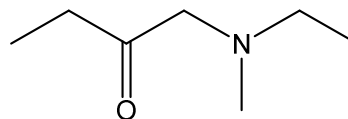
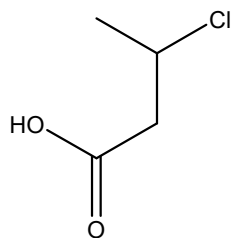
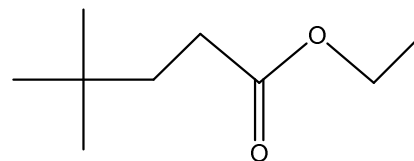
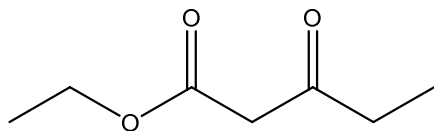
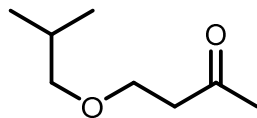
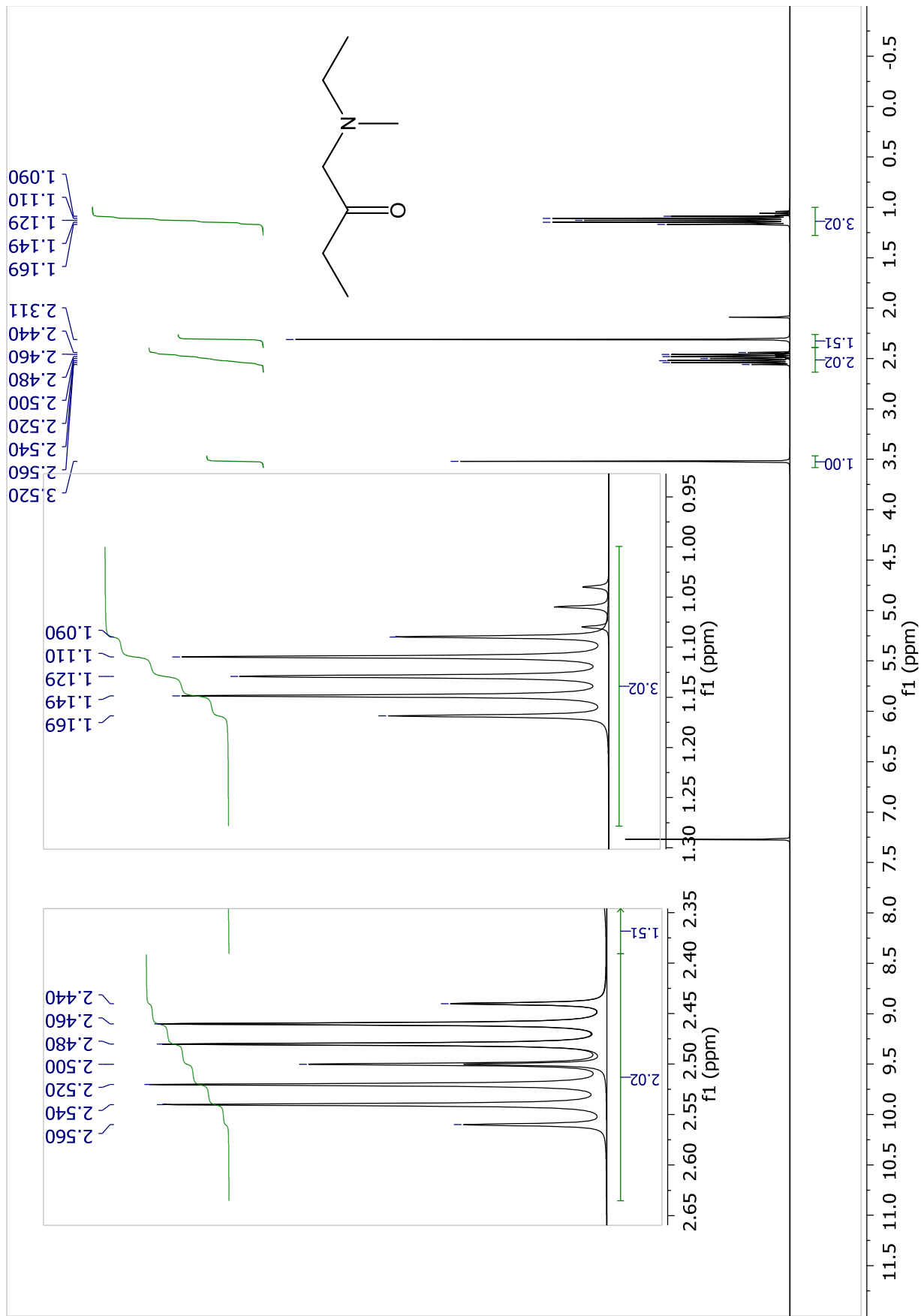
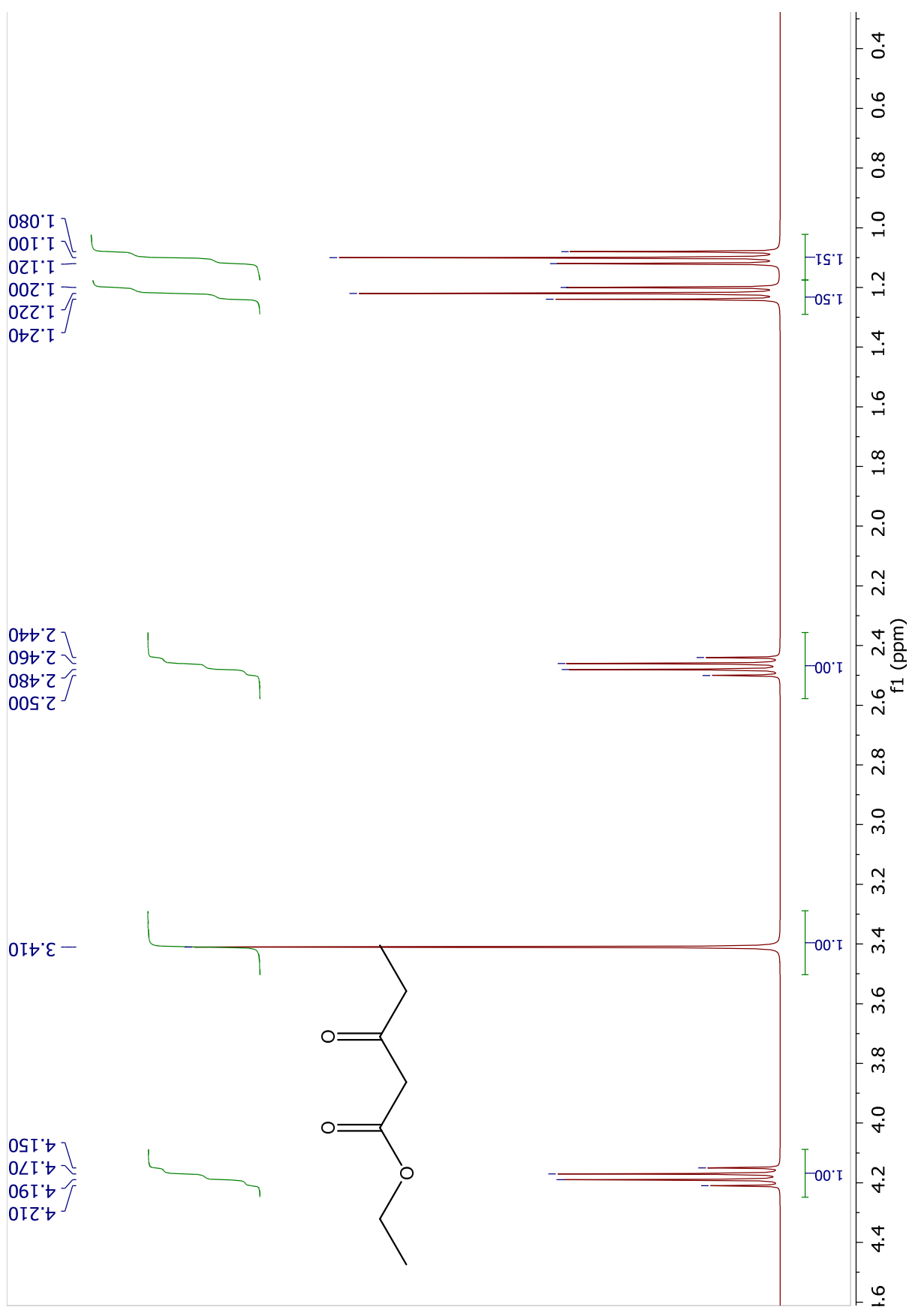
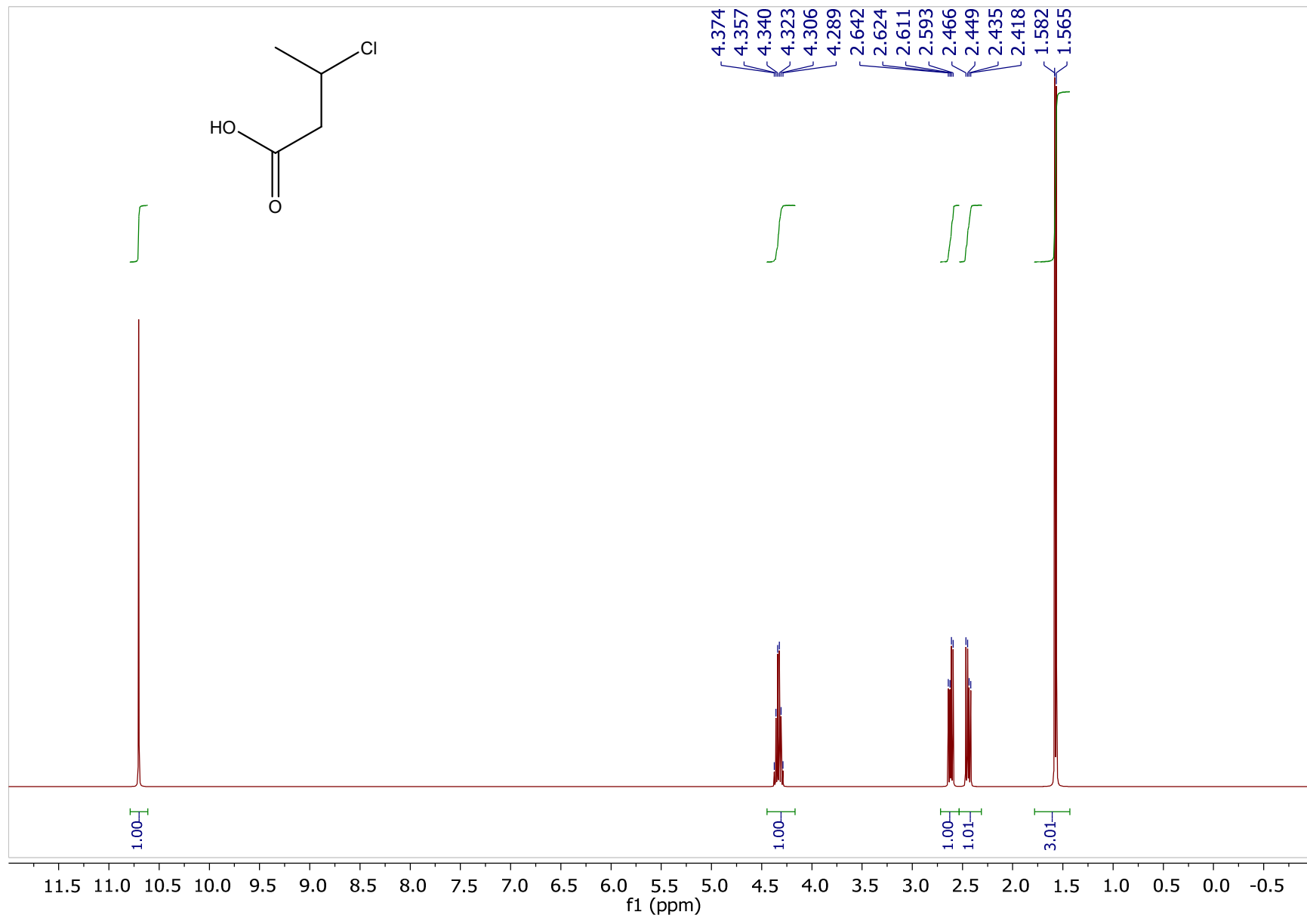
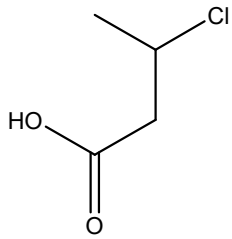


