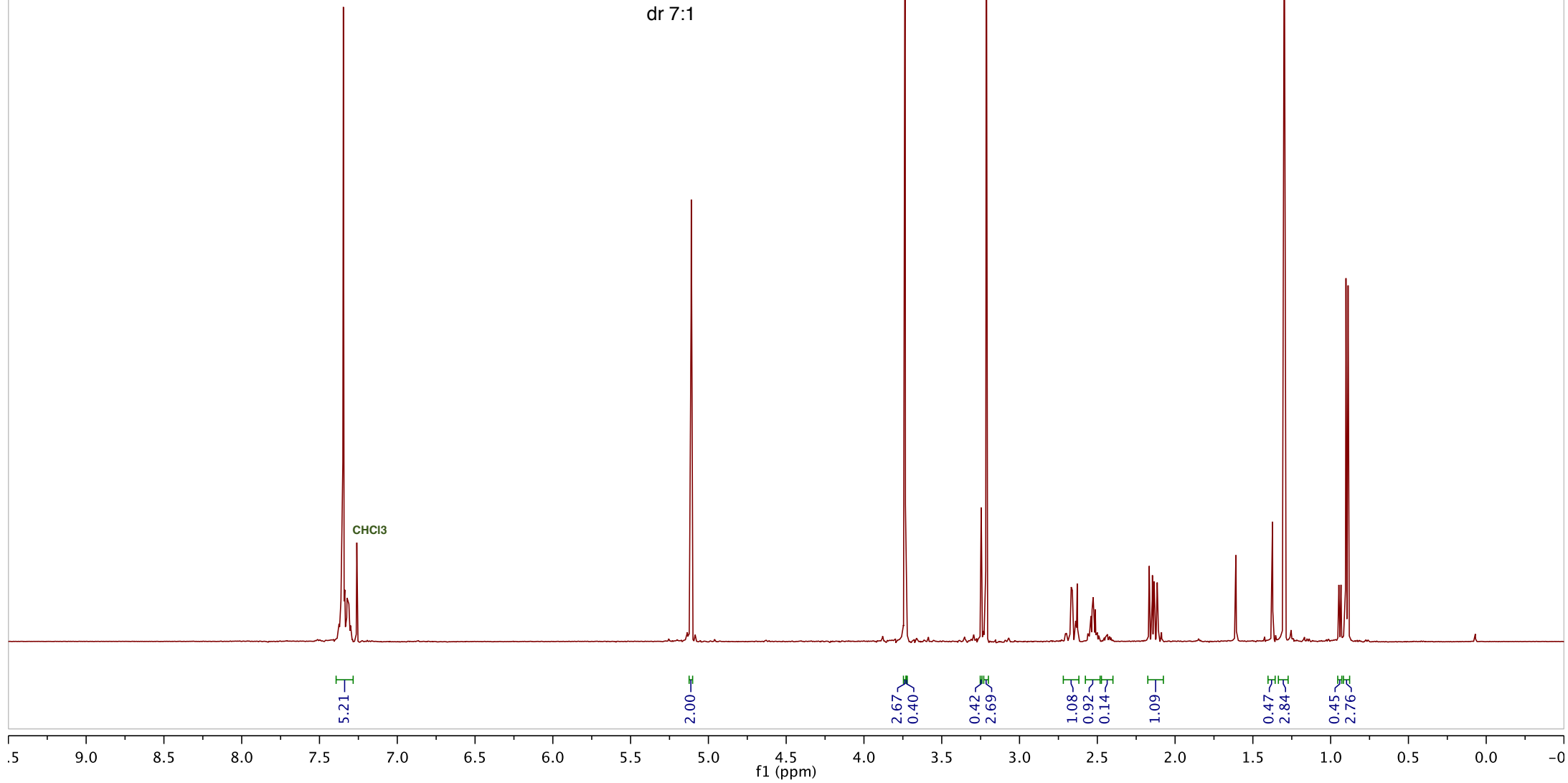
—17.980
—15.891
—14.963
—14.633



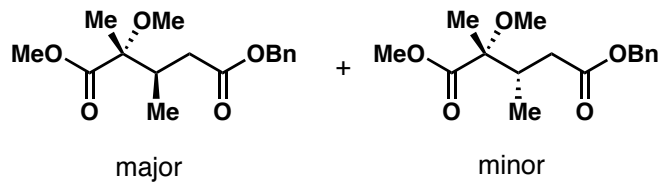
Parameter	Value
1 Title	PLu-07-188-Me-HH
2 Spectrometer	inova
3 Solvent	CDCl3
4 Temperature	25.0
5 Number of Scans	8
6 Relaxation Delay	8.0000
7 Acquisition Date	2016-03-03T10:00:26
8 Spectrometer Frequency	499.86



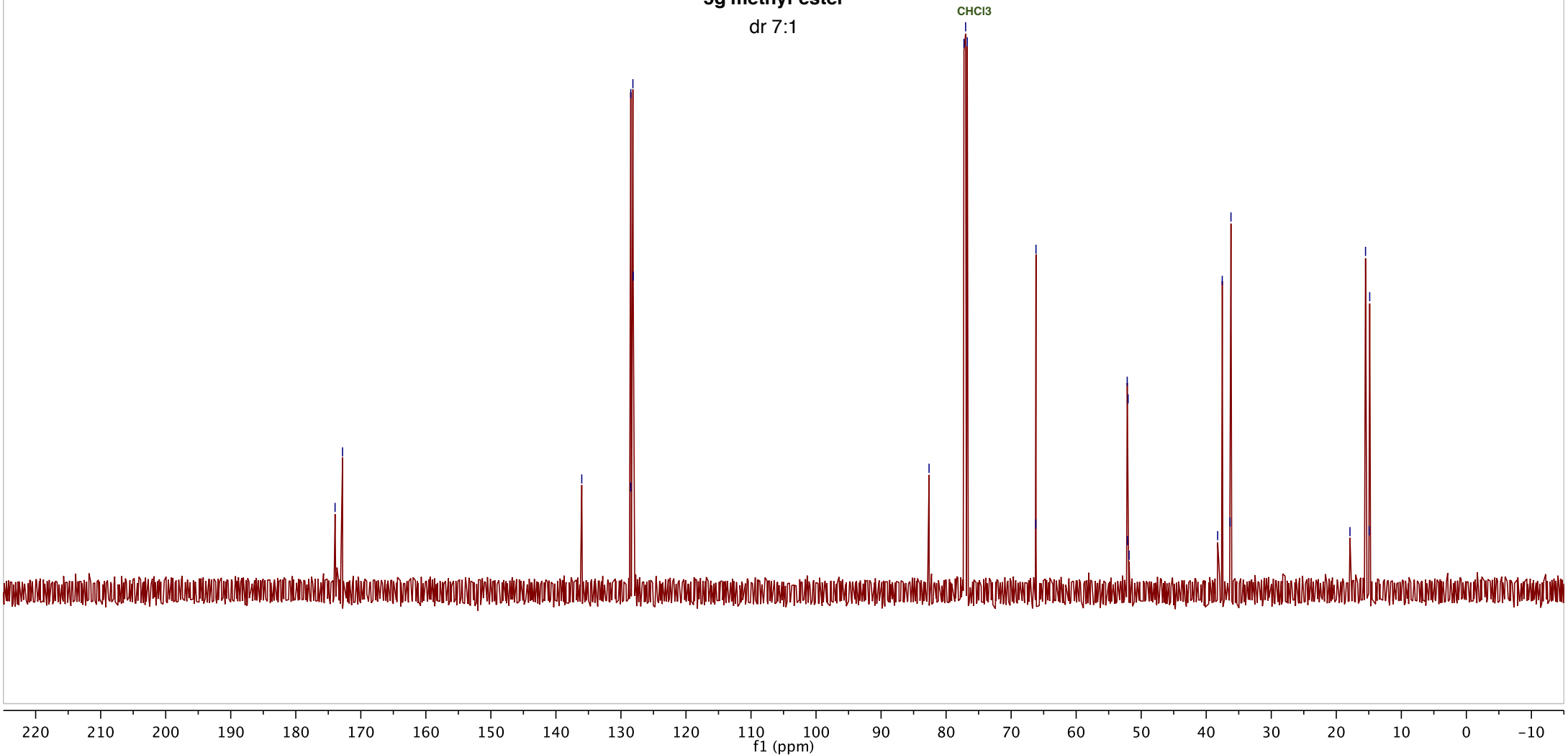
5g methyl ester
dr 7:1



Parameter	Value
1 Title	PLu-07-188-Me-C
2 Spectrometer	inova
3 Solvent	CDCl3
4 Temperature	25.0
5 Number of Scans	100
6 Relaxation Delay	1.0000
7 Acquisition Date	2016-03-03T09:55:06
8 Spectrometer Frequency	125.70



5g methyl ester
dr 7:1



173.957
172.805

136.023
128.499
128.485
128.157
128.116

82.617
77.255
77.000
76.747

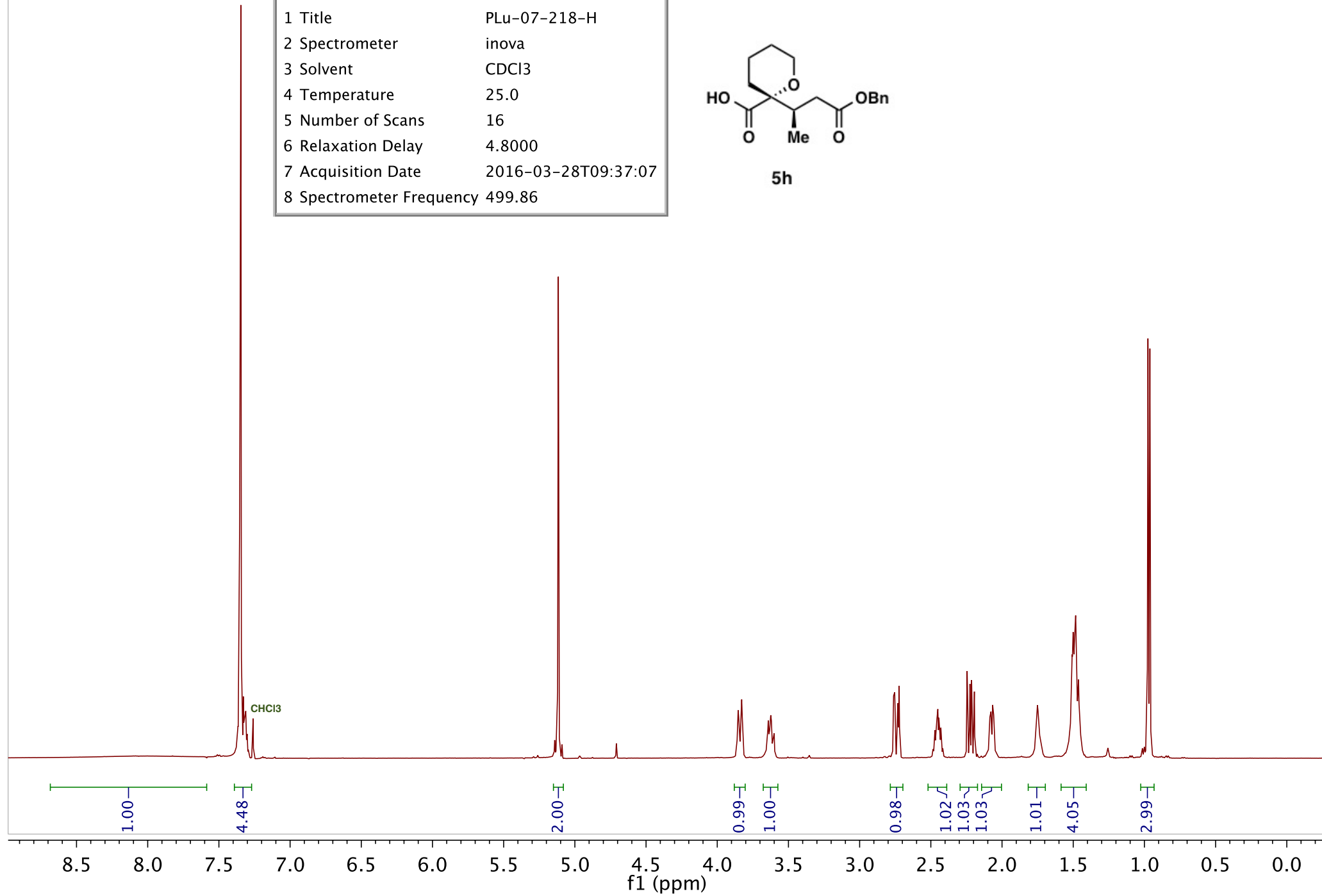
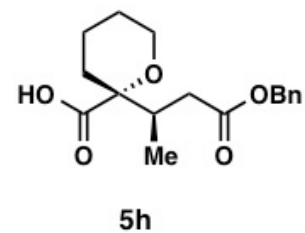
66.207
66.176

