Supplementary Information for

# Phocoenamicins B and C, new antibacterial spirotetronates from the Marine Actinomycete *Micromonospora chaiyaphumensis*

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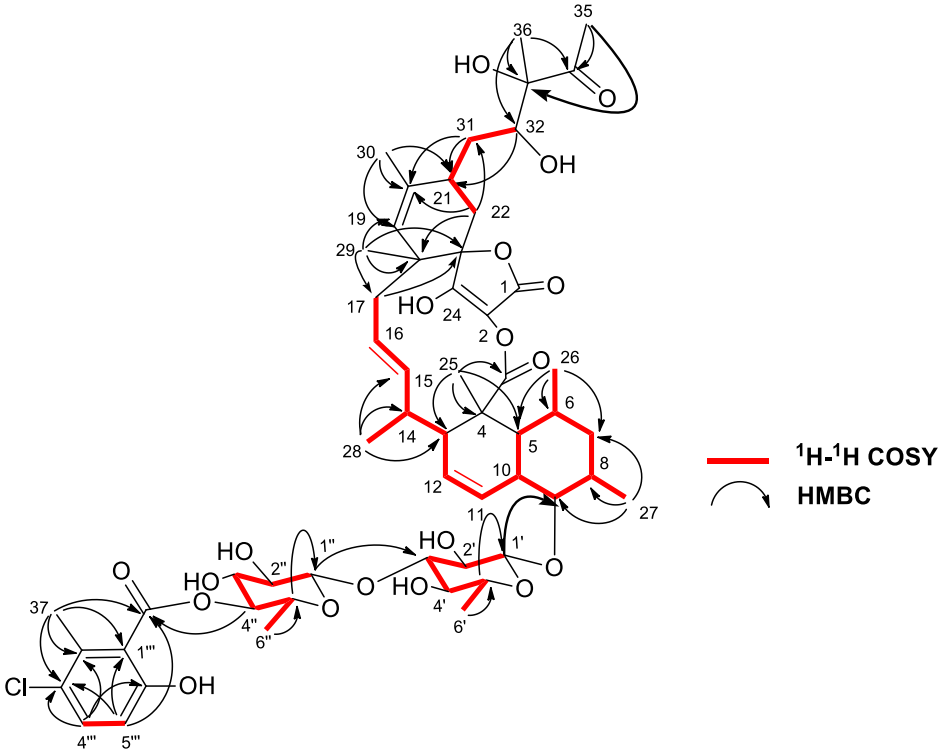
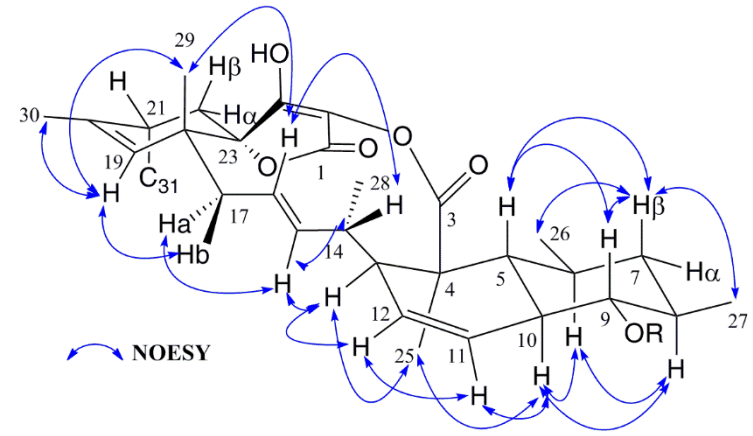
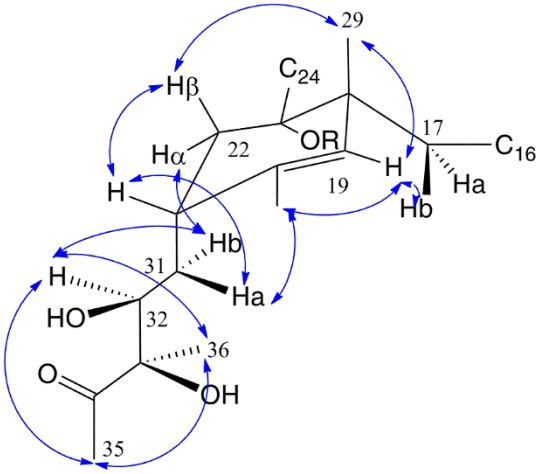


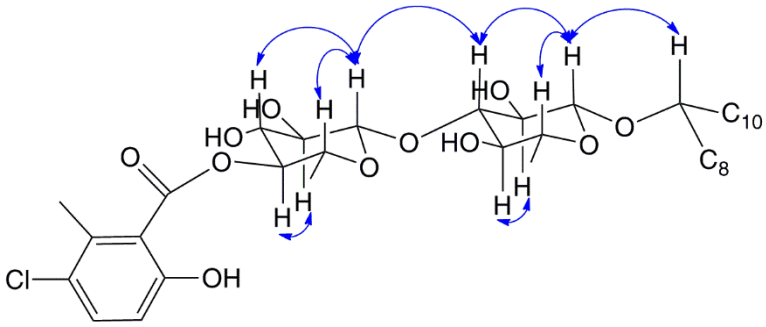

**Figure S1.** $^1$H-$^1$H COSY and key HMBC correlations for **2**.




(S2.a)



(S2.b)



(S2.c)

**Figure S2.** Conformation and configuration of the decalin, cyclohexene and sugars moieties of **2** determined by NOESY data and *J*-based analysis.

**Text S3.** 16S rRNA gene sequence from strain CA-214671.

cgacttcgtcccaatcgccagccccaccttcgacggctccctccacaagggttgggccaccggcttcgggtgttgccgactttcgtgacgtgacg
ggcggtgtgtacaaggcccgggaacgtattcaccgcagcgttgctgatctgcgattactagcgactccgacttcacggggtcgagttgcagac
cccgatccgaactgagaccggctttttgggattcgctccacctcacggtatcgcagcccattgtaccggccattgtagcatgcgtgaagccctgg
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taggccgcgagcccatcccaggccgaaaaactttccacccccaaccatgcggtc

**Table S4.** NMR spectroscopic data (500 Mz, $CD_3OD$) for phocoenamicin (**3**).

| | phocoenamicin (**3**) | |
|---|---|---|
| **Position** | **$\delta_C$, type** | **$\delta_H$ (*J* in Hz)** |
| 1 | 177.8, C | |
| 2 | 107.3, C | |
| 3 | 200.1, C | |
| 4 | 50.9, C | |
| 5 | 43.6, CH | 1.82, m |
| 6 | 39.5, CH | 1.49, m |
| 7α | 45.7, $CH_2$ | 1.72, m |
| 7β | | 1.21, m |
| 8 | 40.9, CH | 1.64, m |
| 9 | 88.6, CH | 3.04, t (9.7) |
| 10 | 48.4, CH | 1.97, m |
| 11 | 126.0, CH | 6.29, d (10.0) |
| 12 | 126.7, CH | 5.57, dd (10.0, 6.2) |
| 13 | 43.0, CH | 2.67, * |
| 14 | 40.0, CH | 2.05, m |
| 15 | 144.1, CH | 5.36, dd (15.1, 9.1) |
| 16 | 123.2, CH | 5.14, dd (15.1, 10.4) |
| 17a | 44.0, $CH_2$ | 2.31, m |
| 17b | | 1.86, m |
| 18 | 41.2, C | |
| 19 | 132.1, CH | 5.02, s |
| 20 | 134.6, C | |
| 21 | 34.3, CH | 2.37, m |
| 22α | 30.3, $CH_2$ | 2.28, m |
| 22β | | 1.71, m |
| 23 | 87.5, C | |
| 24 | 205.7, C | |
| 25 | 17.0, $CH_3$ | 1.59, s |
| 26 | 23.7, $CH_3$ | 0.82, brs |
| 27 | 20.1, $CH_3$ | 1.03, d (6.2) |