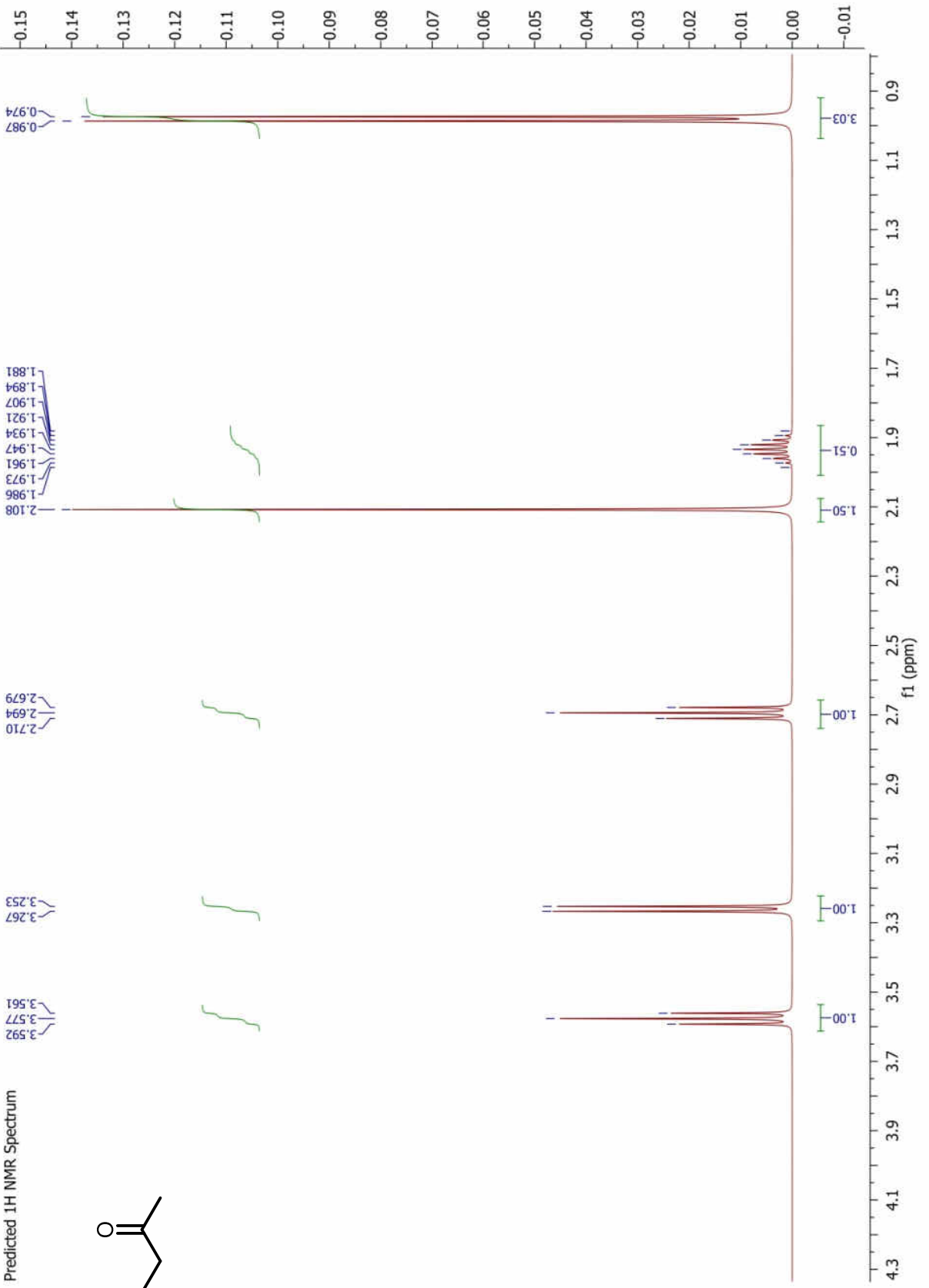
Zadanie 5. Dla poniższych cząsteczek przypisz sygnały w widmie $^1\text{H-NMR}$ odpowiednim grupom protonów. Określ intensywność sygnałów, rodzaj multipletów oraz stosunki sygnałów w multiplicie. Zapisz skrótową postać widma. Widma rejestrowane dla częstości pola 400MHz (CDCl_3 , stężenie 2-5%, temp. pok.).

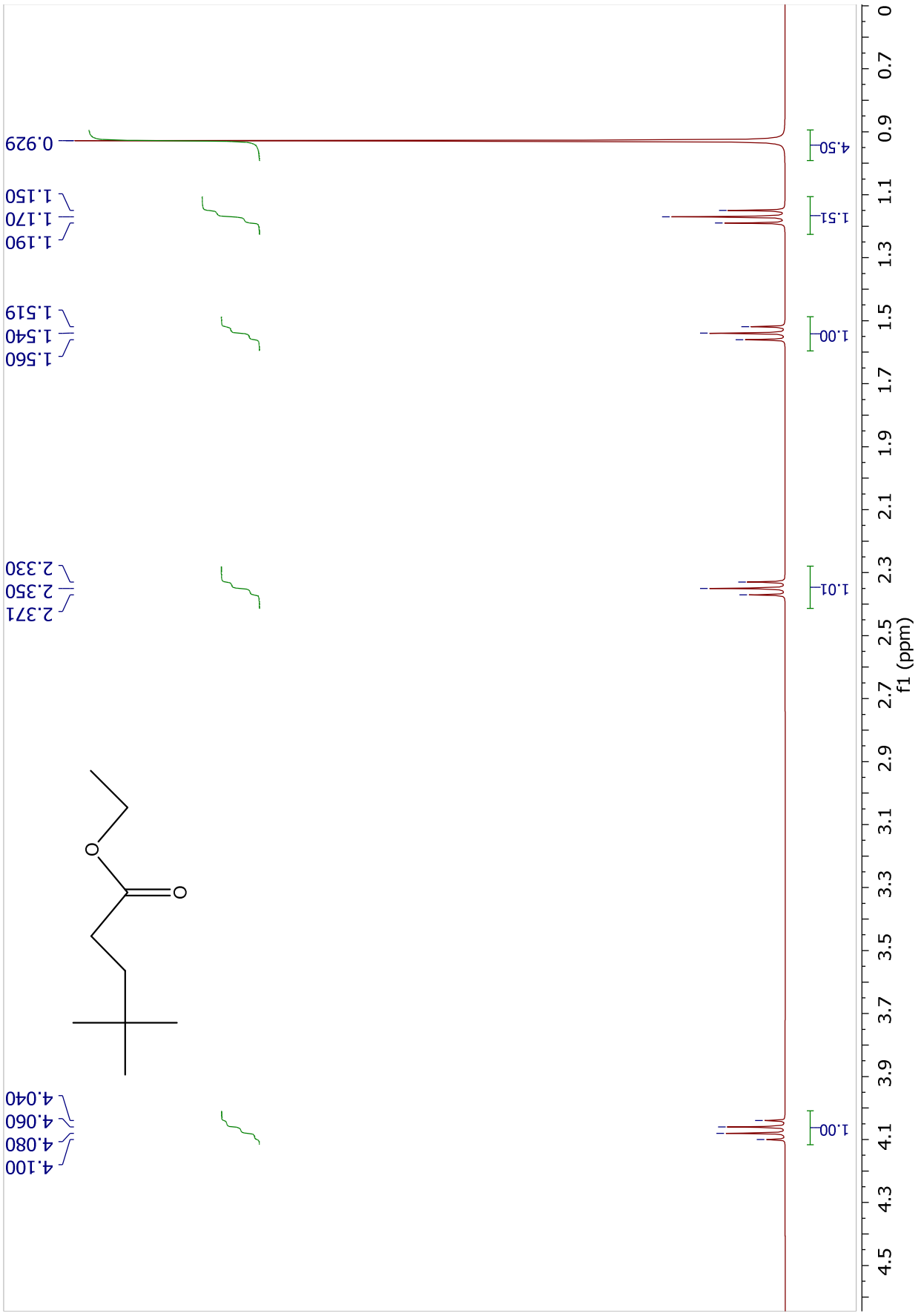




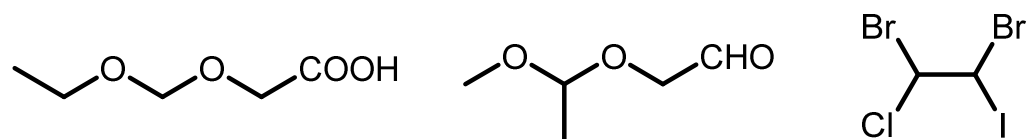
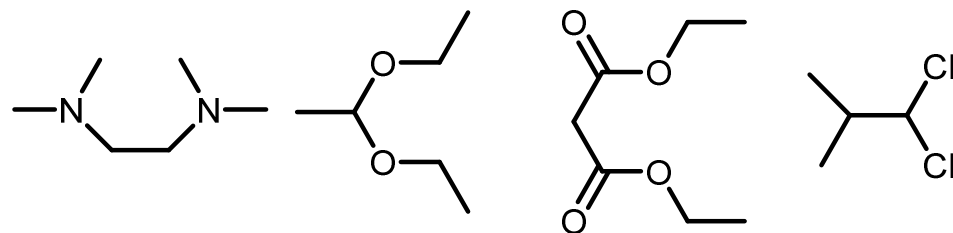






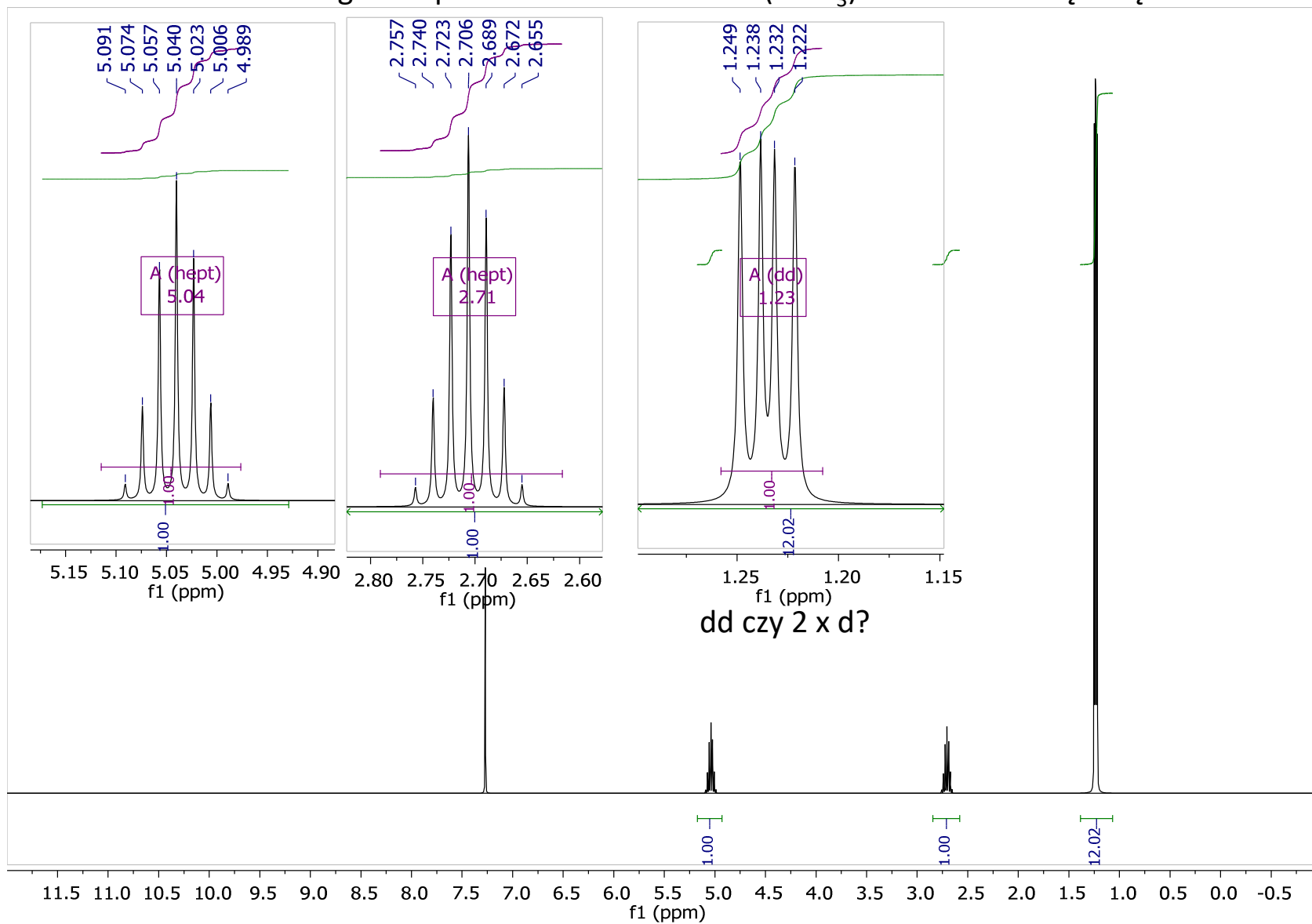
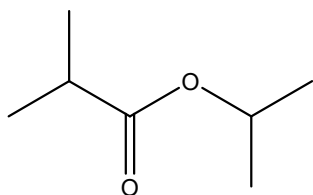


Zadanie 6. Narysuj przewidywane widma $^1\text{H-NMR}$ dla następujących struktur (uwzględnić multipletowość oraz powierzchnie sygnałów).