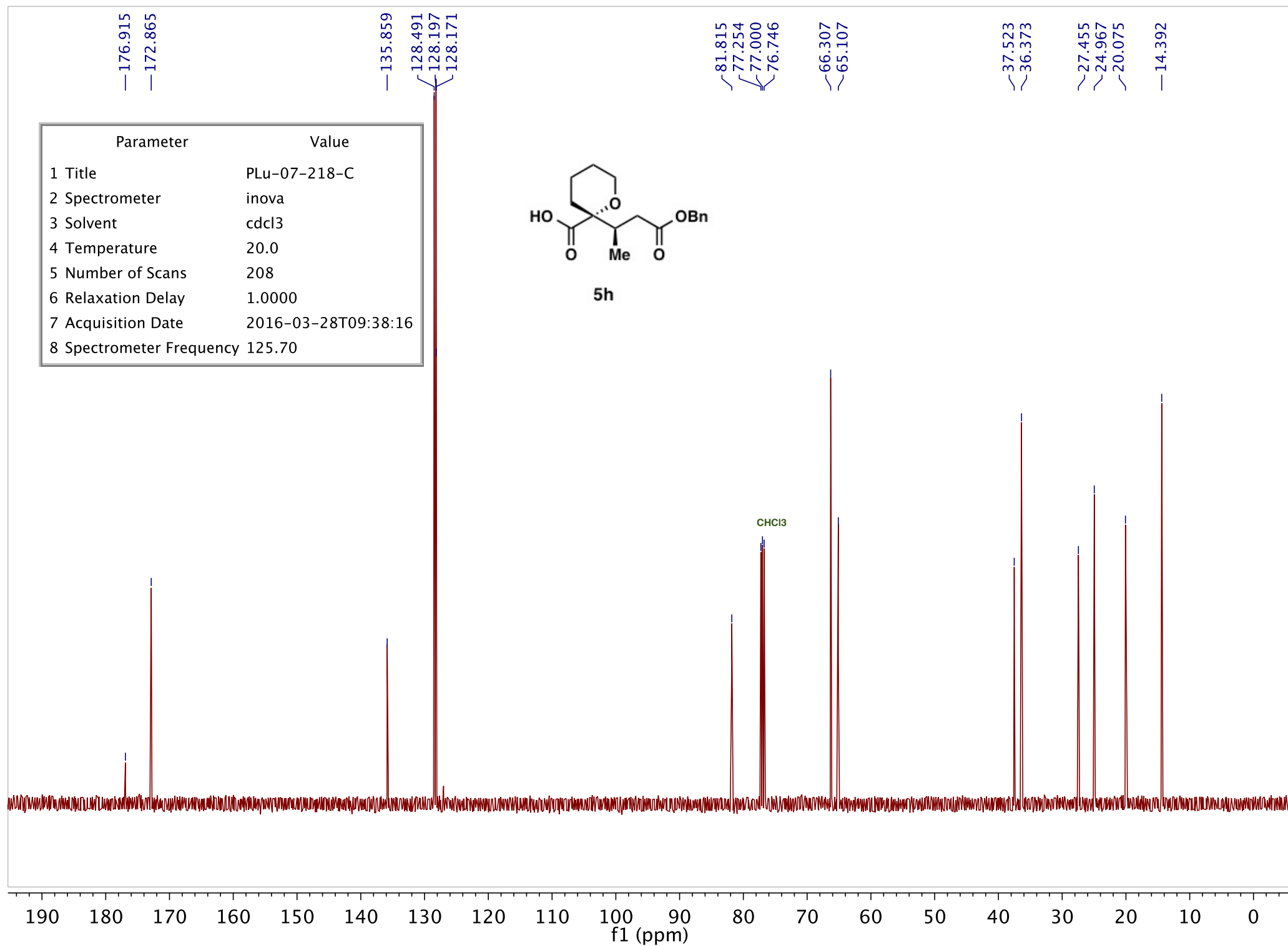
52.148
52.098
52.014
51.860

38.239
37.536
36.329
36.196

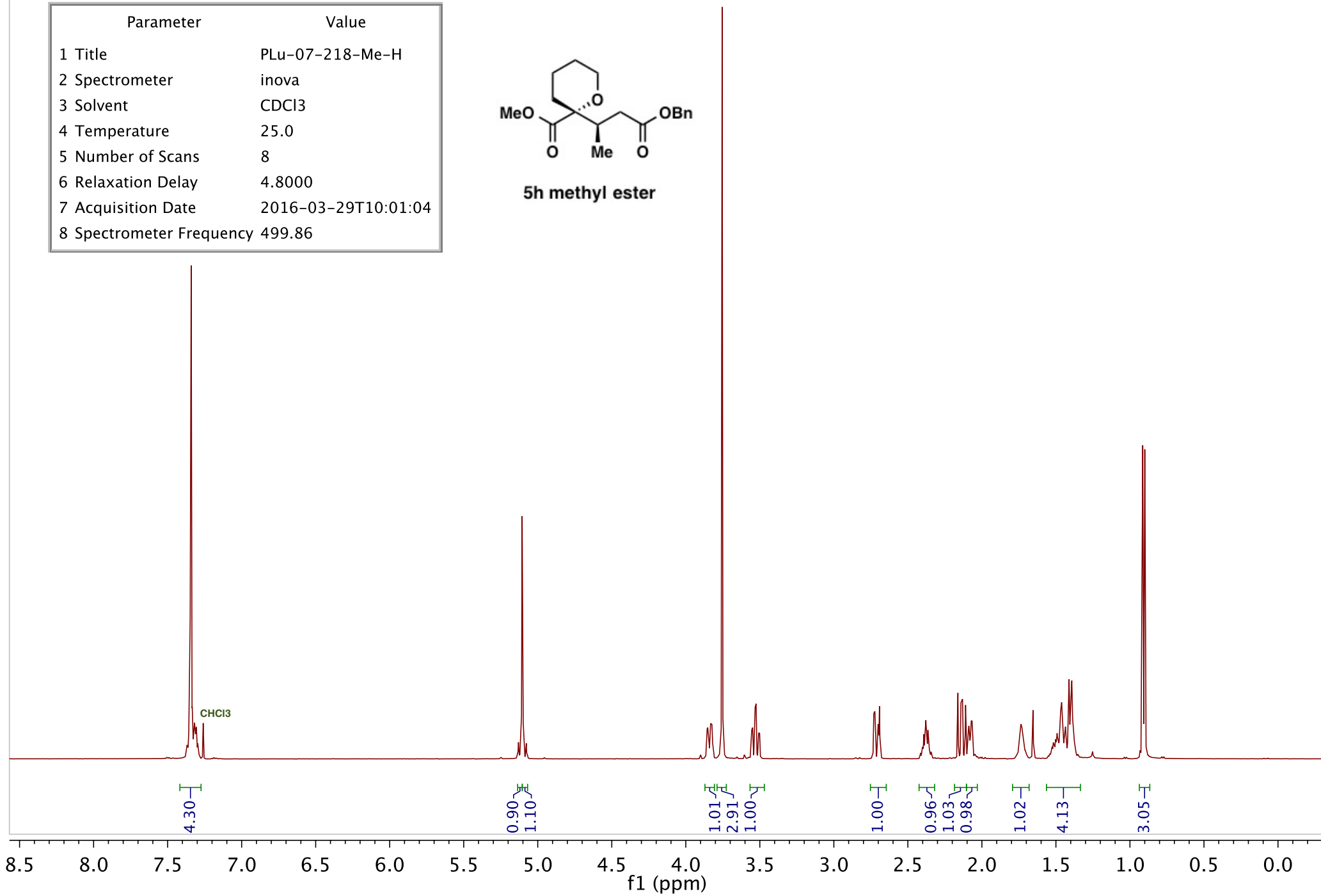
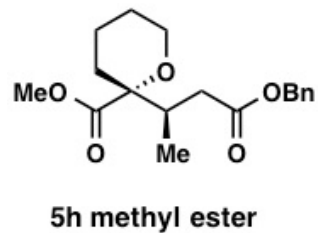
17.898
15.504
14.940
14.863

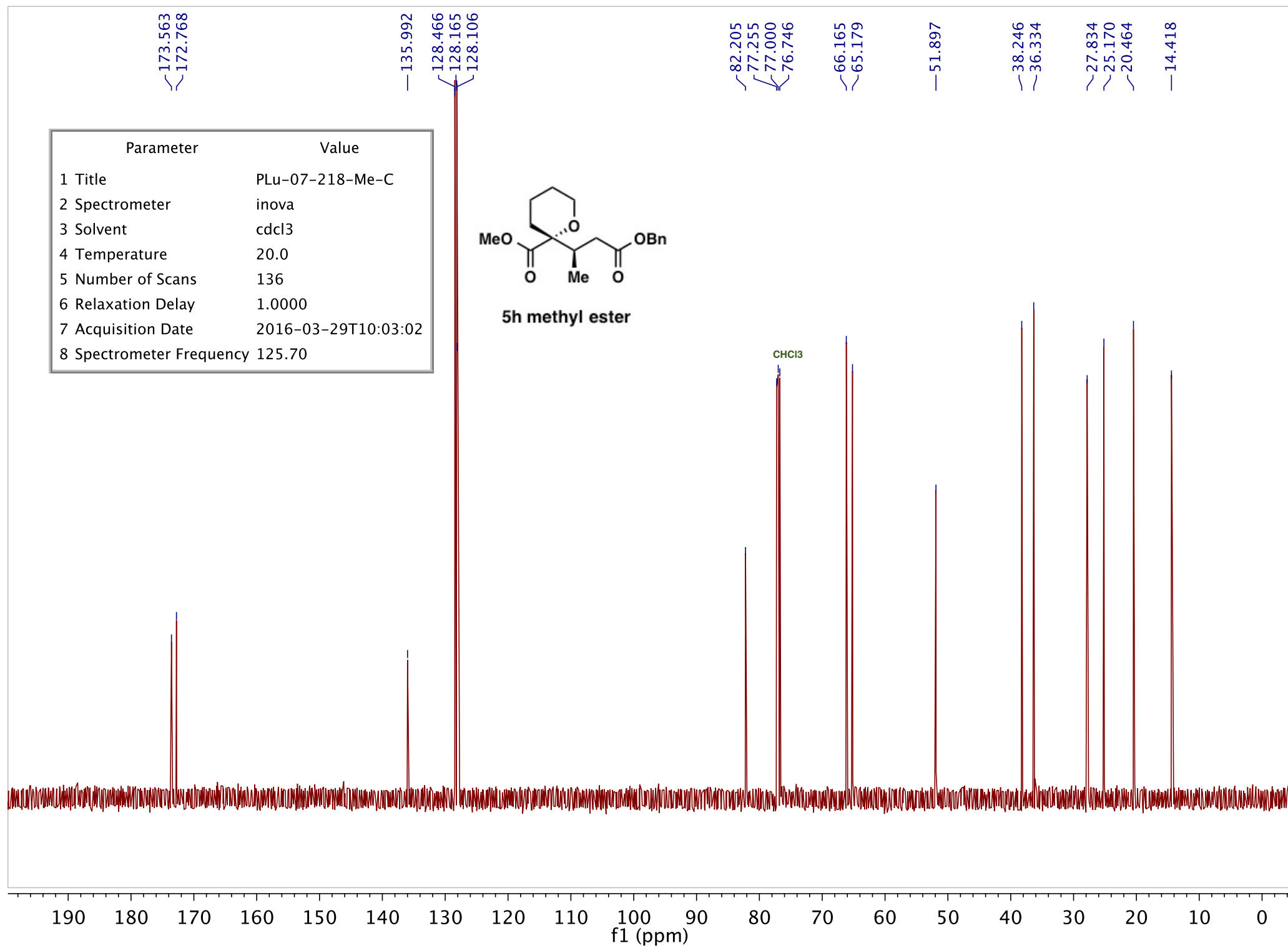
Parameter	Value
1 Title	PLu-07-218-H
2 Spectrometer	inova
3 Solvent	CDCl3
4 Temperature	25.0
5 Number of Scans	16
6 Relaxation Delay	4.8000
7 Acquisition Date	2016-03-28T09:37:07
8 Spectrometer Frequency	499.86



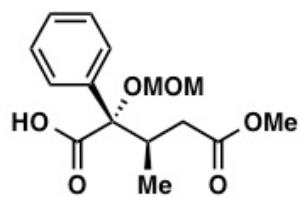


Parameter	Value
1 Title	PLu-07-218-Me-H
2 Spectrometer	inova
3 Solvent	CDCl3
4 Temperature	25.0
5 Number of Scans	8
6 Relaxation Delay	4.8000
7 Acquisition Date	2016-03-29T10:01:04
8 Spectrometer Frequency	499.86



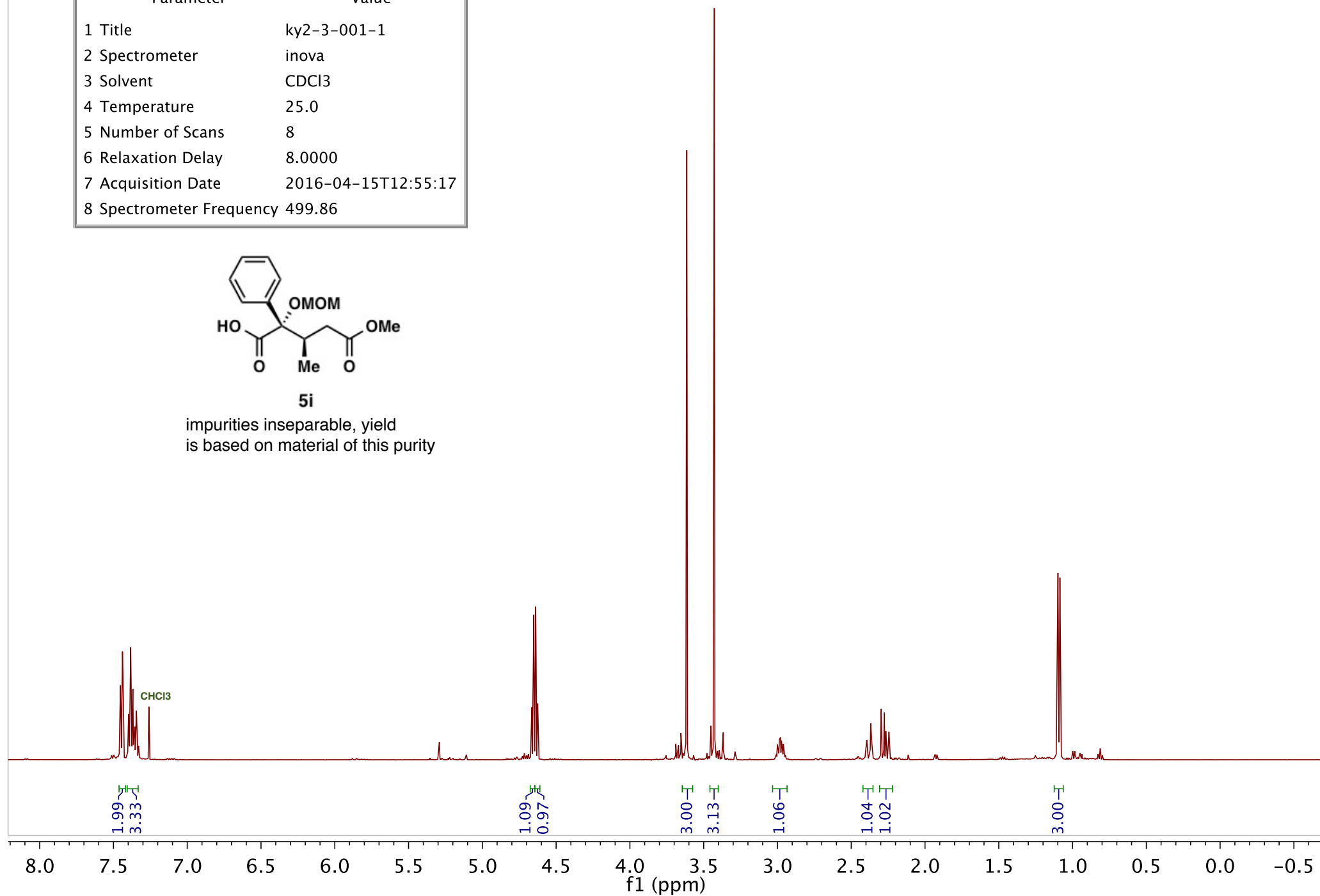


Parameter	Value
1 Title	ky2-3-001-1
2 Spectrometer	inova
3 Solvent	CDCl3
4 Temperature	25.0
5 Number of Scans	8
6 Relaxation Delay	8.0000
7 Acquisition Date	2016-04-15T12:55:17
8 Spectrometer Frequency	499.86



5i

impurities inseparable, yield is based on material of this purity



173.389
173.317

135.433
128.818
128.541
127.876

93.606
89.243

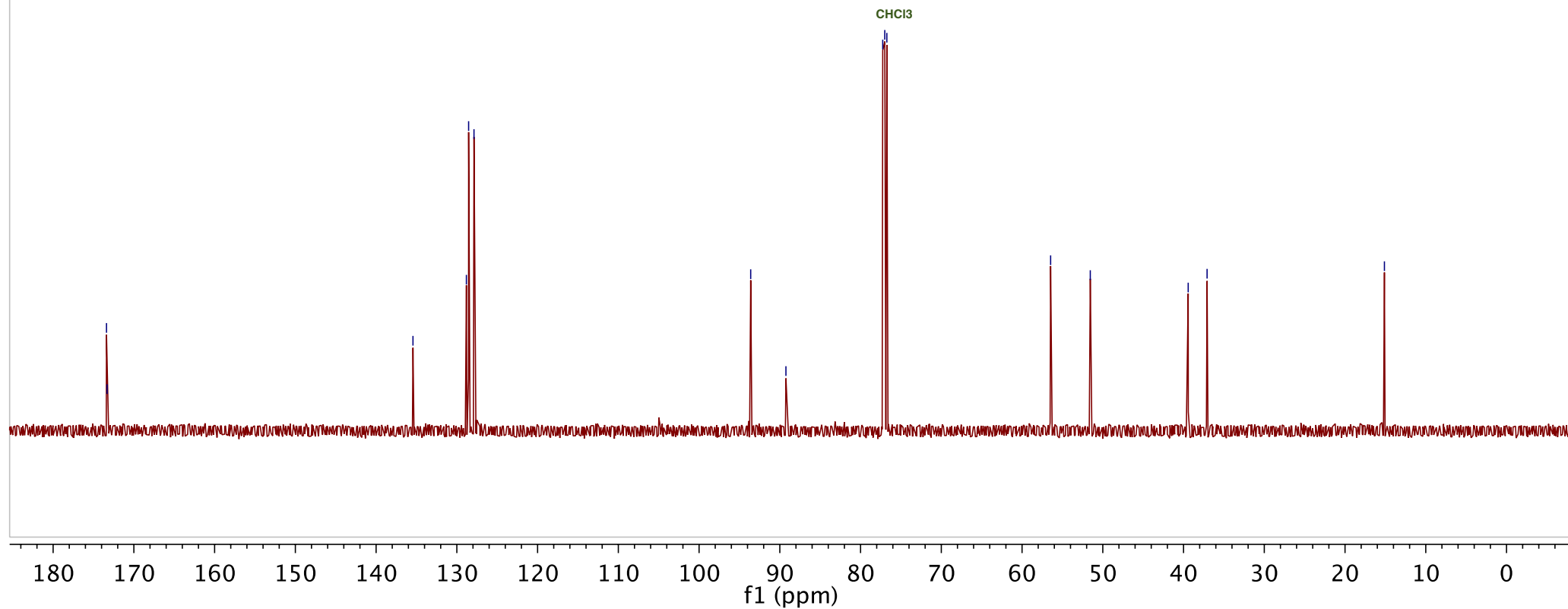
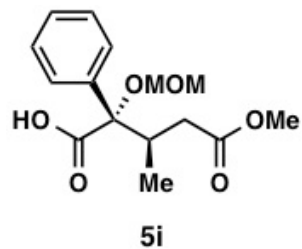
77.254
77.000
76.745