| | | |
|---|---|---|
| 28 | 21.5, $CH_3$ | 0.82, brs |
| 29 | 24.7, $CH_3$ | 1.23, brs |
| 30 | 22.3, $CH_3$ | 1.74, s |
| 31a | 33.7, $CH_2$ | 1.95, m |
| 31b | | 1.74, m |
| 32 | 74.0, CH | 3.82, d (10.6) |
| 33 | 83.4, C | |
| 34 | 215.4, C | |
| 35 | 25.7, $CH_3$ | 2.24, s |
| 36 | 22.2, $CH_3$ | 1.22, s |
| 1' | 104.0, CH | 4.35, d (6.2) |
| 2' | 75.3, CH | 3.45, m |
| 3' | 88.6, CH | 3.46, m |
| 4' | 75.6, CH | 3.11, t (8.7) |
| 5' | 72.9, CH | 3.22, m |
| 6' | 18.4, $CH_3$ | 1.27, d (6.0) |
| 1'' | 105.4, CH | 4.61, d (7.8) |
| 2'' | 76.0, CH | 3.42, t (8.6) |
| 3'' | 75.3, CH | 3.65, t (9.7) |
| 4'' | 77.9, CH | 4.89, * |
| 5'' | 71.7, CH | 3.68, m |
| 6'' | 18.0, $CH_3$ | 1.36, d (6.2) |
| 1''' | 124.3, C | |
| 2''' | 135.6, C | |
| 3''' | 126.0, C | |
| 4''' | 132.4, CH | 7.25, d (8.7) |
| 5''' | 115.8, CH | 6.70, d (8.7) |
| 6''' | 155.3, C | |
| 7''' | 169.3, C | |
| 37 | 17.9, $CH_3$ | 2.36, s |

*Multiplicity not clear, the signal is overlapped.