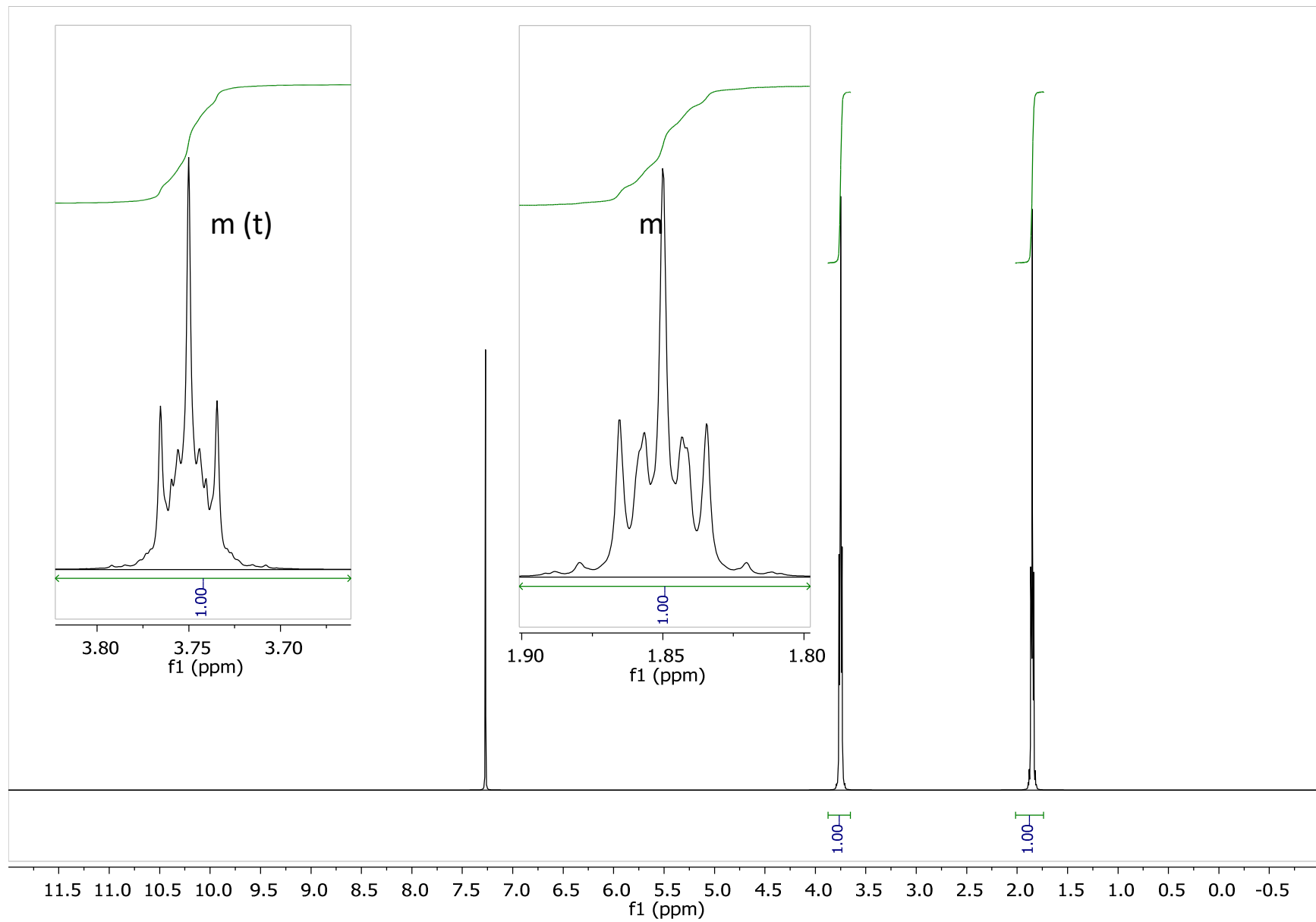
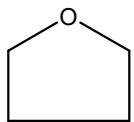


Zadanie 7. Na podstawie widma ^1H NMR zmierzonego na aparacie Bruker 400 MHz (CDCl_3) określ strukturę związku chemicznego.

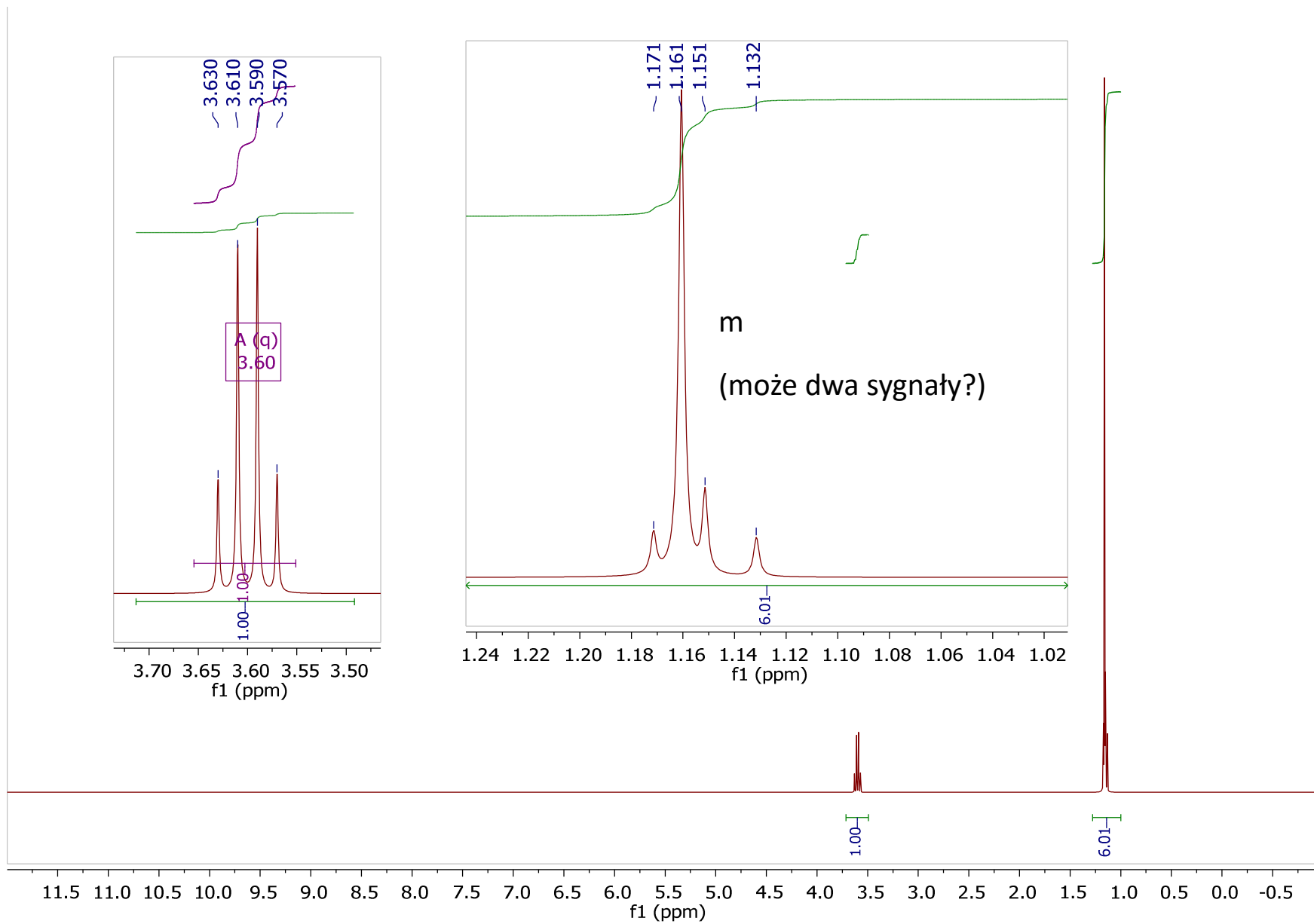
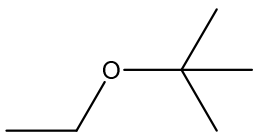
(a) $\text{C}_7\text{H}_{14}\text{O}_2$



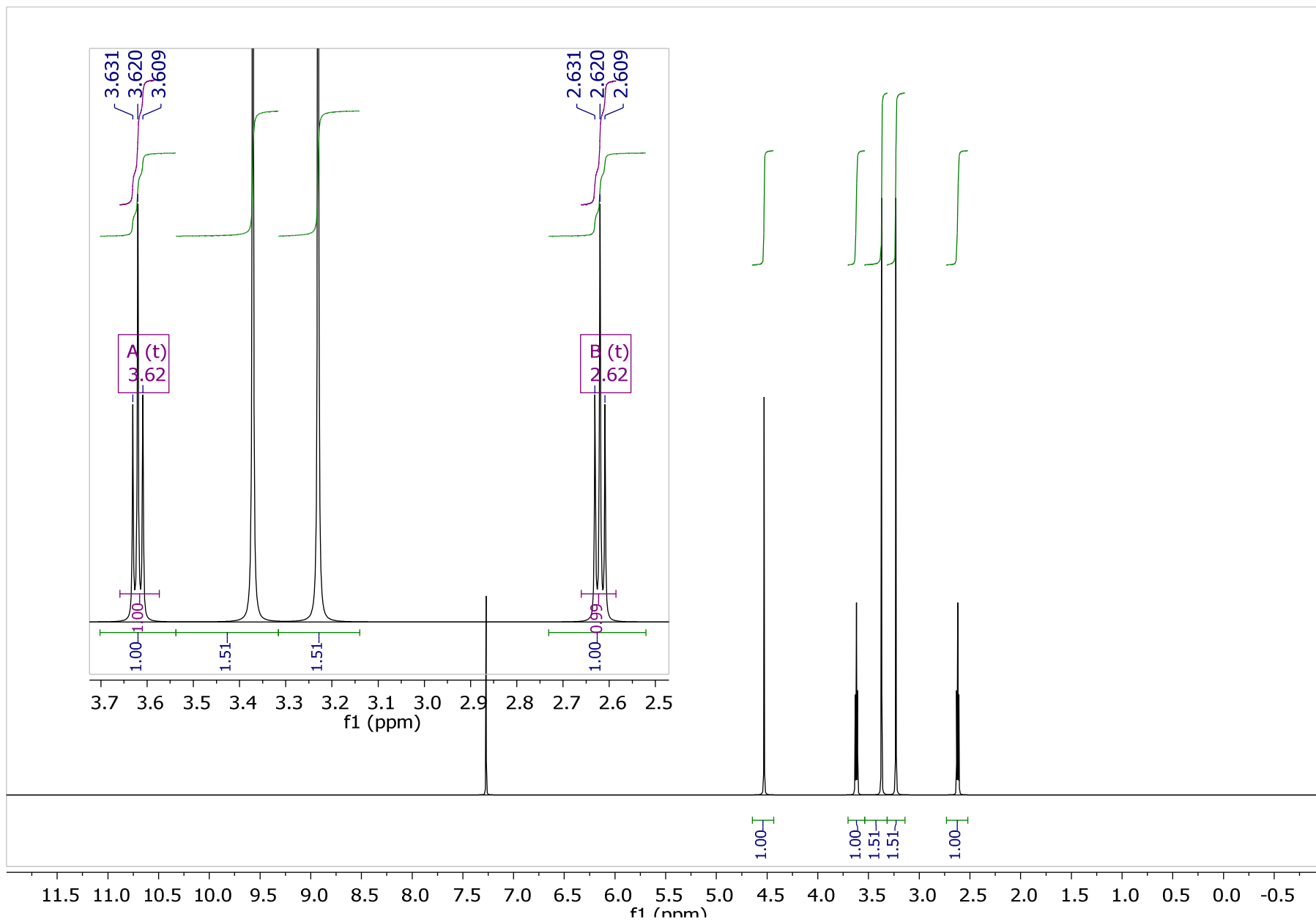
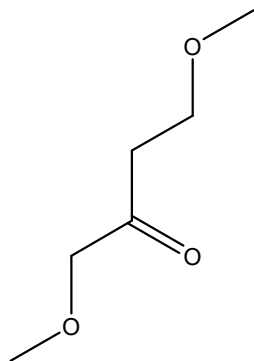
(b) C_4H_8O



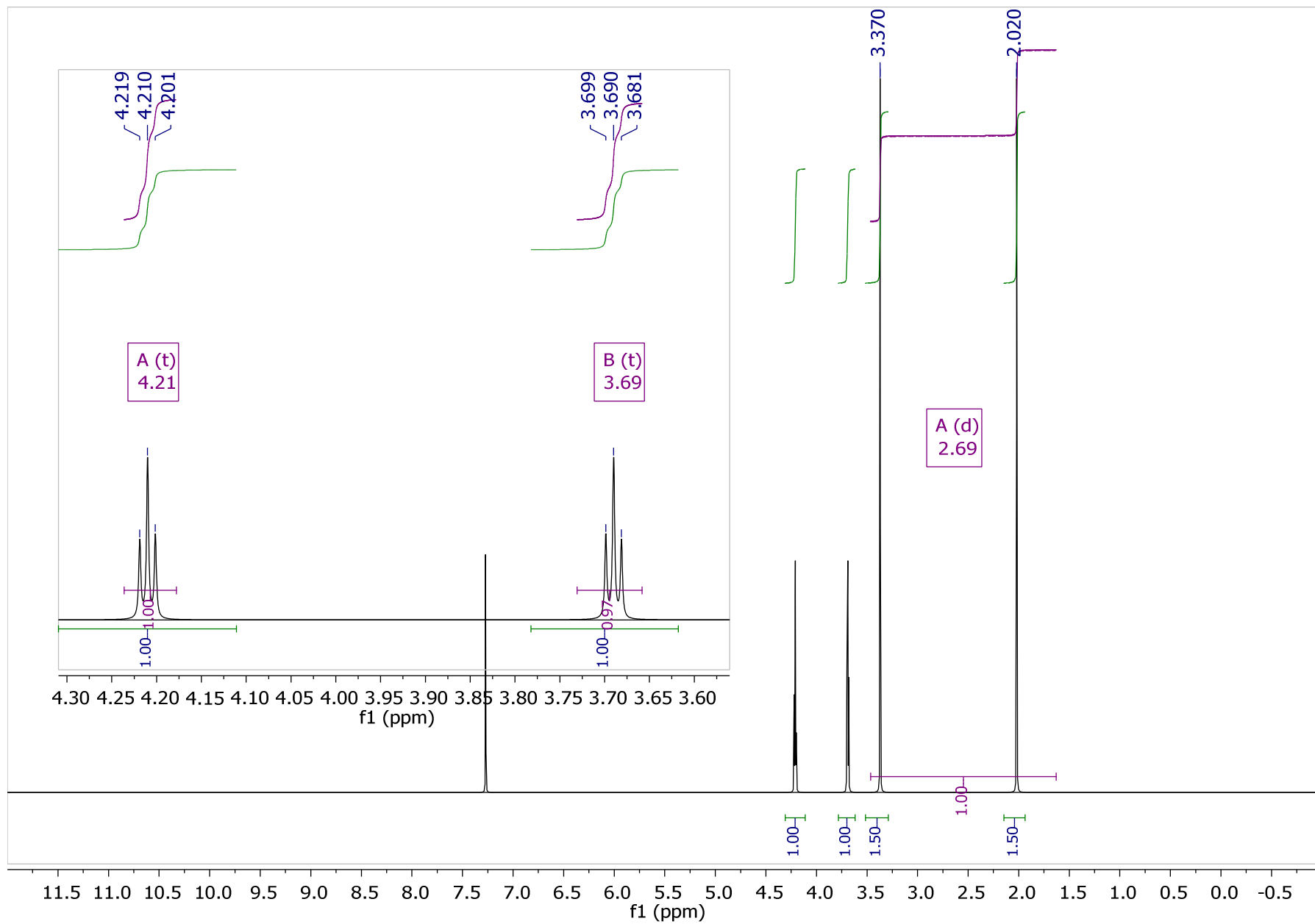
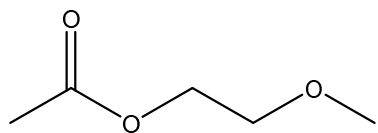
(c) $C_6H_{14}O$



