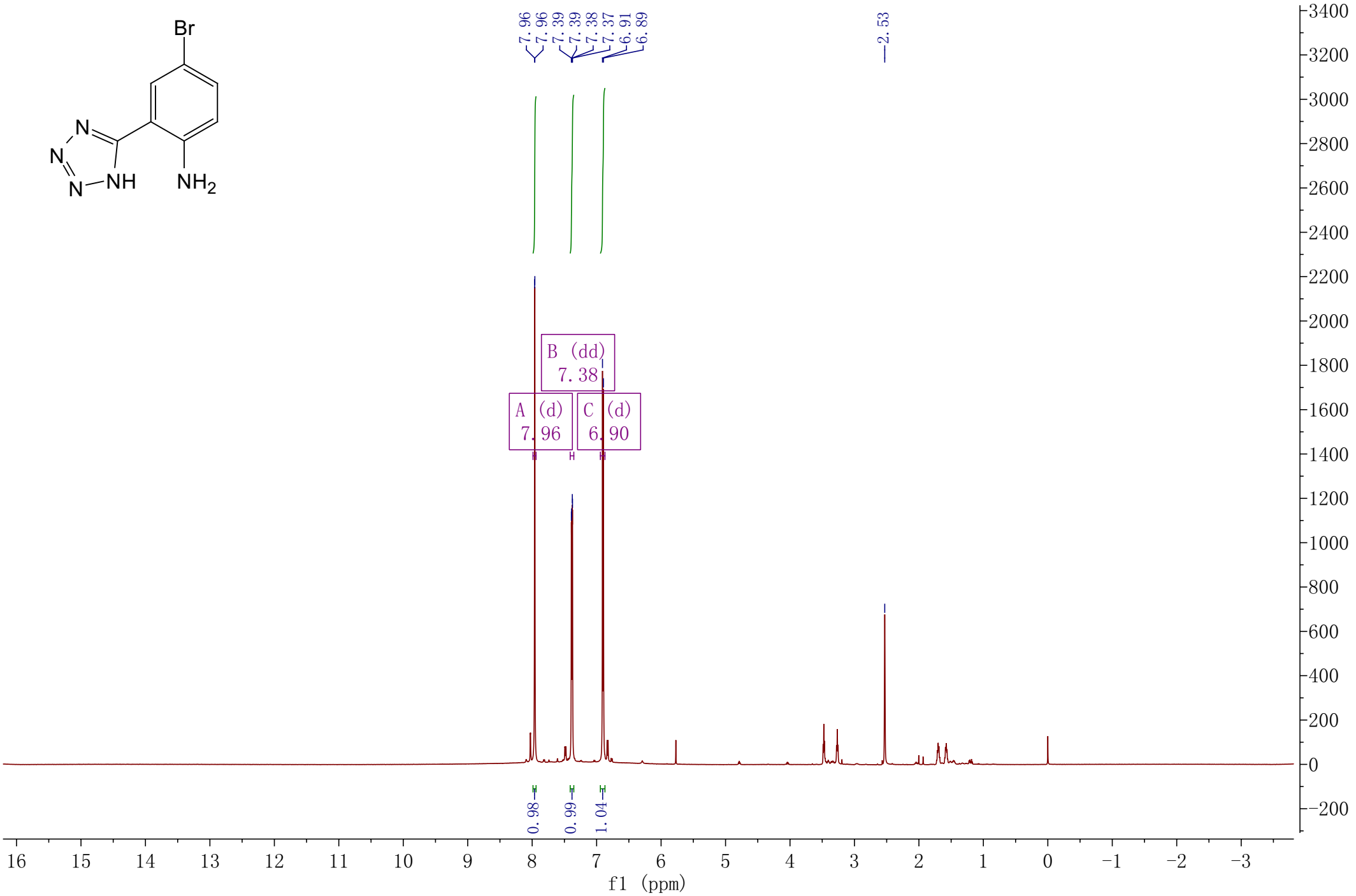
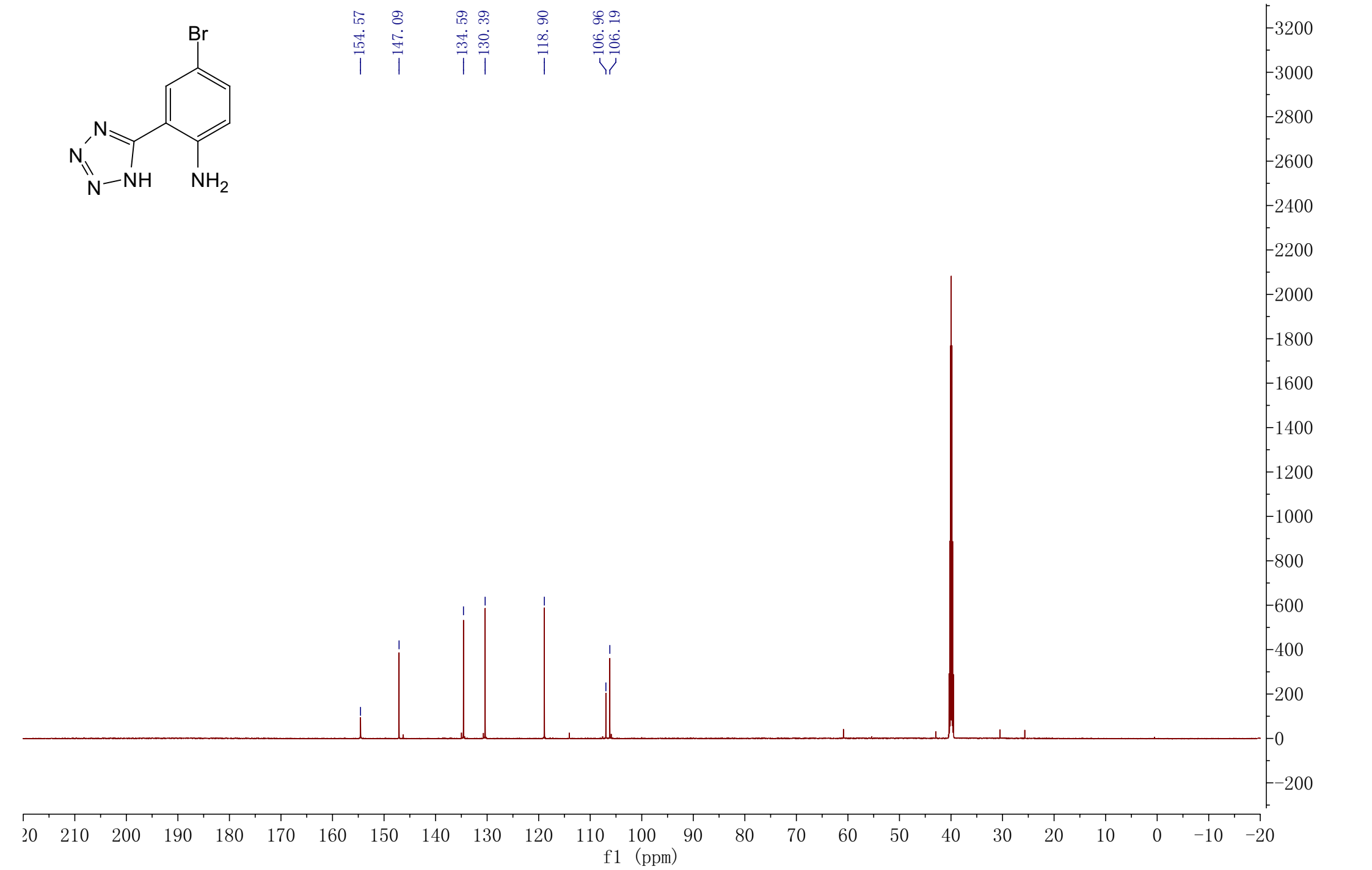
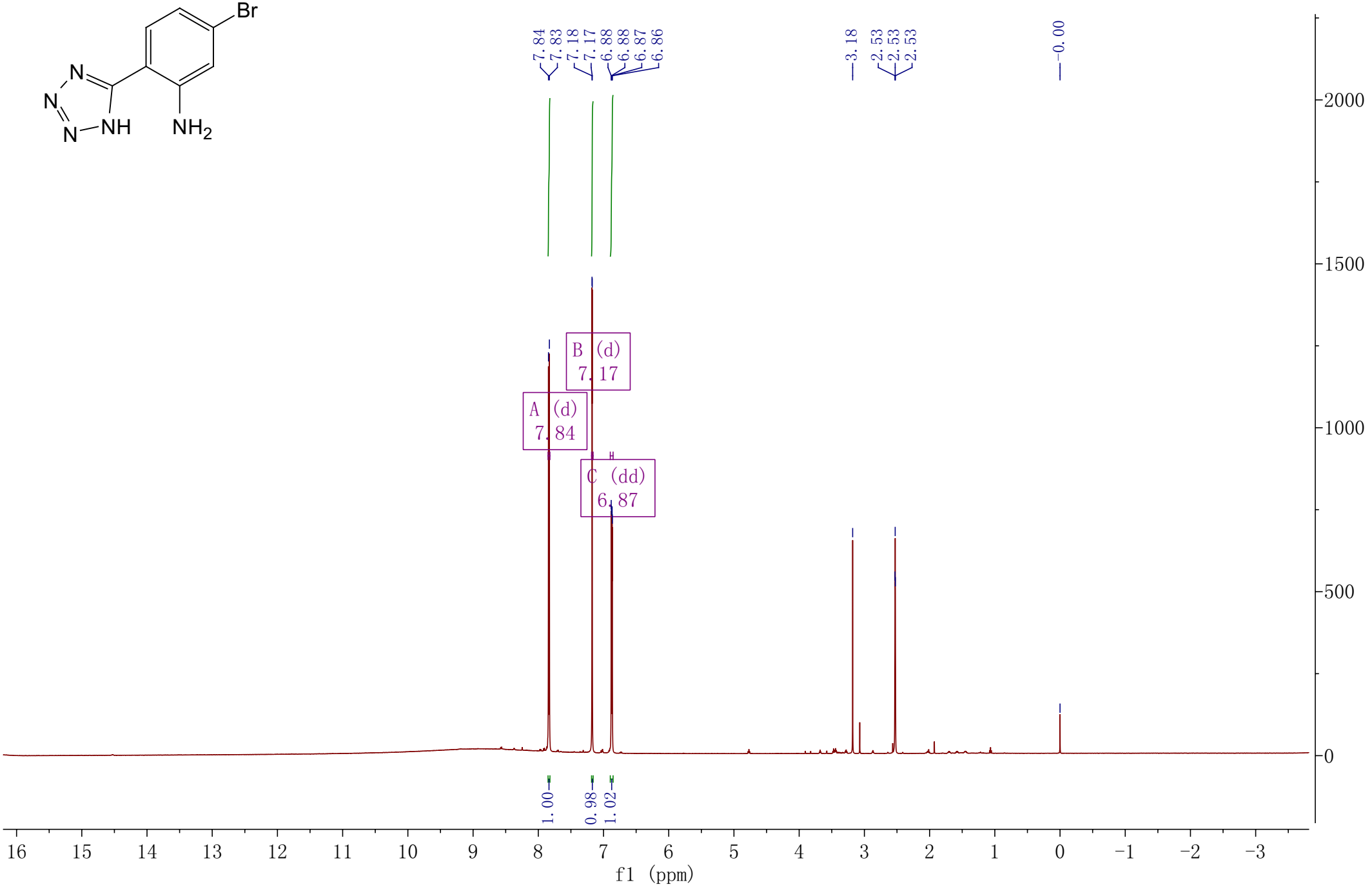
^{1}H NMR (600 MHz, DMSO) δ 7.96 (d, *J* = 1.9 Hz, 1H), 7.38 (dd, *J* = 8.8, 1.9 Hz, 1H), 6.90 (d, *J* = 8.9 Hz, 1H).



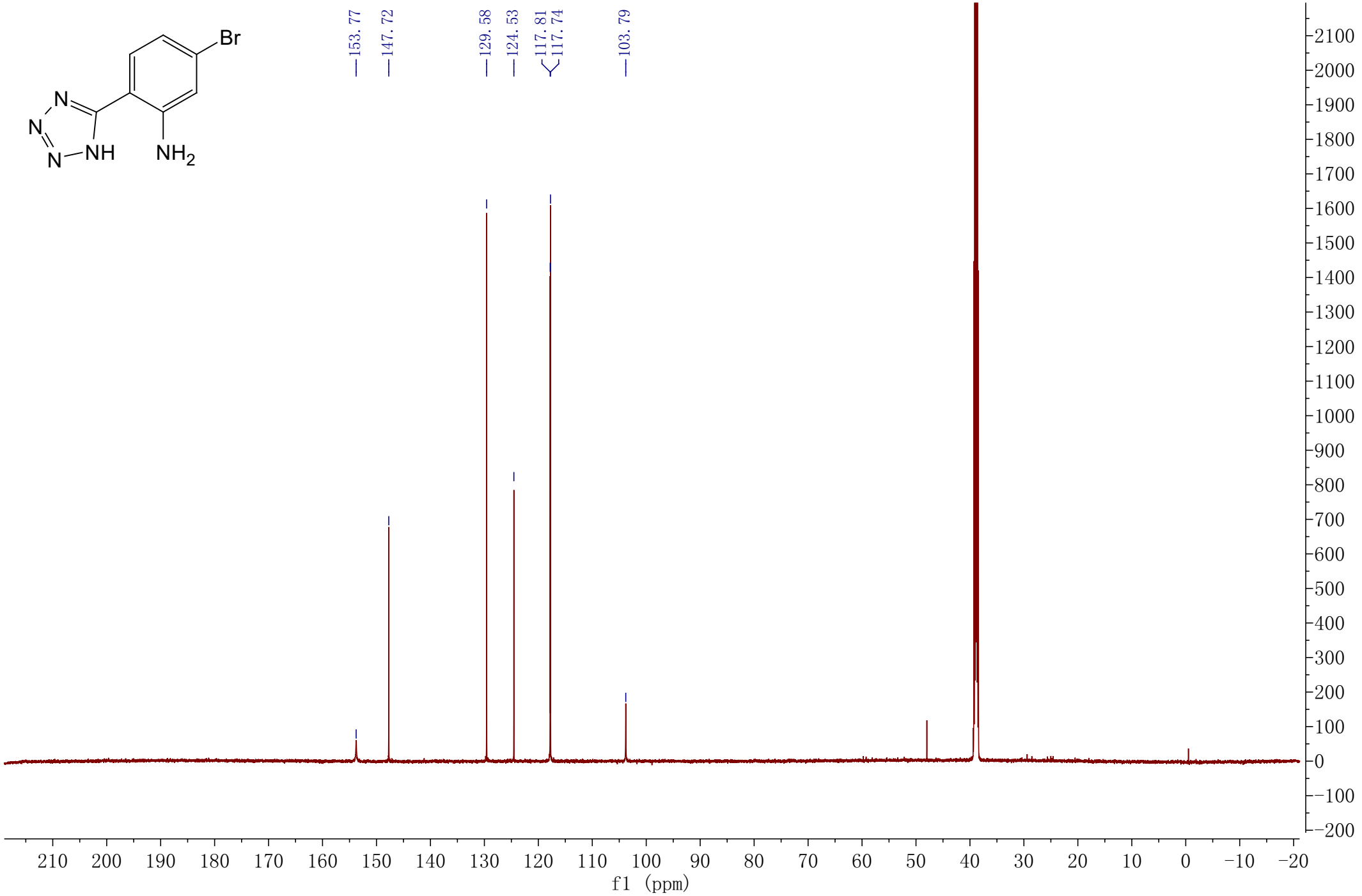
^{13}C NMR (151 MHz, DMSO) δ 154.57, 147.09, 134.59, 130.39, 118.90, 106.96, 106.19.



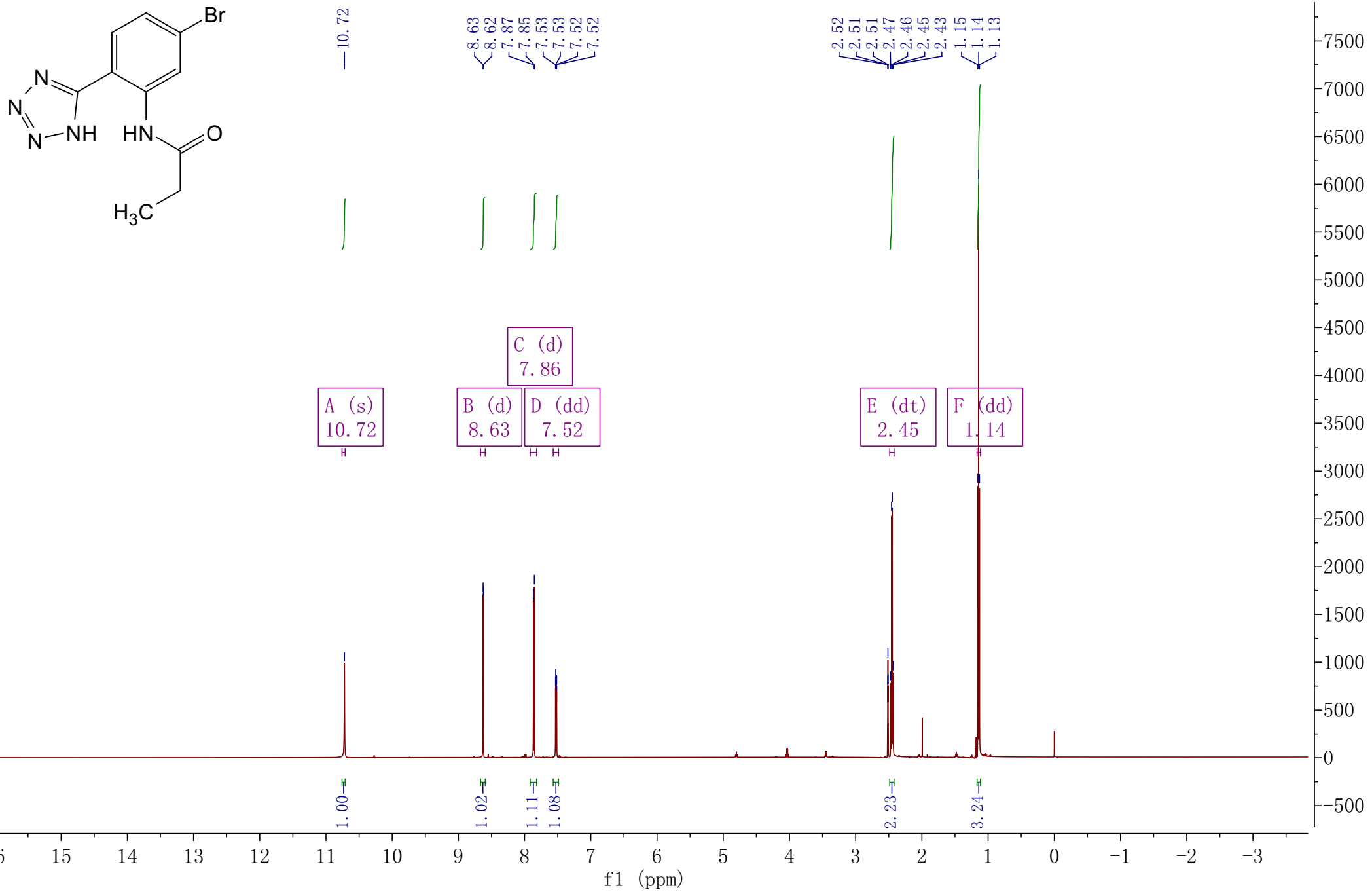
^{1}H NMR (600 MHz, DMSO) δ 7.84 (d, *J* = 8.4 Hz, 1H), 7.17 (d, *J* = 1.9 Hz, 1H), 6.87 (dd, *J* = 8.4, 1.9 Hz, 1H).



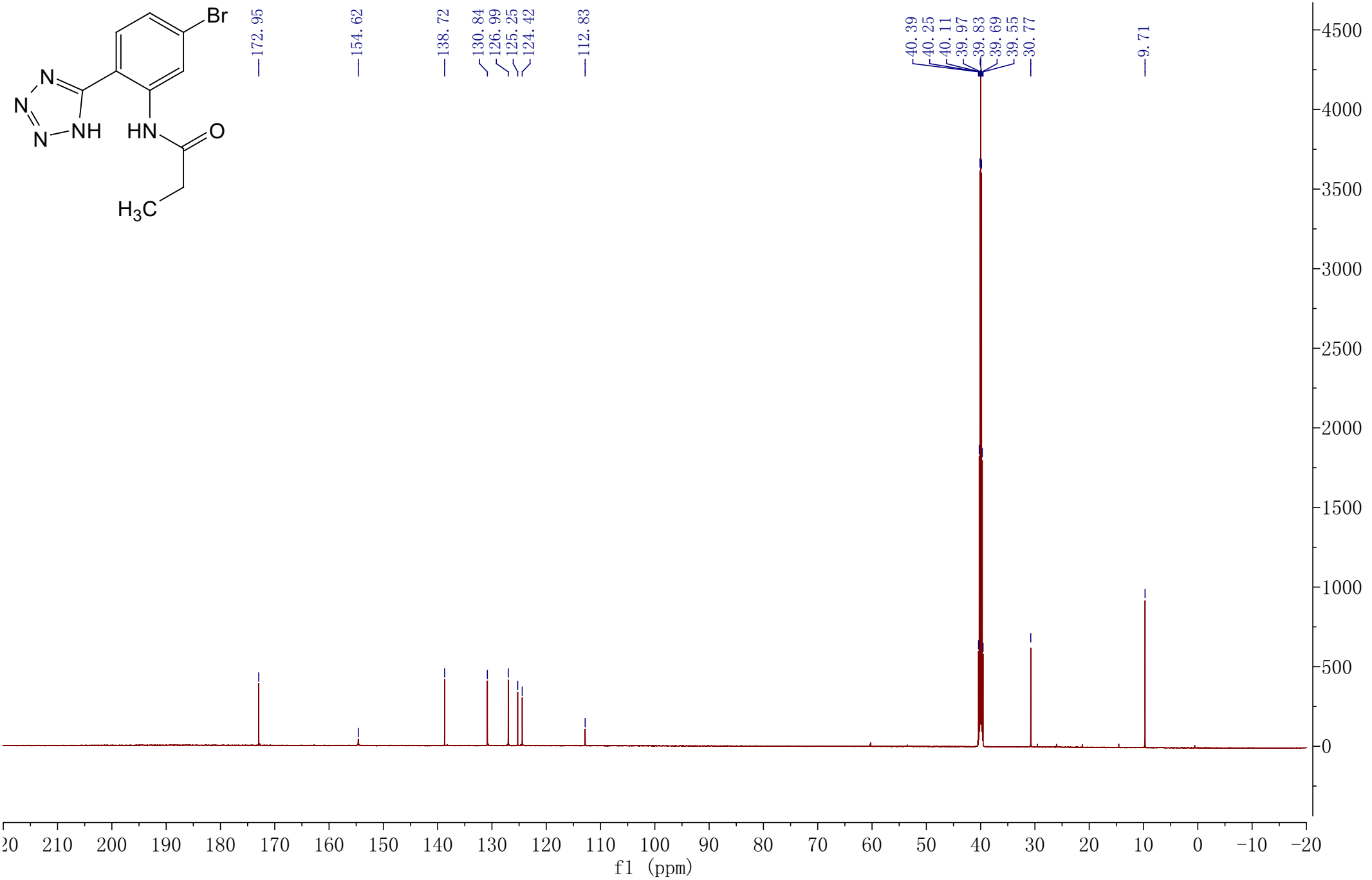
^{13}C NMR (151 MHz, DMSO) δ 153.77, 147.72, 129.58, 124.53, 117.81, 117.74, 103.79.



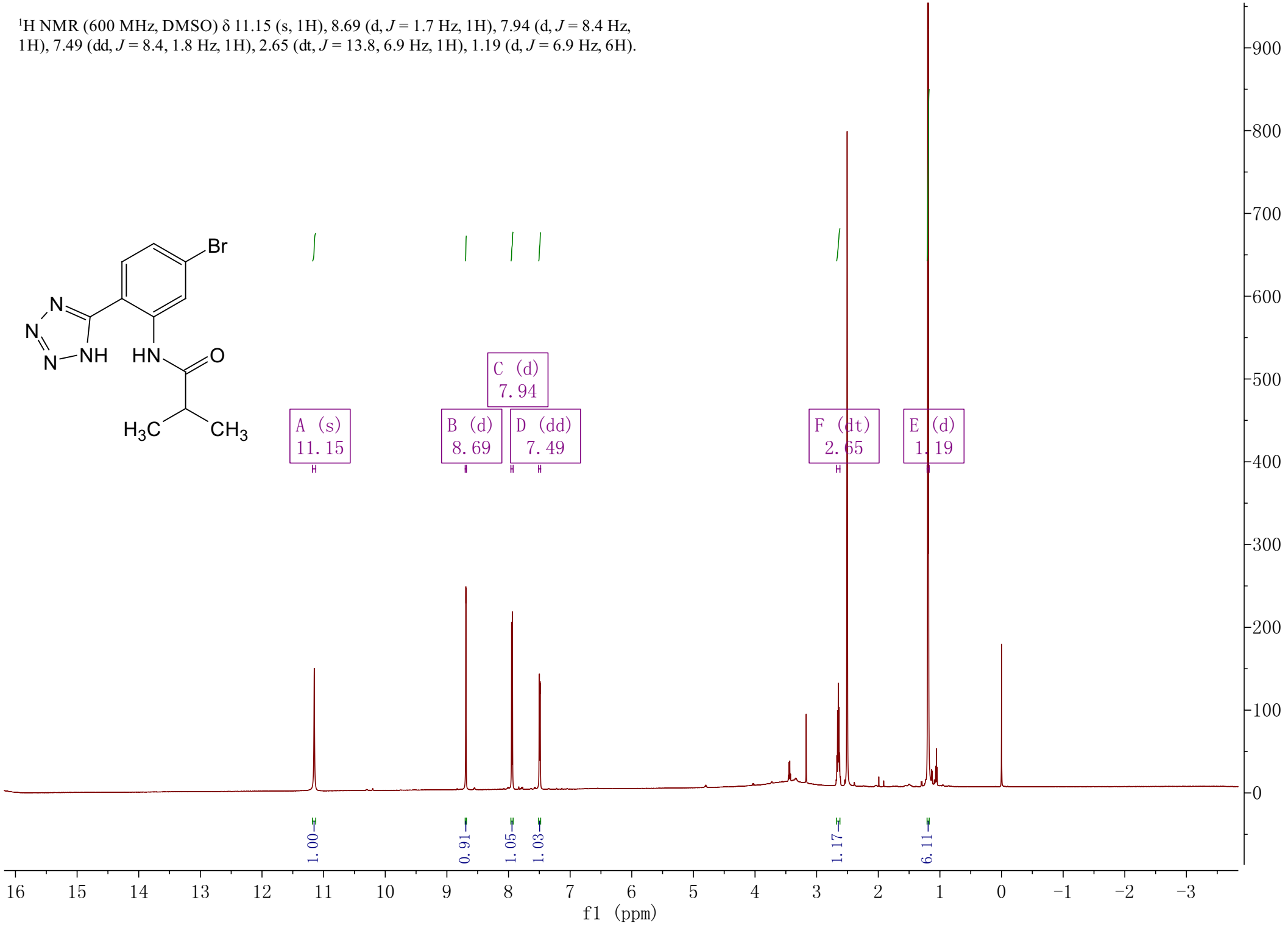
^{1}H NMR (600 MHz, DMSO) δ 10.72 (s, 1H), 8.63 (d, *J* = 2.0 Hz, 1H), 7.86 (d, *J* = 8.4 Hz, 1H), 7.52 (dd, *J* = 8.4, 2.0 Hz, 1H), 2.45 (dt, *J* = 7.5, 5.5 Hz, 2H), 1.14 (dd, *J* = 9.8, 5.2 Hz, 3H).