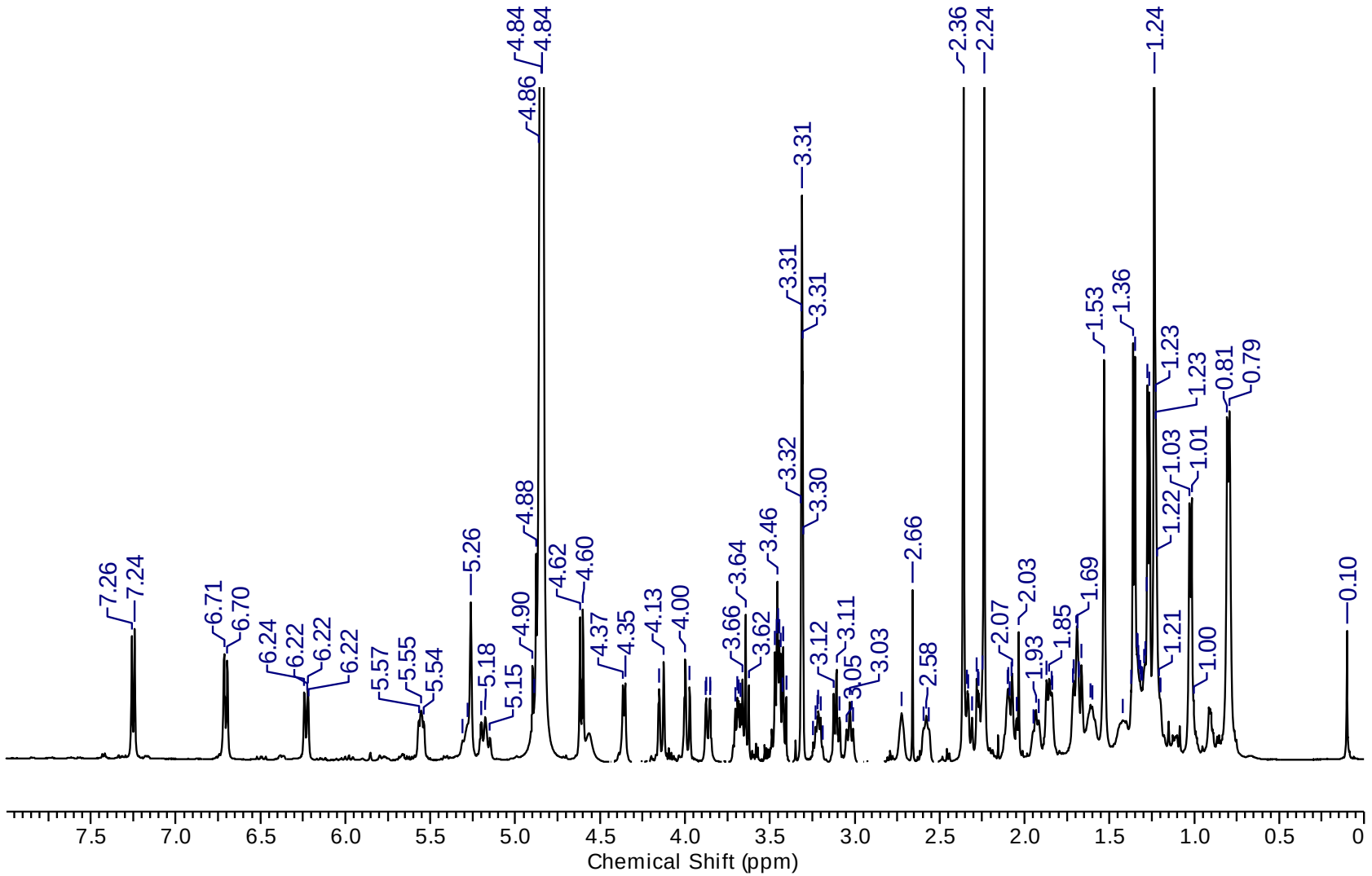


**Figure S5.** $^{1}$H-NMR (500 MHz, methanol-$d_4$) spectrum of phocoenamicin B (**1**).

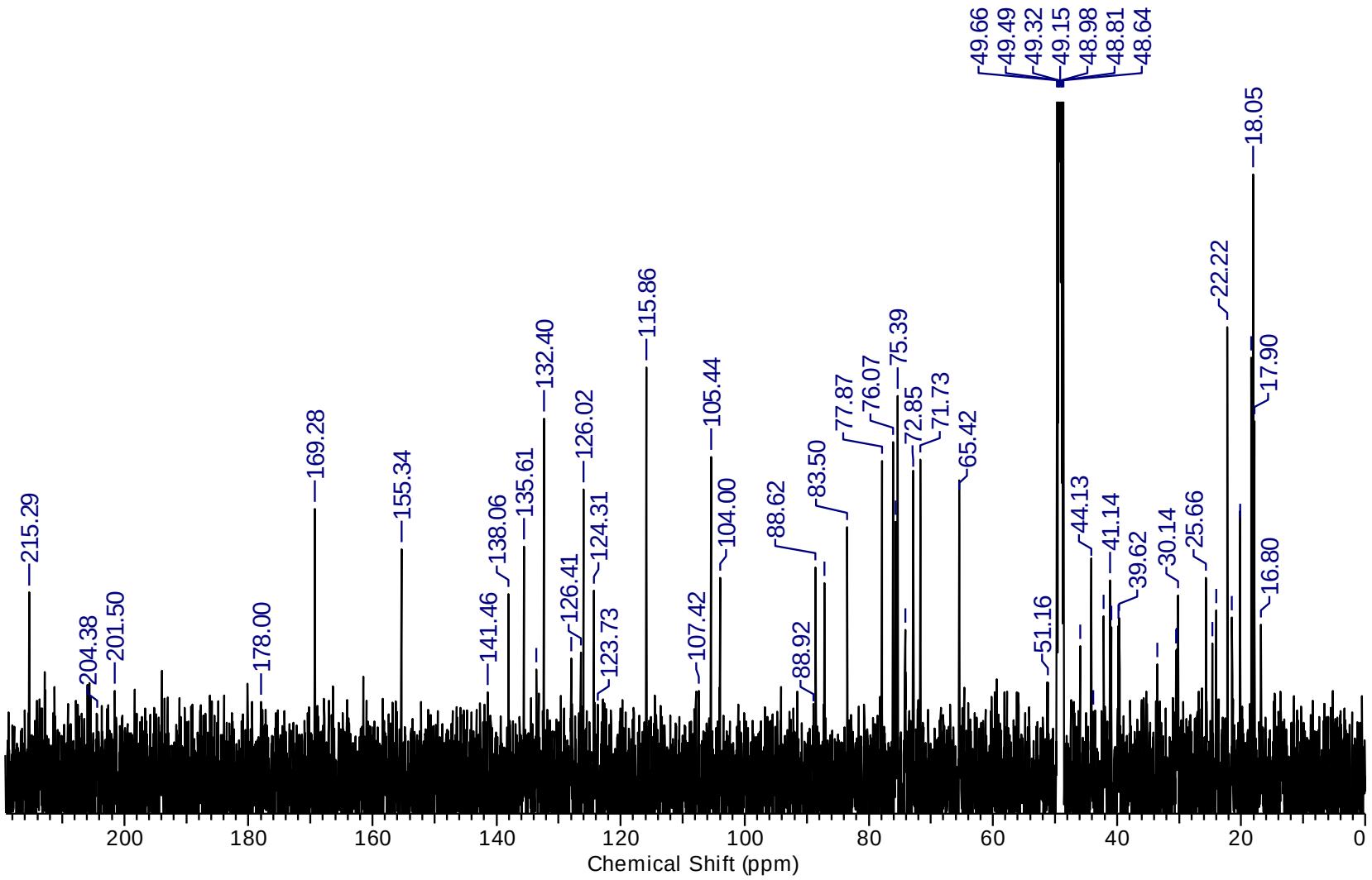


**Figure S6.** $^{13}$C-NMR (125 MHz, methanol-$d_4$) spectrum of phocoenamicin B (**1**).

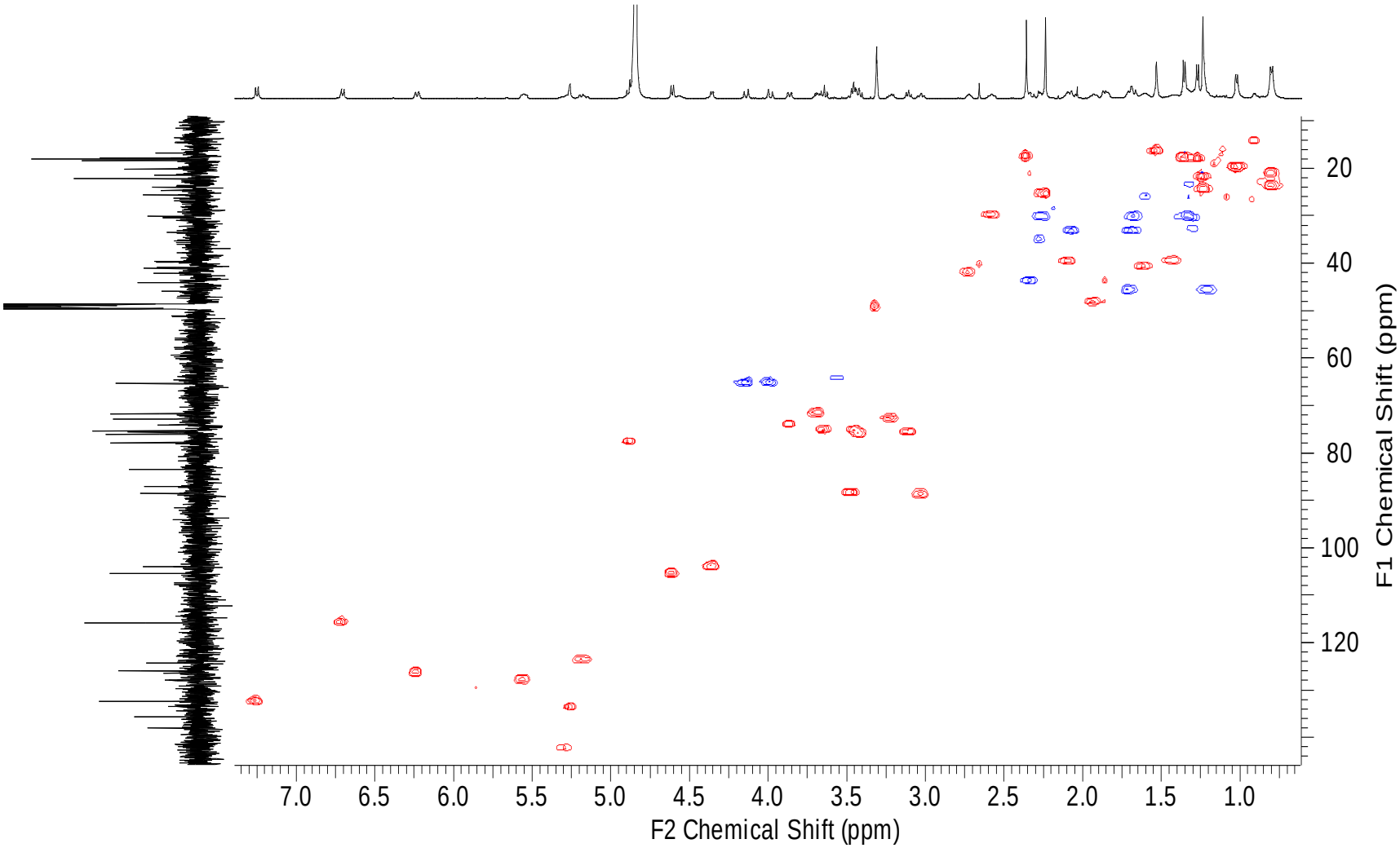