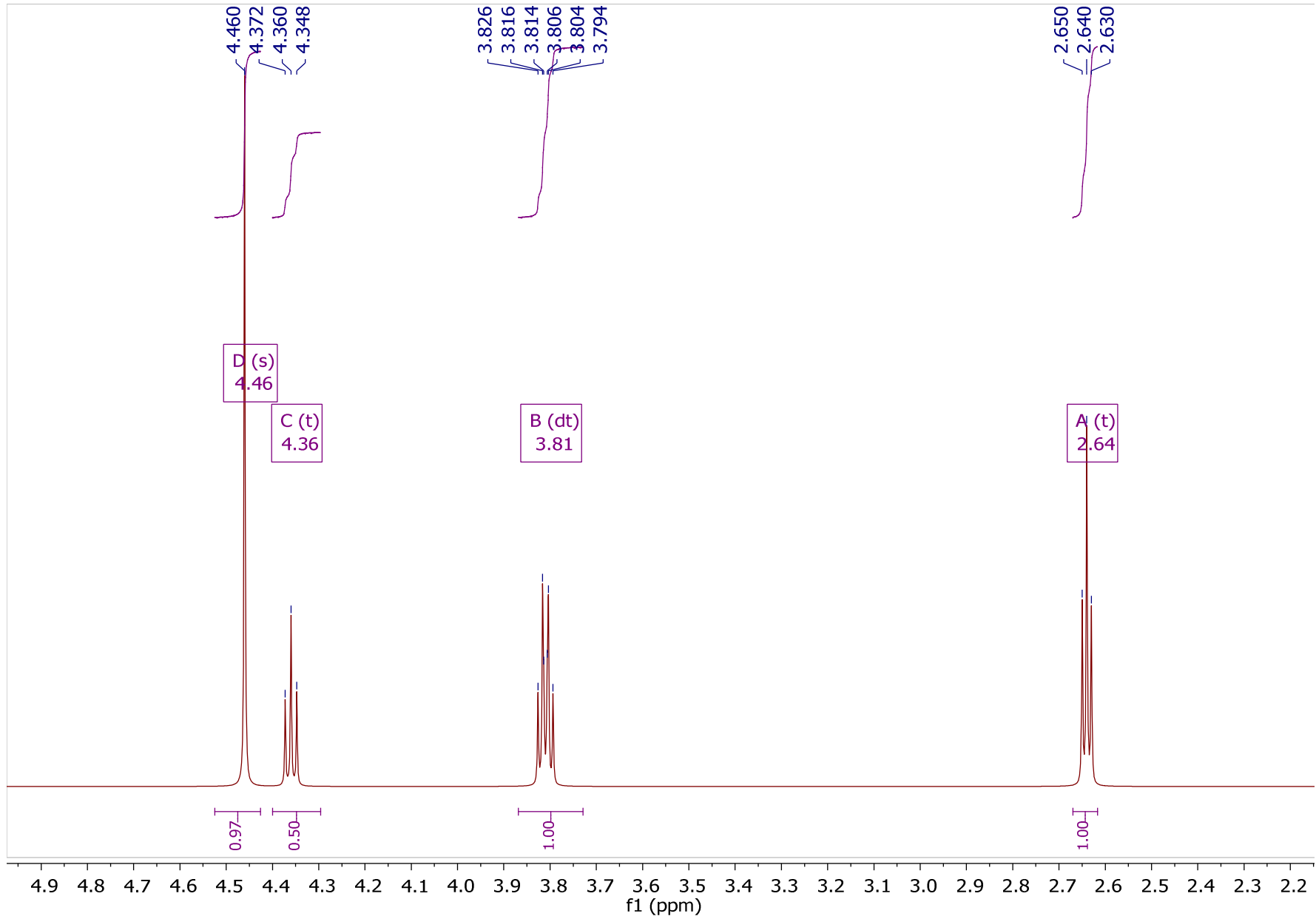
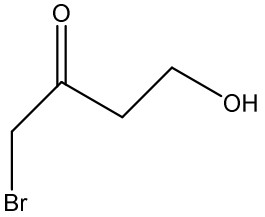
(d) $C_6H_{12}O_3$



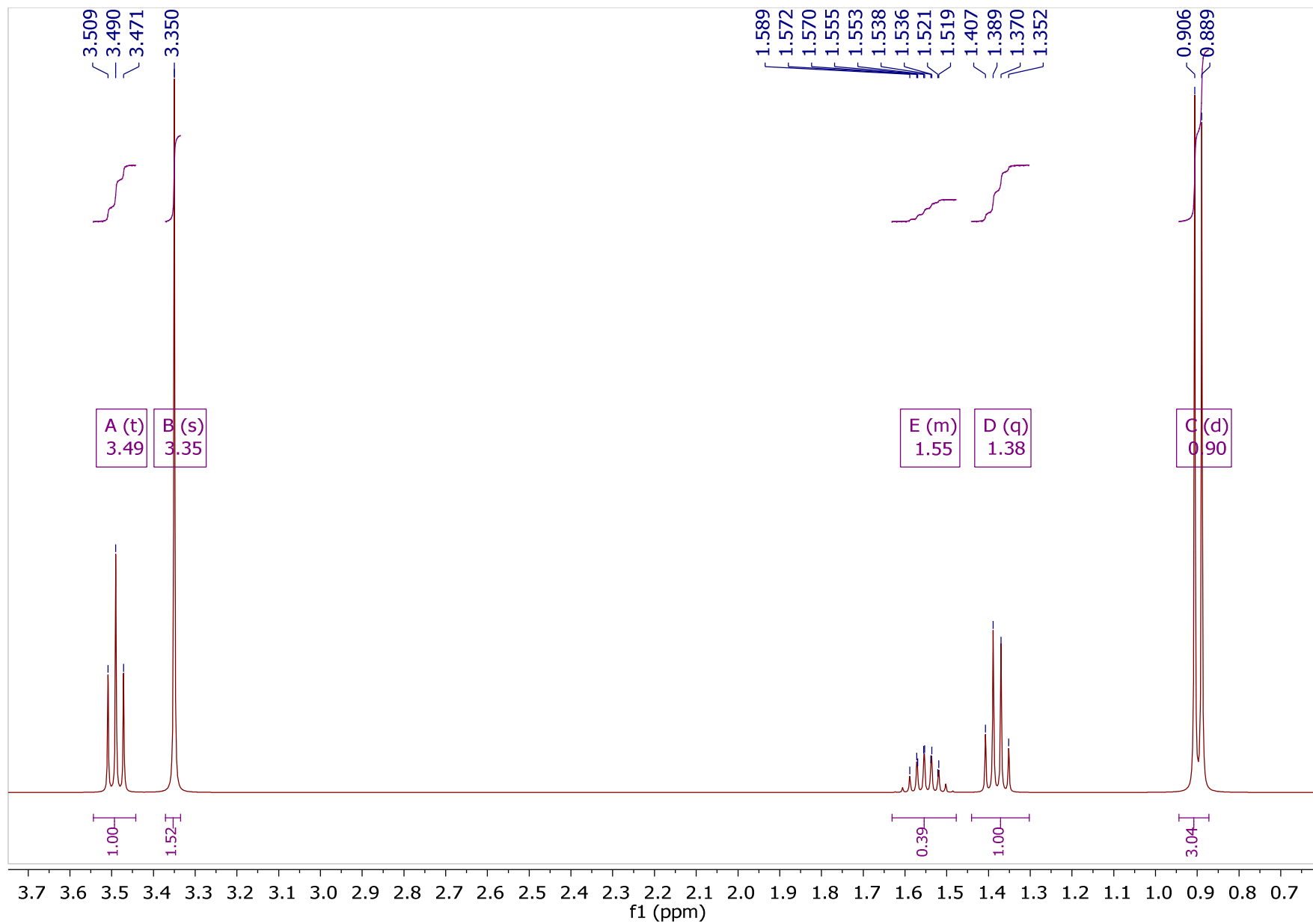
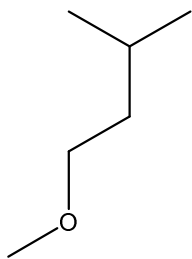
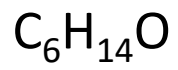
(e) $C_5H_{10}O_3$



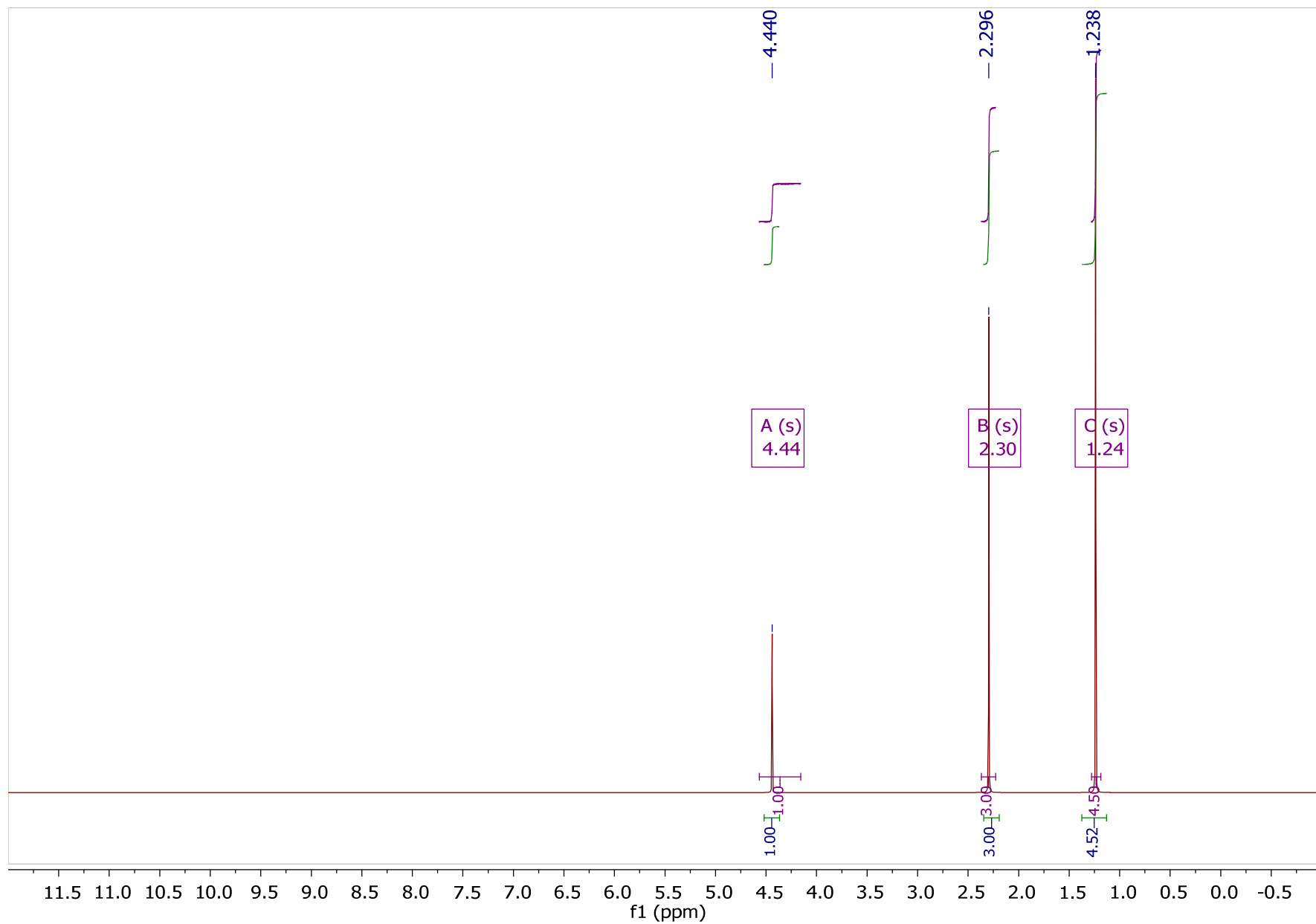
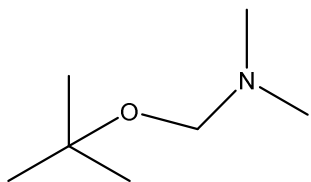
(f) $C_4H_7BrO_2$