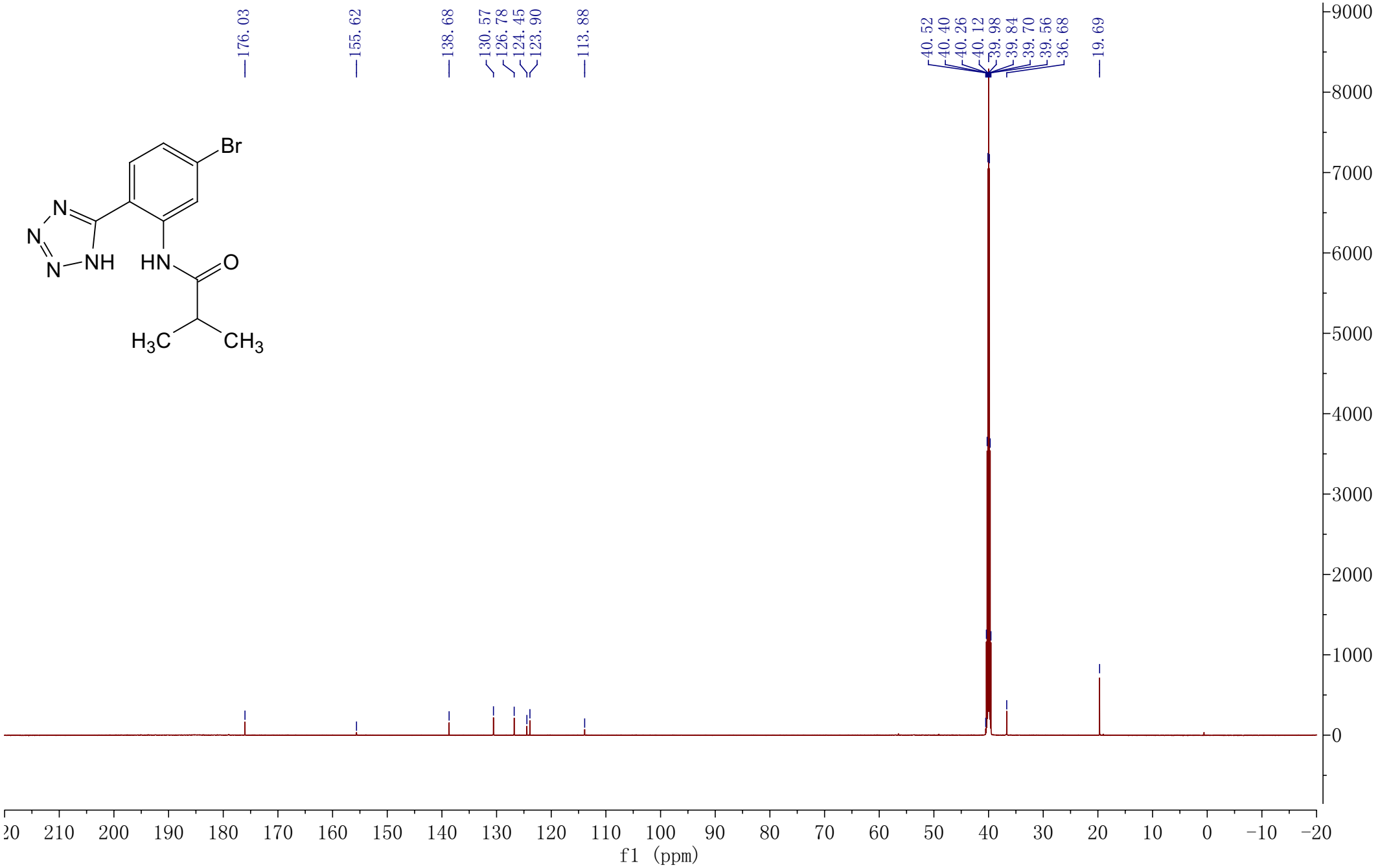
^{13}C NMR (151 MHz, DMSO) δ 172.95, 154.62, 138.72, 130.84, 126.99, 125.25, 124.42, 112.83, 30.77, 9.71.



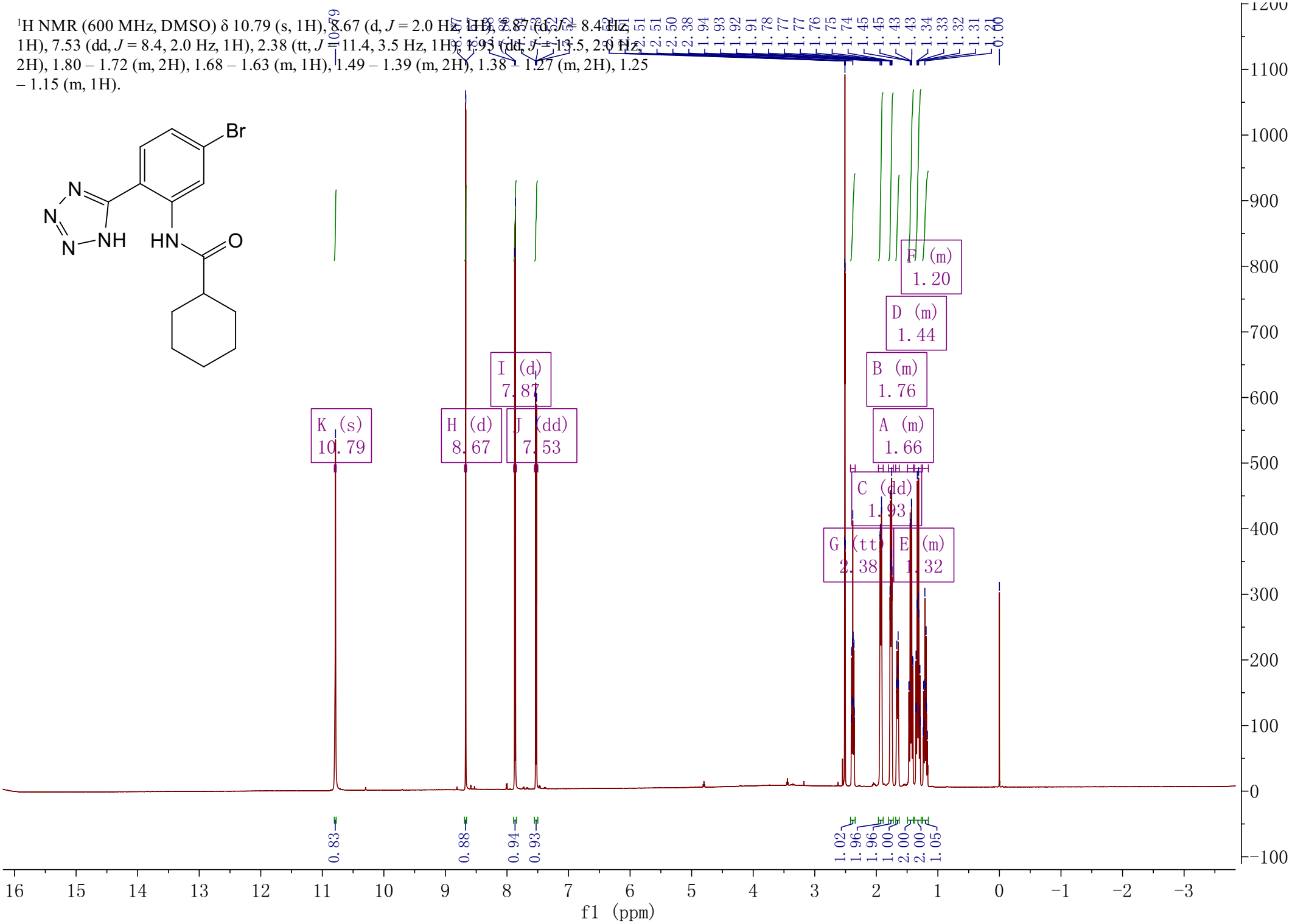
^{1}H NMR (600 MHz, DMSO) δ 11.15 (s, 1H), 8.69 (d, *J* = 1.7 Hz, 1H), 7.94 (d, *J* = 8.4 Hz, 1H), 7.49 (dd, *J* = 8.4, 1.8 Hz, 1H), 2.65 (dt, *J* = 13.8, 6.9 Hz, 1H), 1.19 (d, *J* = 6.9 Hz, 6H).



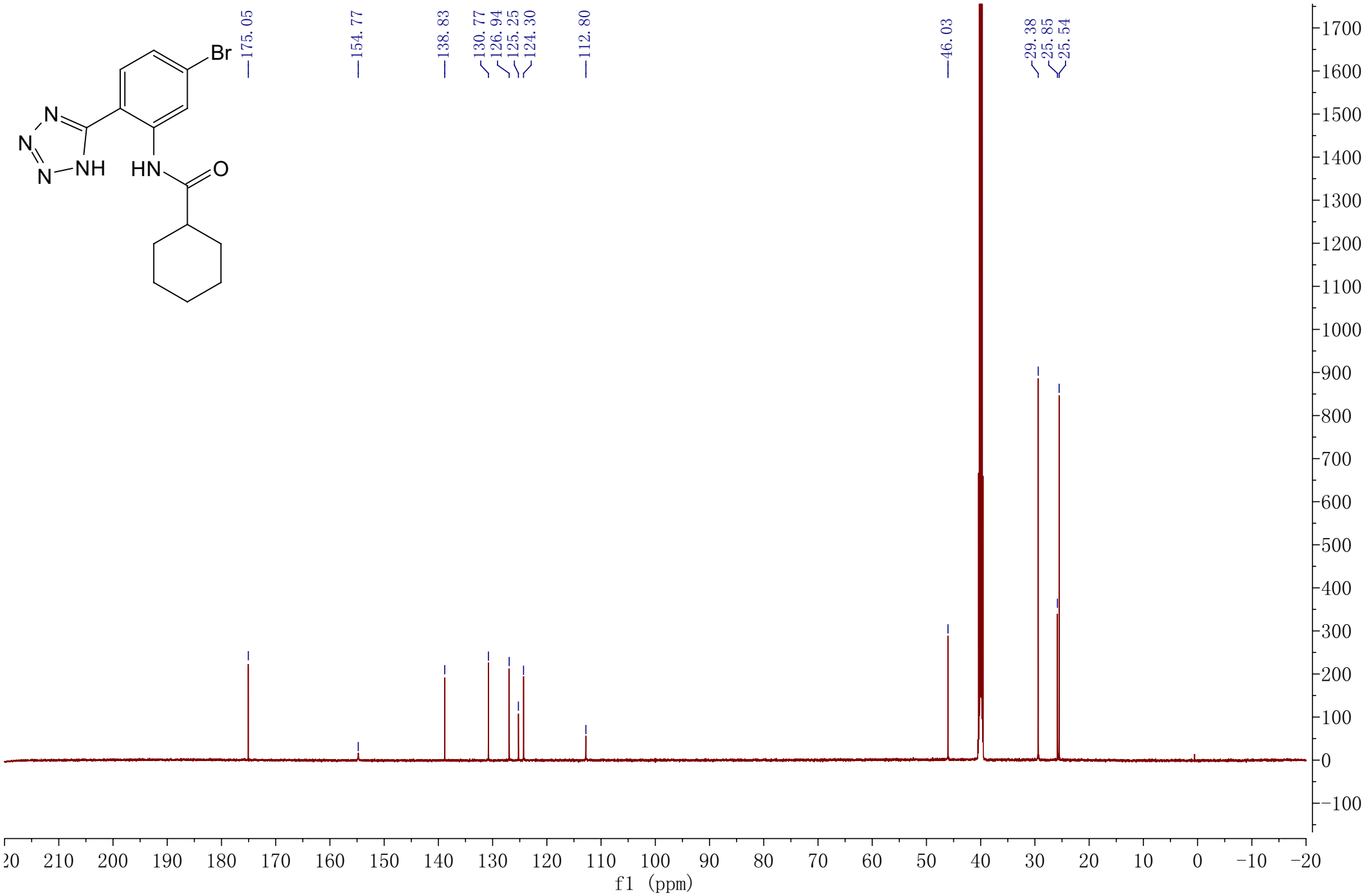
^{13}C NMR (151 MHz, DMSO) δ 176.03, 155.62, 138.68, 130.57, 126.78, 124.45, 123.90, 113.88, 36.68, 19.69.



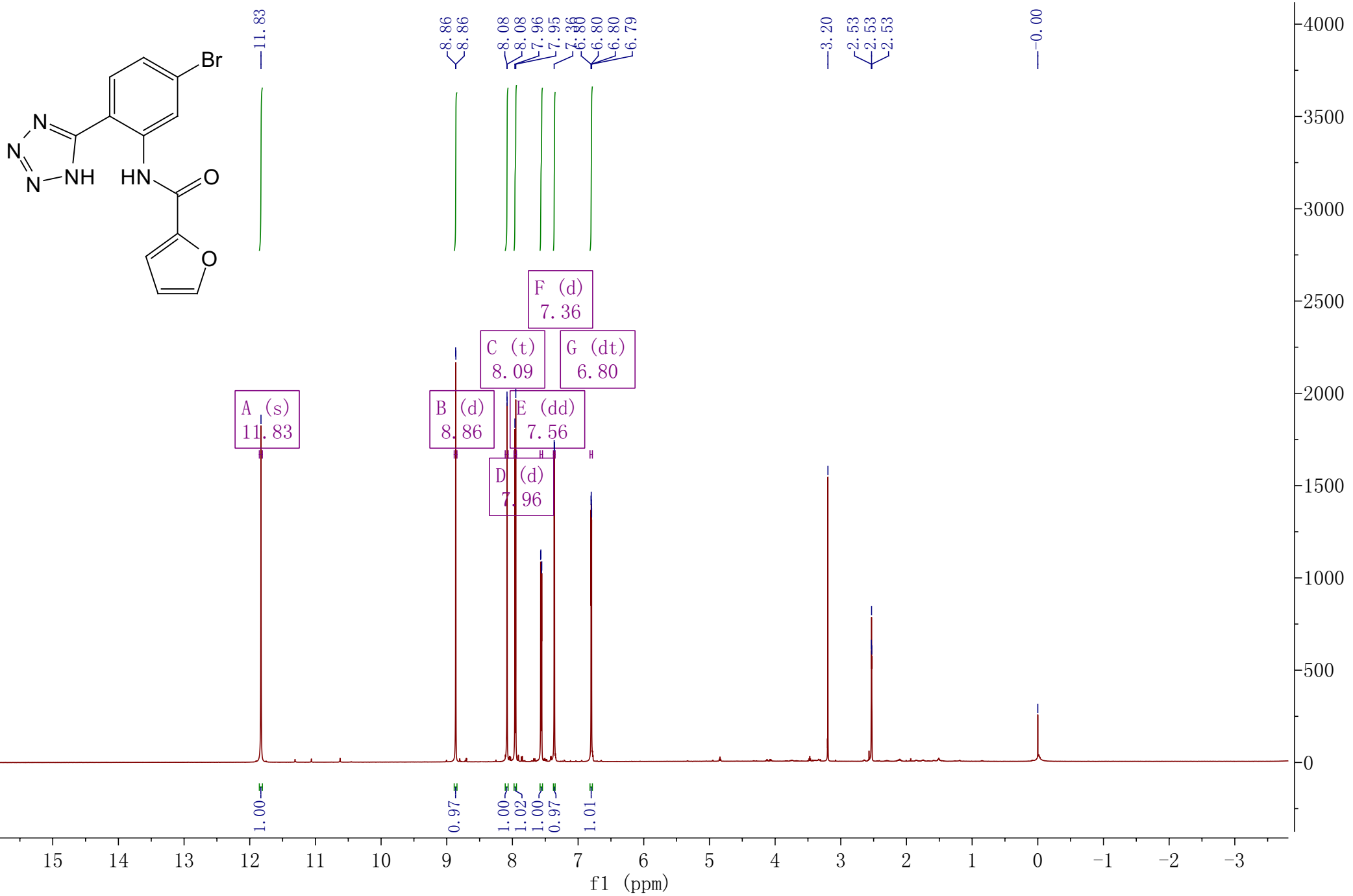
^{1}H NMR (600 MHz, DMSO) δ 10.79 (s, 1H), 8.67 (d, J = 2.0 Hz, 1H), 7.87 (d, J = 8.4 Hz, 1H), 7.53 (dd, J = 8.4, 2.0 Hz, 1H), 2.38 (tt, J = 11.4, 3.5 Hz, 1H), 1.93 (dd, J = 13.5, 2.9 Hz, 2H), 1.80 – 1.72 (m, 2H), 1.68 – 1.63 (m, 1H), 1.49 – 1.39 (m, 2H), 1.38 – 1.27 (m, 2H), 1.25 – 1.15 (m, 1H).



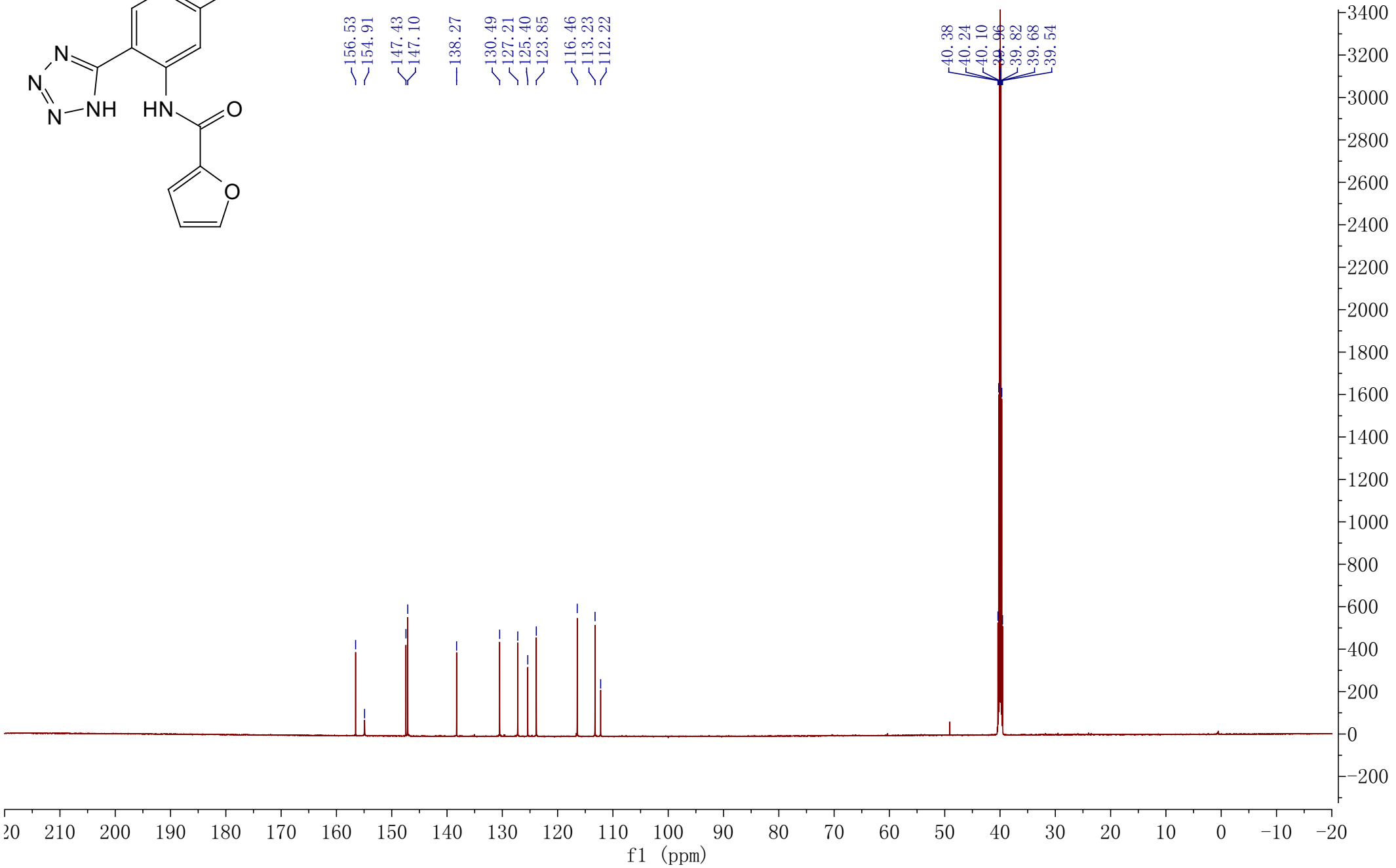
^{13}C NMR (151 MHz, DMSO) δ 175.05, 154.77, 138.83, 130.77, 126.94, 125.25, 124.30, 112.80, 46.03, 29.38, 25.85, 25.54.



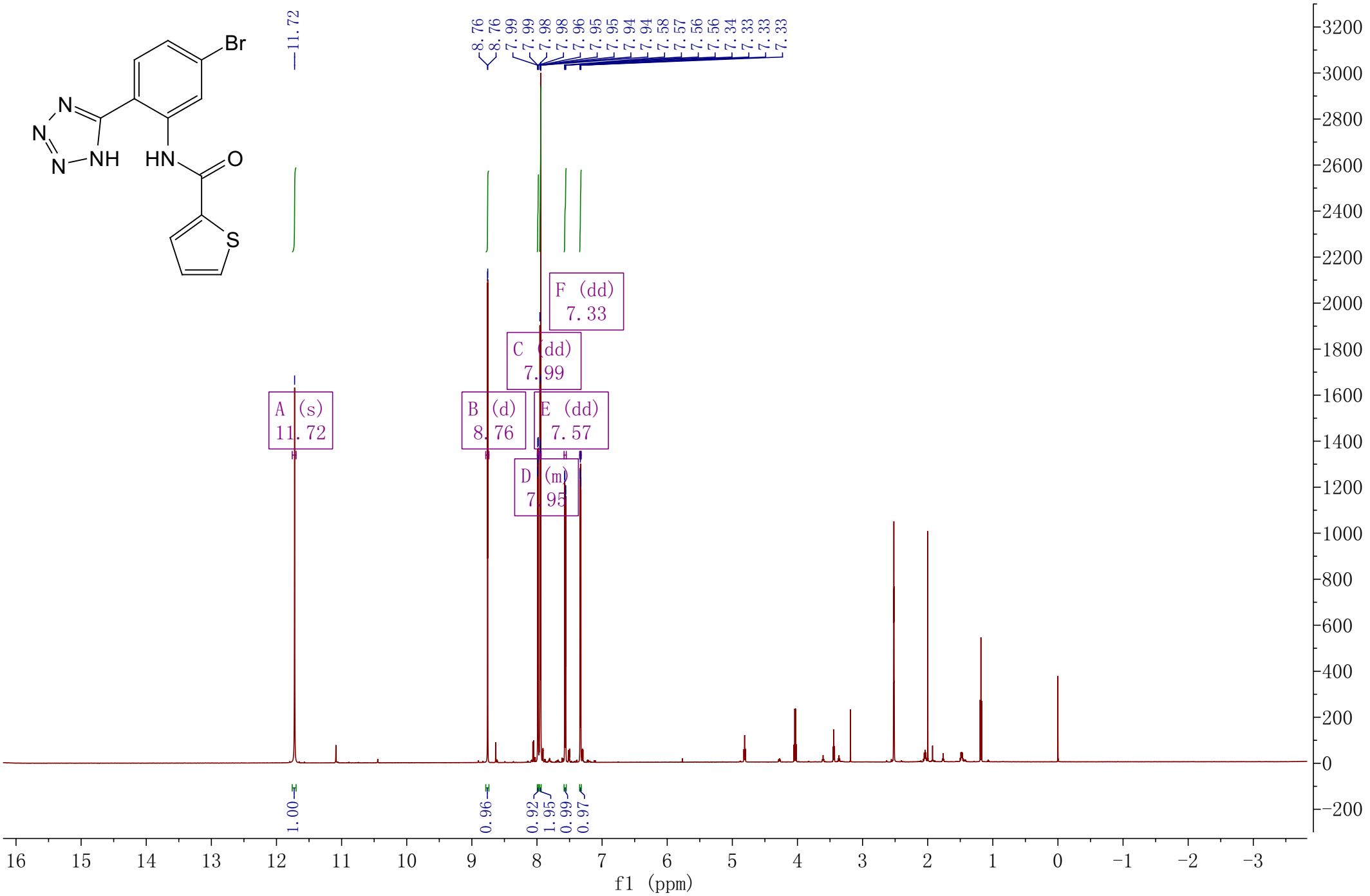
^{1}H NMR (600 MHz, DMSO) δ 11.83 (s, 1H), 8.86 (d, *J* = 2.0 Hz, 1H), 8.09 (t, *J* = 7.9 Hz, 1H), 7.96 (d, *J* = 8.4 Hz, 1H), 7.56 (dd, *J* = 8.4, 2.0 Hz, 1H), 7.36 (d, *J* = 3.2 Hz, 1H), 6.80 (dt, *J* = 8.0, 4.0 Hz, 1H).



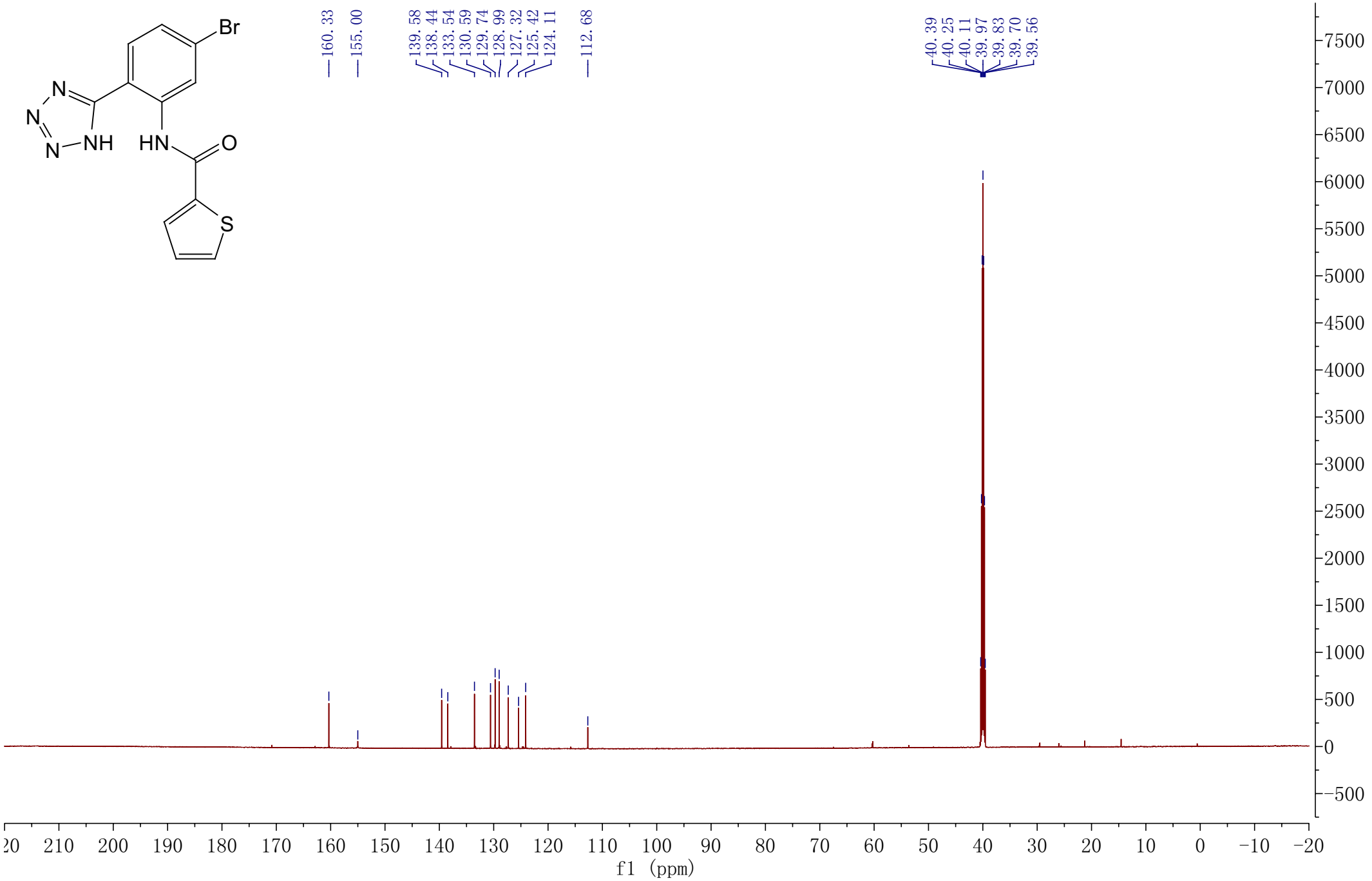
^{13}C NMR (151 MHz, DMSO) δ 156.53, 154.91, 147.43, 147.10, 138.27, 130.49, 127.21, 125.40, 123.85, 116.46, 113.23, 112.22.



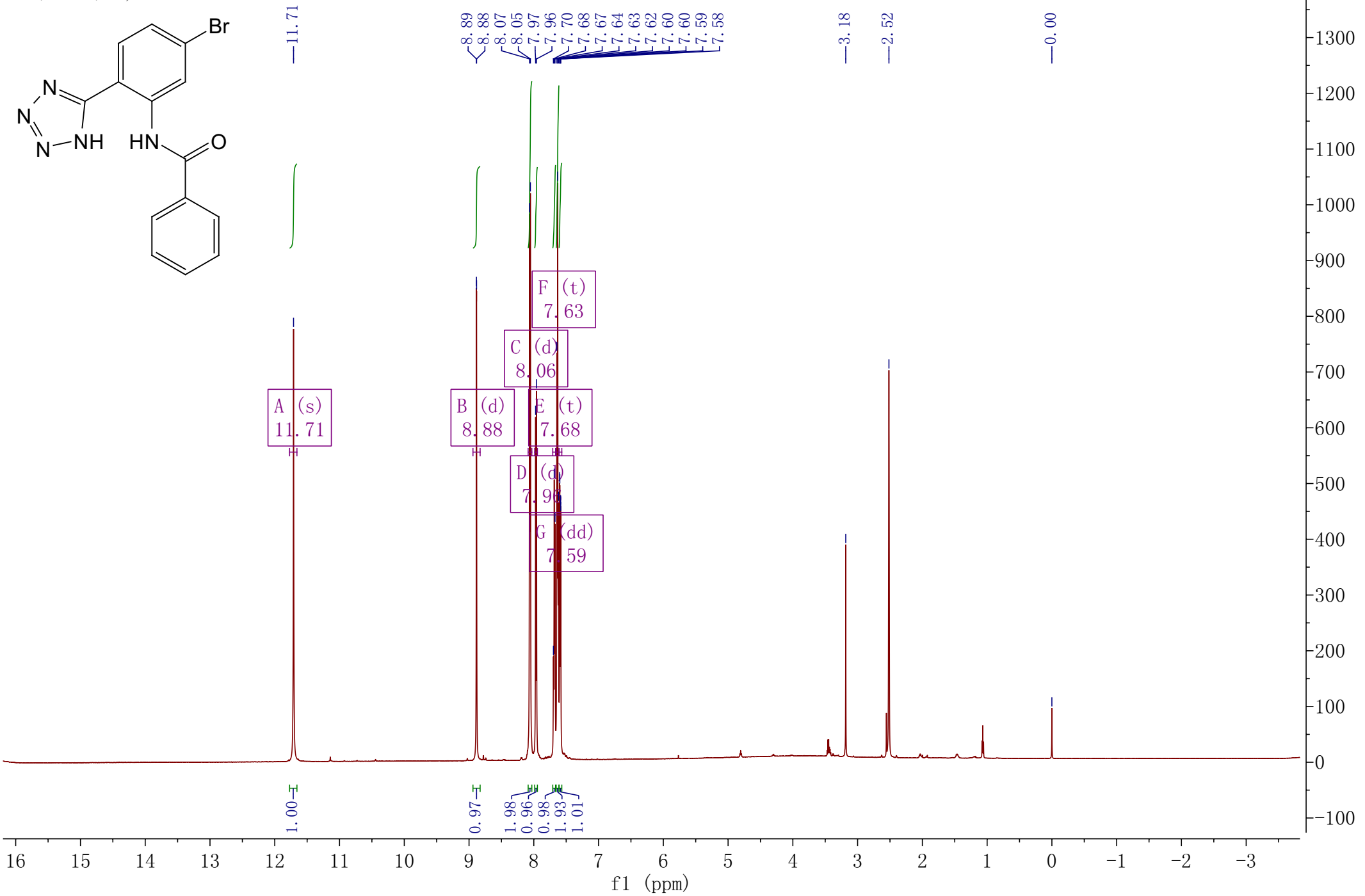
^{1}H NMR (600 MHz, DMSO) δ 11.72 (s, 1H), 8.76 (d, *J* = 2.0 Hz, 1H), 7.99 (dd, *J* = 5.0, 1.0 Hz, 1H), 7.96 – 7.94 (m, 2H), 7.57 (dd, *J* = 8.4, 2.0 Hz, 1H), 7.33 (dd, *J* = 4.9, 3.8 Hz, 1H).



