Supporting Information

Palladium-catalyzed disilylation of *ortho*-halophenylethylenes enabled by 2-pyridone ligand

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1. General Information

Unless otherwise noted, reagents received from commercial suppliers (Adamas, Bidepharm, Macklin, TCI, Aladdin, Energy, Sigma-Aldrich, etc.) were used as received. Solvents dried with molecular sieves were obtained from J&K, Macklin, Energy or Acros and used directly without further purification. Reactions were monitored by thin layer chromatography (TLC) supplied by Yantai Jiangyou Silicon Material Company (China). Visualization was accomplished with UV light or basic aqueous potassium permanganate ($KMnO_4$). Chromatography was conducted using forced flow (flash chromatography) of the indicated solvent system on 300-400 mesh silica gel (Silicycle flash F60). Preparative TLC was performed on silica gel 60 HSGF254 plates (Yantai Jiangyou) and observation of plates was carried out under UV light (254 nm).

Nuclear Magnetic Resonance (**NMR**) spectra were acquired on Varian mercury–400 and Bruker AM–400 spectrometers. Chemical shifts are reported in δ ppm referenced to internal $SiMe_4$ (TMS) standard or residual solvent peaks: TMS (δ 0.00 ppm) for ^{1}**H NMR** in Chloroform-*d* and DMSO-d_6; solvents' carbon resonances (Chloroform-*d* δ 77.00 and DMSO-d_6 δ 39.50) for ^{13}**C NMR**. Multiplicities are denoted as s (singlet), d (doublet), t (triplet), q (quartet), p (quintet), h (sextet), m (multiplet), and br (broad).

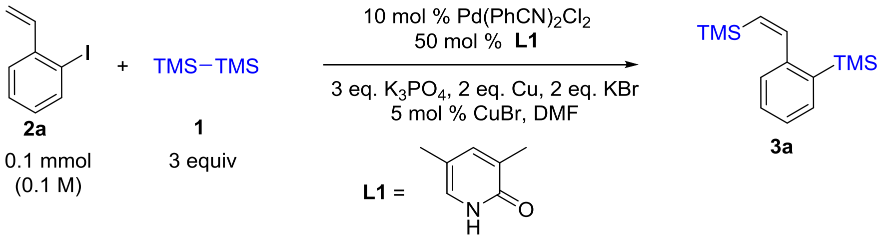
2. Reaction Development

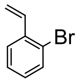
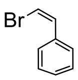
Optimization of Reaction Conditions

To a 10 mL sealed tube charged with a stir bar were added a mixture of Pd precursor, ligand, base, and additives (if applicable). The sealed tube was capped with a Teflon thread plug, and then degassed and backfilled with argon (this procedure was repeated three times). Then hexamethyldisilane (**1**), 1-iodo-2-vinylbenzene (**2a**) and solvent were added under argon. The tube was sealed and the reaction mixture was stirred at a certain temperature for the specified amount of time. After the reaction mixture was cooled to room temperature, dodecane (internal standard, 12.5 μL) and dichloromethane (2 mL) were added. An aliquot (0.1 mL) from the mixture was further diluted with dichloromethane and filtered and then analyzed by GC-FID. The yield and conversion were calculated against a calibration curve obtained for the authentic product and starting materials.

Note: when the loading of Pd precursor or ligand was too low to weigh accurately, a solution of the Pd precursor or ligand in the same solvent applied for the reaction was prepared in a certain concentration and used instead of the pure form.

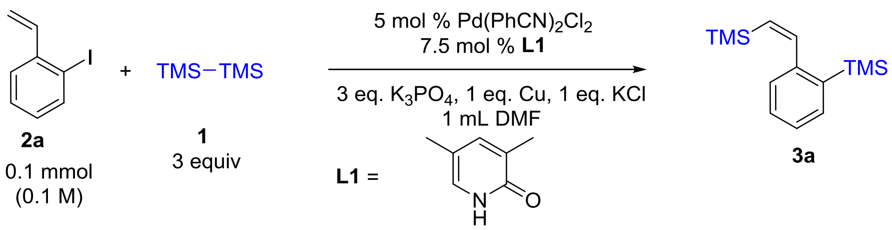
Table S1 Initial Screening of Reaction Conditions

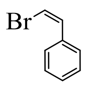


entry	variation/additive	T/°C	conversion (%)[a]	**3a** (%)[a]
1	--	35 (62h)	8	2
2	--	60 (36h)	70	6
3	+ 0.5 eq. HCOOH	35 (86h)	10	1.6
4	2.5 mol % $Pd_2(dba)_3{\cdot}HCCl_3$	35 (86h)	24	0.7
5	 as substrate	80 (15h)	100	1
6	 as substrate	80 (15h)	100	1.5

[a]GC yield using dodecane as an internal standard.

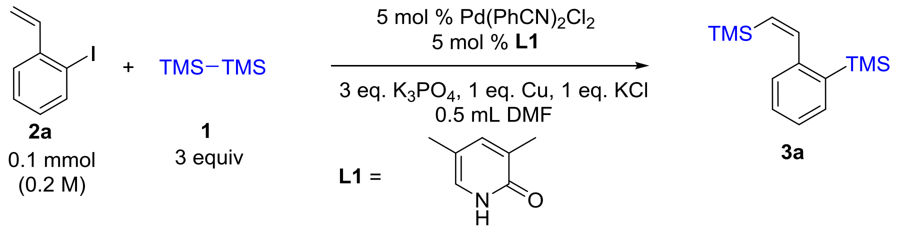
Table S2 Screening of the reaction conditions



entry	variation/additive	T/°C	conversion (%)[a]	**3a** (%)[a]
1	--	60 (16h)	77	27
2	10 mol % **L1**	60 (21h)	100	25
3	--	35 (74h)	55	21
4	1 mol % $Pd(PhCN)_2Cl_2$, 4 mol % **L1**	60 (74h)	89	13
5	 as substrate	60 (24h)	100	14
6	0.5 mL DMF	40 (71h)	100	37
7	0.5 mL DMF, 5 mol % **L1**	40 (33h)	100	37
8	0.5 mL DMF, $Pd(OAc)_2$ instead	40 (71h)	100	37

[a]GC yield using dodecane as an internal standard.

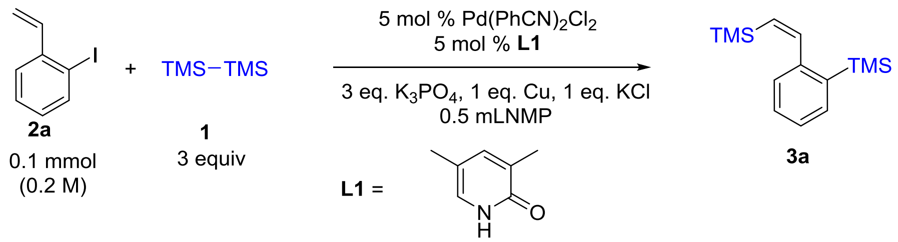
Table S3 Selected Conditions Screening



entry	variation/additive	T/°C	conversion (%)[a]	**3a** (%)[a]
1	10 mol % CuCl	50 (12h)	100	43
2	without Cu & KCl	50 (15h)	100	29
3	Cs_2CO_3 as base	50 (17h)	45	19
4	KO^{t}Bu as base	50 (12h)	100	0
5	DMA as solvent	50 (12h)	100	48
6	NMP as solvent	50 (12h)	100	49

[a]GC yield using dodecane as an internal standard.

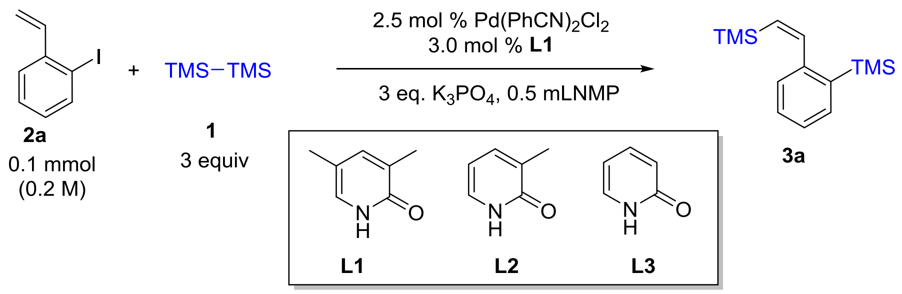
Table S4 Screening of additives



entry	variation/additive	T/°C	conversion (%)[a]	**3a** (%)[a]
1	10 mol % CuCl	50 (15h)	100	51
2	20 mol % CuCl	50 (15h)	100	60
3	10 % CuCl, 2.5 % Pd, 3.0% **L1**	50 (15h)	100	68
4	20 mol % CuCl, without Cu	50 (15h)	100	57
5	20 mol % CuCl, without Cu & KCl	50 (15h)	100	65
6	10 mol % CuCl, 5 eq. TMS_2	50 (15h)	100	54
7	10 mol % CuCl, additional 1 eq. Cs_2CO_3	50 (15h)	100	55

[a]GC yield using dodecane as an internal standard.

Table S5 Screening of ligands and the equivalents of additives and catalysts



entry	variation/additive	T/°C	conversion (%)[a]	**3a** (%)[a]
1	20 mol % CuCl	50 (16h)	85	65
2	30 mol % CuCl	50 (16h)	73	53
3	50 mol % CuCl	50 (16h)	75	55
4	20 % CuCl, 1 % Pd, 1.2% **L1**	50 (40h)	100	81.5
5	20 % CuCl, 1 % Pd, 1.4% **L1**	50 (40h)	100	82.3
6	0.2 mmol scale, 20 % CuCl 1 % Pd, 1.2% **L1**, 0.5 mL DMF	50 (40h)	100	78
7	20 % CuCl, 1 % Pd, 1.4% **L2**	50 (35h)	100	84
8	20 % CuBr, 1 % Pd, 1.4% **L2**	60 (16h)	100	84
9	20 % CuI, 1 % Pd, 1.4% **L2**	60 (16h)	100	86
10	20 % CuCl, 1 % Pd, 1.4% **L3**	60 (16h)	100	83
11	20 % CuI, 0.5 % Pd, 0.7% **L2**	60 (23h)	100	87

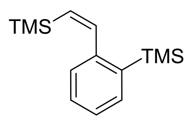
[a]GC yield using dodecane as an internal standard.

3. Preparation of Substrates

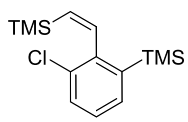
The substrates *ortho*-halophenylethylenes (**2**) are all known compounds and were synthesized according to the reported procedures[1].

4. General Procedure for the Disilylation Reaction of *ortho*-Halophenylethylenes

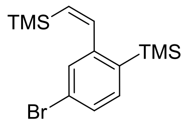
Standard reaction conditions: To a 10 mL sealed tube charged with a stir bar was added a mixture of CuI (11.4 mg, 0.06 mmol, 20 mol %), K_3PO_4 (192 mg, 0.9 mmol, 3 equiv.) and P(*o*-Tol)$_3$ (3.7 mg, 0.012 mmol, 4 mol %, if applied for *ortho*-bromophenylethylenes). The tube was capped with a Teflon thread plug, and then degassed and backfilled with argon (this procedure was repeated three times). Then $Pd(PhCN)_2Cl_2$ (0.0015 mmol, 0.5 mol %, an NMP solution was used instead of the pure form), 3-methylpyridin-2(1H)-one (0.0021 mmol, 0.7 mol %, an NMP solution was used instead of the pure form), *ortho*-halophenylethylene (0.3 mmol, 1 equiv), hexamethyldisilane (186 μL, 0.9 mmol, 3 equiv) and NMP (1.5 mL) were added under argon. The tube was sealed immediately and the reaction mixture was stirred at 60℃ for 24-48 h (*ortho*-iodophenylethylene) or 70℃ for 14-18 h (*ortho*-bromophenylethylene). After cooling to room temperature, the mixture was poured into water (15 mL), extracted with petroleum ether, dried over Na_2SO_4 and concentrated. The pure product was then isolated by flash column chromatography unless otherwise noted.



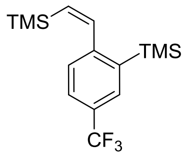
3a: 66.5 mg, 89% yield. Colorless oil. **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 7.62 (d, *J* = 14.9, 1H), 7.48 (dd, *J* = 7.2, 1.6, 1H), 7.30 (td, *J* = 7.4, 1.6, 1H), 7.27 – 7.21 (m, 1H), 7.19 (d, *J* = 7.1, 1H), 5.86 (d, *J* = 14.9, 1H), 0.29 (s, 9H), -0.09 (s, 9H). **^{13}C NMR** (101 MHz, Chloroform-*d*) δ = 148.6, 146.9, 137.7, 133.7, 133.2, 128.6, 128.5, 126.4, 0.0, -0.2. **HRMS** (FI): *m*/*z* for $C_{14}H_{24}Si_2$ $[M]^+$ calcd.: 248.1411, found: 48.1410.



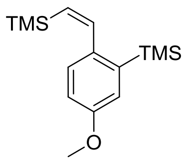
3b: 84.1 mg, 98% yield. Colorless oil. **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 7.39 – 7.33 (m, 2H), 7.27 (d, *J* = 15.1, 1H), 7.16 (ddd, *J* = 8.0, 7.2, 0.8, 1H), 6.08 (d, *J* = 15.3, 1H), 0.27 (s, 9H), -0.16 (s, 9H). **^{13}C NMR** (101 MHz, Chloroform-*d*) δ = 144.7, 142.8, 140.9, 136.7, 132.9, 132.1, 129.8, 127.5, 0.1, -1.3. **HRMS** (FI): *m*/*z* for $C_{14}H_{23}ClSi_2$ $[M]^+$ calcd.: 282.1021, found: 282.1019.



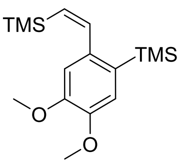
3c: 83.3 mg, 85% yield. Colorless oil. **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 7.53 (d, *J* = 14.8, 1H), 7.40 – 7.32 (m, 2H), 7.32 (d, *J* = 7.8, 1H), 5.91 (d, *J* = 14.8, 1H), 0.27 (s, 9H), -0.05 (s, 9H). **^{13}C NMR** (101 MHz, Chloroform-*d*) δ 148.6, 146.9, 136.5, 135.3, 134.8, 131.5, 129.2, 123.1, 0.0, -0.3. **HRMS** (FI): *m*/*z* for $C_{14}H_{23}BrSi_2$ $[M]^+$ calcd.: 326.0516, found: 326.0515.



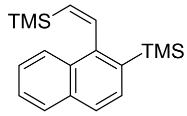
3d: 93.5 mg, 98% yield. Colorless oil. **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 7.71 (s, 1H), 7.62 – 7.54 (m, 2H), 7.30 (d, *J* = 7.9, 1H), 5.99 (d, *J* = 15.0, 1H), 0.34 (s, 9H), -0.06 (s, 9H). **^{13}C NMR** (101 MHz, Chloroform-*d*) δ 150.4, 147.1, 139.1, 135.2, 130.3 (q, *J* =3.7), 128.8, 128.5 (q, *J* =31.9), 125.3 (q, *J* =3.8), 124.5 (q, *J* =272.3), 0.0, -0.4. **^{19}F NMR** (376 MHz, Chloroform-*d*) δ -62.35. **HRMS** (FI): *m*/*z* for $C_{15}H_{23}F_3O_2$ $[M]^+$ calcd.: 316.1282, found: 316.1283.



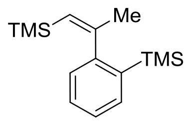
3e: 78.3 mg, 94% yield. Colorless oil. **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 7.55 (d, *J* = 14.7, 1H), 7.14 (dd, *J* = 8.4, 0.7, 1H), 7.02 (d, *J* = 2.8, 1H), 6.81 (dd, *J* = 8.3, 2.8, 1H), 5.78 (d, *J* = 14.7, 1H), 3.80 (s, 3H), 0.28 (s, 9H), -0.07 (s, 9H). **^{13}C NMR** (101 MHz, Chloroform-*d*) δ 158.1, 148.1, 139.5, 139.3, 132.2, 129.9, 120.1, 112.5, 55.1, 0.1, -0.3. **HRMS** (FI): *m*/*z* for $C_{15}H_{26}OSi_2$ $[M]^+$ calcd.: 278.1517, found: 278.1516.



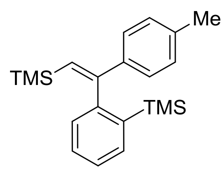
3f: 73.7 mg, 80% yield. White solid. **Melting point**: 41-43 ˚C. **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 7.57 (d, *J* = 14.8, 1H), 6.97 (s, 1H), 6.79 (s, 1H), 5.81 (d, *J* = 14.8, 1H), 3.90 (s, 3H), 3.90 (s, 3H), 0.28 (s, 9H), -0.02 (s, 9H). **^{13}C NMR** (101 MHz, Chloroform-*d*) δ 148.8, 148.3, 147.2, 140.2, 132.2, 129.3, 116.6, 112.6, 55.8, 55.7, 0.1, -0.10. **HRMS** (FI): *m*/*z* for $C_{16}H_{28}O_2Si_2$ $[M]^+$ calcd.: 308.1622, found: 308.1626.



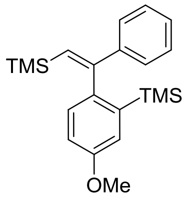
3g: 88.1 mg, 98% yield. Colorless oil. **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 8.17 – 8.08 (m, 1H), 7.83 – 7.76 (m, 1H), 7.75 – 7.67 (m, 2H), 7.58 (d, *J* = 8.3, 1H), 7.49 – 7.38 (m, 2H), 6.25 (d, *J* = 15.4, 1H), 0.35 (s, 9H), -0.41 (s, 9H). **^{13}C NMR** (101 MHz, Chloroform-*d*) δ 145.5, 144.7, 136.9, 134.2, 133.6, 131.8, 130.0, 127.8, 126.7, 126.0, 125.8, 125.4, 0.3, -1.3. **HRMS** (FI): *m*/*z* for $C_{18}H_{26}Si_2$ $[M]^+$ calcd.: 298.1568, found: 298.1569.



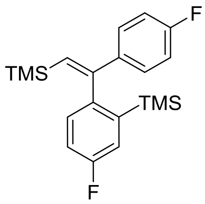
3h: 78.0 mg, 99% yield. Colorless oil. **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 7.53 – 7.46 (m, 1H), 7.30 – 7.18 (m, 2H), 7.03 – 6.96 (m, 1H), 5.57 (q, *J* = 1.4, 1H), 2.13 (d, *J* = 1.4, 3H), 0.29 (s, 9H), -0.26 (s, 9H). **^{13}C NMR** (101 MHz, Chloroform-*d*) δ 156.8, 150.6, 136.7, 134.6, 128.4, 128.4, 128.3, 125.9, 31.8, 0.9, -0.4. **HRMS** (FI): *m*/*z* for $C_{15}H_{26}Si_2$ $[M]^+$ calcd.: 262.1568, found: 262.1565.



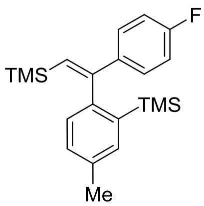
3i: 98% yield. Colorless oil. **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 7.61 – 7.54 (m, 1H), 7.43 – 7.29 (m, 2H), 7.16 (m, 3H), 7.07 (d, *J* = 8.1, 2H), 6.35 (s, 1H), 2.33 (s, 3H), -0.01 (s, 9H), -0.16 (s, 9H). **^{13}C NMR** (101 MHz, Chloroform-*d*) δ 157.4, 148.0, 140.1, 138.6, 137.4, 134.7, 130.9, 128.7, 128.3, 128.0, 126.9, 126.4, 21.1, 0.3, -0.4. **HRMS** (FI): *m*/*z* for $C_{21}H_{30}Si_2$ $[M]^+$ calcd.: 338.1881, found: 338.1886.



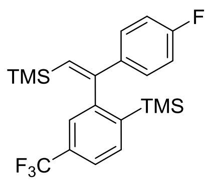
3j: 104.5 mg, 98% yield. Colorless oil. **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 7.25 – 7.19 (m, 5H), 7.13 – 7.06 (m, 2H), 6.92 – 6.87 (m, 1H), 6.34 (s, 1H), 3.86 (s, 3H), -0.07 (s, 9H), -0.16 (s, 9H). **^{13}C NMR** (101 MHz, Chloroform-*d*) δ 158.0, 157.4, 143.3, 140.3, 140.2, 132.2, 129.7, 128.0, 127.5, 127.1, 121.1, 112.3, 55.1, 0.1, -0.3. **HRMS** (FI): *m/z* for $C_{21}H_{30}OSi_2$ $[M]^+$ calcd.: 354.1830, found: 354.1834.



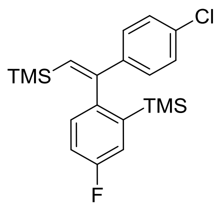
3k: 101.8 mg, 94% yield. Colorless oil. **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 7.38 – 7.27 (m, 3H), 7.22 (dd, *J* = 8.3, 5.6, 1H), 7.15 (td, *J* = 8.3, 2.7, 1H), 7.04 (t, *J* = 8.7, 2H), 6.41 (s, 1H), 0.06 (s, 9H), -0.06 (s, 9H). **^{13}C NMR** (101 MHz, Chloroform-*d*) δ 162.5 (d, *J* = 247.9), 161.8 (d, *J* = 248.0), 155.4, 143.4 (d, *J* = 3.2), 141.8 (d, *J* = 3.7), 139.1 (d, *J* = 3.2), 132.5 (d, *J* = 6.8), 129.9 (d, *J* = 1.8), 128.7 (d, *J* = 8.1), 121.4 (d, *J* = 18.9), 115.1 (d, *J* = 20.9), 114.9 (d, *J* = 21.4), 0.0, -0.4. **^{19}F NMR** (376 MHz, Chloroform-*d*) δ -114.62 (tt, *J* = 8.7, 5.4), -116.07 (td, *J* = 8.9, 5.5). **HRMS** (FI): *m/z* for $C_{20}H_{26}F_2Si_2$ $[M]^+$ calcd.: 360.1536, found: 360.1537.



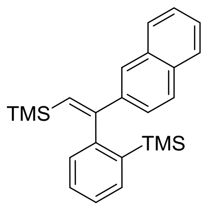
3l: 103.7 mg, 97% yield. Colorless oil. **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 7.34 (d, *J* = 1.9, 1H), 7.23 – 7.15 (m, 3H), 7.03 (d, *J* = 7.7, 1H), 6.92 (t, *J* = 8.7, 2H), 6.26 (s, 1H), 2.39 (s, 3H), -0.05 (s, 9H), -0.18 (s, 9H). **^{13}C NMR** (101 MHz, Chloroform-*d*) δ 162.4 (d, *J* = 247.3), 156.6, 144.7, 139.4 (d, *J* = 3.2), 138.2, 135.8, 135.7, 130.9, 129.1, 129.1 (d, *J* = 1.8), 128.7 (d, *J* = 8.0), 114.8 (d, *J* = 21.3), 21.4, 0.3, -0.4. **^{19}F NMR** (376 MHz, Chloroform-*d*) δ -115.12 (tt, *J* = 8.6, 5.4). **HRMS** (FI): *m/z* for $C_{21}H_{29}FSi_2$ $[M]^+$ calcd.: 356.1786, found: 356.1784.



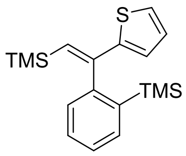
3m: 121.7 mg, 99% yield. Colorless oil. **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 7.70 (d, *J* = 7.8, 1H), 7.65 – 7.54 (m, 1H), 7.42 (d, *J* = 1.9, 1H), 7.25 – 7.13 (m, 2H), 6.97 (t, *J* = 8.7, 2H), 6.38 (s, 1H), -0.00 (s, 9H), -0.17 (s, 9H). **^{13}C NMR** (101 MHz, Chloroform-*d*) δ 162.6 (d, *J* = 248.3), 155.2, 148.3, 143.9 (q, *J* = 1.2), 138.5 (d, *J* = 3.3), 135.5, 130.6 (q, *J* = 32.3, 32.3, 32.3), 130.5 (d, *J* = 1.8), 128.7 (d, *J* = 8.1), 127.2 (q, *J* = 3.7, 3.6, 3.6), 124.1 (q, *J* = 272.4, 272.3, 272.3), 123.1 (q, *J* = 3.8, 3.8, 3.8), 115.1 (d, *J* = 21.5), 0.0, -0.55. **^{19}F NMR** (376 MHz, Chloroform-*d*) δ -62, -114.16 (tt, *J* = 8.7, 5.4). **HRMS** (FI): *m/z* for $C_{21}H_{26}F_4Si_2$ $[M]^+$ calcd.: 410.1504, found: 410.1498.



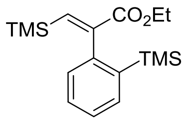
3n: 107.6 mg, 95% yield. Colorless oil. **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 7.25 – 7.19 (m, 3H), 7.18 – 7.13 (m, 2H), 7.10 (dd, *J* = 8.3, 5.6, 1H), 7.05 (td, *J* = 8.4, 2.7, 1H), 6.37 (s, 1H), -0.03 (s, 9H), -0.17 (s, 9H). **^{13}C NMR** (101 MHz, Chloroform-*d*) δ 161.8 (d, *J* = 248.1), 155.3, 143.1 (d, *J* = 3.4), 141.9 (d, *J* = 3.6), 141.2, 133.6, 132.6 (d, *J* = 6.7), 130.8, 128.2, 128.2, 121.4 (d, *J* = 18.8), 115.1 (d, *J* = 20.7), 0.1, -0.45. **^{19}F NMR** (376 MHz, Chloroform-*d*) δ -115.95 (td, *J* = 8.8, 5.5). **HRMS** (FI): *m/z* for $C_{20}H_{26}ClFSi_2$ $[M]^+$ calcd.: 376.1240, found: 376.1235.



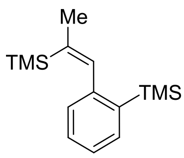
3o: 110.0 mg, 98% yield. Colorless oil. **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 7.81 – 7.73 (m, 2H), 7.70 – 7.63 (m, 2H), 7.62 – 7.57 (m, 1H), 7.46 – 7.33 (m, 5H), 7.24 – 7.19 (m, 1H), 6.54 (s, 1H), -0.07 (s, 9H), -0.15 (s, 9H). **^{13}C NMR** (101 MHz, Chloroform-*d*) δ 157.3, 147.7, 139.9, 138.9, 134.8, 133.1, 132.8, 131.0, 129.9, 128.5, 128.5, 127.7, 127.4, 127.0, 126.6, 126.0, 126.0, 124.3, 0.4, -0.4. **HRMS** (FI): *m/z* for $C_{24}H_{30}Si_2$ $[M]^+$ calcd.: 374.1881, found: 374.1887.



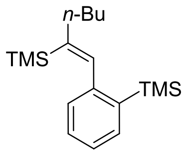
3p: 98.3 mg, 99% yield. Colorless oil. **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 7.59 – 7.53 (m, 1H), 7.38 – 7.28 (m, 2H), 7.19 (dd, *J* = 5.1, 1.2, 1H), 7.18 – 7.11 (m, 1H), 6.85 (dd, *J* = 5.1, 3.6, 1H), 6.40 (dd, *J* = 3.6, 1.2, 1H), 6.20 (s, 1H), 0.08 (s, 9H), -0.19 (s, 9H). **^{13}C NMR** (101 MHz, Chloroform-*d*) δ 151.3, 149.8, 146.8, 138.9, 134.7, 130.0, 128.3, 127.8, 127.4, 126.8, 125.6, 0.5, -0.4. **HRMS** (FI): *m*/*z* for $C_{18}H_{26}SSi_2$ $[M]^+$ calcd.: 330.1288, found: 330.1293.



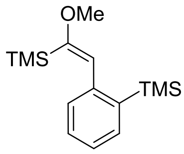
3q: 80.9 mg, 84% yield. Colorless oil. **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 7.56 – 7.48 (m, 1H), 7.32 – 7.27 (m, 2H), 7.24 (s, 1H), 7.06 – 6.97 (m, 1H), 4.27 – 4.07 (m, 2H), 1.22 (t, *J* = 7.1, 7.1, 3H), 0.19 (s, 9H), -0.19 (s, 9H). **^{13}C NMR** (101 MHz, Chloroform-*d*) δ 167.0, 149.2, 145.2, 144.0, 138.6, 134.3, 130.0, 128.2, 126.7, 61.1, 14.2, 0.5, -1.1. **HRMS** (FI): *m*/*z* for $C_{17}H_{28}O_2Si_2$ $[M]^+$ calcd.: 320.1622, found: 320.1624.



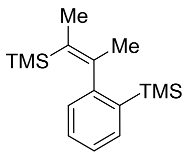
3r: 64.7 mg, 82% yield. Colorless oil. **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 7.45 (dd, *J* = 7.0, 1.7, 1H), 7.29 (s, 1H), 7.28 – 7.22 (m, 1H), 7.21 (td, *J* = 7.3, 1.6, 1H), 7.08 (d, *J* = 7.0, 1H), 1.95 (d, *J* = 1.7, 3H), 0.26 (s, 9H), -0.16 (s, 9H). **^{13}C NMR** (101 MHz, Chloroform-*d*) δ 146.9, 143.2, 139.6, 137.7, 133.7, 129.3, 128.4, 126.0, 24.5, -0.2, -0.6. **HRMS** (FI): *m*/*z* for $C_{15}H_{26}Si_2$ $[M]^+$ calcd.: 262.1568, found: 262.1563.



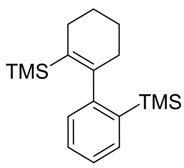
3s: 64.1 mg, 70% yield. Colorless oil. **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 7.46 (dd, *J* =7.3, 1.6, 1H), 7.30 (s, 1H), 7.26 (td, *J* =7.4, 1.7, 1H), 7.21 (td, *J* =7.3, 1.5, 1H), 7.12 (d, *J* =7.1, 1H), 2.26 (m, 2H), 1.53 – 1.34 (m, 4H), 0.95 (t, *J* =7.2, 3H), 0.26 (s, 9H), -0.15 (s, 9H). **^{13}C NMR** (101 MHz, Chloroform-*d*) δ 147.2, 144.2, 143.1, 137.7, 133.7, 129.3, 128.4, 126.0, 38.2, 32.4, 22.7, 14.0, 0.2, -0.2. **HRMS** (FI): *m/z* for $C_{18}H_{32}Si_2$ $[M]^+$ calcd.: 304.2037, found: 304,2035.



3t: 80.4 mg, 96% yield. Colorless oil. **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 7.47 (dd, *J* =7.1, 1.9, 1H), 7.30 – 7.17 (m, 2H), 7.11 (d, *J* =7.3, 1H), 6.54 (s, 1H), 3.64 (s, 3H), 0.29 (s, 9H), -0.12 (s, 9H). **^{13}C NMR** (101 MHz, Chloroform-*d*) δ 164.3, 143.8, 139.1, 133.8, 130.7, 128.5, 125.8, 115.3, 54.6, -0.1, -1.1. **HRMS** (FI): *m/z* for $C_{15}H_{26}OSi_2$ $[M]^+$ calcd.: 278.1517, found: 278.1512.

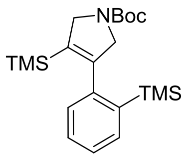


3u: 76.4 mg, 92% yield. Colorless oil. **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 7.52 – 7.45 (m, 1H), 7.27 – 7.18 (m, 2H), 6.97 – 6.90 (m, 1H), 1.95 (q, *J* = 1.1, 3H), 1.77 (q, *J* = 1.1, 3H), 0.23 (s, 9H), -0.31 (s, 9H). **^{13}C NMR** (101 MHz, Chloroform-*d*) δ 153.0, 148.2, 137.2, 134.6, 131.4, 128.8, 128.3, 125.6, 23.9, 17.5, 0.7, -0.7. **HRMS** (FI): *m/z* for $C_{16}H_{28}Si_2$ $[M]^+$ calcd.: 276.1724, found: 276.1721.



3v: 74.4 mg, 82% yield. Colorless oil. **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 7.48 (dd, *J* =7.2, 1.8, 1H), 7.27 – 7.18 (m, 2H), 6.95 (dd, *J* =7.0, 1.7, 1H), 2.28 – 2.05 (m, 4H), 1.81 – 1.73 (m, 2H), 1.73 – 1.61 (m, 1H), 1.58 – 1.51 (m, 1H), 0.27 (s, 9H), -0.32 (s, 9H). **^{13}C NMR** (101 MHz, Chloroform-*d*) δ

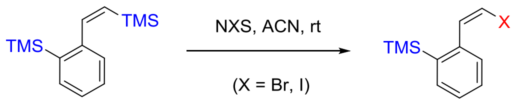
152.2, 149.6, 137.5, 134.7, 133.0, 129.2, 128.3, 125.6, 35.5, 28.3, 23.0, 22.6, 1.0, -0.9. **HRMS** (FI): *m*/*z* for $C_{18}H_{30}Si_2$ $[M]^+$ calcd.: 302.1881, found: 302.1877.



3w: 105.3 mg, 90% yield. Colorless oil. **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 7.56 – 7.50 (m, 1H), 7.33 – 7.27 (m, 2H), 7.09 – 7.01 (m, 1H), 4.46 – 4.16 (m, 4H), 1.54 – 1.44 (m, 9H), 0.25 (s, 9H), -0.15 (s, 9H). **^{13}C NMR** (101 MHz, Chloroform-*d*) δ 154.2, 154.0, 149.8, 149.6, 142.5, 138.3, 138.2, 134.8, 134.7, 134.4, 134.3, 129.0, 128.5, 128.5, 126.8, 79.4, 79.3, 61.2, 61.0, 58.21, 58.19, 28.6, 28.5, 0.7, 0.6, -1.2, -1.3. **HRMS** (FI): *m*/*z* for $C_{21}H_{35}O_2NSi_2$ $[M]^+$ calcd.: 389.2201, found: 389.2204.