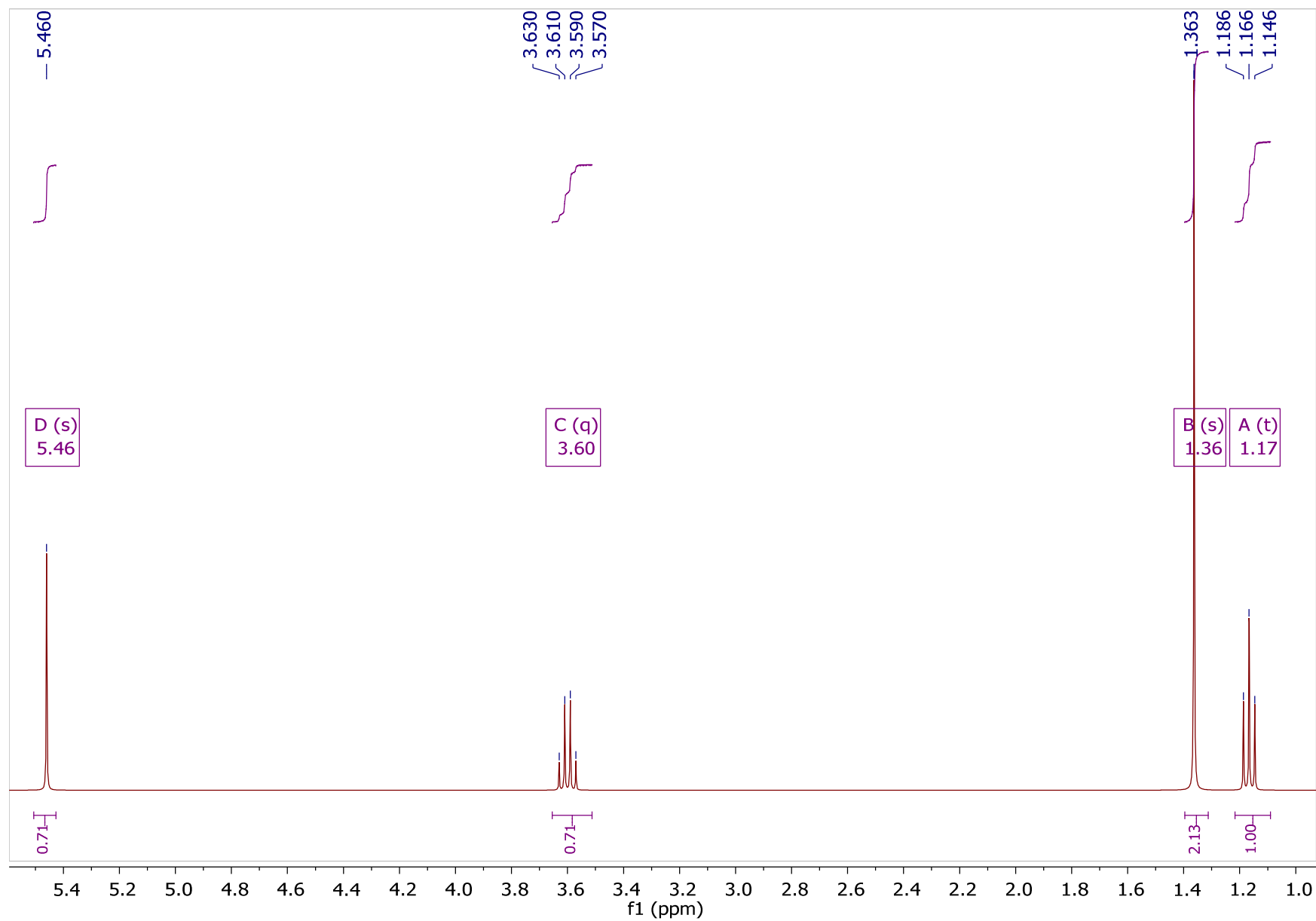
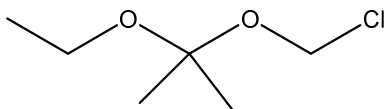
(g)



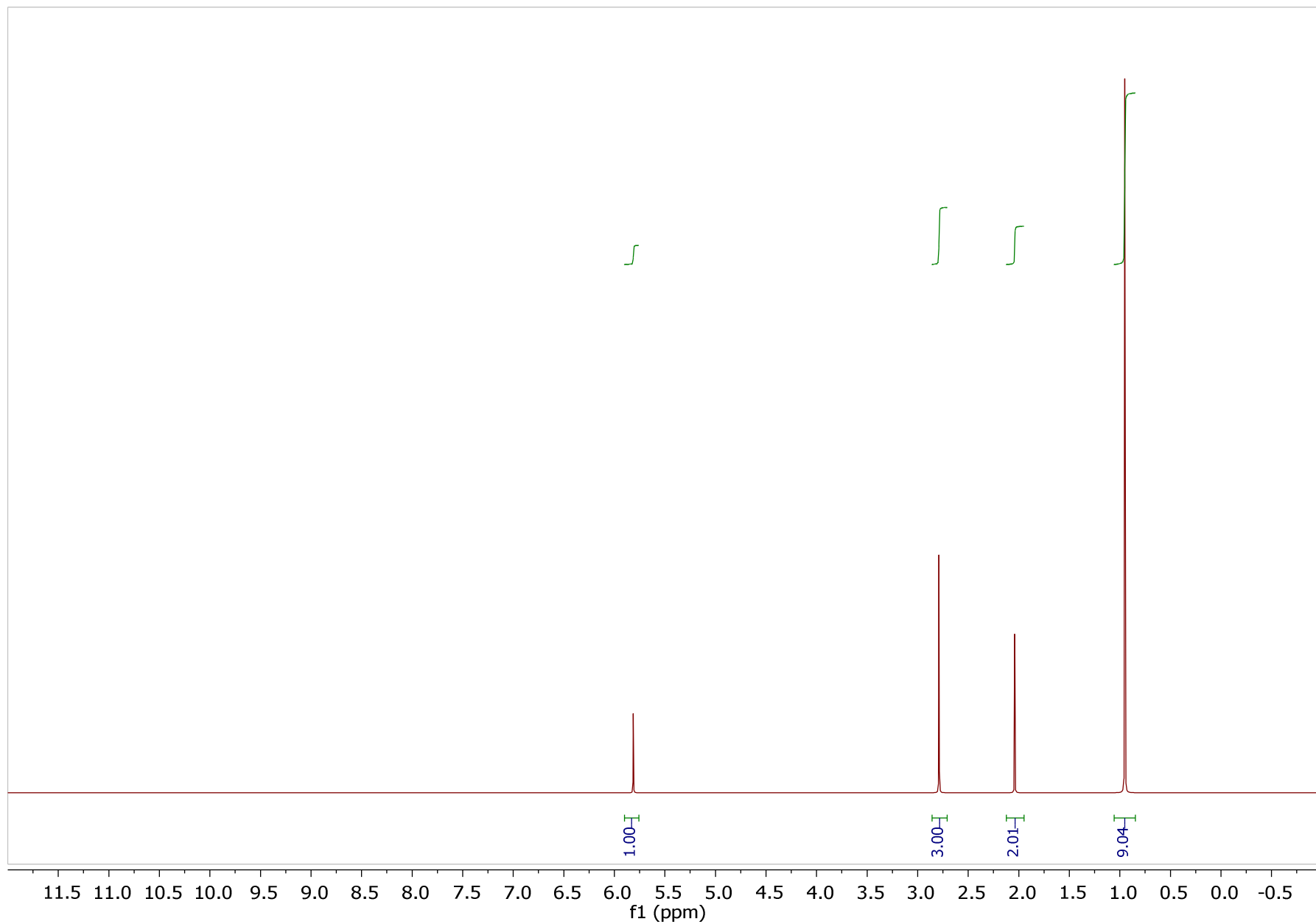
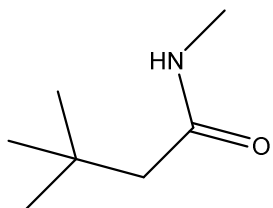
(h) C₇H₁₇ON



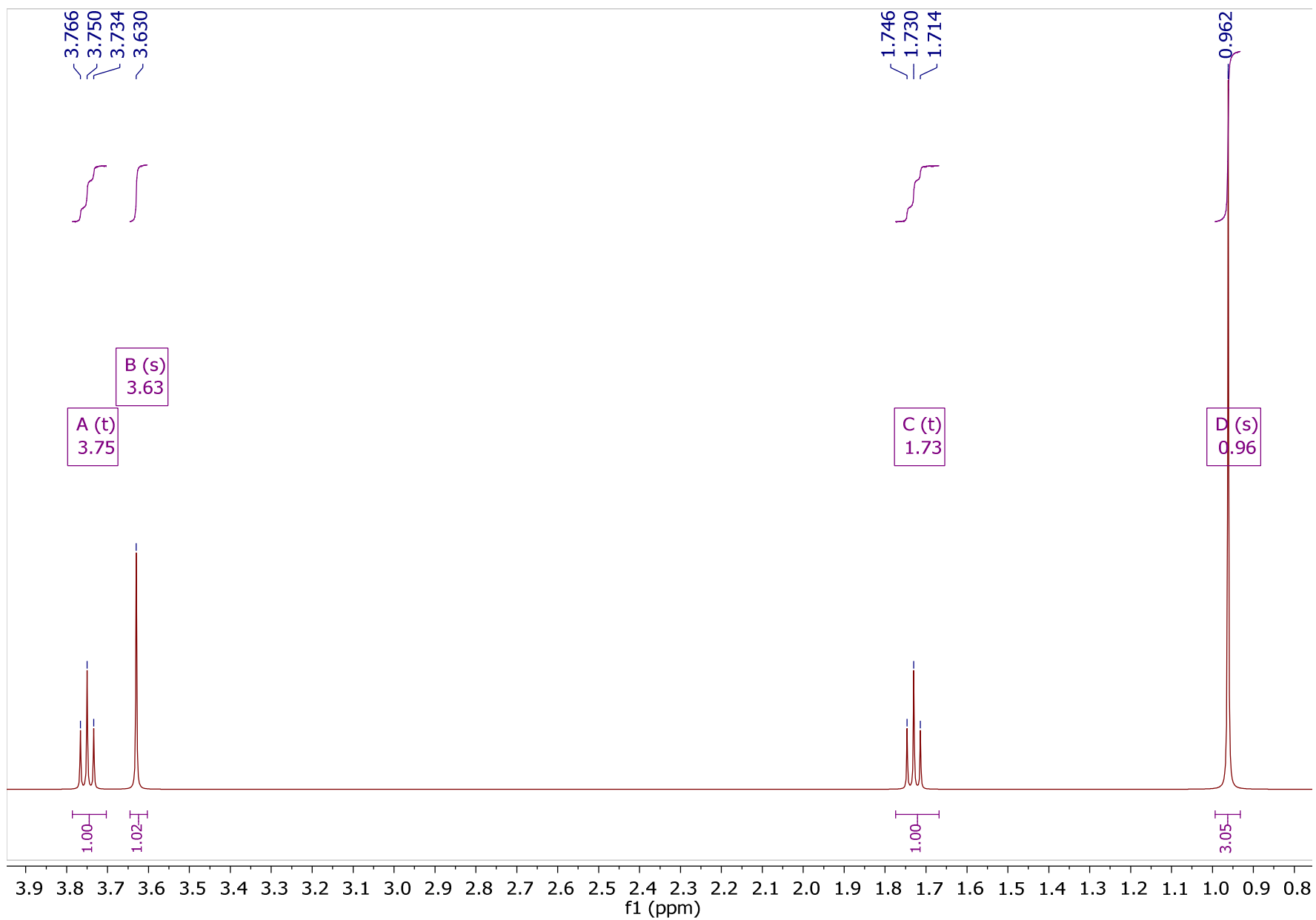
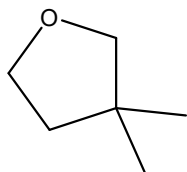
(i) $C_6H_{13}O_2Cl$



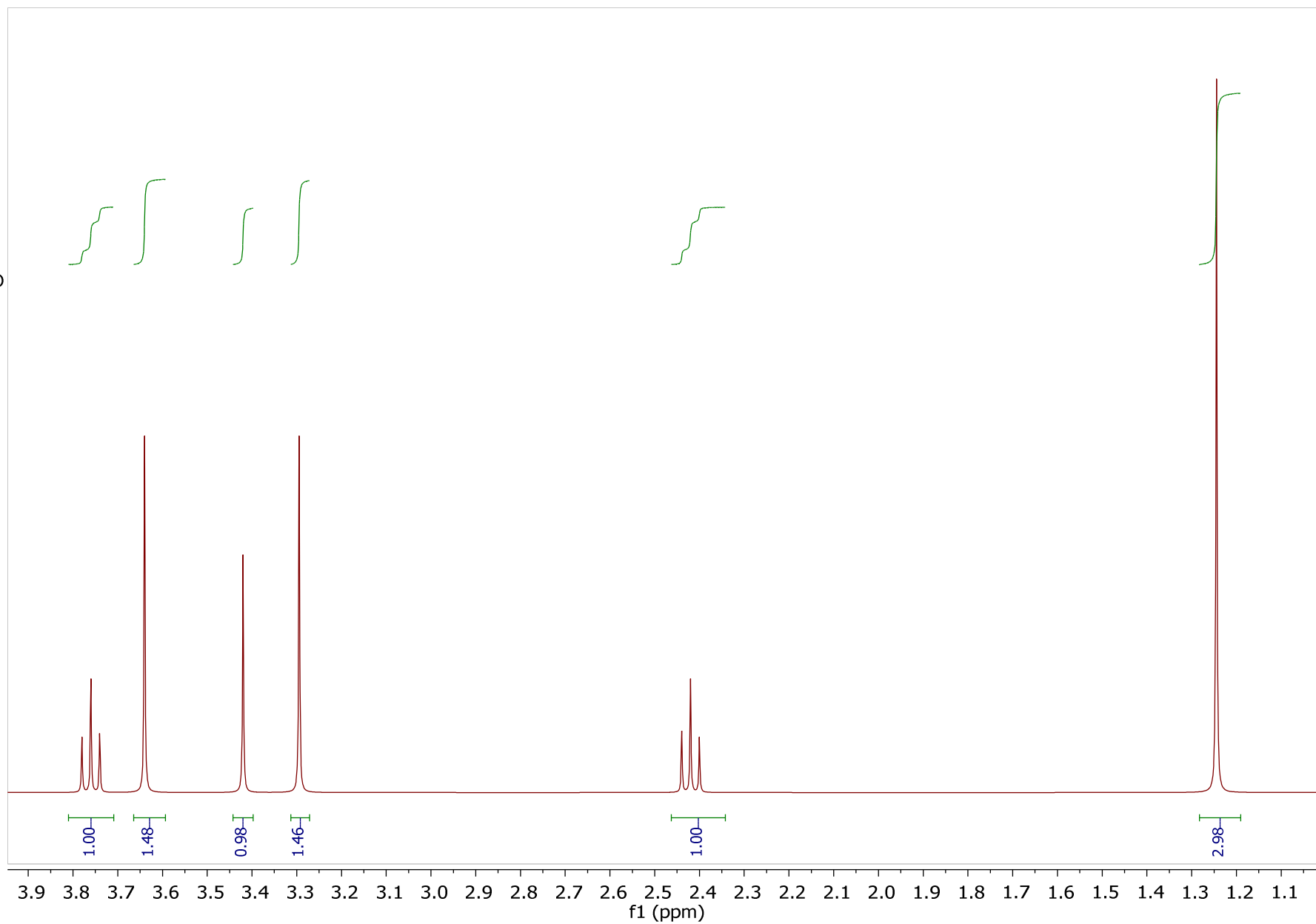
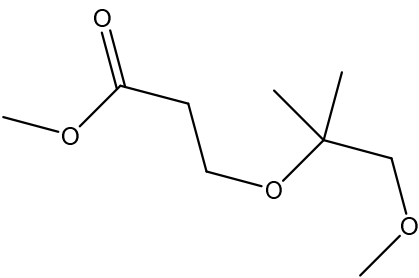
(j) $C_7H_{15}ON$