56.461
51.549

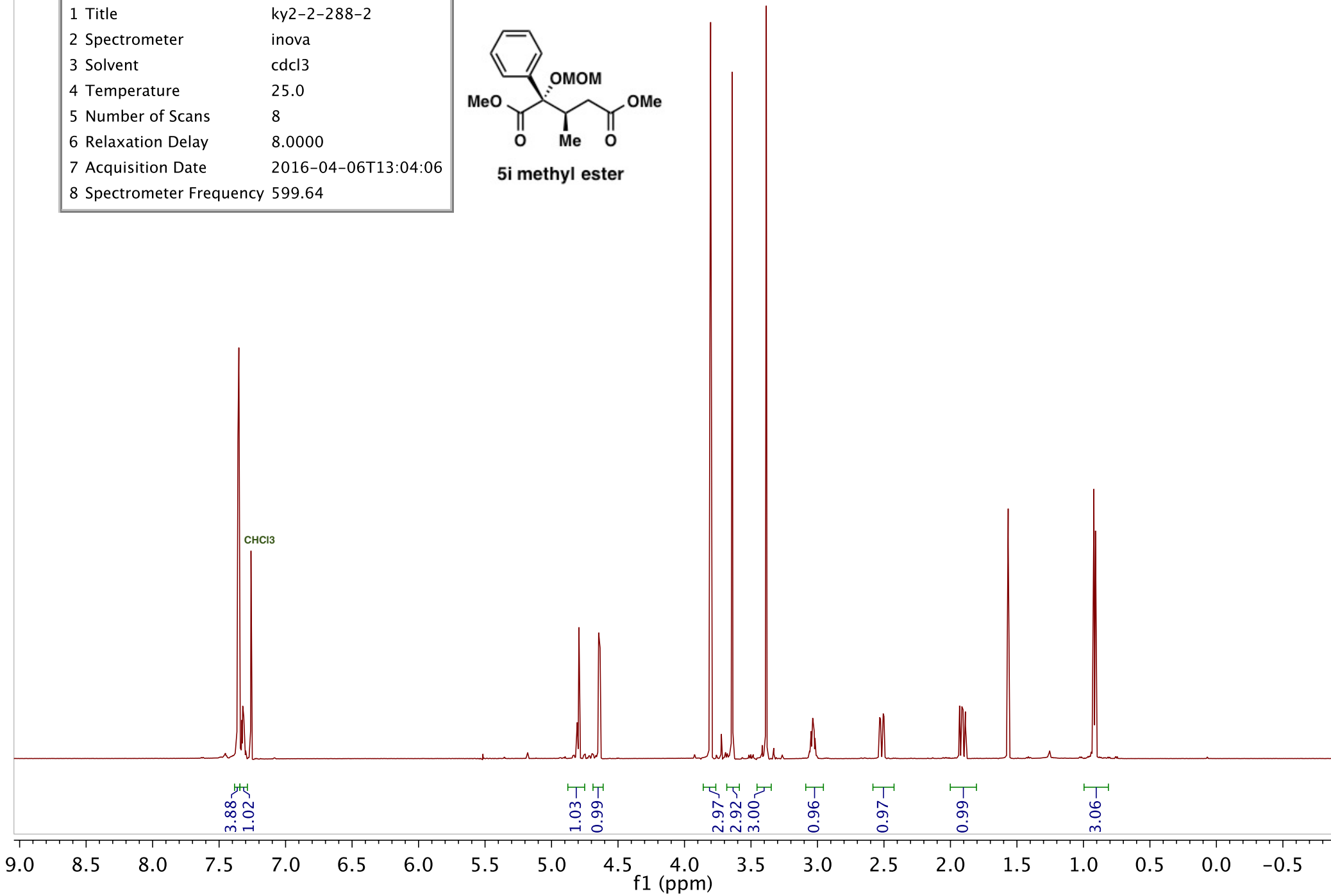
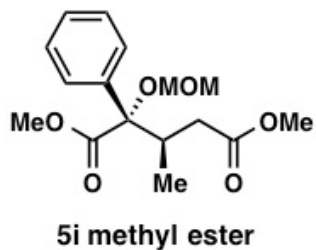
39.423
37.084

15.121

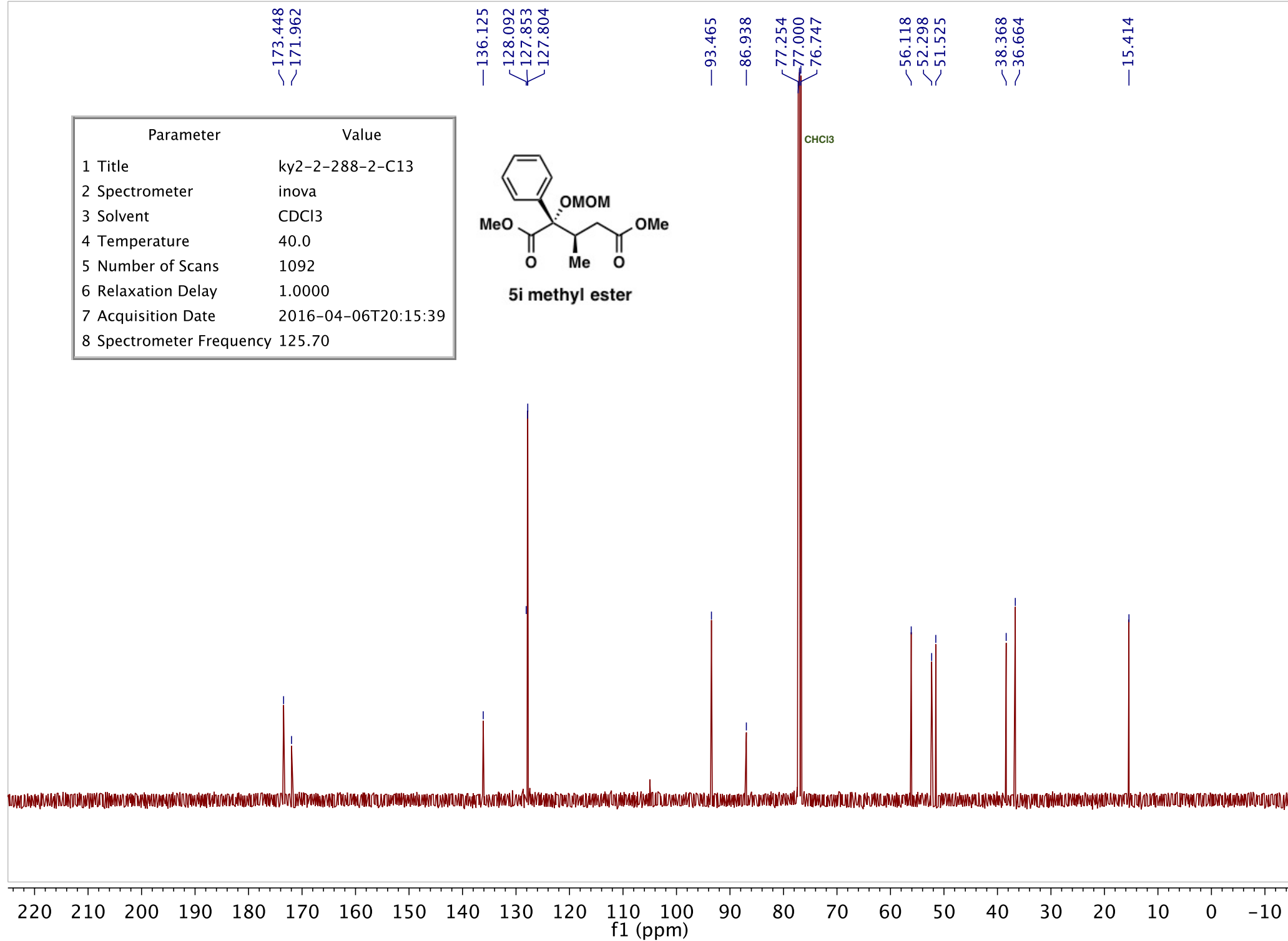
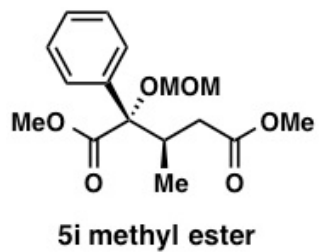
Parameter	Value
1 Title	ky2-3-001-1-C13
2 Spectrometer	inova
3 Solvent	CDCl3
4 Temperature	25.0
5 Number of Scans	128
6 Relaxation Delay	1.0000
7 Acquisition Date	2016-04-15T14:26:33
8 Spectrometer Frequency	125.70



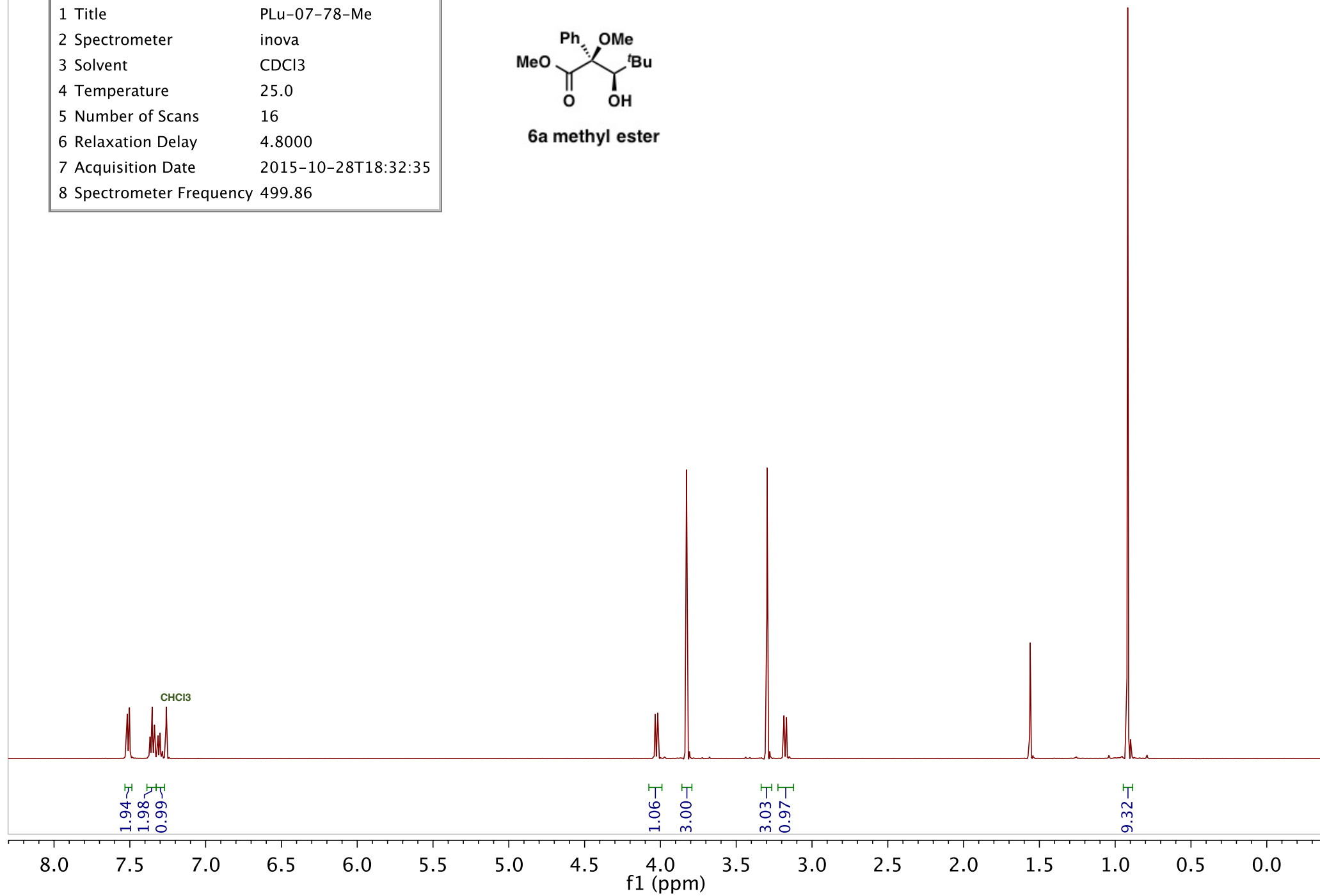
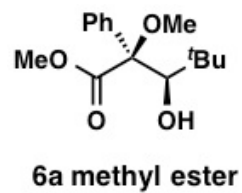
Parameter	Value
1 Title	ky2-2-288-2
2 Spectrometer	inova
3 Solvent	cdcl3
4 Temperature	25.0
5 Number of Scans	8
6 Relaxation Delay	8.0000
7 Acquisition Date	2016-04-06T13:04:06
8 Spectrometer Frequency	599.64