**Figure S7.** HSQC (methanol-$d_4$) spectrum of phocoenamicin B (**1**).

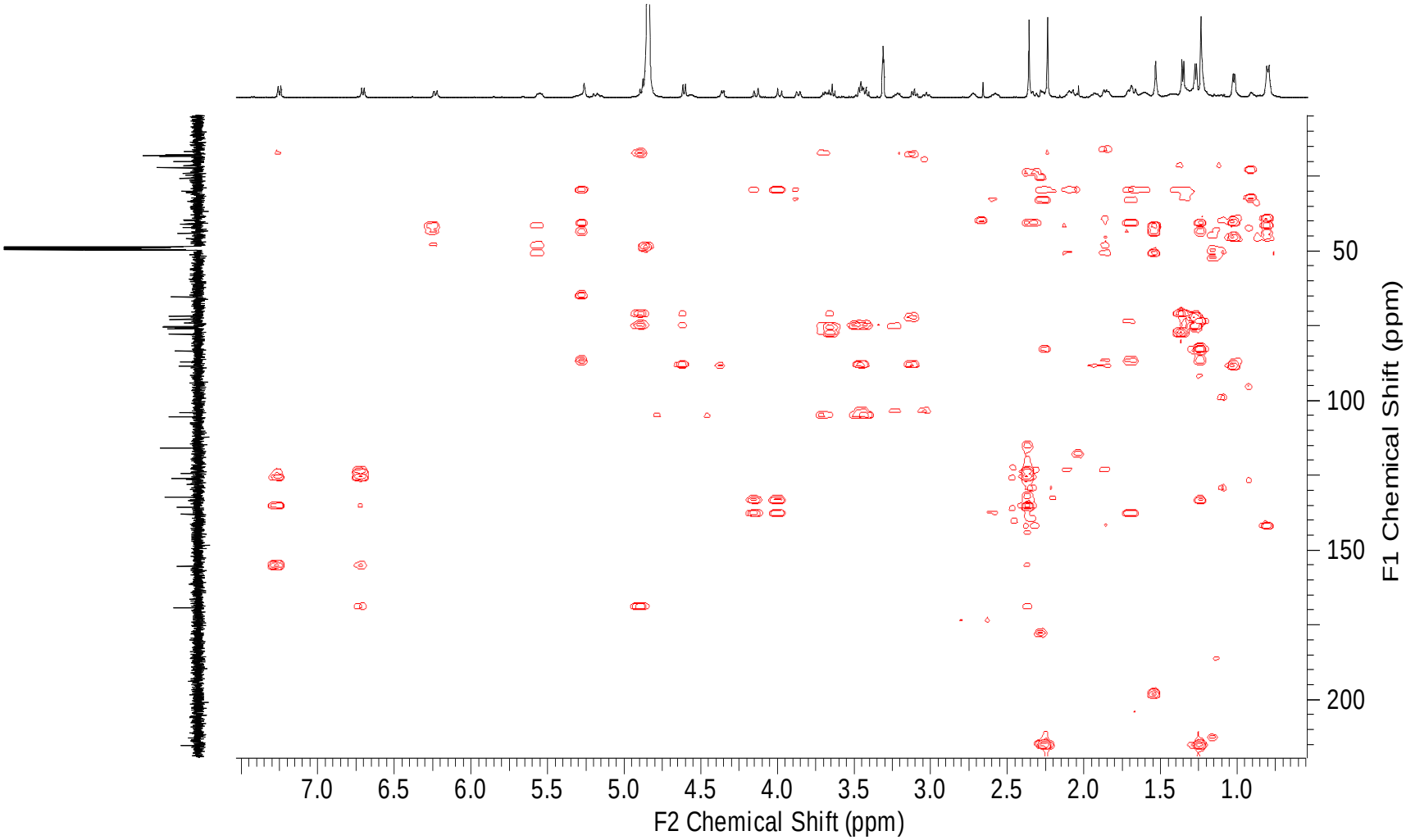


**Figure S8.** HMBC (methanol-$d_4$) spectrum of phocoenamicin B (**1**).

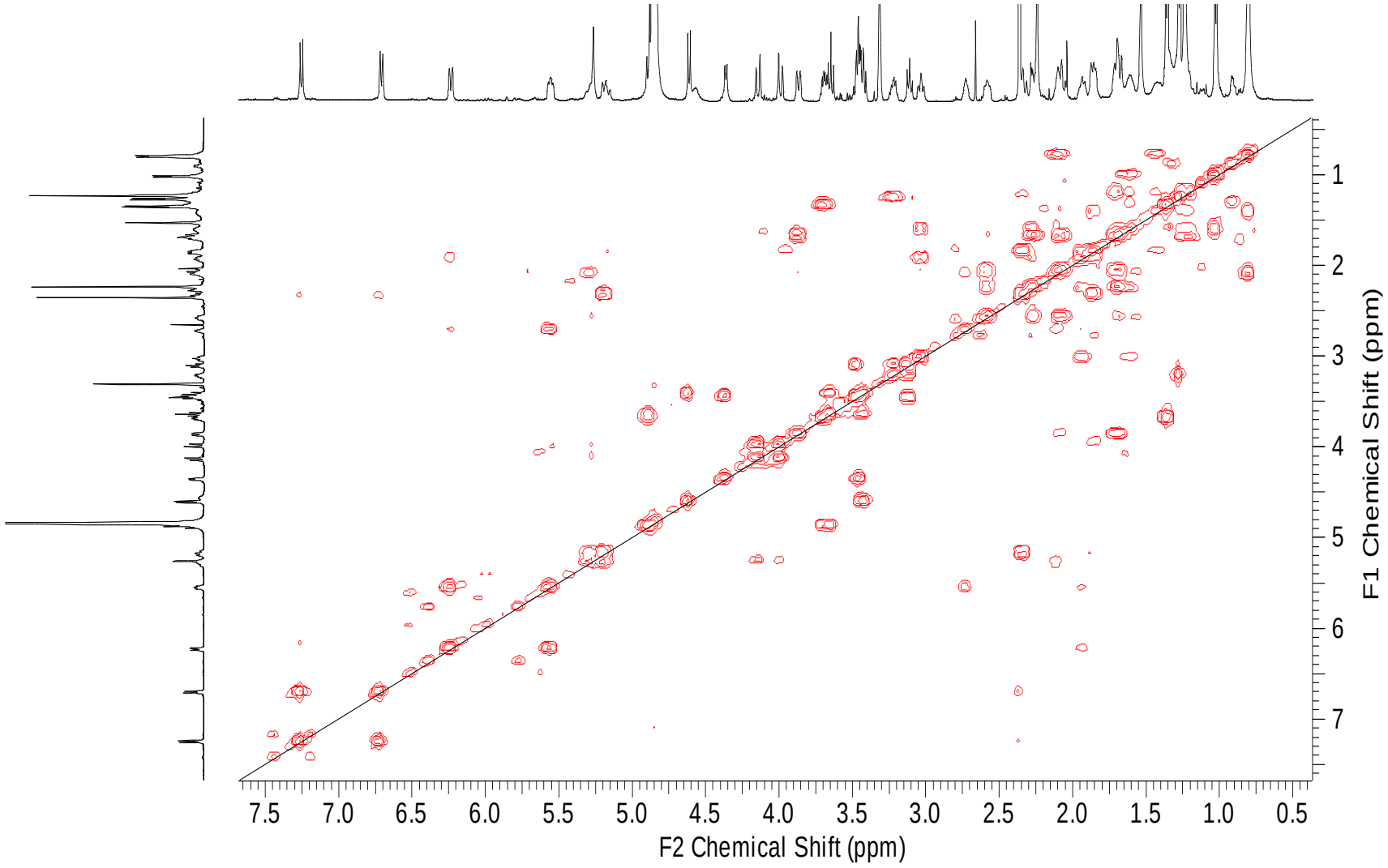


