# Supporting Information for

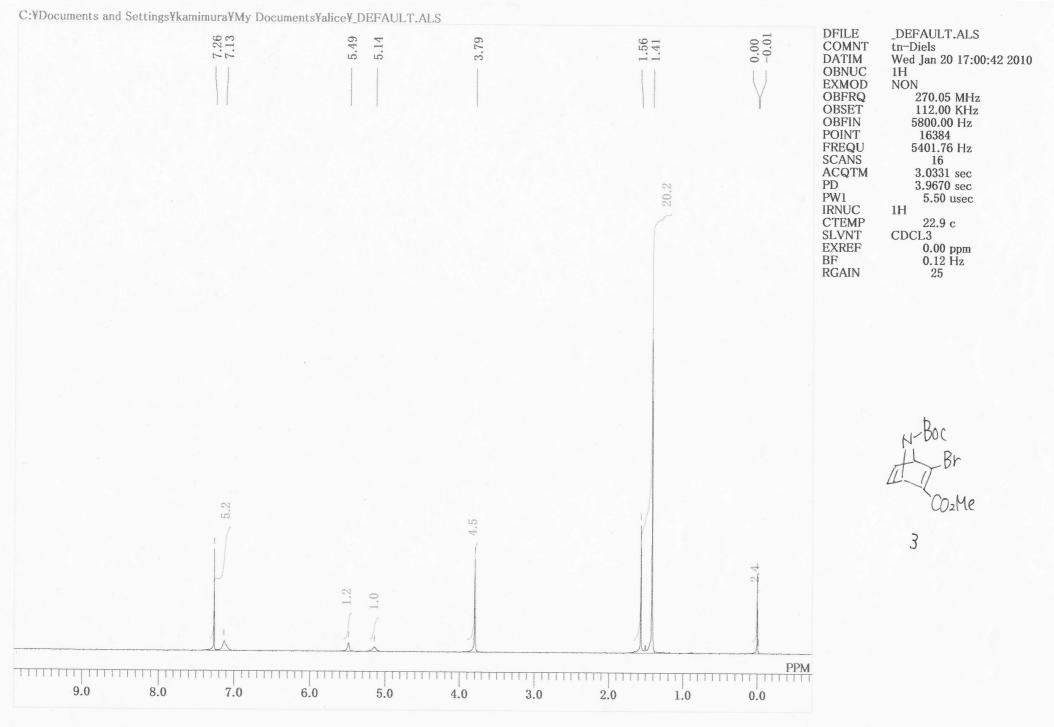
# Use of the Diels-Alder Adduct of Pyrrole in Organic Synthesis. Formal Synthesis of Tamiflu