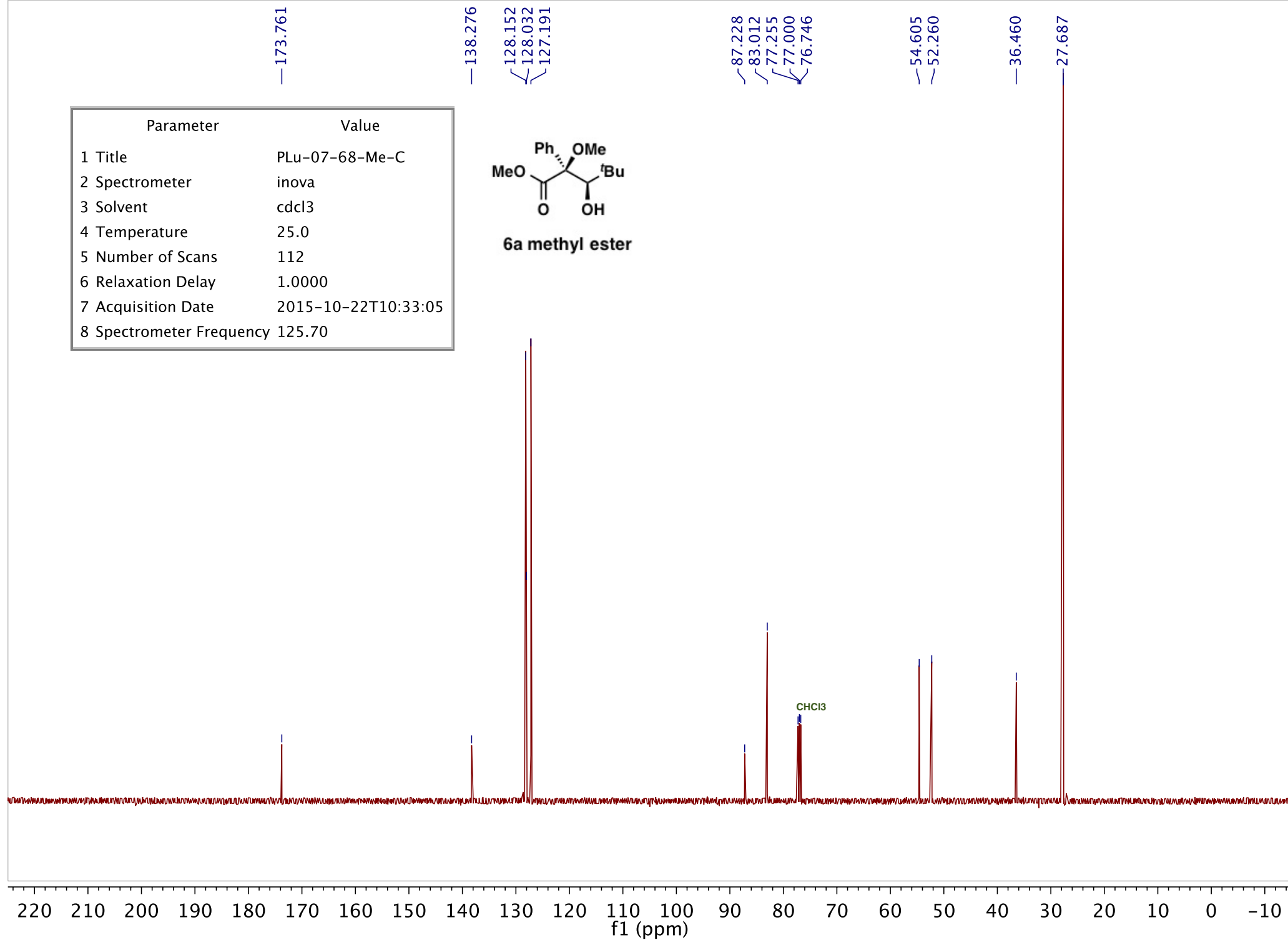
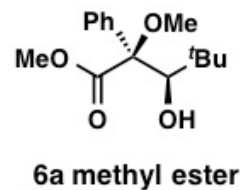
Parameter	Value
1 Title	ky2-2-288-2-C13
2 Spectrometer	inova
3 Solvent	CDCl3
4 Temperature	40.0
5 Number of Scans	1092
6 Relaxation Delay	1.0000
7 Acquisition Date	2016-04-06T20:15:39
8 Spectrometer Frequency	125.70



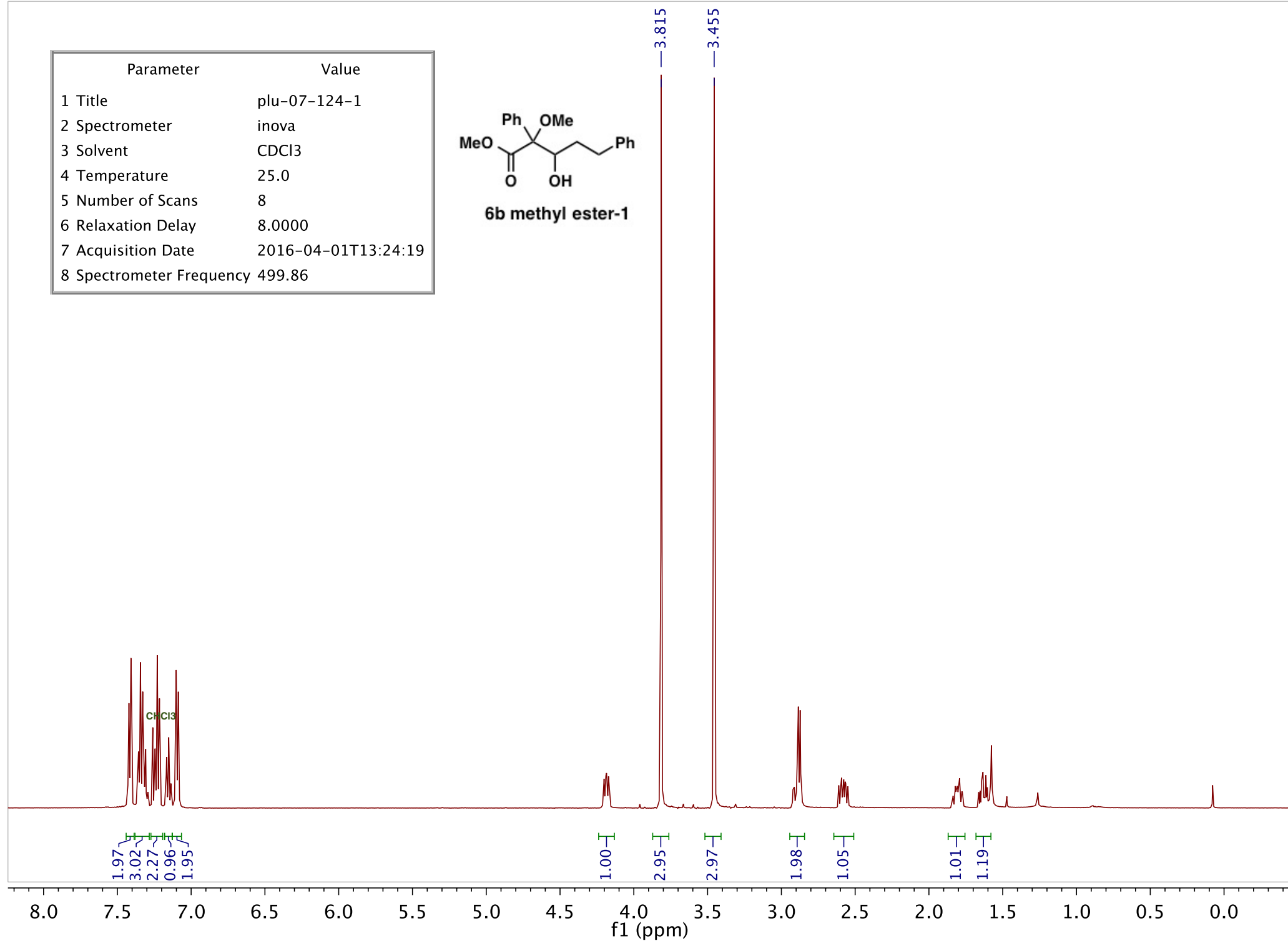
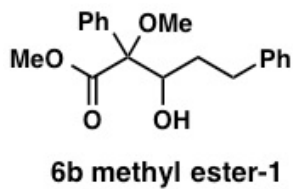
Parameter	Value
1 Title	PLu-07-78-Me
2 Spectrometer	inova
3 Solvent	CDCl3
4 Temperature	25.0
5 Number of Scans	16
6 Relaxation Delay	4.8000
7 Acquisition Date	2015-10-28T18:32:35
8 Spectrometer Frequency	499.86

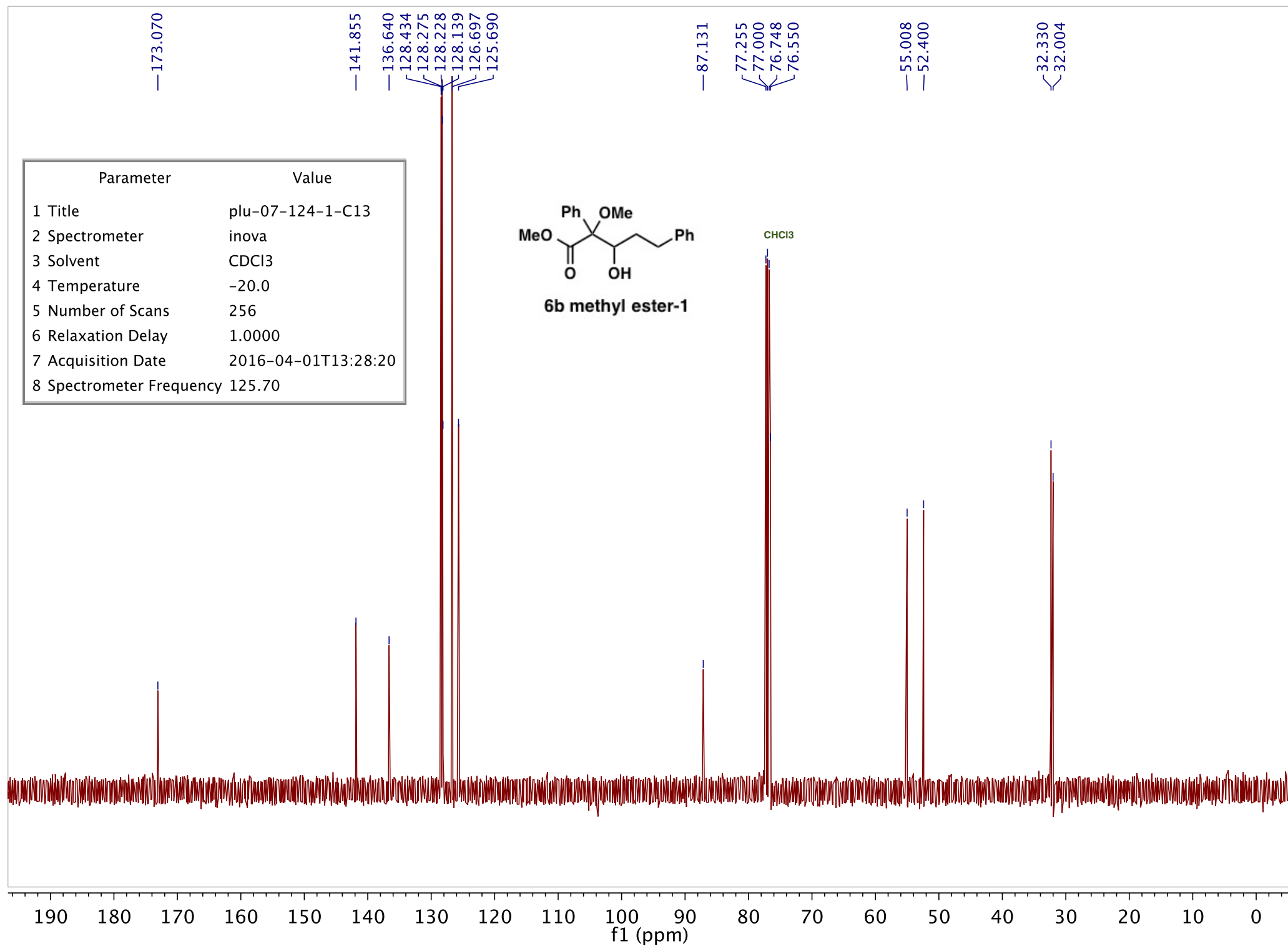


Parameter	Value
1 Title	PLu-07-68-Me-C
2 Spectrometer	inova
3 Solvent	cdcl3
4 Temperature	25.0
5 Number of Scans	112
6 Relaxation Delay	1.0000
7 Acquisition Date	2015-10-22T10:33:05
8 Spectrometer Frequency	125.70

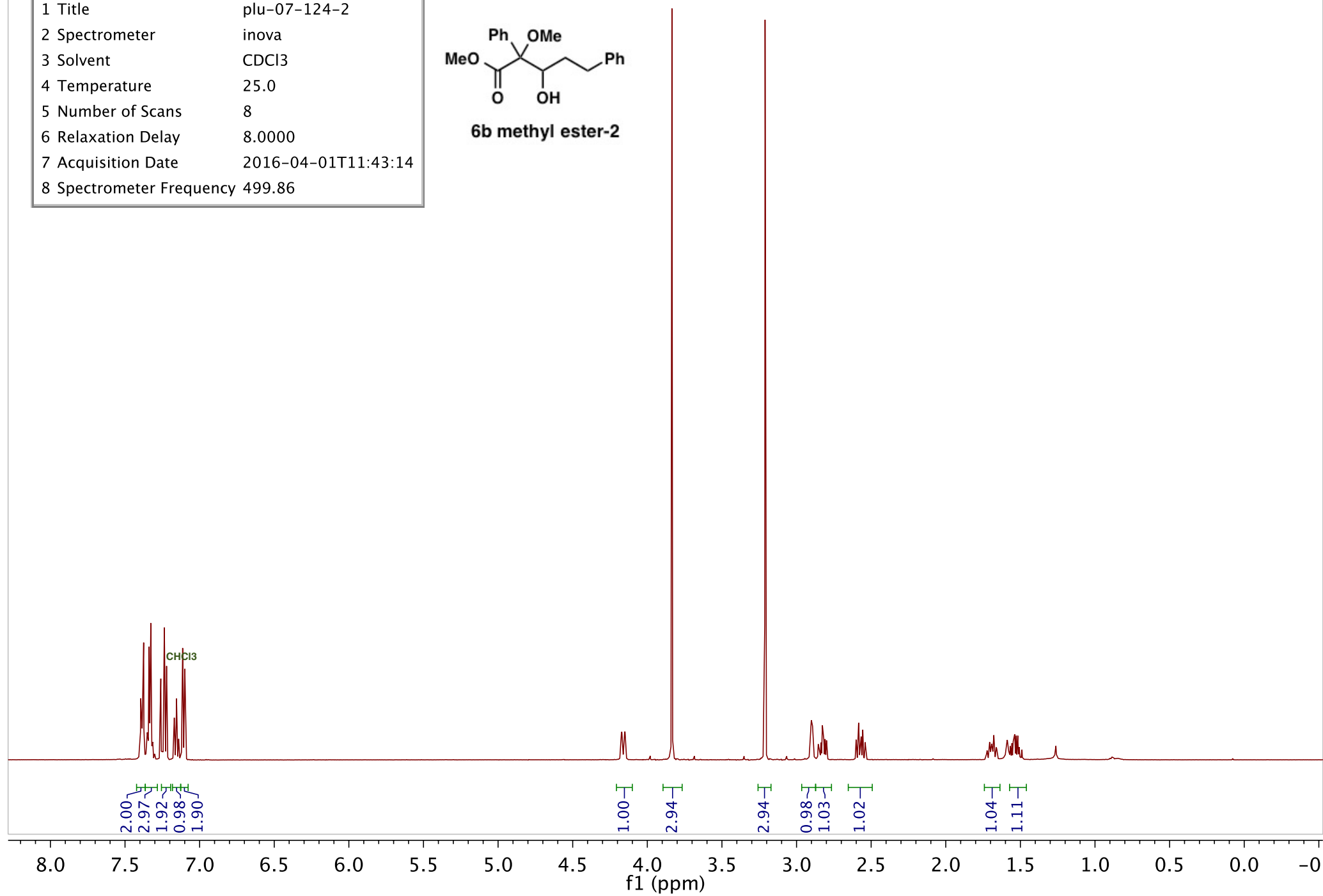
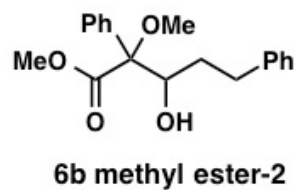