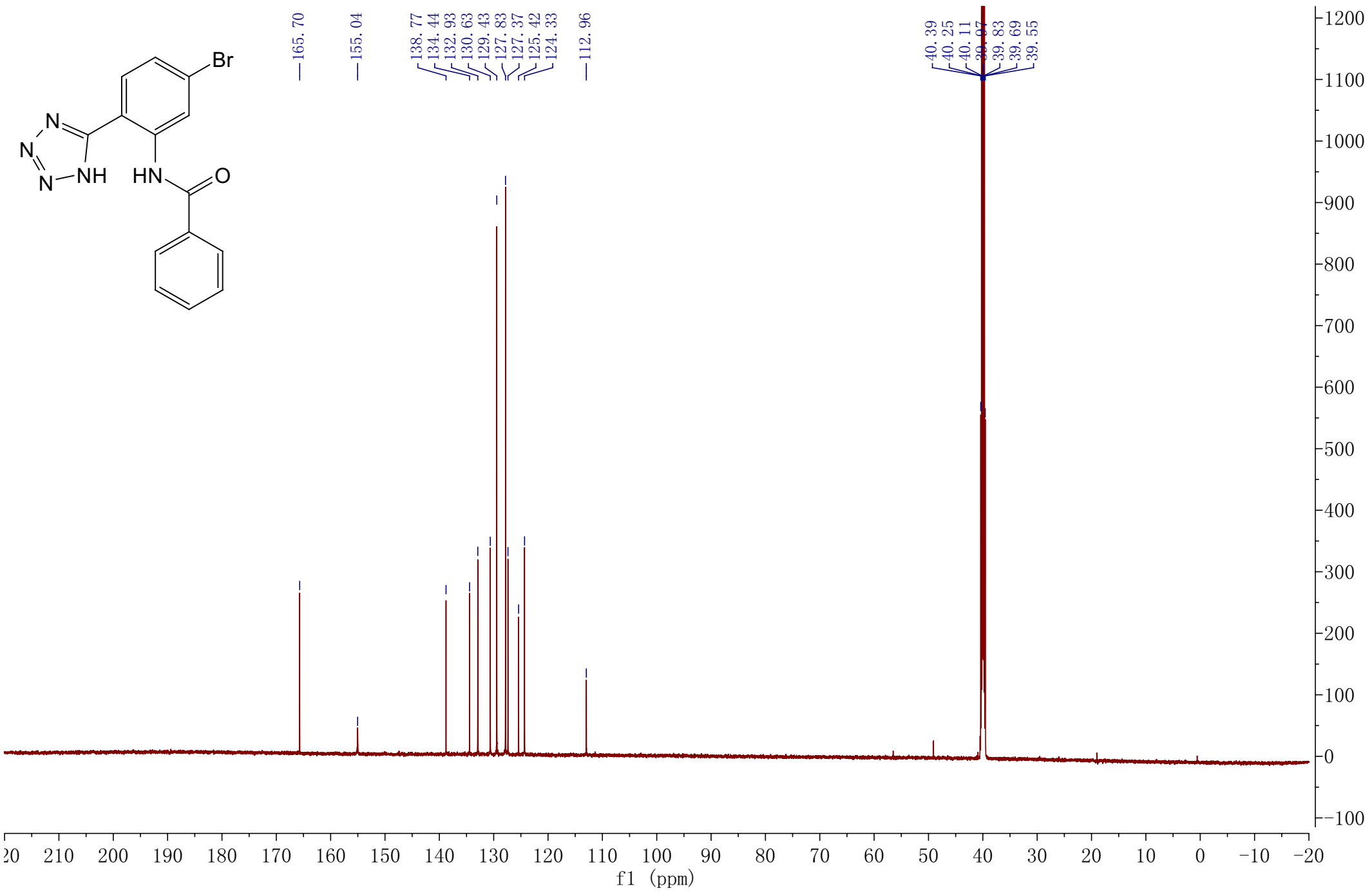
^{13}C NMR (151 MHz, DMSO) δ 160.33, 155.00, 139.58, 138.44, 133.54, 130.59, 129.74, 128.99, 127.32, 125.42, 124.11, 112.68.



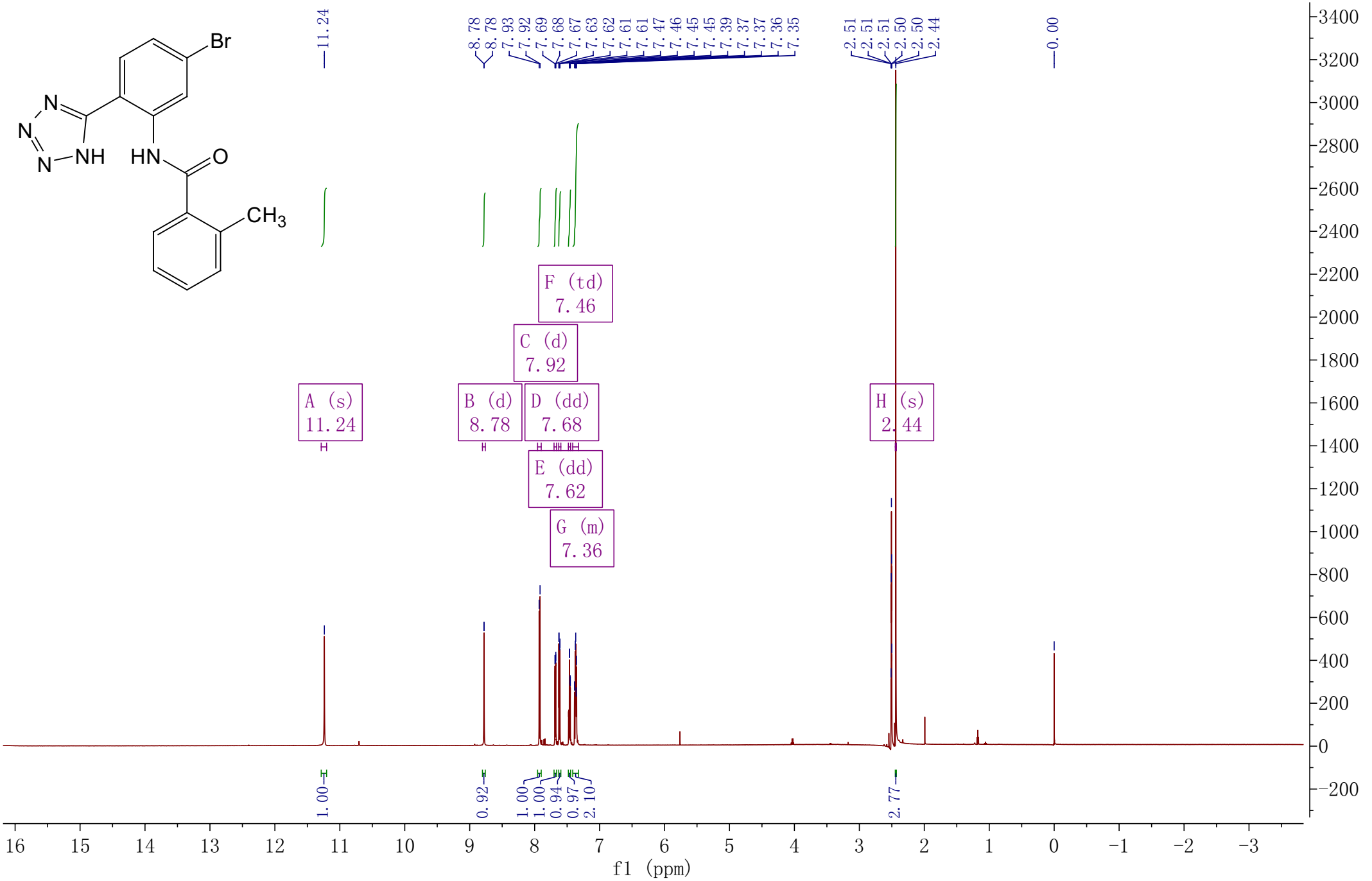
^{1}H NMR (600 MHz, DMSO) δ 11.71 (s, 1H), 8.88 (d, *J* = 1.4 Hz, 1H), 8.06 (d, *J* = 7.4 Hz, 2H), 7.96 (d, *J* = 8.4 Hz, 1H), 7.68 (t, *J* = 7.2 Hz, 1H), 7.63 (t, *J* = 7.5 Hz, 2H), 7.59 (dd, *J* = 8.4, 1.5 Hz, 1H).



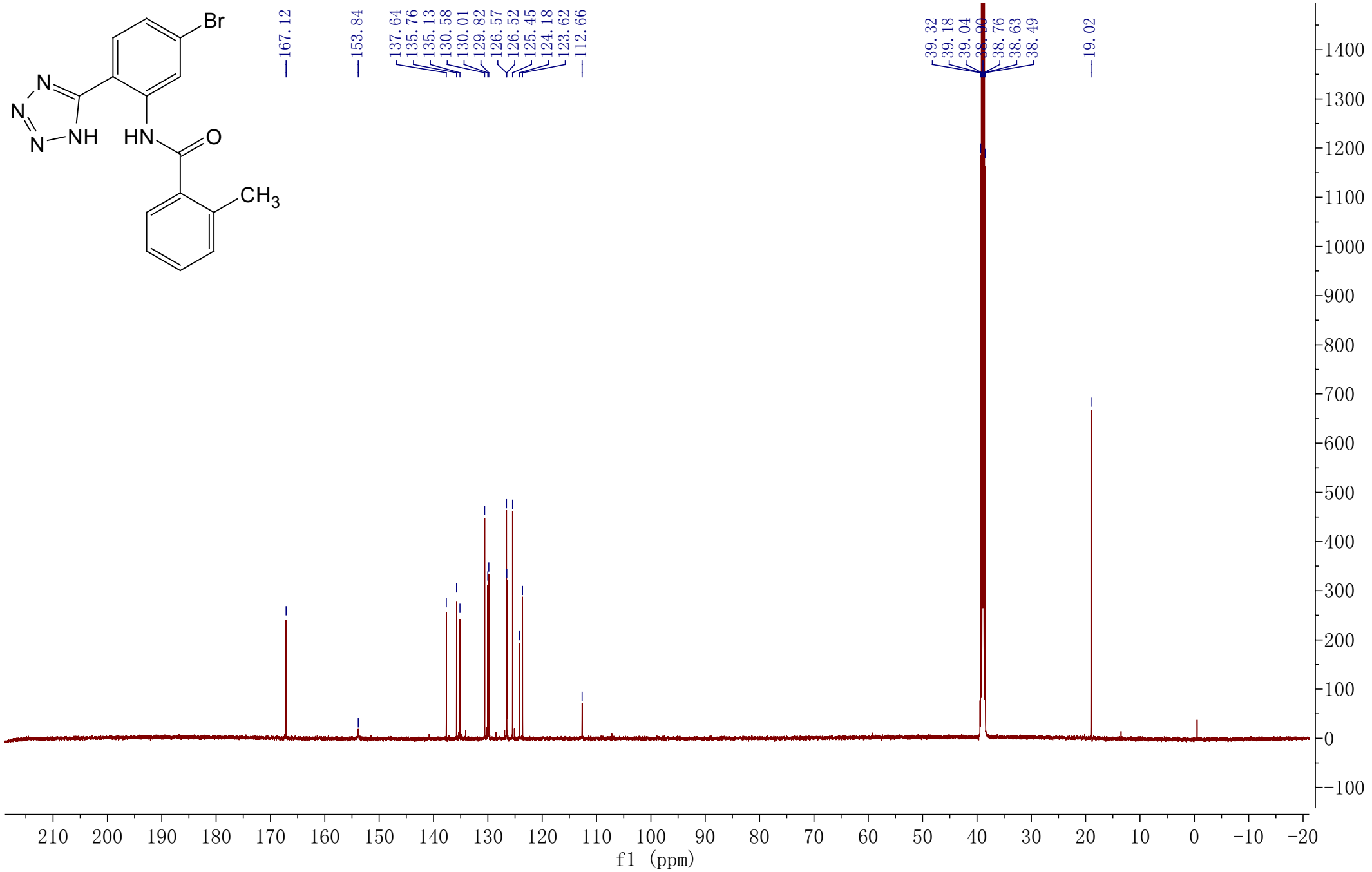
^{13}C NMR (151 MHz, DMSO) δ 165.70, 155.04, 138.77, 134.44, 132.93, 130.63, 129.43, 127.83, 127.37, 125.42, 124.33, 112.96.



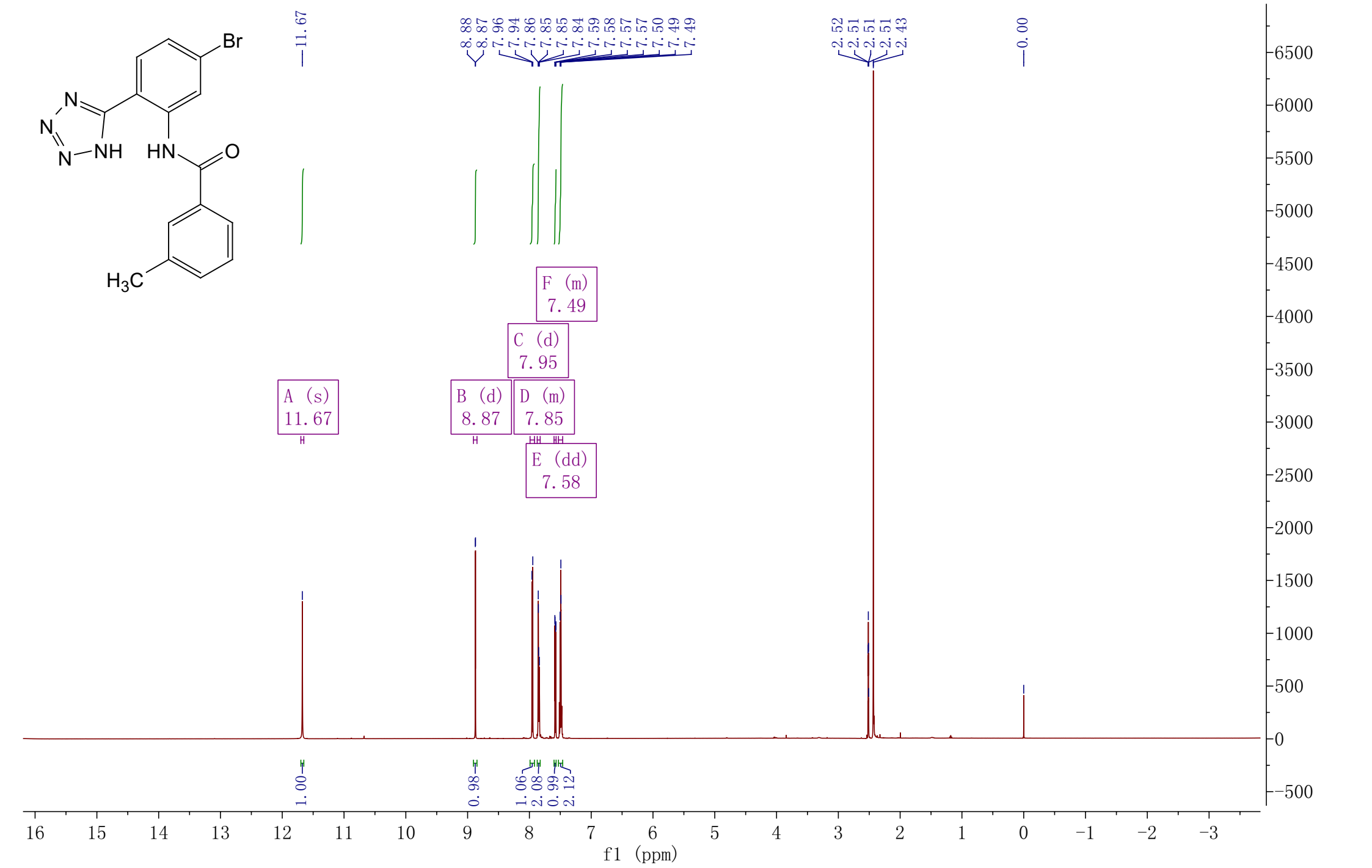
^{1}H NMR (600 MHz, DMSO) δ 11.24 (s, 1H), 8.78 (d, *J* = 1.9 Hz, 1H), 7.92 (d, *J* = 8.4 Hz, 1H), 7.68 (dd, *J* = 6.7, 5.7 Hz, 1H), 7.62 (dd, *J* = 8.4, 2.0 Hz, 1H), 7.46 (td, *J* = 7.5, 1.3 Hz, 1H), 7.41 – 7.33 (m, 2H), 2.44 (s, 3H).



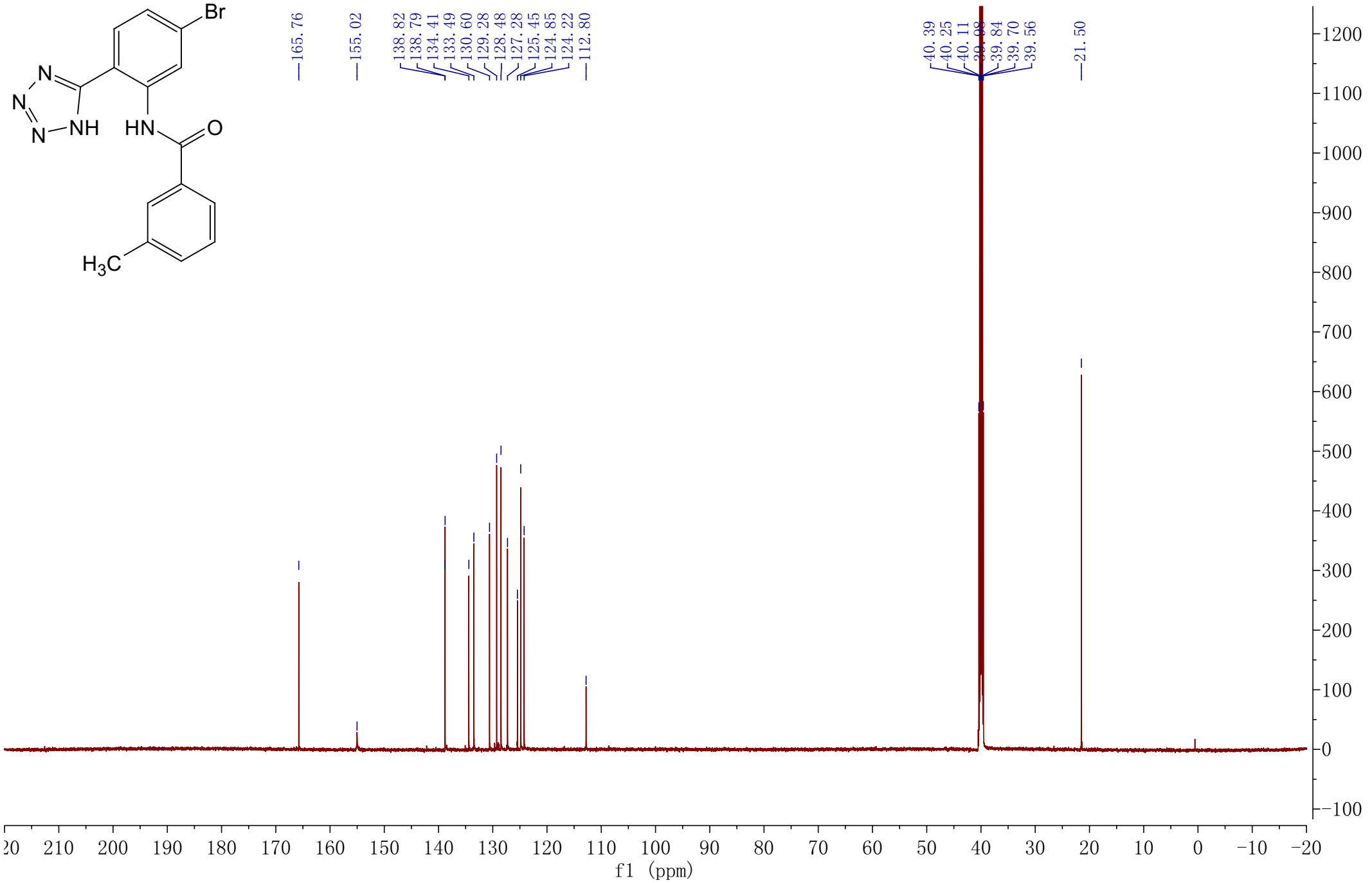
^{13}C NMR (151 MHz, DMSO) δ 167.12, 153.84, 137.64, 135.76, 135.13, 130.58, 130.01, 129.82, 126.57, 126.52, 125.45, 124.18, 123.62, 112.66, 19.02.



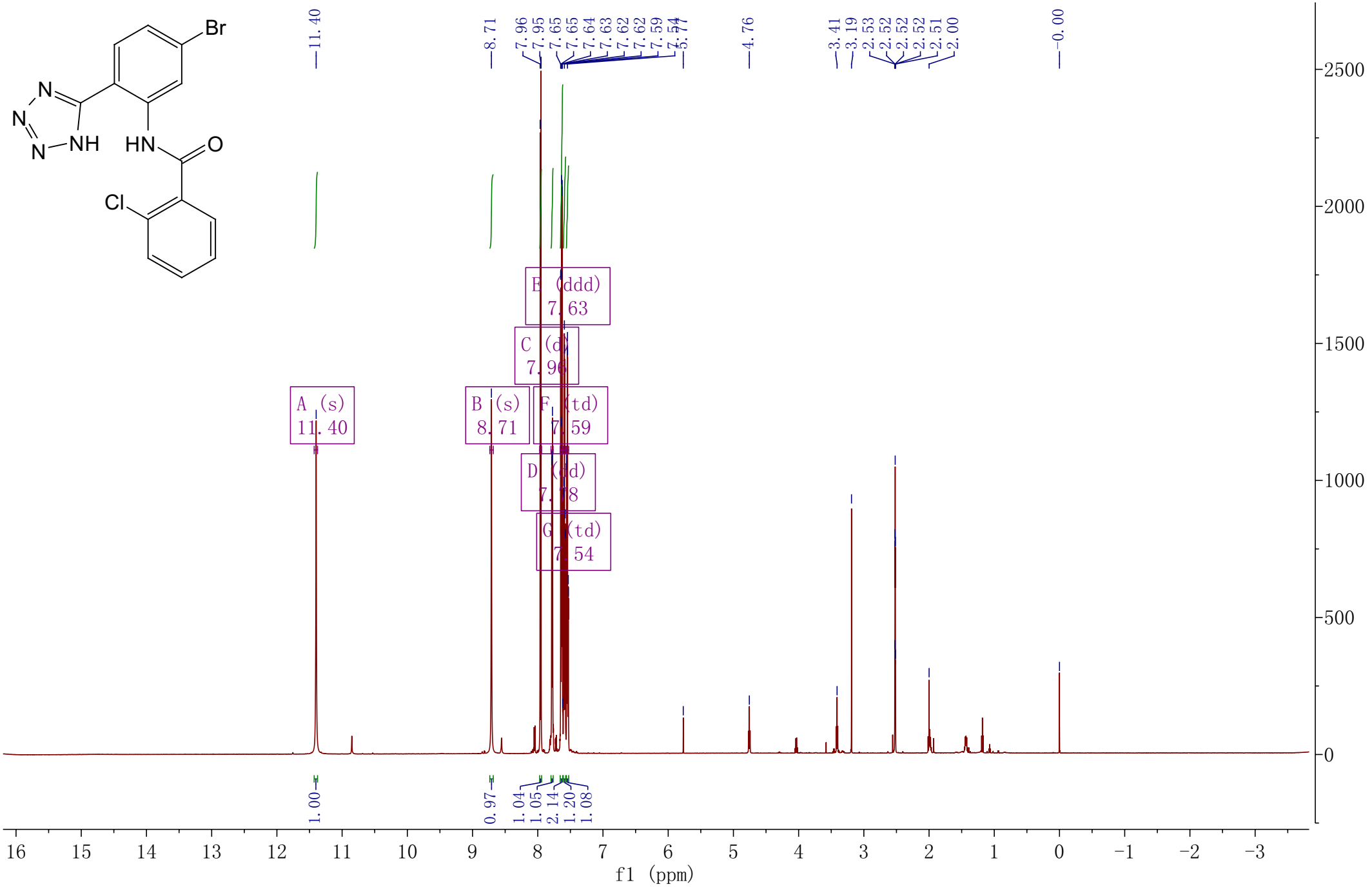
^{1}H NMR (600 MHz, DMSO) δ 11.67 (s, 1H), 8.87 (d, *J* = 2.0 Hz, 1H), 7.95 (d, *J* = 8.4 Hz, 1H), 7.87 – 7.83 (m, 2H), 7.58 (dd, *J* = 8.4, 2.0 Hz, 1H), 7.53 – 7.46 (m, 2H).



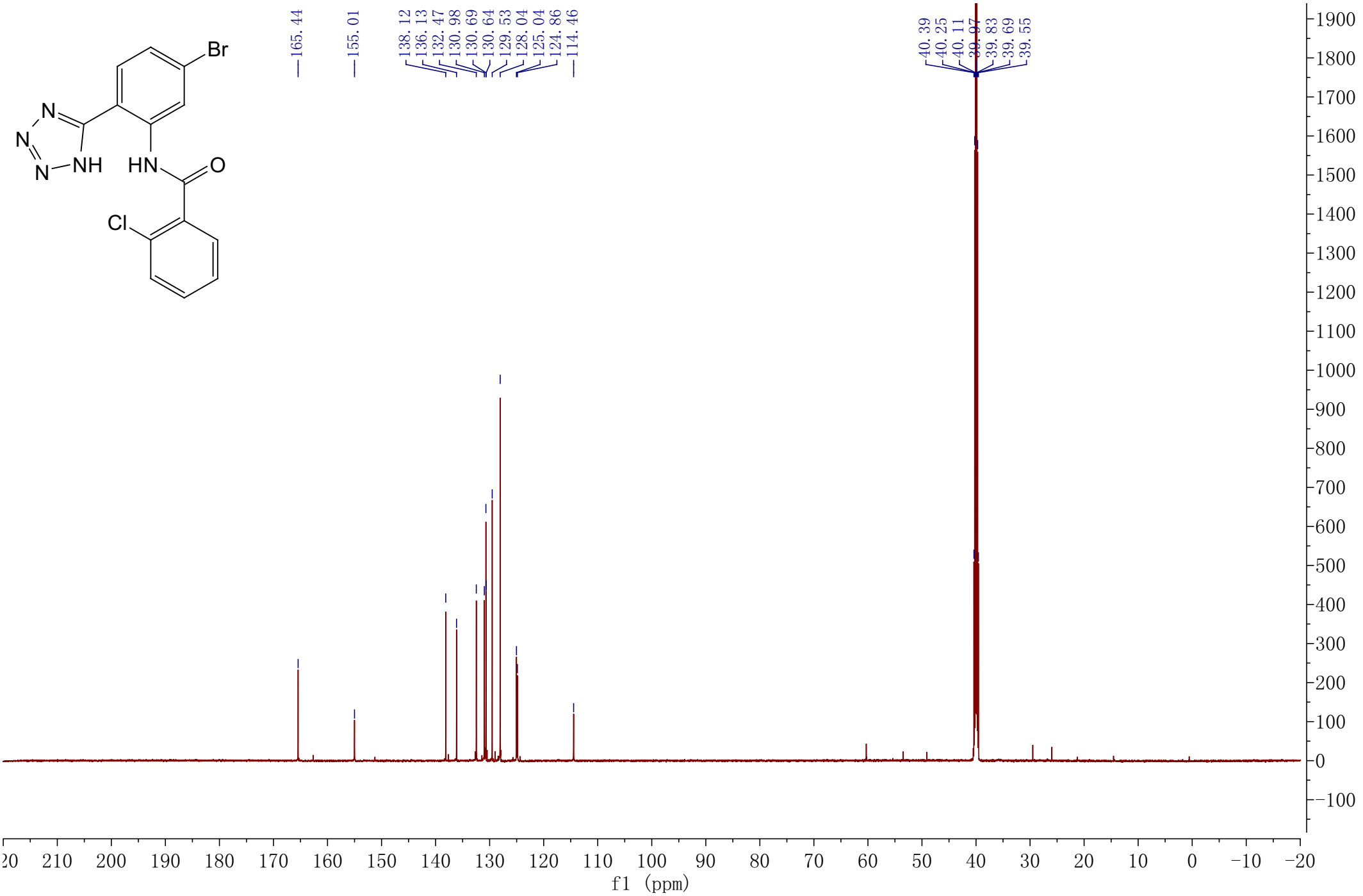
^{13}C NMR (151 MHz, DMSO) δ 165.76, 155.02, 138.82, 138.79, 134.41, 133.49, 130.60, 129.28, 128.48, 127.28, 125.45, 124.85, 124.22, 112.80, 21.50.