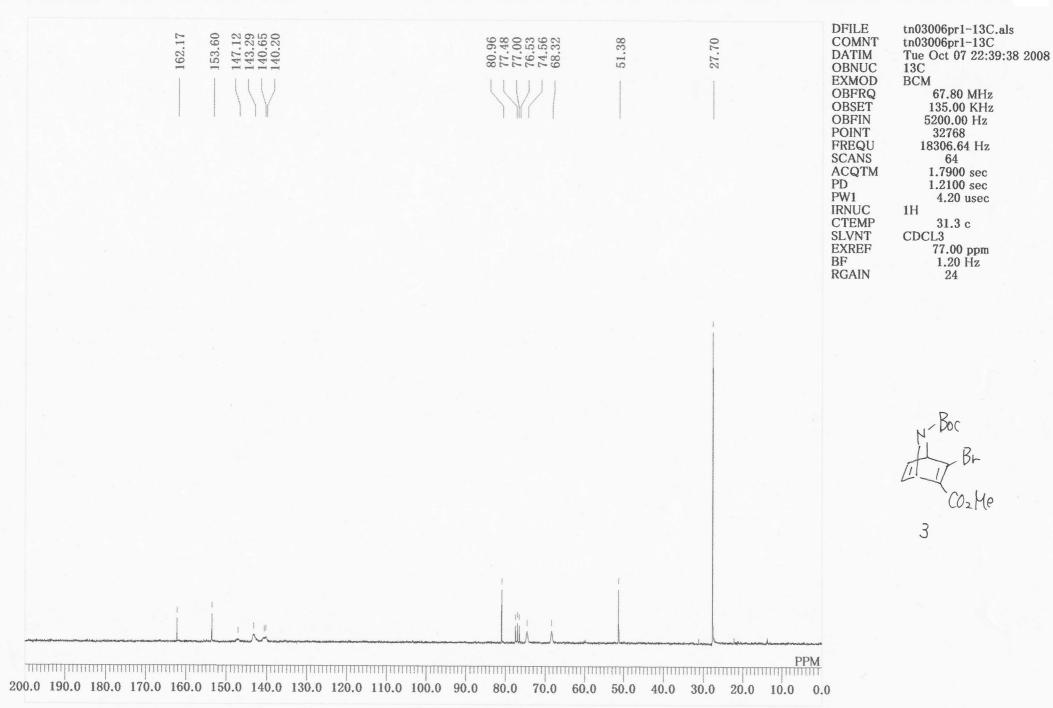
## Akio Kamimura\* and Toshiki Nakano

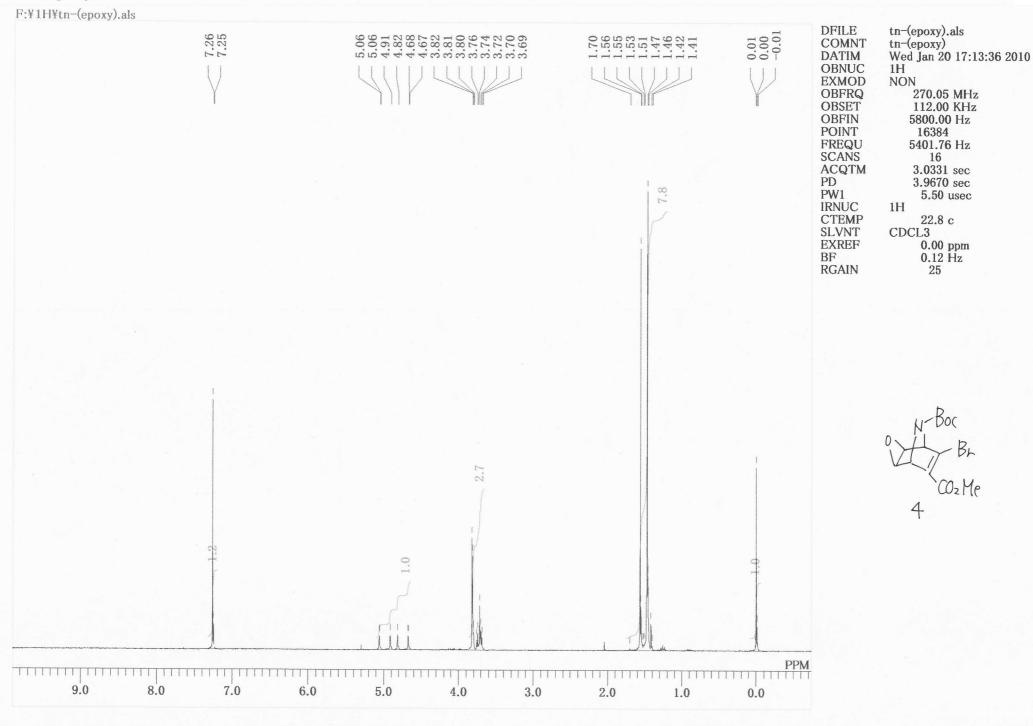
Department of Applied Molecular Bioscience, Graduate School of Medicine, Yamaguchi University, Ube 755-8611 Japan,