**Figure S9.** COSY (methanol-$d_4$) spectrum of phocoenamicin B (**1**).

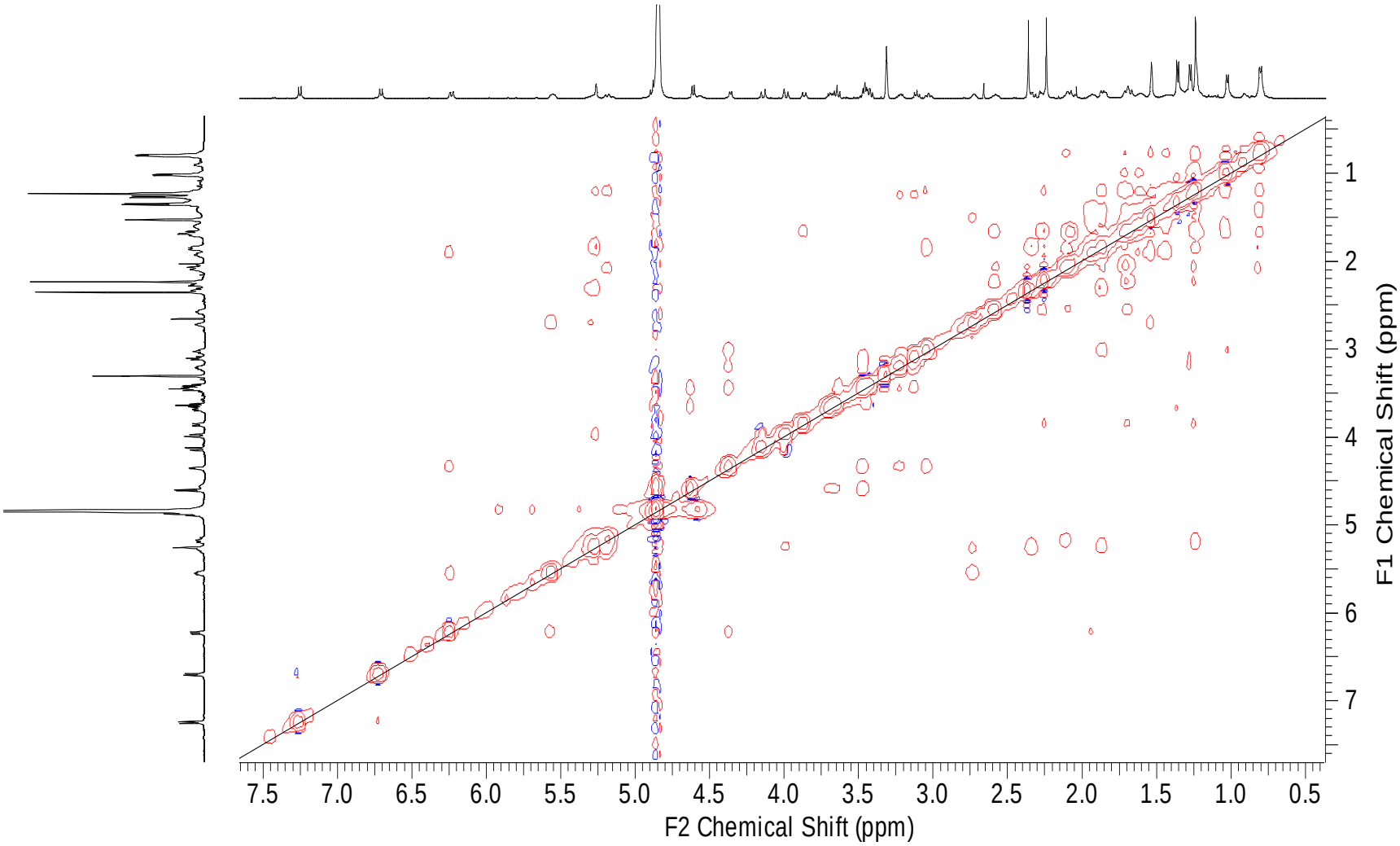


**Figure S10.** NOESY (methanol-$d_4$) spectrum of phocoenamicin B (**1**).

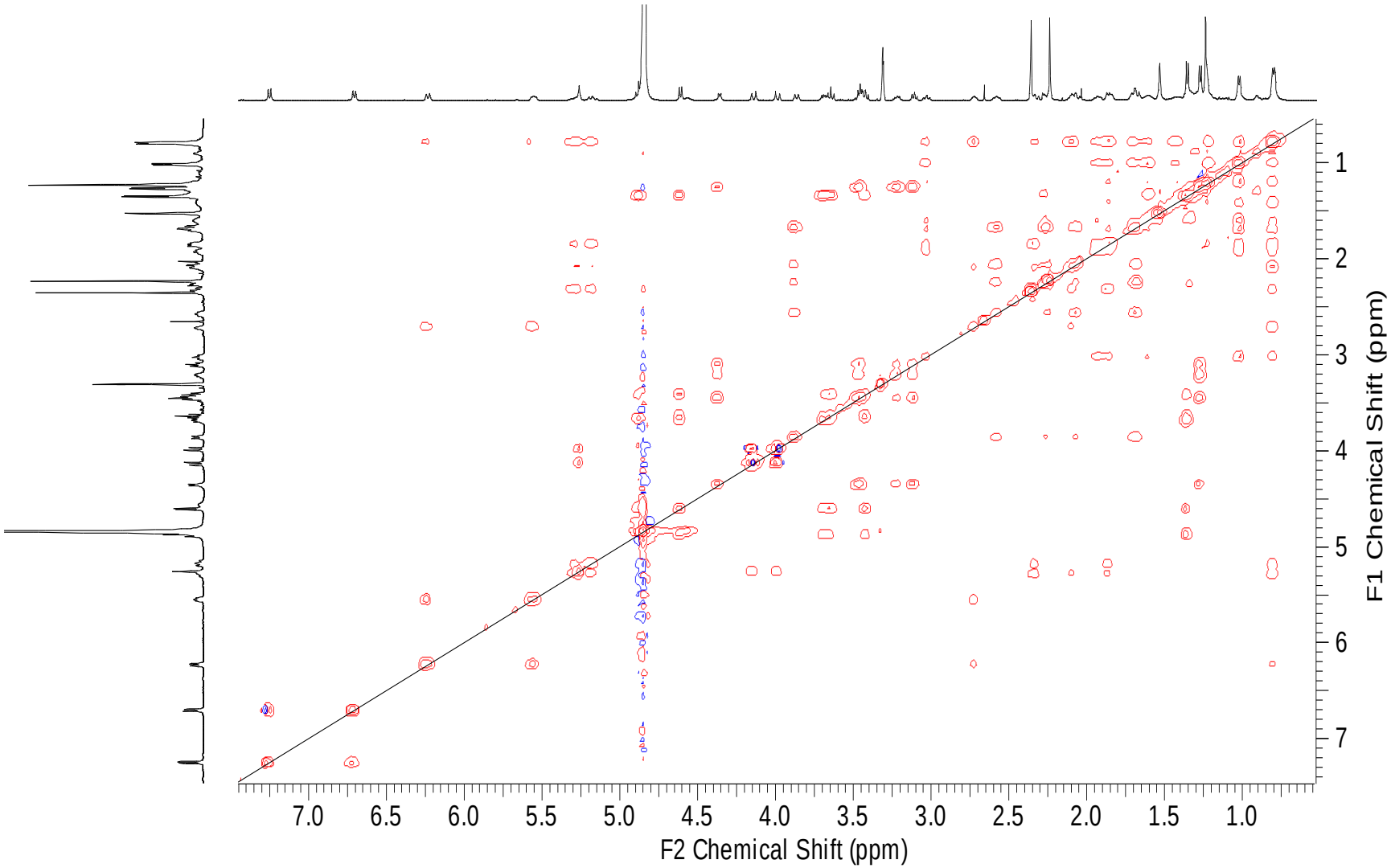


**Figure S11.** TOCSY (methanol-$d_4$) spectrum of phocoenamicin B (**1**).

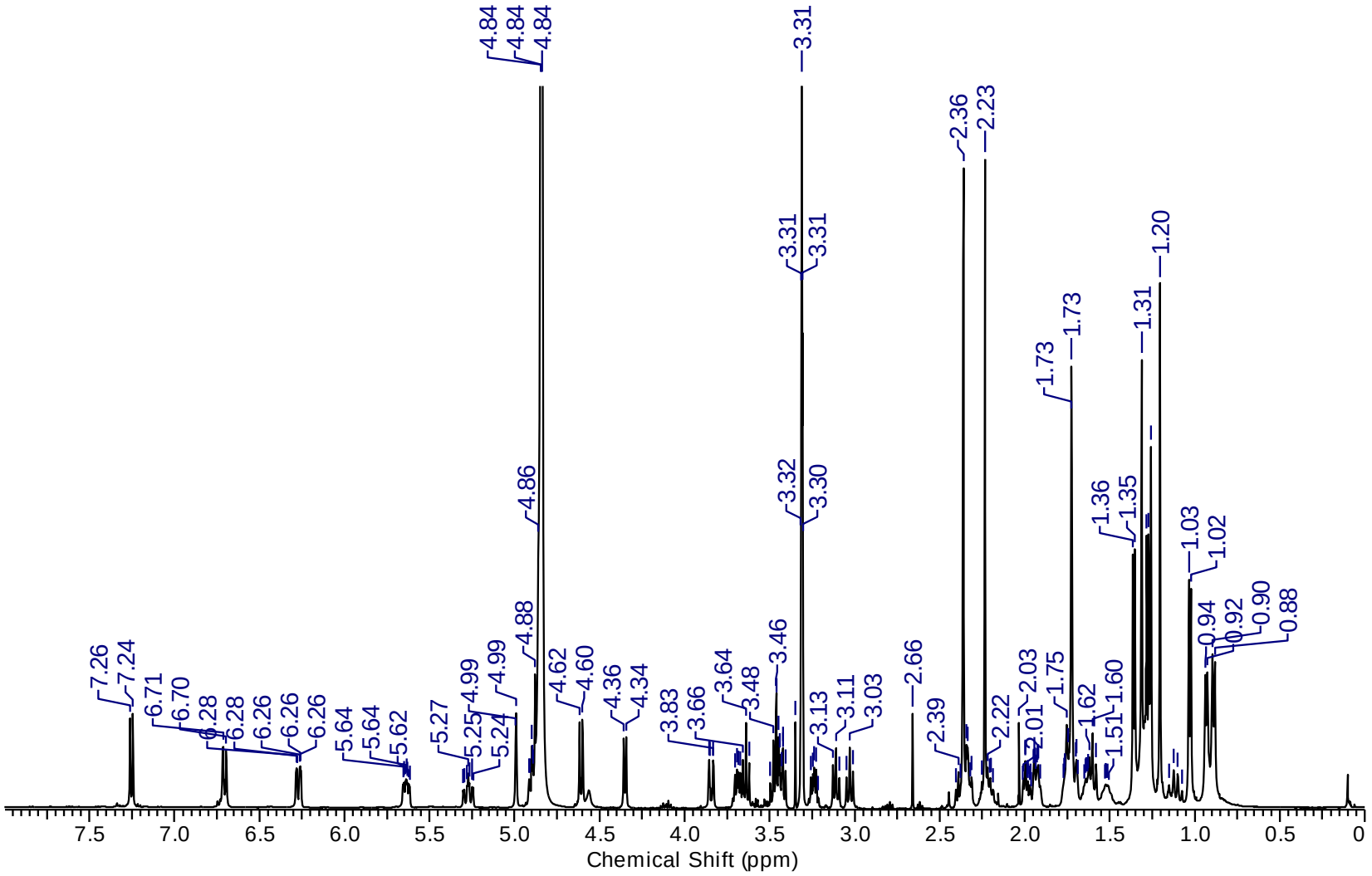