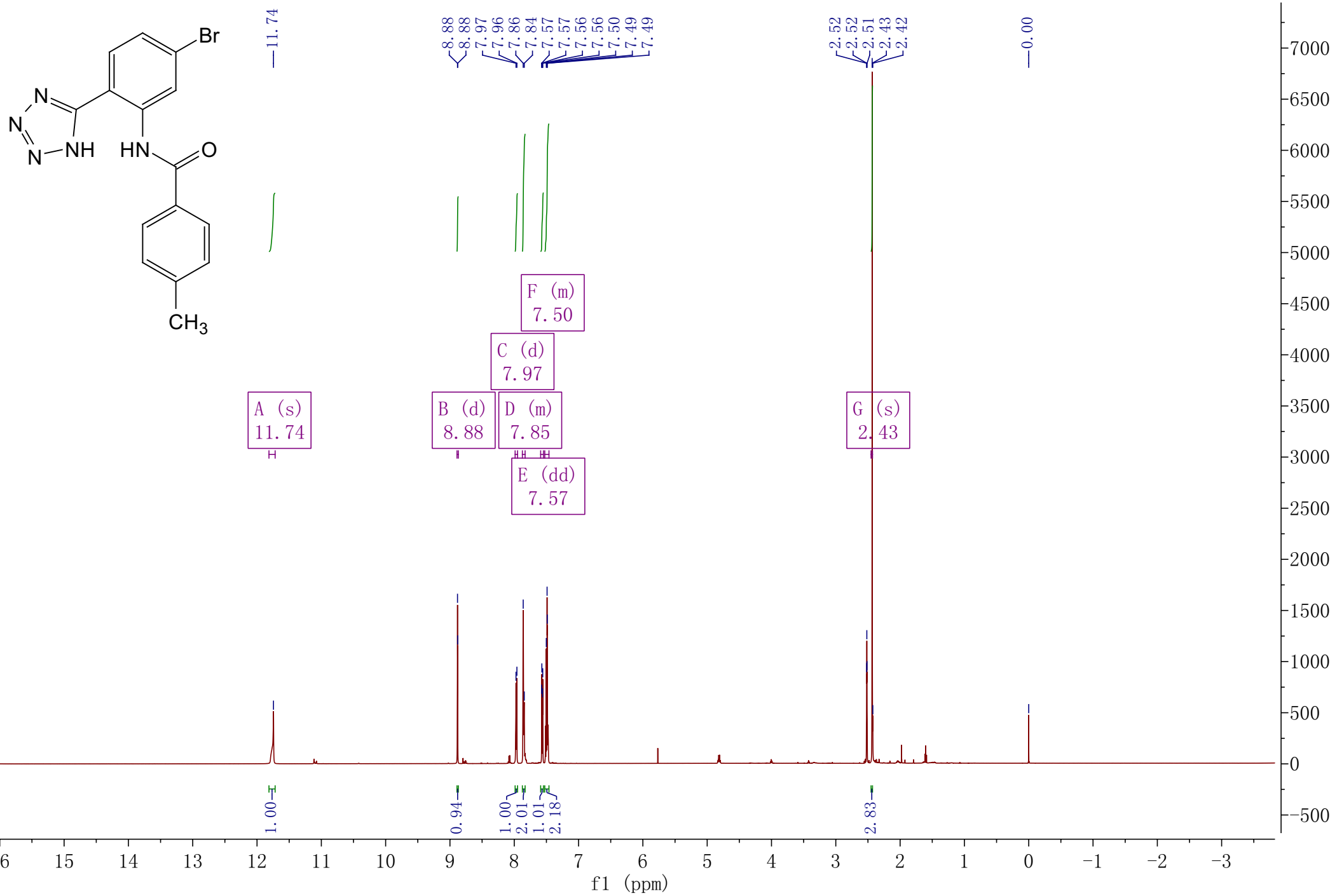
^{1}H NMR (600 MHz, DMSO) δ 11.40 (s, 1H), 8.71 (s, 1H), 7.96 (d, *J* = 8.4 Hz, 1H), 7.78 (dd, *J* = 7.5, 1.4 Hz, 1H), 7.63 (ddd, *J* = 11.1, 5.7, 2.9 Hz, 2H), 7.59 (td, *J* = 7.7, 1.7 Hz, 1H), 7.54 (td, *J* = 7.4, 1.2 Hz, 1H).



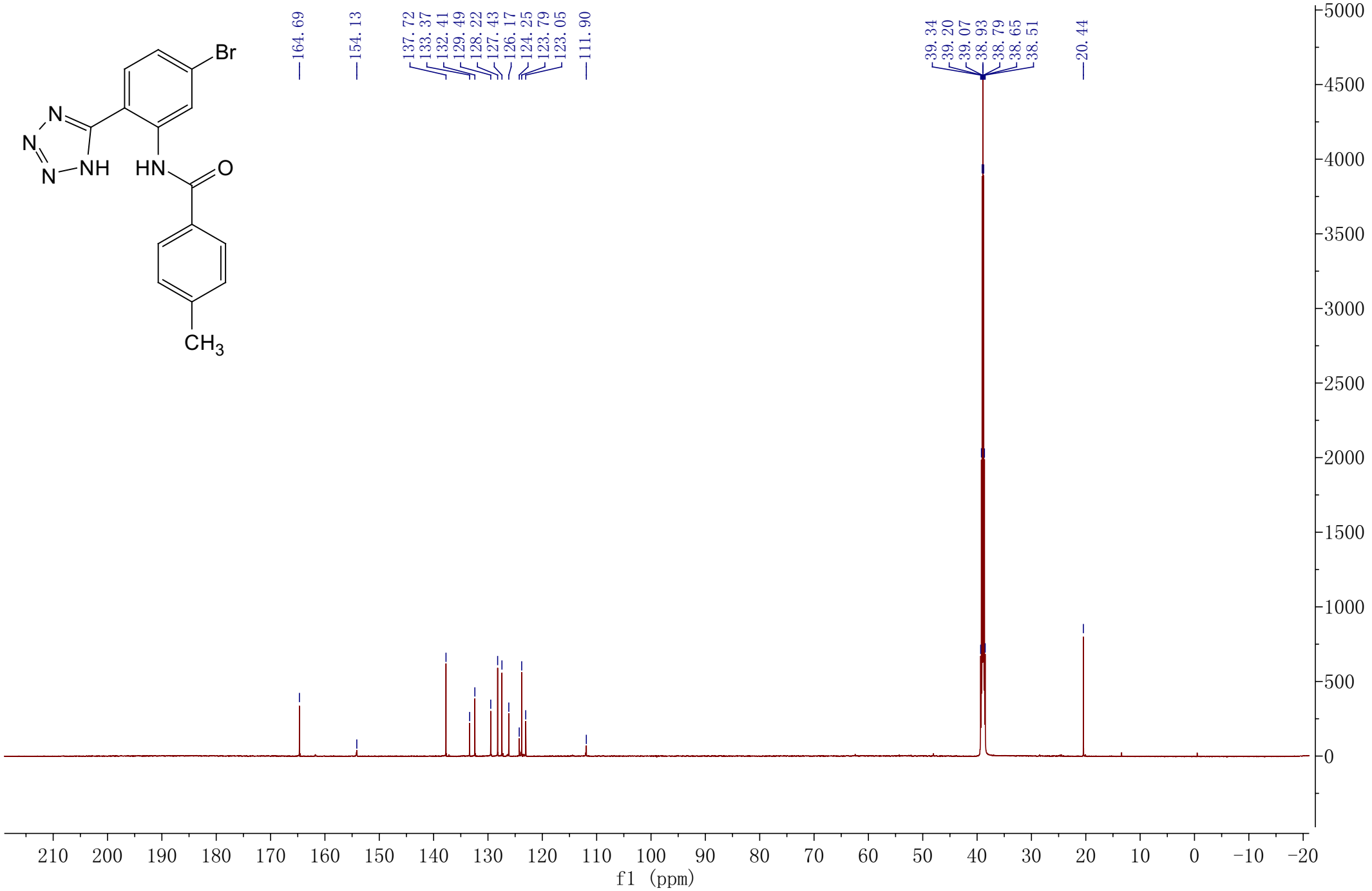
^{13}C NMR (151 MHz, DMSO) δ 165.44, 155.01, 138.12, 136.13, 132.47, 130.98, 130.69, 130.64, 129.53, 128.04, 125.04, 124.86, 114.46.



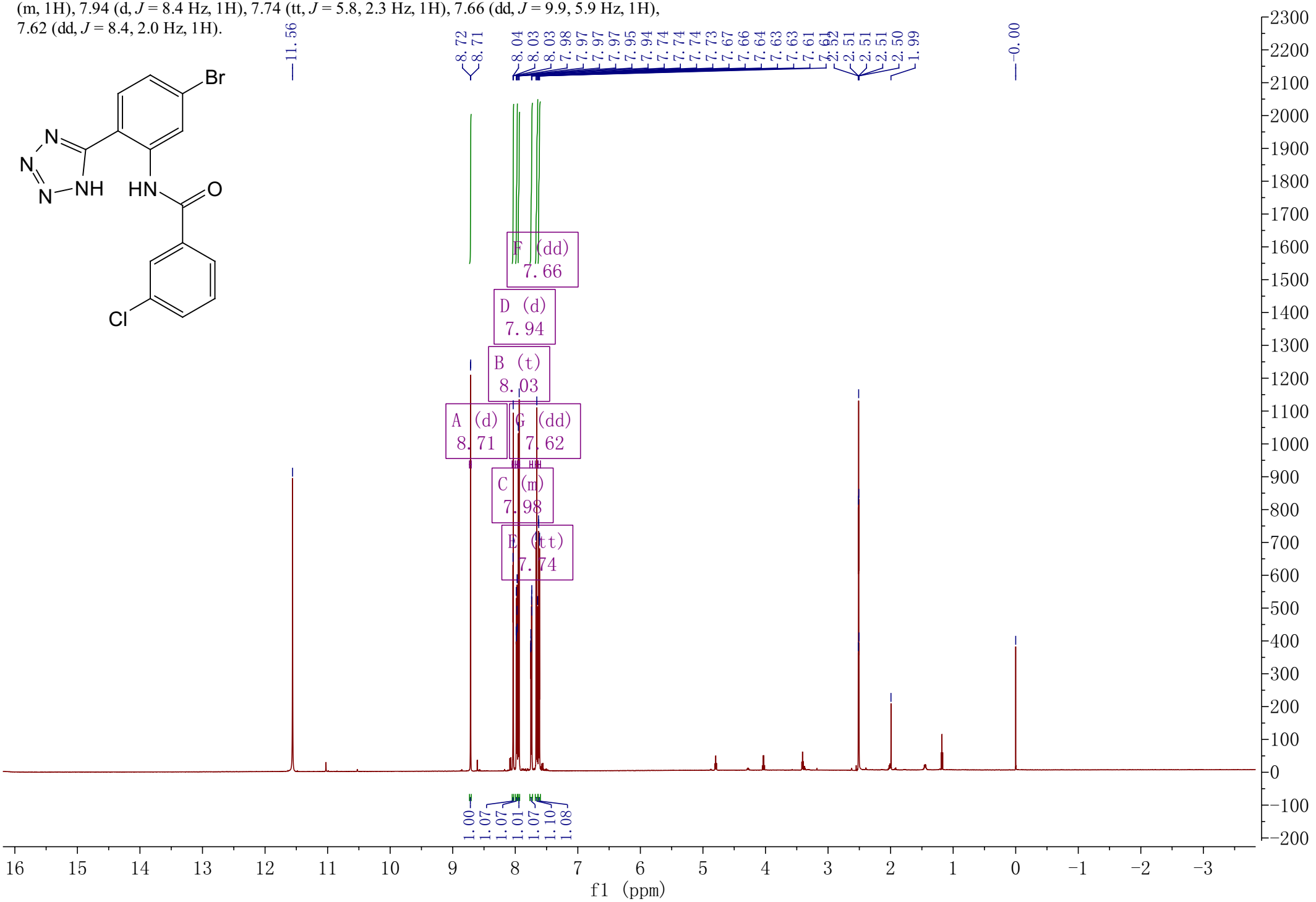
^{1}H NMR (600 MHz, DMSO) δ 11.74 (s, 1H), 8.88 (d, *J* = 1.9 Hz, 1H), 7.97 (d, *J* = 8.4 Hz, 1H), 7.87 – 7.83 (m, 2H), 7.57 (dd, *J* = 8.4, 2.0 Hz, 1H), 7.53 – 7.46 (m, 2H), 2.43 (s, 3H).



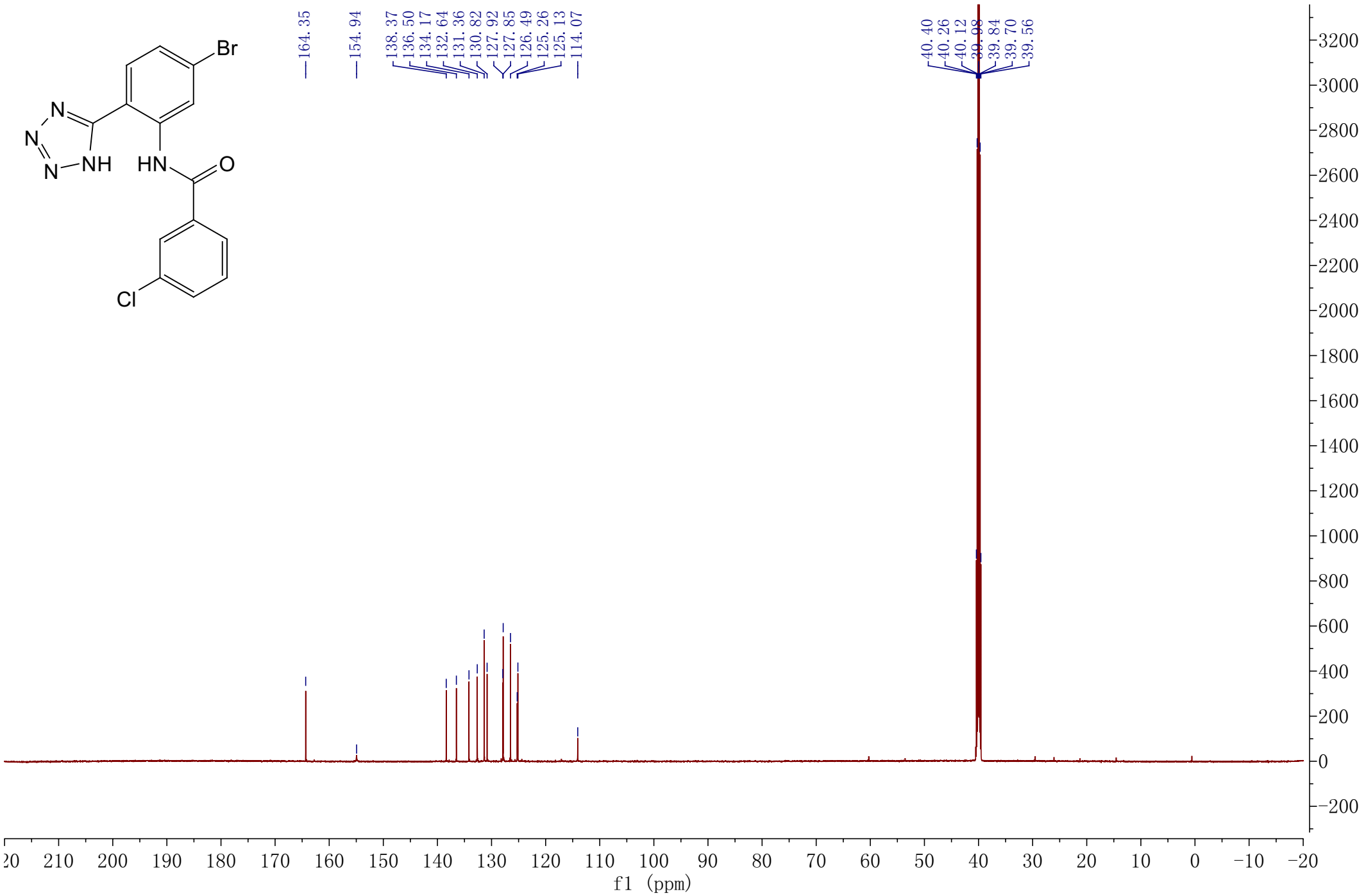
^{13}C NMR (151 MHz, DMSO) δ 164.69, 154.13, 137.72, 133.37, 132.41, 129.49, 128.22, 127.43, 126.17, 124.25, 123.79, 123.05, 111.90, 20.44.



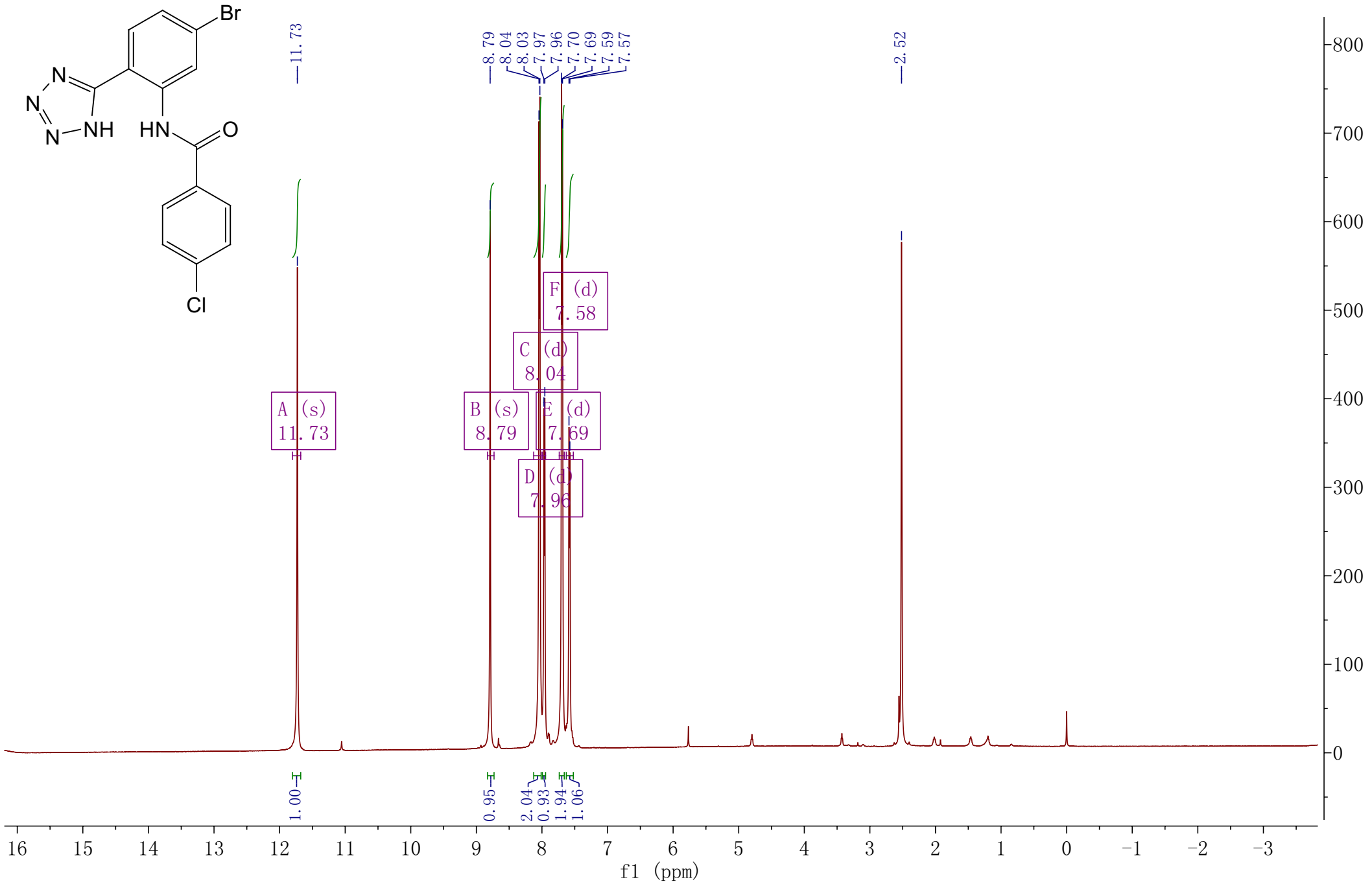
^{1}H NMR (600 MHz, DMSO) δ 8.71 (d, *J* = 2.0 Hz, 1H), 8.03 (t, *J* = 1.8 Hz, 1H), 8.00 – 7.97 (m, 1H), 7.94 (d, *J* = 8.4 Hz, 1H), 7.74 (tt, *J* = 5.8, 2.3 Hz, 1H), 7.66 (dd, *J* = 9.9, 5.9 Hz, 1H), 7.62 (dd, *J* = 8.4, 2.0 Hz, 1H).



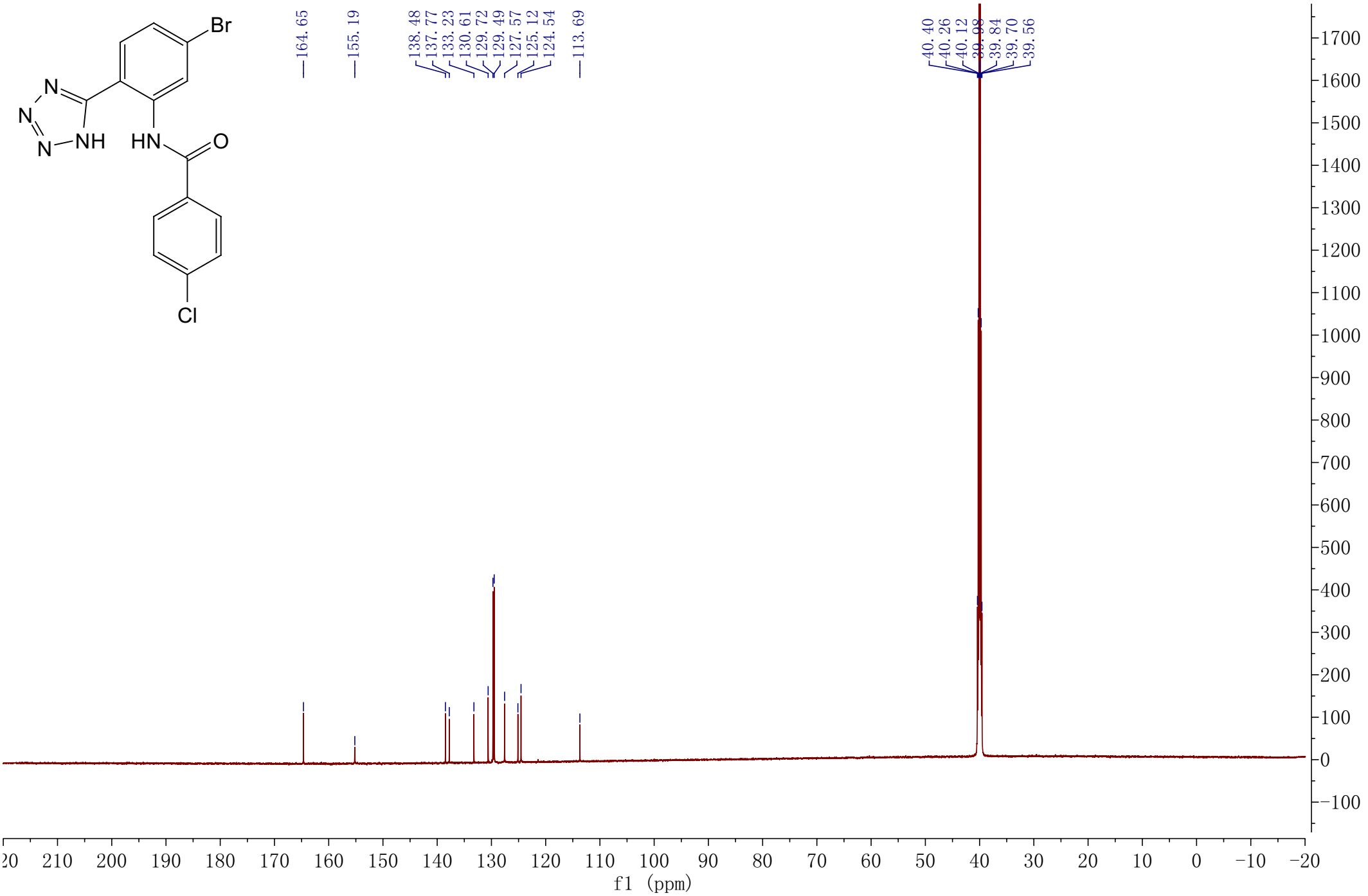
^{13}C NMR (151 MHz, DMSO) δ 164.35, 154.94, 138.37, 136.50, 134.17, 132.64, 131.36, 130.82, 127.92, 127.85, 126.49, 125.26, 125.13, 114.07.



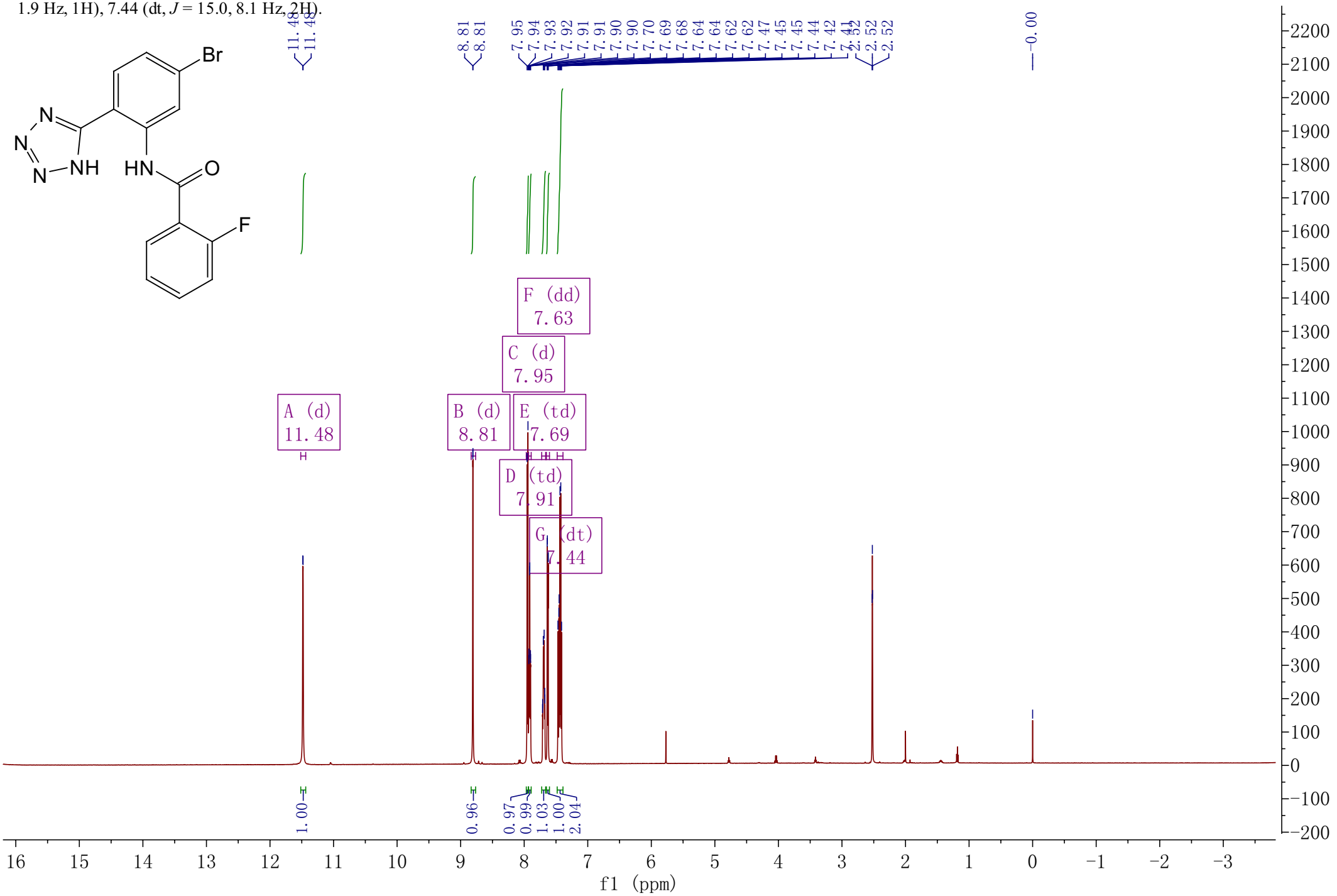
^{1}H NMR (600 MHz, DMSO) δ 11.73 (s, 1H), 8.79 (s, 1H), 8.04 (d, *J* = 7.9 Hz, 2H), 7.96 (d, *J* = 8.3 Hz, 1H), 7.69 (d, *J* = 7.9 Hz, 2H), 7.58 (d, *J* = 8.0 Hz, 1H).