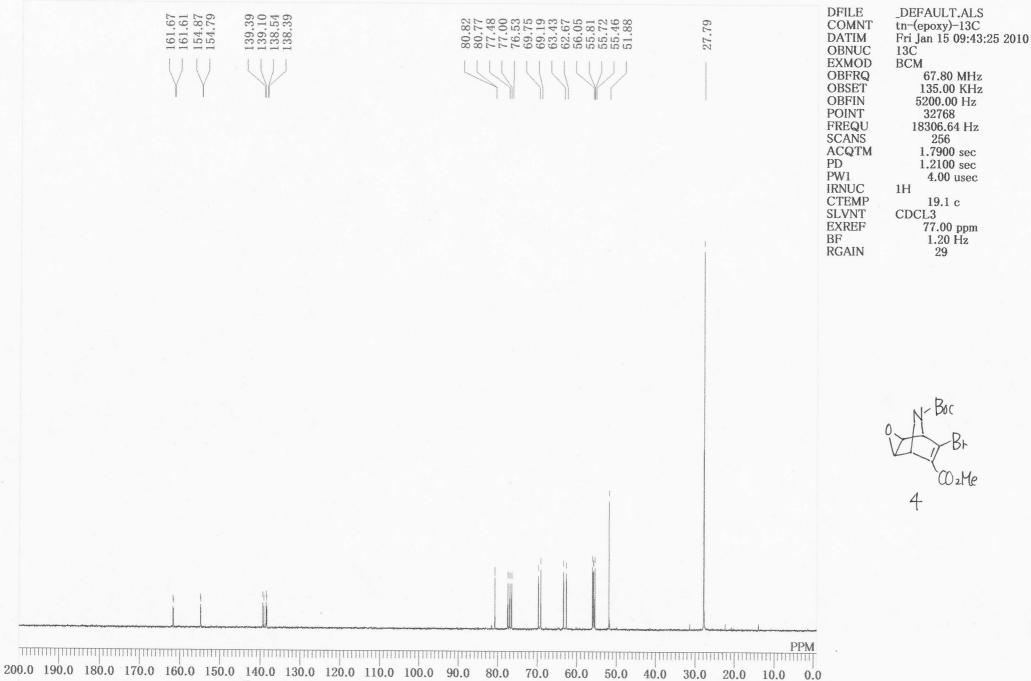
### Contents

1. NMR spectra for **3**, **4**, endo-**5**, exo-**5**, **6**, **7**, **8**, **9**, **10**, **11**, and **12** S2

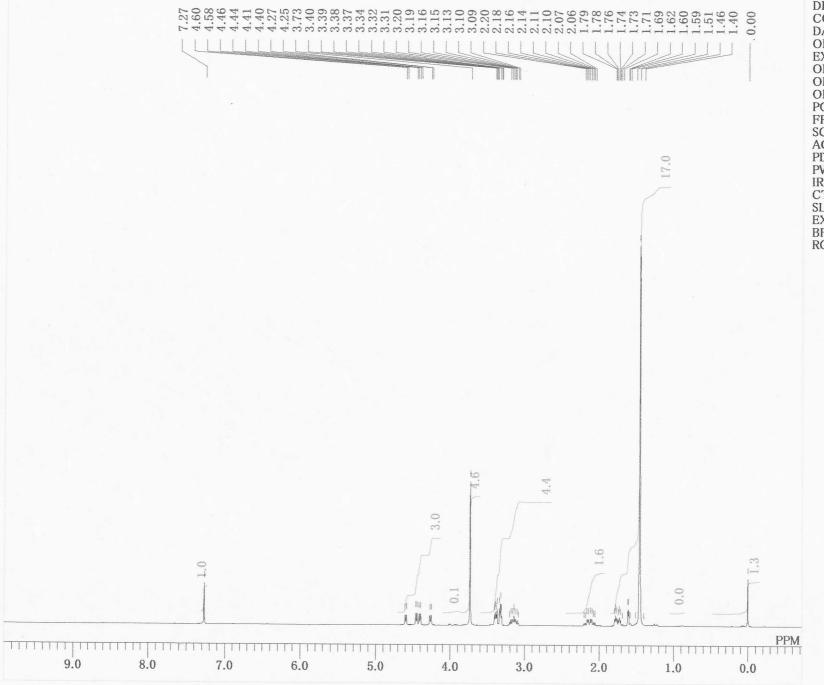






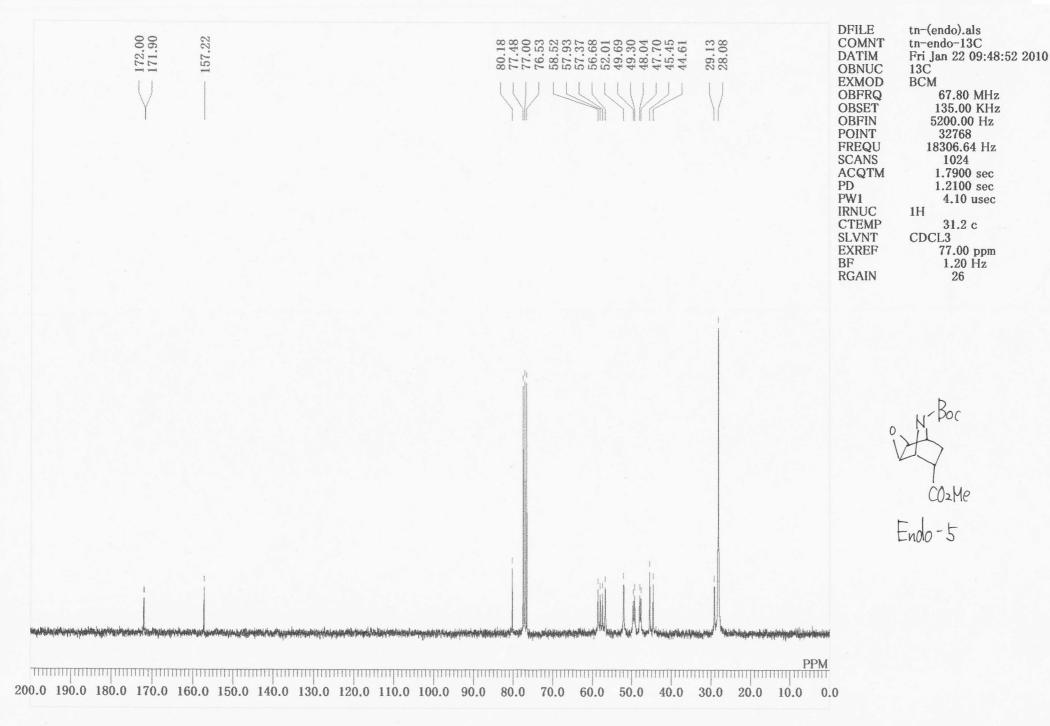