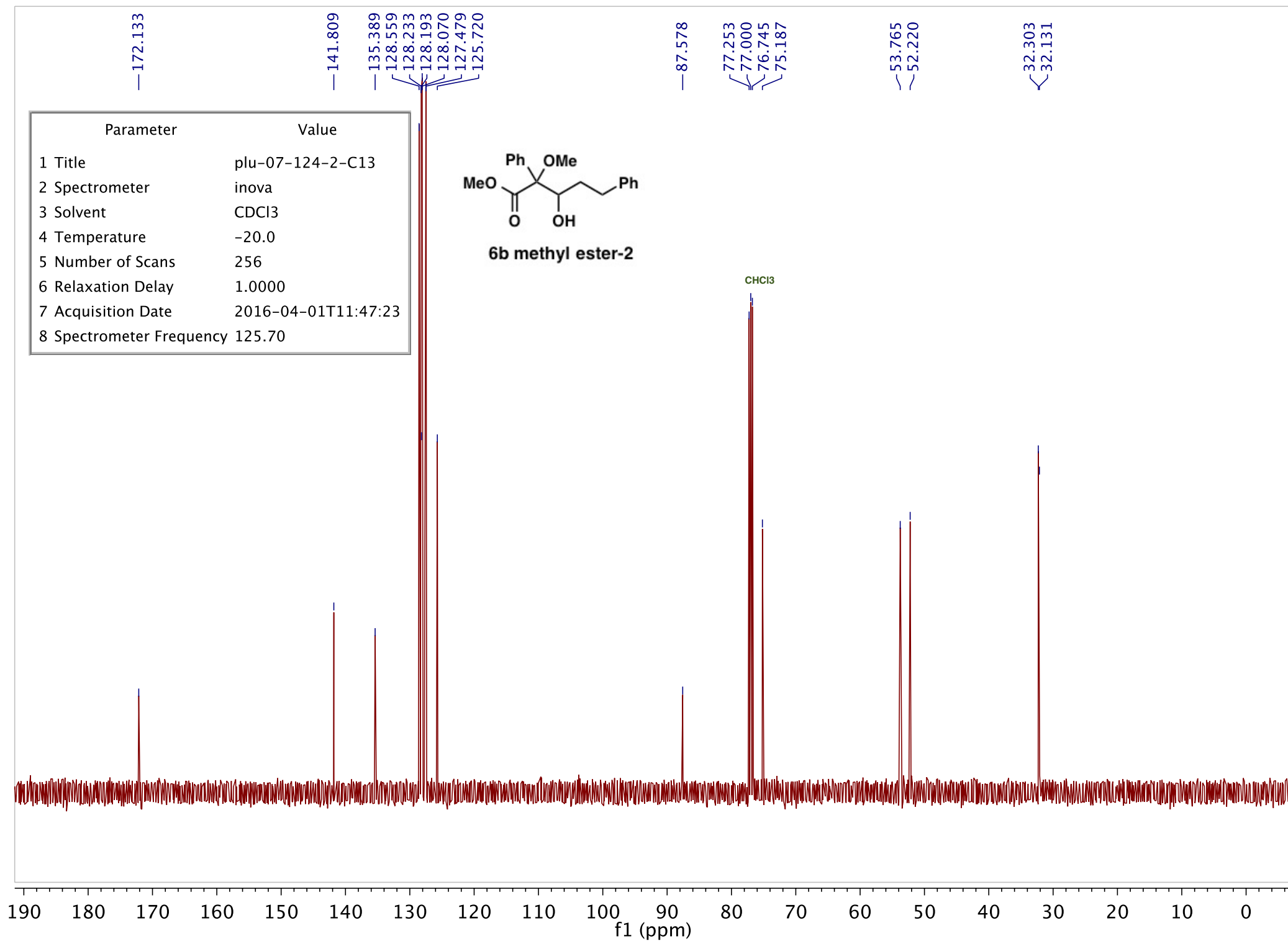
Parameter	Value
1 Title	plu-07-124-1
2 Spectrometer	inova
3 Solvent	CDCl3
4 Temperature	25.0
5 Number of Scans	8
6 Relaxation Delay	8.0000
7 Acquisition Date	2016-04-01T13:24:19
8 Spectrometer Frequency	499.86



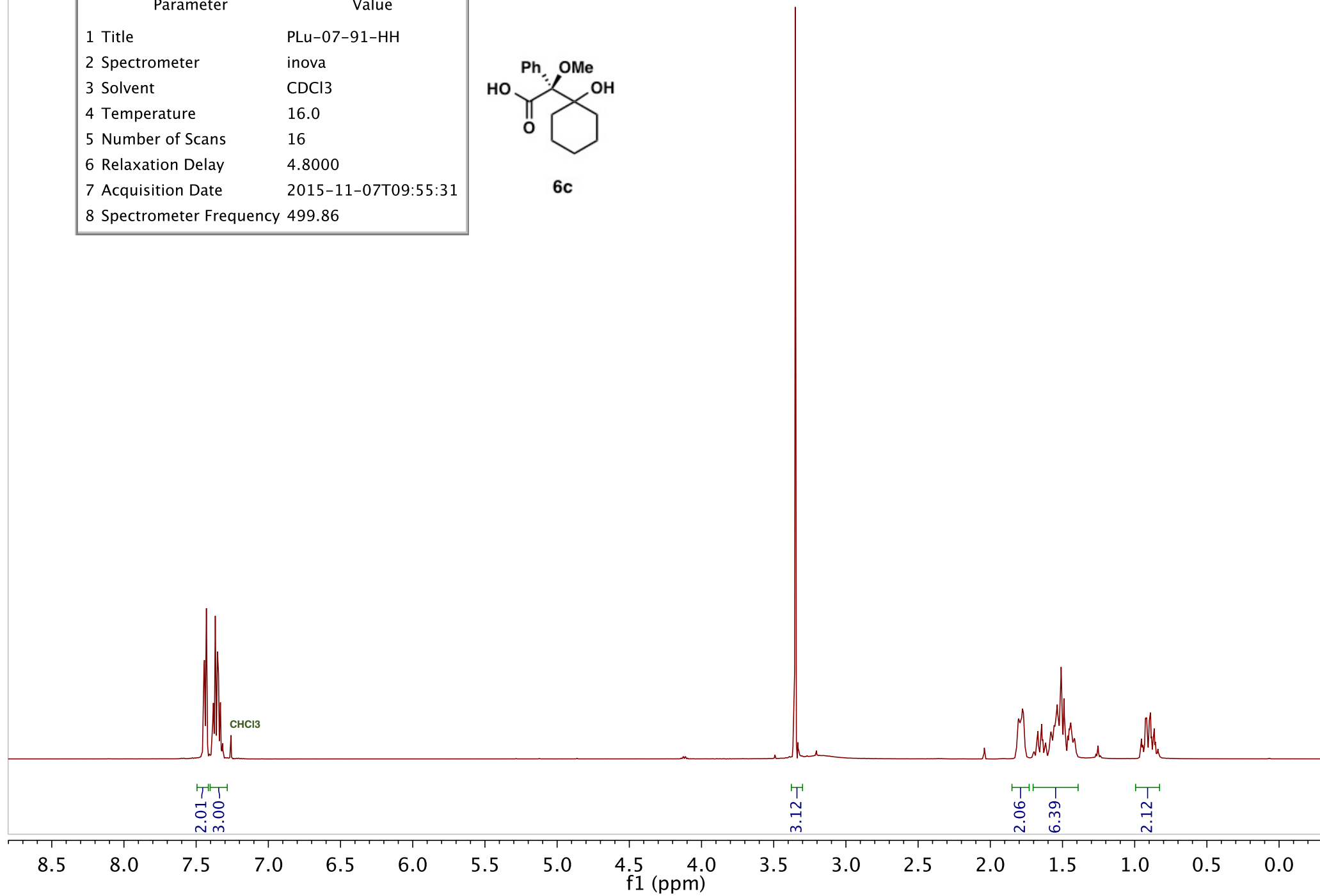
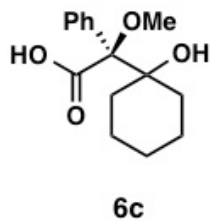


Parameter	Value
1 Title	plu-07-124-2
2 Spectrometer	inova
3 Solvent	CDCl3
4 Temperature	25.0
5 Number of Scans	8
6 Relaxation Delay	8.0000
7 Acquisition Date	2016-04-01T11:43:14
8 Spectrometer Frequency	499.86

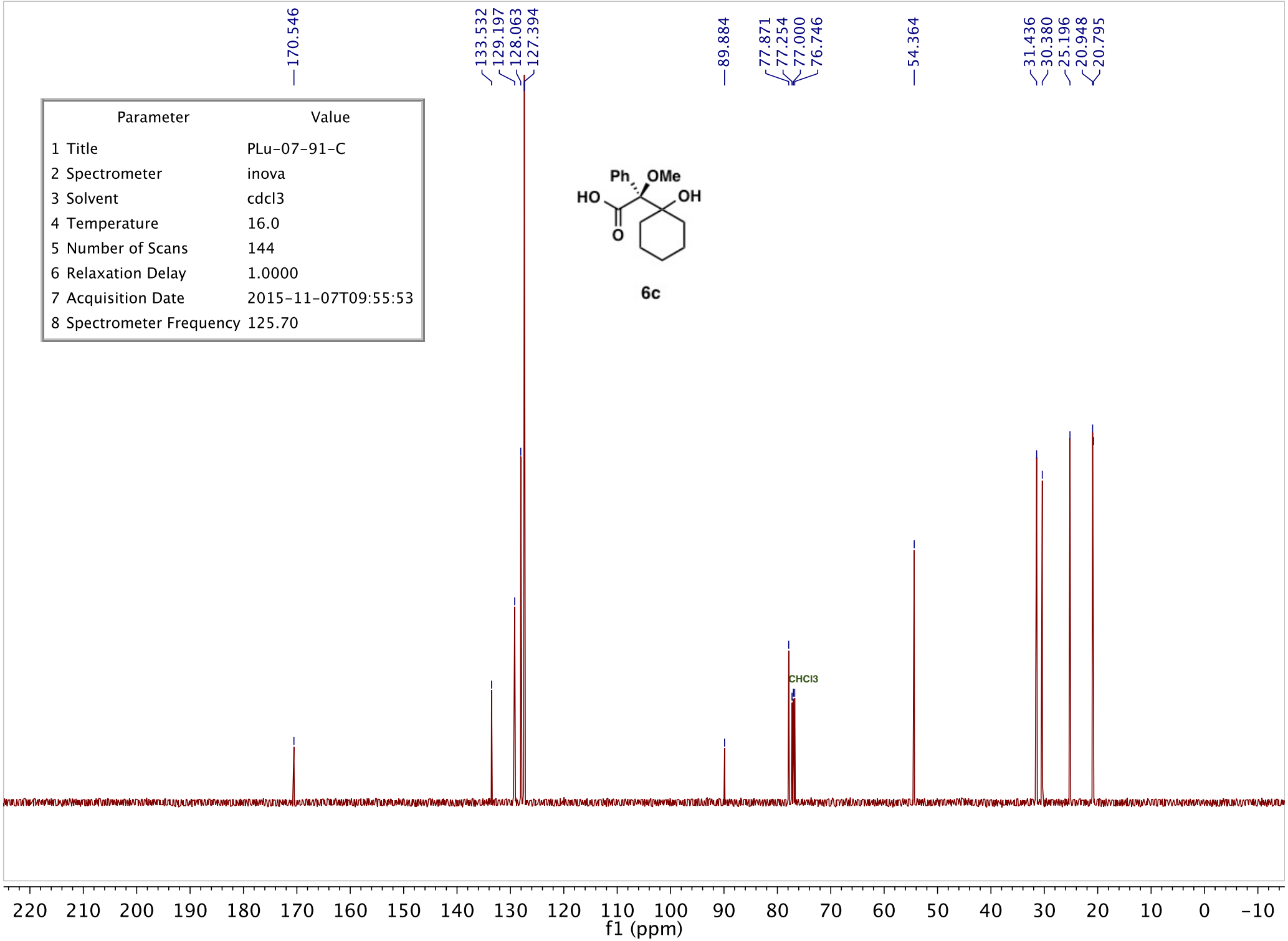
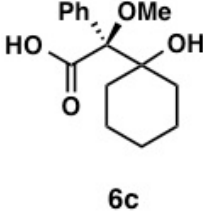




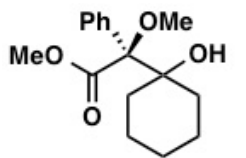
Parameter	Value
1 Title	PLu-07-91-HH
2 Spectrometer	inova
3 Solvent	CDCl3
4 Temperature	16.0
5 Number of Scans	16
6 Relaxation Delay	4.8000
7 Acquisition Date	2015-11-07T09:55:31
8 Spectrometer Frequency	499.86



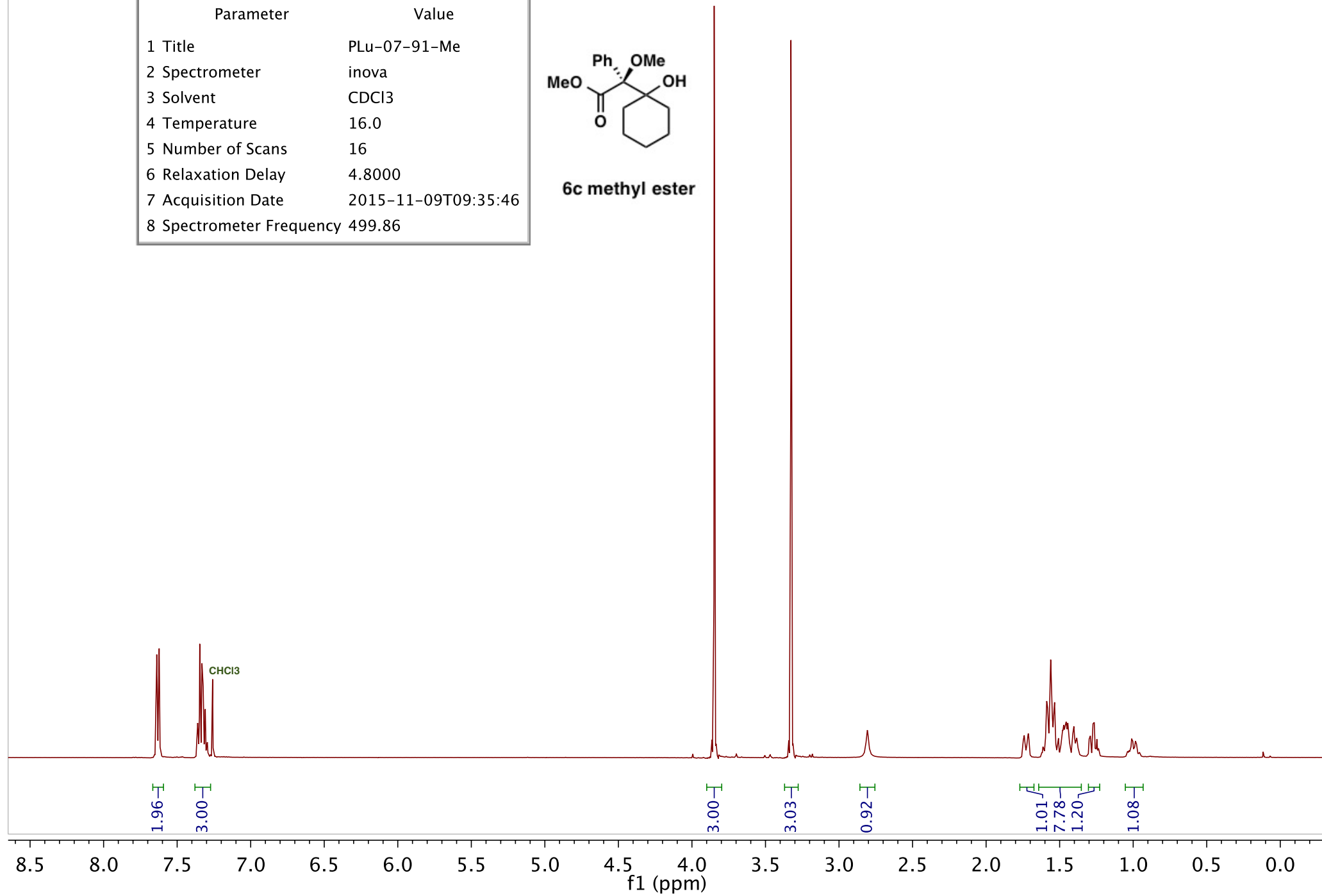
Parameter	Value
1 Title	PLu-07-91-C
2 Spectrometer	inova
3 Solvent	cdcl3
4 Temperature	16.0
5 Number of Scans	144
6 Relaxation Delay	1.0000
7 Acquisition Date	2015-11-07T09:55:53
8 Spectrometer Frequency	125.70