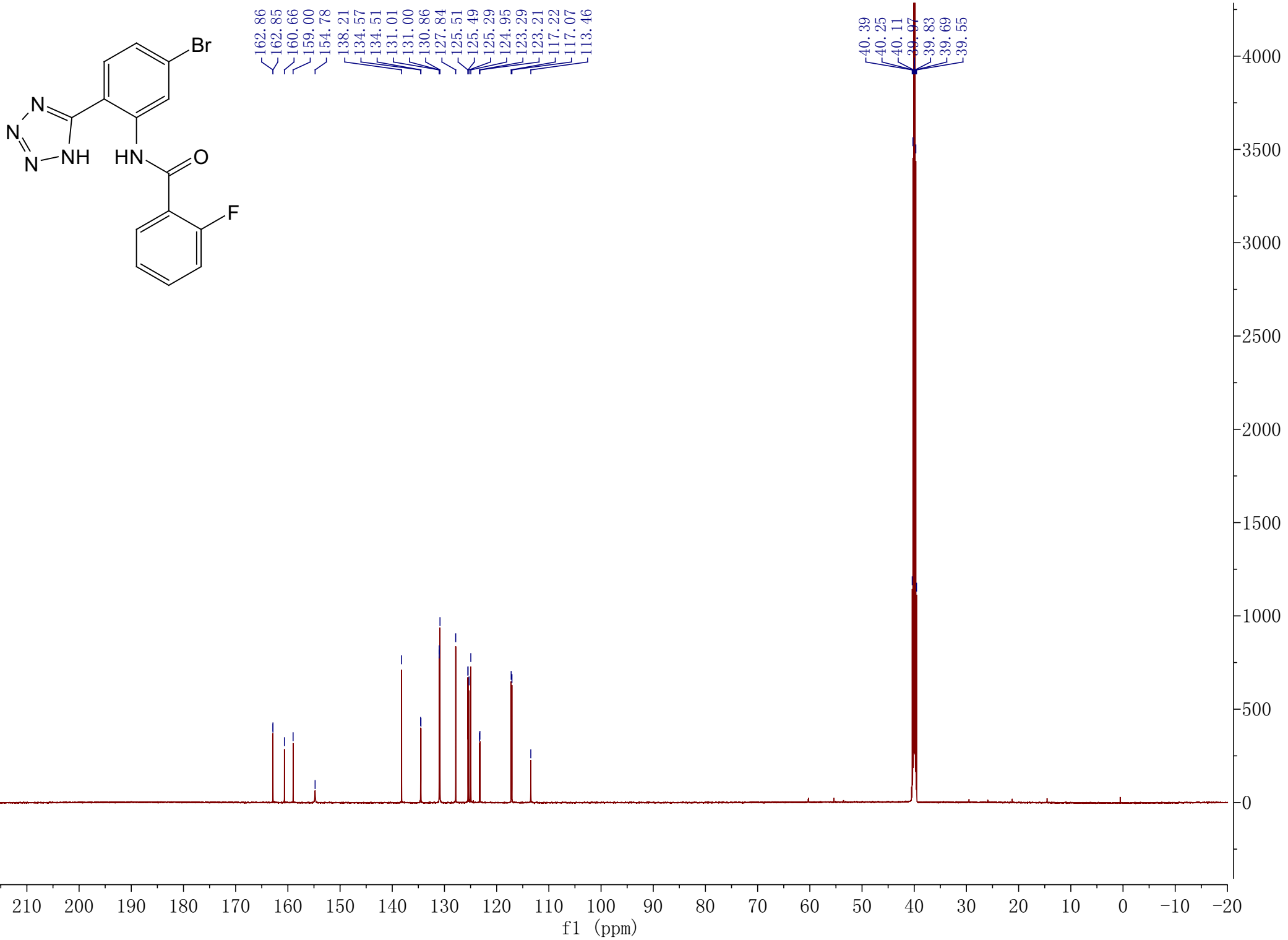


^{13}C NMR (151 MHz, DMSO) δ 164.65, 155.19, 138.48, 137.77, 133.23, 130.61, 129.72, 129.49, 127.57, 125.12, 124.54, 113.69.

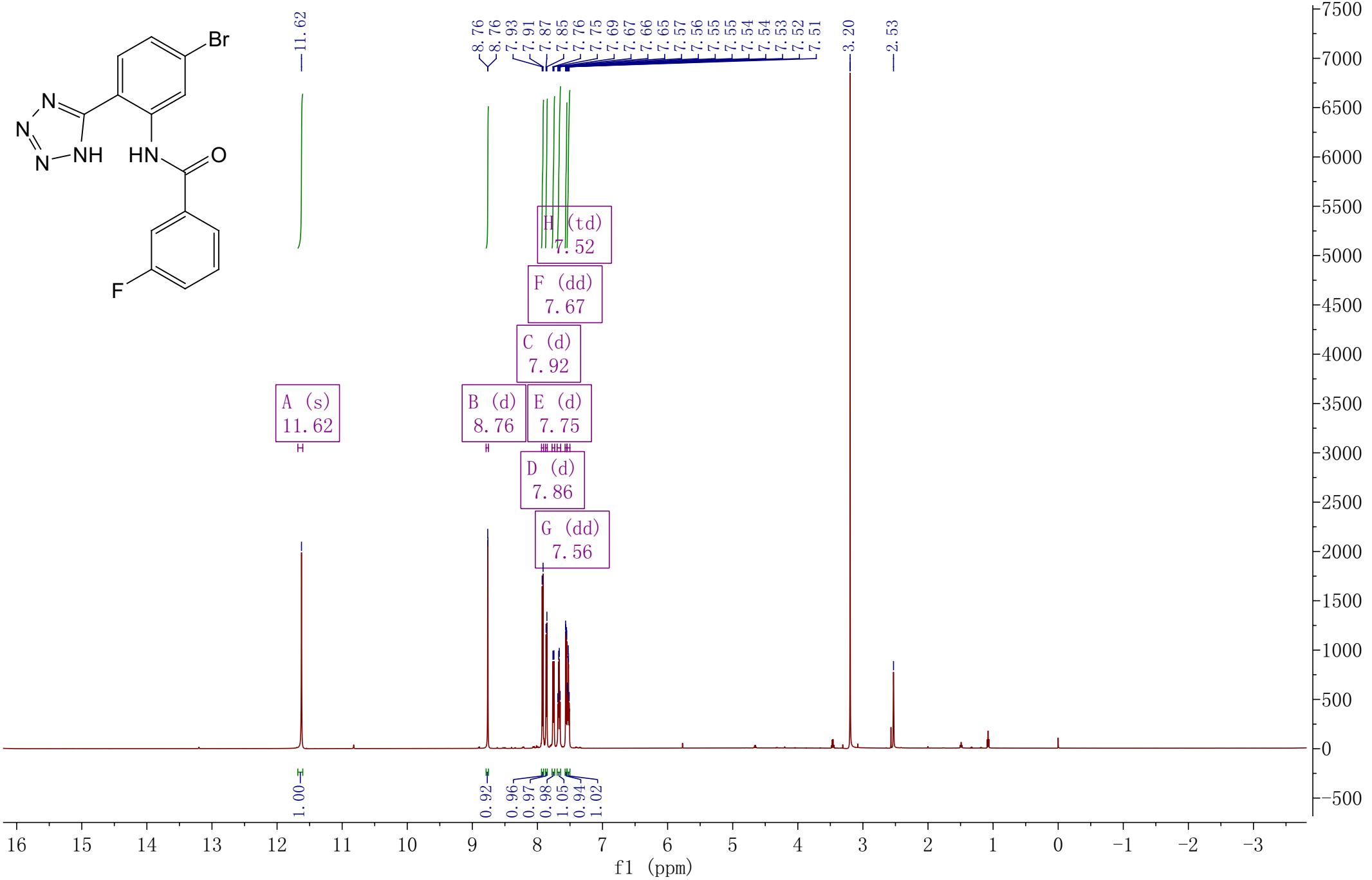


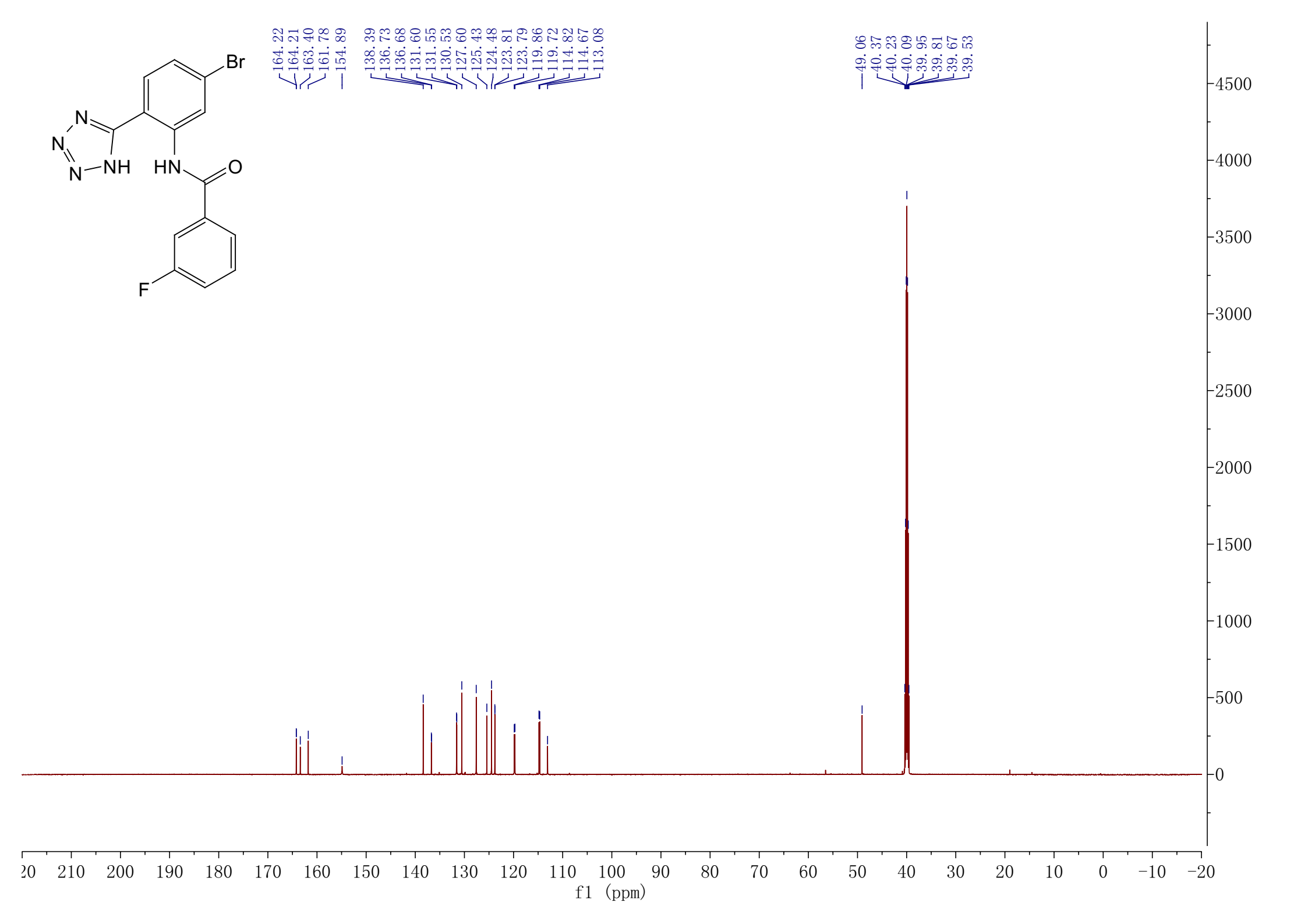
^{1}H NMR (600 MHz, DMSO) δ 11.48 (d, *J* = 2.4 Hz, 1H), 8.81 (d, *J* = 1.4 Hz, 1H), 7.95 (d, *J* = 8.4 Hz, 1H), 7.91 (td, *J* = 7.6, 1.4 Hz, 1H), 7.69 (td, *J* = 7.3, 1.5 Hz, 1H), 7.63 (dd, *J* = 8.4, 1.9 Hz, 1H), 7.44 (dt, *J* = 15.0, 8.1 Hz, 2H).



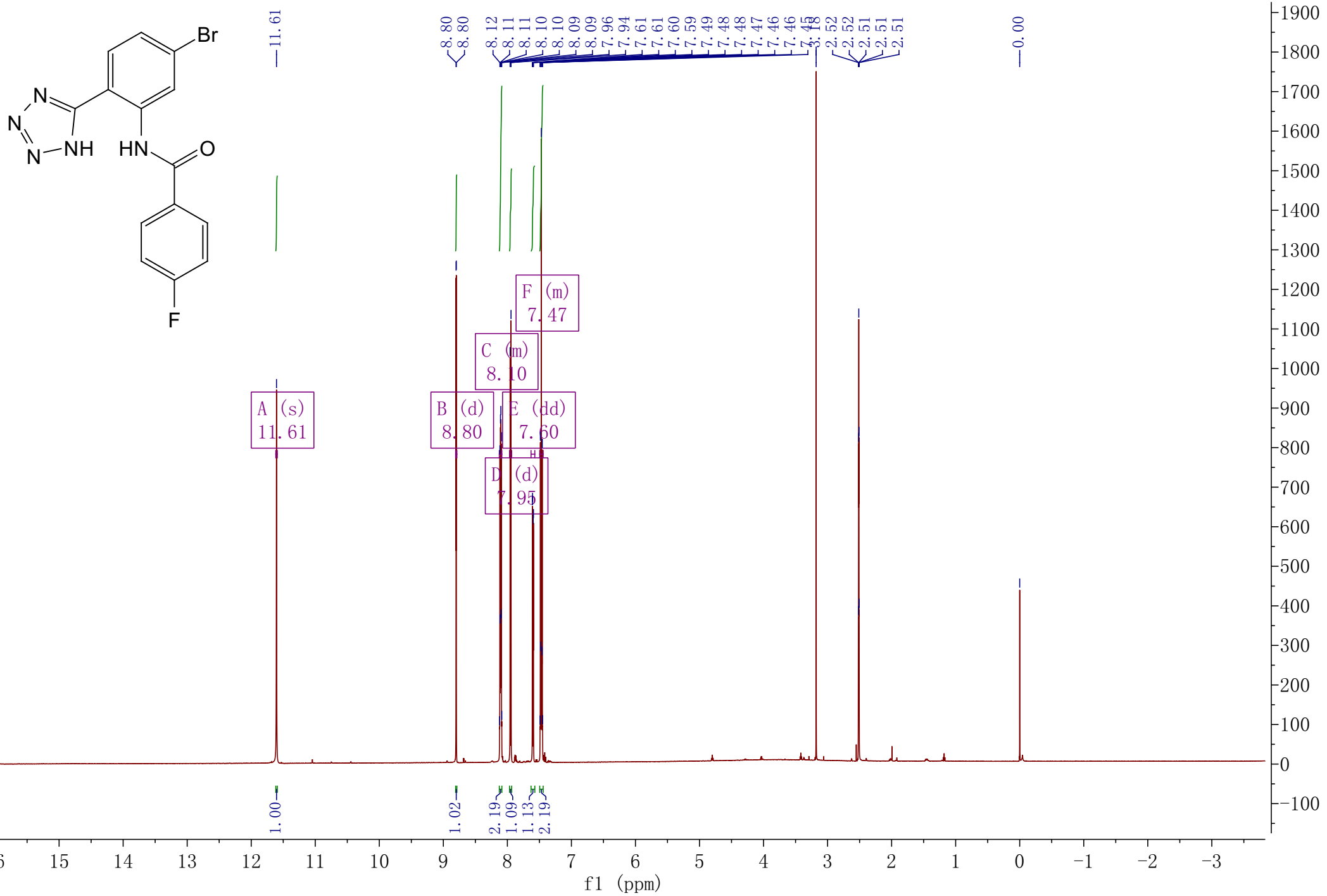

Br
N
N
NH
HN
O
F
162.86
162.85
160.66
159.00
154.78
138.21
134.57
134.51
131.01
131.00
130.86
127.84
125.51
125.49
125.29
124.95
123.29
123.21
117.22
117.07
113.46
40.39
40.25
40.11
39.97
39.83
39.69
39.55
4000
3500
3000
2500
2000
1500
1000
500
0
220
210
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
-10
-20
f1 (ppm)

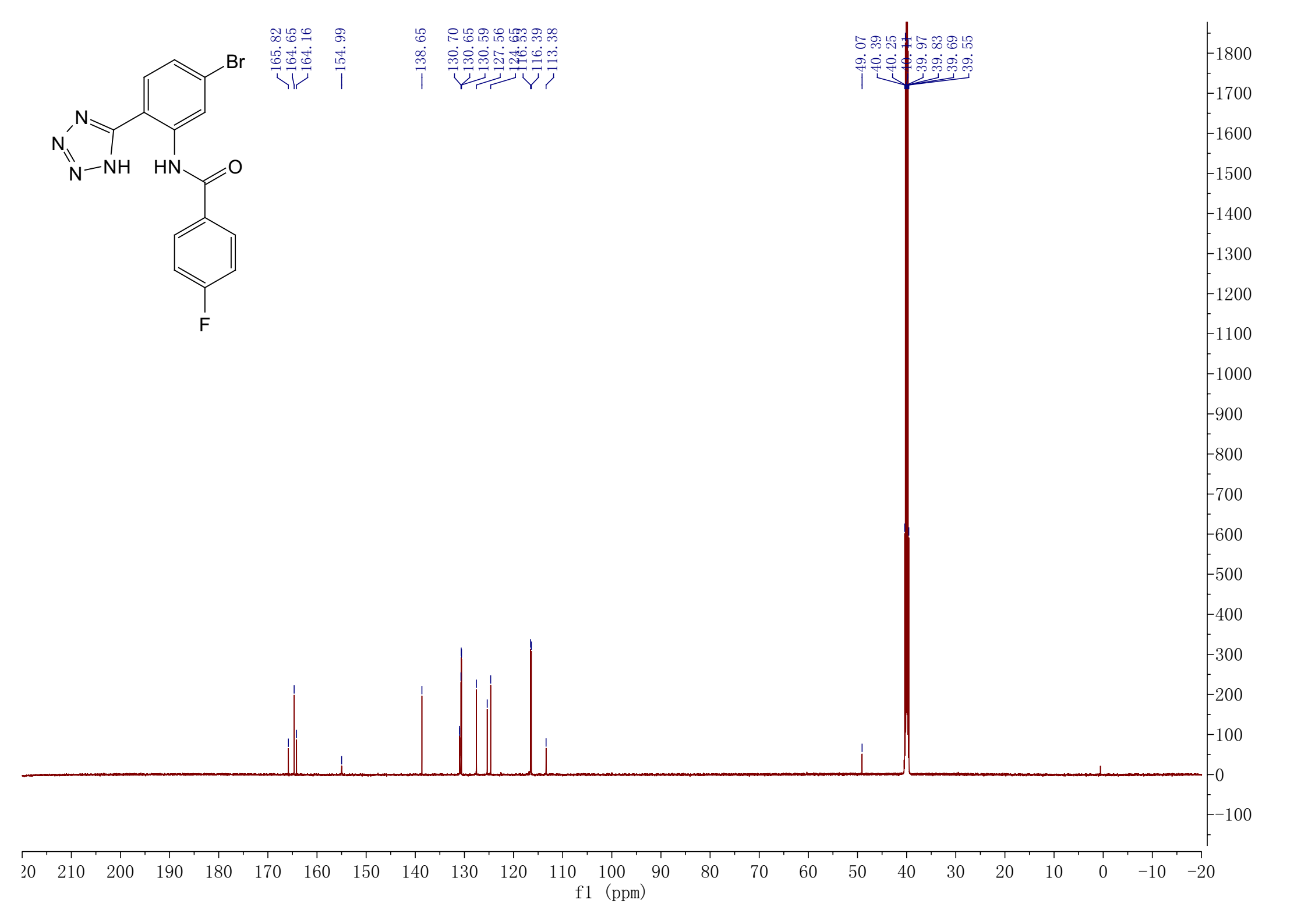
^{1}H NMR (600 MHz, DMSO) δ 11.62 (s, 1H), 8.76 (d, *J* = 1.8 Hz, 1H), 7.92 (d, *J* = 8.4 Hz, 1H), 7.86 (d, *J* = 7.7 Hz, 1H), 7.75 (d, *J* = 9.6 Hz, 1H), 7.67 (dd, *J* = 13.8, 7.9 Hz, 1H), 7.56 (dd, *J* = 8.4, 1.9 Hz, 1H), 7.52 (td, *J* = 8.4, 2.2 Hz, 1H).



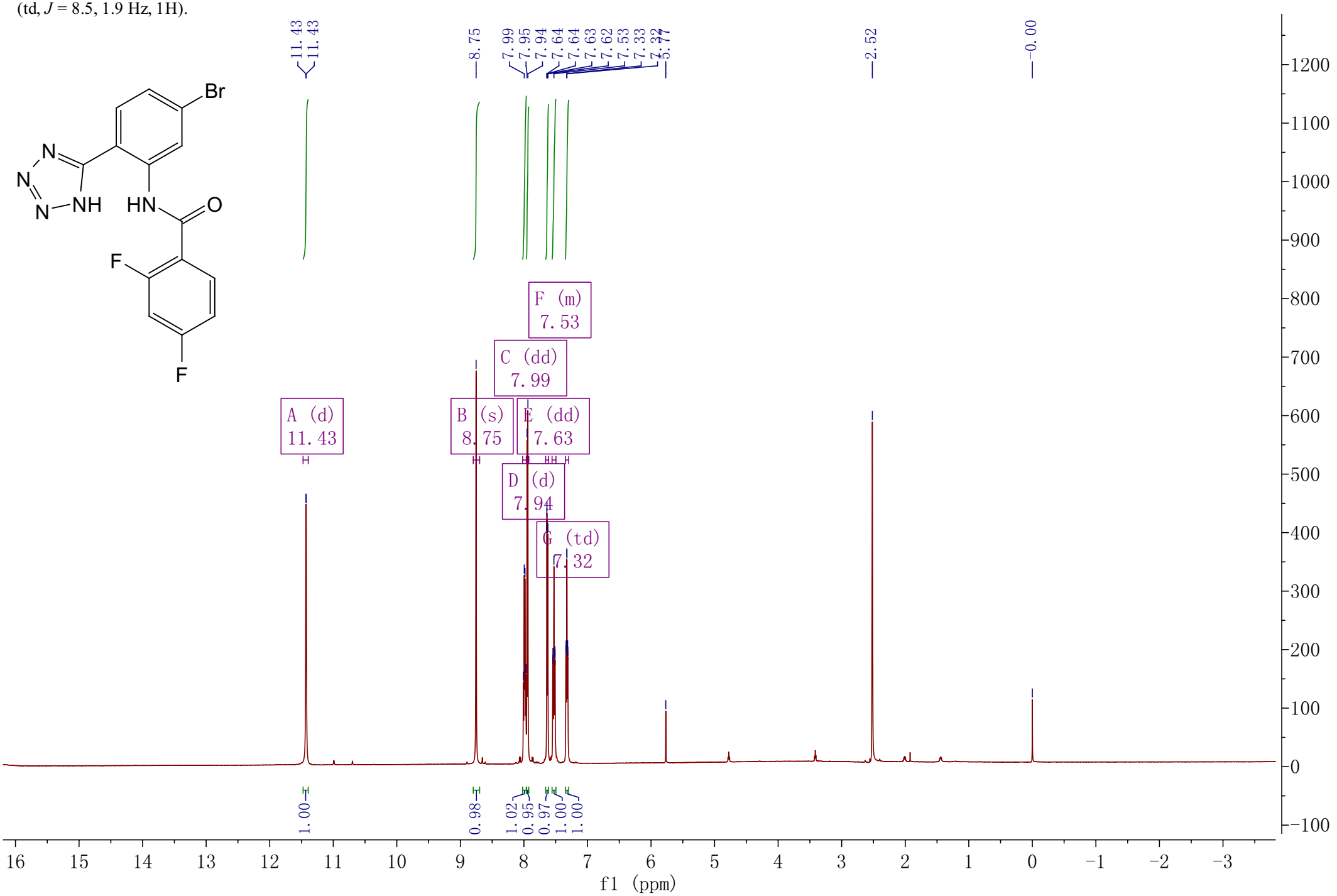

Br
N
N
NH
HN
O
F
164.22
164.21
163.40
161.78
154.89
138.39
136.73
136.68
131.60
131.55
130.53
127.60
125.43
124.48
123.81
123.79
119.86
119.72
114.82
114.67
113.08
49.06
40.37
40.23
40.09
39.95
39.81
39.67
39.53
4500
4000
3500
3000
2500
2000
1500
1000
500
0
220
210
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
-10
-20
f1 (ppm)

^{1}H NMR (600 MHz, DMSO) δ 11.61 (s, 1H), 8.80 (d, *J* = 2.0 Hz, 1H), 8.13 – 8.09 (m, 2H), 7.95 (d, *J* = 8.4 Hz, 1H), 7.60 (dd, *J* = 8.4, 2.0 Hz, 1H), 7.49 – 7.44 (m, 2H).

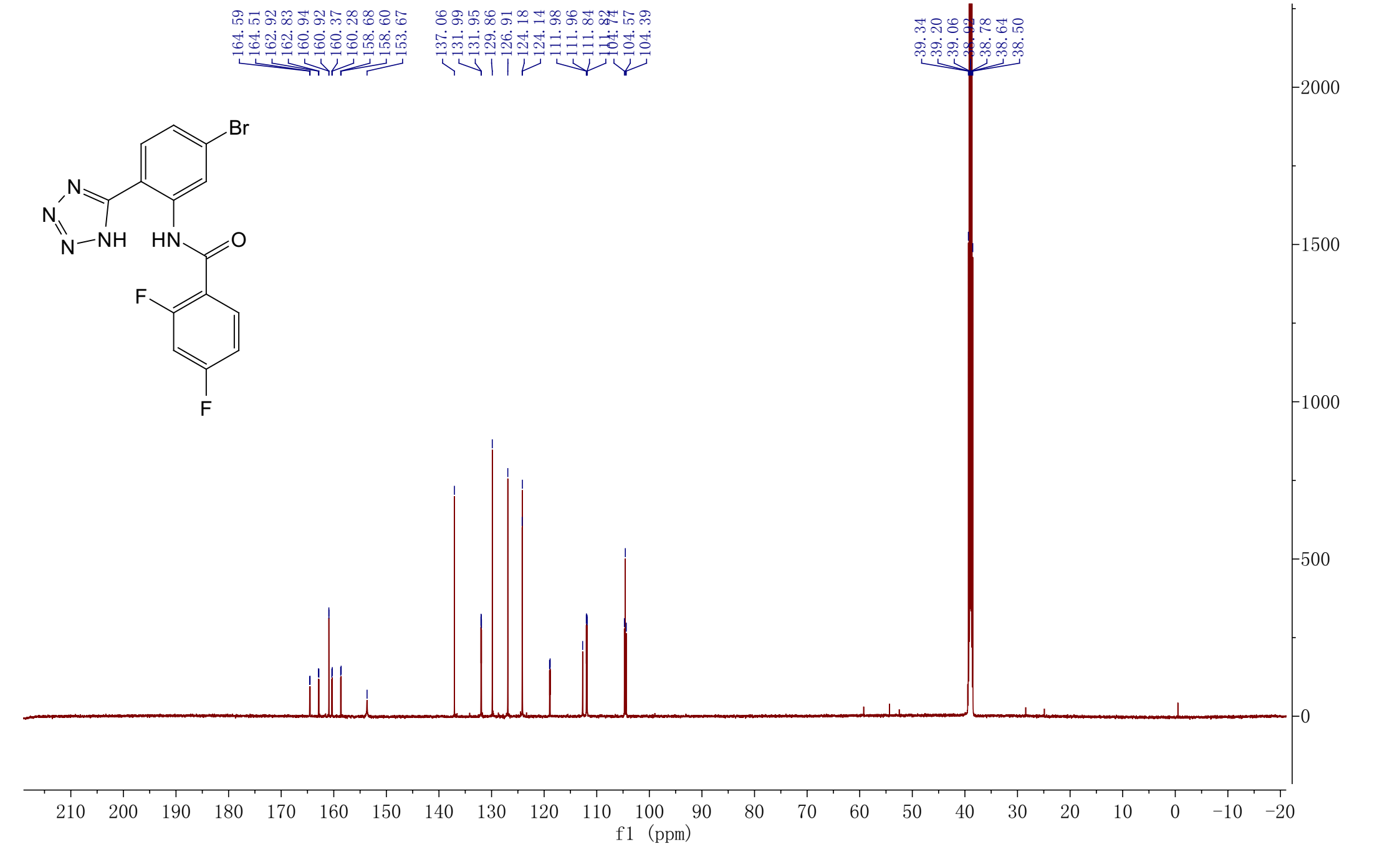



Br
N
N
NH
HN
O
F
165.82
164.65
164.16
154.99
138.65
130.70
130.65
130.59
127.56
124.65
124.53
116.39
113.38
49.07
40.39
40.25
40.11
39.97
39.83
39.69
39.55
f1 (ppm)

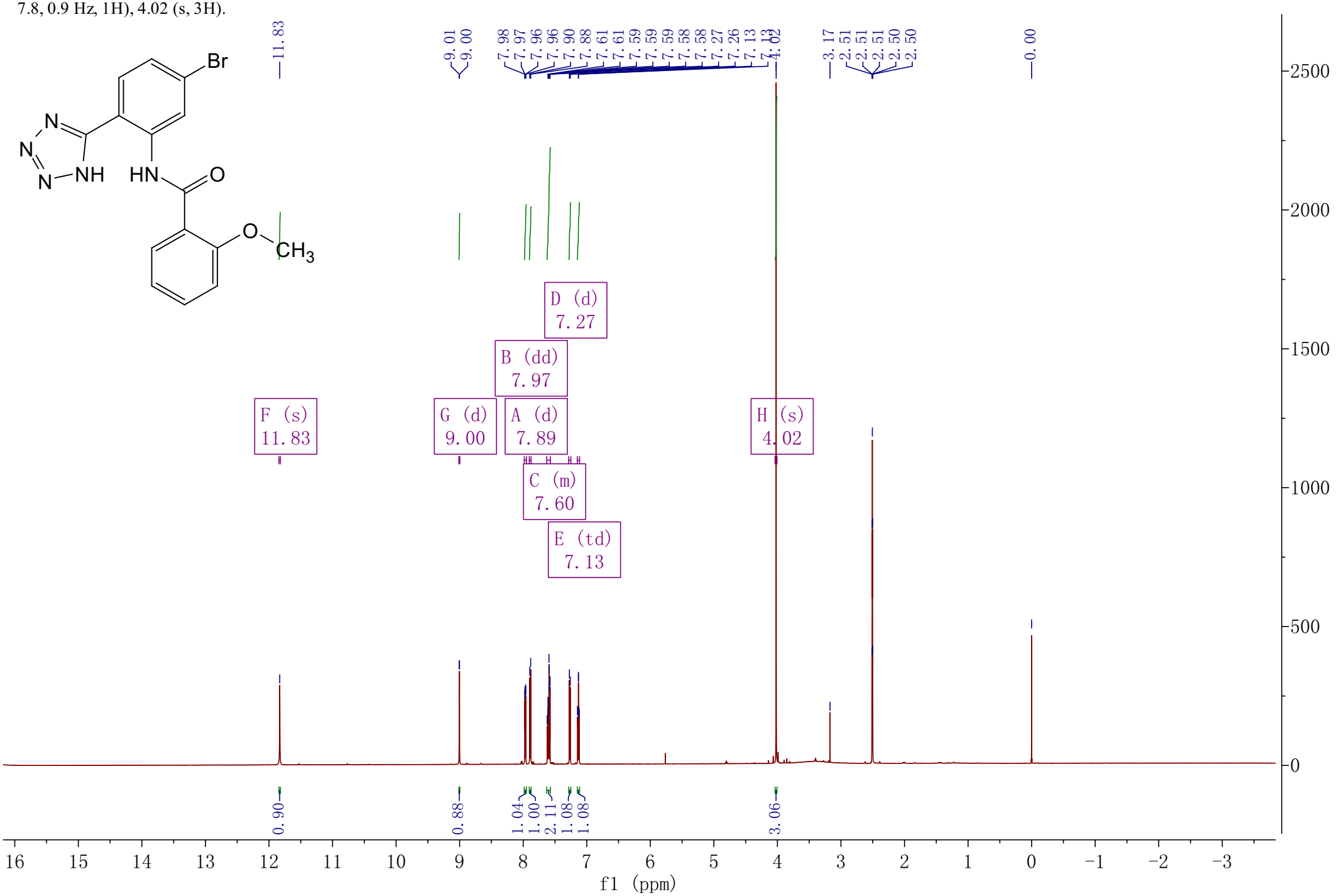
^{1}H NMR (600 MHz, DMSO) δ 11.43 (d, *J* = 2.1 Hz, 1H), 8.75 (s, 1H), 7.99 (dd, *J* = 15.3, 8.4 Hz, 1H), 7.94 (d, *J* = 8.4 Hz, 1H), 7.63 (dd, *J* = 8.4, 1.6 Hz, 1H), 7.56 – 7.50 (m, 1H), 7.32 (td, *J* = 8.5, 1.9 Hz, 1H).