5. Synthetic Transformations of the Disilylated Product 3a

5.1 Vinyl Halogenation Reaction

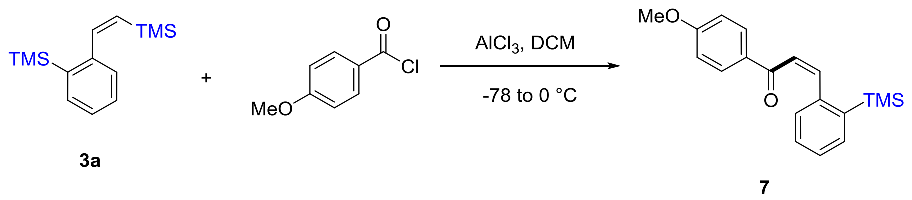


To the solution of NXS (0.3 mmol, 1 equiv.) in 2 mL CH_3CN at rt (20 ℃) was added **3a** (0.3 mmol, 1 equiv., 74.6 mg, 84 μL). After stirring at rt for 6 h, the reaction mixture was poured into water and extracted with petroleum ether. The combined extract was dried over Na_2SO_4, concentrated in *vacuo* and purified by flash column chromatography (petroleum ether) to give the product **5**/**6**.

5: 72.5 mg, 95% yield, colorless oil. **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 7.55 (d, *J* =7.3, 2H), 7.38 (td, *J* =7.5, 1.5, 1H), 7.34 – 7.27 (m, 2H), 6.52 (d, *J* =7.8, 1H), 0.30 (s, 9H). **^{13}C NMR** (101 MHz, Chloroform-*d*) δ 141.1, 138.8, 134. 9, 134.3, 128.9, 128.7, 127.1, 108.6, -0.3. **HRMS** (FI): *m/z* for $C_{11}H_{15}BrSi$ $[M]^+$ calcd.: 254.0121, found: 254.0125.

6: 78.1 mg, 86% yield, colorless oil. **^{1}H NMR** (400 MHz, Chloroform-*d*) δ 7.55 (d, *J* =6.9, 1H), 7.50 (d, *J* =8.2, 1H), 7.45 – 7.34 (m, 2H), 7.31 (td, *J* =7.2, 1.8, 1H), 6.66 (d, *J* =8.3, 1H), 0.29 (s, 9H). **^{13}C NMR** (101 MHz, Chloroform-*d*) δ 144.0, 141.6, 138.4, 134.3, 128.8, 128.5, 127.2, 83.8, -0.3. **HRMS** (FI): *m/z* for $C_{11}H_{15}ISi$ $[M]^+$ calcd.: 301.9982, found: 301.9980.

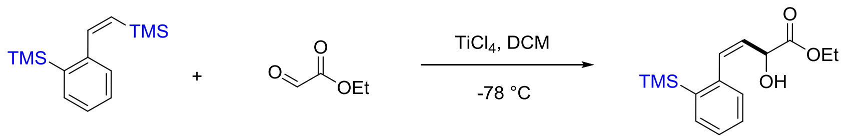
5.2 Acylation of 3a



To the solution of 4-methoxybenzoyl chloride (0.33 mmol , 56.3 mg, 45 μL, 1.1 equiv.) in DCM (0.6 mL) at -78 ℃ under argon was added $AlCl_3$ (0.36 mmol, 48 mg, 1.2 equiv.), then a solution of **3a** (0.3 mmol, 1 equiv., 74.6 mg, 84 μL) in 0.4 mL DCM was added slowly into the mixture. The reaction mixture was stirred at -78 ℃ for 1 h and then the temperature was slowly elevated to 0 ℃ in 20 min. After cooling to -78 ℃, a solution of Et_3N and MeOH in DCM was added slowly to quench the reaction. A solution of oxalic acid in water was added followed by extraction with EtOAc. The combined extract was dried over Na_2SO_4, concentrated in *vacuo* and purified by flash column chromatography (petroleum ether/EtOAc 15 : 1) to give the product **7** (74.7 mg, 80% yield) as a yellowish oil. This product is rather unstable and will be transformed into the more stable *trans*-isomer under common experimental operation.

^{1}H NMR (400 MHz, Chloroform-*d*) δ 7.87 (d, *J* =8.9, 2H), 7.48 (dd, *J* =7.3, 1.6, 1H), 7.32 (d, *J* =12.5, 1H), 7.25 – 7.06 (m, 3H), 6.82 (d, *J* =8.9, 2H), 6.64 (d, *J* =12.5, 1H), 3.81 (s, 3H), 0.38 (s, 9H). **^{13}C NMR** (101 MHz, Chloroform-*d*) δ 193.1, 163.4, 141.6, 140.5, 138.4, 134.1, 131.2, 130.2, 129.3, 128.7, 127.32, 127.31, 113.6, 55.4, -0.0. **HRMS** (FI): *m/z* for $C_{19}H_{22}O_2Si$ $[M]^+$ calcd.: 310.1384, found: 310.1381.

5.3 Substitution Reaction of 3a with Ethyl Glyoxylate

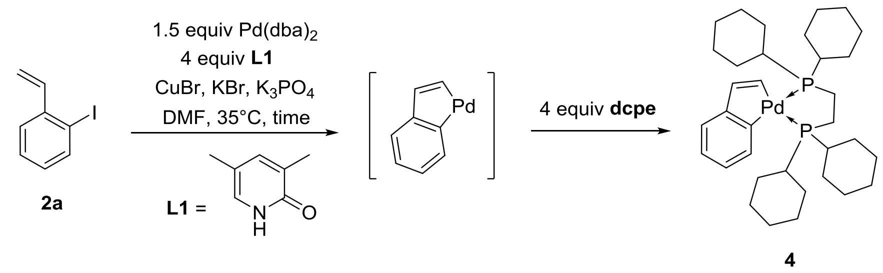


3a **8**

According to the reported procedure,[2] to the solution of ethyl glyoxylate (50% in toluene, 0.33 mmol , 67.4 mg, 1.1 equiv.) in DCM (0.4 mL) at -78 ℃ under argon was added a solution of $TiCl_4$ (0.36 mmol, 68.3 mg, 39.5 μL, 1.2 equiv.) in 0.4 mL DCM, then a solution of **3a** (0.3 mmol, 1 equiv., 74.6 mg, 84 μL) in 0.4 mL DCM was added slowly into the mixture. The reaction mixture was stirred at -78 ℃ for 1 h and then a solution of Et_3N and MeOH in DCM was added slowly to quench the reaction. A solution of oxalic acid in water was added followed by extraction with EtOAc. The combined extract was dried over Na_2SO_4, concentrated in *vacuo* and purified by flash column chromatography (petroleum ether/EtOAc 5 : 1) to give the product **8** (70.0 mg, 84% yield) as a colorless oil.

^{1}H NMR (400 MHz, Chloroform-*d*) δ 7.55 (dd, *J* =7.2, 1.5, 1H), 7.45 (d, *J* =7.5, 1H), 7.36 (td, *J* =7.5, 1.5, 1H), 7.28 (td, *J* =7.4, 1.4, 1H), 7.04 (d, *J* =11.2, 1H), 5.66 (dd, *J* =11.2, 9.9, 1H), 4.84 (dd, *J* =10.0, 5.1, 1H), 4.25 (q, *J* =7.2, 2H), 3.01 (d, *J* =5.2, 1H), 1.29 (t, *J* =7.2, 3H), 0.32 (s, 9H). **^{13}C NMR** (101 MHz, Chloroform-*d*) δ 174.2, 141.4, 139.0, 136.6, 134.3, 129.4, 128.8, 127.2, 126.9, 67.3, 62.2, 14.1, -0.3. **HRMS** (FI): *m/z* for $C_{15}H_{22}O_3Si$ $[M]^+$ calcd.: 278.1333, found: 278.1332.

6. The Influence of the Equivalent of 2-Pyridone Ligand on the Formation of Aryl-Vinyl-Palladacycle Species



Synthesis and characterization of the Aryl-Vinyl-Palladacycle complex **4** have been reported.[1c]

Table S6

entry	time	variation	**4** (%)[a]
1	5 s	--	0
2	25 s	--	4
3	50 s	--	7
4	80 s	--	7
5	2 min	--	9
6	4 min	--	9
7	2 min	without **L1**	0
8	25s	CuBr, KBr	12
9	50s	CuBr, KBr	13
10	2 min	CuBr, KBr	15
11	4 min	CuBr, KBr	17

[a]Determined by ^{31}P NMR using Ph_3PO as an internal standard.

For in situ Capturing of Aryl-Vinyl-Palladacycle species:

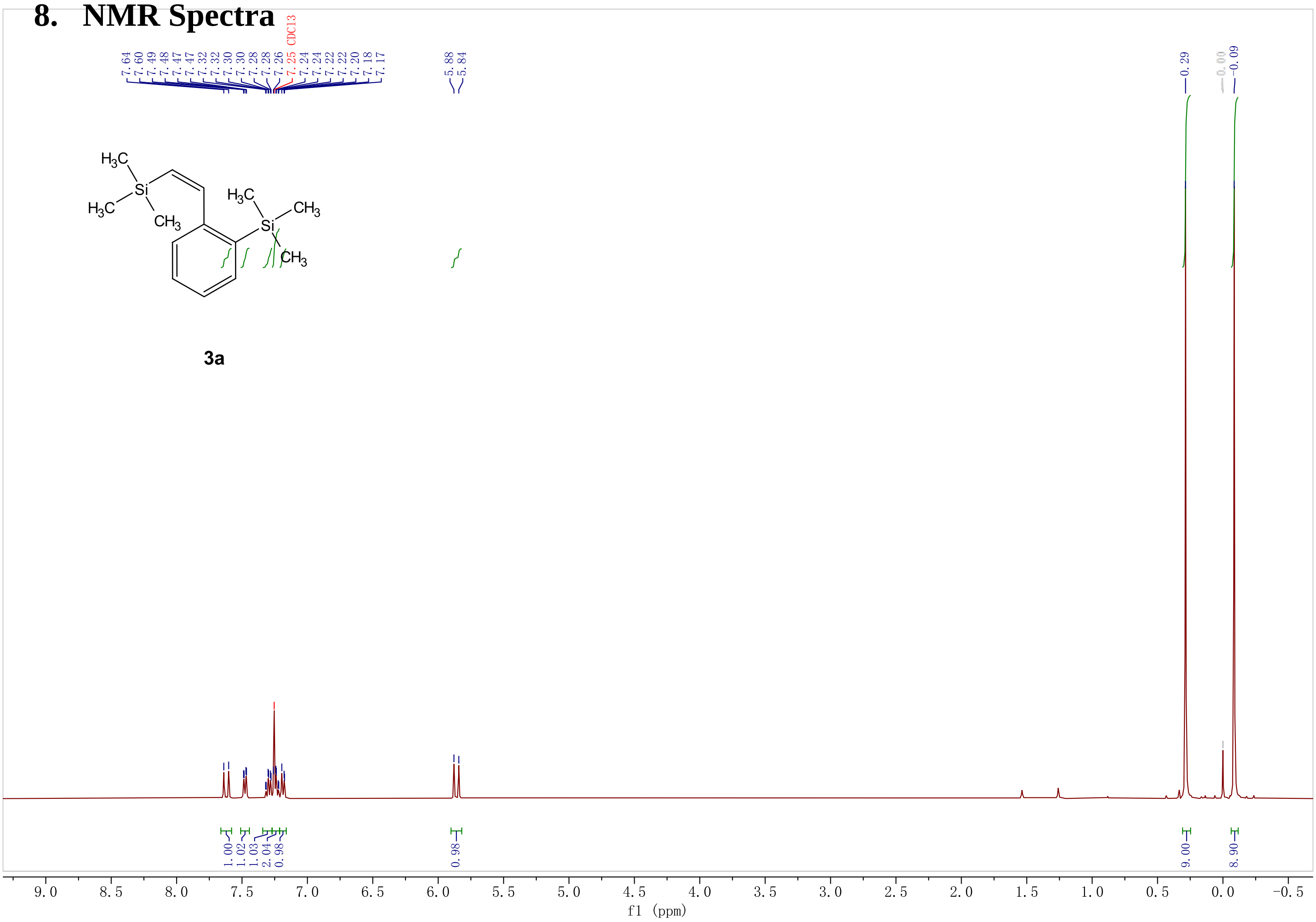
To a 5 mL sealed tube charged with a stir bar was added a mixture of $Pd(dba)_2$ (2.2 mg, 3.75 μmol), 3,5-dimethylpyridin-2(1H)-one (**L1**) (1.2 mg, 10 μmol), K_3PO_4 (21.2 mg, 0.1 mmol), and a ground mixture of CuBr and KBr (12.2 mg, containing 2.0 μmol CuBr and 0.1 mmol KBr). The tube was capped with a Teflon thread plug, and then degassed and backfilled with argon (this procedure was repeated three times). DMF (0.6 mL) was added and the mixture was stirred at 35℃ for 30 s. Then a DMF solution of *ortho*-iodophenylethylene (10.2 μL, containing 2.5 μmol solute) was added and, after stirring for 50s, a freshly prepared CH_2Cl_2 solution of 1,2-bis(dicyclohexylphosphino)ethane (**dcpe**) (80 μL, containing 4.2 mg, 10 μmol **dcpe**) was added, followed with a DMF solution of Ph_3PO (12.5 μL, containing 2.95 μmol solute) as internal standard. The resulting mixture was transferred to an NMR tube under argon and submitted to NMR analysis.

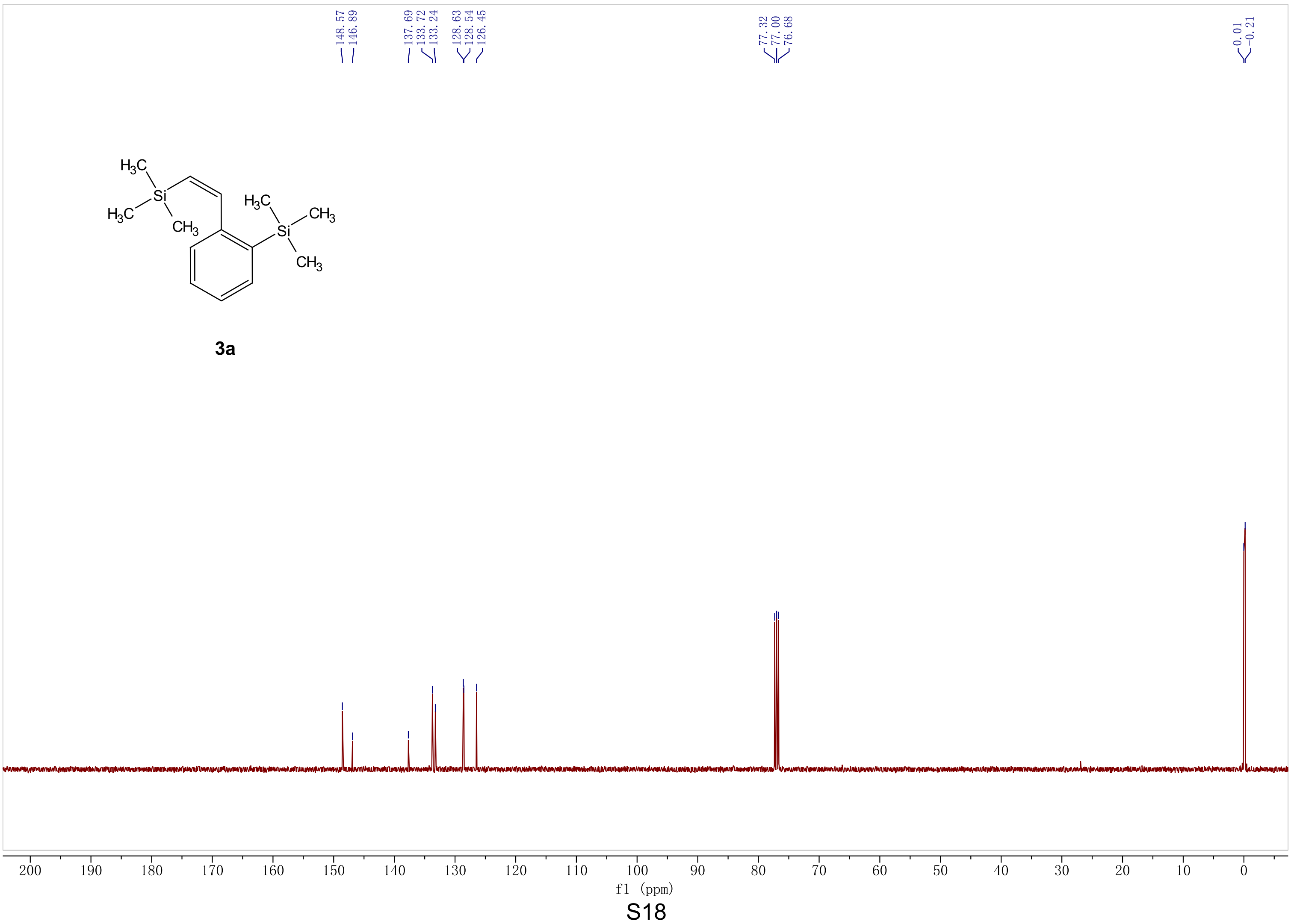
7. References

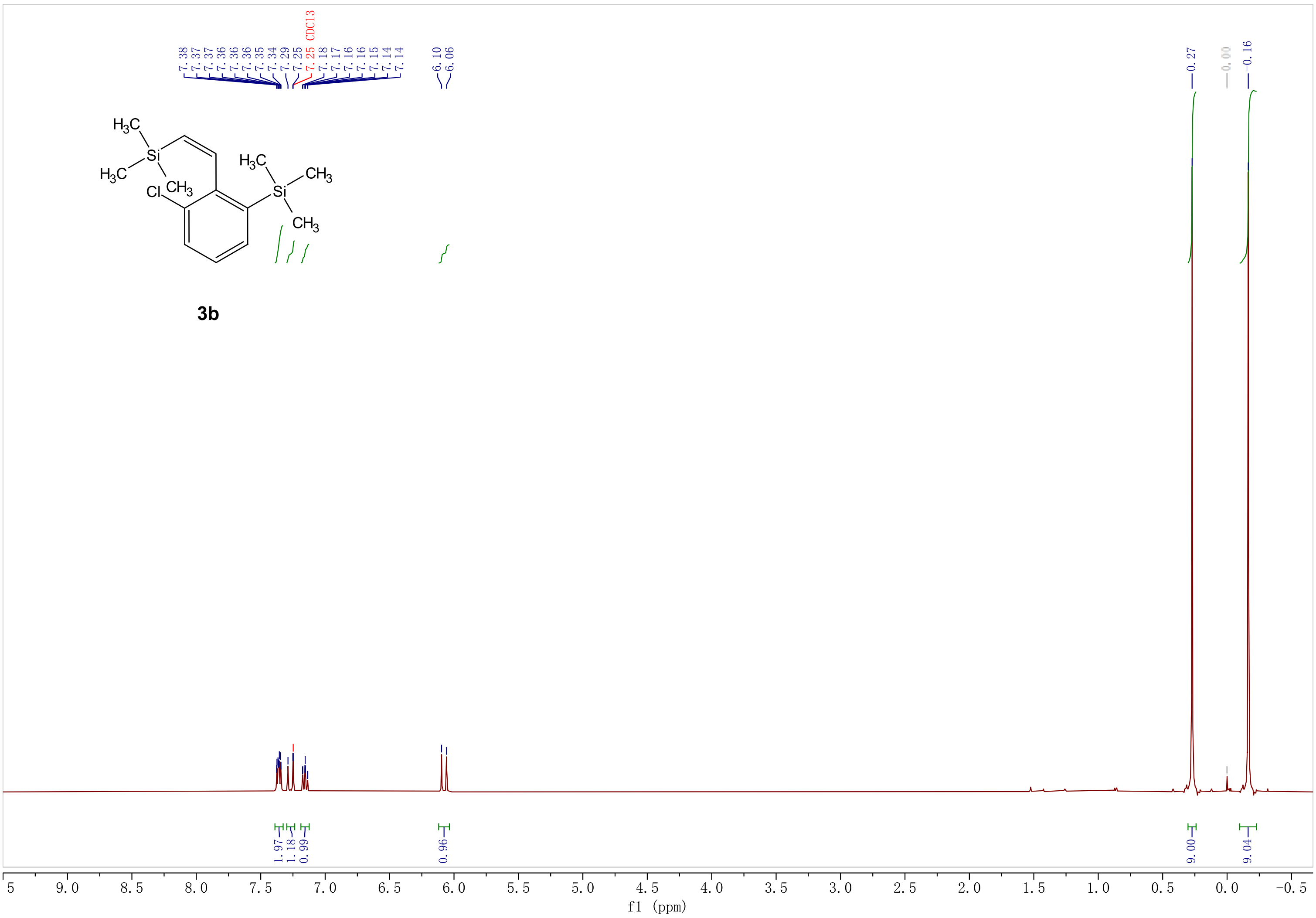
1 (a) T.-J. Hu, G. Zhang, Y.-H. Chen, C.-G. Feng and G.-Q. Lin, *J. Am. Chem. Soc.*, 2016, **138**, 2897; (b) M.-Y. Li, P. Han, T.-J. Hu, D. Wei, G. Zhang, A. Qin, C.-G. Feng, B. Z. Tang and G.-Q. Lin, *iScience*, 2020, **23**, 100966; (c) B.-B. Zhu, W.-B. Ye, Z.-T. He, S.-S. Zhang, C.-G. Feng and G.-Q. Lin, *ACS Catal.*, 2021, **11**, 12123.

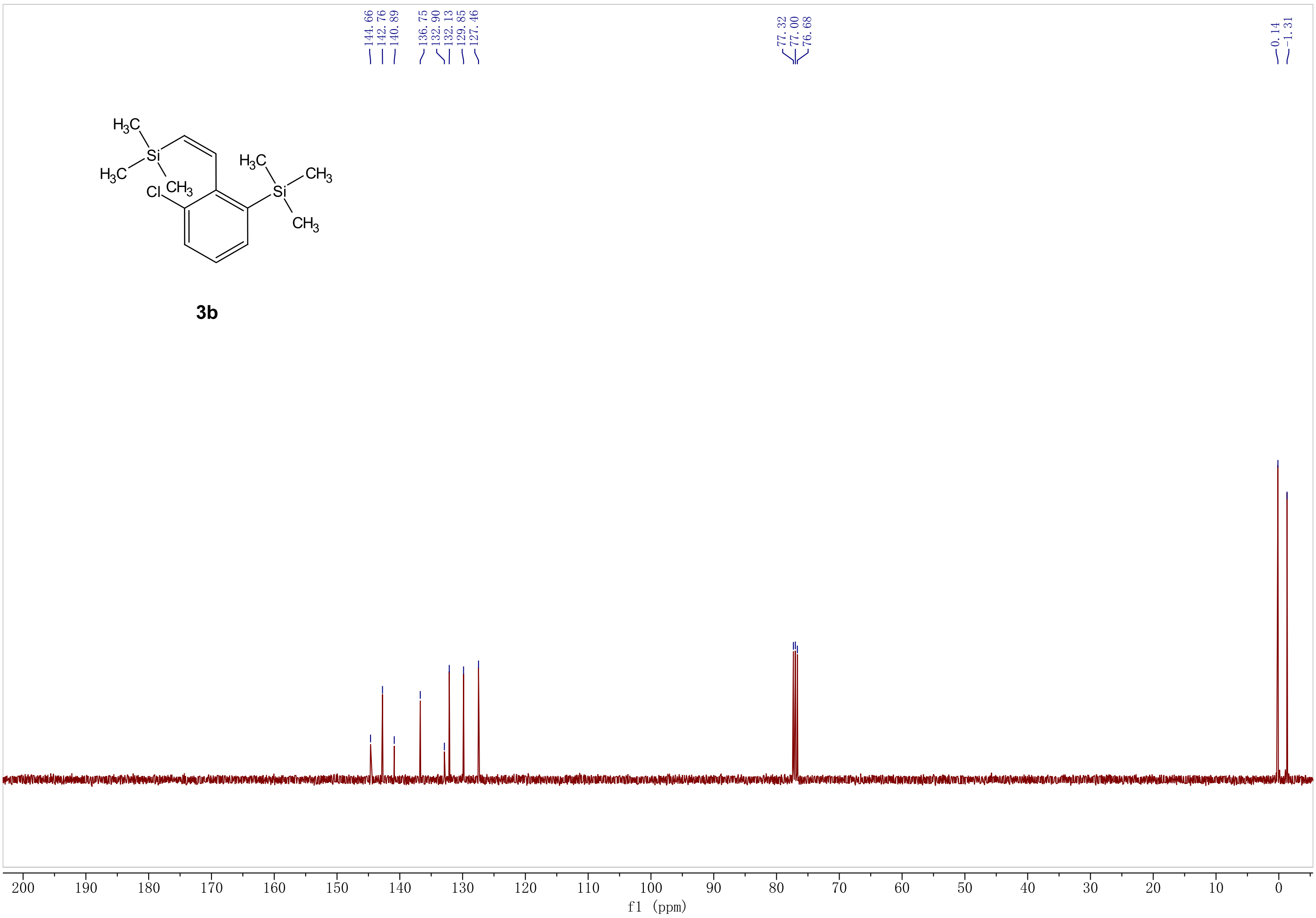
2 K. Mikami, H. Wakabayashi and T. Nakai, *J. Org. Chem.*, 1991, **56**, 4337.