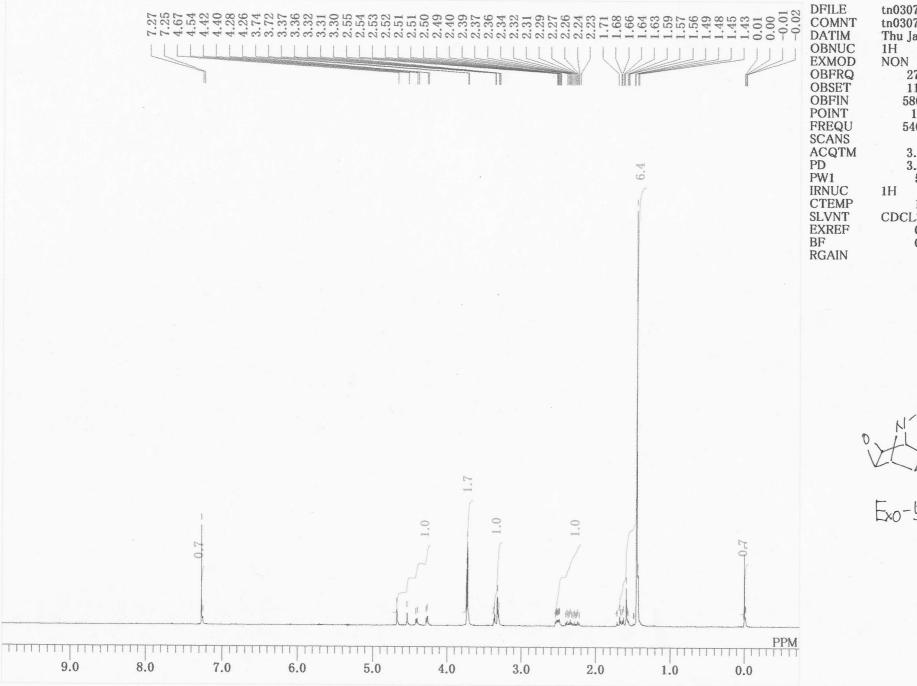
67.80 MHz 135.00 KHz 5200.00 Hz 18306.64 Hz 1.7900 sec 1.2100 sec 4.00 usec 77.00 ppm 1.20 Hz



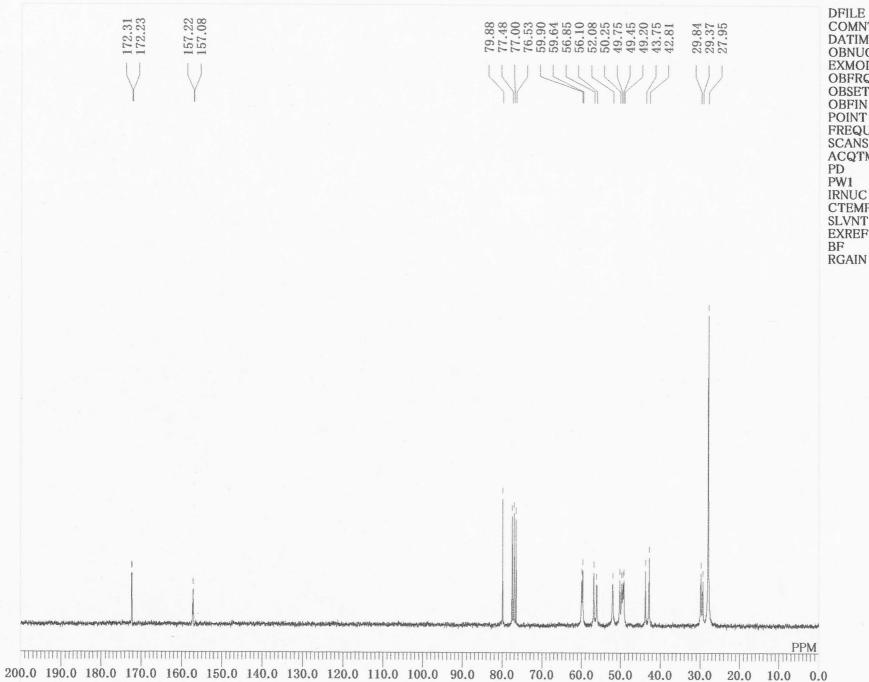
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> N-Boc Co.Me