**Figure S12.** $^{1}$H-NMR (500 MHz, methanol-$d_4$) spectrum of phocoenamicin C (**2**).

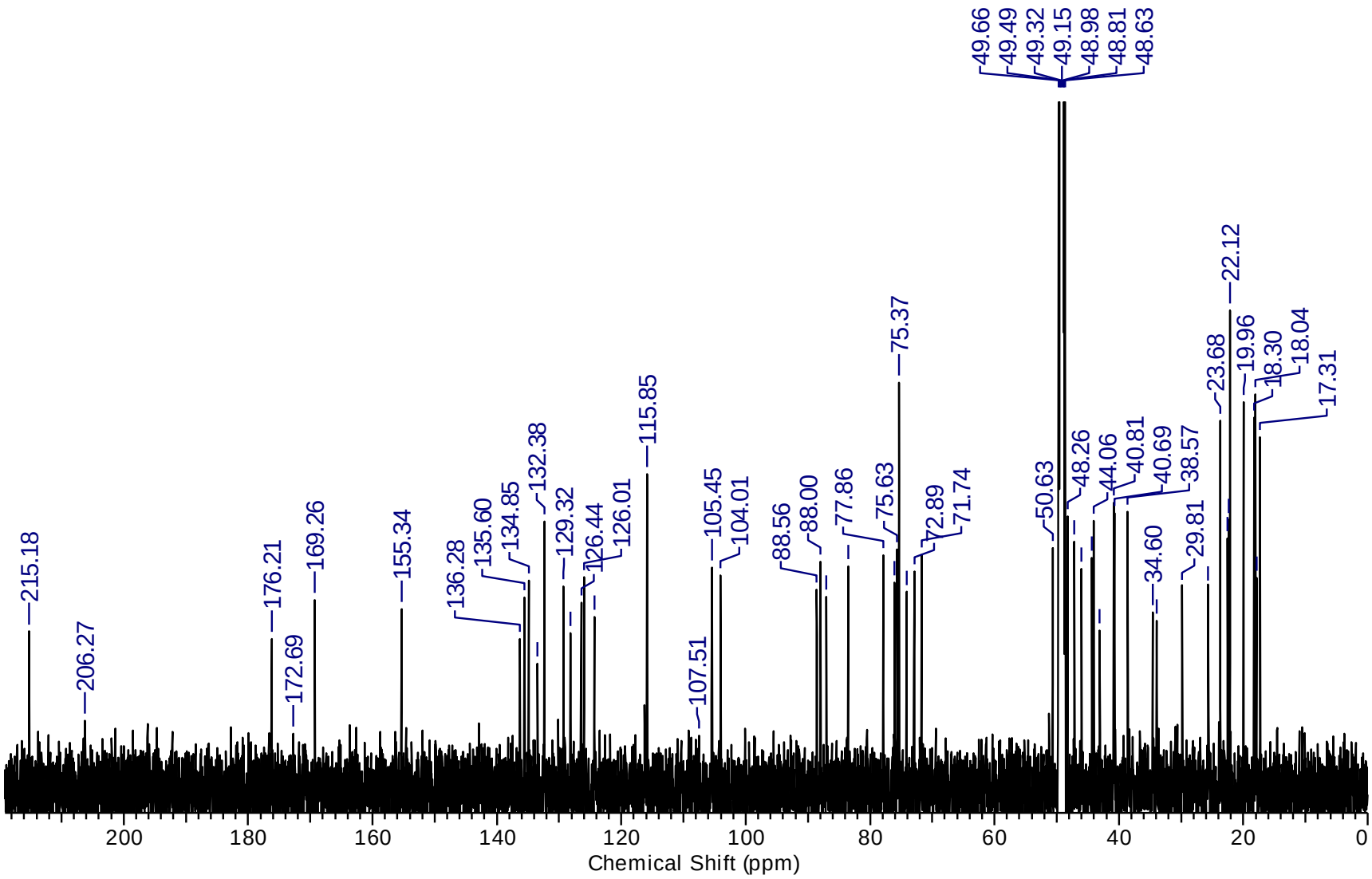


**Figure S13.** $^{13}$C-NMR (125 MHz, methanol-$d_4$) spectrum of phocoenamicin C (**2**).

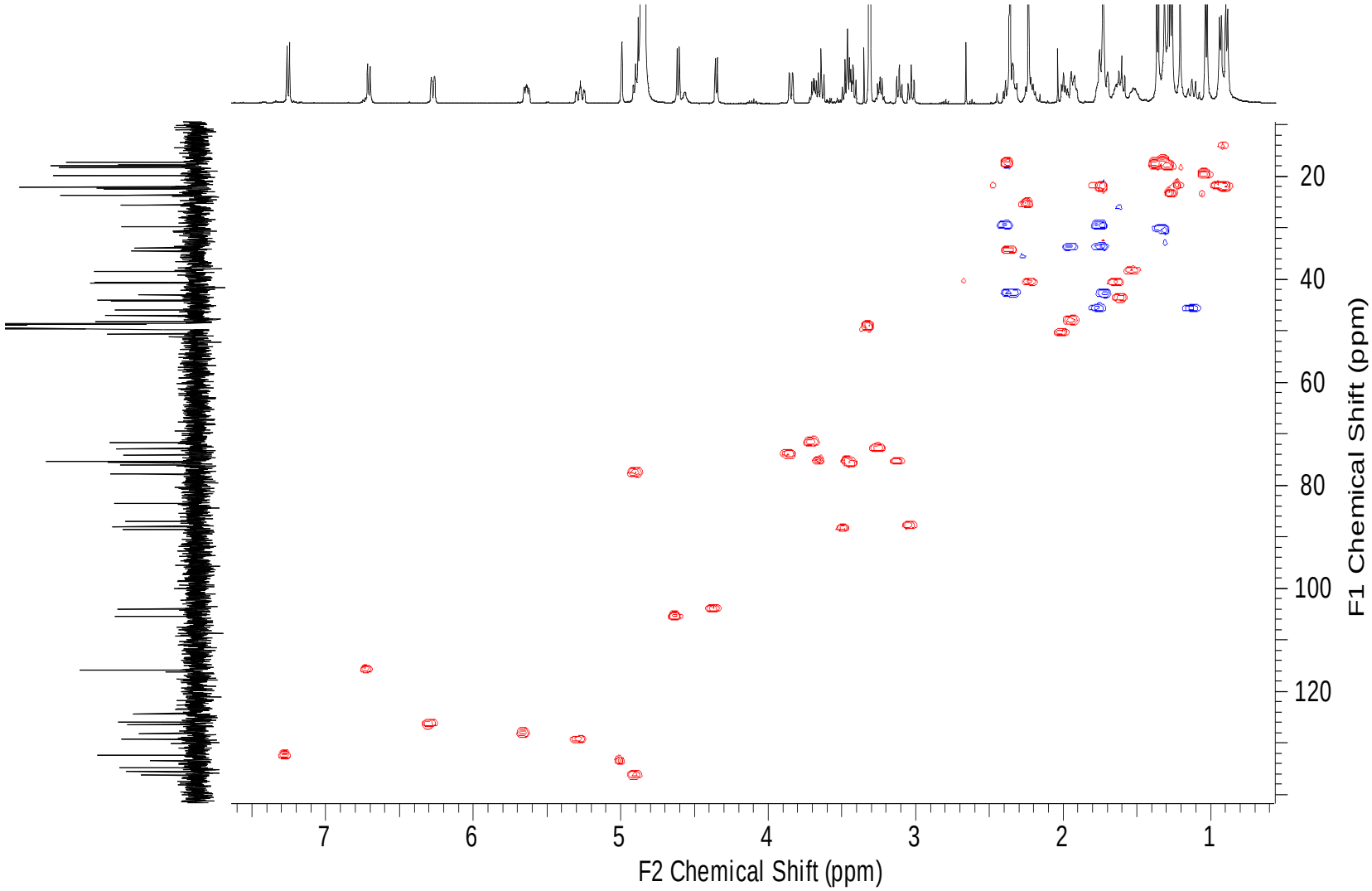