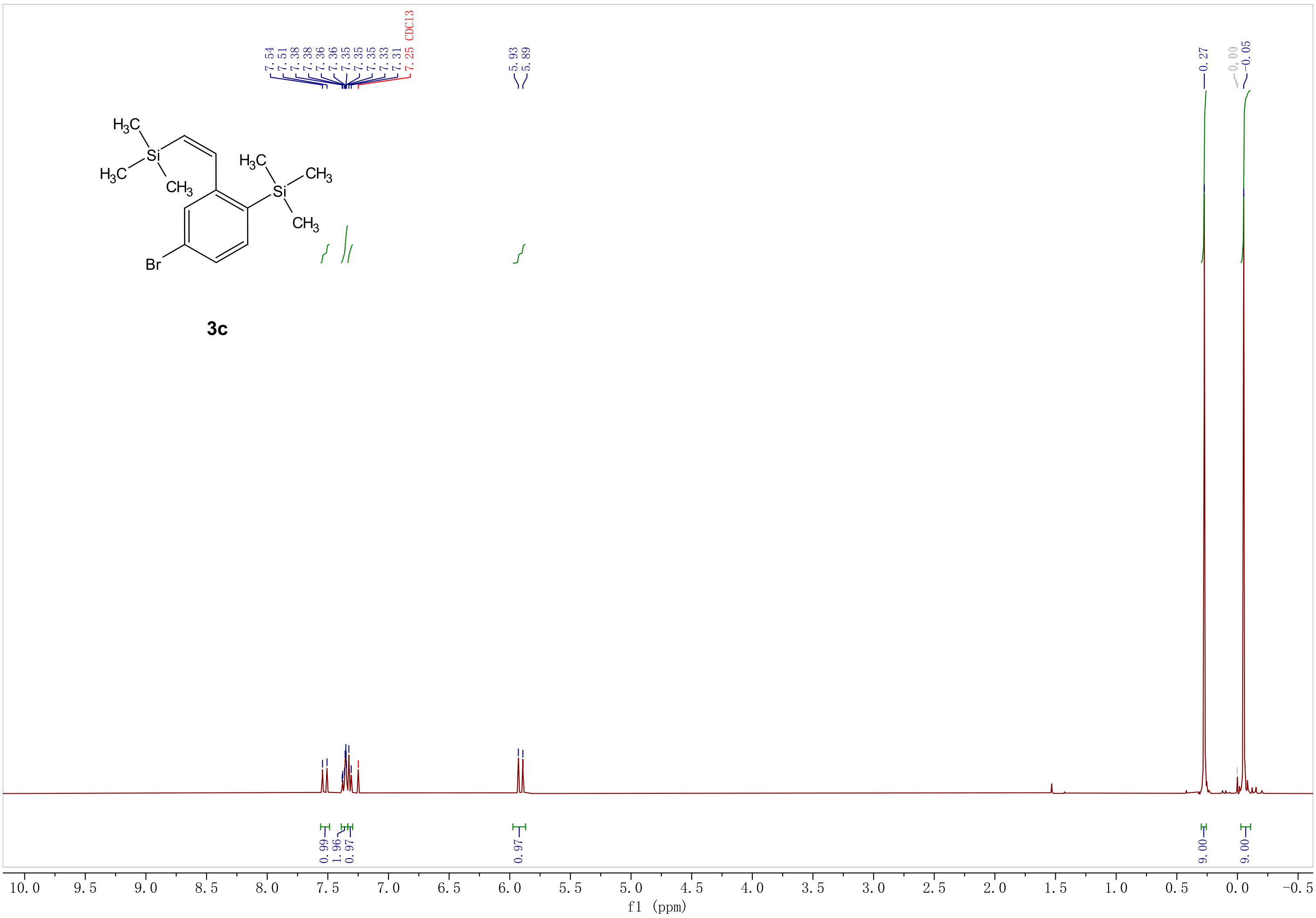
8. NMR Spectra










7.54
7.51
7.38
7.38
7.36
7.36
7.35
7.35
7.35
7.33
7.31
7.25 CDCl3
5.93
5.89
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-0.05
3c
0.99
1.96
0.97
0.97
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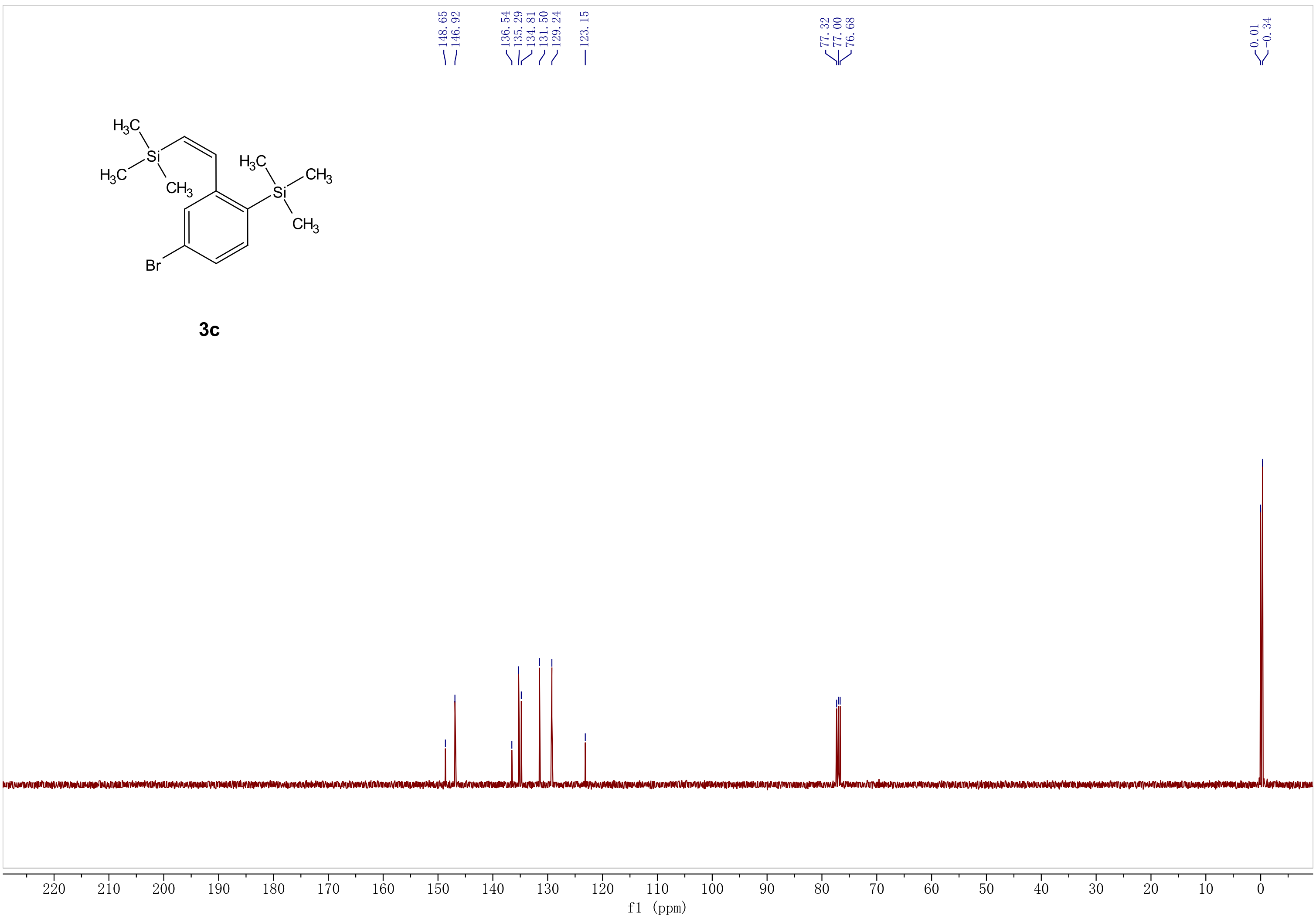
9.00
f1 (ppm)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129.24
123.15
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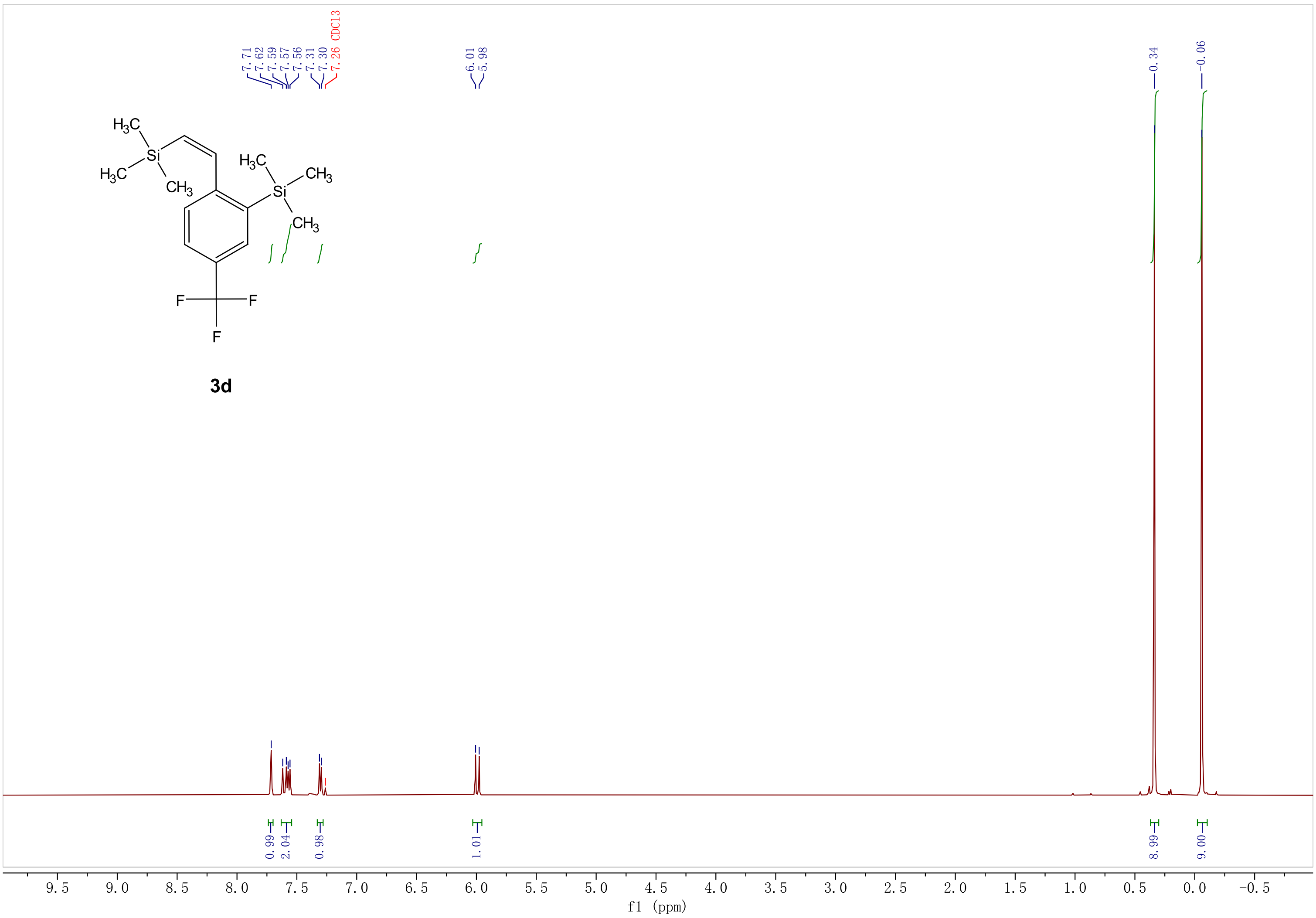
76.68
0.01
-0.34
3c
f1 (ppm)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7.62
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7.57
7.56
7.31
7.30
7.26 CDCl3
6.01
5.98
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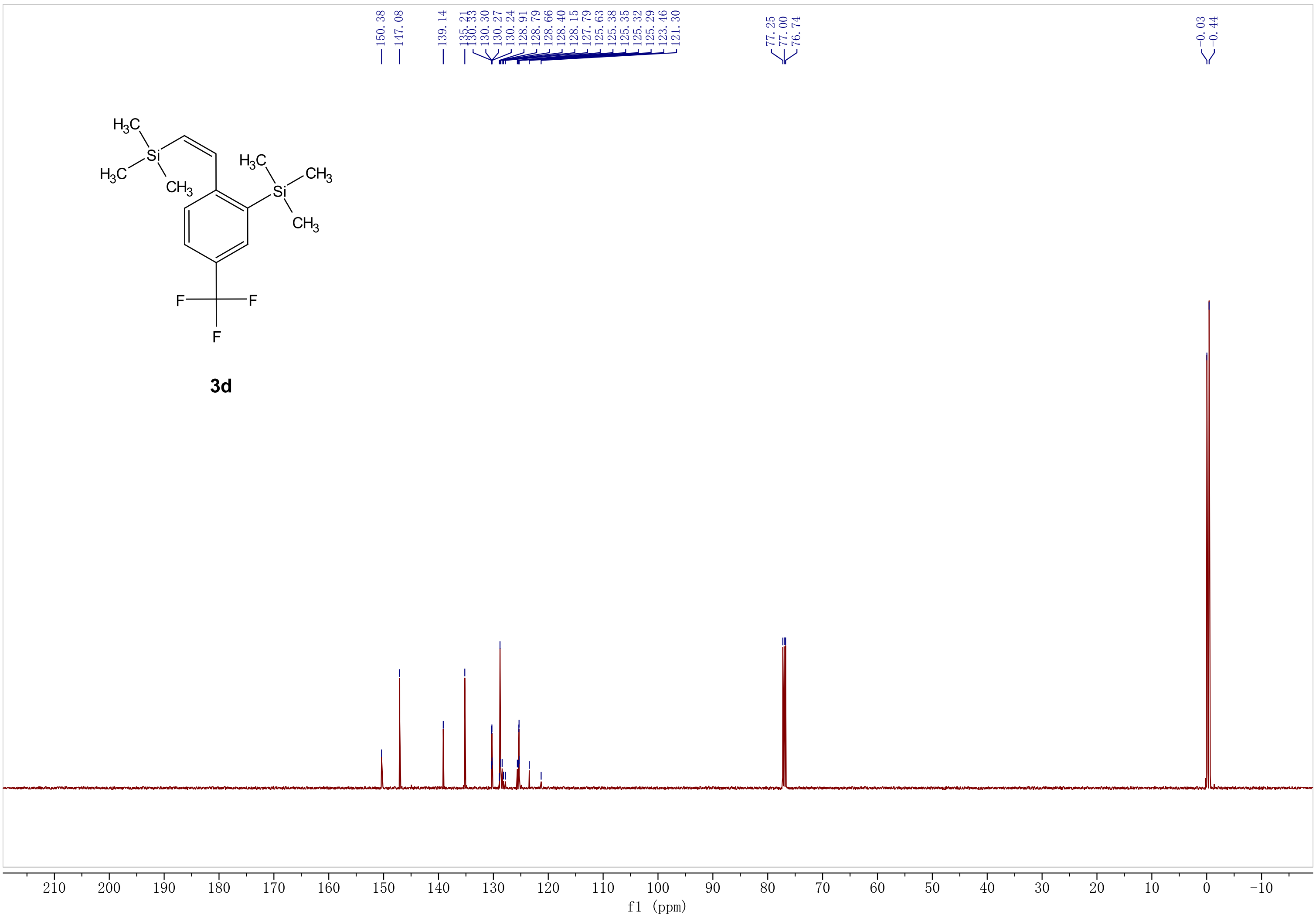
-0.06
0.99
2.04
0.98
1.01
8.99
9.00
3d
f1 (ppm)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130.24
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128.79
128.66
128.40
128.15
127.79
125.63
125.38
125.35
125.32
125.29
123.46
121.30
77.25
77.00
76.74
-0.03
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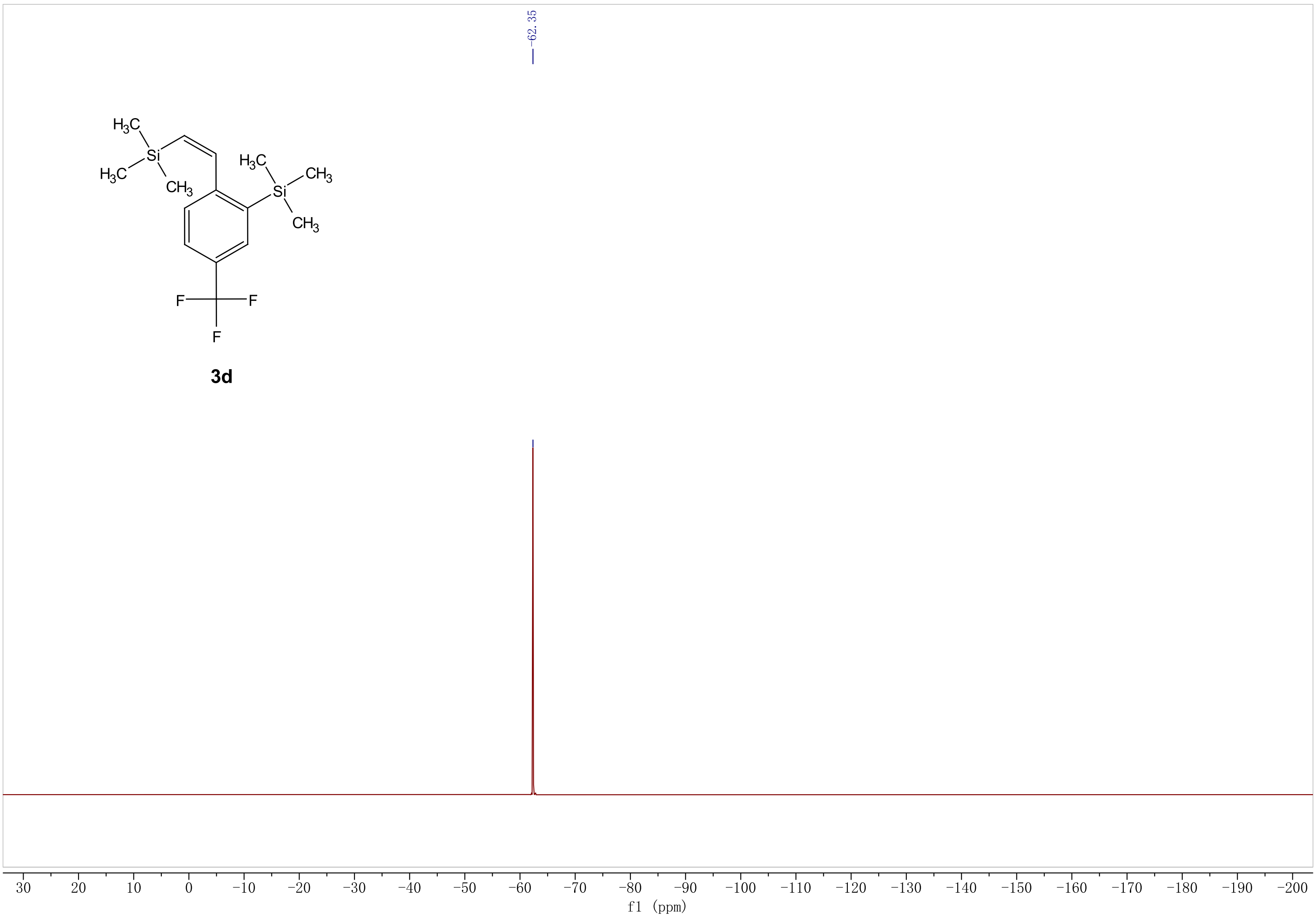
3d
f1 (ppm)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3d
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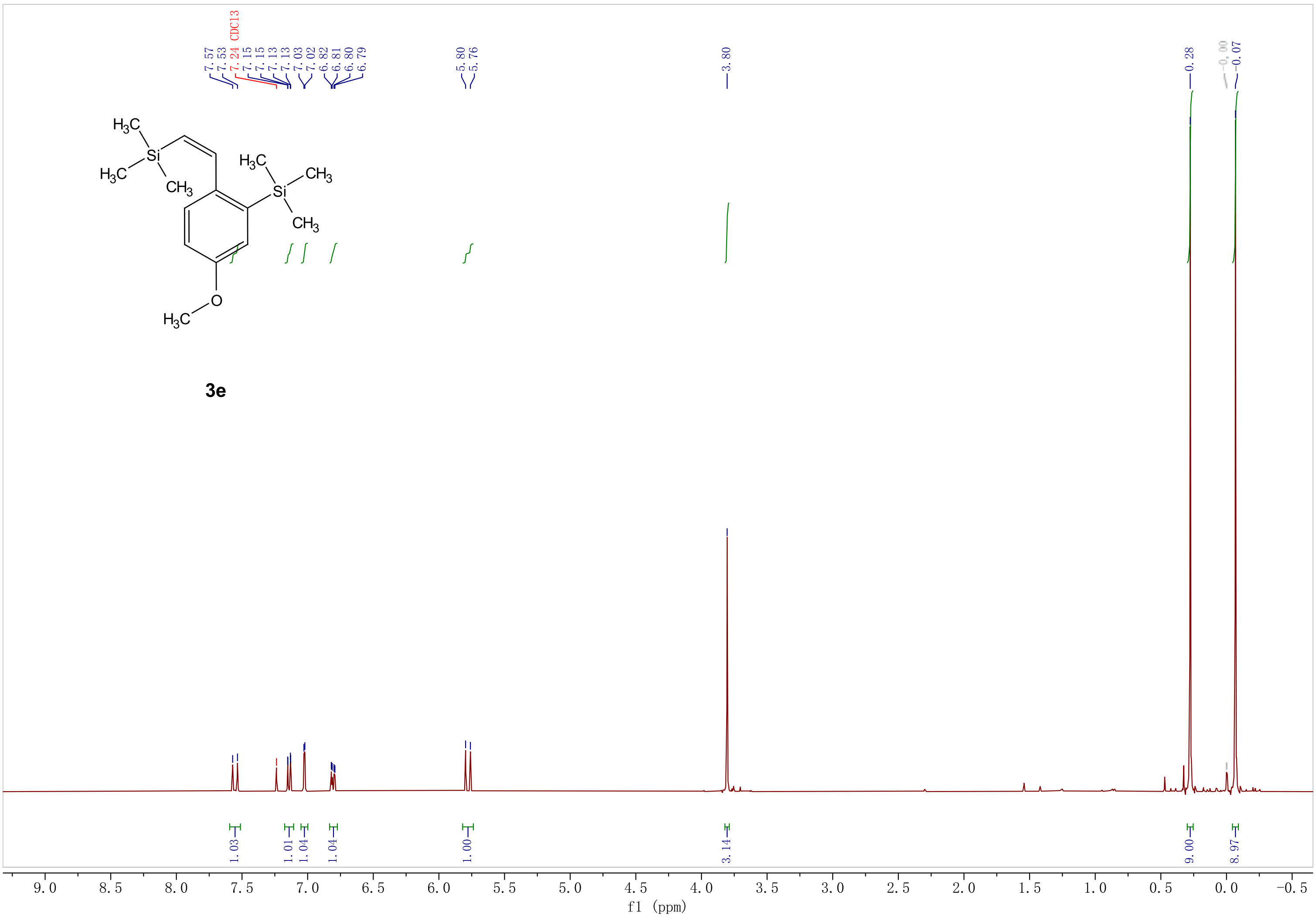
f1 (ppm)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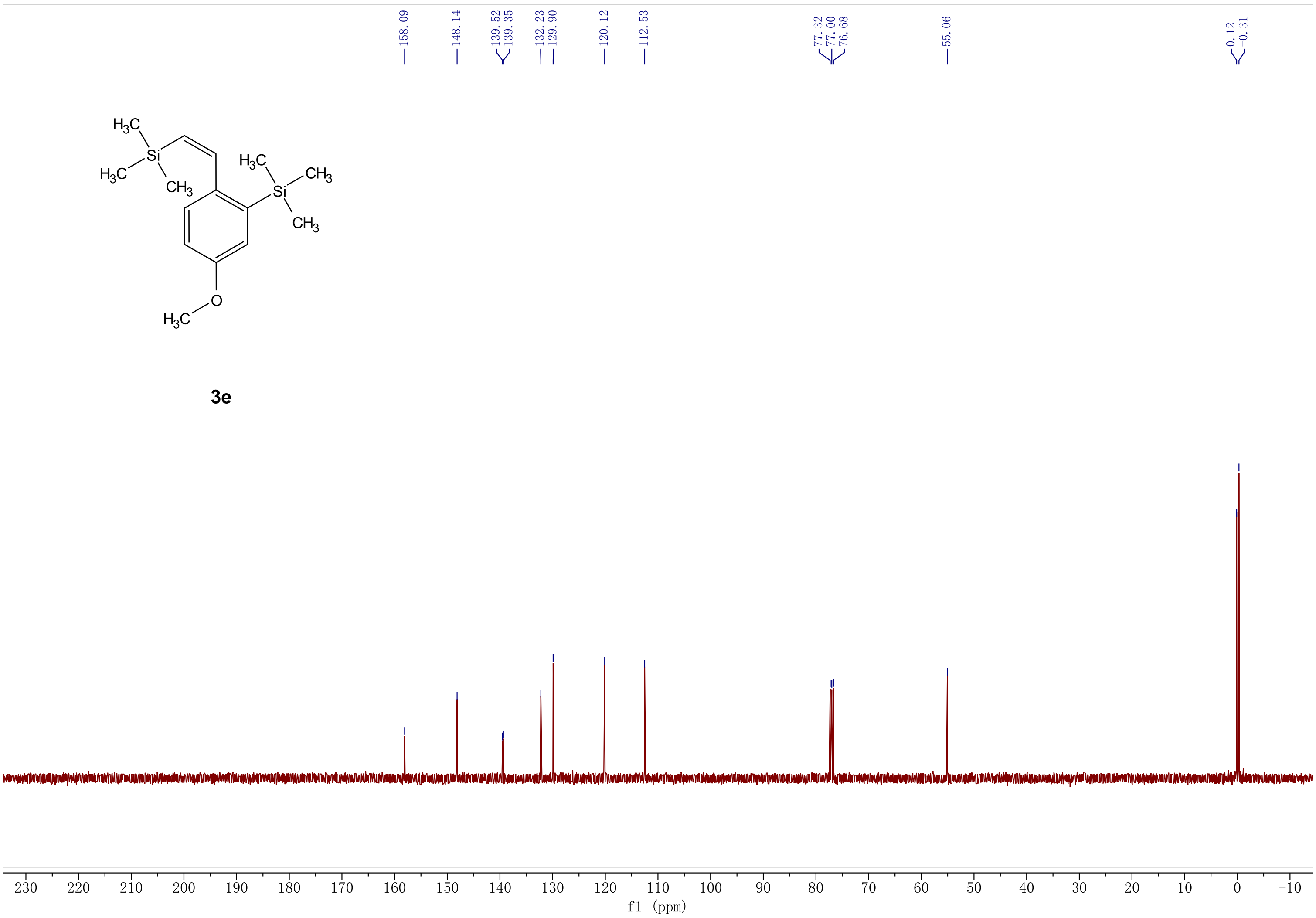
7.15
7.13
7.13
7.03
7.02
6.82
6.81
6.80
6.79
5.80
5.76
3.80
0.28
0.00
-0.07
3e
1.03
1.01
1.04
1.04
1.00
3.14
9.00
8.97
9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0 -0.5
f1 (ppm)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132.23
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112.53
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77.00
76.68
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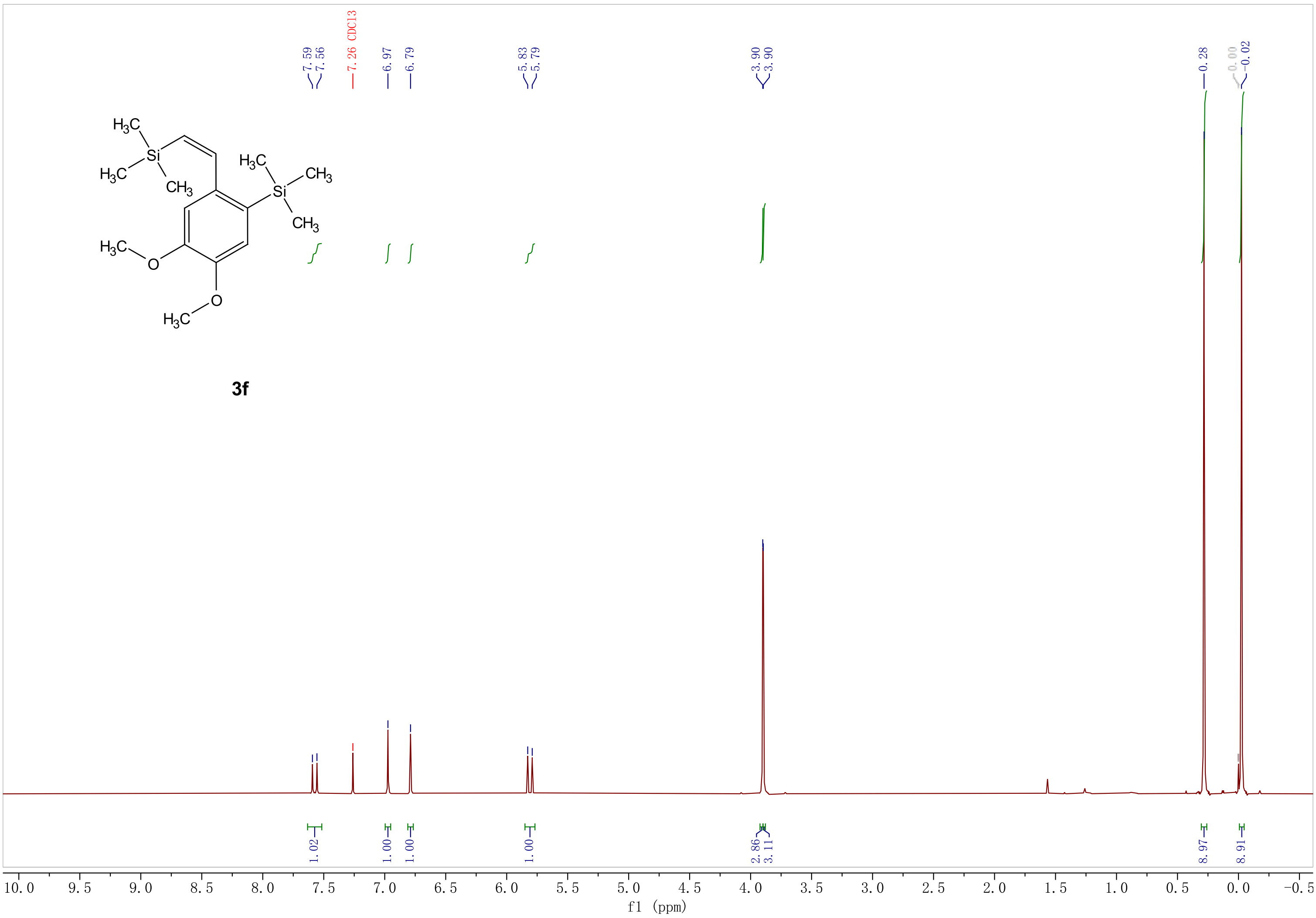
0.12
-0.31
3e
f1 (ppm)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7.56
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3.90
3.90
0.28
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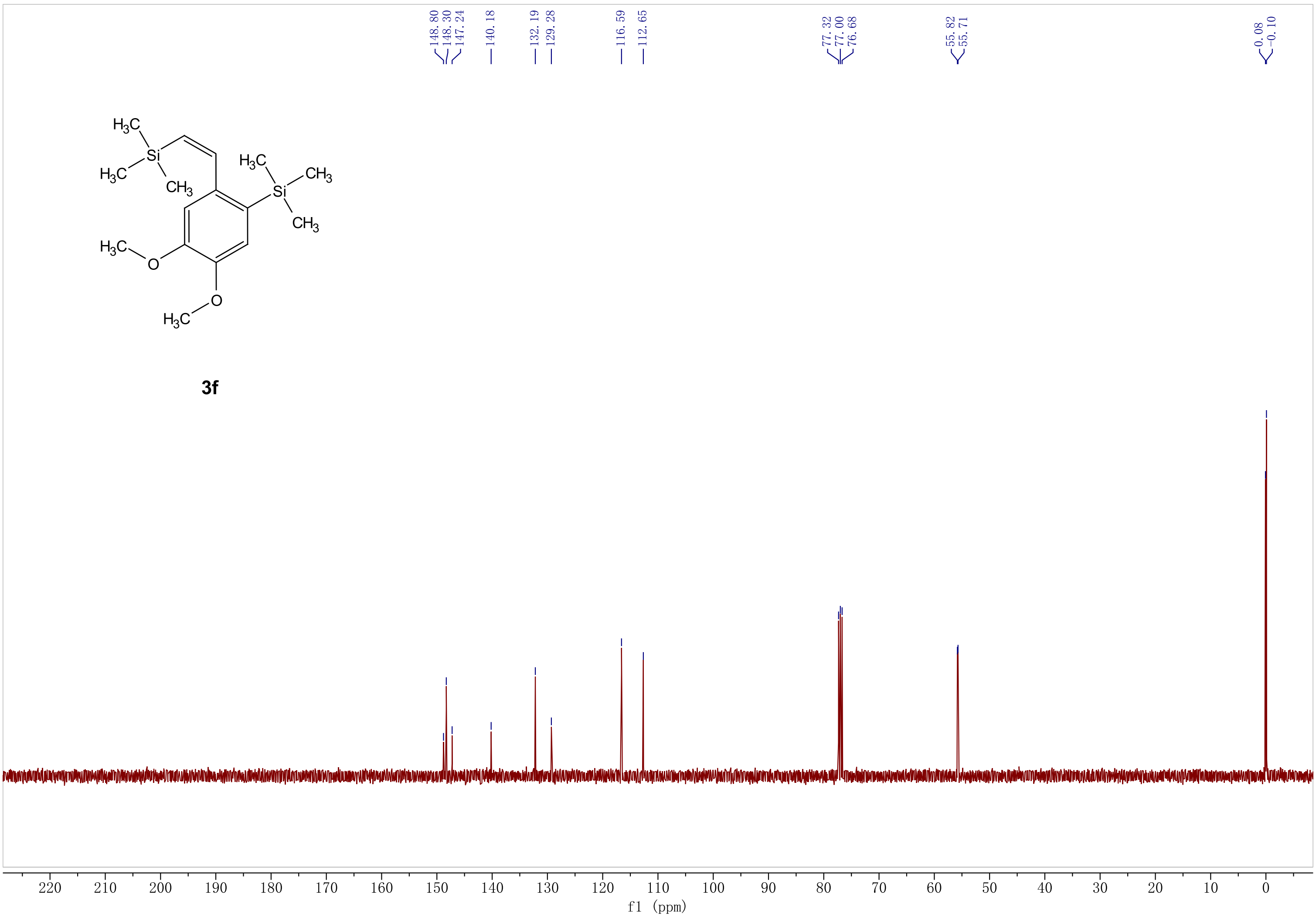
3f
1.02
1.00
1.00
1.00
2.86
3.11
8.97
8.91
f1 (ppm)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147.24
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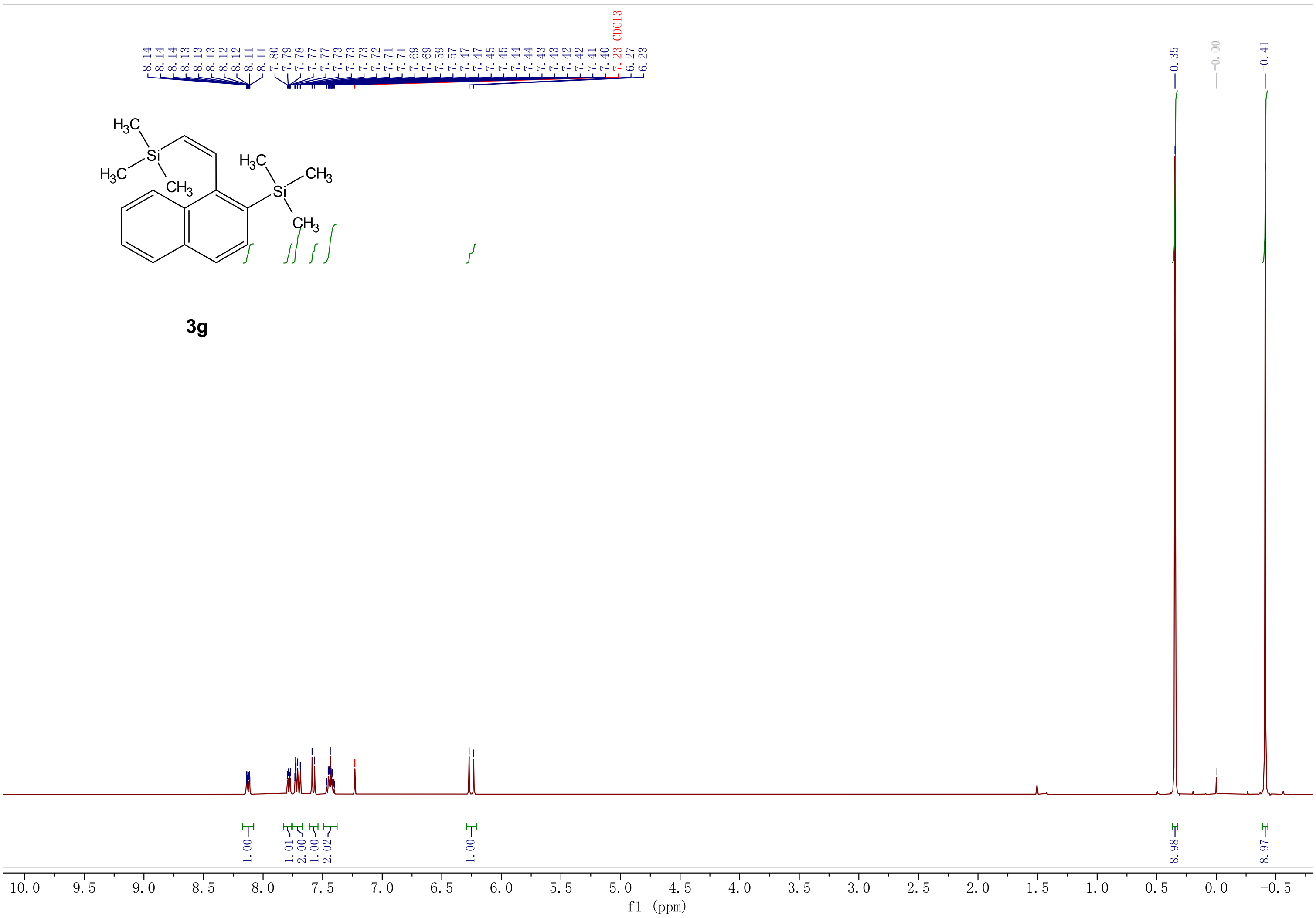
-0.10
H3C
Si
CH3
O
3f
f1 (ppm)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7.23 CDCl3
6.27
6.23
0.35
-0.00
-0.41
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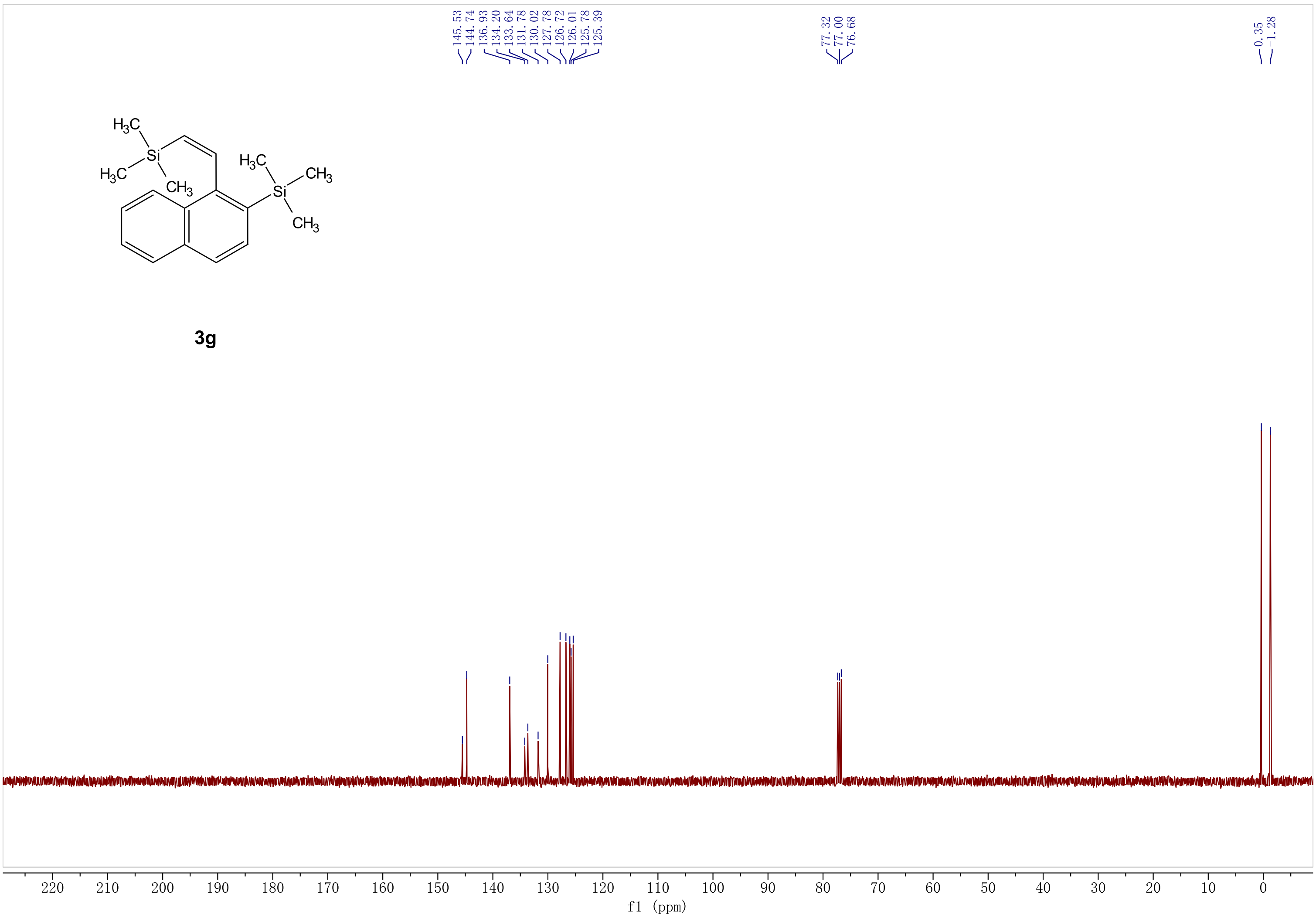
1.00
2.02
1.00
8.98
8.97
H3C
Si
CH3
3g
f1 (ppm)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131.78
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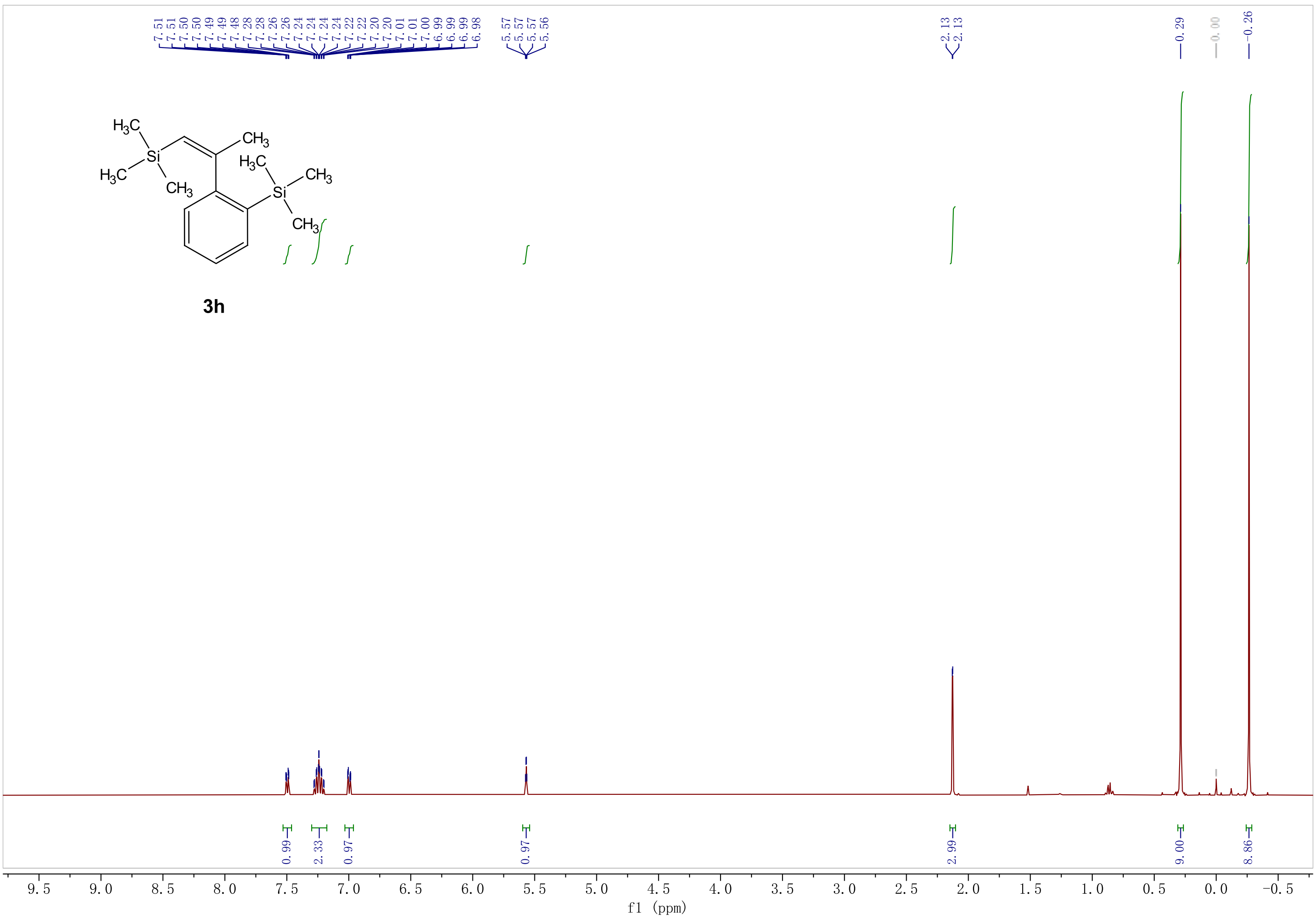
125.78
125.39
77.32
77.00
76.68
0.35
-1.28
3g