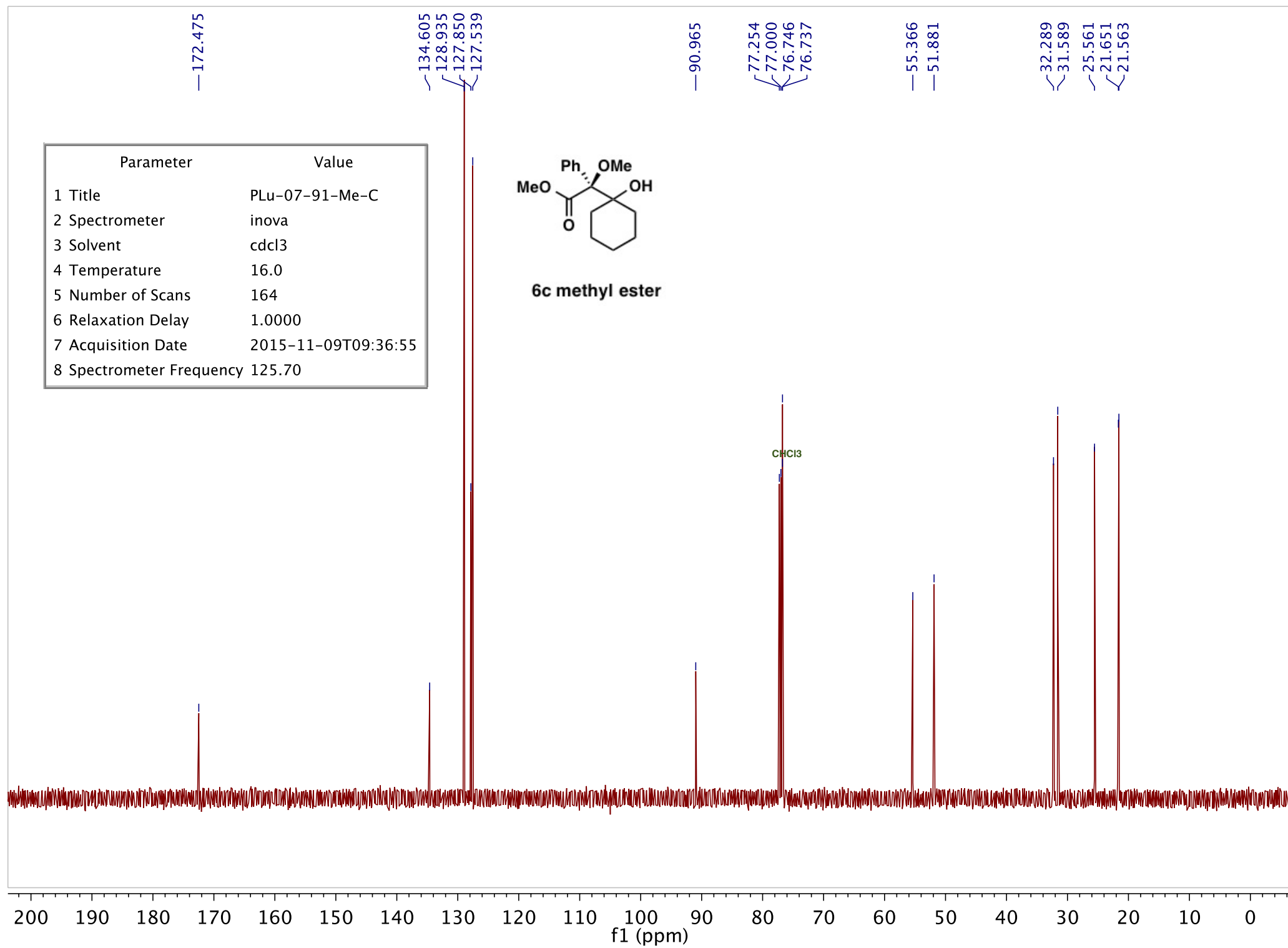


Parameter	Value
1 Title	PLu-07-91-Me
2 Spectrometer	inova
3 Solvent	CDCl3
4 Temperature	16.0
5 Number of Scans	16
6 Relaxation Delay	4.8000
7 Acquisition Date	2015-11-09T09:35:46
8 Spectrometer Frequency	499.86

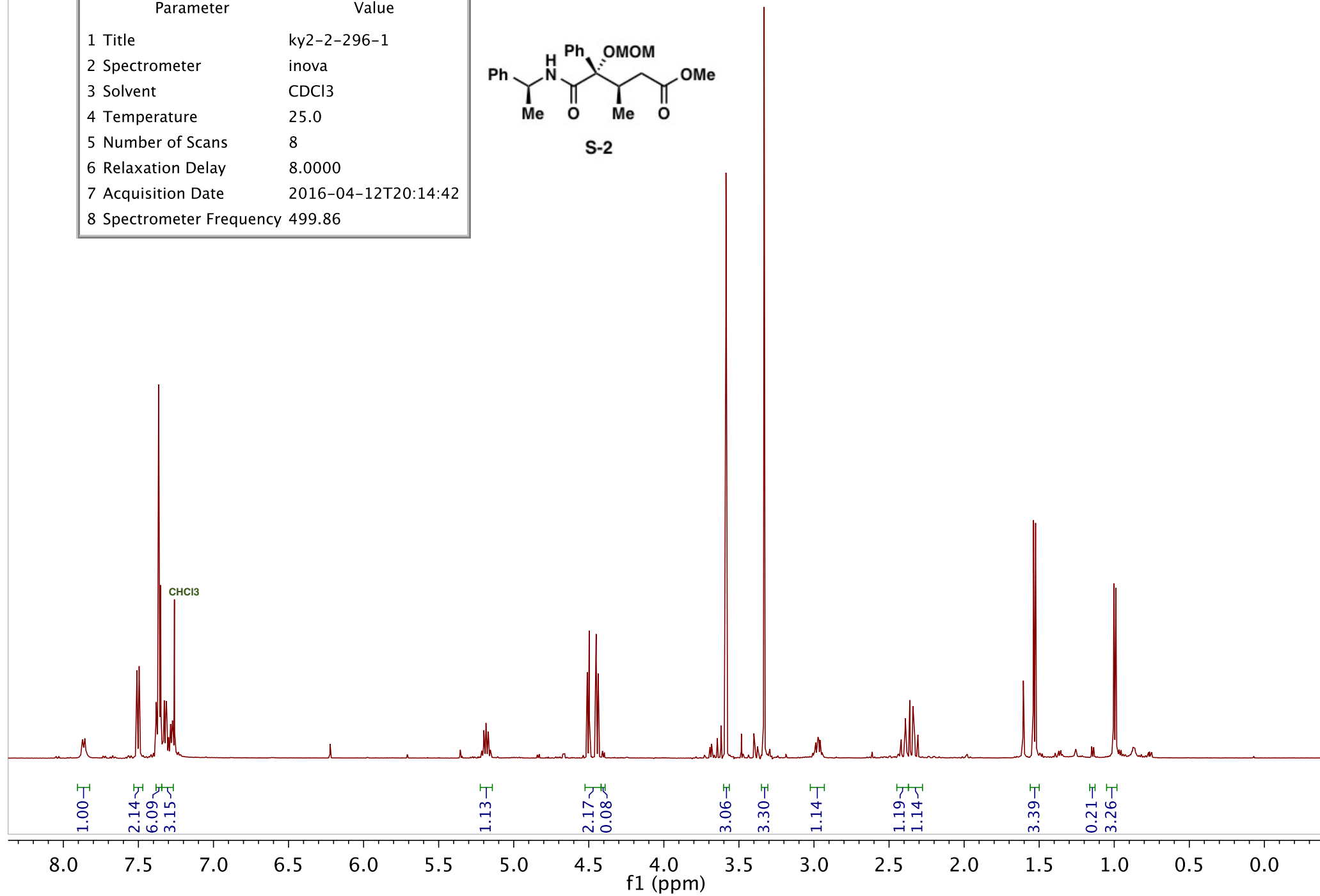
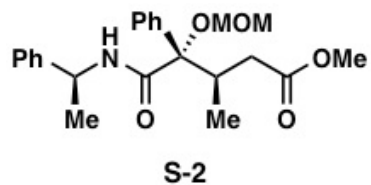


6c methyl ester

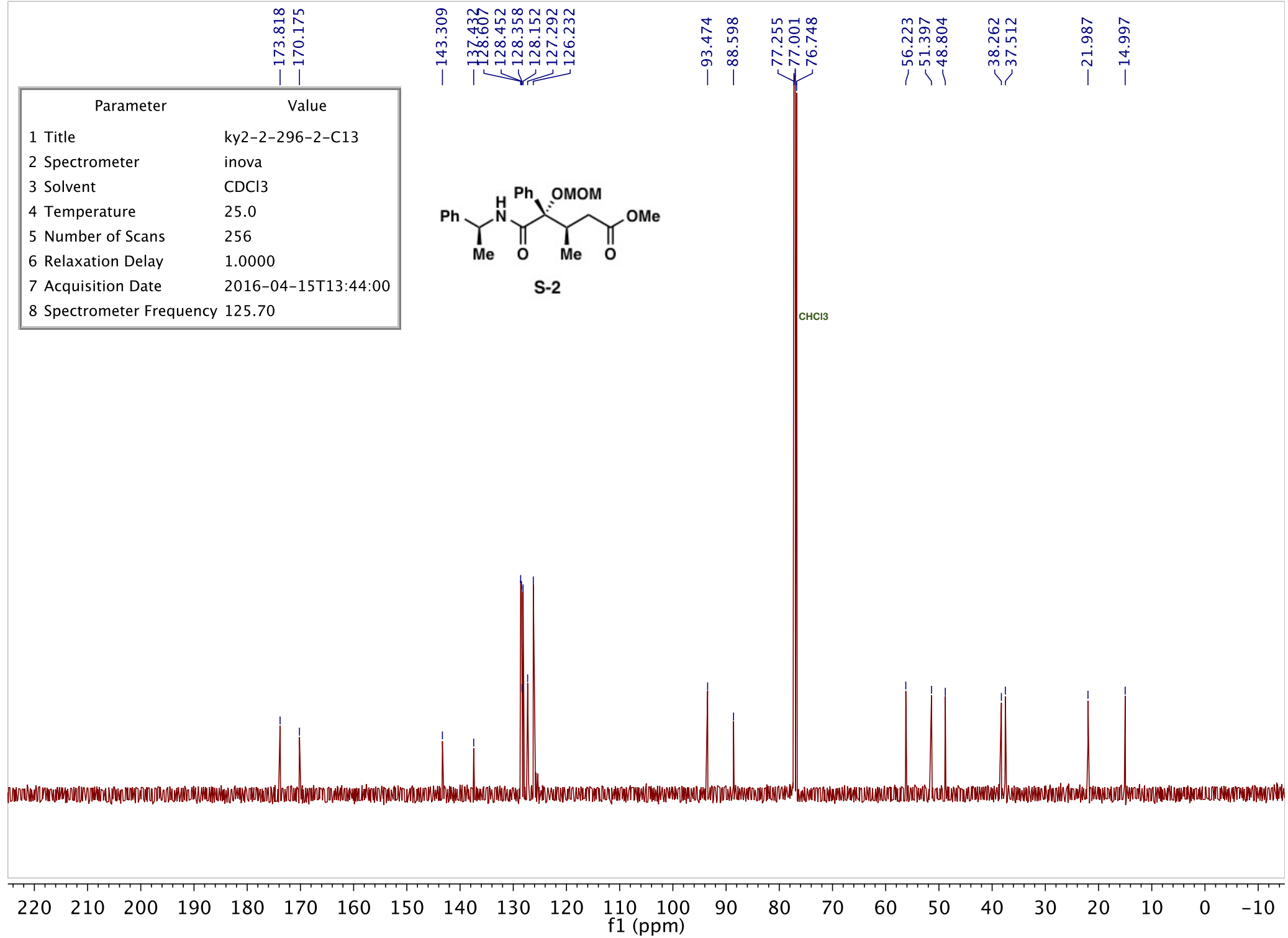
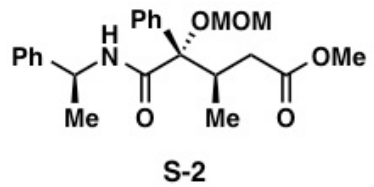




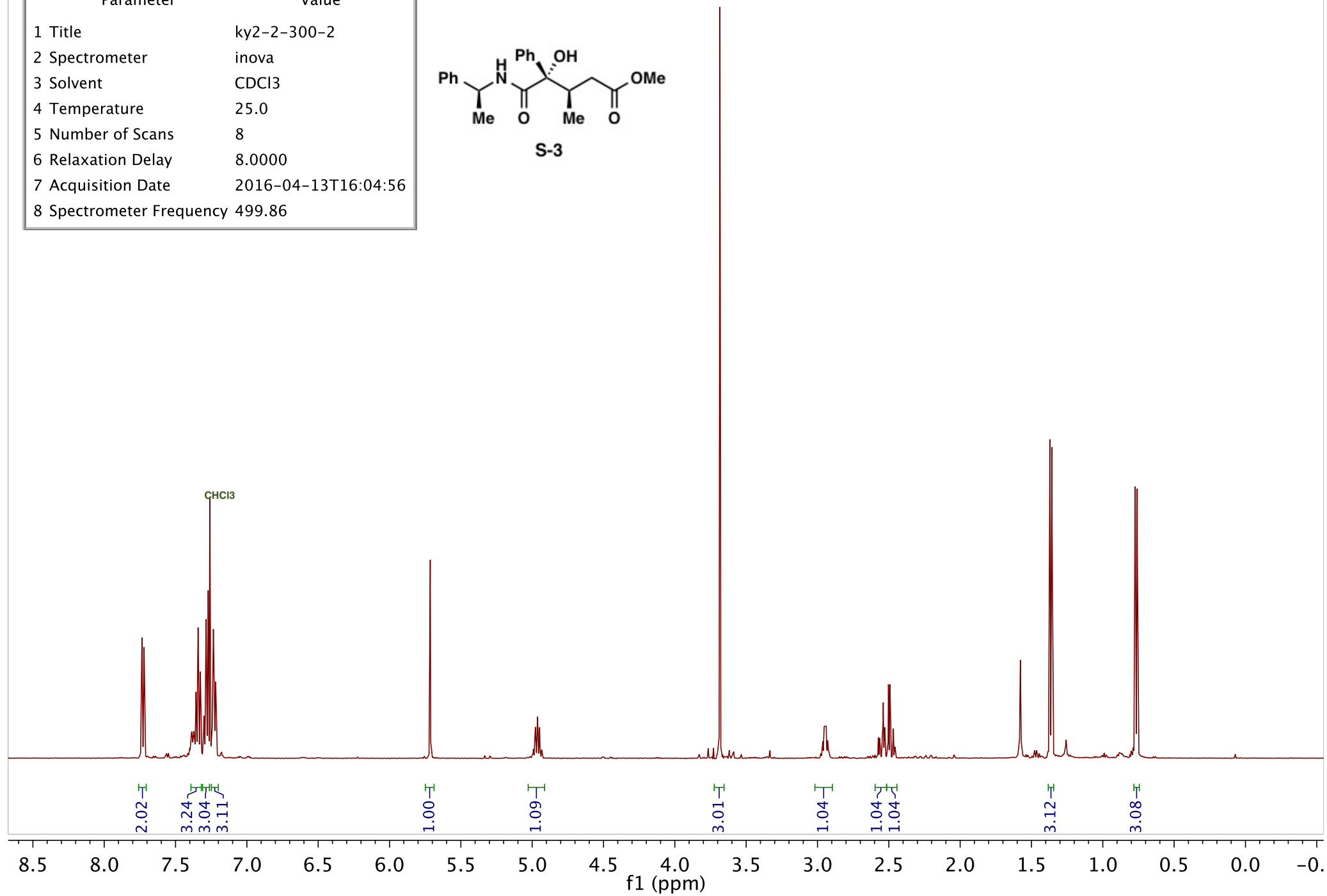
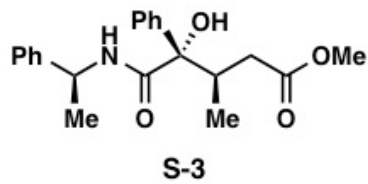
Parameter	Value
1 Title	ky2-2-296-1
2 Spectrometer	inova
3 Solvent	CDCl3
4 Temperature	25.0
5 Number of Scans	8
6 Relaxation Delay	8.0000
7 Acquisition Date	2016-04-12T20:14:42
8 Spectrometer Frequency	499.86