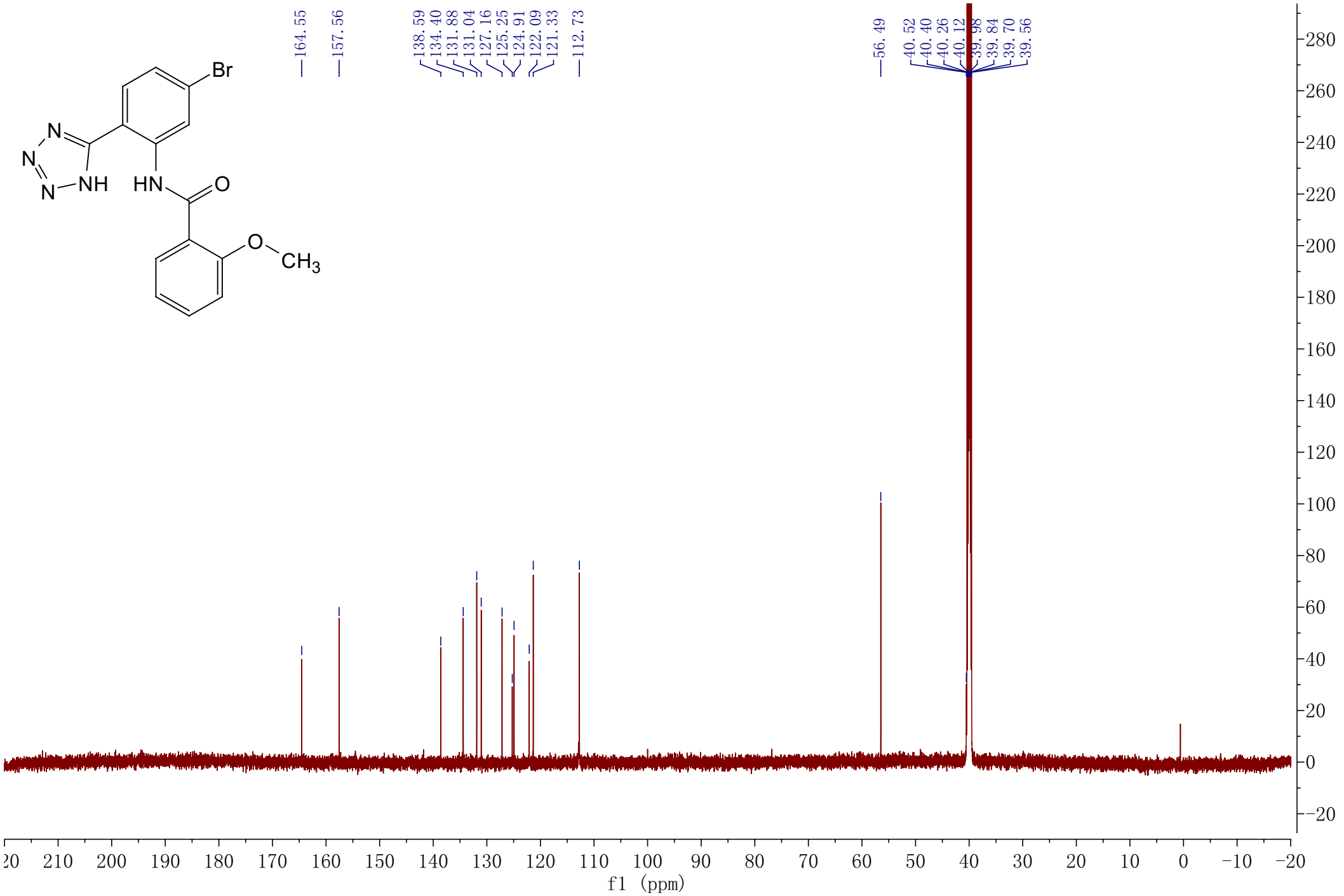
^{13}C NMR (151 MHz, DMSO) δ 163.71 (dd, *J* = 252.4, 12.5 Hz), 160.93 (d, *J* = 1.8 Hz), 159.48 (dd, *J* = 253.8, 13.1 Hz), 153.67 (s), 137.06 (s), 131.97 (dd, *J* = 10.6, 3.4 Hz), 129.86 (s), 126.91 (s), 124.16 (d, *J* = 7.1 Hz), 118.92 (dd, *J* = 12.8, 3.6 Hz), 112.68 (s), 111.90 (dd, *J* = 21.7, 3.4 Hz), 104.57 (t, *J* = 26.6 Hz).



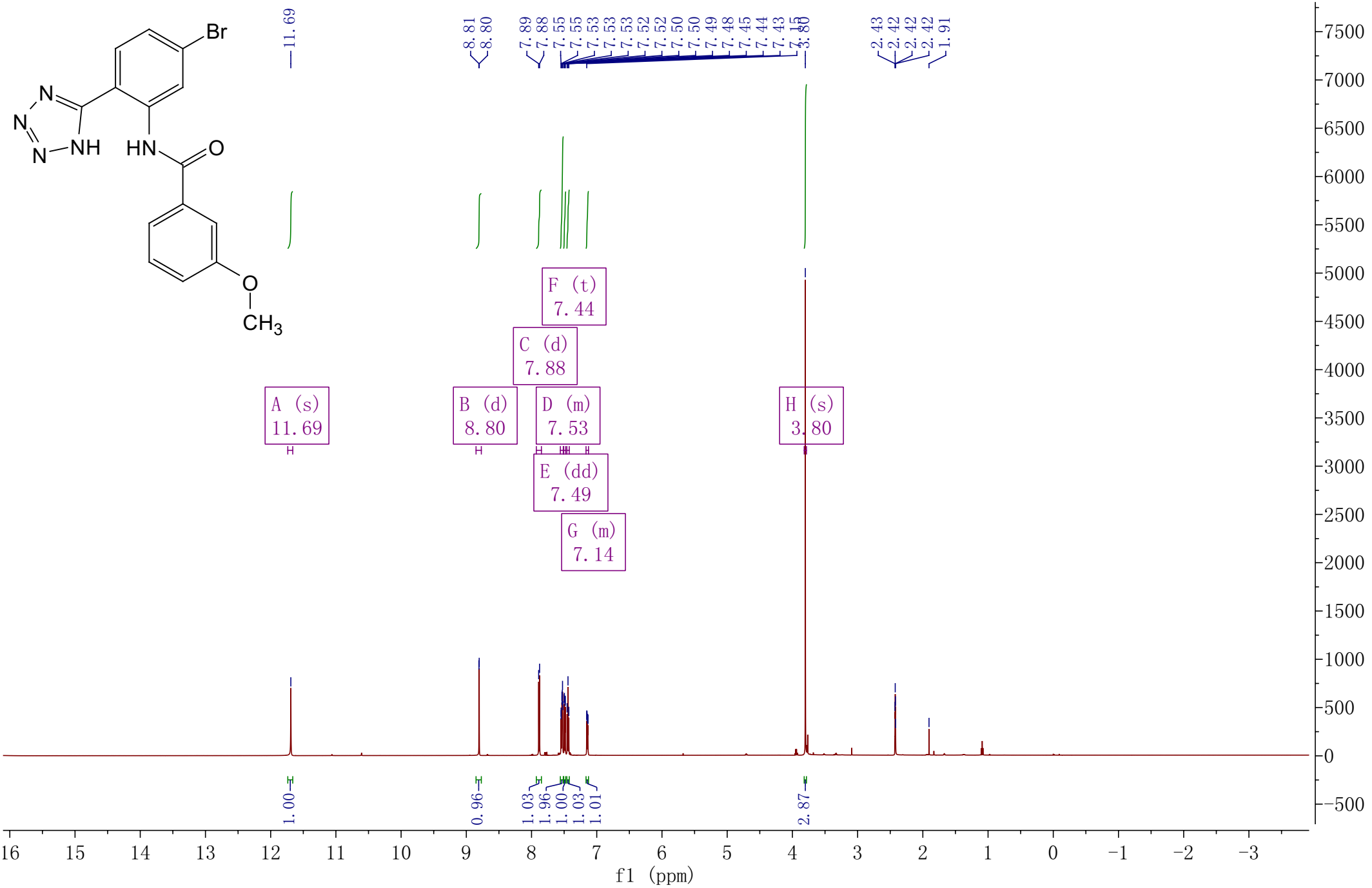
^{1}H NMR (600 MHz, DMSO) δ 11.83 (s, 1H), 9.00 (d, *J* = 1.9 Hz, 1H), 7.97 (dd, *J* = 7.8, 1.8 Hz, 1H), 7.89 (d, *J* = 8.4 Hz, 1H), 7.63 – 7.57 (m, 2H), 7.27 (d, *J* = 8.1 Hz, 1H), 7.13 (td, *J* = 7.8, 0.9 Hz, 1H), 4.02 (s, 3H).



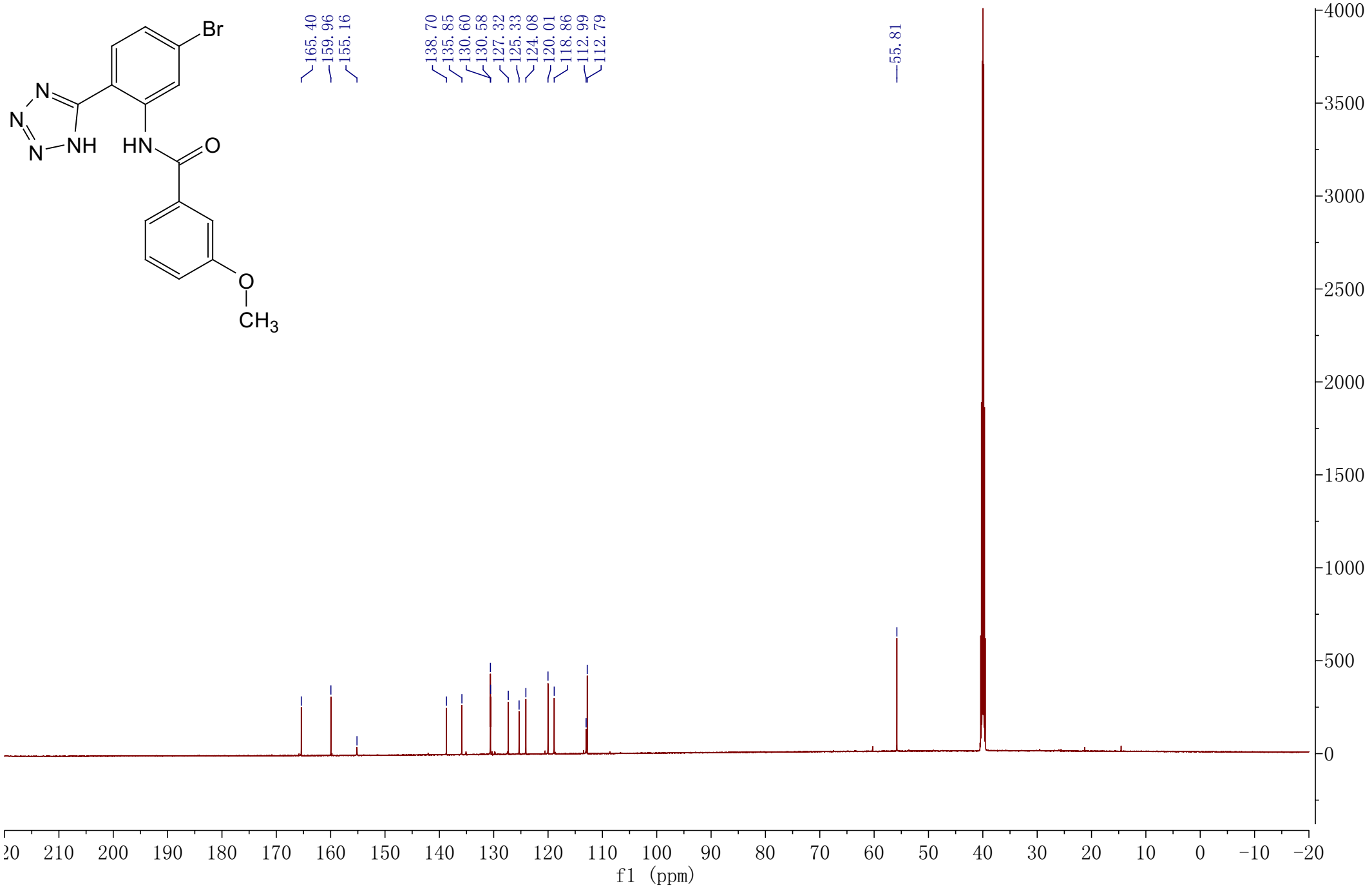
^{13}C NMR (151 MHz, DMSO) δ 164.55, 157.56, 138.59, 134.40, 131.88, 131.04, 127.16, 125.25, 124.91, 122.09, 121.33, 112.73, 56.49.



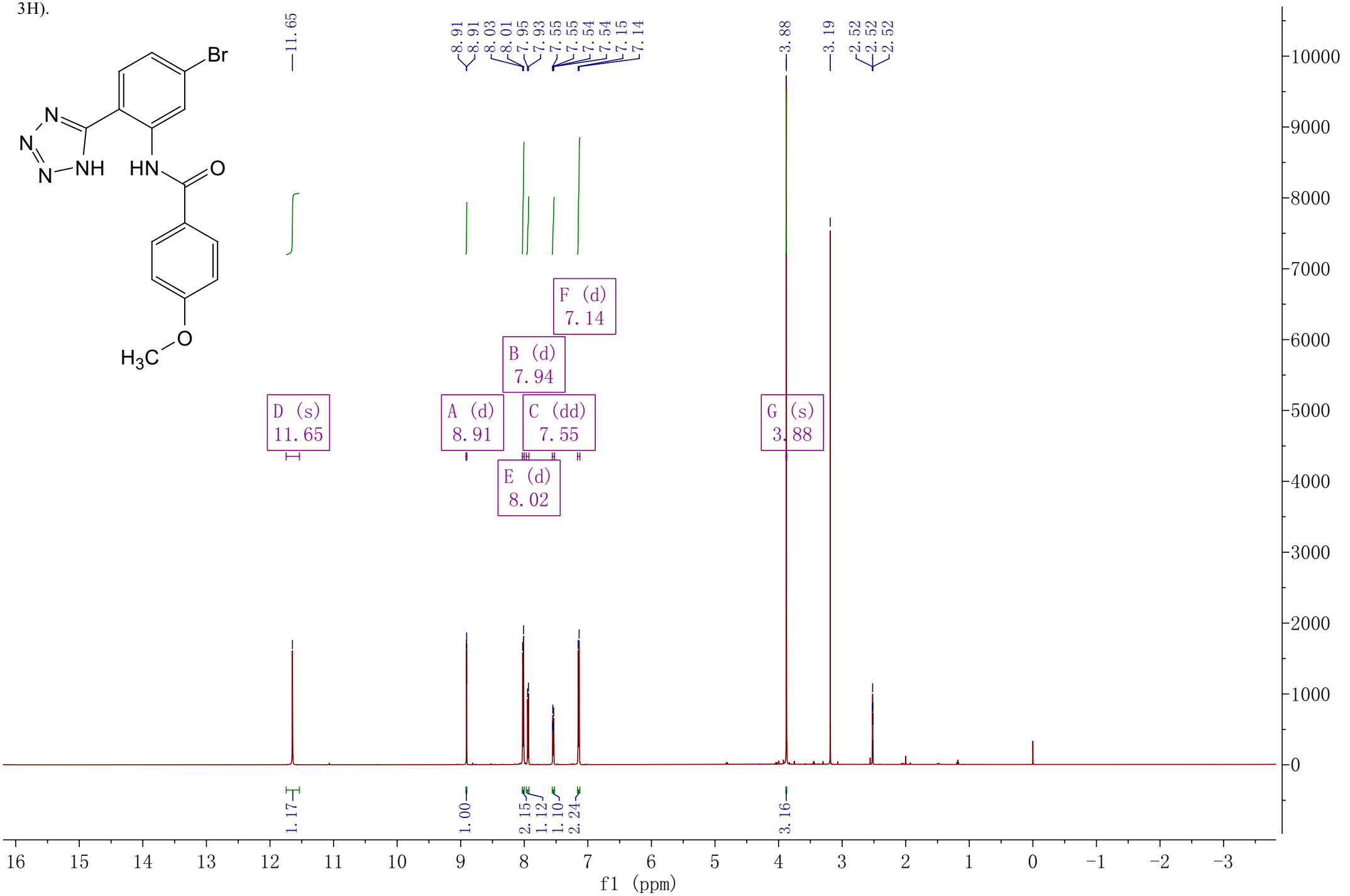
^{1}H NMR (600 MHz, DMSO) δ 11.69 (s, 1H), 8.80 (d, *J* = 2.0 Hz, 1H), 7.88 (d, *J* = 8.4 Hz, 1H), 7.56 – 7.51 (m, 2H), 7.49 (dd, *J* = 8.4, 2.0 Hz, 1H), 7.44 (t, *J* = 7.9 Hz, 1H), 7.16 – 7.13 (m, 1H), 3.80 (s, 3H).



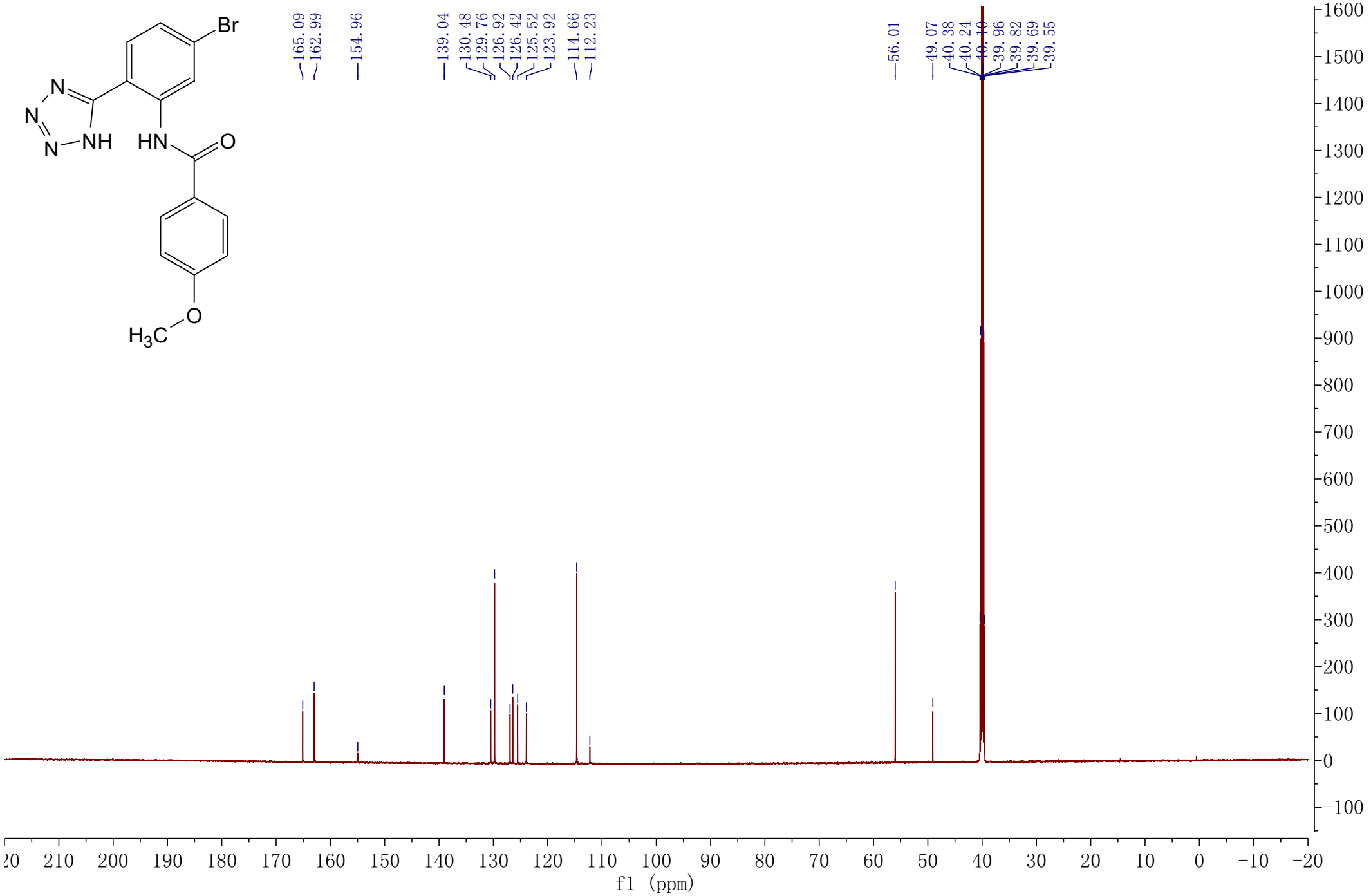
^{13}C NMR (151 MHz, DMSO) δ 165.40, 159.96, 155.16, 138.70, 135.85, 130.60, 130.58, 127.32, 125.33, 124.08, 120.01, 118.86, 112.99, 112.79, 55.81.



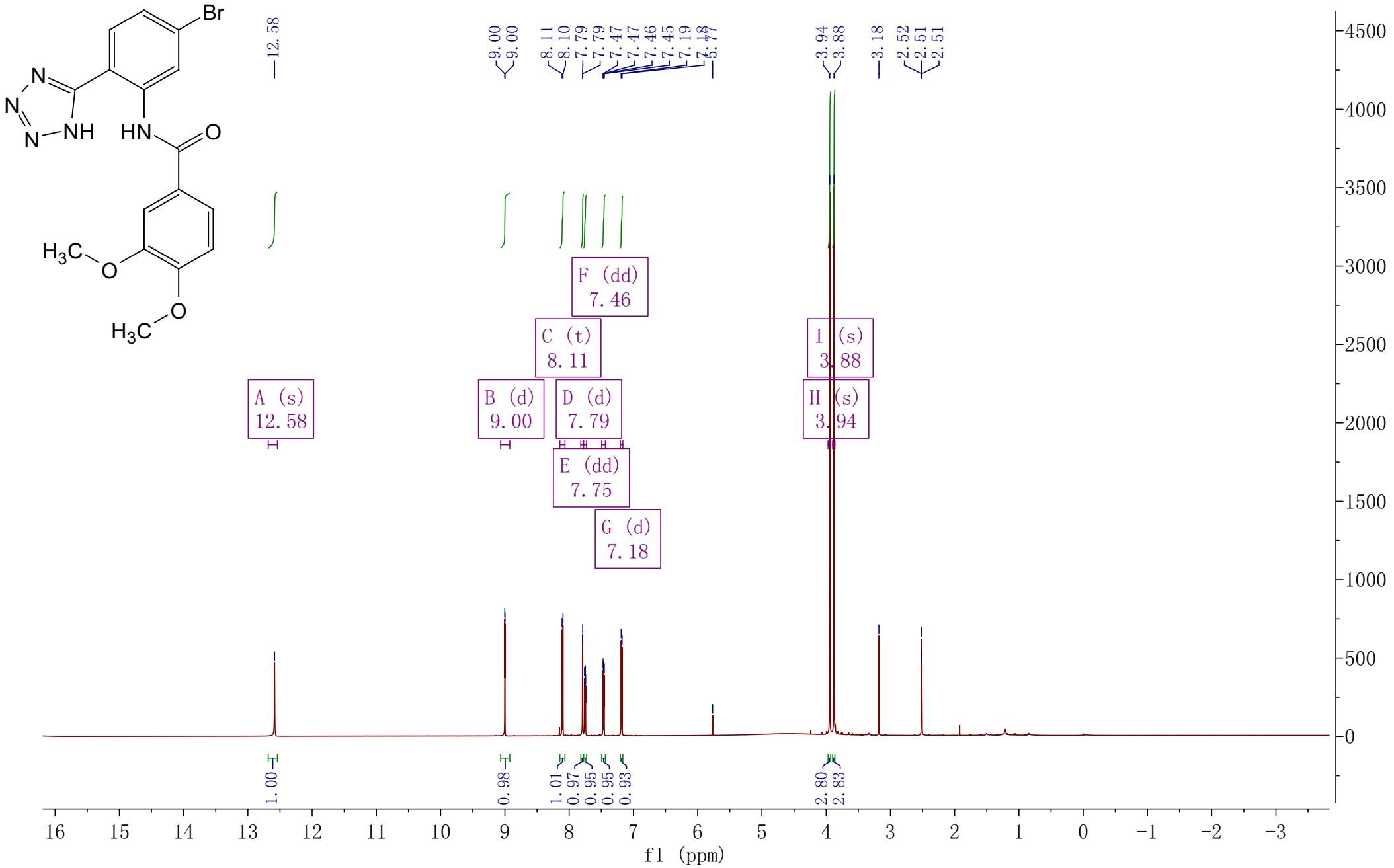
^{1}H NMR (600 MHz, DMSO) δ 11.65 (s, 1H), 8.91 (d, *J* = 2.0 Hz, 1H), 8.02 (d, *J* = 8.7 Hz, 2H), 7.94 (d, *J* = 8.4 Hz, 1H), 7.55 (dd, *J* = 8.4, 1.9 Hz, 1H), 7.14 (d, *J* = 8.7 Hz, 2H), 3.88 (s, 3H).