f1 (ppm)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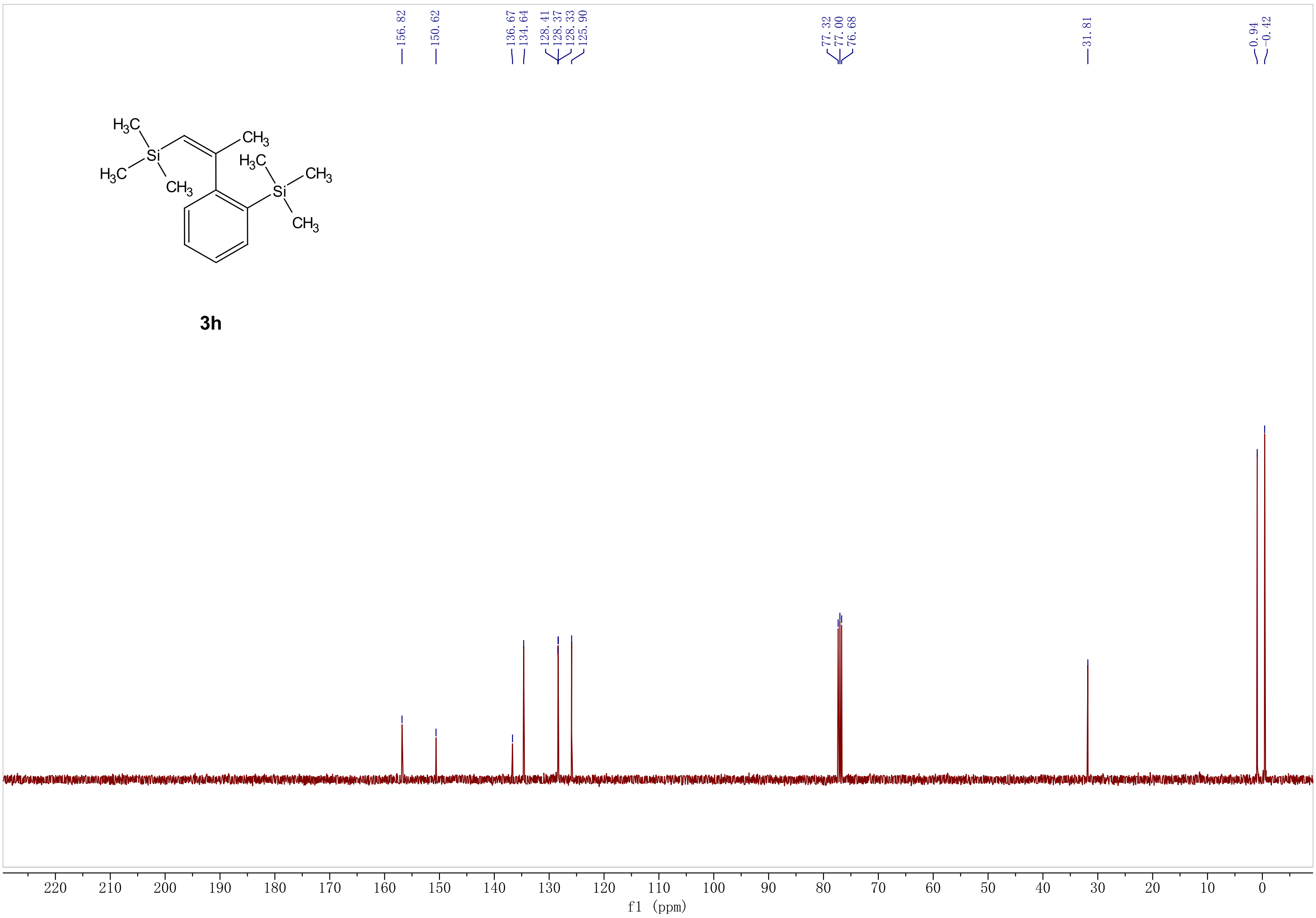
7.48
7.28
7.28
7.26
7.26
7.24
7.24
7.24
7.24
7.22
7.22
7.20
7.20
7.01
7.01
7.00
6.99
6.99
6.98
5.57
5.57
5.57
5.56
2.13
2.13
0.29
0.00
-0.26
3h
0.99
2.33
0.97
0.97
2.99
9.00
8.86
f1 (ppm)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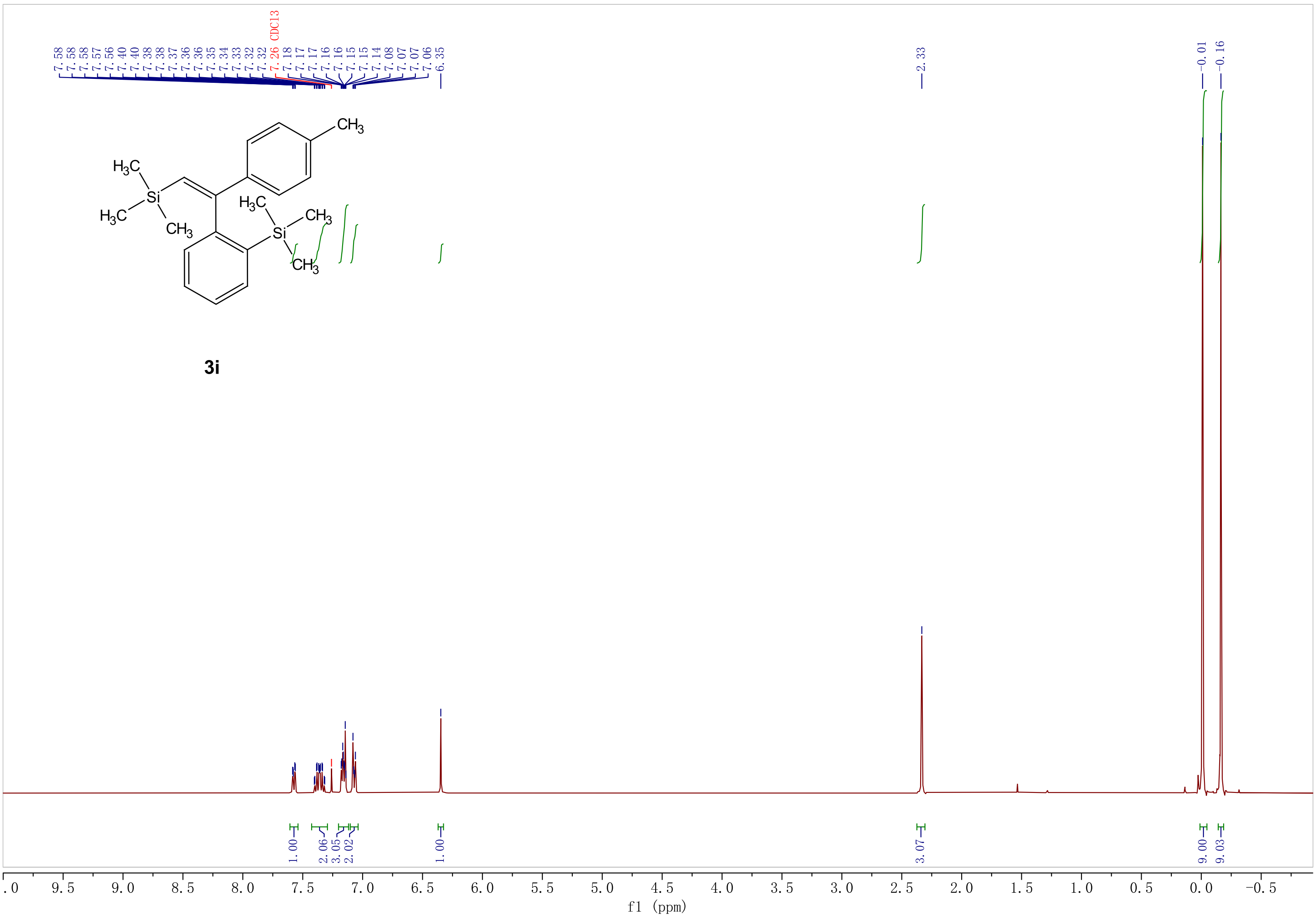
76.68
31.81
0.94
-0.42
3h
f1 (ppm)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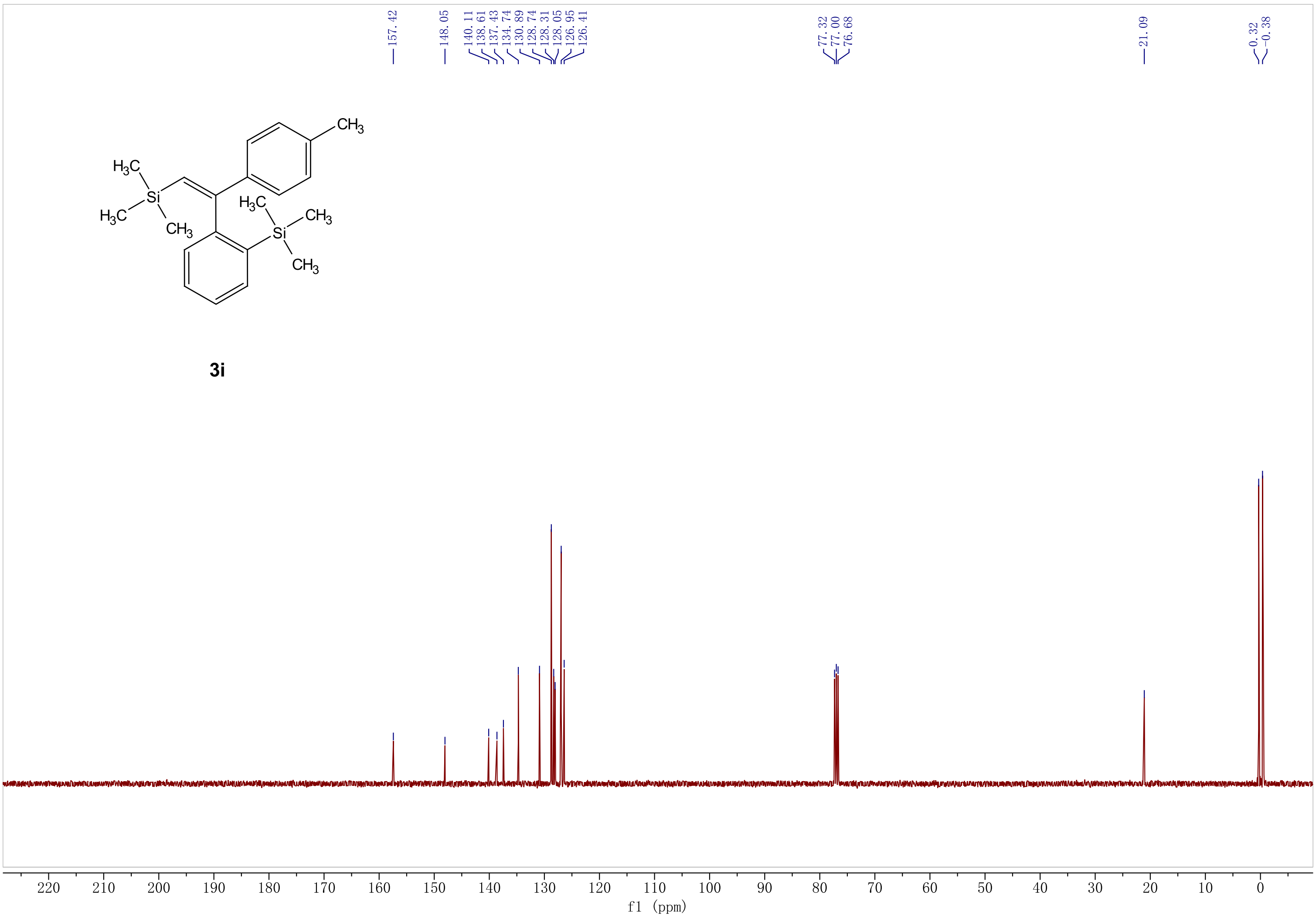
7.35
7.34
7.33
7.32
7.32
7.26 CDCl3
7.18
7.17
7.17
7.16
7.16
7.15
7.15
7.14
7.08
7.07
7.07
7.06
6.35
2.33
-0.01
-0.16
3i
1.00
2.06
3.05
2.02
1.00
3.07
9.00
9.03
f1 (ppm)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126.95
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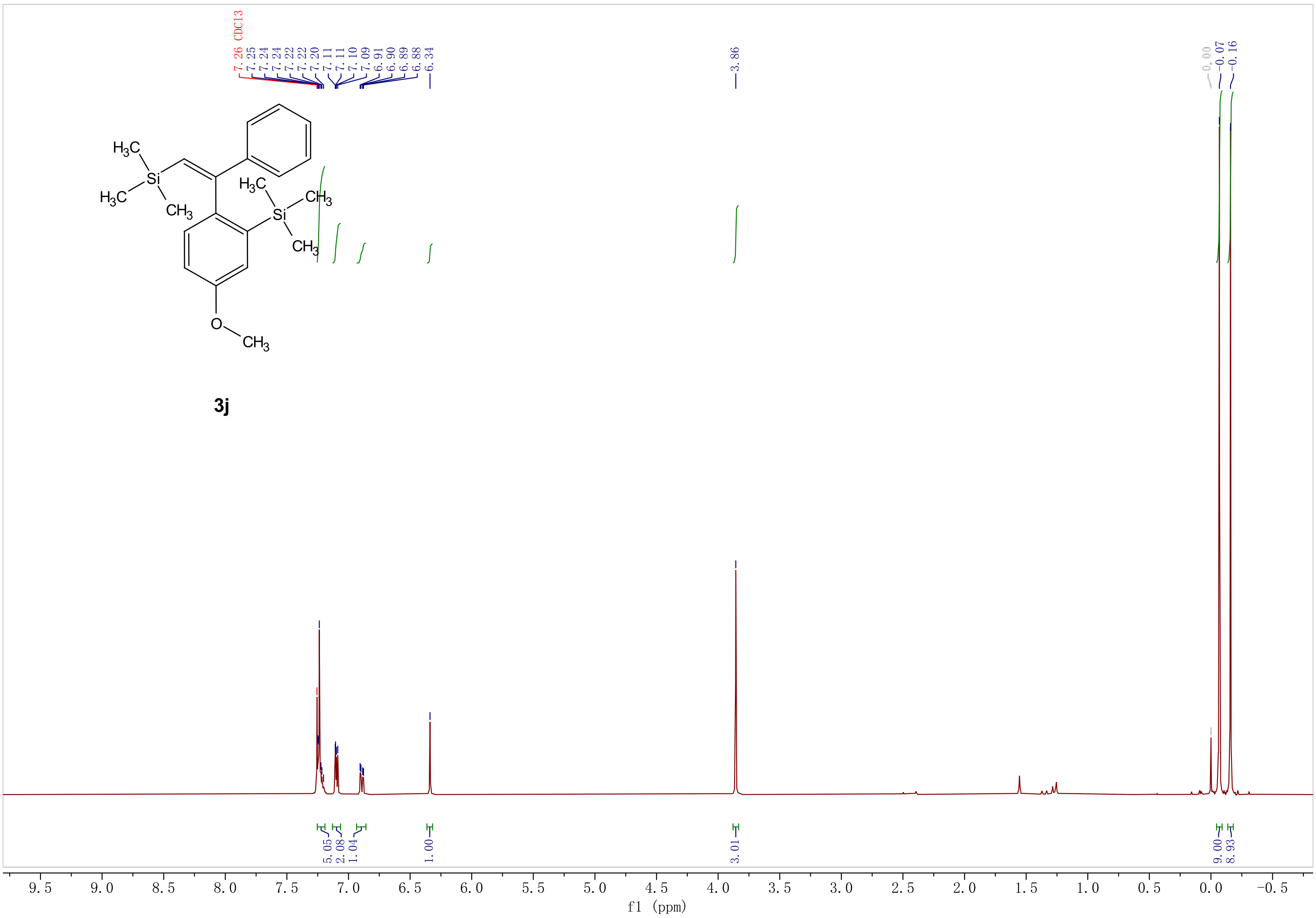
77.32
77.00
76.68
21.09
0.32
-0.38
CH_3
H_3C
Si
H_3C
CH_3
H_3C
CH_3
Si
CH_3
3i
220 210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0
f1 (ppm)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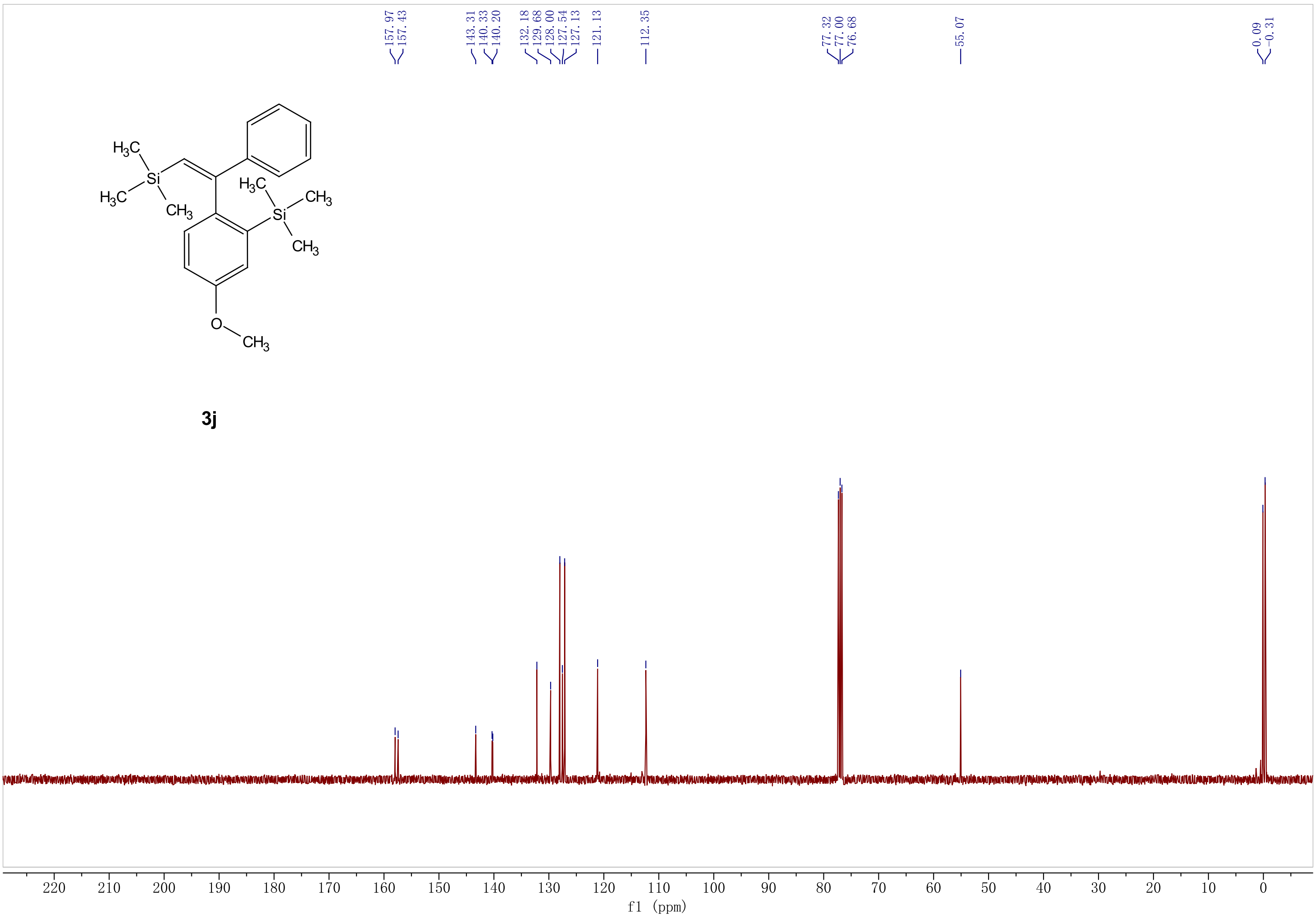
7.24
7.24
7.22
7.22
7.20
7.11
7.11
7.10
7.09
6.91
6.90
6.89
6.88
6.34
3.86
0.00
-0.07
-0.16
H_3C
Si
H_3C
CH_3
H_3C
CH_3
Si
CH_3
O
CH_3
3j
5.05
2.08
1.04
1.00
3.01
9.00
8.93
9.5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0 -0.5
f1 (ppm)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128.00
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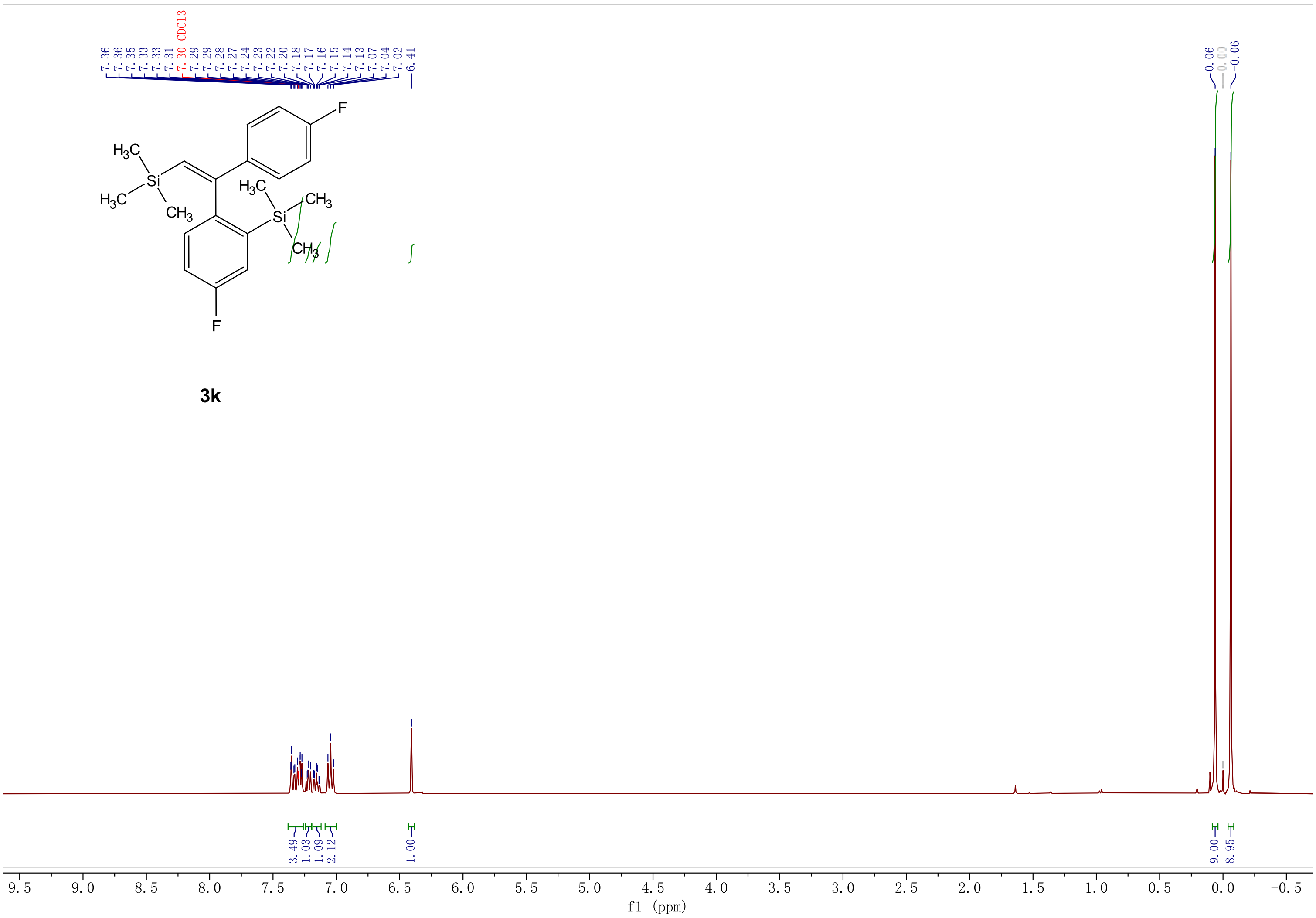
127.13
121.13
112.35
77.32
77.00
76.68
55.07
0.09
-0.31
H3C
Si
CH3
H3C
O
3j
f1 (ppm)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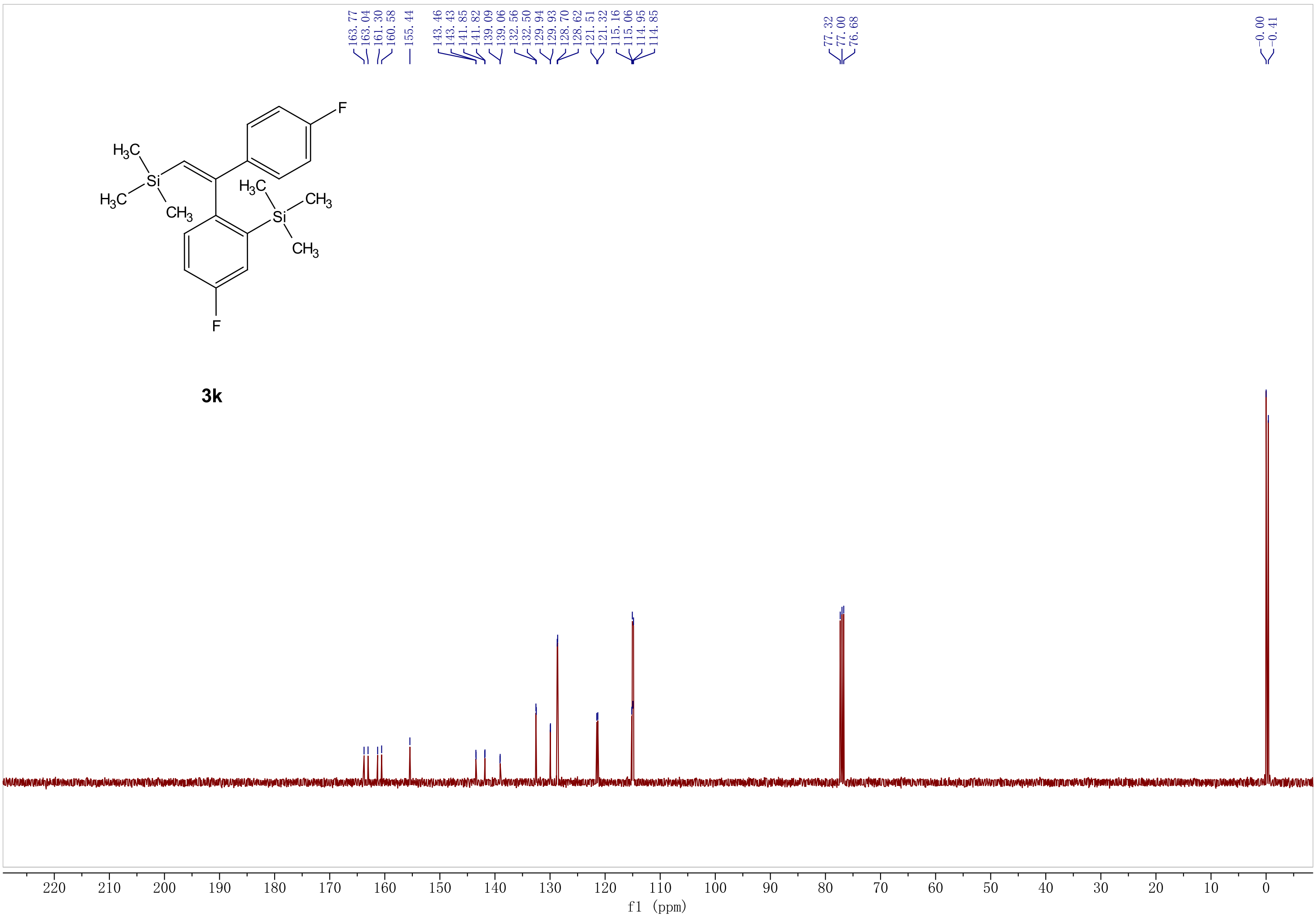
7.33
7.33
7.31
7.30 CDC13
7.29
7.29
7.28
7.27
7.24
7.23
7.22
7.20
7.18
7.17
7.16
7.15
7.14
7.13
7.07
7.04
7.02
6.41
0.06
0.00
-0.06
F
H3C
Si
CH3
3k
3.49
1.03
1.09
2.12
1.00
9.00
8.95
f1 (ppm)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139.06
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129.94
129.93
128.70
128.62
121.51
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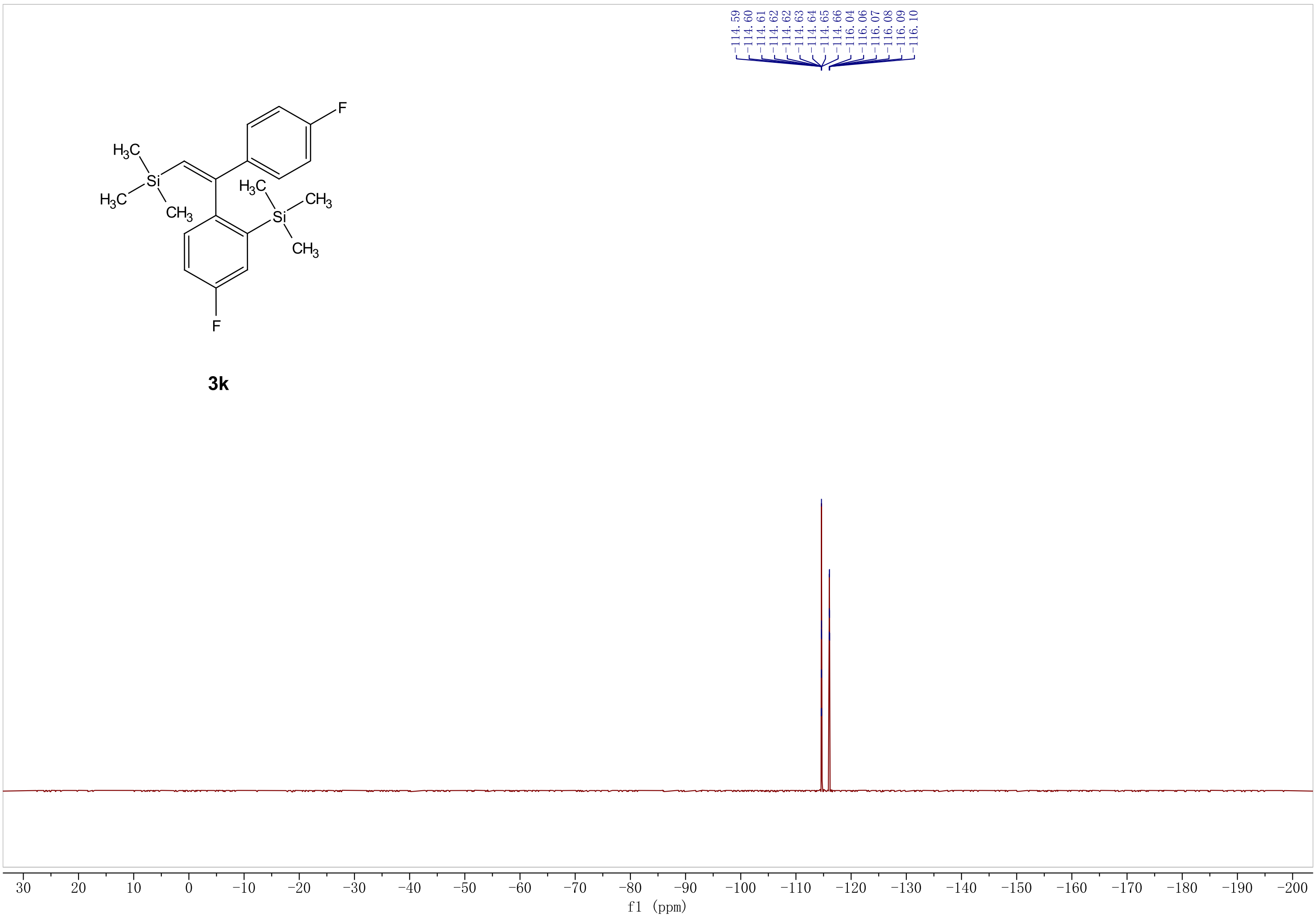
114.85
77.32
77.00
76.68
0.00
-0.41
3k
f1 (ppm)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-114.60
-114.61
-114.62
-114.63
-114.64
-114.65
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-116.04
-116.06
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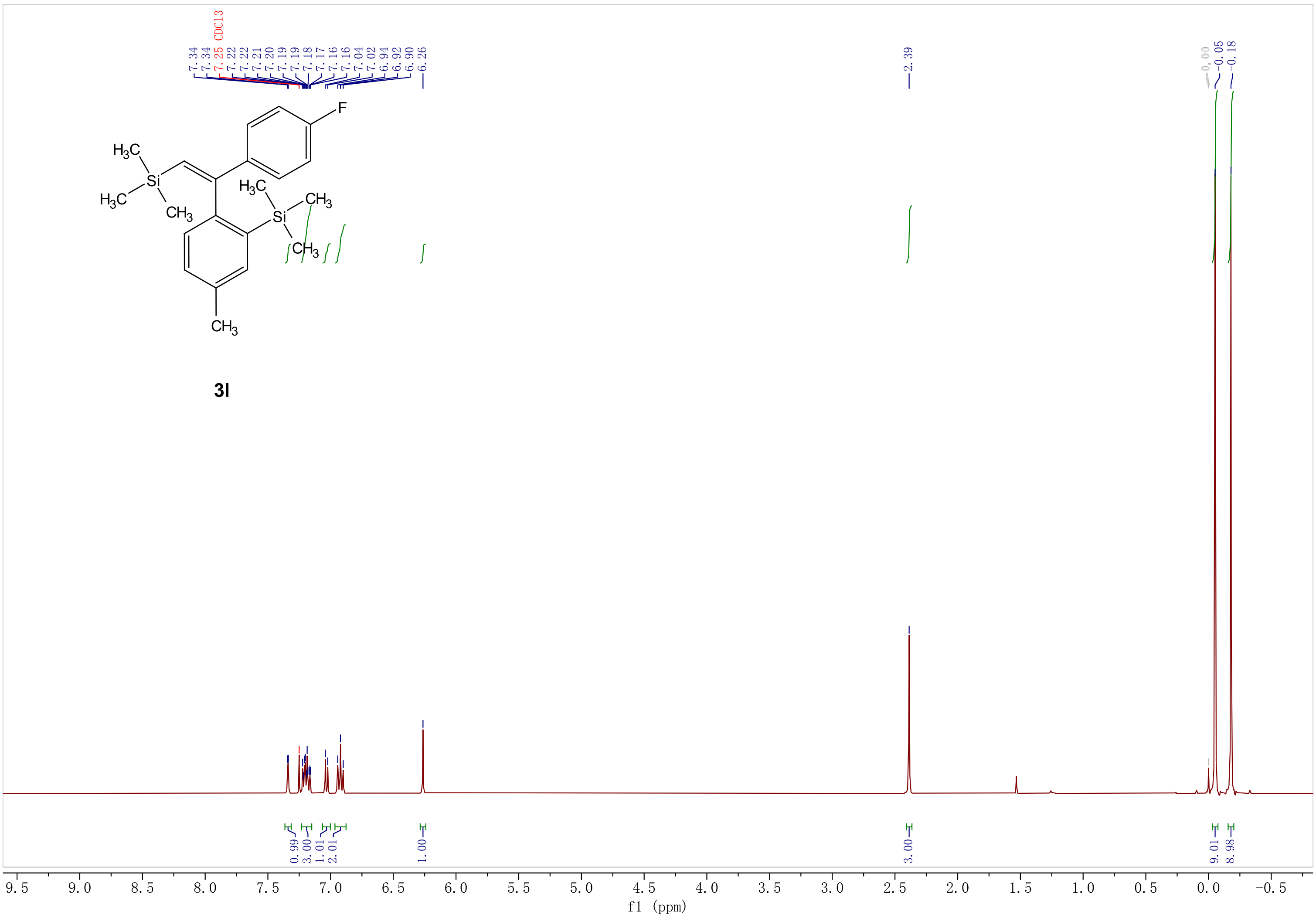
-116.08
-116.09
-116.10
3k
f1 (ppm)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7.34
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7.22
7.22
7.21
7.20
7.19
7.18
7.17
7.16
7.16
7.04
7.02
6.94
6.92
6.90
6.26
2.39
0.00
-0.05
-0.18
0.99
3.00
1.01
2.01
1.00
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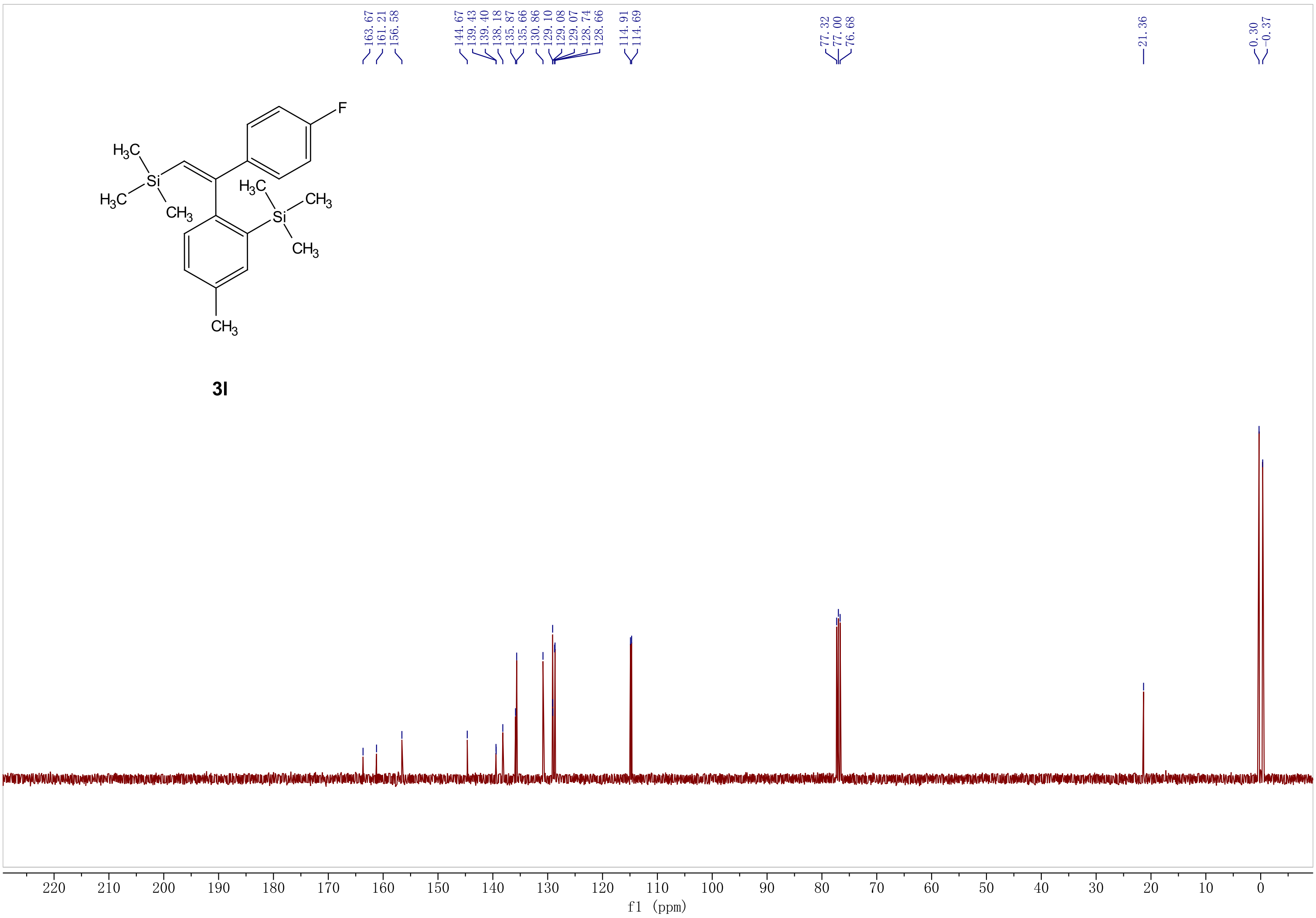
9.01
8.98
f1 (ppm)