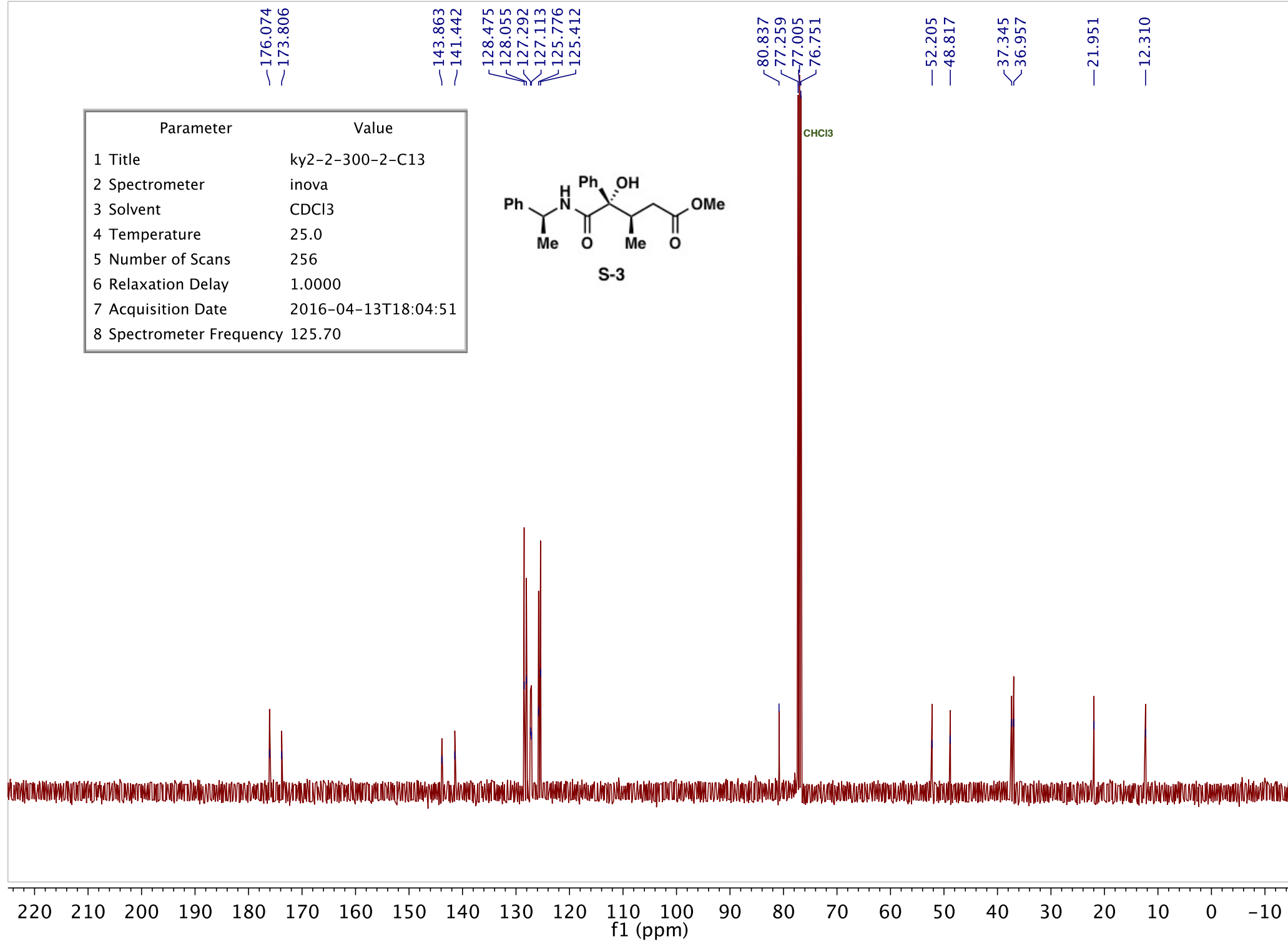
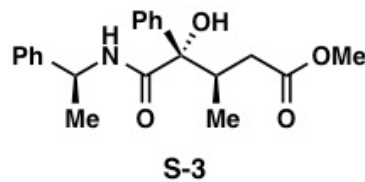
Parameter	Value
1 Title	ky2-2-296-2-C13
2 Spectrometer	inova
3 Solvent	CDCl3
4 Temperature	25.0
5 Number of Scans	256
6 Relaxation Delay	1.0000
7 Acquisition Date	2016-04-15T13:44:00
8 Spectrometer Frequency	125.70



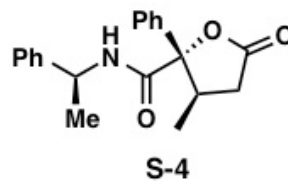
Parameter	Value
1 Title	ky2-2-300-2
2 Spectrometer	inova
3 Solvent	CDCl3
4 Temperature	25.0
5 Number of Scans	8
6 Relaxation Delay	8.0000
7 Acquisition Date	2016-04-13T16:04:56
8 Spectrometer Frequency	499.86



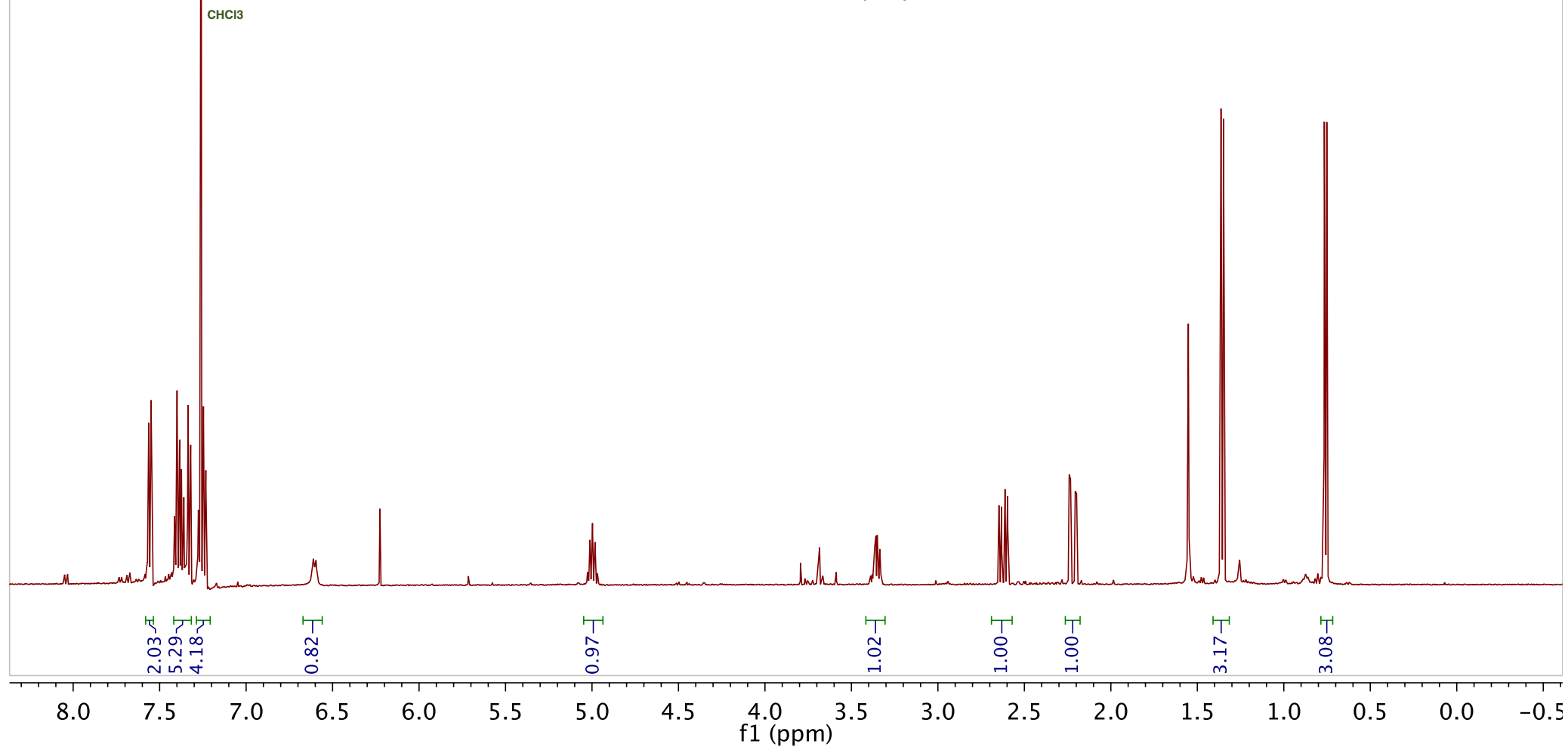
Parameter	Value
1 Title	ky2-2-300-2-C13
2 Spectrometer	inova
3 Solvent	CDCl3
4 Temperature	25.0
5 Number of Scans	256
6 Relaxation Delay	1.0000
7 Acquisition Date	2016-04-13T18:04:51
8 Spectrometer Frequency	125.70



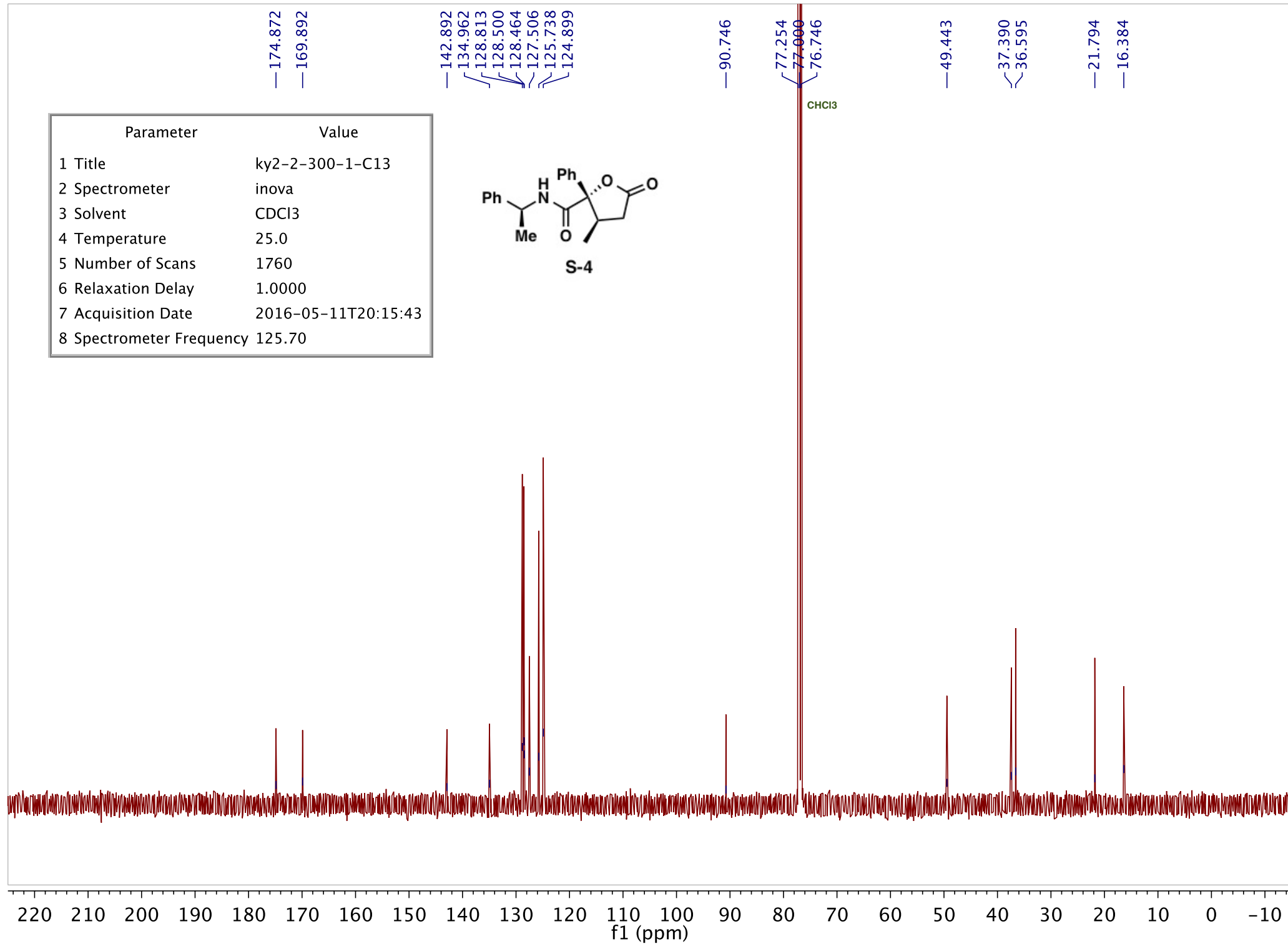
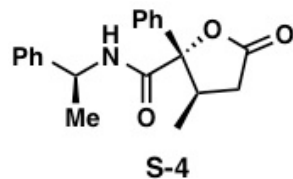
Parameter	Value
1 Title	ky2-2-300-1
2 Spectrometer	inova
3 Solvent	CDCl3
4 Temperature	25.0
5 Number of Scans	8
6 Relaxation Delay	8.0000
7 Acquisition Date	2016-04-13T15:59:52
8 Spectrometer Frequency	499.86