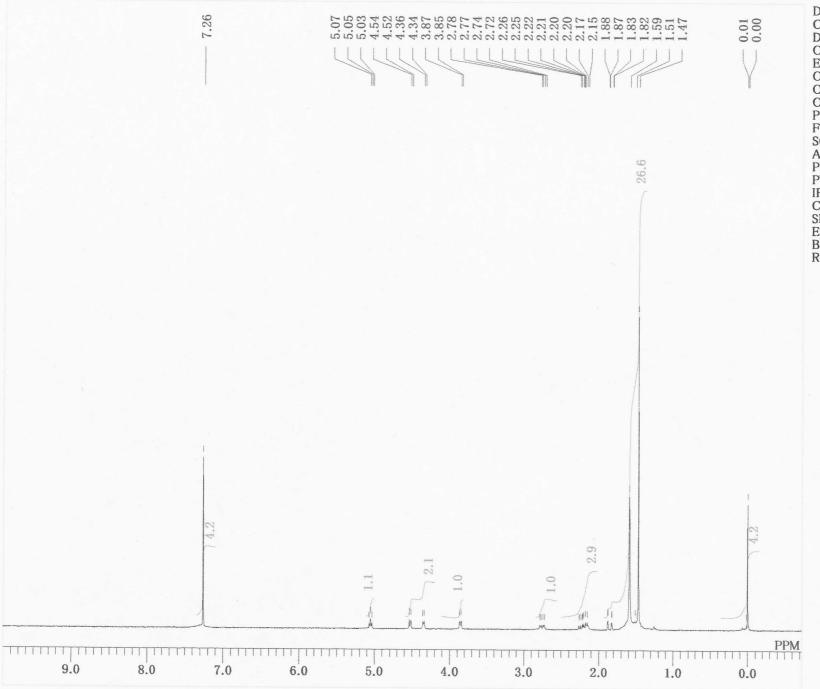
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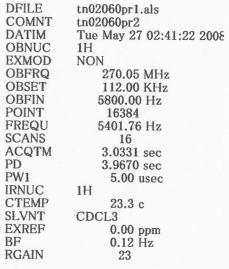


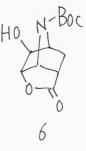
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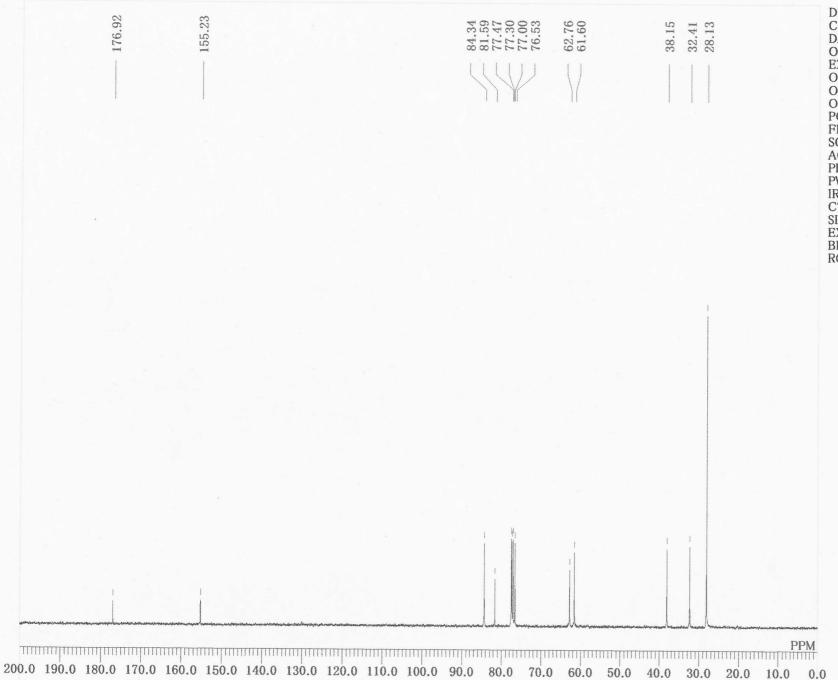
> N-DOC CO2Me

Exo-5

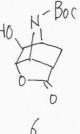




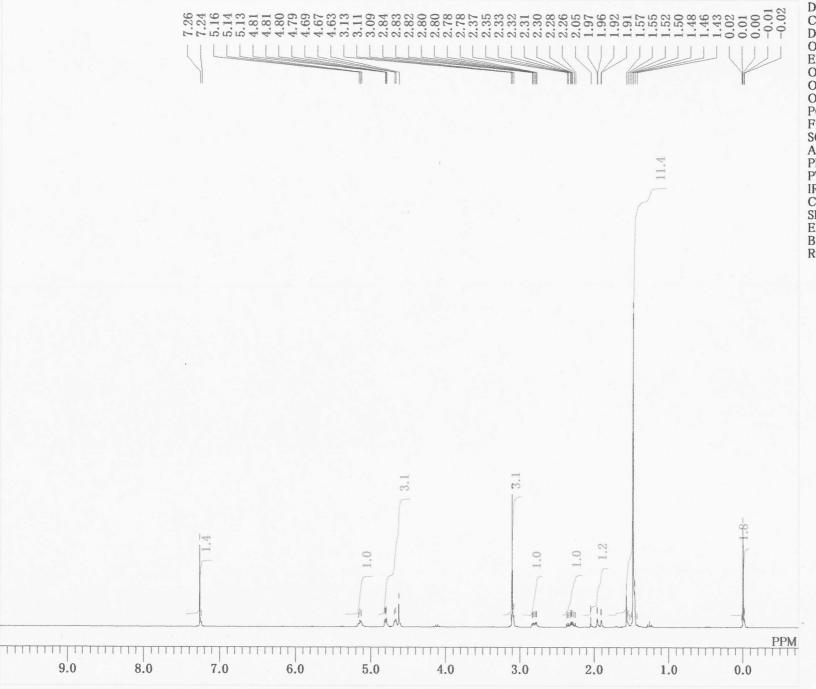


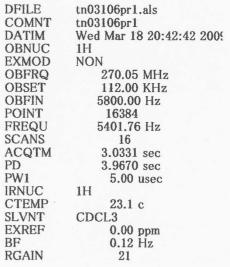


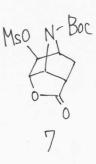
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6