3l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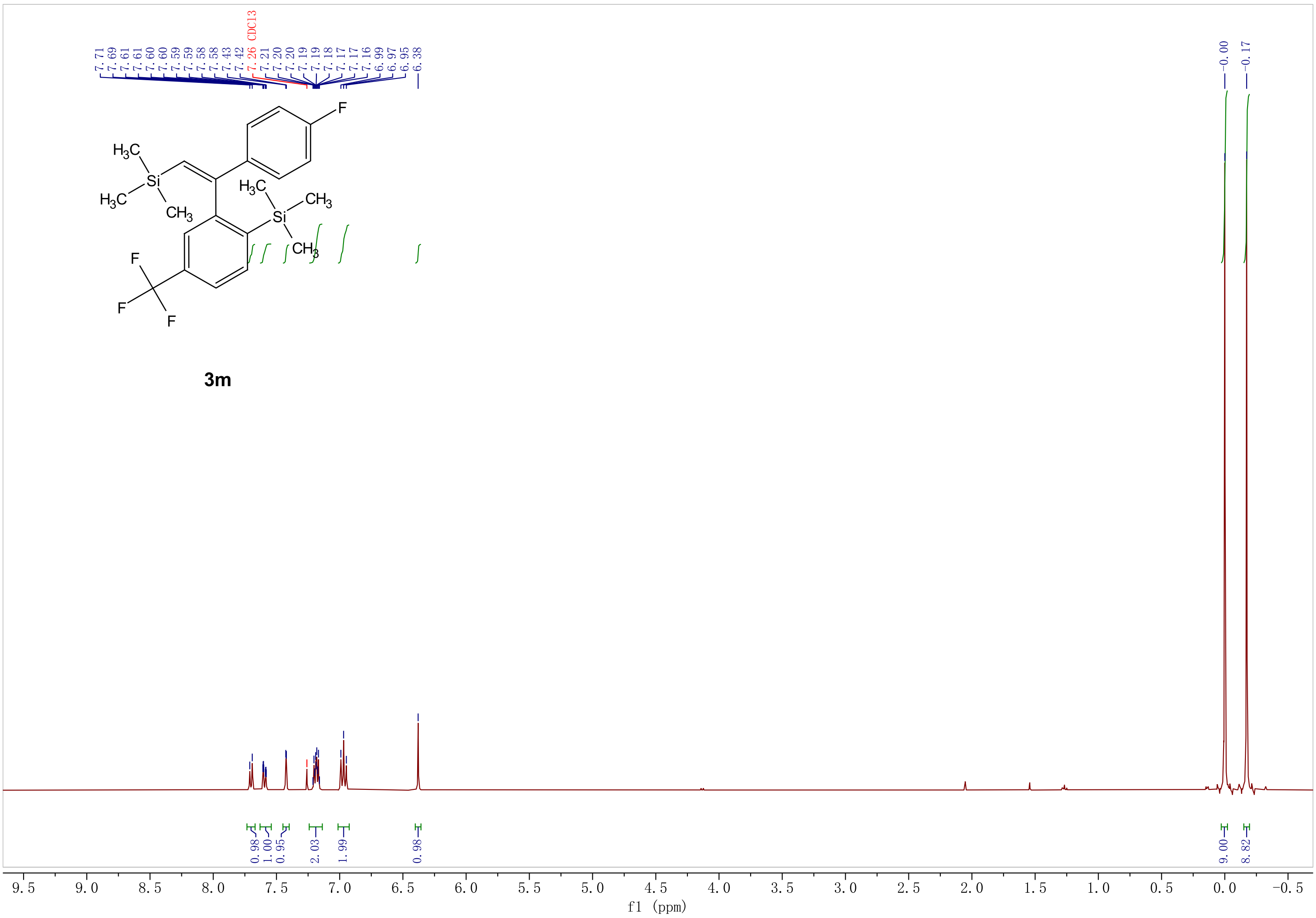
130.86
129.10
129.08
129.07
128.74
128.66
114.91
114.69
77.32
77.00
76.68
21.36
0.30
-0.37
f1 (ppm)

3l

-115.08
-115.10
-115.11
-115.11
-115.12
-115.13
-115.13
-115.14
-115.16
3l
30 20 10 0 -10 -20 -30 -40 -50 -60 -70 -80 -90 -100 -110 -120 -130 -140 -150 -160 -170 -180 -190 -200
f1 (ppm)



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7.69
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7.60
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7.59
7.58
7.58
7.43
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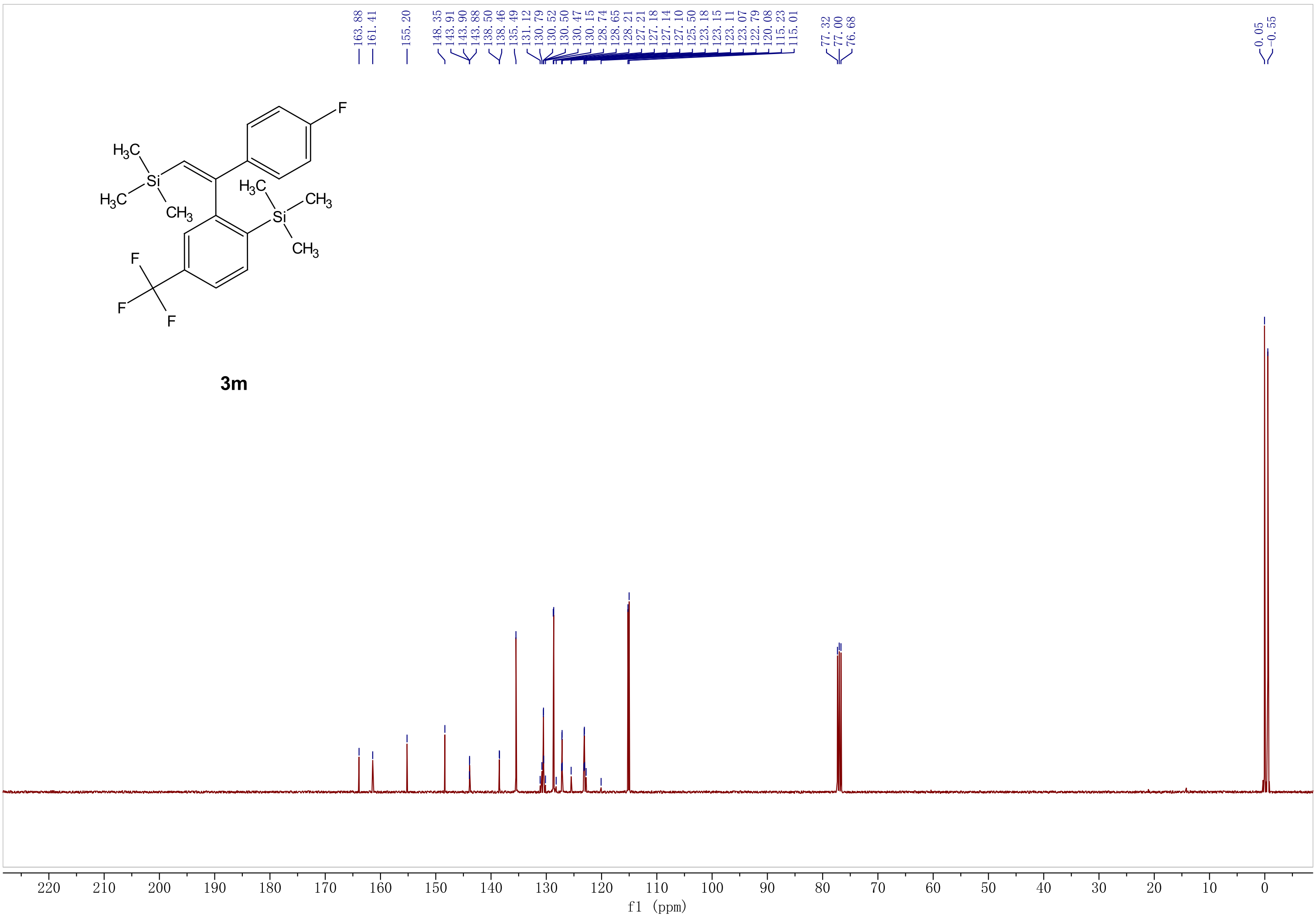
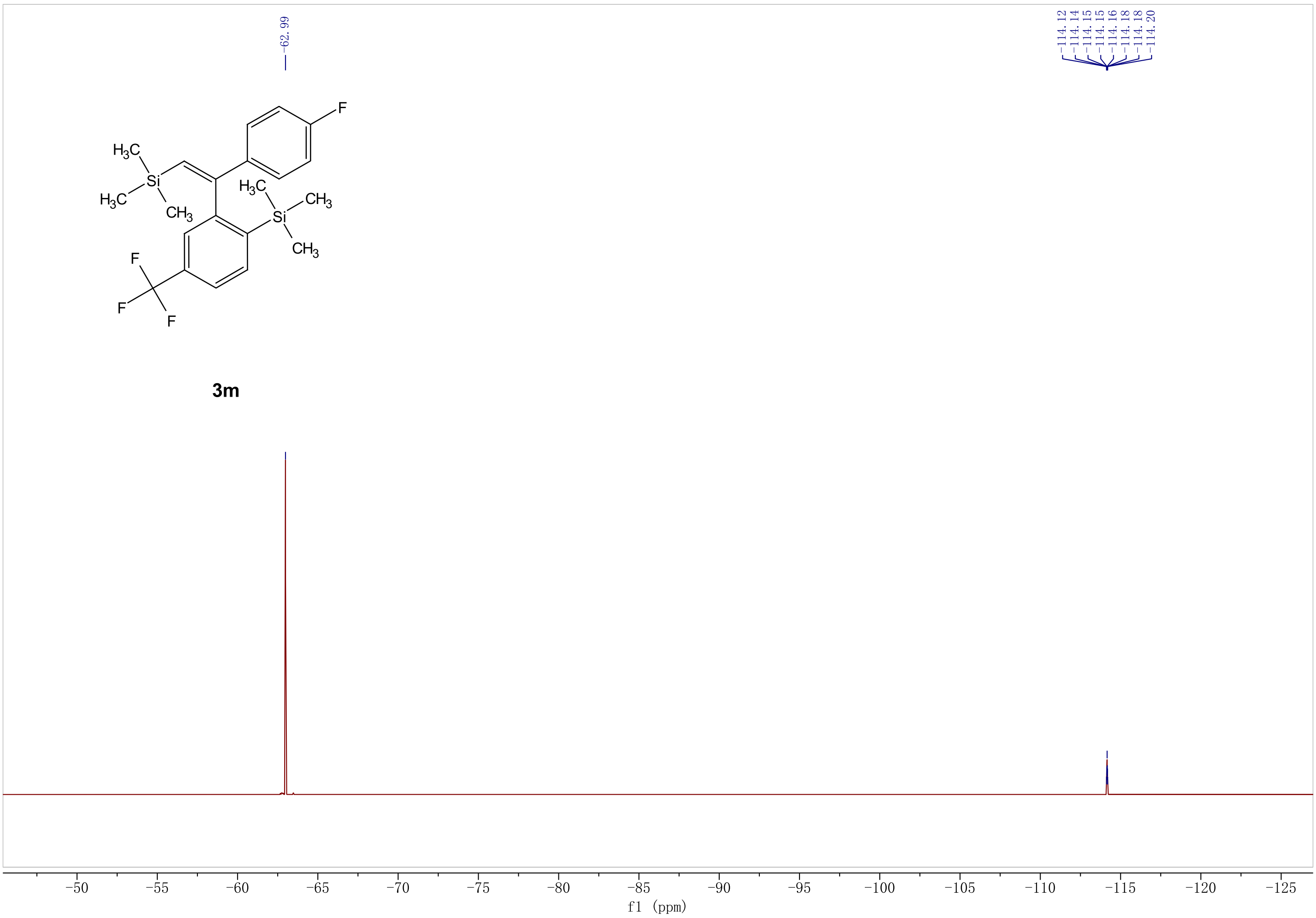
7.26 CDCl3
7.21
7.21
7.20
7.20
7.19
7.19
7.18
7.17
7.17
7.16
6.99
6.97
6.95
6.38
-0.00
-0.17
3m
0.98
1.00
0.95
2.03
1.99
0.98
9.00
8.82
9.5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0 -0.5
f1 (ppm)



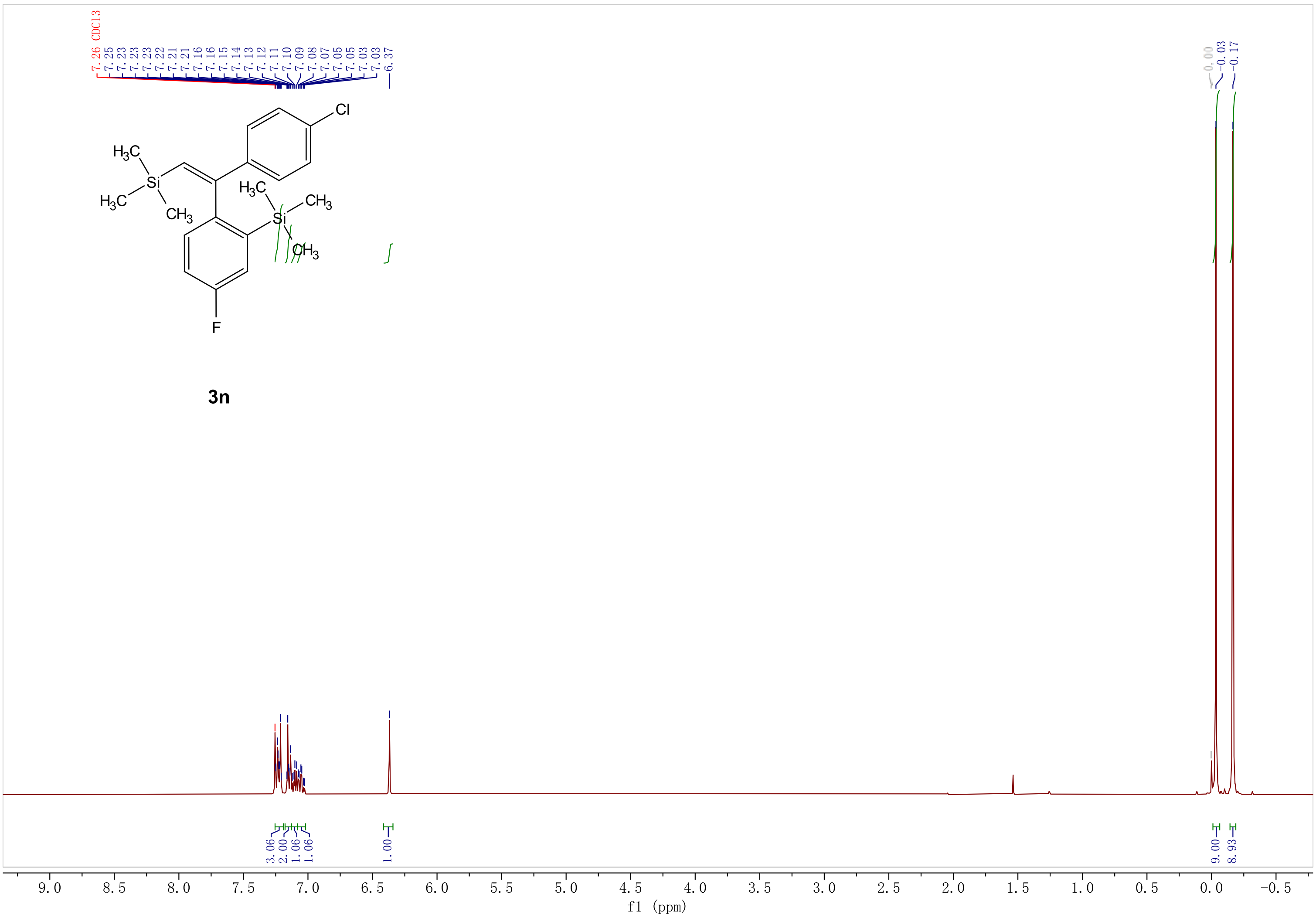
3m

f1 (ppm)



3m

f1 (ppm)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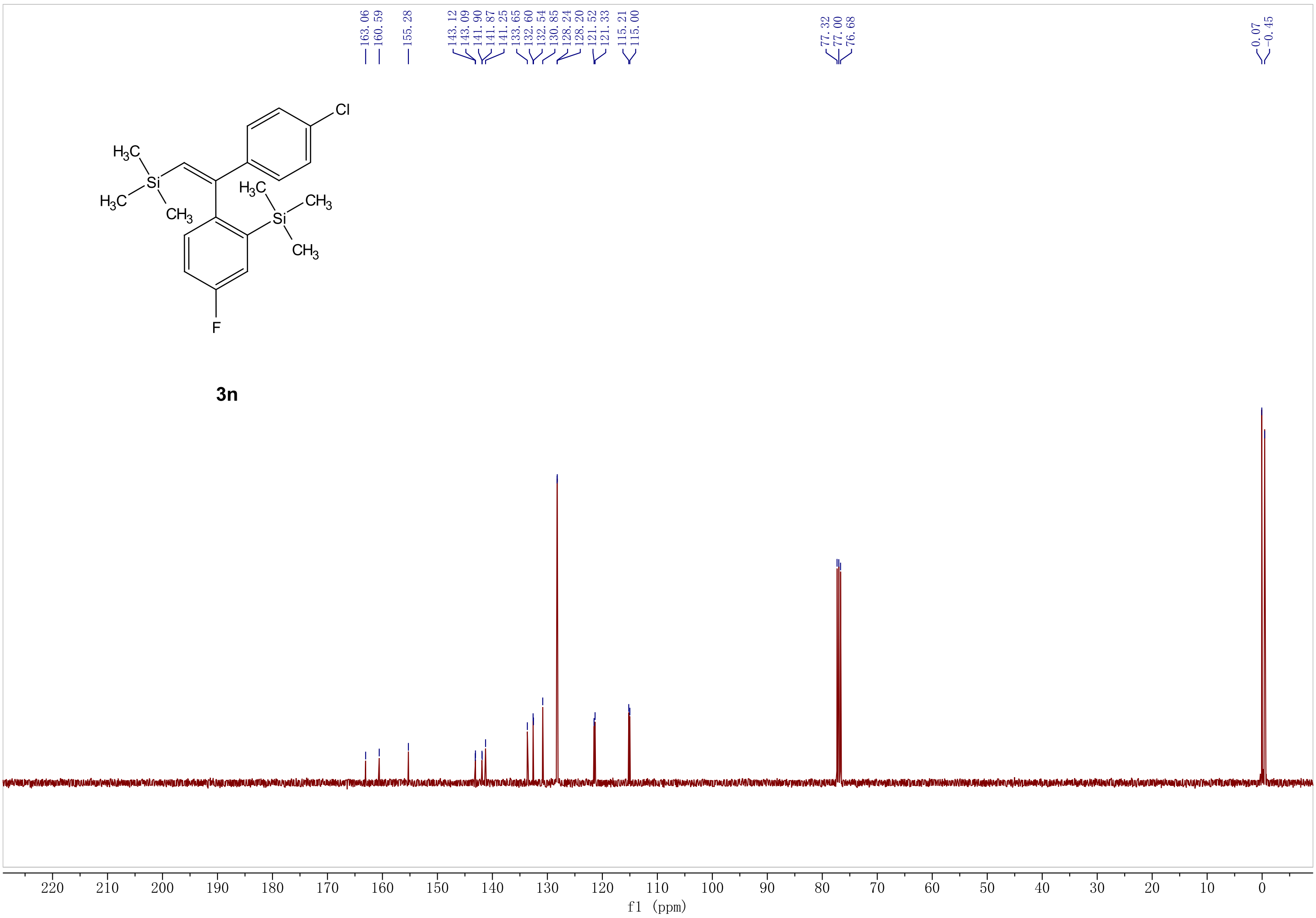
7.13
7.12
7.11
7.10
7.09
7.08
7.07
7.05
7.05
7.03
7.03
6.37
0.00
-0.03
-0.17
Cl
H3C
Si
H3C
CH3
H3C
CH3
Si
CH3
F
3n
3.06
2.00
1.06
1.06
1.00
9.00
8.93
f1 (ppm)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132.60
132.54
130.85
128.24
128.20
121.52
121.33
115.21
115.00
77.32
77.00
76.68
-0.07
-0.45
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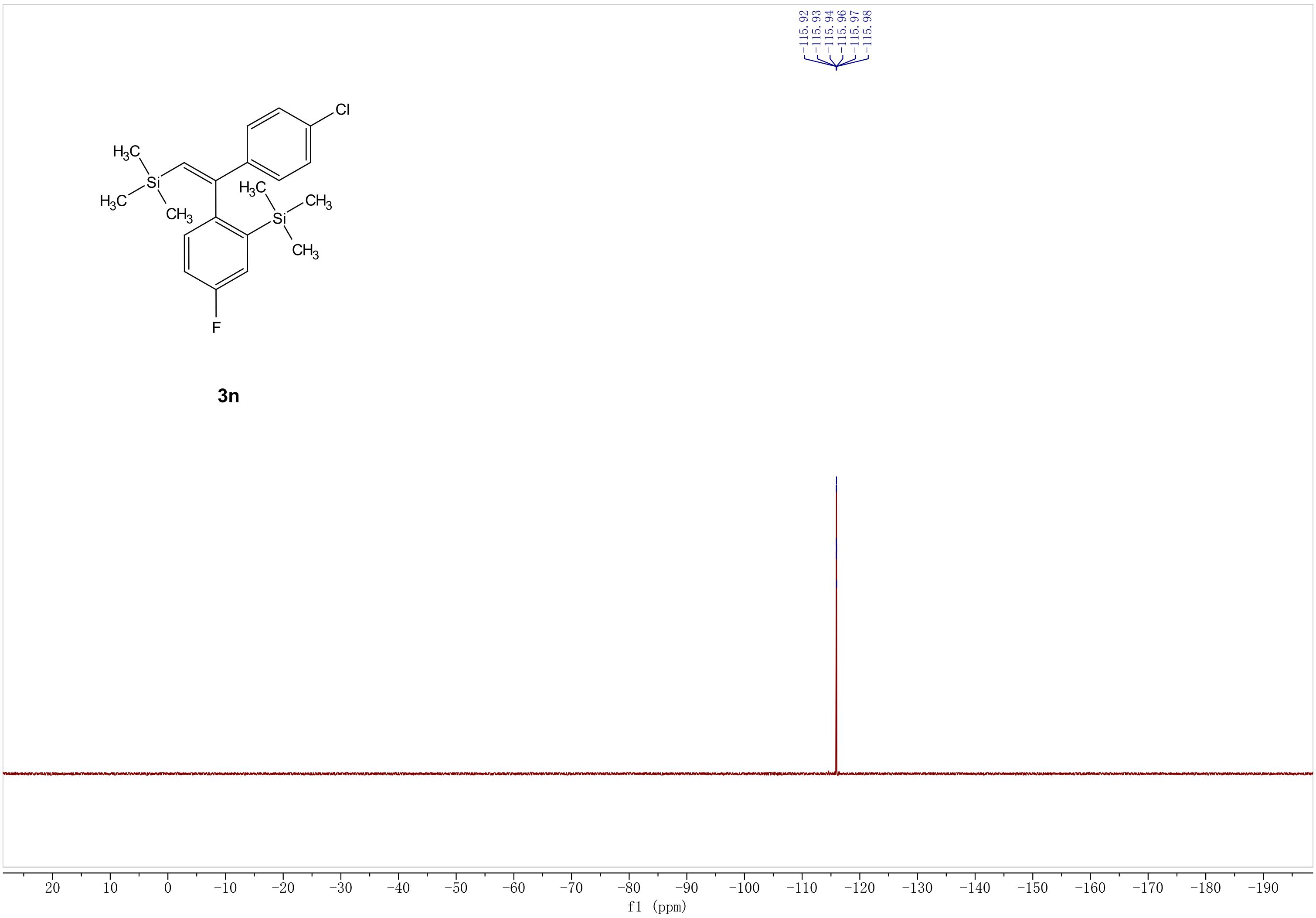
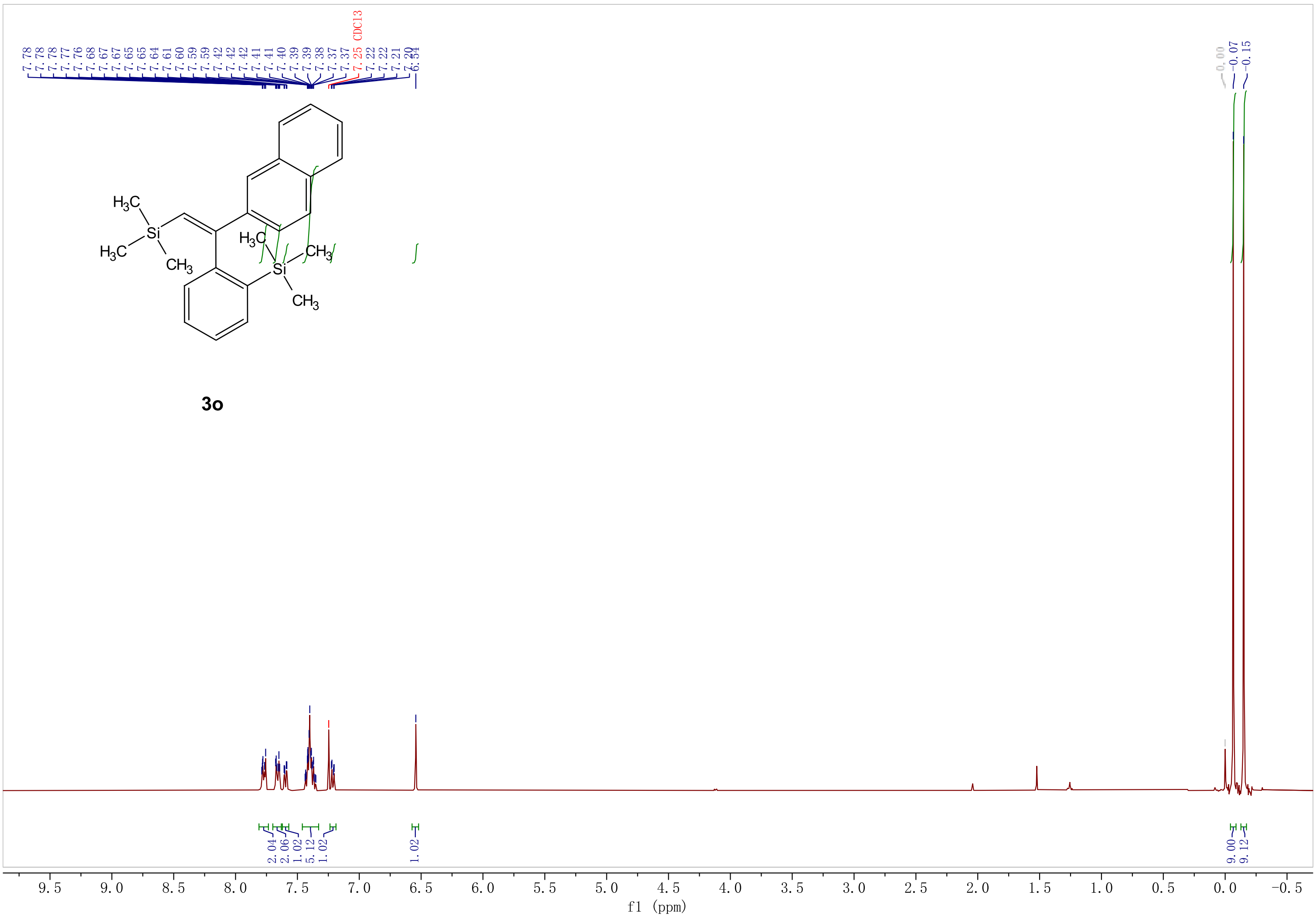
H3C
Si
H3C
CH3
H3C
CH3
Si
CH3
F
3n
f1 (ppm)