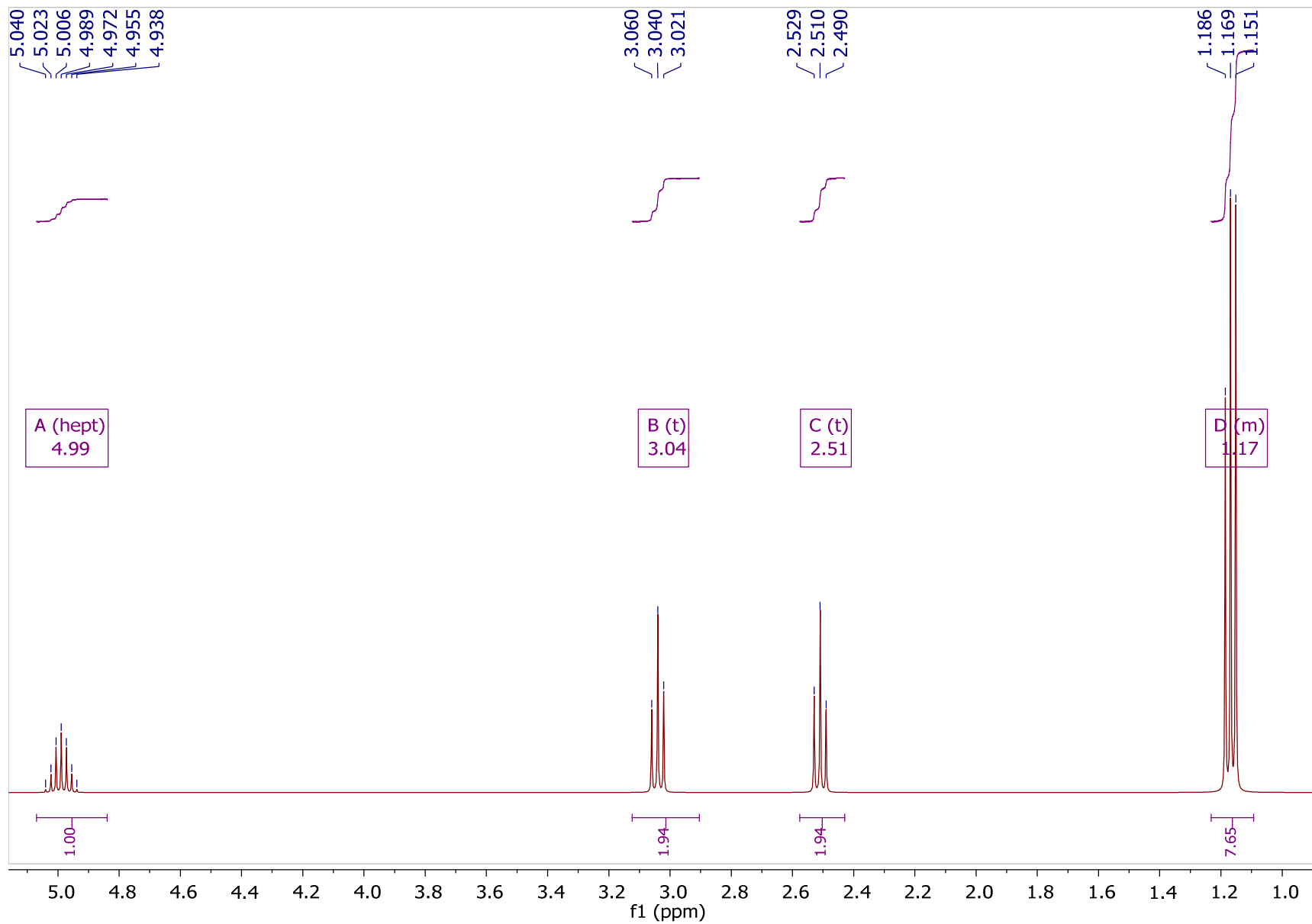
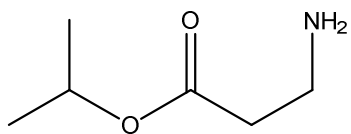
(k) C₆H₁₂O



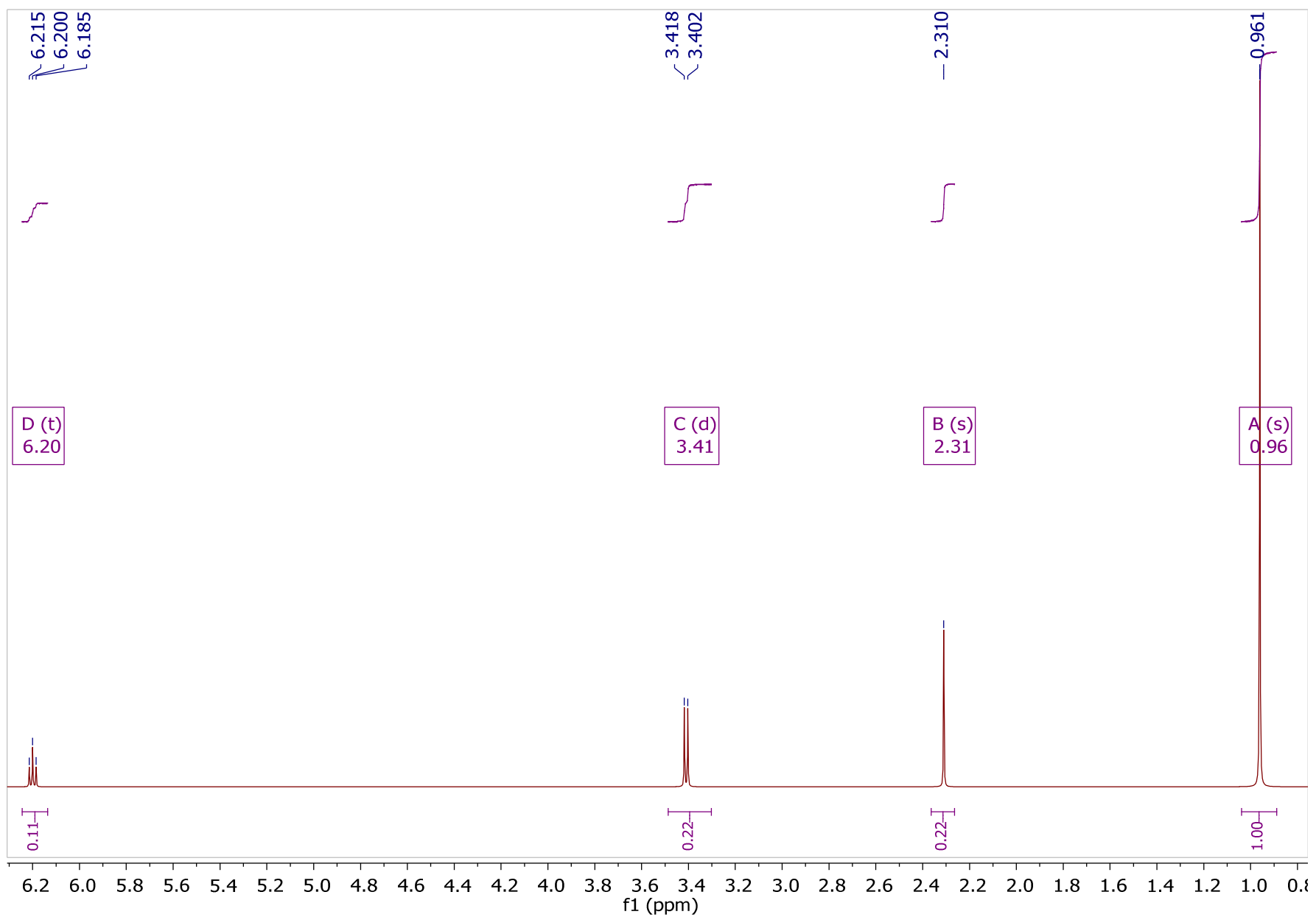
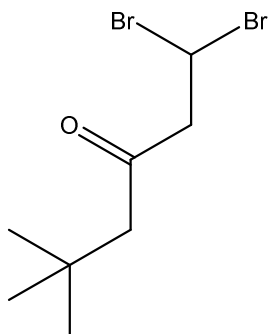
(I) $C_9H_{18}O_4$



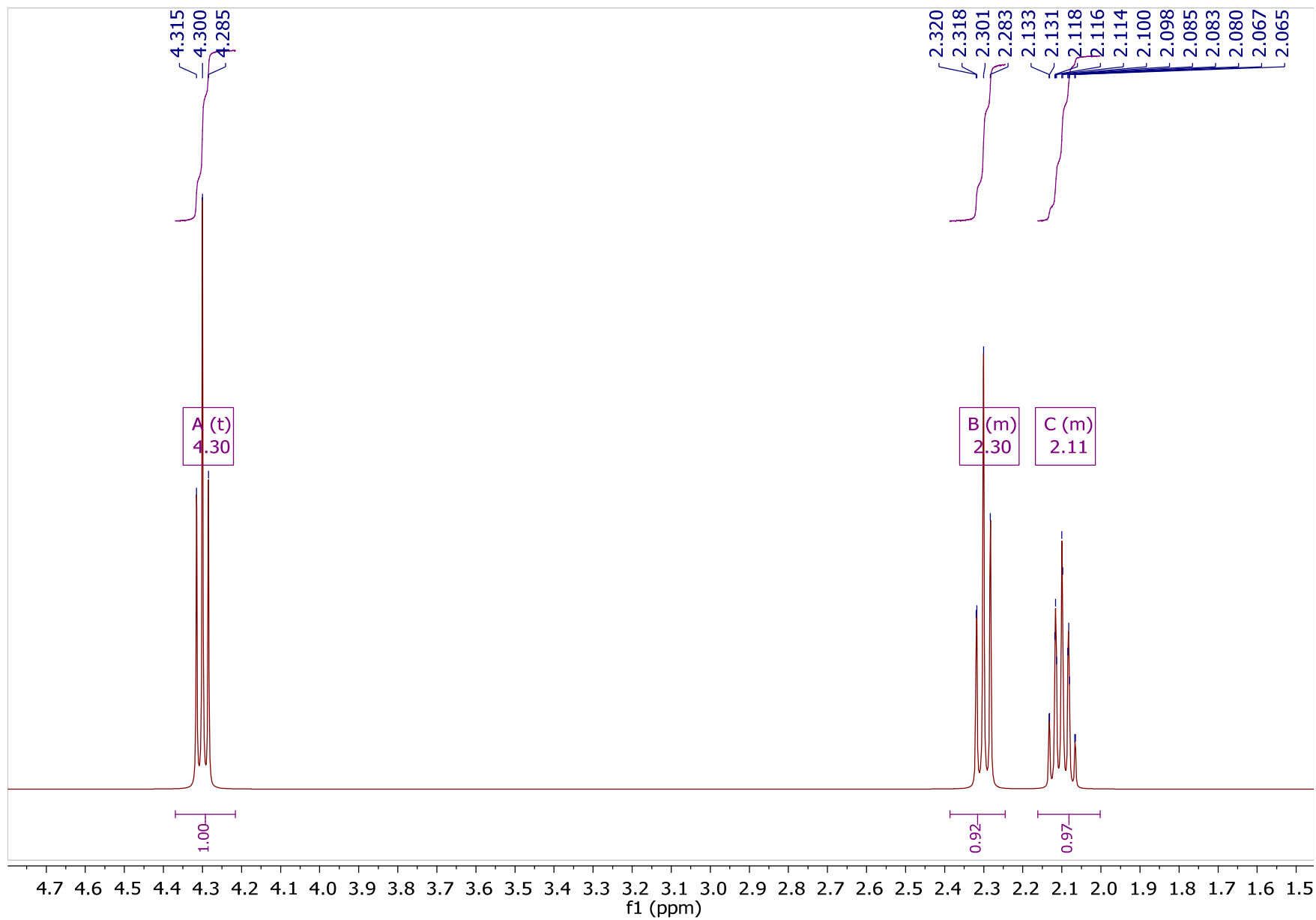
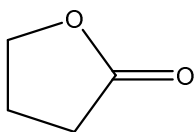
(m) C₆H₁₃NO₂