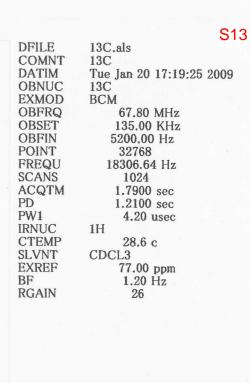


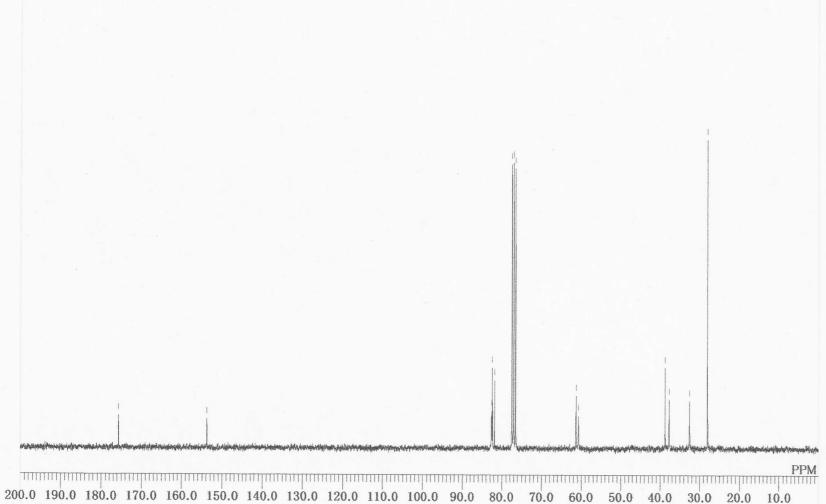




175.66

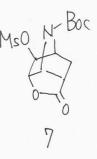
153.74

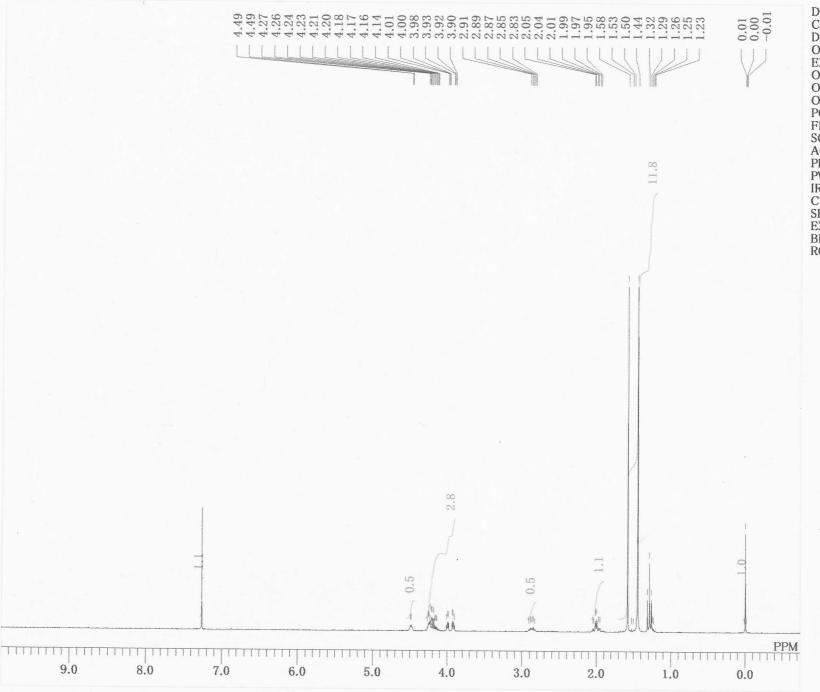


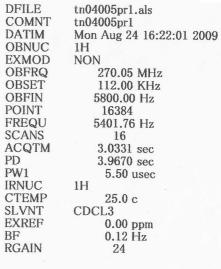


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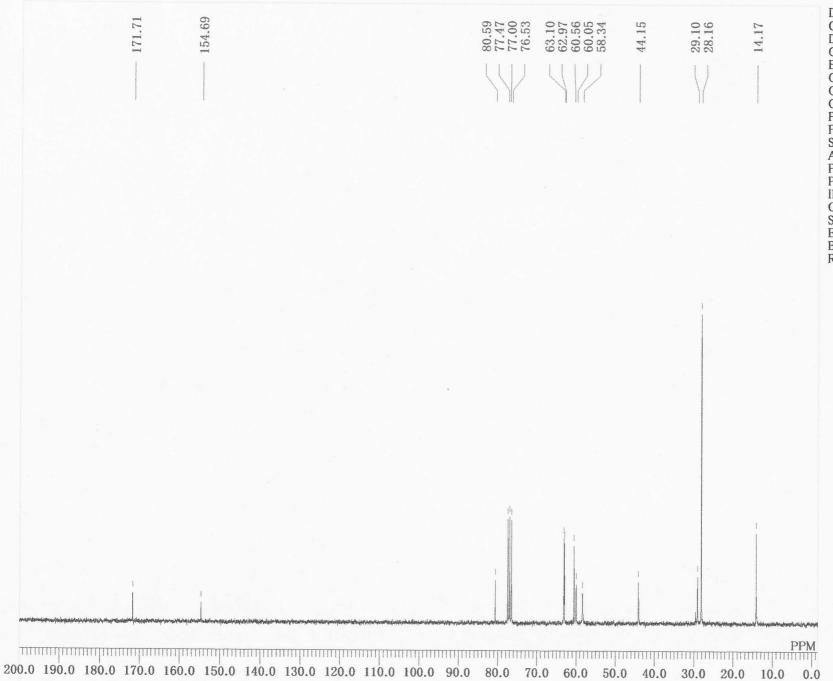
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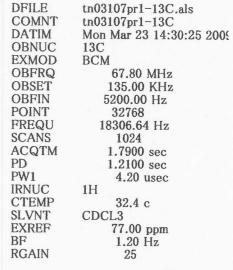