-115.92
-115.93
-115.94
-115.96
-115.97
-115.98
Cl
H_3C
Si
H_3C
CH_3
H_3C
CH_3
Si
CH_3
F
3n
20 10 0 −10 −20 −30 −40 −50 −60 −70 −80 −90 −100 −110 −120 −130 −140 −150 −160 −170 −180 −190
f1 (ppm)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7.64
7.61
7.60
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7.59
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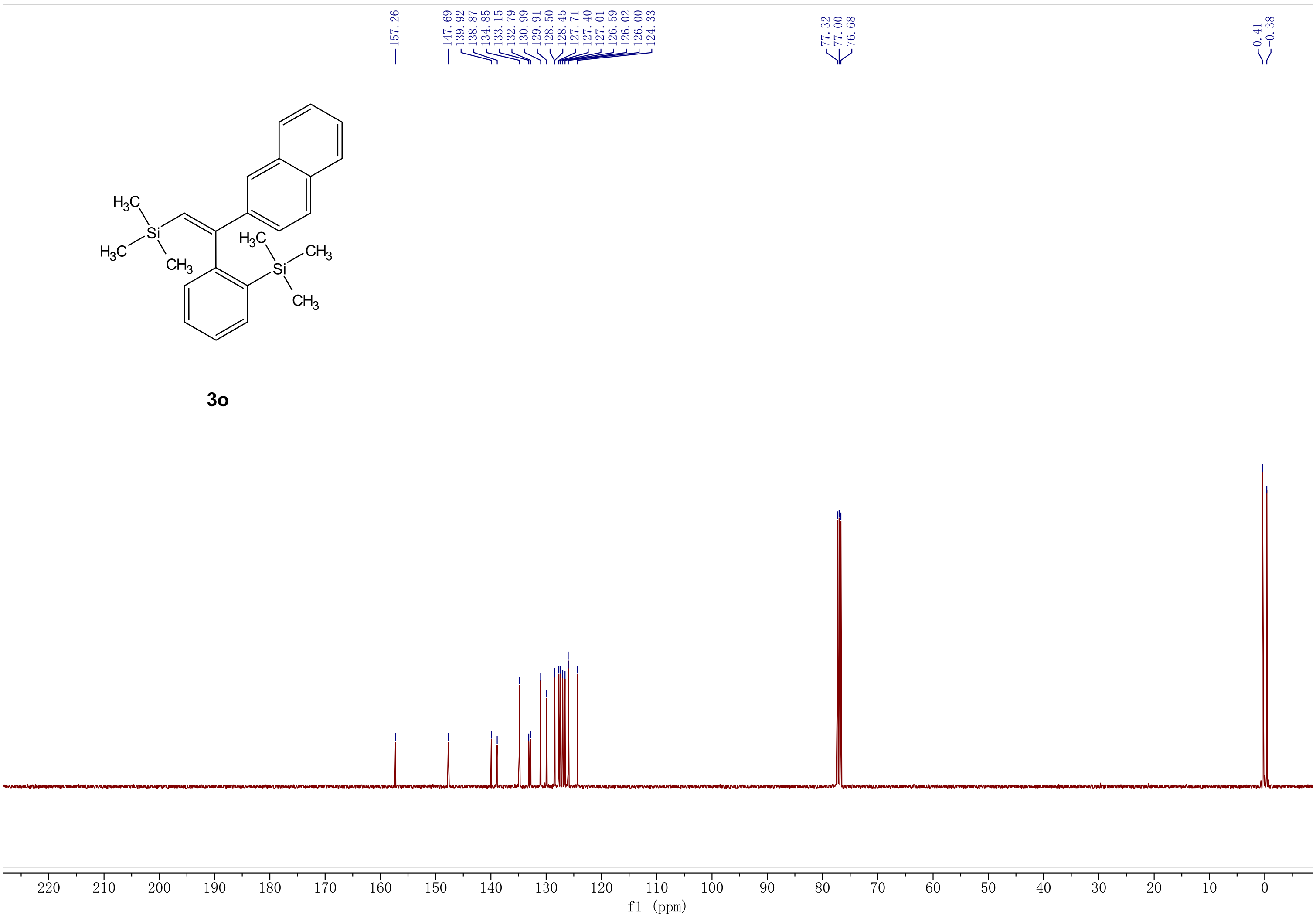
7.42
7.42
7.41
7.41
7.40
7.39
7.39
7.38
7.37
7.37
7.25 CDCl3
7.22
7.22
7.21
7.20
6.54
0.00
-0.07
-0.15
H_3C
Si
H_3C
CH_3
H_3C
CH_3
Si
CH_3
3o
2.04
2.06
1.02
5.12
1.02
1.02
9.00
9.12
9.5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0 -0.5
f1 (ppm)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128.45
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127.40
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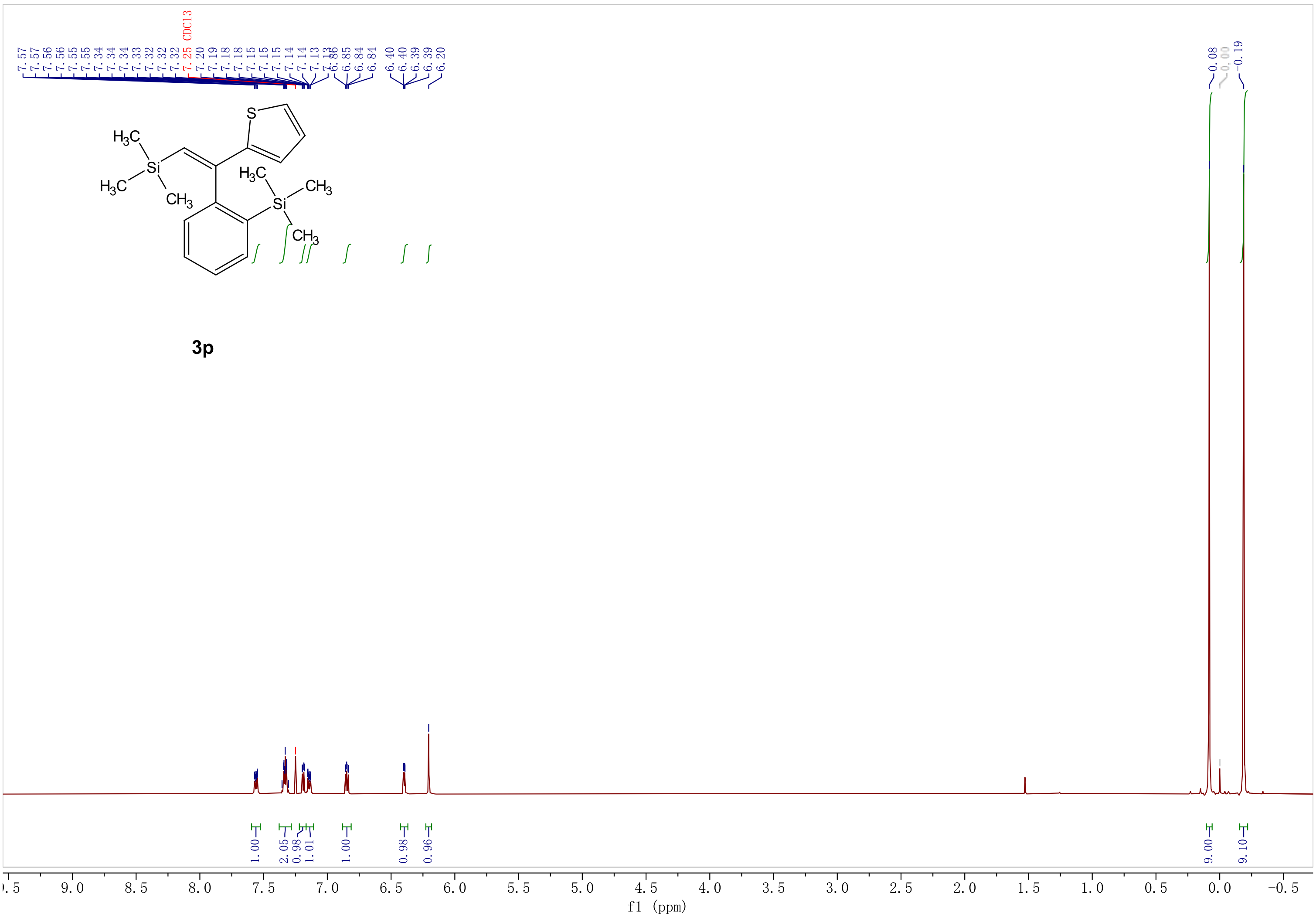
126.59
126.02
126.00
124.33
77.32
77.00
76.68
0.41
-0.38
3o
f1 (ppm)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7.34
7.33
7.32
7.32
7.32
7.25 CDCl3
7.20
7.19
7.18
7.18
7.15
7.15
7.15
7.14
7.14
7.13
6.85
6.84
6.84
6.40
6.40
6.39
6.39
6.20
0.08
0.00
-0.19
3p
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2.05
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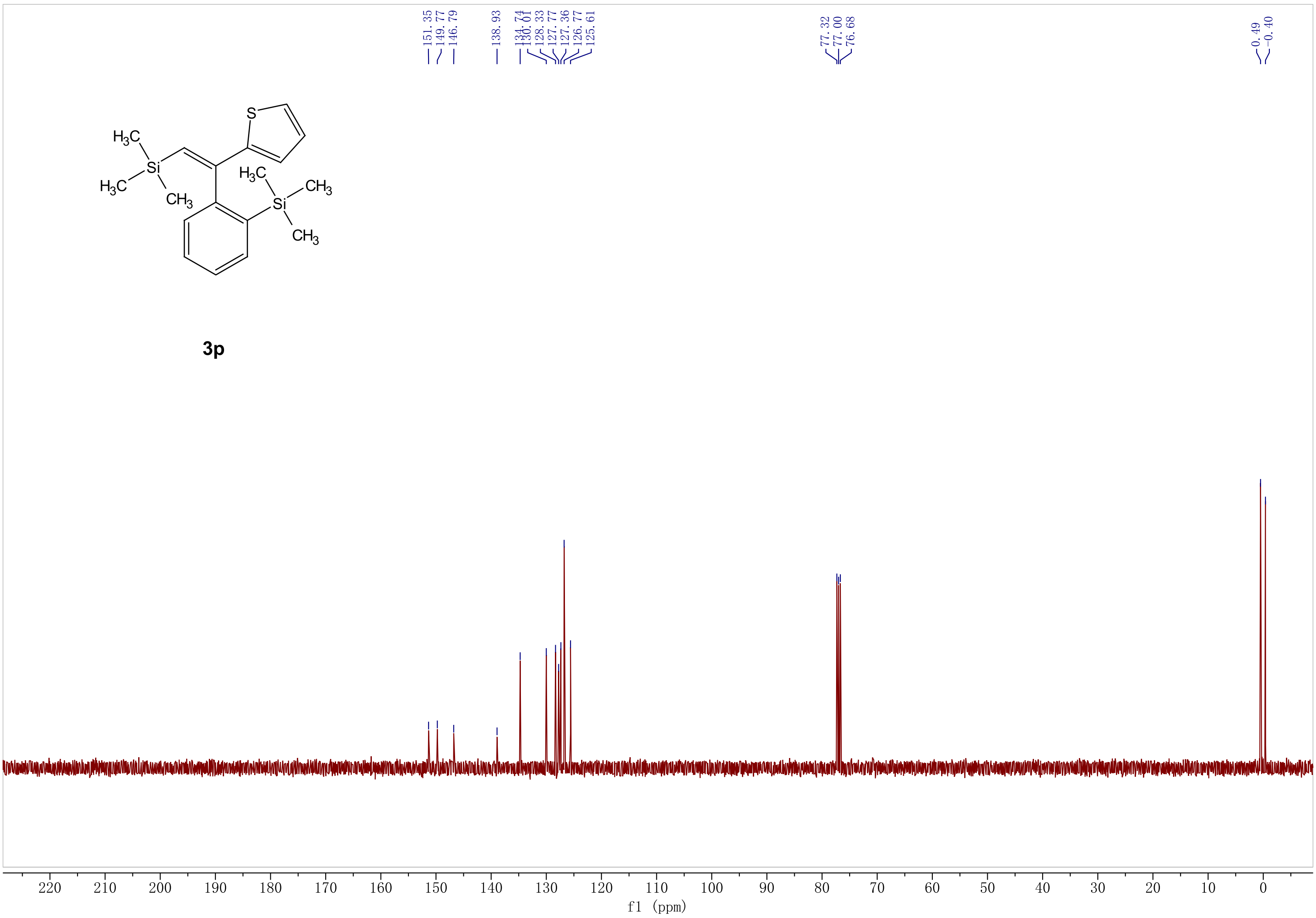
1.01
1.00
0.98
0.96
9.00
9.10
f1 (ppm)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77.00
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0.49
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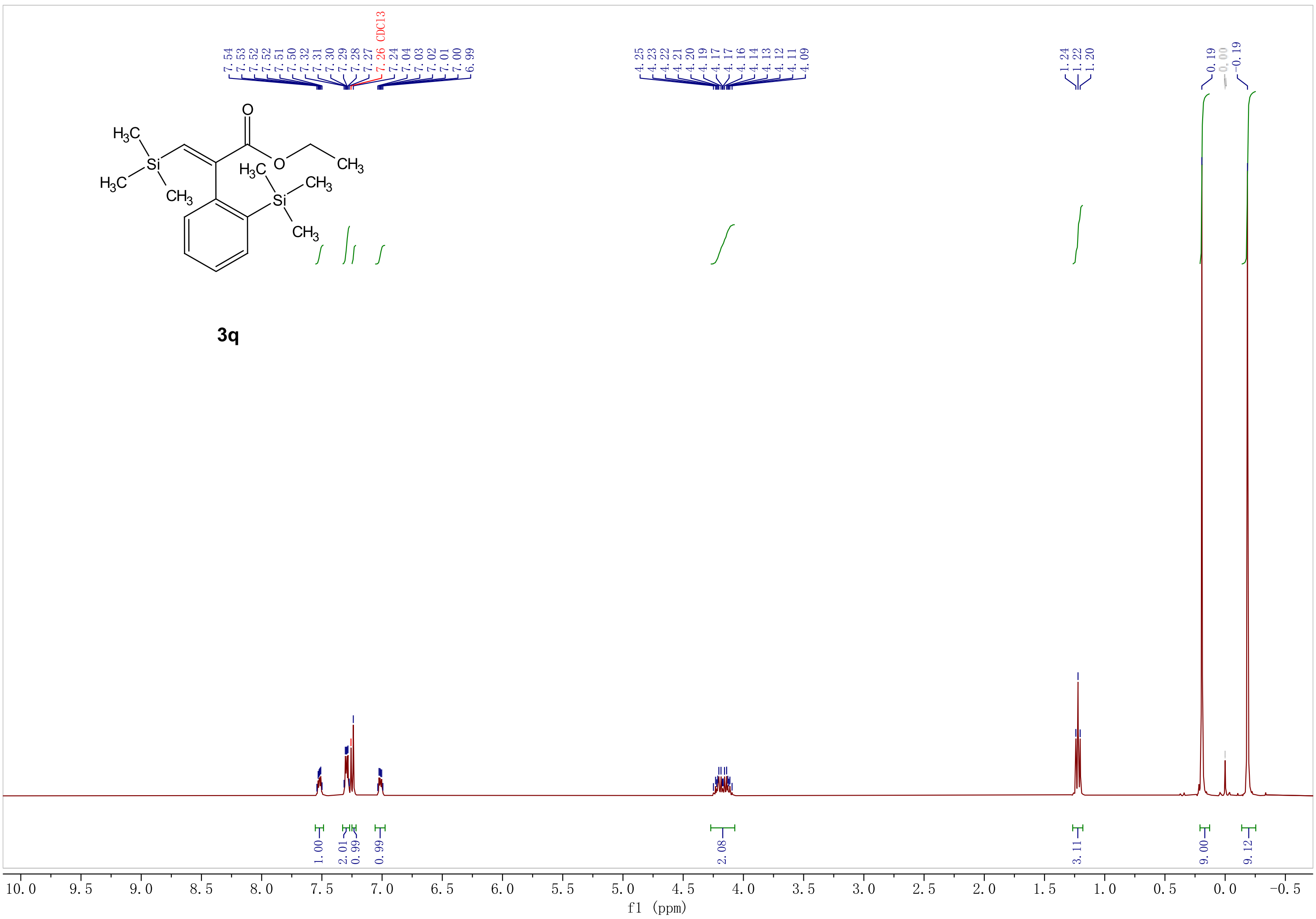
3p
f1 (ppm)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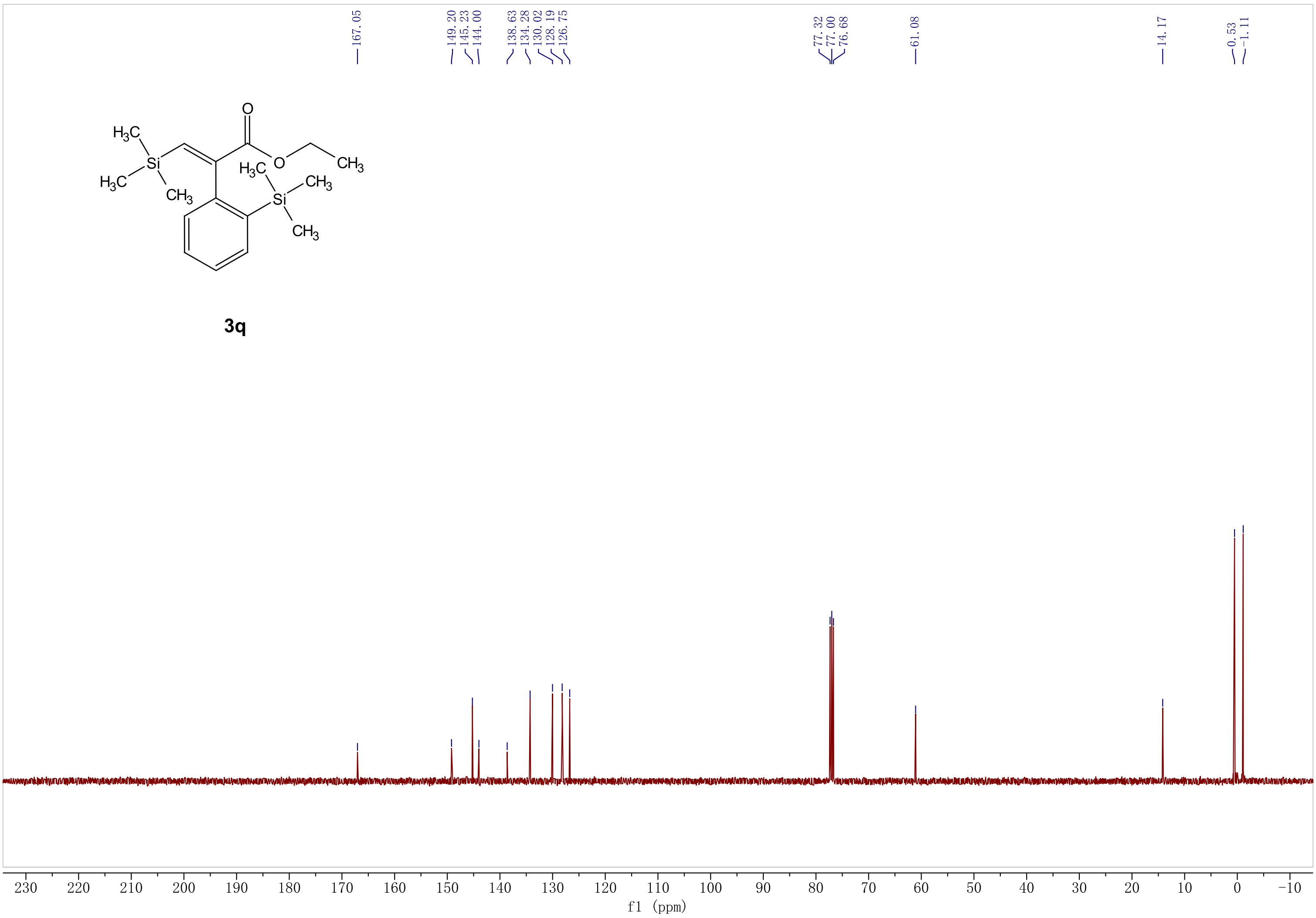
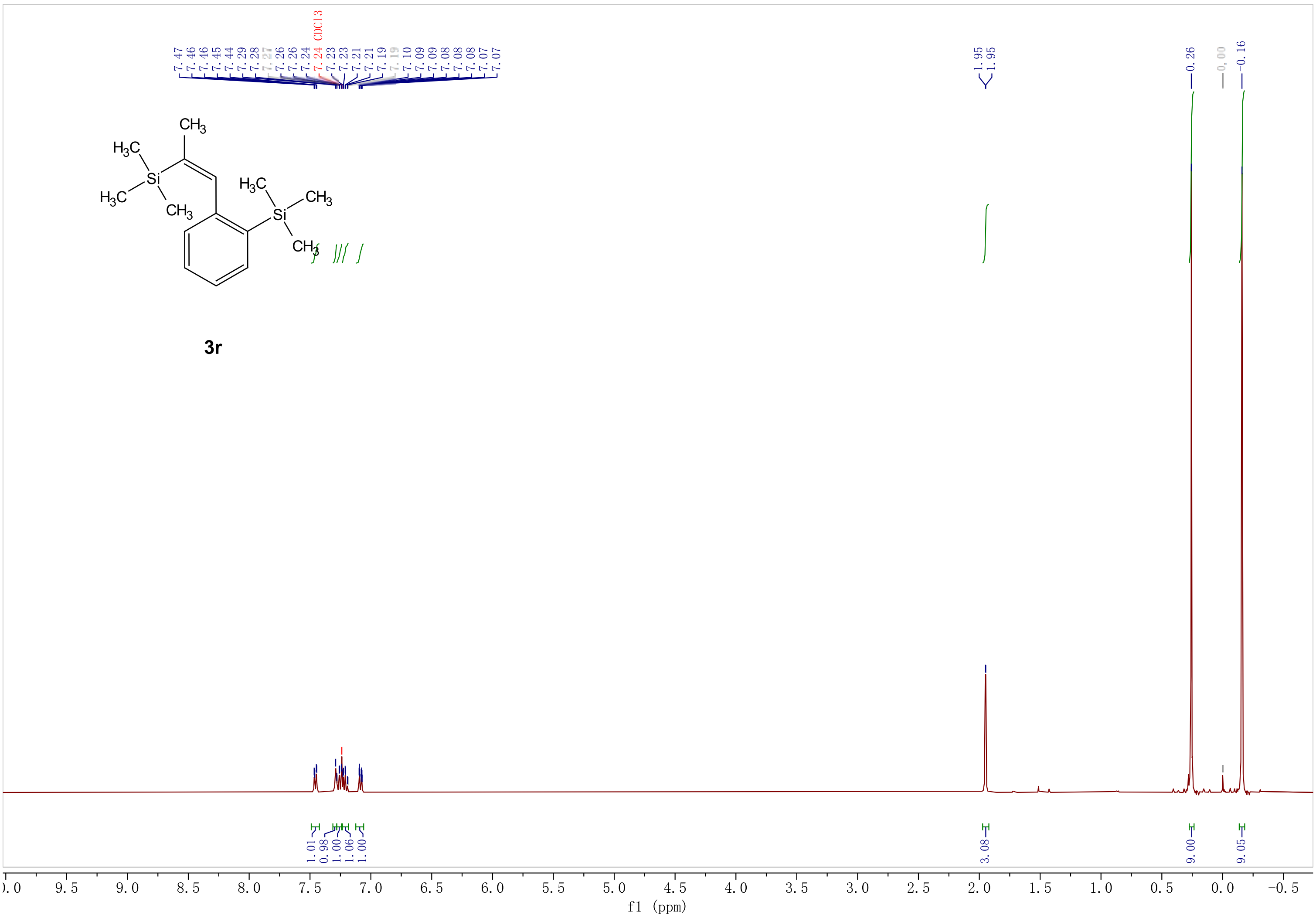
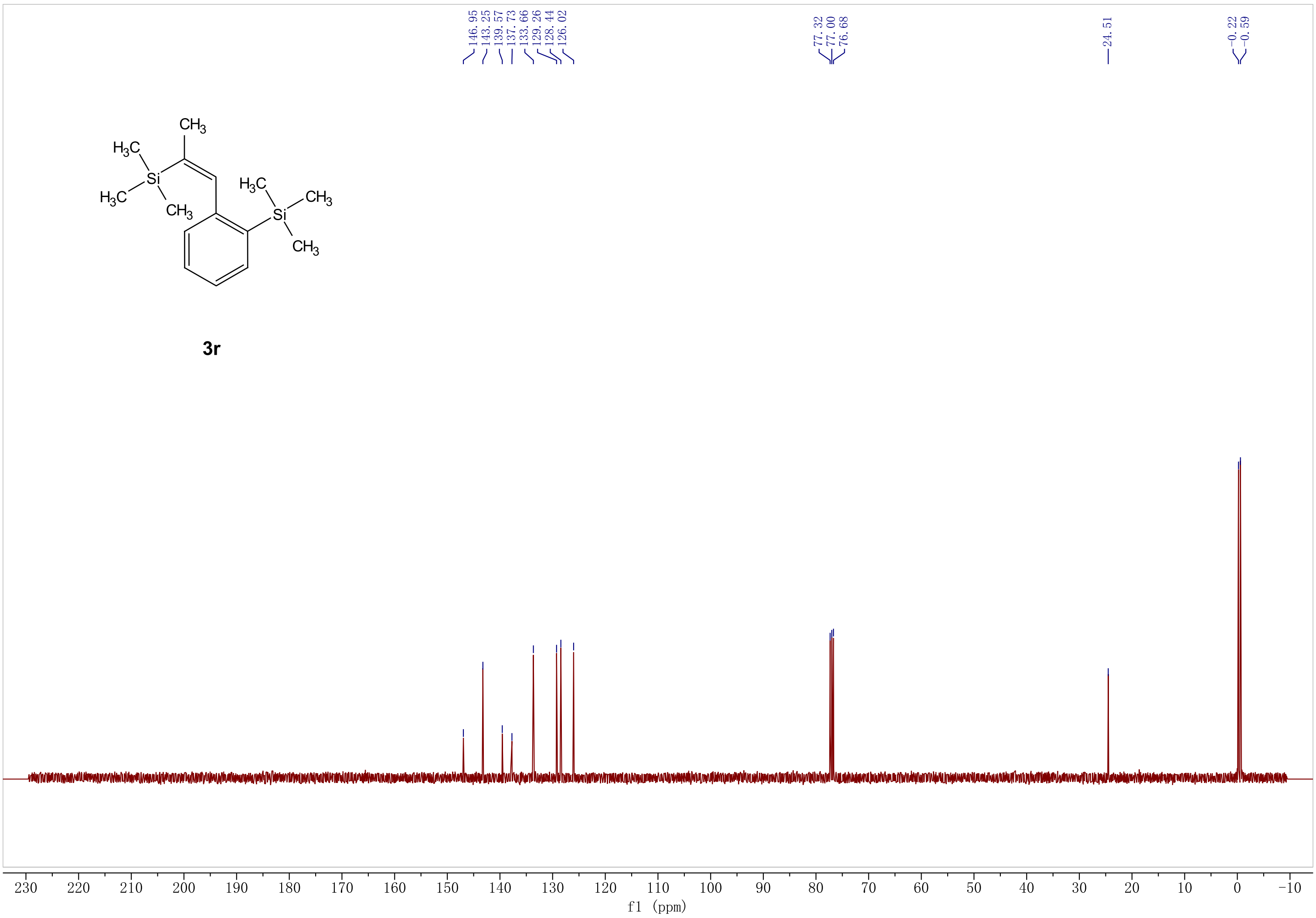
7.53
7.52
7.52
7.51
7.50
7.32
7.31
7.30
7.29
7.28
7.27
7.26 CDCl3
7.24
7.04
7.03
7.02
7.01
7.00
6.99
4.25
4.23
4.22
4.21
4.20
4.19
4.17
4.16
4.14
4.13
4.12
4.11
4.09
1.24
1.22
1.20
0.19
0.00
-0.19
3q
1.00
2.01
0.99
0.99
2.08
3.11
9.00
9.12
f1 (ppm)

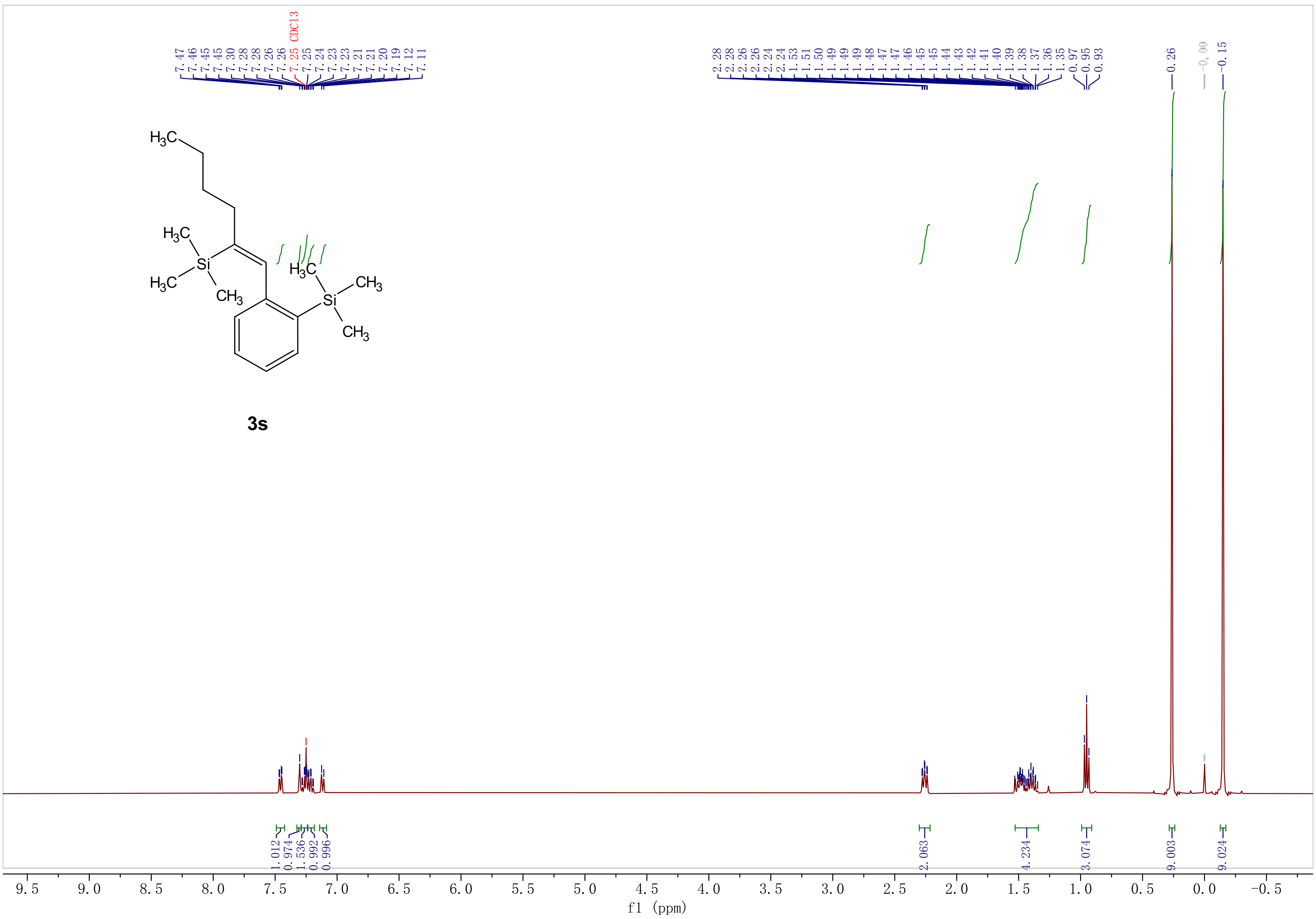

167.05
149.20
145.23
144.00
138.63
134.28
130.02
128.19
126.75
77.32
77.00
76.68
61.08
14.17
0.53
-1.11
f1 (ppm)