**Figure S14.** HSQC (methanol-$d_4$) spectrum of phocoenamicin C (**2**).

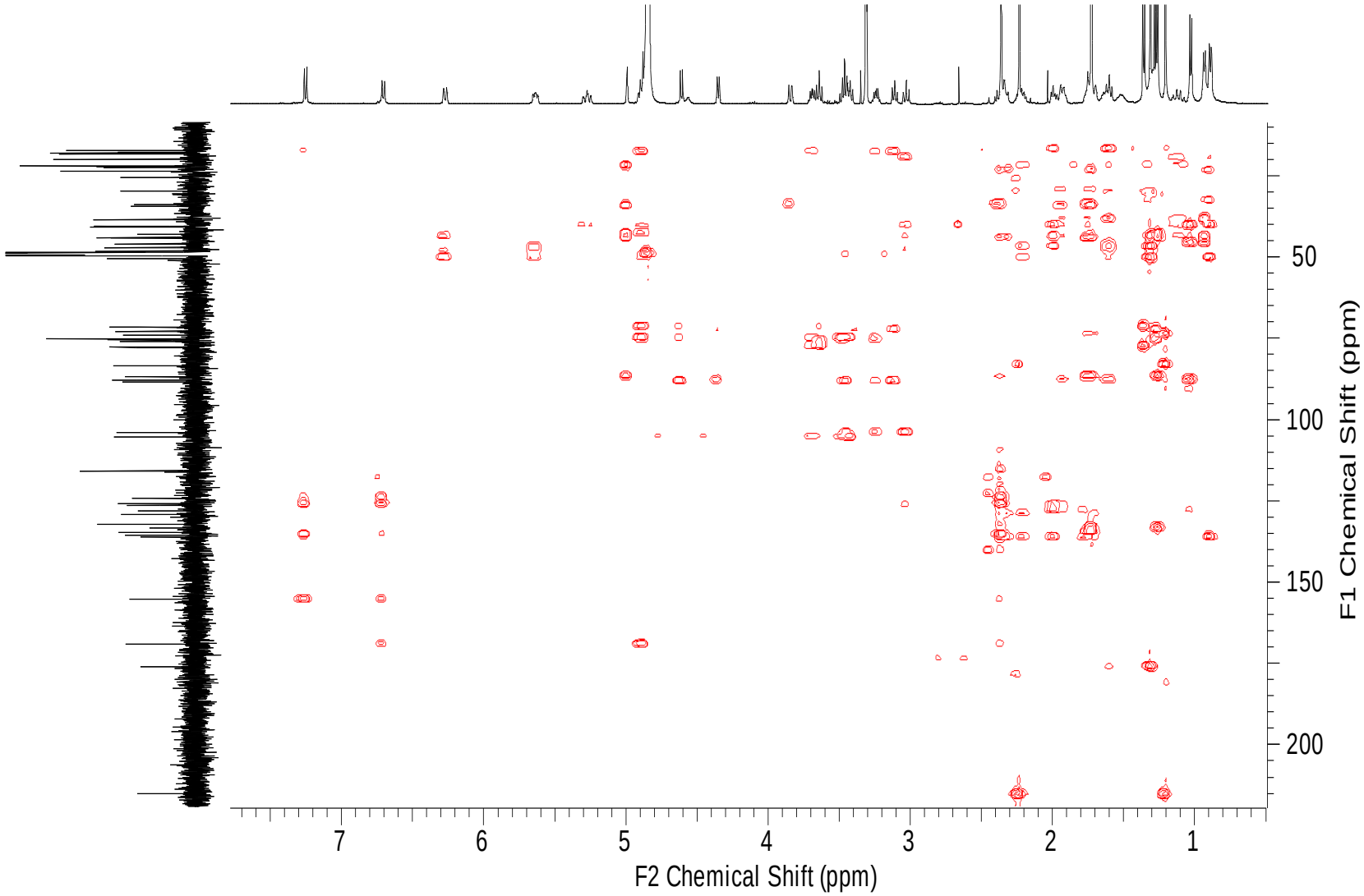


**Figure S15.** HMBC (methanol-$d_4$) spectrum of phocoenamicin C (**2**).

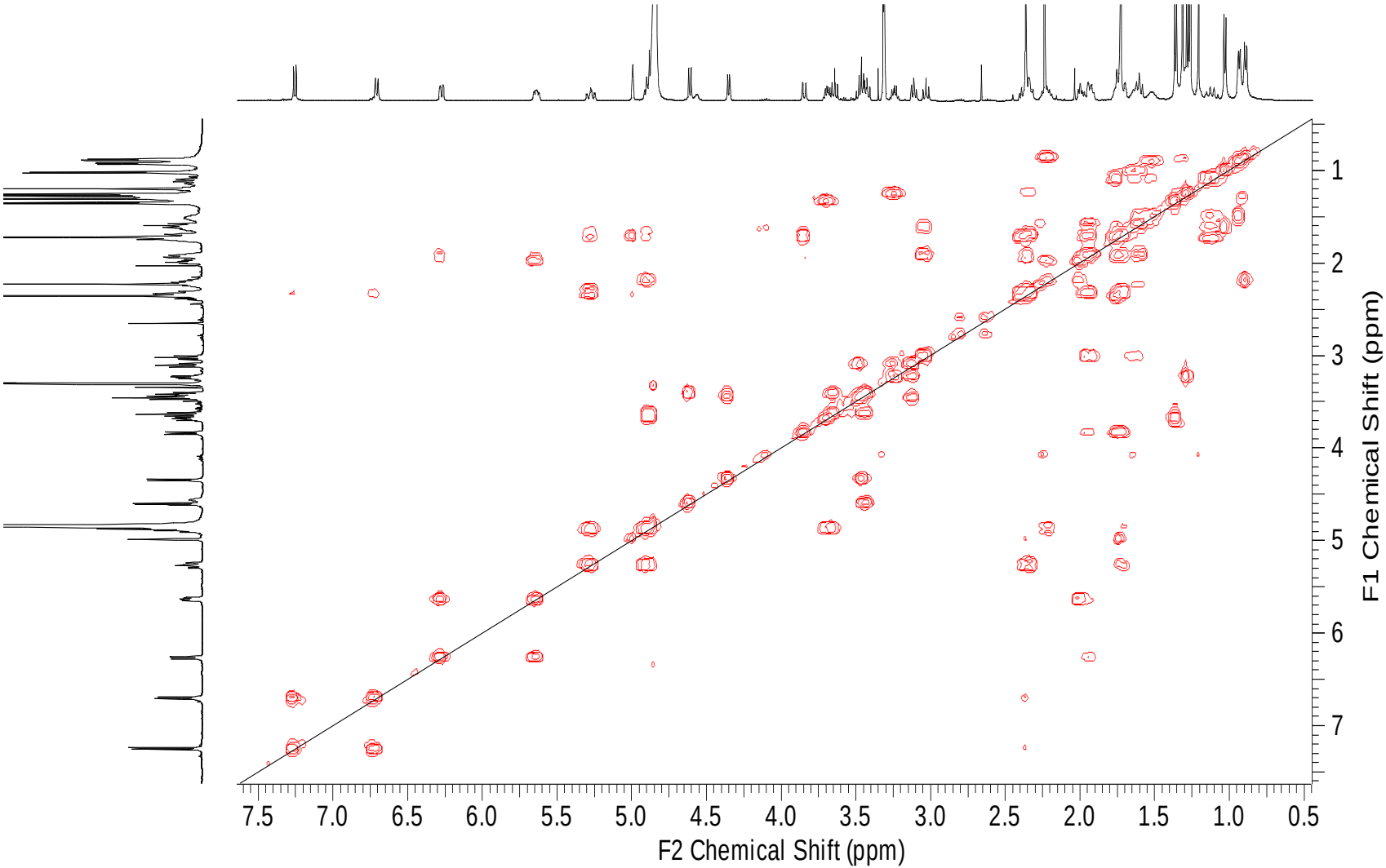