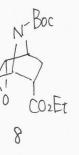


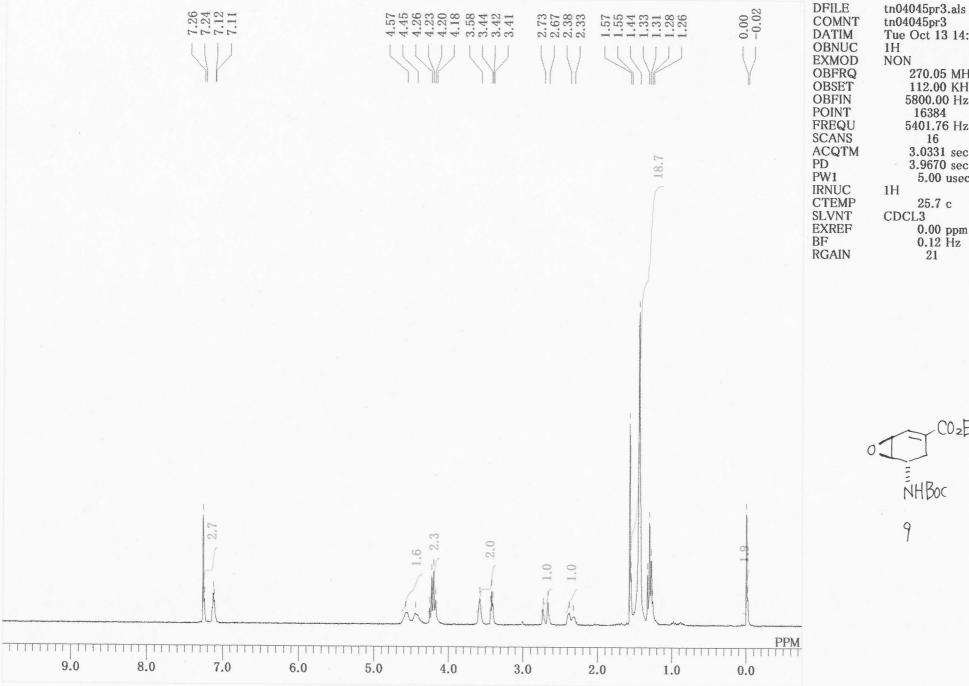


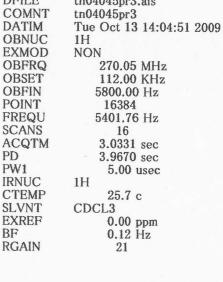


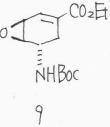


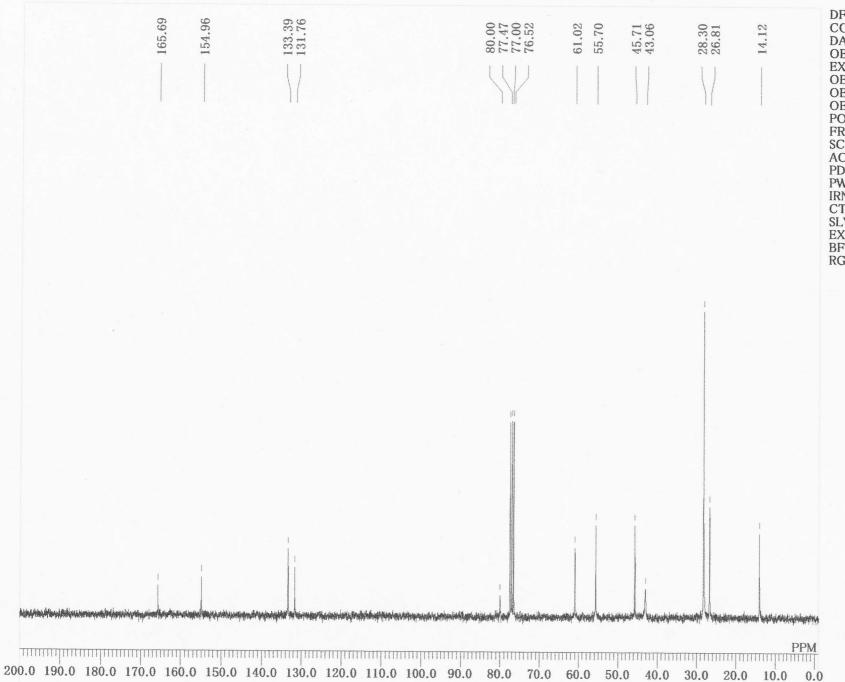










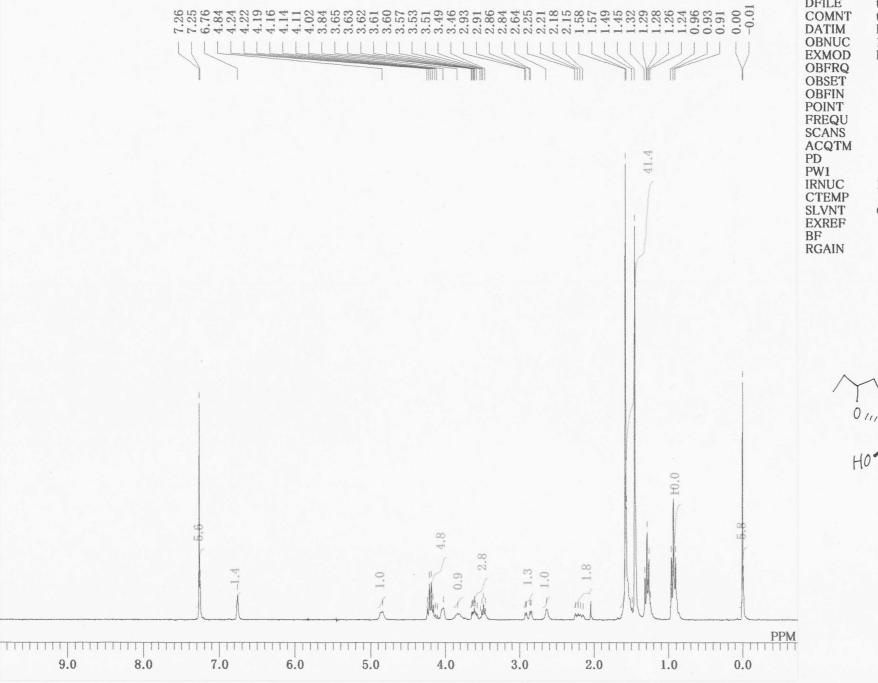


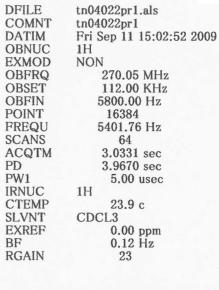
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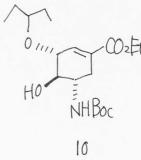
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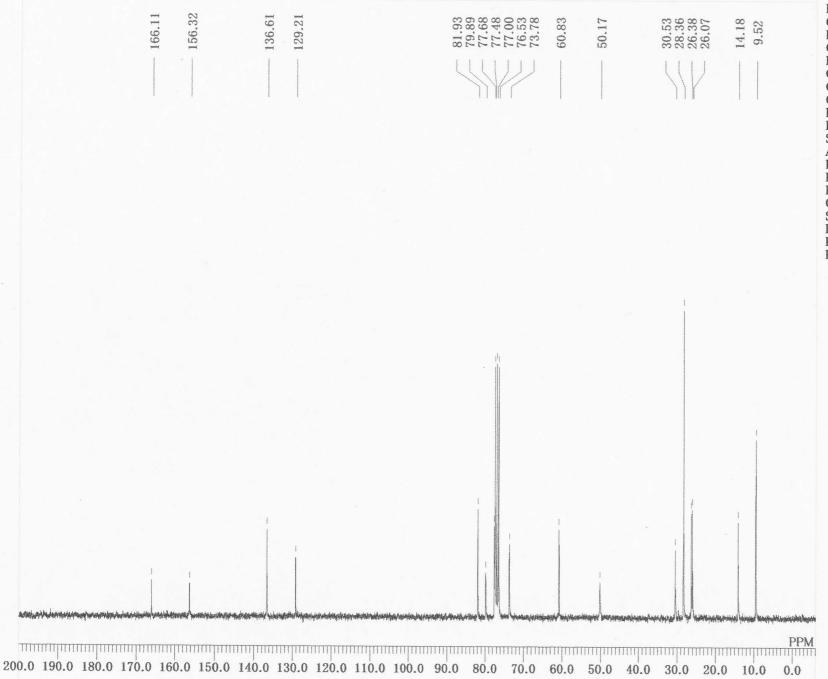
NHBoc