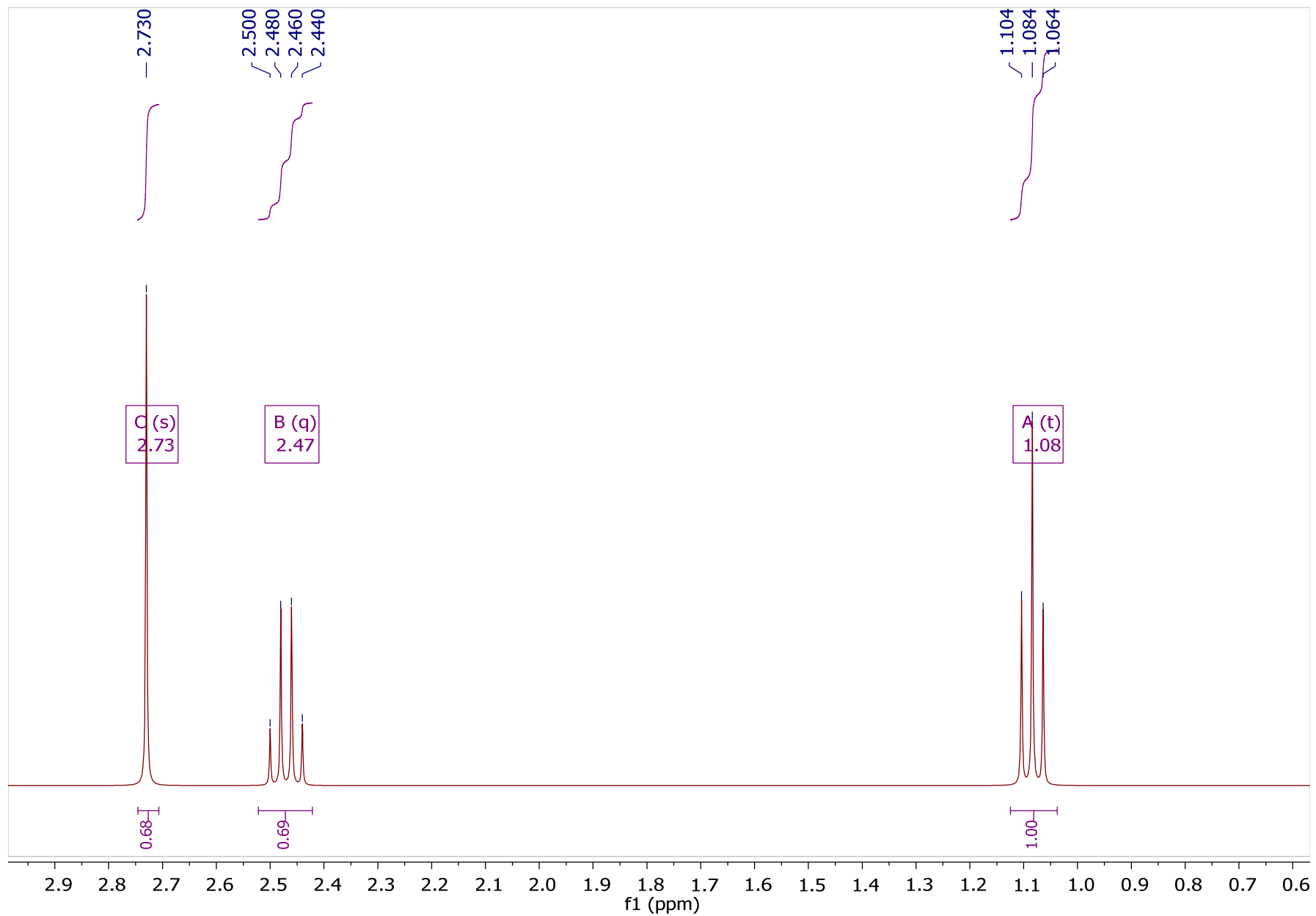
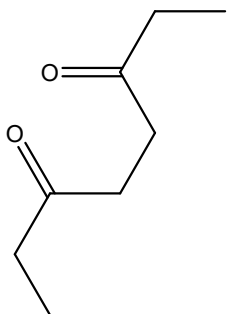
(n) $C_8H_{14}OBr_2$



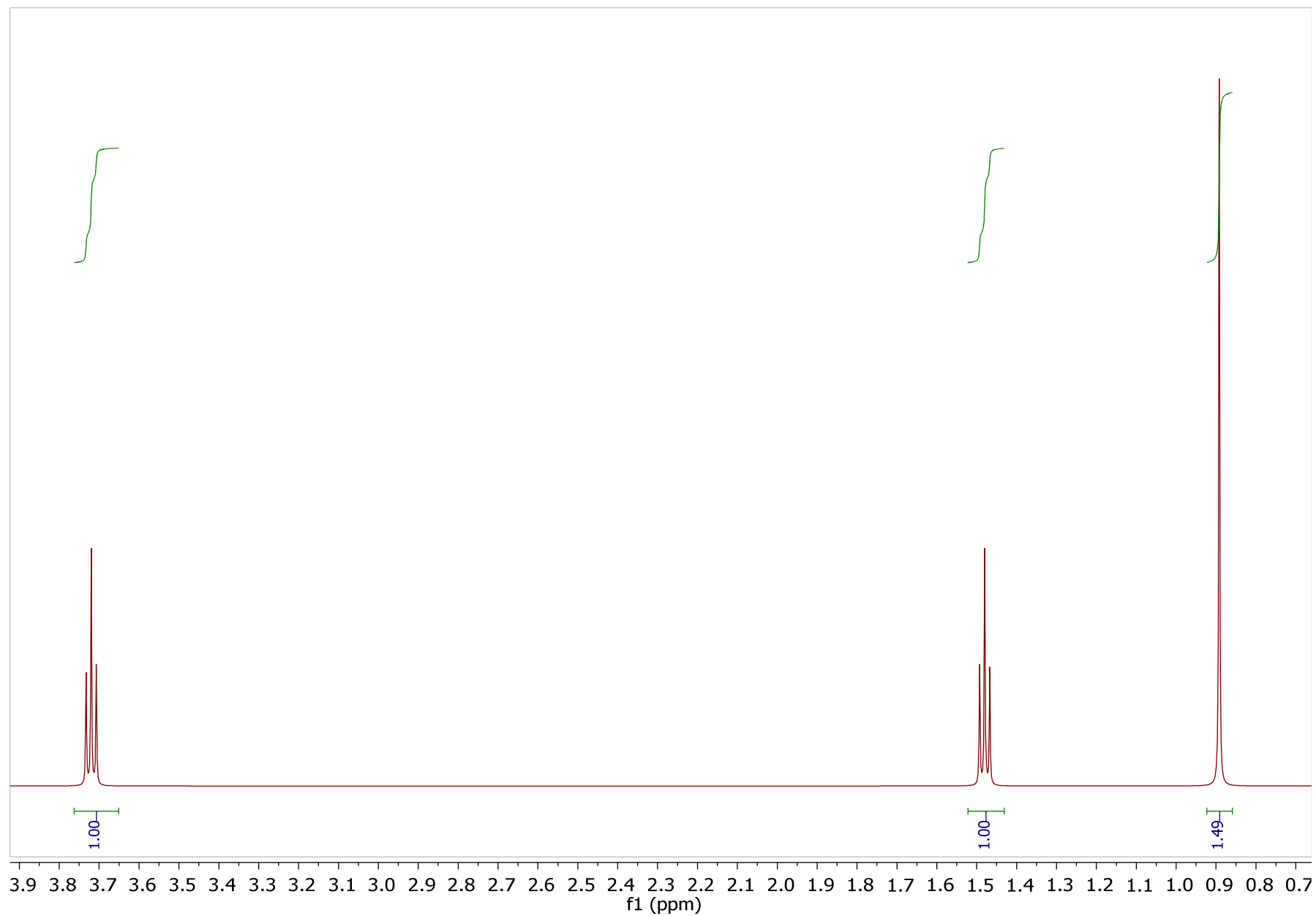
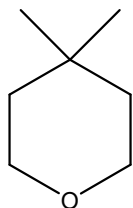
(o) $C_4H_6O_2$



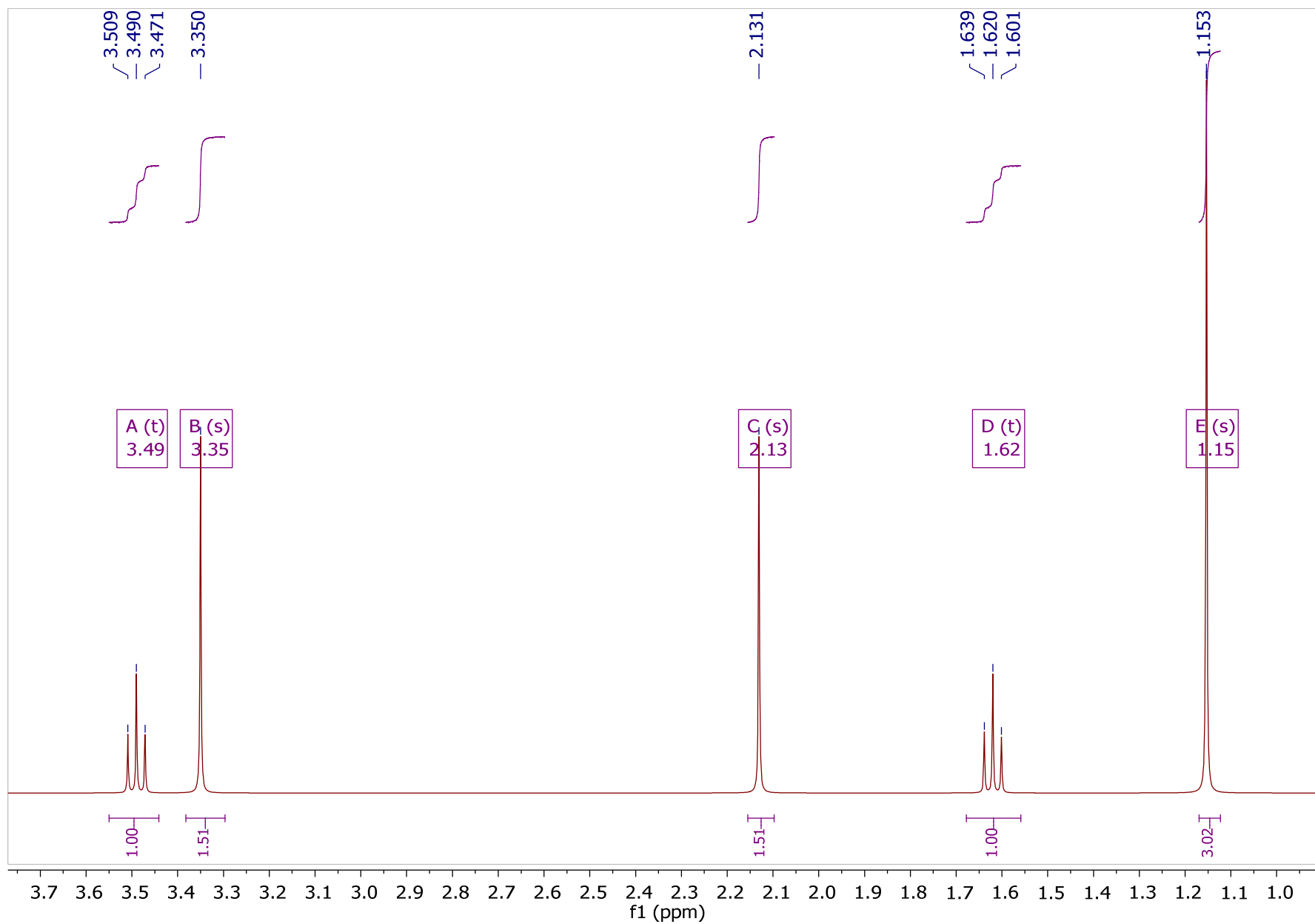
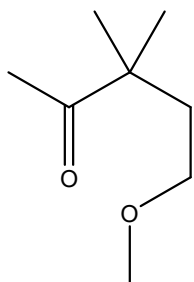
(p) $C_8H_{14}O_2$