**Figure S16.** COSY (methanol-$d_4$) spectrum of phocoenamicin C (**2**).

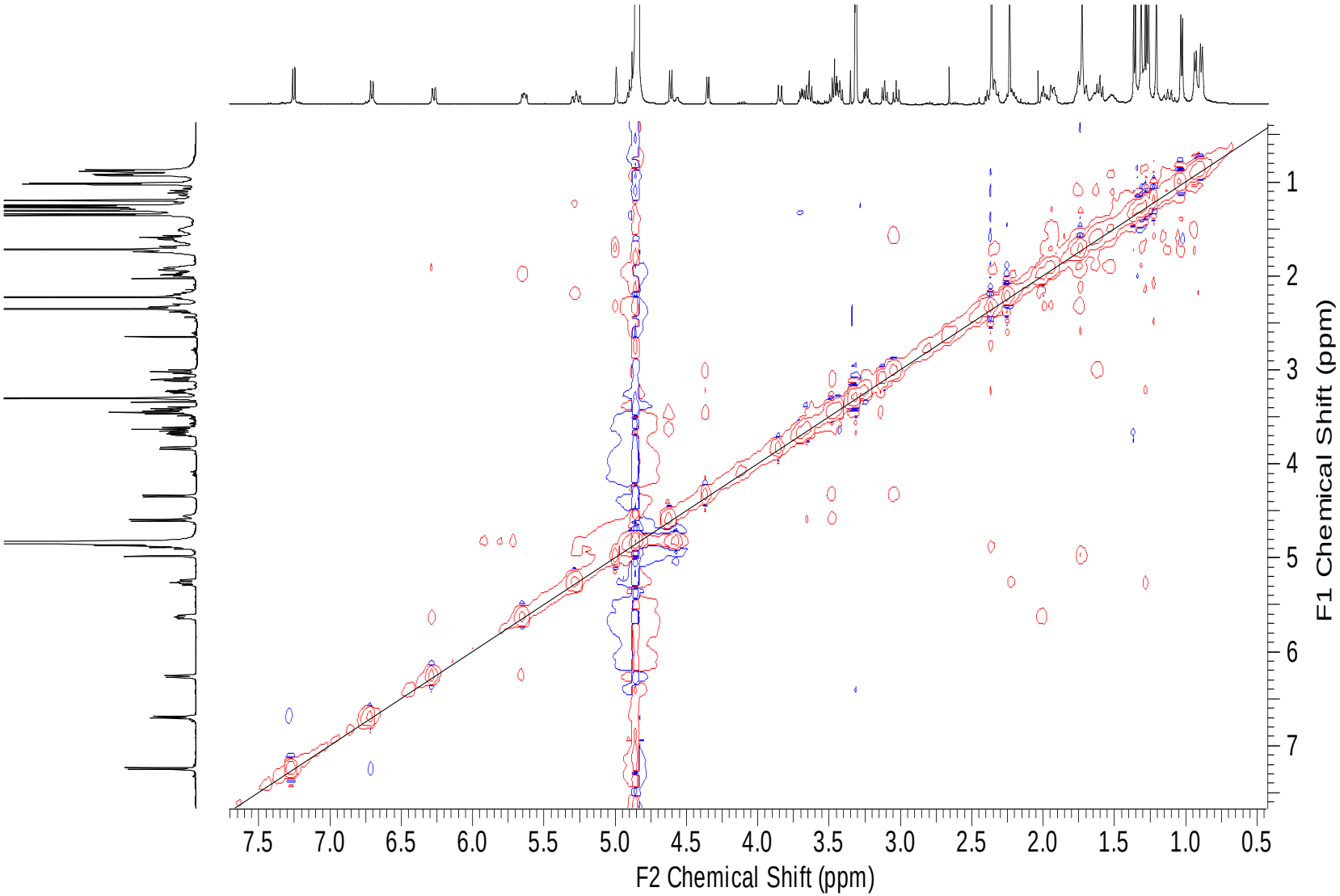


**Figure S17.** NOESY (methanol-$d_4$) spectrum of phocoenamicin C (**2**).

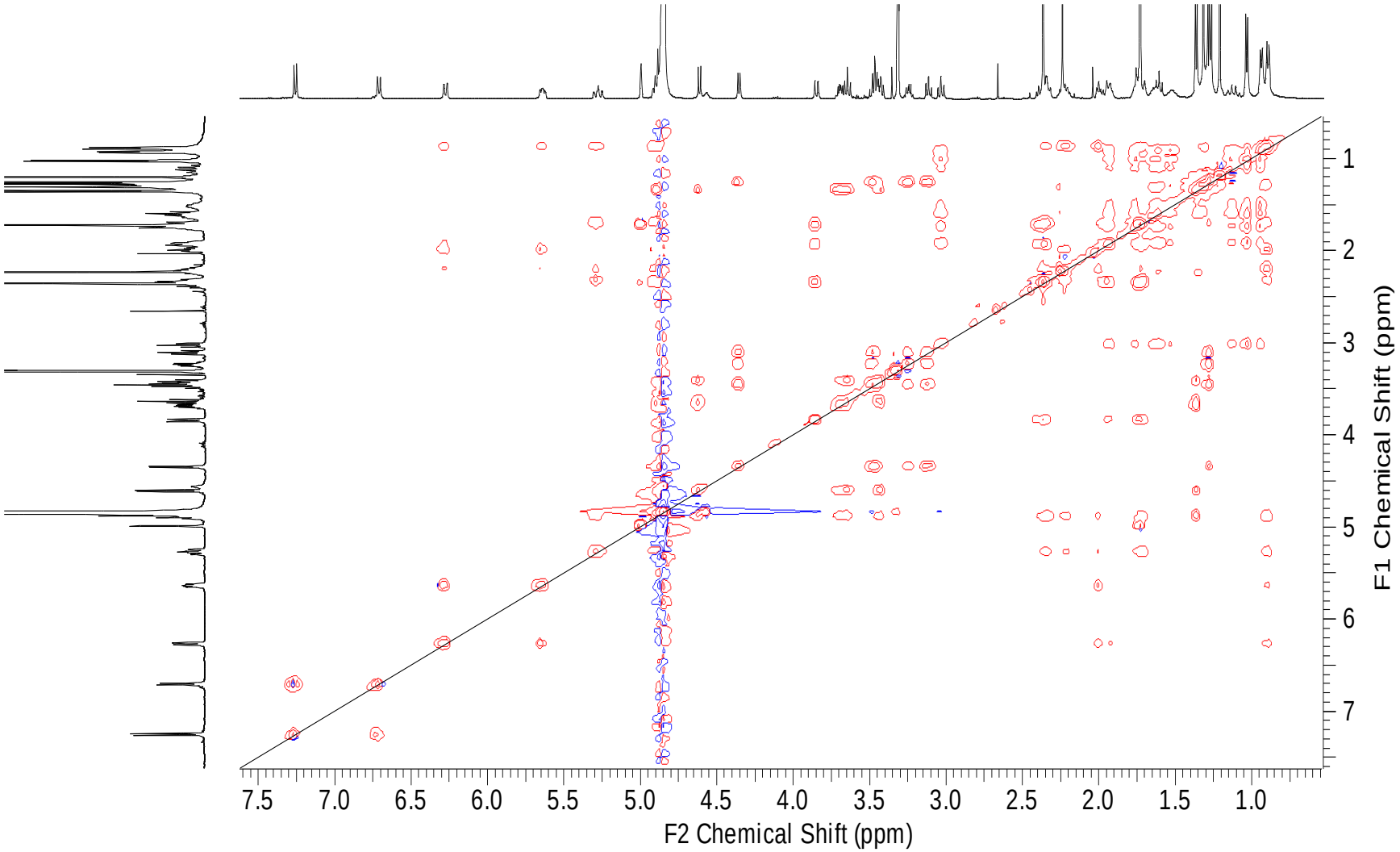


**Figure S18.** TOCSY (methanol-$d_4$) spectrum of phocoenamicin C (**2**).