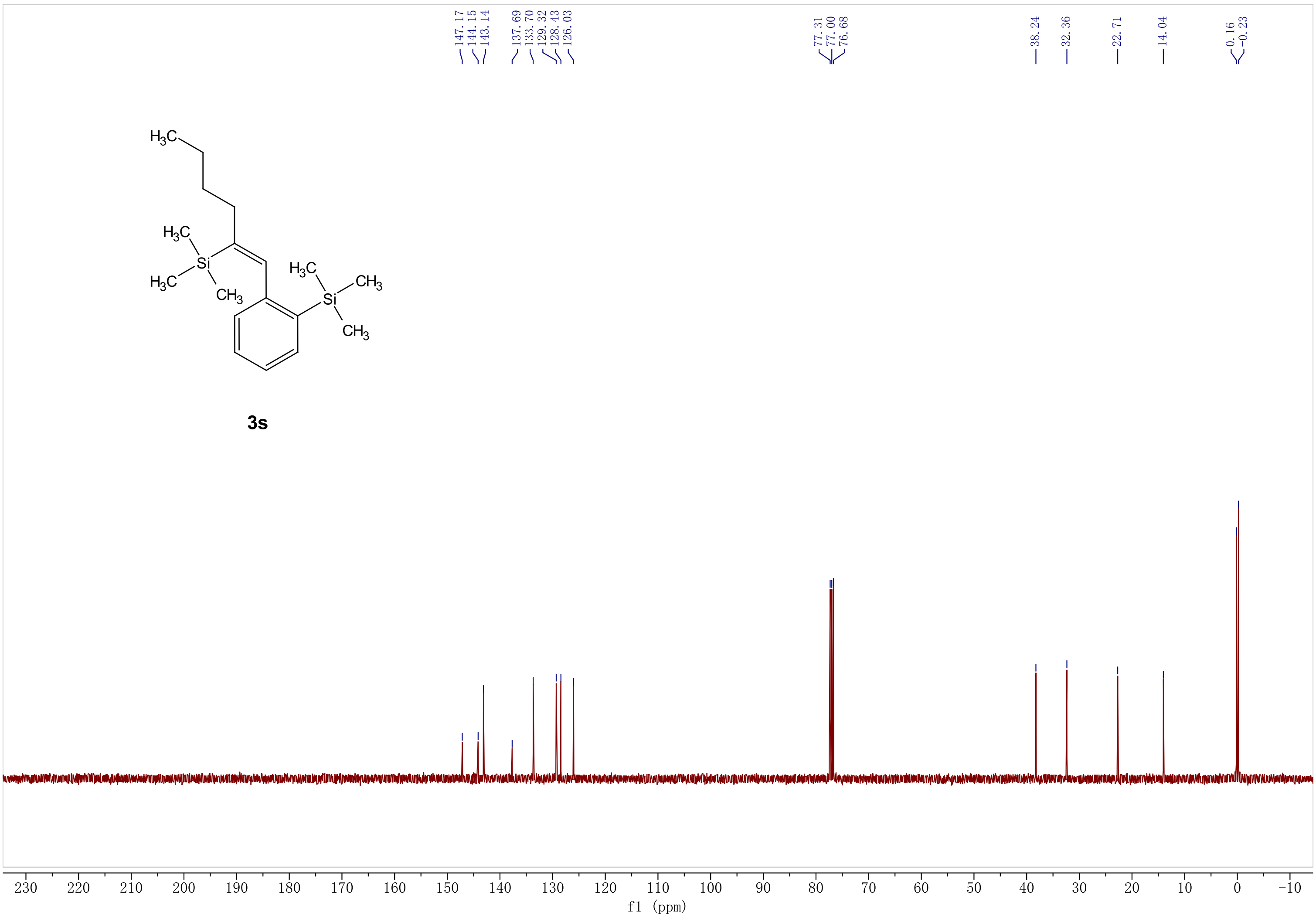
3q

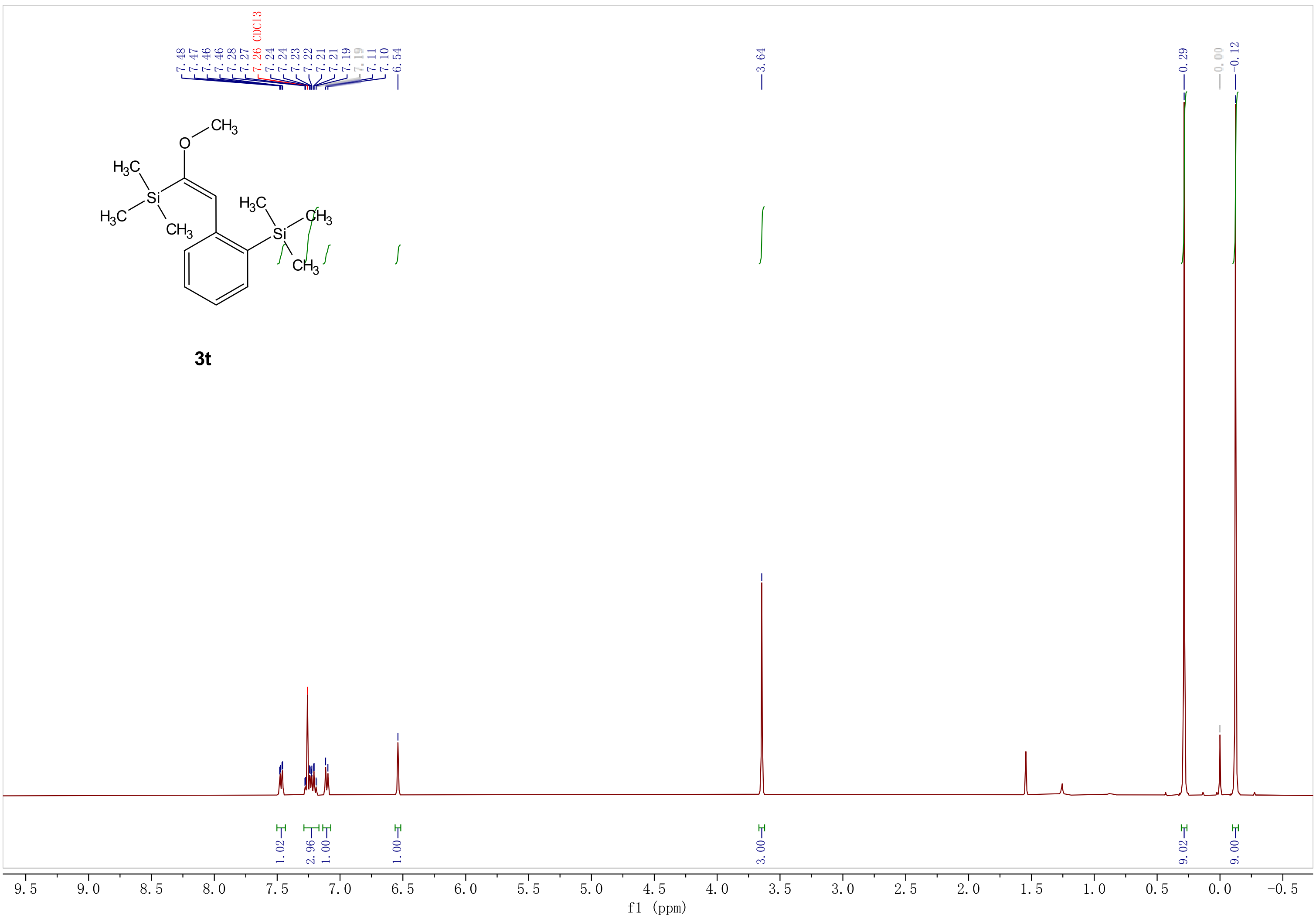

7.47
7.46
7.45
7.44
7.29
7.28
7.27
7.26
7.26
7.24
7.24 CDCl3
7.23
7.23
7.21
7.21
7.19
7.19
7.10
7.09
7.09
7.08
7.08
7.08
7.07
7.07
1.95
1.95
0.26
0.00
-0.16
1.01
0.98
1.00
1.06
1.00
3.08
9.00
9.05
f1 (ppm)

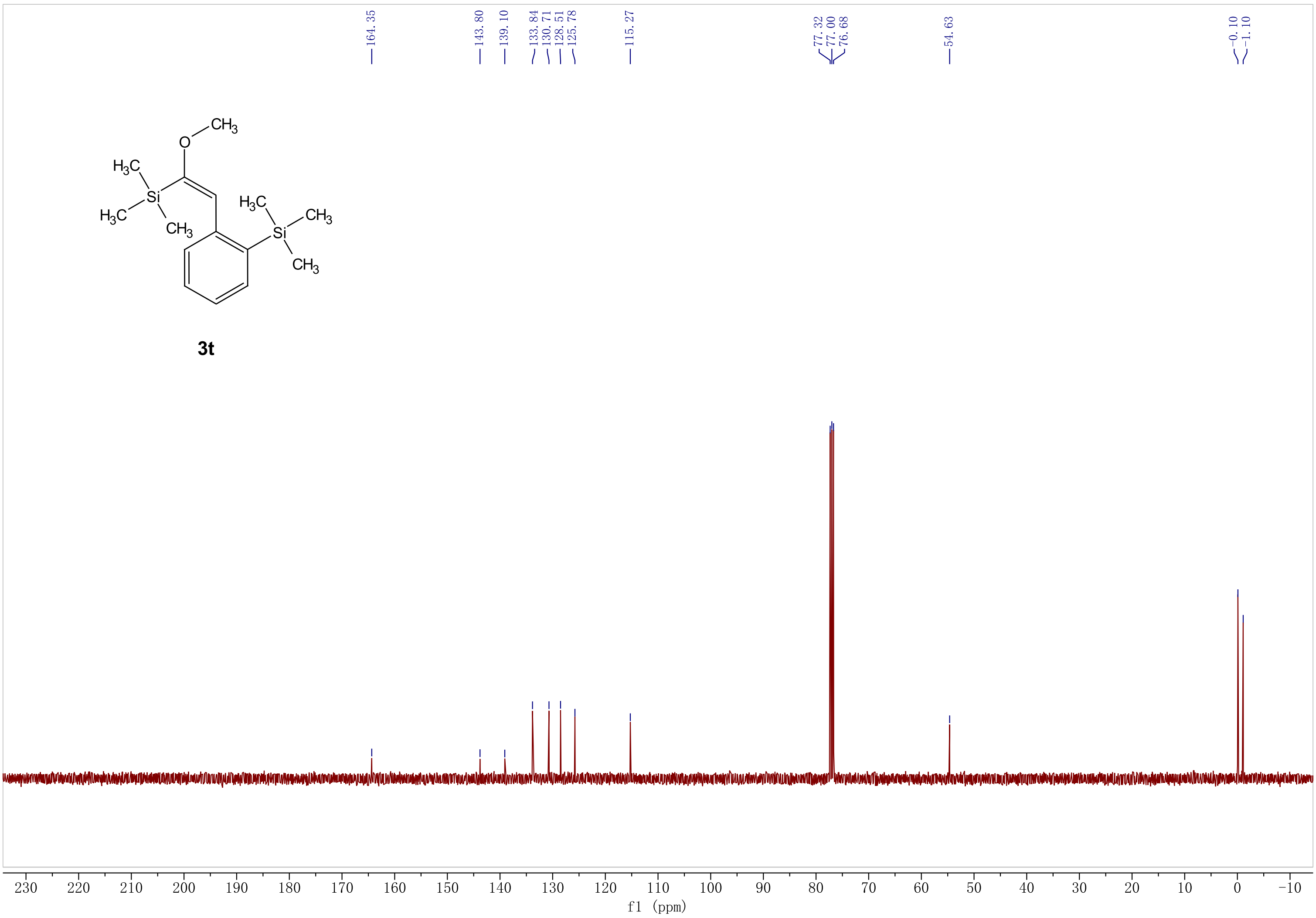
3r


146.95
143.25
139.57
137.73
133.66
129.26
128.44
126.02
77.32
77.00
76.68
24.51
-0.22
-0.59
3r
230 220 210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 -10
f1 (ppm)

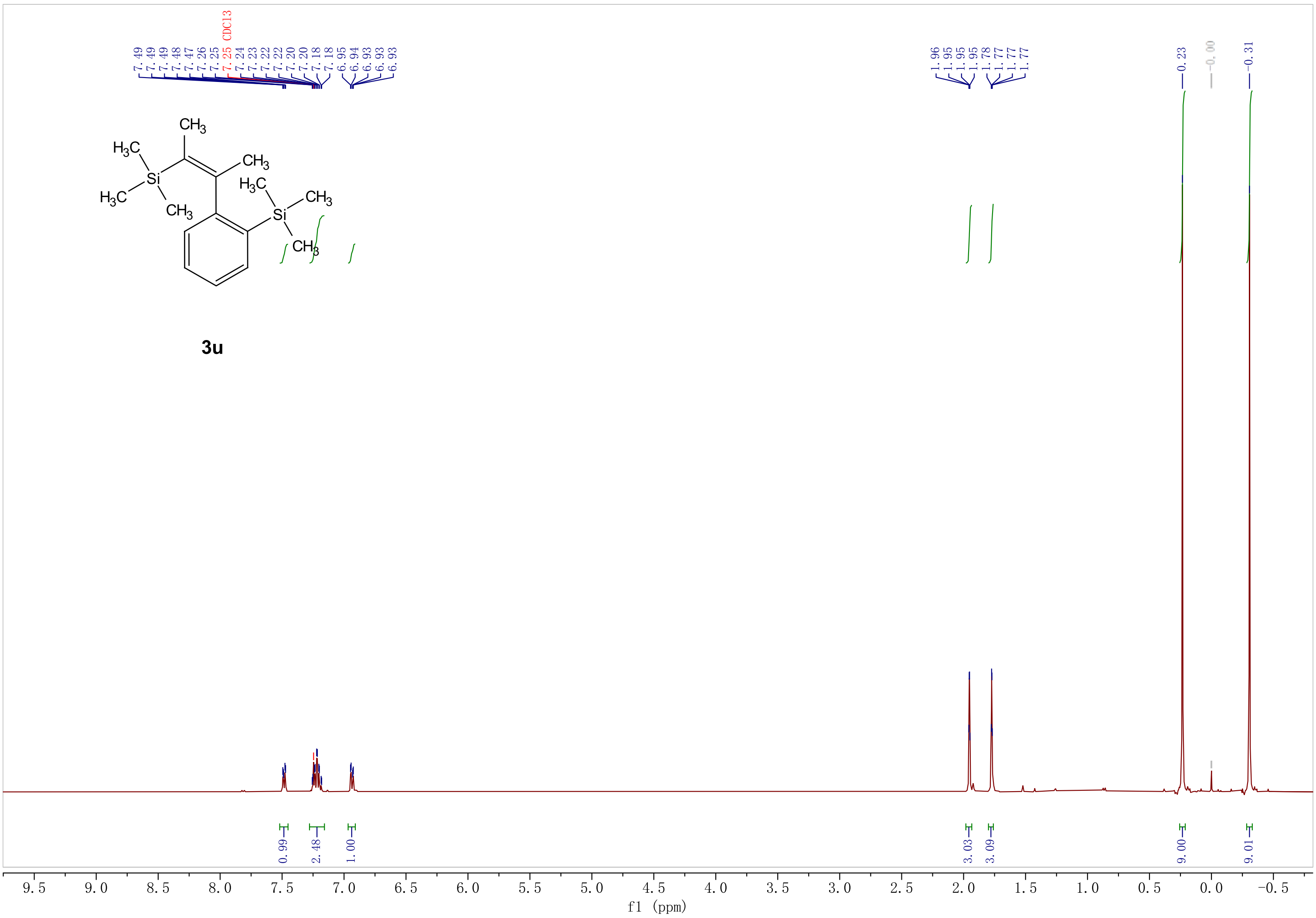

7.47 7.46 7.45 7.45 7.30 7.28 7.28 7.26 7.25 CDCl3 7.25 7.24 7.23 7.23 7.21 7.21 7.20 7.19 7.12 7.11
2.28 2.28 2.26 2.26 2.24 2.24 1.53 1.51 1.50 1.49 1.49 1.48 1.47 1.46 1.45 1.45 1.44 1.43 1.42 1.41 1.40 1.39 1.38 1.37 1.36 1.35 0.97 0.95 0.93
0.26
0.00
-0.15
3s
1.012 0.974 1.536 0.992 0.996 2.063 4.234 3.074 9.003 9.024
9.5 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 -0.5
f1 (ppm)


147.17
144.15
143.14
137.69
133.70
129.32
128.43
126.03
77.31
77.00
76.68
38.24
32.36
22.71
14.04
0.16
-0.23
3s
f1 (ppm)

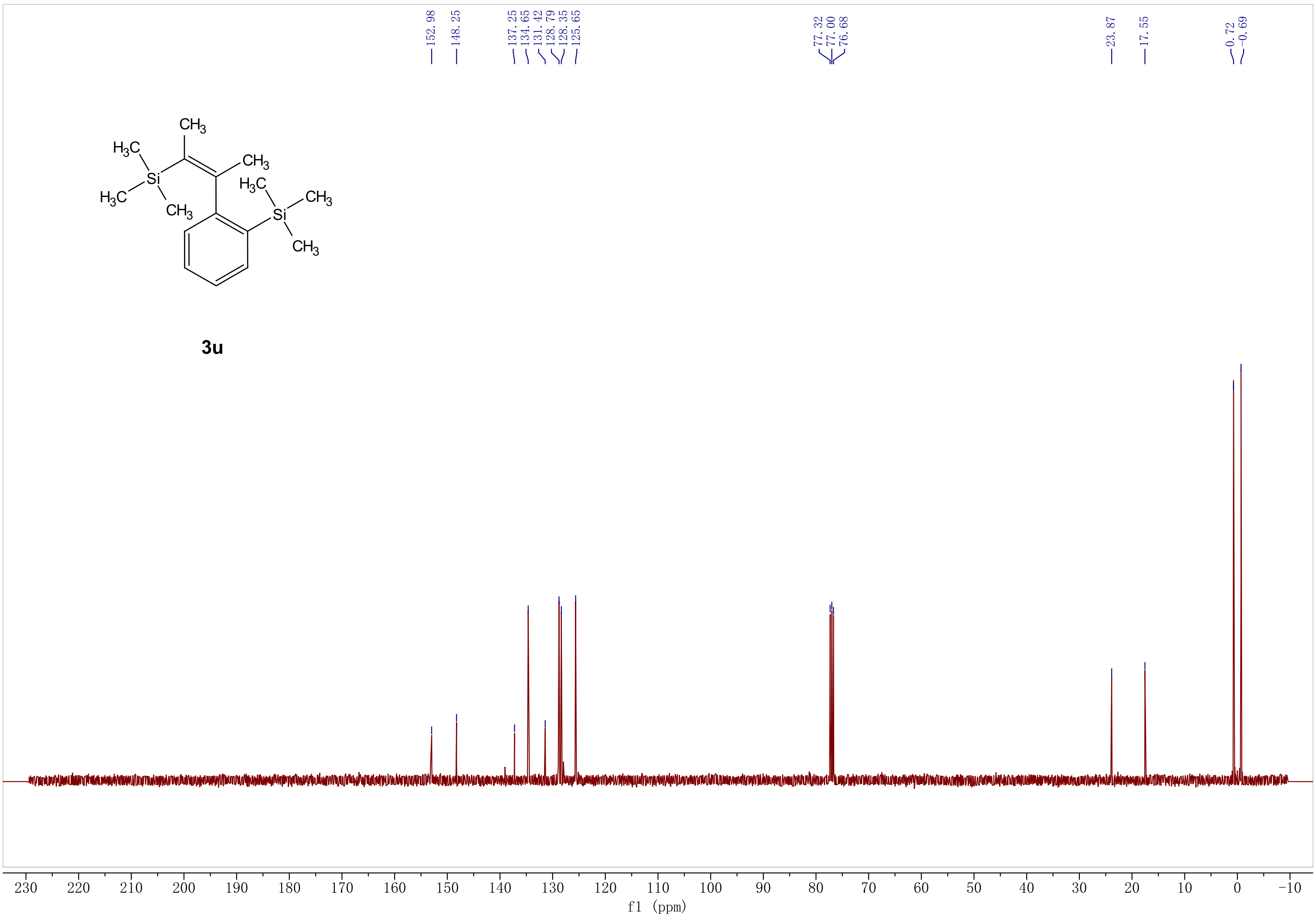

7.48
7.47
7.46
7.28
7.27
7.26 CDCl3
7.24
7.24
7.23
7.22
7.21
7.21
7.19
7.19
7.11
7.10
6.54
3.64
0.29
0.00
-0.12
3t
1.02
2.96
1.00
1.00
3.00
9.02
9.00
f1 (ppm)

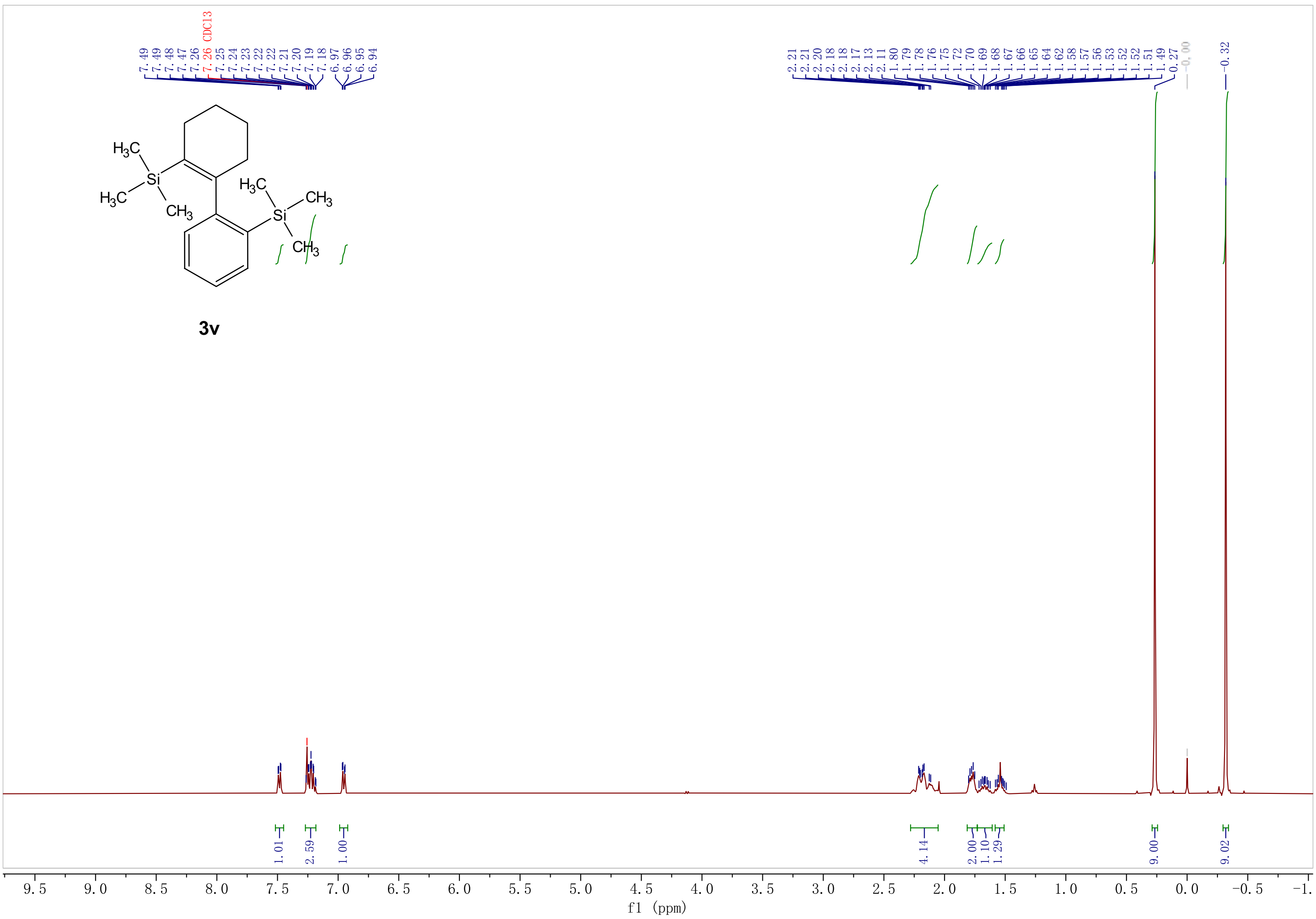


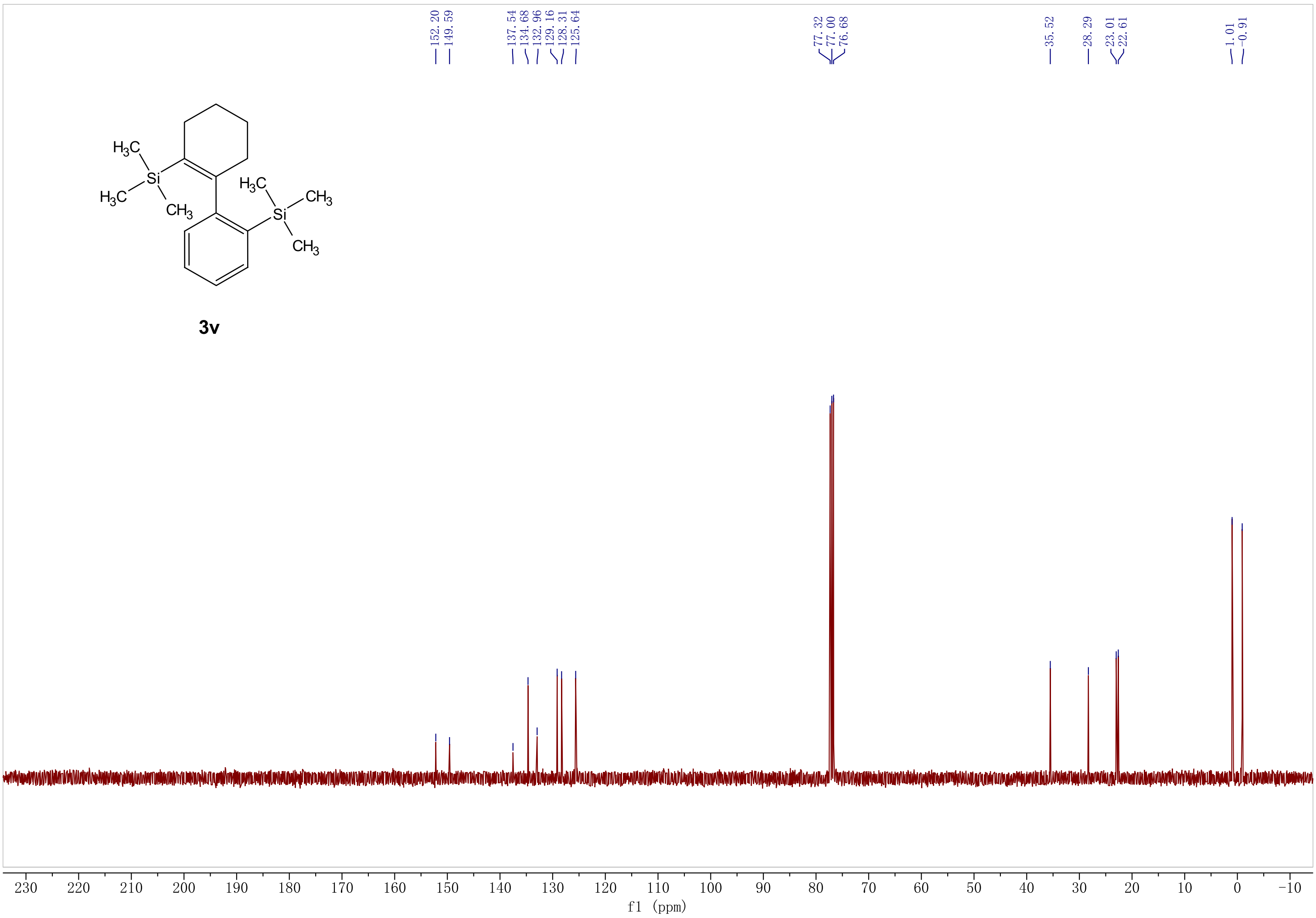
164.35
143.80
139.10
133.84
130.71
128.51
125.78
115.27
77.32
77.00
76.68
54.63
-0.10
-1.10
3t
230 220 210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 -10
f1 (ppm)



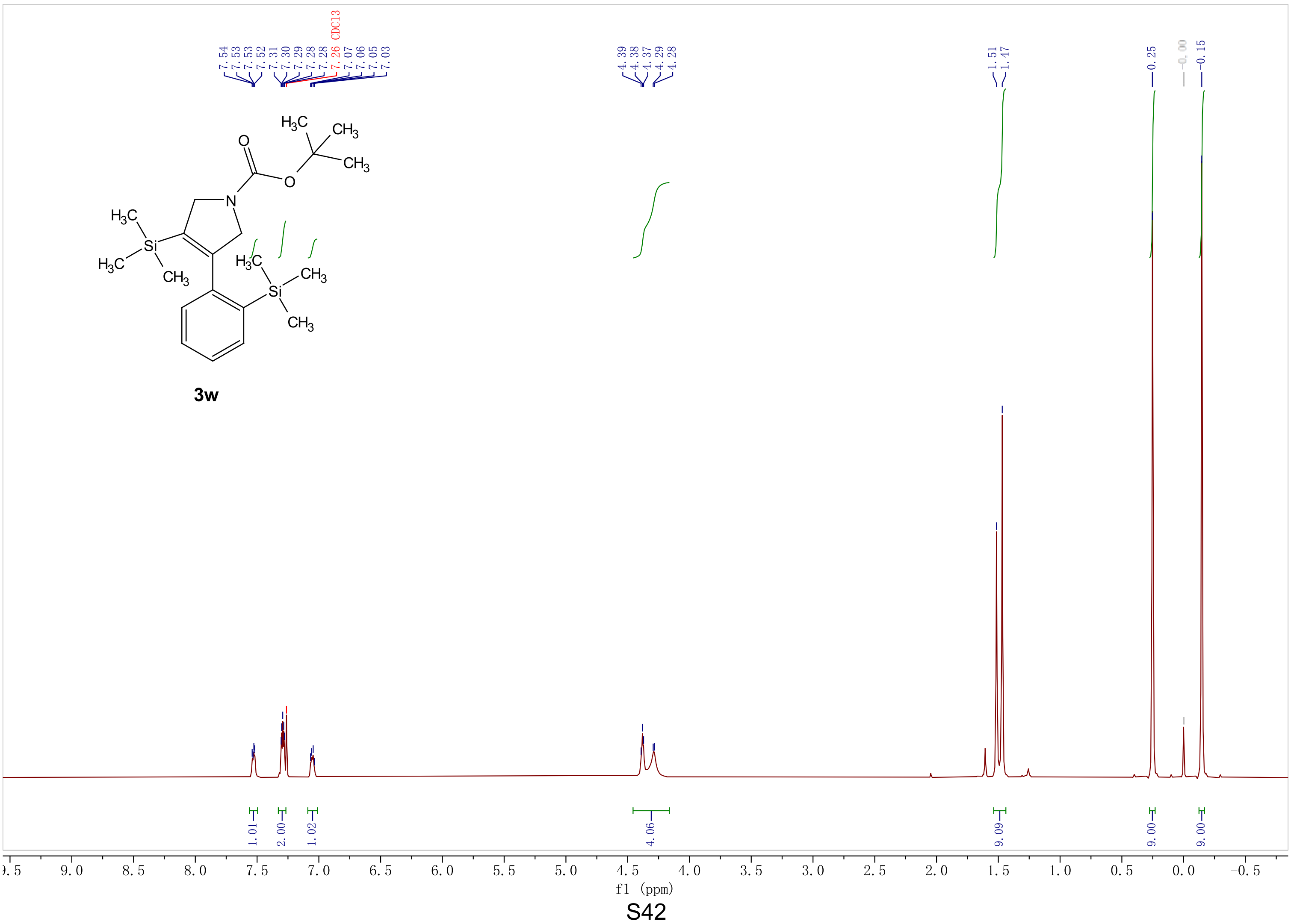
7.49
7.49
7.49
7.48
7.47
7.26
7.25
7.25 CDCl3
7.24
7.23
7.22
7.22
7.20
7.20
7.18
7.18
6.95
6.94
6.93
6.93
6.93
1.96
1.95
1.95
1.95
1.78
1.77
1.77
1.77
0.23
-0.00
-0.31
3u
0.99
2.48
1.00
3.03
3.09
9.00
9.01
9.5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0 -0.5
f1 (ppm)


152.98
148.25
137.25
134.65
131.42
128.79
128.35
125.65
77.32
77.00
76.68
23.87
17.55
0.72
-0.69
3u
f1 (ppm)