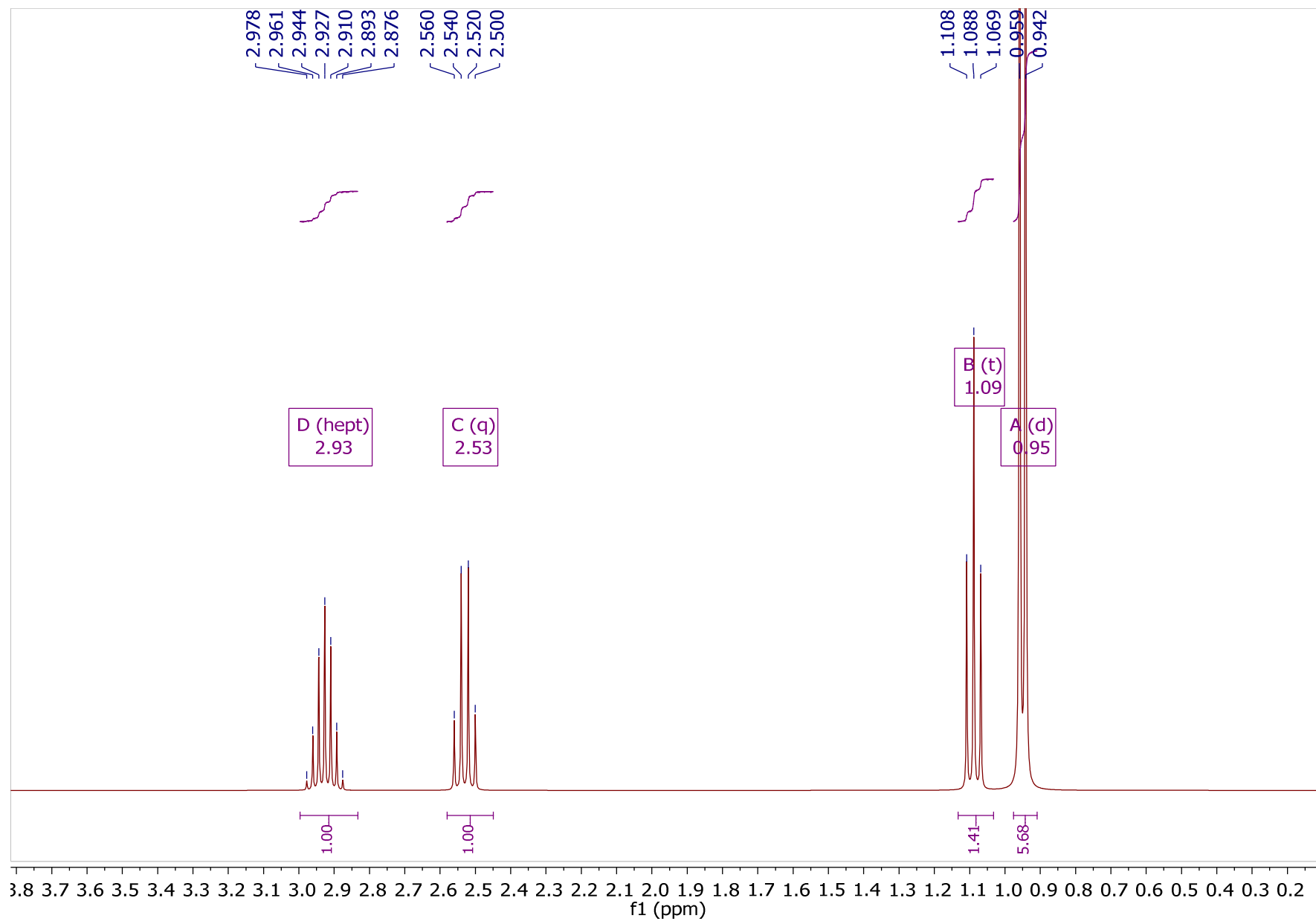
(r) C₇H₁₄O



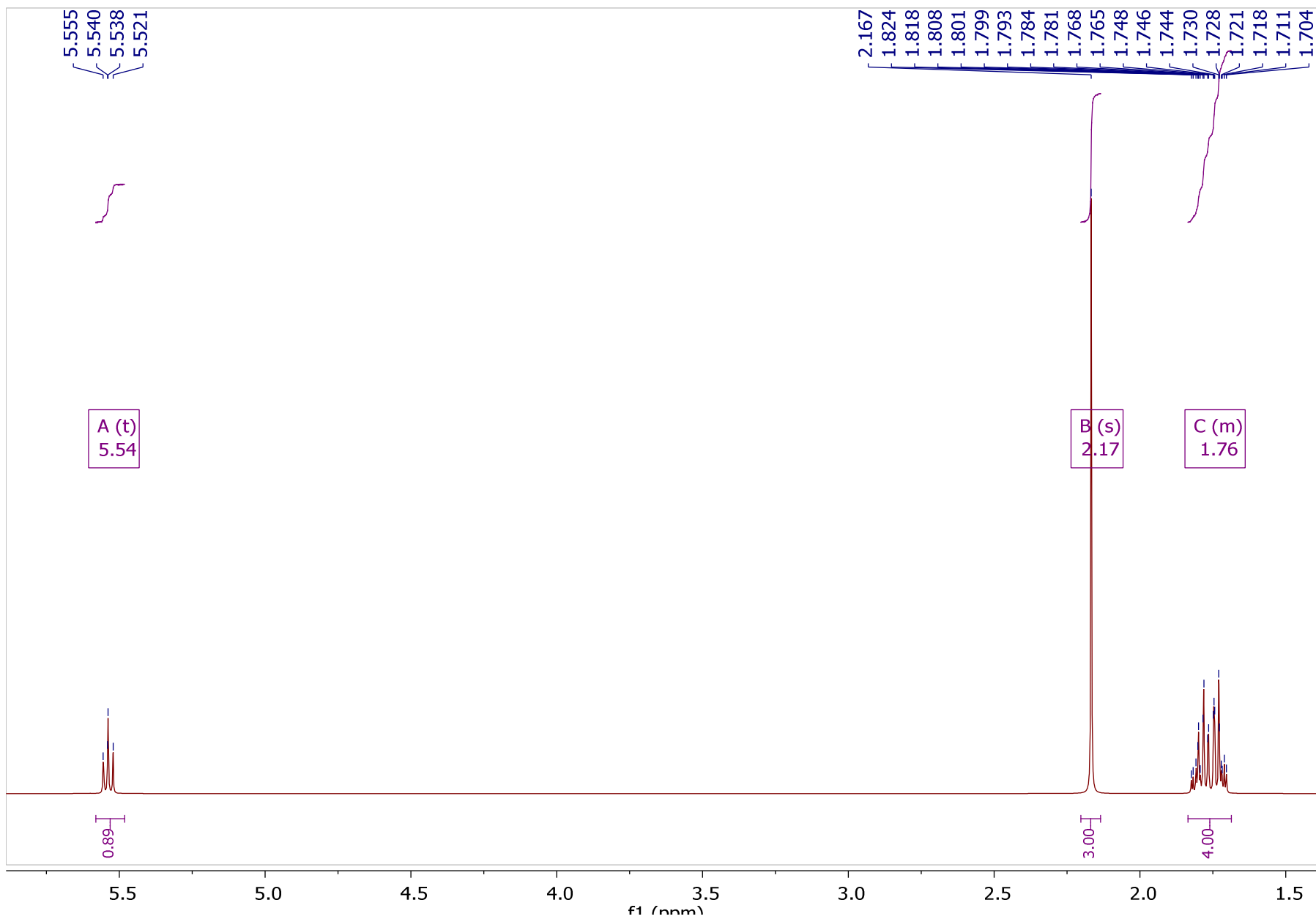
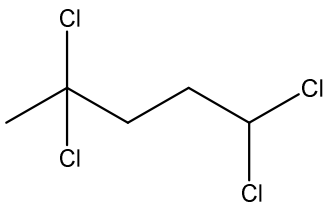
(s) C₈H₁₆O₂



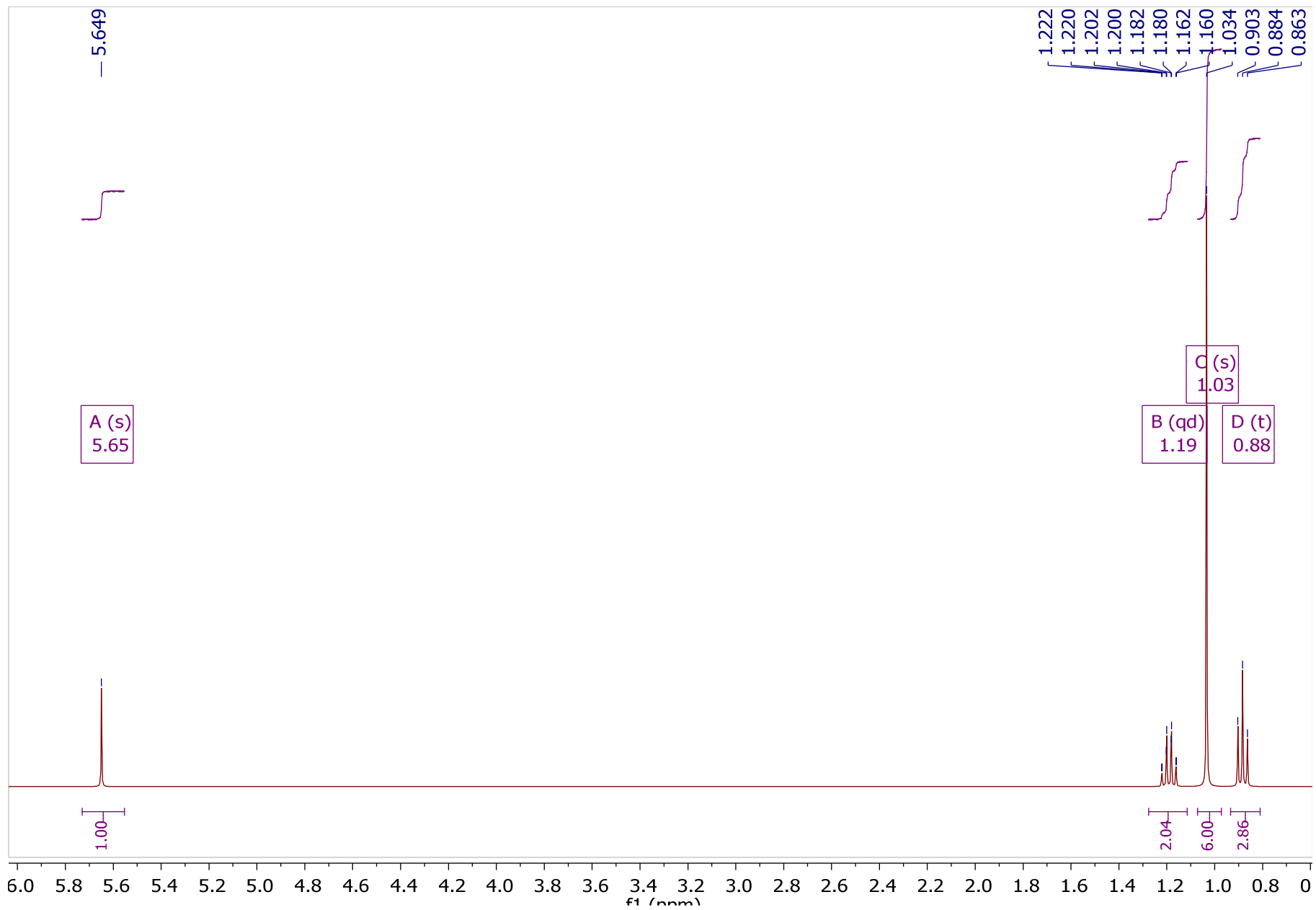
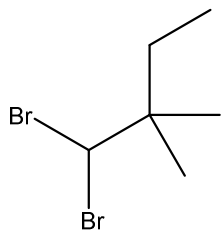
(t) $C_5H_8Cl_4$



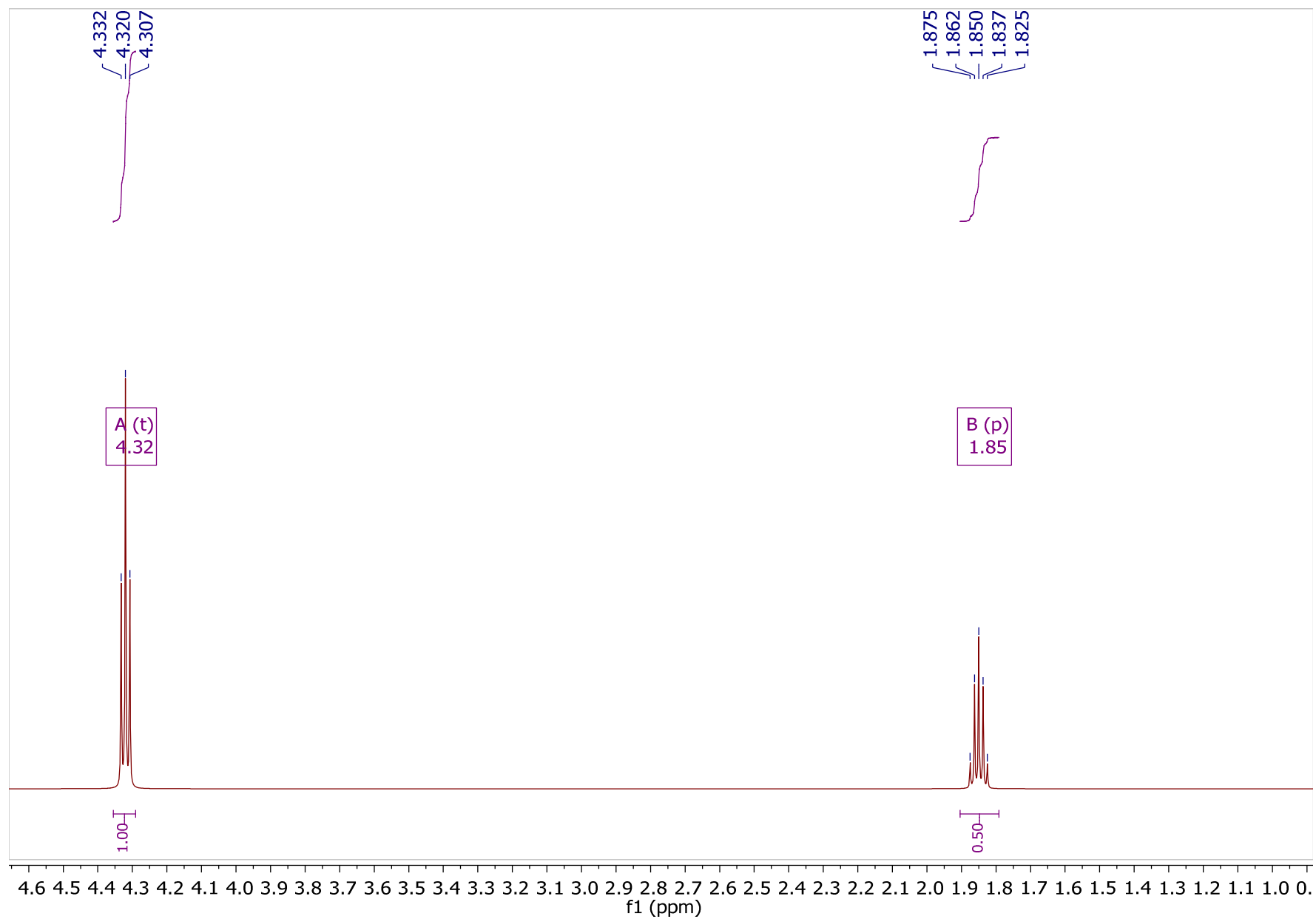
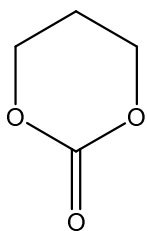
(u) C₈H₁₄O₂



(w) C₆H₁₂Br₂



(y) $C_4H_6O_3$



(z) $C_4H_{10}O_3$