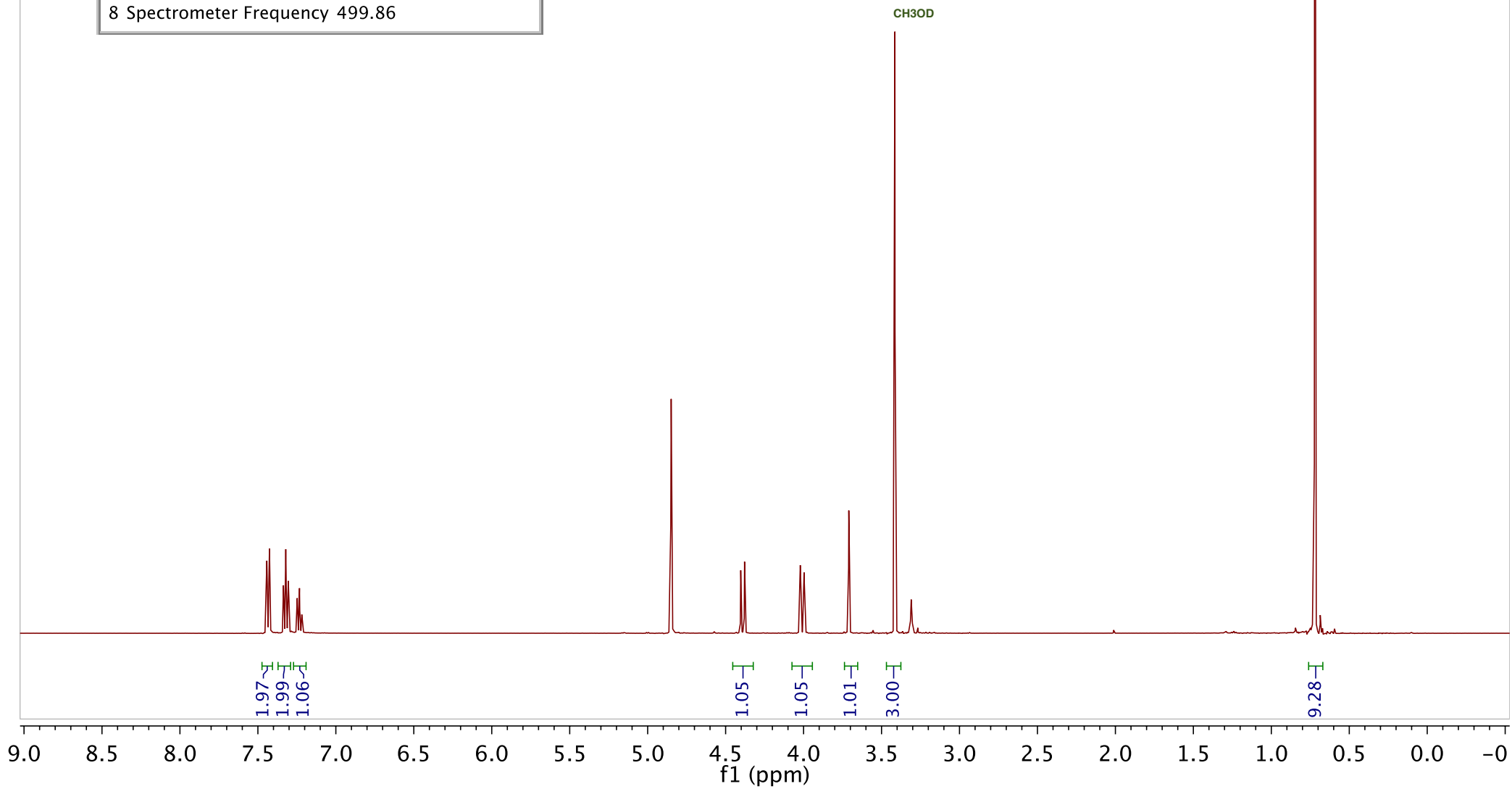
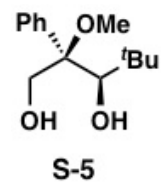
impurities inseparable, yield is based on material of this purity



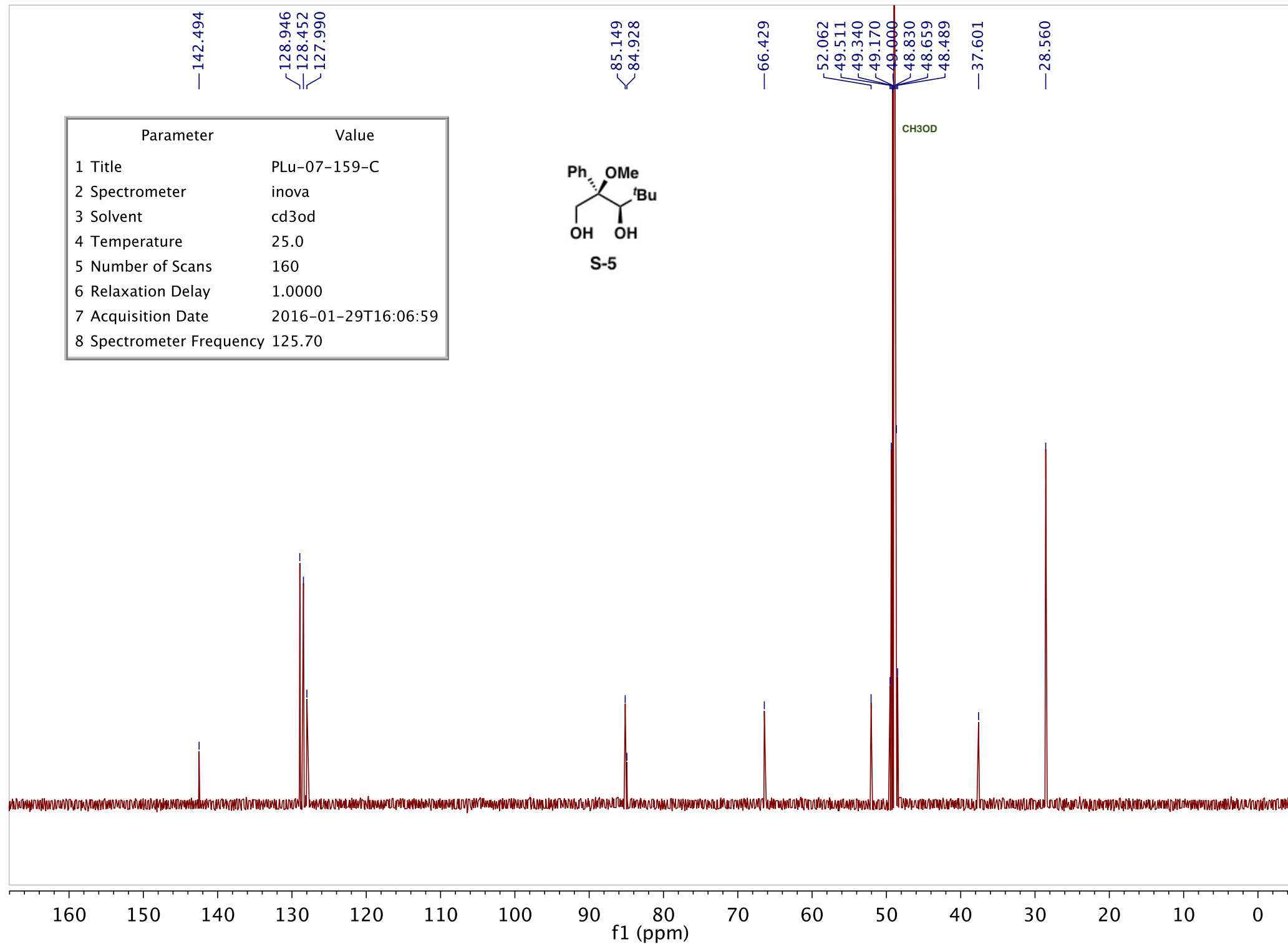
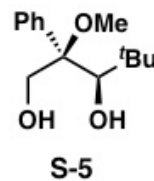
Parameter	Value
1 Title	ky2-2-300-1-C13
2 Spectrometer	inova
3 Solvent	CDCl3
4 Temperature	25.0
5 Number of Scans	1760
6 Relaxation Delay	1.0000
7 Acquisition Date	2016-05-11T20:15:43
8 Spectrometer Frequency	125.70



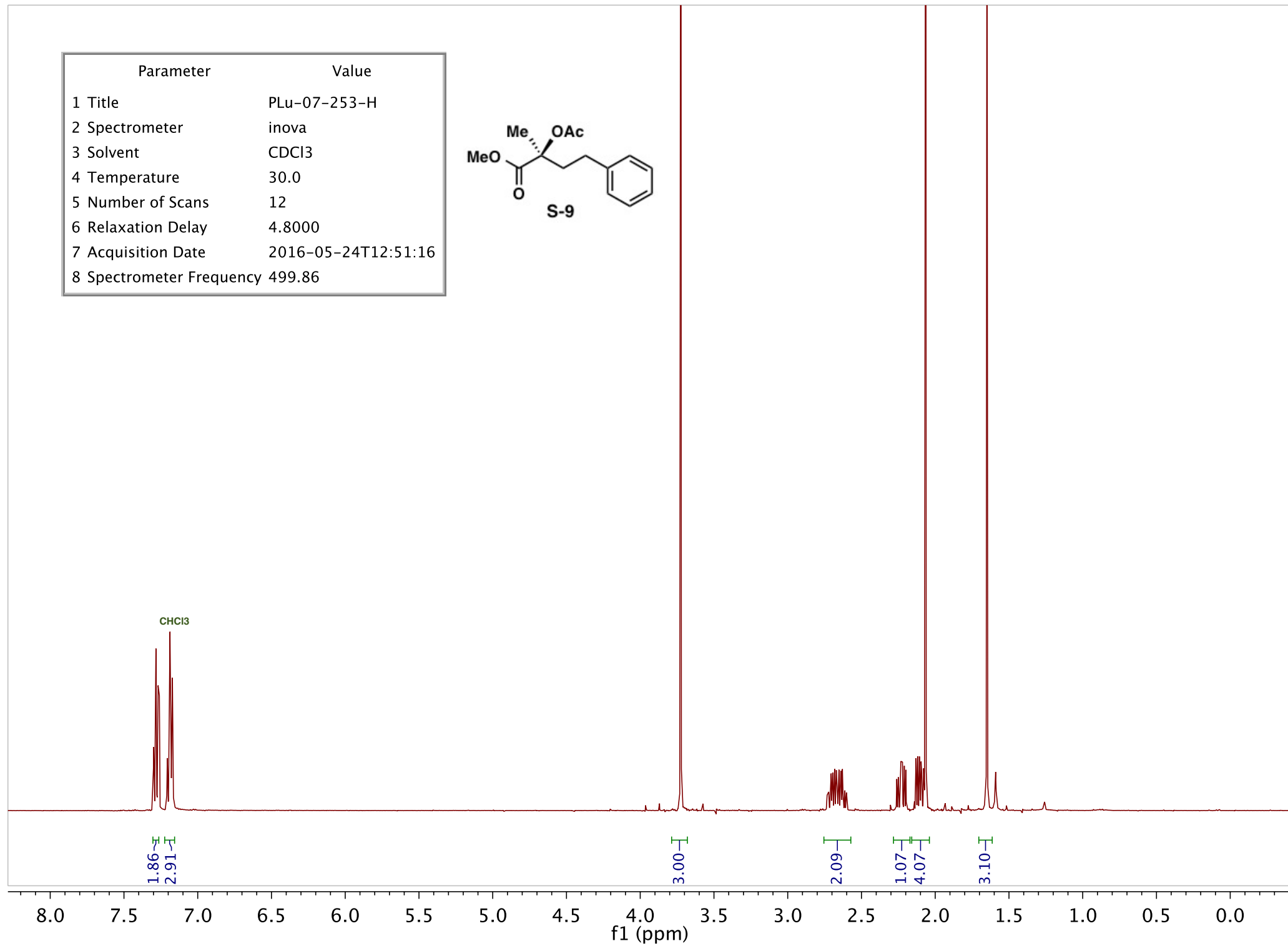
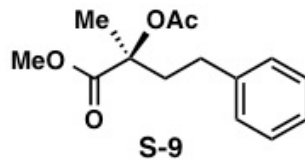
Parameter	Value
1 Title	PLu-07-159-H
2 Spectrometer	inova
3 Solvent	cd3od
4 Temperature	25.0
5 Number of Scans	12
6 Relaxation Delay	4.8000
7 Acquisition Date	2016-01-29T16:03:43
8 Spectrometer Frequency	499.86

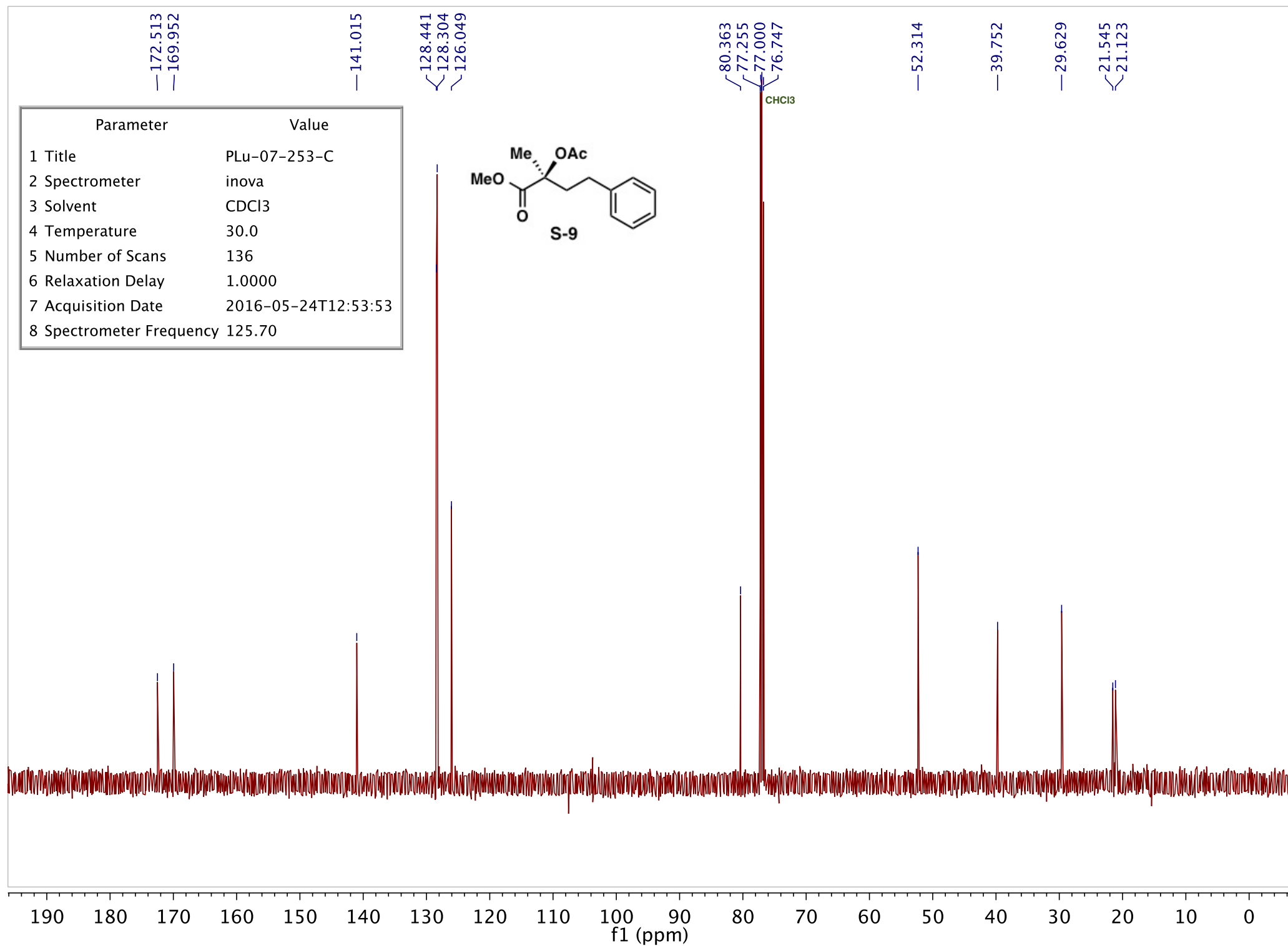


Parameter	Value
1 Title	PLu-07-159-C
2 Spectrometer	inova
3 Solvent	cd3od
4 Temperature	25.0
5 Number of Scans	160
6 Relaxation Delay	1.0000
7 Acquisition Date	2016-01-29T16:06:59
8 Spectrometer Frequency	125.70



Parameter	Value
1 Title	PLu-07-253-H
2 Spectrometer	inova
3 Solvent	CDCl3
4 Temperature	30.0
5 Number of Scans	12
6 Relaxation Delay	4.8000
7 Acquisition Date	2016-05-24T12:51:16
8 Spectrometer Frequency	499.86





Parameter	Value
1 Title	PLu-07-253-C
2 Spectrometer	inova
3 Solvent	CDCl ₃
4 Temperature	30.0
5 Number of Scans	136
6 Relaxation Delay	1.0000
7 Acquisition Date	2016-05-24T12:53:53
8 Spectrometer Frequency	125.70