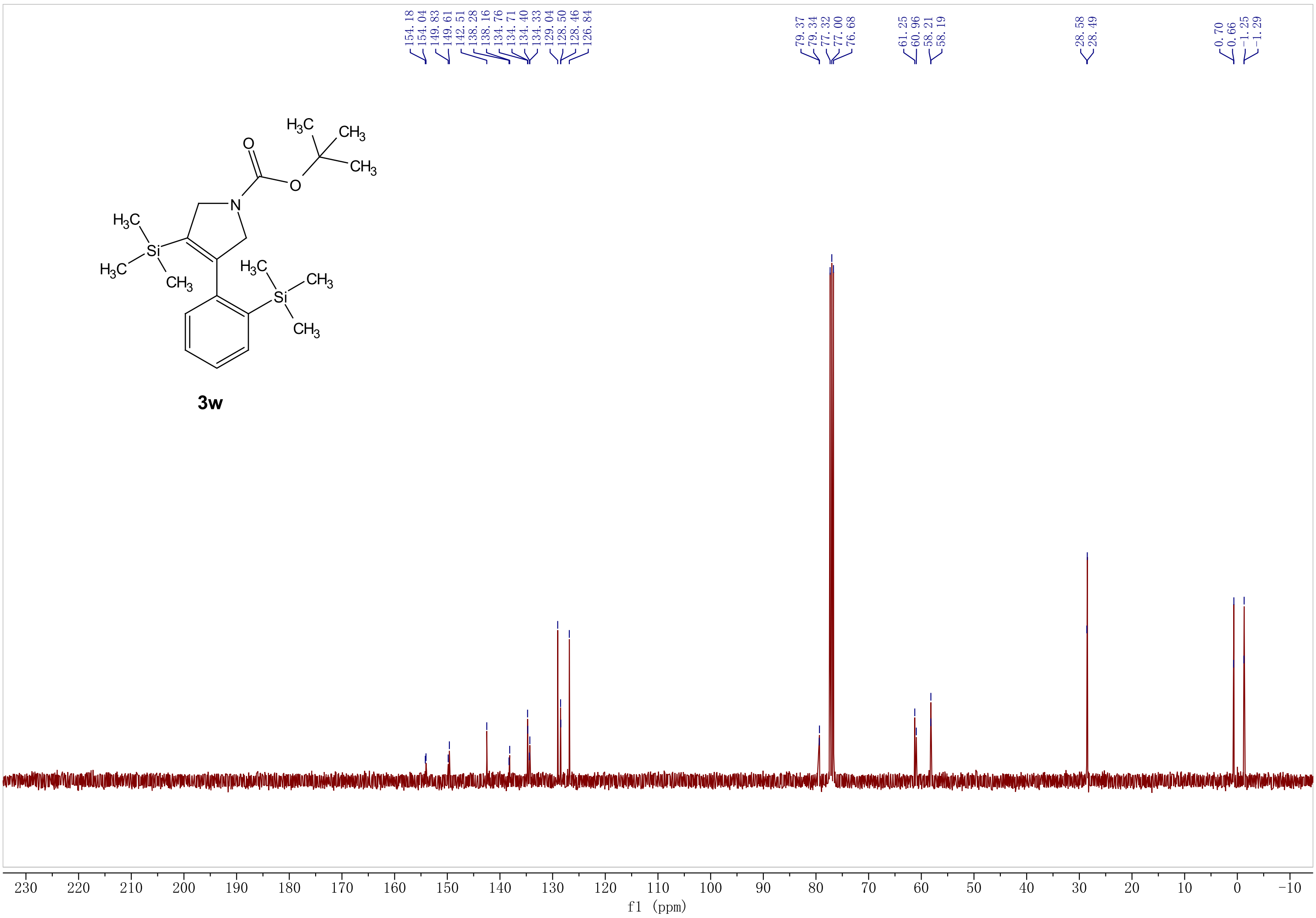

7.49
7.49
7.48
7.47
7.26
7.26 CDCl3
7.25
7.24
7.23
7.22
7.22
7.21
7.20
7.19
7.18
6.97
6.96
6.95
6.94
2.21
2.21
2.20
2.18
2.17
2.13
2.11
1.80
1.79
1.78
1.76
1.75
1.72
1.70
1.69
1.68
1.67
1.66
1.65
1.64
1.62
1.58
1.57
1.56
1.53
1.52
1.52
1.51
1.49
0.27
-0.00
-0.32
3v
1.01
2.59
1.00
4.14
2.00
1.10
1.29
9.00
9.02
f1 (ppm)



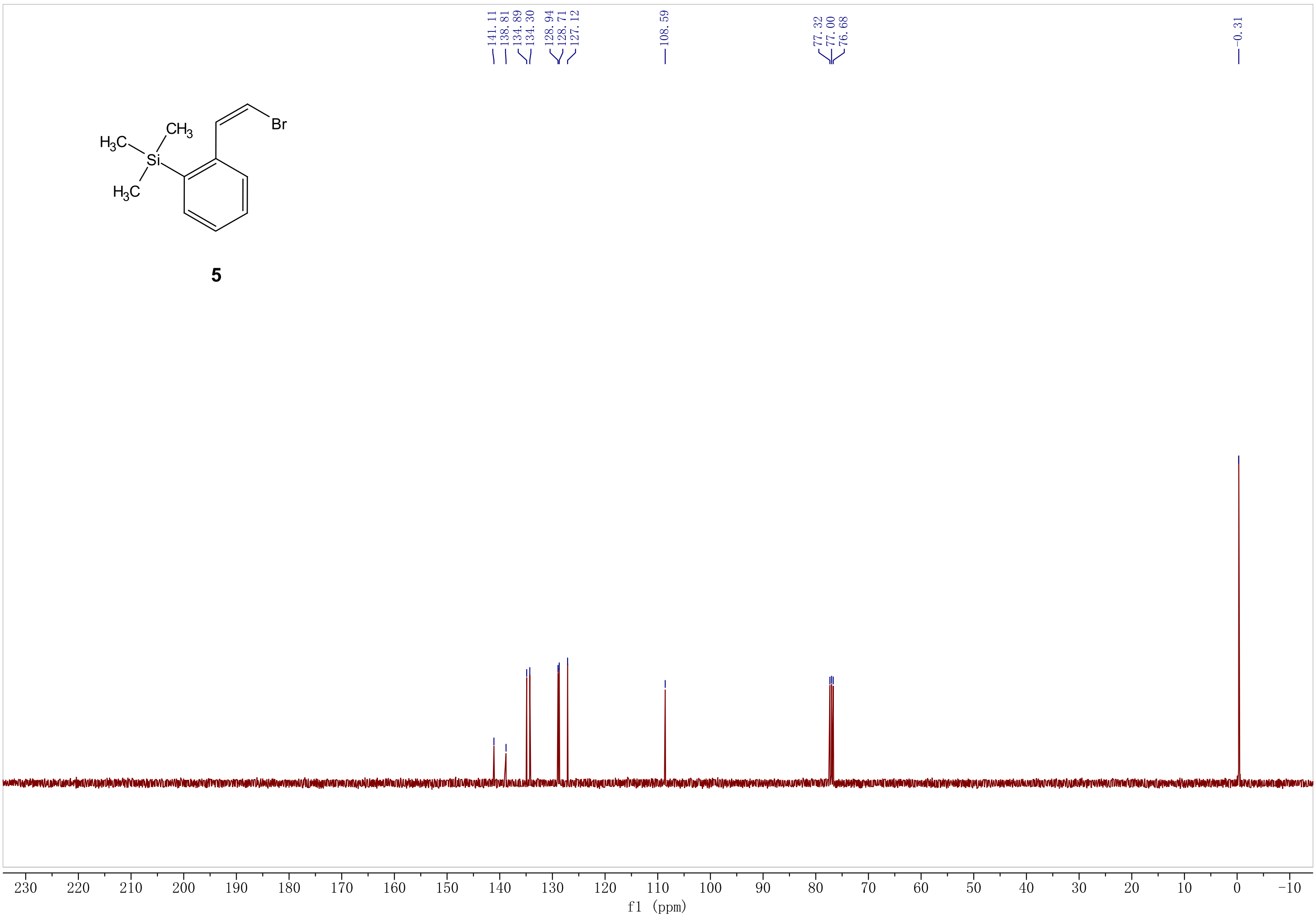
152.20
149.59
137.54
134.68
132.96
129.16
128.31
125.64
77.32
77.00
76.68
35.52
28.29
23.01
22.61
1.01
-0.91
H_3C
Si
CH_3
3v
f1 (ppm)

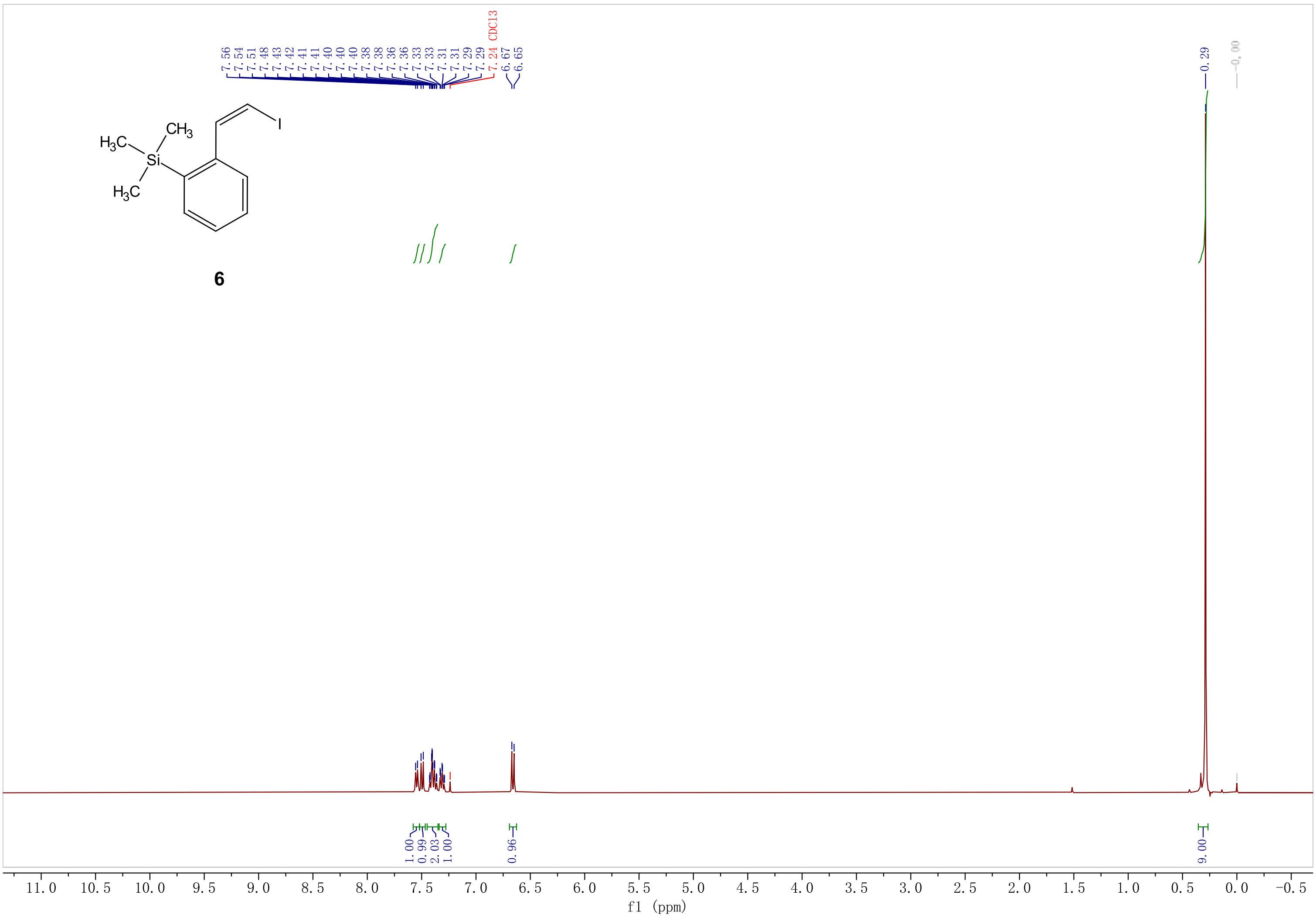


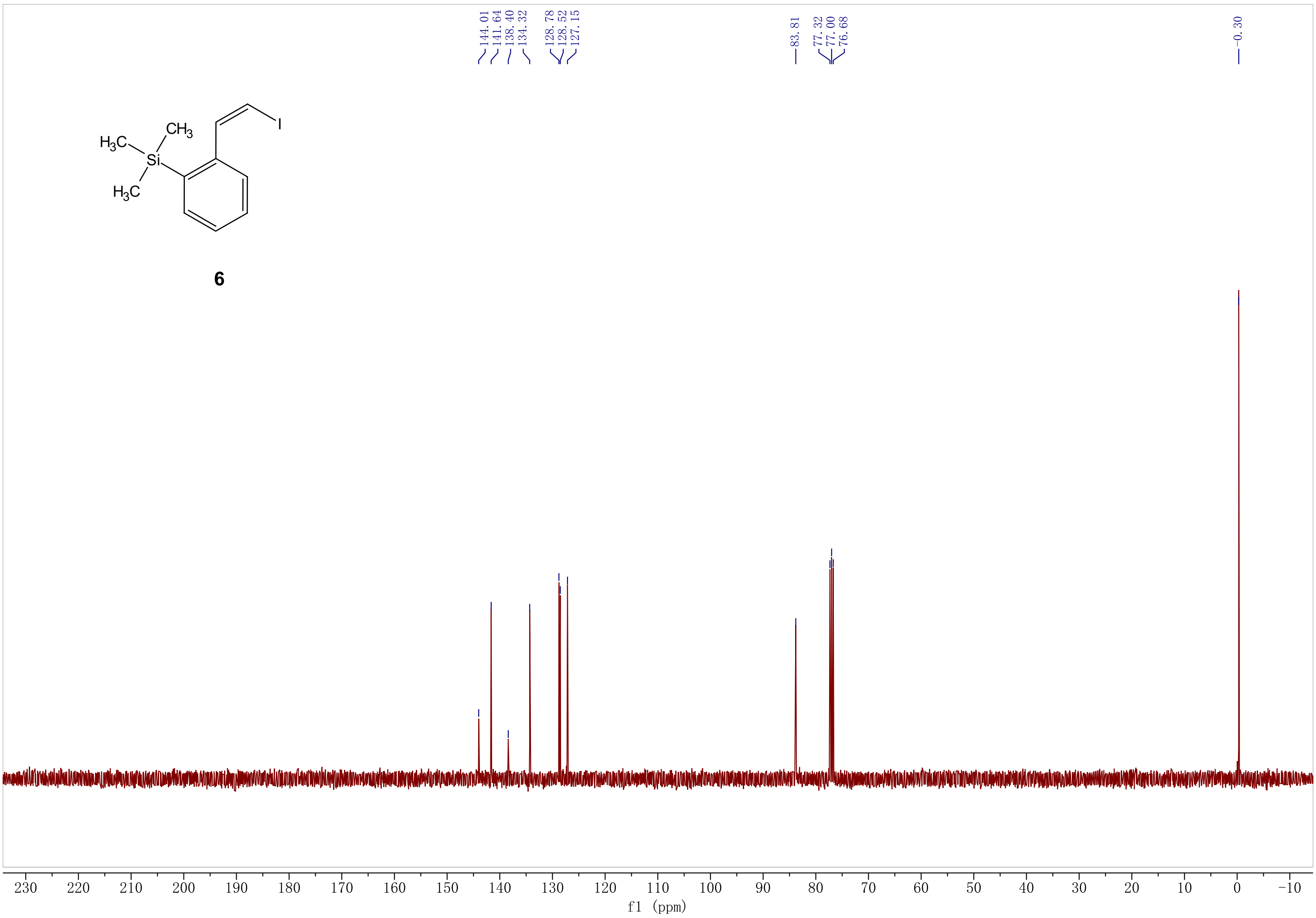
7.54
7.53
7.53
7.52
7.31
7.30
7.29
7.28
7.28
7.26 CDCl3
7.07
7.06
7.05
7.03
4.39
4.38
4.37
4.29
4.28
1.51
1.47
0.25
-0.00
-0.15
1.01
2.00
1.02
4.06
9.09
9.00
9.00
3w
f1 (ppm)

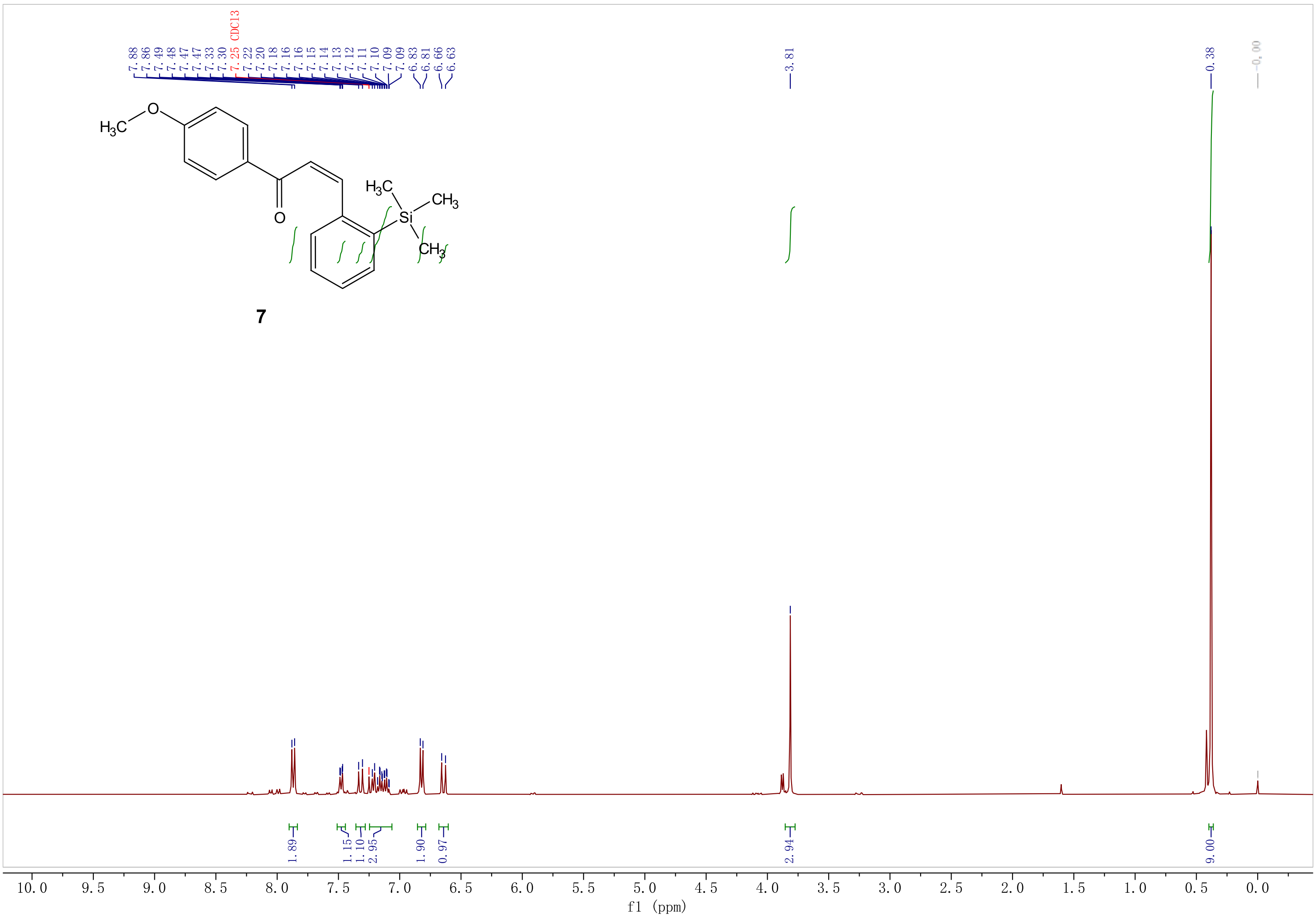

154.18
154.04
149.83
149.61
142.51
138.28
138.16
134.76
134.71
134.40
134.33
129.04
128.50
128.46
126.84
79.37
79.34
77.32
77.00
76.68
61.25
60.96
58.21
58.19
28.58
28.49
0.70
0.66
-1.25
-1.29
3w
f1 (ppm)

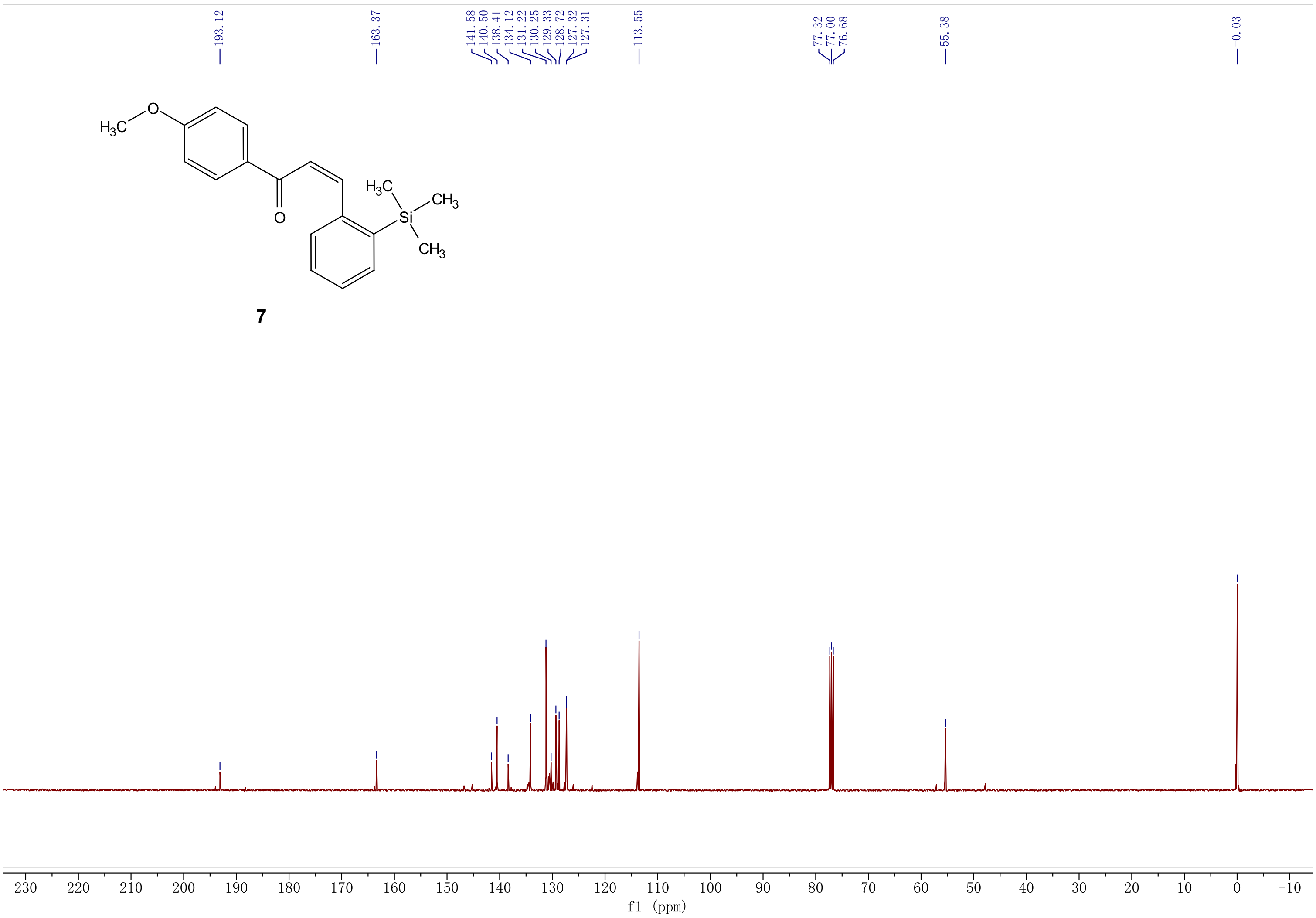

7.56
7.54
7.40
7.39
7.38
7.37
7.36
7.35
7.34
7.32
7.31
7.30
7.29
7.28
7.27
7.23 CDCl3
6.53
6.51
0.30
-0.00
5
2.01
1.05
2.01
0.99
9.00
f1 (ppm)


141.11
138.81
134.89
134.30
128.94
128.71
127.12
108.59
77.32
77.00
76.68
-0.31
Br
H_3C
CH_3
Si
H_3C
5
f1 (ppm)

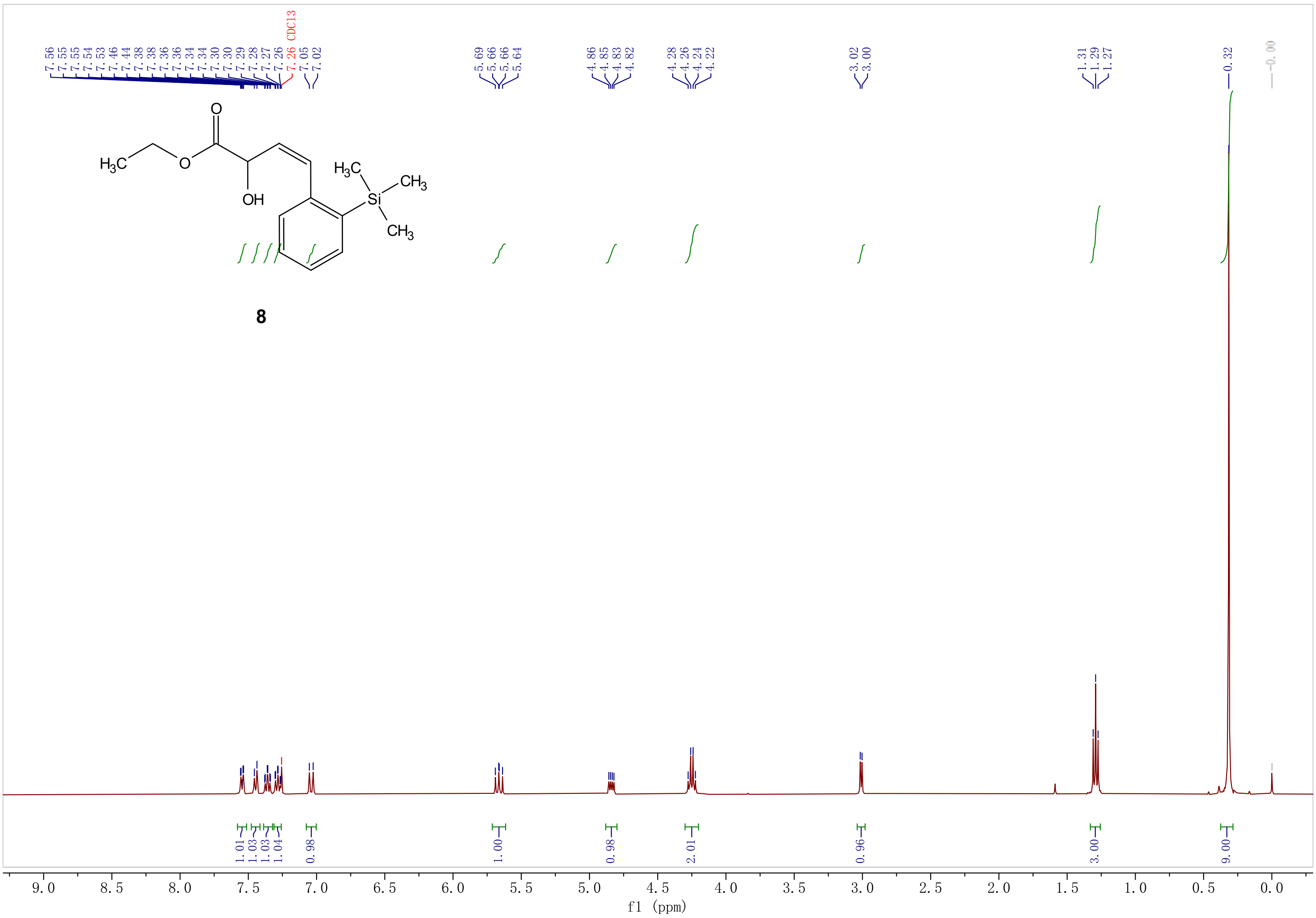

7.56
7.54
7.51
7.48
7.43
7.42
7.41
7.41
7.40
7.40
7.40
7.38
7.38
7.36
7.36
7.33
7.33
7.31
7.31
7.29
7.29
7.24 CDCl3
6.67
6.65
0.29
-0.00
I
H_3C
CH_3
Si
H_3C
6
1.00
0.99
2.03
1.00
0.96
9.00
f1 (ppm)


144.01
141.64
138.40
134.32
128.78
128.52
127.15
83.81
77.32
77.00
76.68
-0.30
H_3C
CH_3
Si
H_3C
I
6
f1 (ppm)

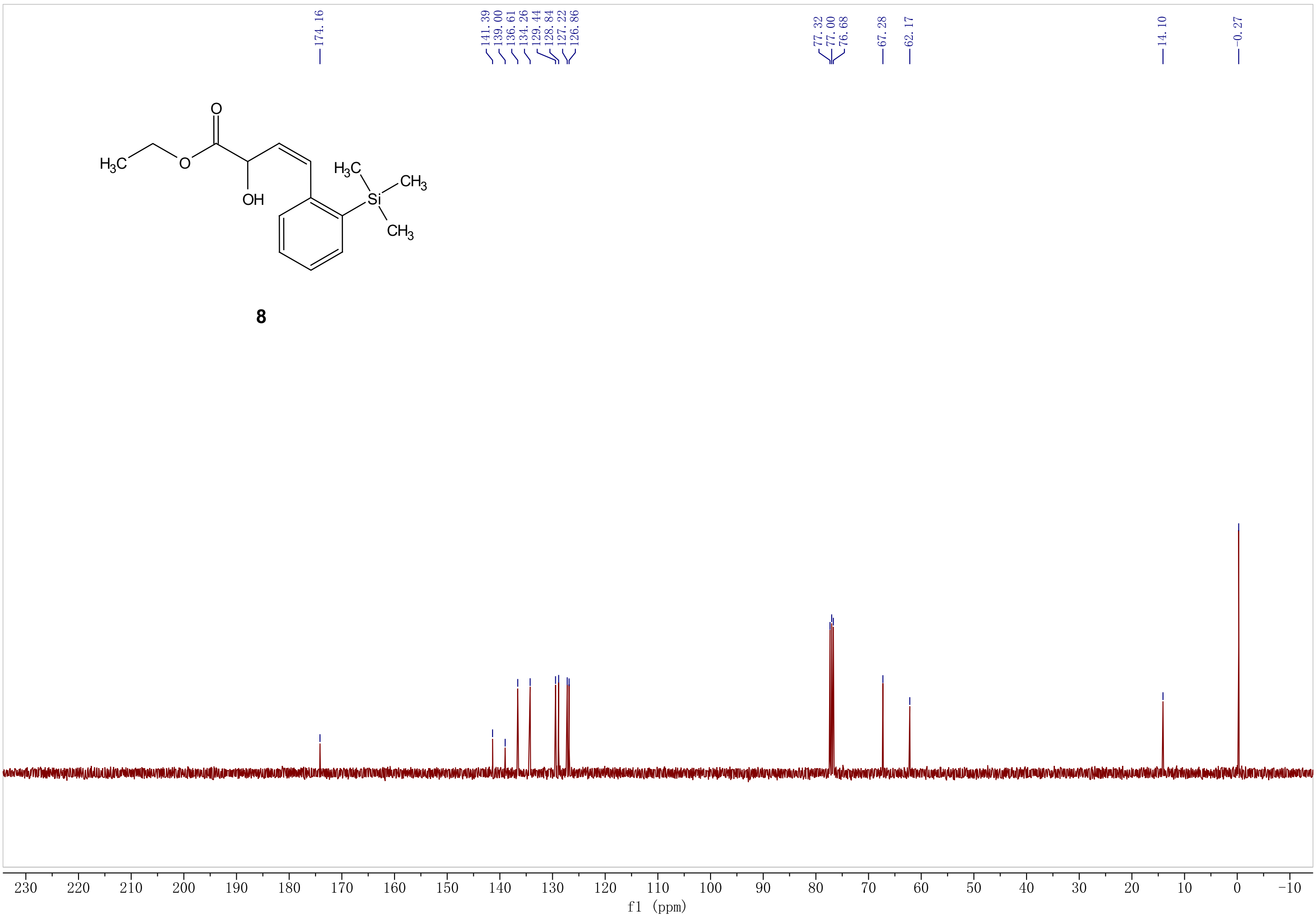

7.88
7.86
7.49
7.48
7.47
7.47
7.33
7.30
7.25 CDCl3
7.22
7.20
7.18
7.16
7.16
7.15
7.14
7.13
7.12
7.11
7.10
7.09
7.09
6.83
6.81
6.66
6.63
3.81
0.38
0.00
H_3C
O
O
H_3C
CH_3
Si
CH_3
7
1.89
1.15
1.10
2.95
1.90
0.97
2.94
9.00
f1 (ppm)


193.12
163.37
141.58
140.50
138.41
134.12
131.22
130.25
129.33
128.72
127.32
127.31
113.55
77.32
77.00
76.68
55.38
-0.03
f1 (ppm)

7


7.56
7.55
7.55
7.54
7.53
7.46
7.44
7.38
7.38
7.36
7.36
7.34
7.30
7.30
7.29
7.28
7.27
7.26 CDCl3
7.05
7.02
5.69
5.66
5.66
5.64
4.86
4.85
4.83
4.82
4.28
4.26
4.24
4.22
3.02
3.00
1.31
1.29
1.27
0.32
0.00
1.01
1.03
1.03
1.04
0.98
1.00
0.98
2.01
0.96
3.00
9.00
f1 (ppm)

8


174.16
141.39
139.00
136.61
134.26
129.44
128.84
127.22
126.86
77.32
77.00
76.68
67.28
62.17
14.10
-0.27
O
H_3C
O
OH
H_3C
CH_3
Si
CH_3
8
230 220 210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 -10
f1 (ppm)