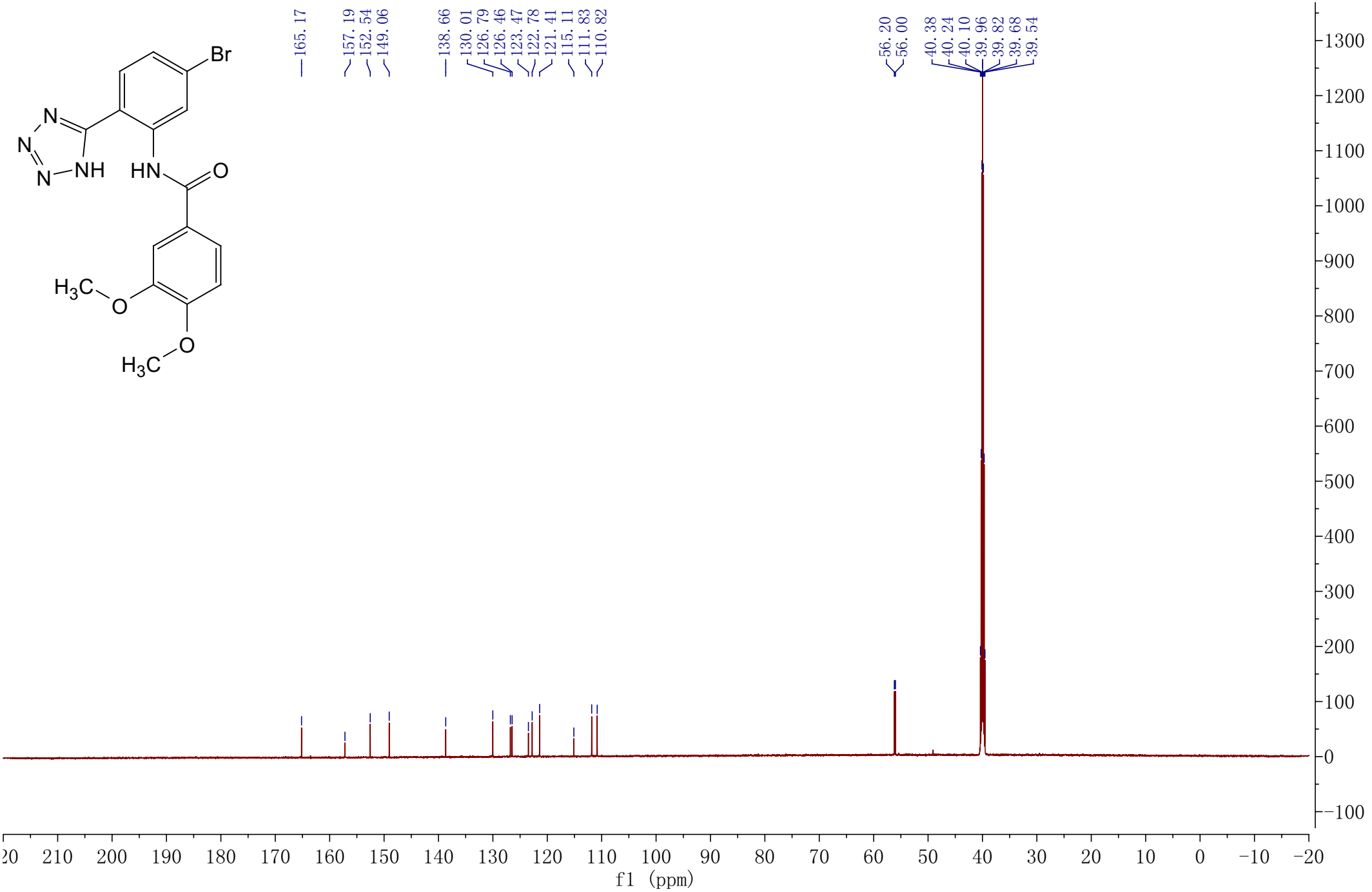
^{13}C NMR (151 MHz, DMSO) δ 165.09, 162.99, 154.96, 139.04, 130.48, 129.76, 126.92, 126.42, 125.52, 123.92, 114.66, 112.23, 56.01.



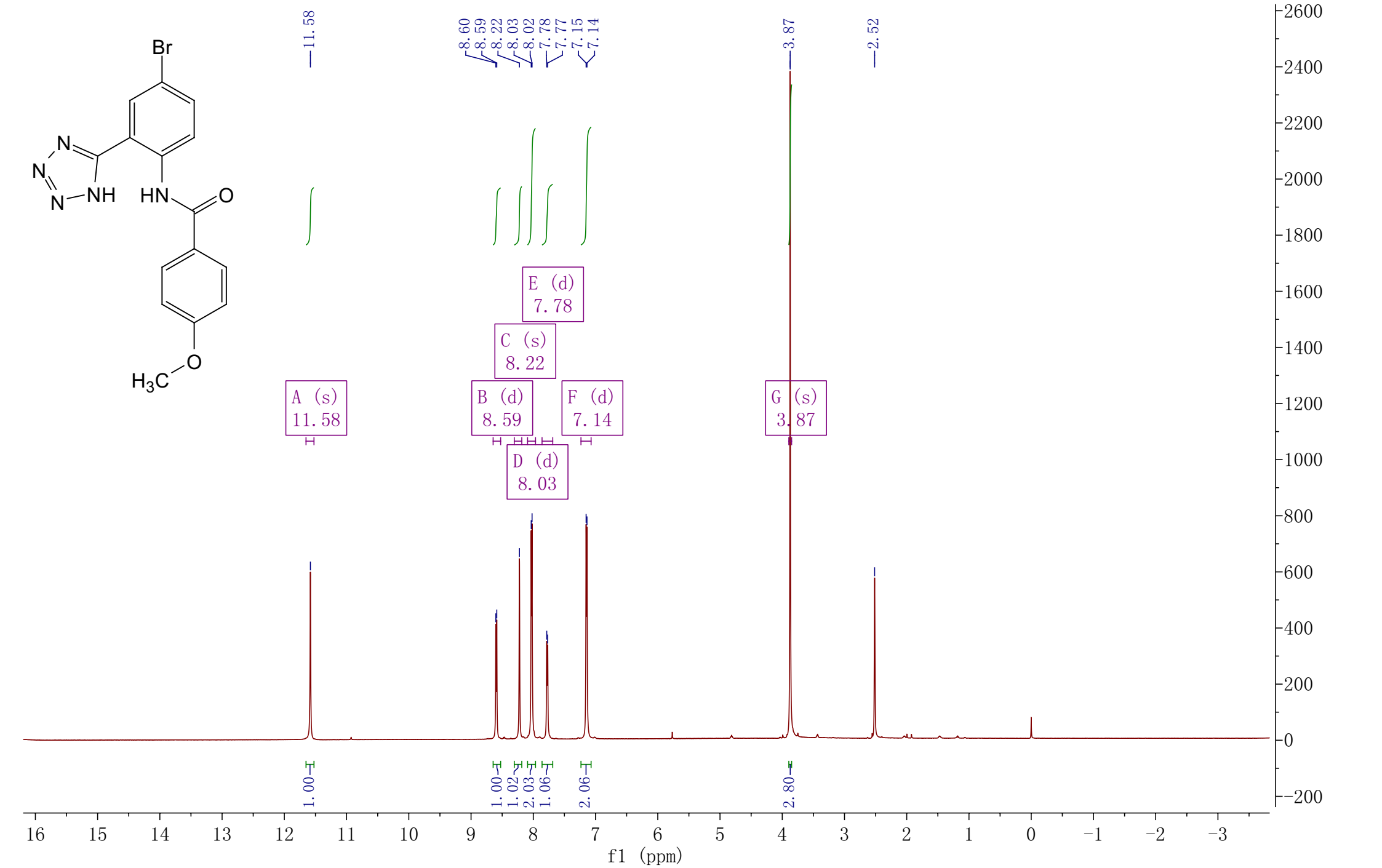
^{1}H NMR (600 MHz, DMSO) δ 12.58 (s, 1H), 9.00 (d, *J* = 2.0 Hz, 1H), 8.11 (t, *J* = 10.5 Hz, 1H), 7.79 (d, *J* = 2.0 Hz, 1H), 7.75 (dd, *J* = 8.4, 2.1 Hz, 1H), 7.46 (dd, *J* = 8.4, 2.1 Hz, 1H), 7.18 (d, *J* = 8.5 Hz, 1H), 3.94 (s, 3H), 3.88 (s, 3H).



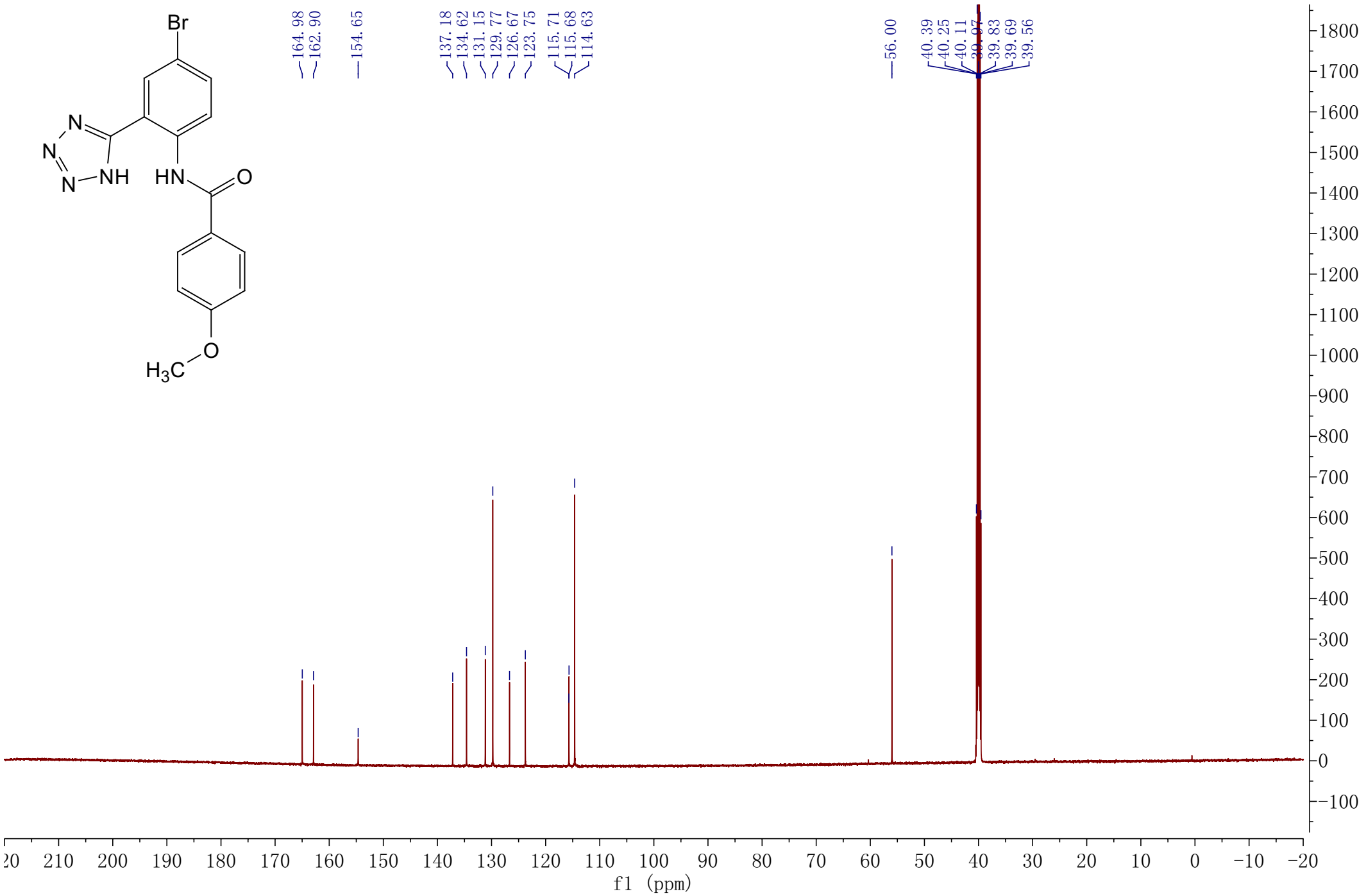
^{13}C NMR (151 MHz, DMSO) δ 165.17, 157.19, 152.54, 149.06, 138.66, 130.01, 126.79, 126.46, 123.47, 122.78, 121.41, 115.11, 111.83, 110.82, 56.20, 56.00.



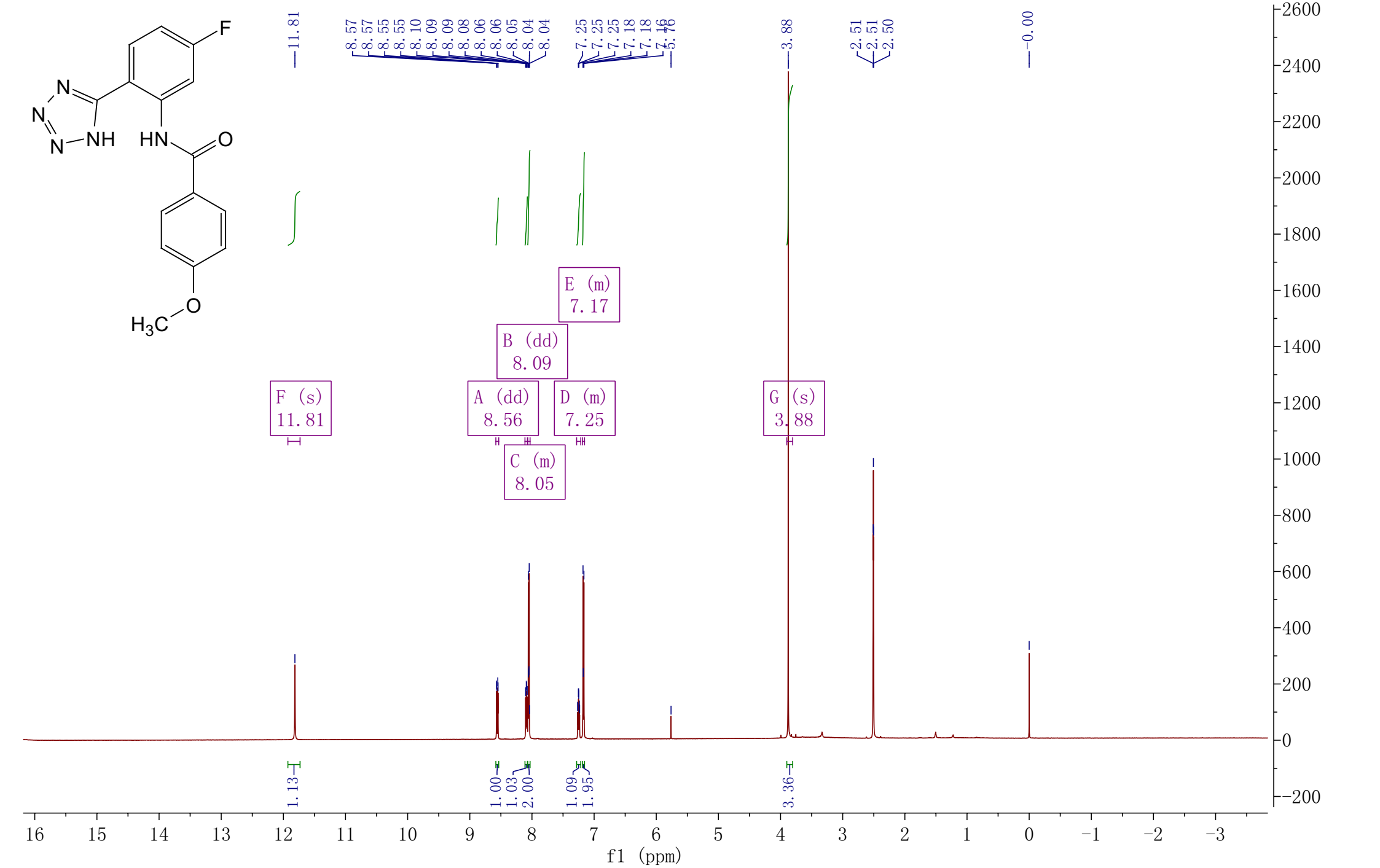
^{1}H NMR (600 MHz, DMSO) δ 11.58 (s, 1H), 8.59 (d, *J* = 8.9 Hz, 1H), 8.22 (s, 1H), 8.03 (d, *J* = 8.3 Hz, 2H), 7.78 (d, *J* = 8.5 Hz, 1H), 7.14 (d, *J* = 8.3 Hz, 2H), 3.87 (s, 3H).



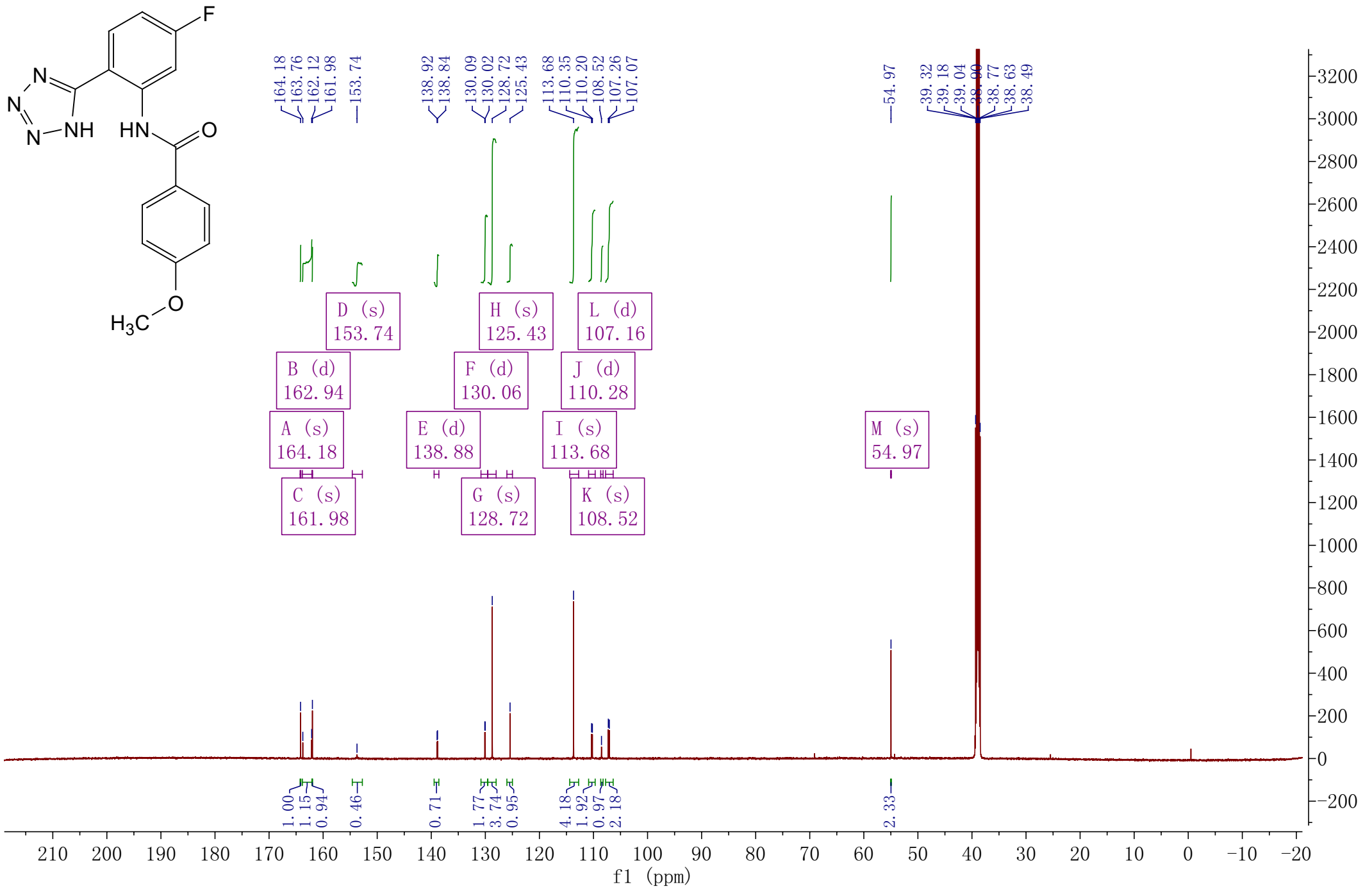
^{13}C NMR (151 MHz, DMSO) δ 164.98, 162.90, 154.65, 137.18, 134.62, 131.15, 129.77, 126.67, 123.75, 115.71, 115.68, 114.63, 56.00.



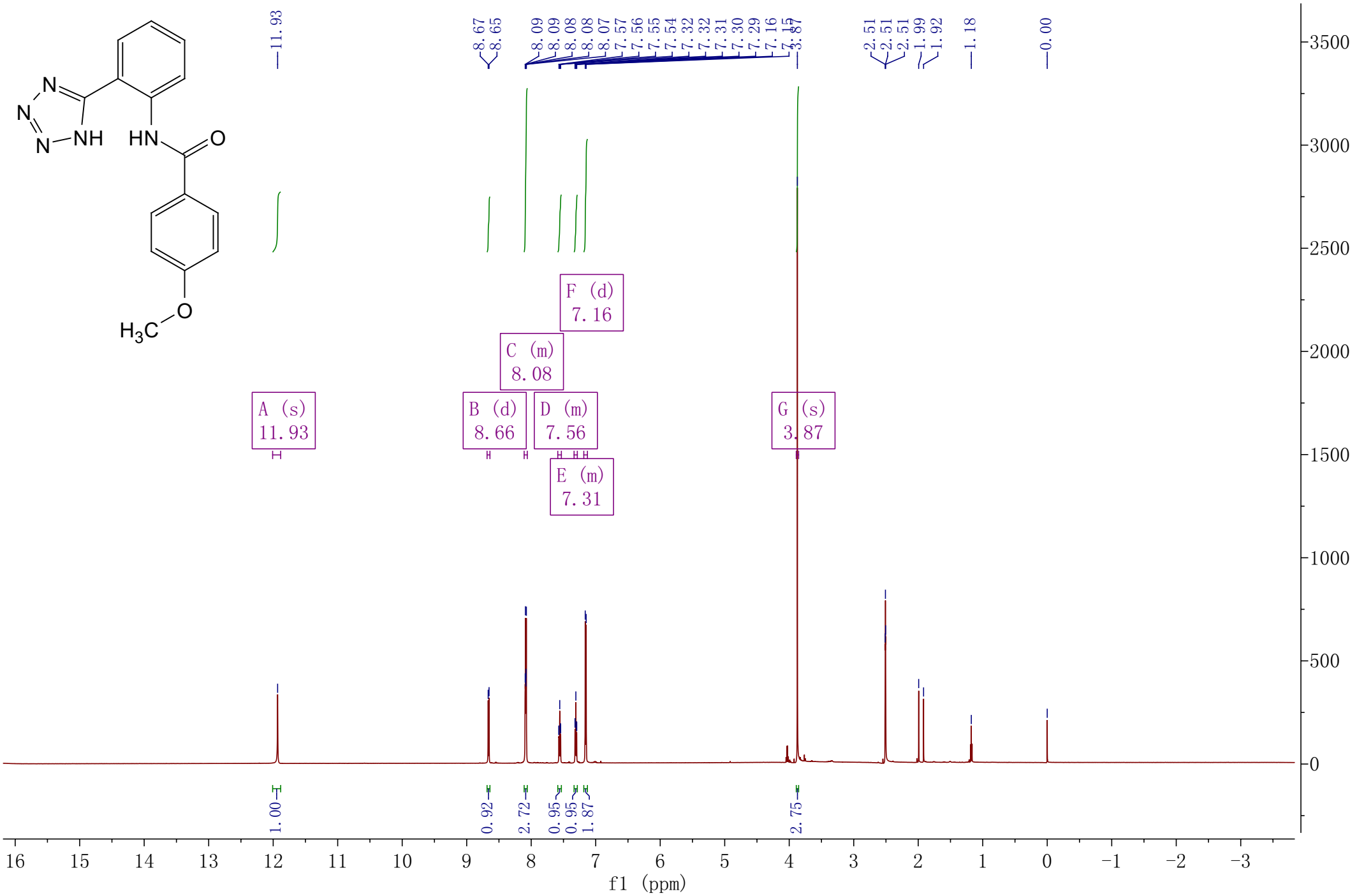
^{1}H NMR (600 MHz, DMSO) δ 11.81 (s, 1H), 8.56 (dd, *J* = 12.0, 2.7 Hz, 1H), 8.09 (dd, *J* = 8.8, 6.3 Hz, 1H), 8.07 – 8.03 (m, 2H), 7.28 – 7.21 (m, 1H), 7.19 – 7.15 (m, 2H), 3.88 (s, 3H).



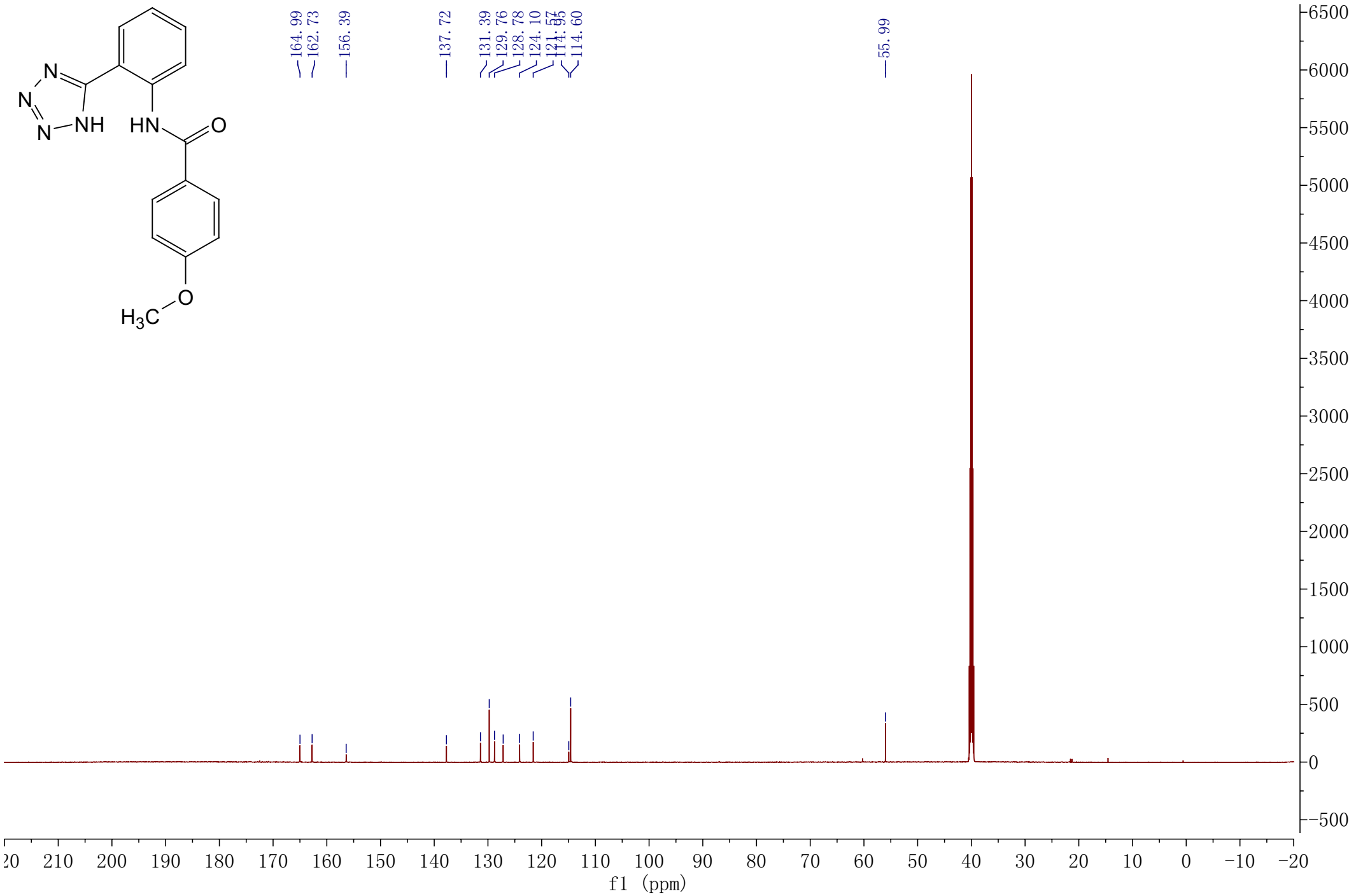
^{13}C NMR (151 MHz, DMSO) δ 164.18 (s), 162.94 (d, J = 247.2 Hz), 161.98 (s), 153.74 (s), 138.88 (d, J = 12.3 Hz), 130.06 (d, J = 10.6 Hz), 128.72 (s), 125.43 (s), 113.68 (s), 110.28 (d, J = 22.7 Hz), 108.52 (s), 107.16 (d, J = 28.2 Hz), 54.97 (s).



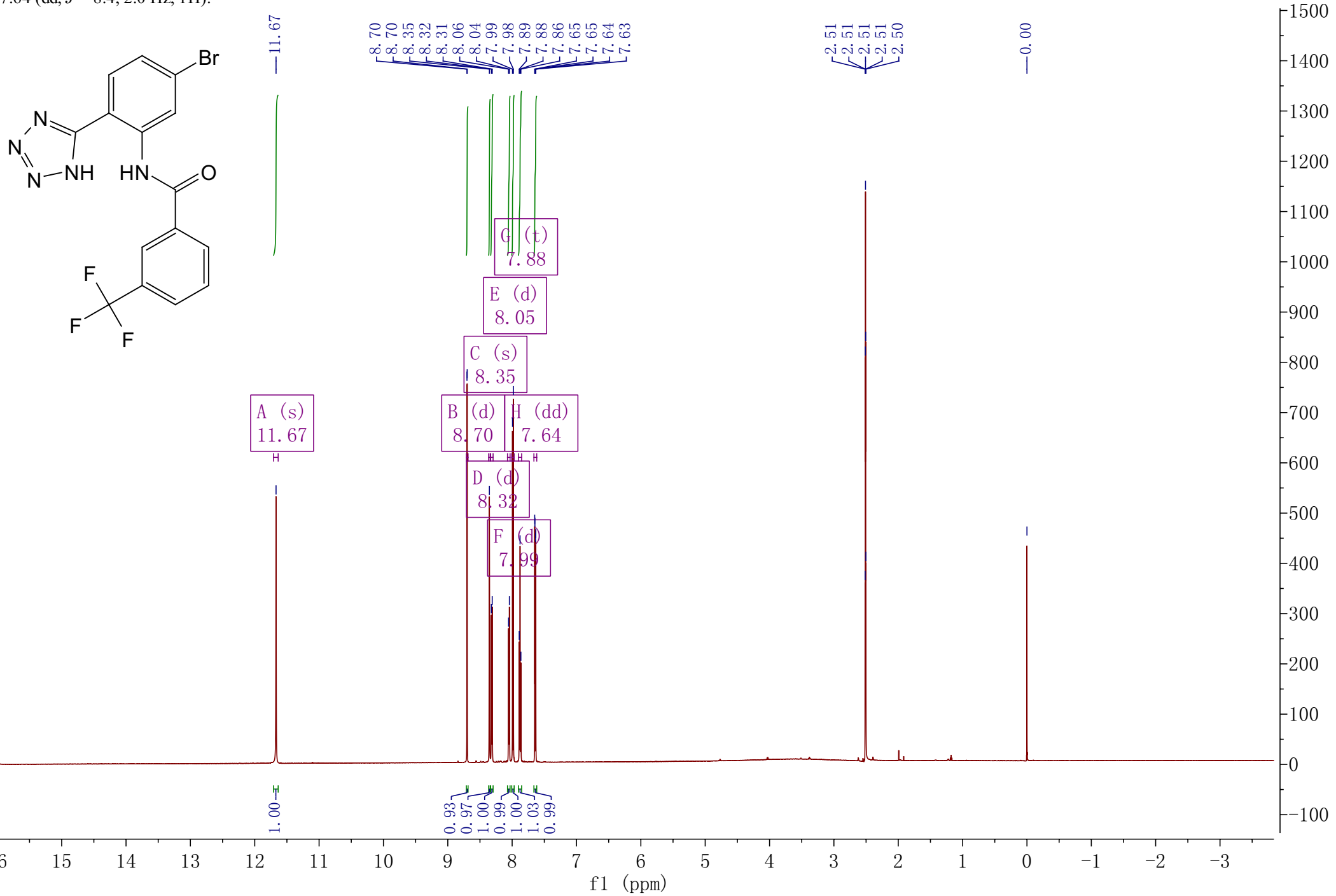
^{1}H NMR (600 MHz, DMSO) δ 11.93 (s, 1H), 8.66 (d, *J* = 8.1 Hz, 1H), 8.11 – 8.06 (m, 3H), 7.59 – 7.53 (m, 1H), 7.34 – 7.29 (m, 1H), 7.16 (d, *J* = 8.8 Hz, 2H), 3.87 (s, 3H).



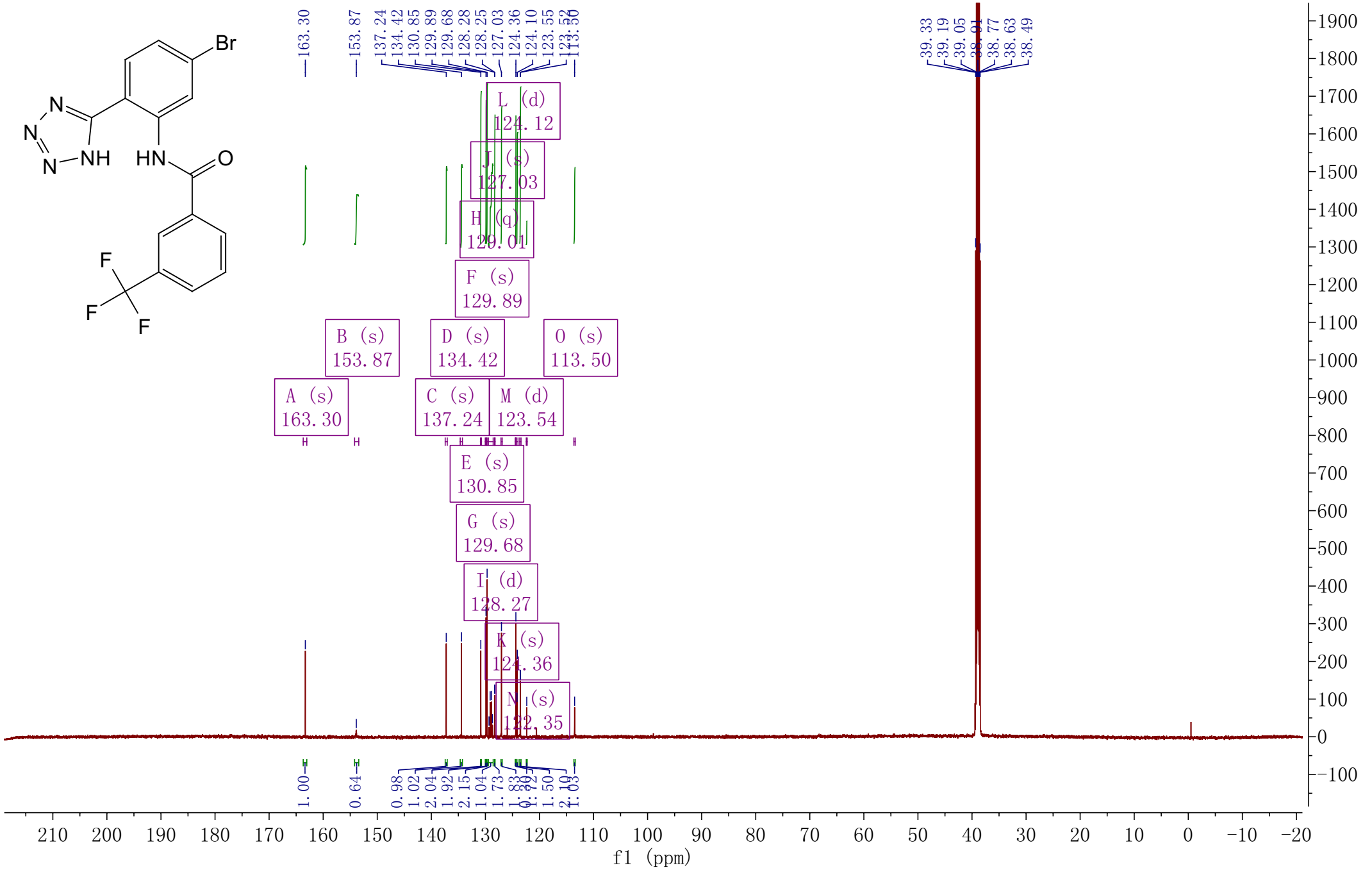
^{13}C NMR (151 MHz, DMSO) δ 164.99, 162.73, 156.39, 137.72, 131.39, 129.76, 128.78, 127.16, 124.10, 121.57, 114.95, 114.60, 55.99.



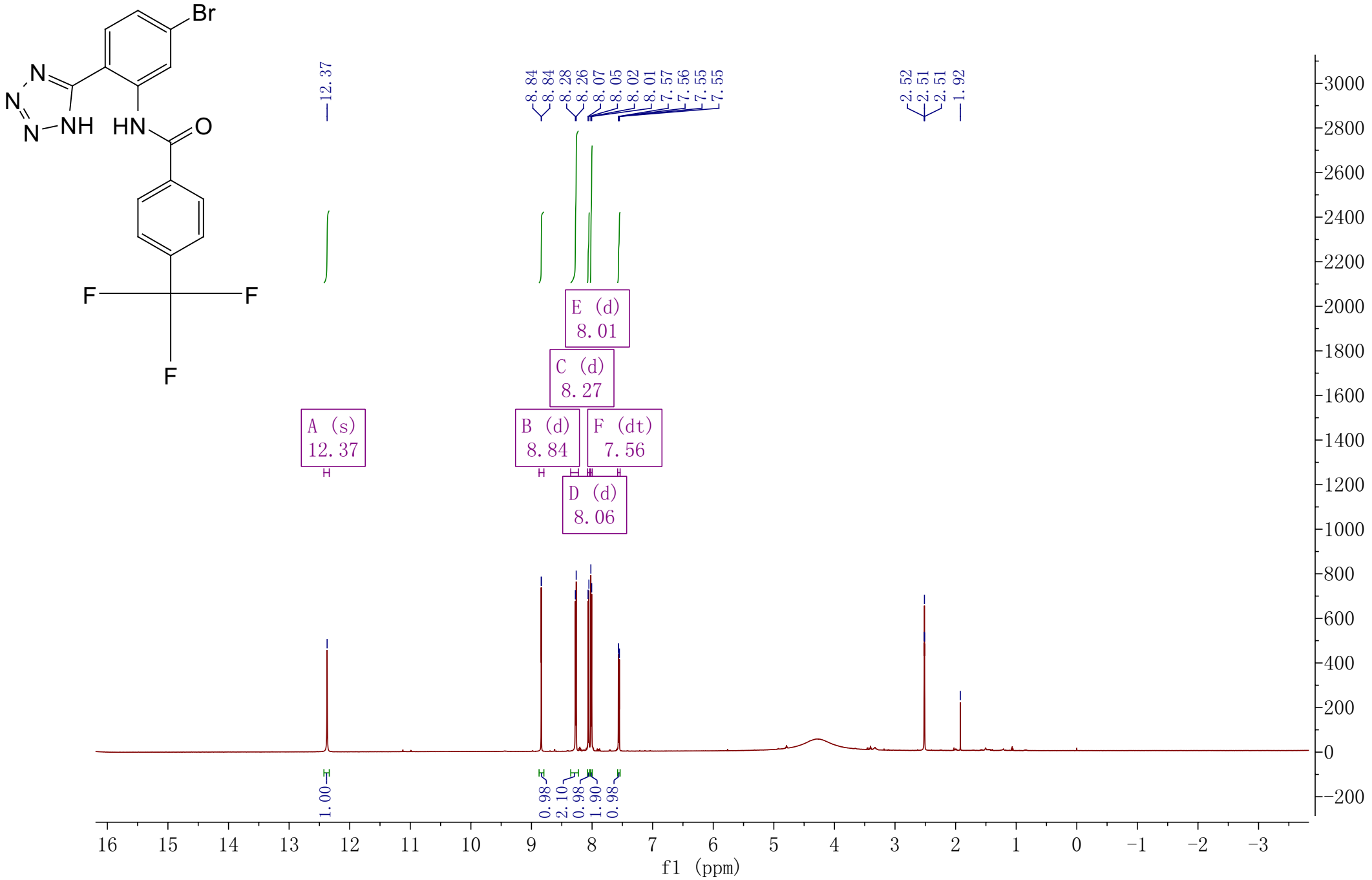
^{1}H NMR (600 MHz, DMSO) δ 11.67 (s, 1H), 8.70 (d, *J* = 2.0 Hz, 1H), 8.35 (s, 1H), 8.32 (d, *J* = 7.9 Hz, 1H), 8.05 (d, *J* = 7.8 Hz, 1H), 7.99 (d, *J* = 8.4 Hz, 1H), 7.88 (t, *J* = 7.8 Hz, 1H), 7.64 (dd, *J* = 8.4, 2.0 Hz, 1H).



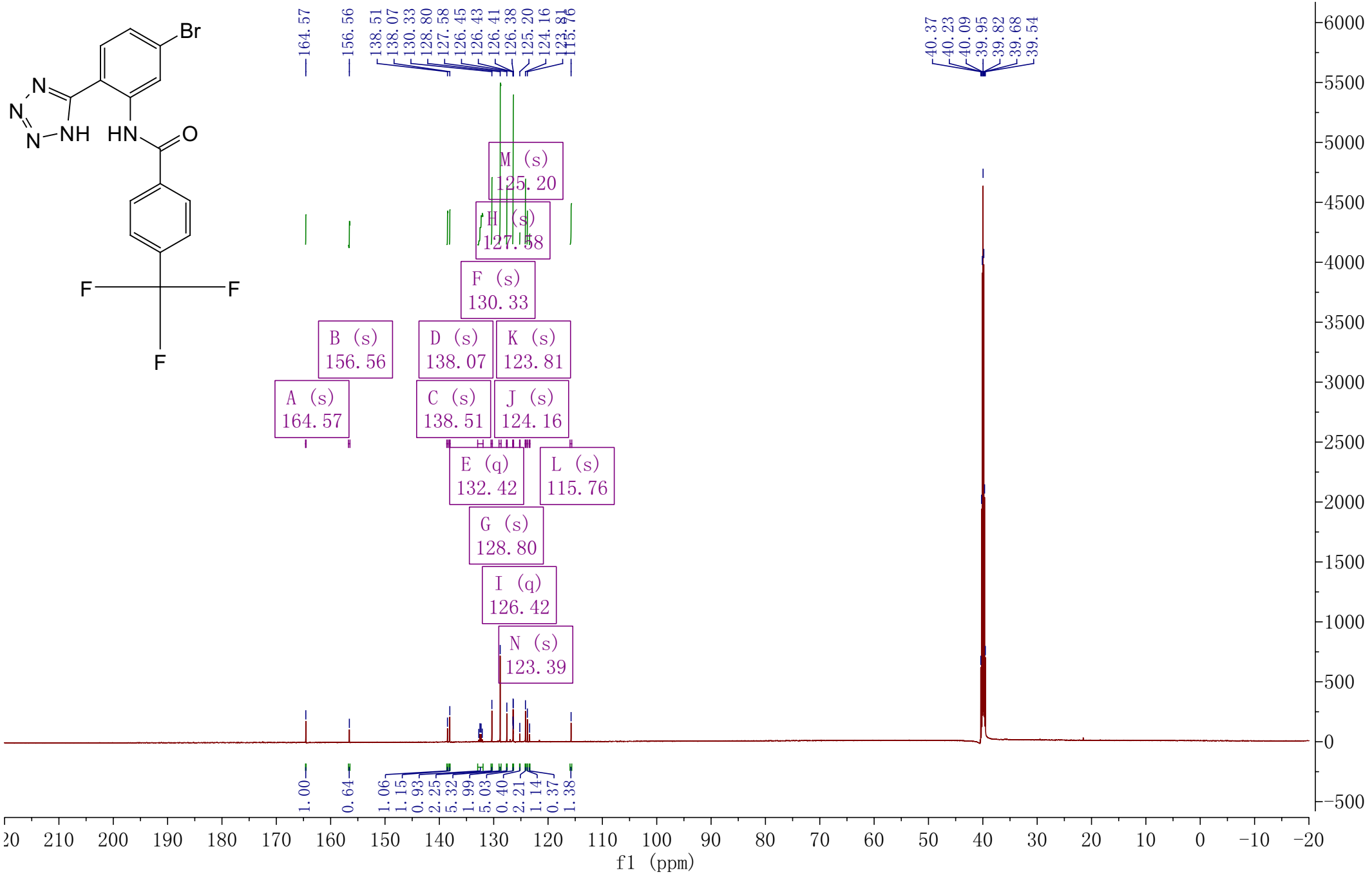
^{13}C NMR (151 MHz, DMSO) δ 163.30 (s), 153.87 (s), 137.24 (s), 134.42 (s), 130.85 (s), 129.89 (s), 129.68 (s), 129.01 (q, *J* = 32.2 Hz), 128.27 (d, *J* = 3.5 Hz), 127.03 (s), 124.36 (s), 124.12 (d, *J* = 8.2 Hz), 123.54 (d, *J* = 3.9 Hz), 122.35 (s), 113.50 (s).



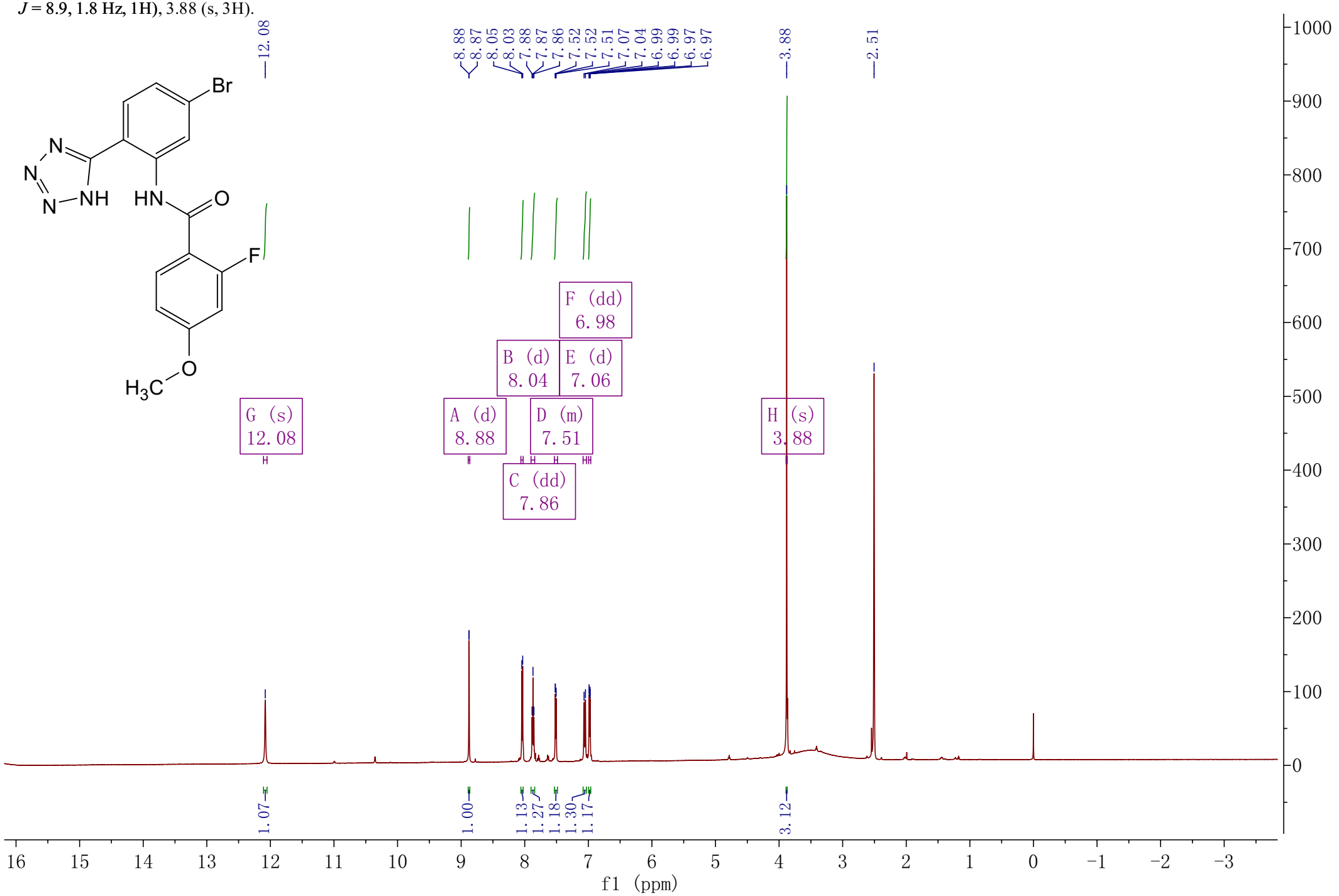
^{1}H NMR (600 MHz, DMSO) δ 12.37 (s, 1H), 8.84 (d, *J* = 2.0 Hz, 1H), 8.27 (d, *J* = 8.1 Hz, 2H), 8.06 (d, *J* = 8.4 Hz, 1H), 8.01 (d, *J* = 8.2 Hz, 2H), 7.56 (dt, *J* = 8.4, 4.4 Hz, 1H).



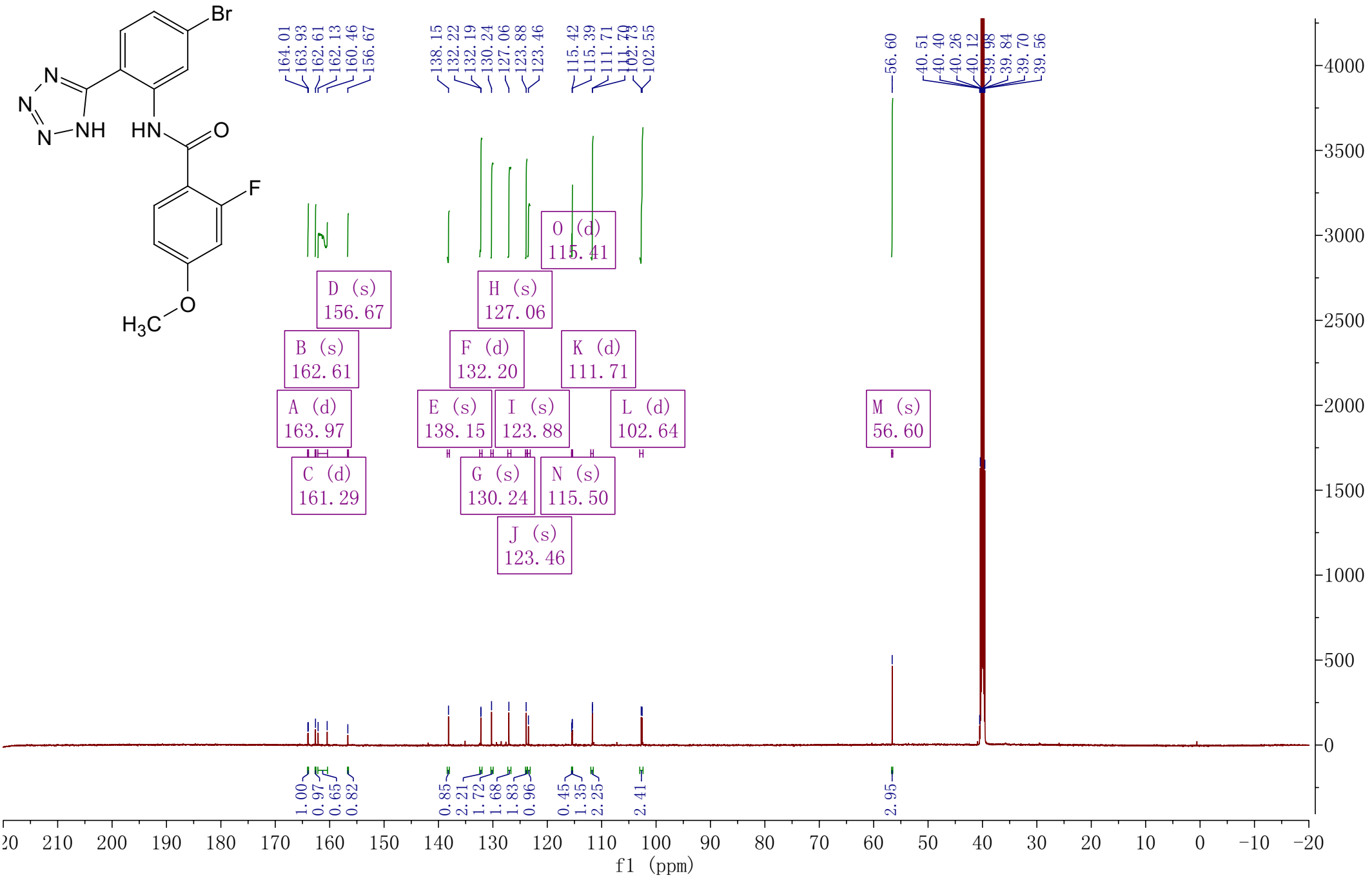
^{13}C NMR (151 MHz, DMSO) δ 164.57 (s), 156.56 (s), 138.51 (s), 138.07 (s), 132.42 (q, *J* = 32.0 Hz), 130.33 (s), 128.80 (s), 127.58 (s), 126.42 (q, *J* = 3.5 Hz), 125.20 (s), 124.16 (s), 123.81 (s), 123.39 (s), 115.76 (s).



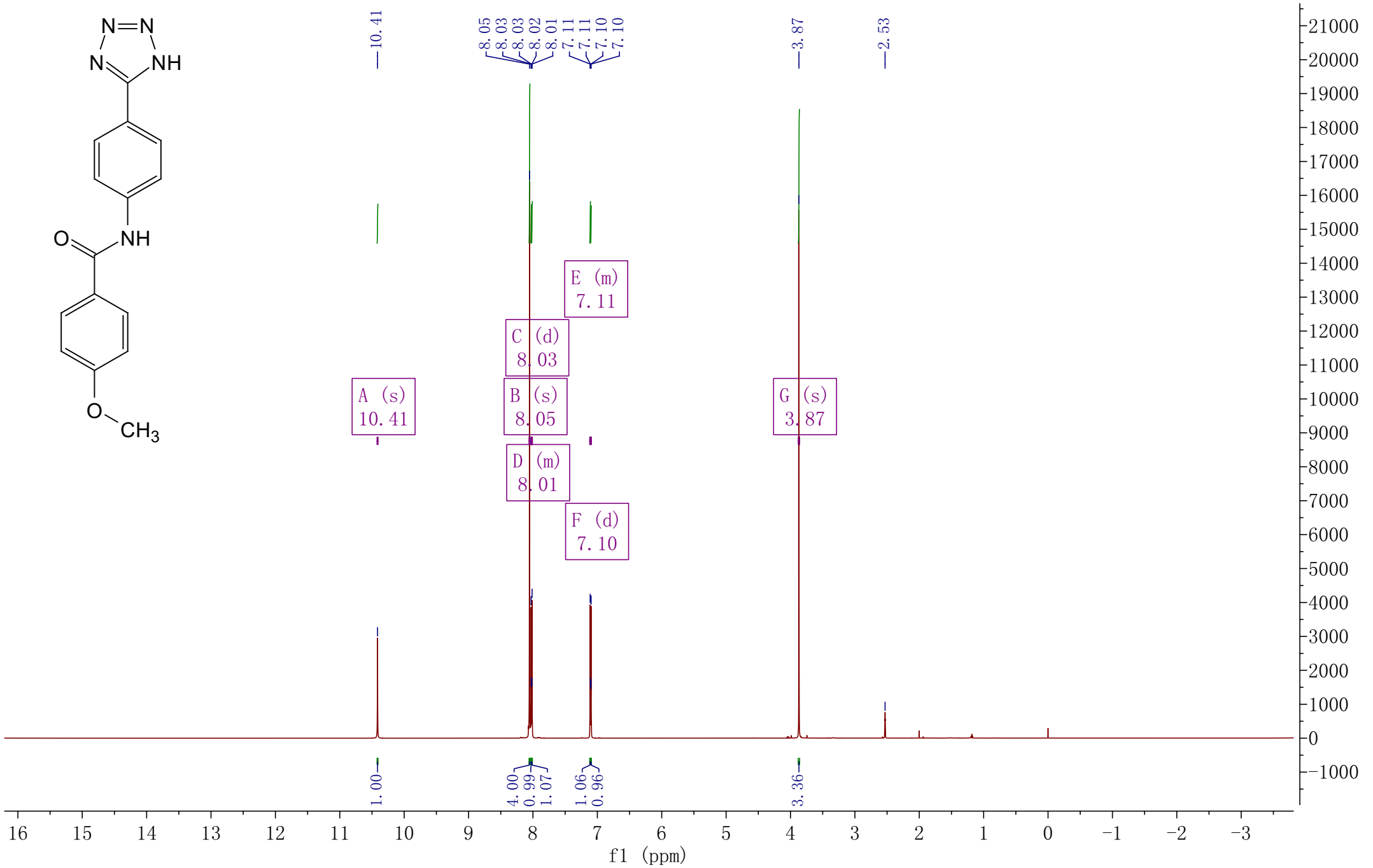
^{1}H NMR (600 MHz, DMSO) δ 12.08 (s, 1H), 8.88 (d, *J* = 1.1 Hz, 1H), 8.04 (d, *J* = 8.4 Hz, 1H), 7.86 (dd, *J* = 15.7, 6.9 Hz, 1H), 7.53 – 7.49 (m, 1H), 7.06 (d, *J* = 13.2 Hz, 1H), 6.98 (dd, *J* = 8.9, 1.8 Hz, 1H), 3.88 (s, 3H).



^{13}C NMR (151 MHz, DMSO) δ 163.97 (d, *J* = 11.6 Hz), 162.61 (s), 161.29 (d, *J* = 251.2 Hz), 156.67 (s), 138.15 (s), 132.20 (d, *J* = 3.8 Hz), 130.24 (s), 127.06 (s), 123.88 (s), 123.46 (s), 115.50 (s), 115.41 (d, *J* = 3.8 Hz), 111.71 (d, *J* = 2.4 Hz), 102.64 (d, *J* = 26.4 Hz), 56.60 (s).



^{1}H NMR (600 MHz, DMSO) δ 10.41 (s, 1H), 8.05 (s, 4H), 8.03 (d, *J* = 1.9 Hz, 1H), 8.02 – 8.01 (m, 1H), 7.12 – 7.11 (m, 1H), 7.10 (d, *J* = 1.8 Hz, 1H), 3.87 (s, 3H).



^{13}C NMR (151 MHz, DMSO) δ 165.71, 162.59, 155.43, 142.50, 130.24, 128.02, 127.06, 120.91, 119.23, 114.13, 55.91.