9

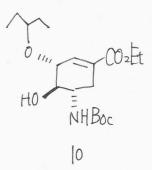


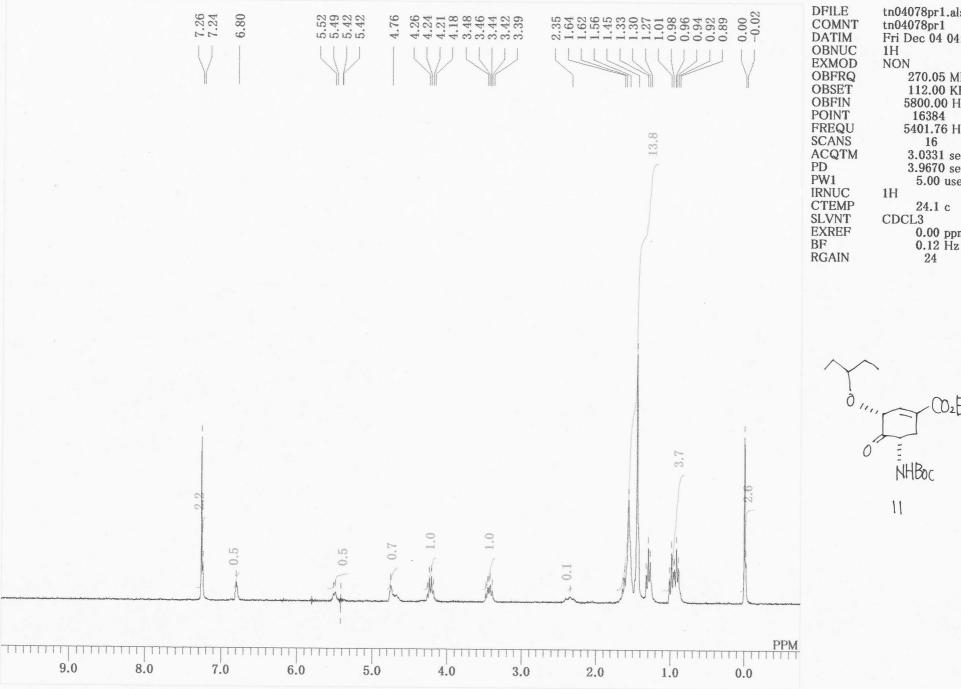


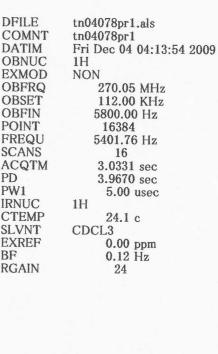


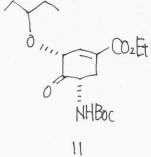


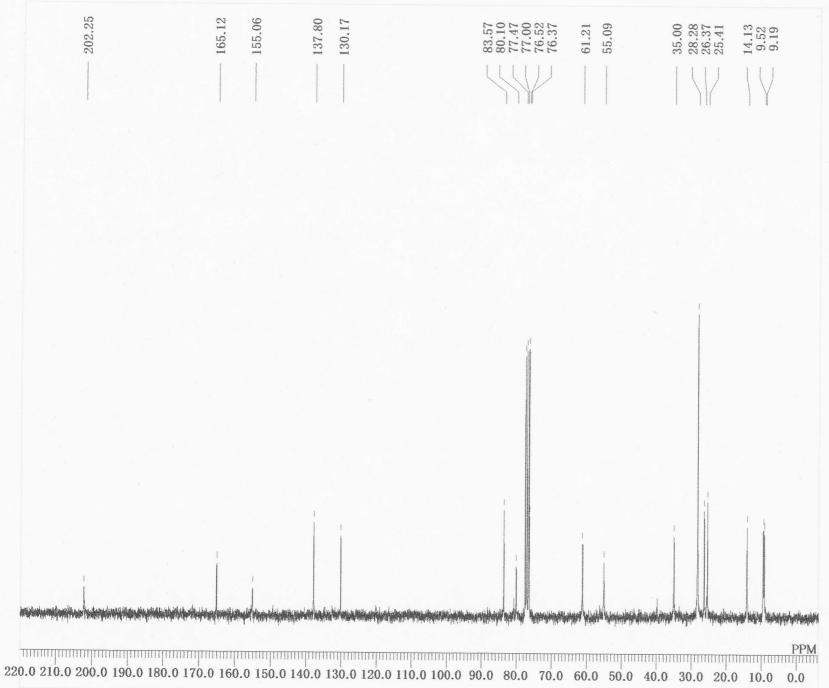
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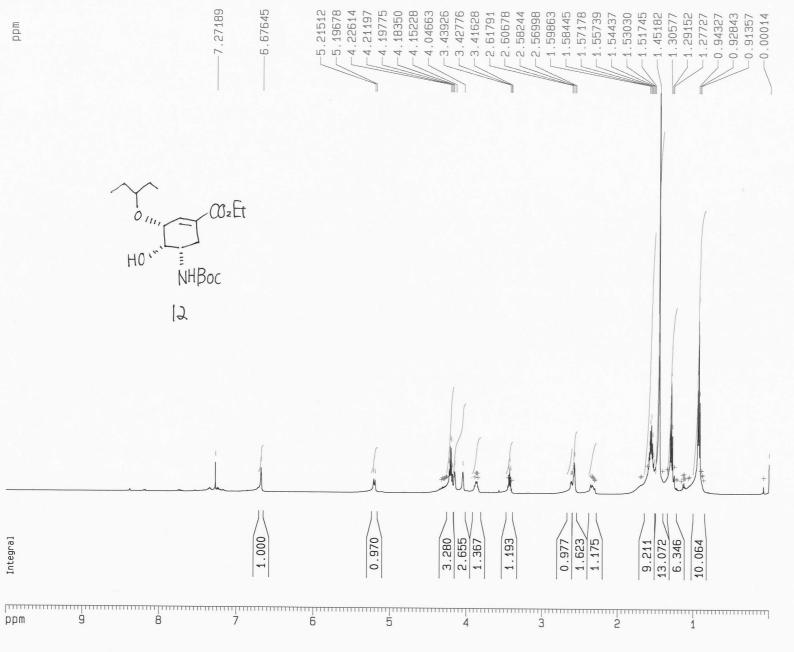




DFILE tn04073pr1-13C.als COMNT tn04073pr1-13C Mon Nov 30 17:31:48 2009 DATIM **OBNUC** 13C **EXMOD BCM OBFRQ** 67.80 MHz **OBSET** 135.00 KHz **OBFIN** 5200.00 Hz POINT 32768 18306.64 Hz FREQU **SCANS** 2048 **ACQTM** 1.7900 sec PD 1.2100 sec PW1 4.10 usec **IRNUC** 1H 34.7 с **CTEMP SLVNT** CDCL3 **EXREF** 77.00 ppm BF 1.20 Hz **RGAIN** 24

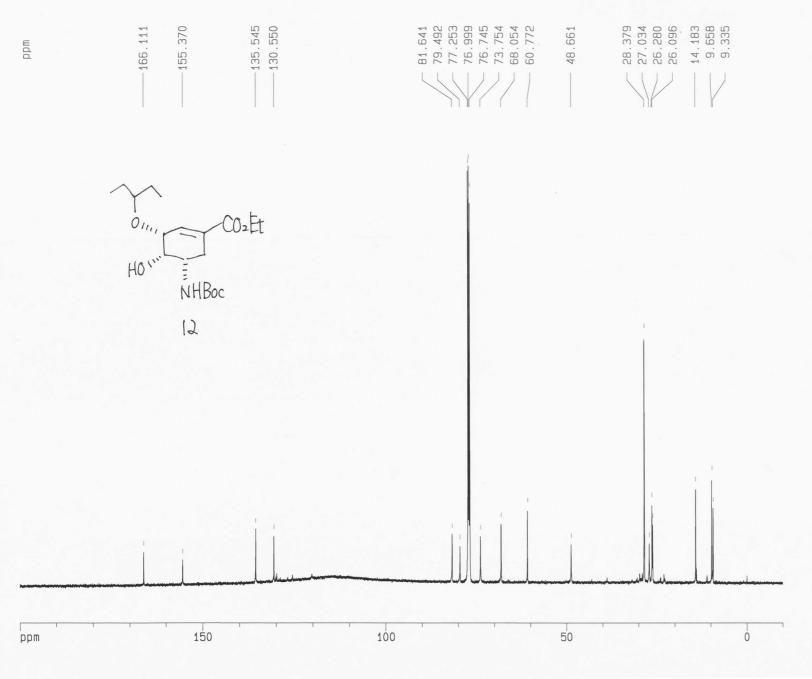
CO<sub>2</sub>Et

NHBoc



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1D NMR plot CX F1P F1 F2P F2 PPMCM HZCM	parameters 20.00 cm 10.000 ppm 5001.30 Hz 0.000 ppm 0.00 Hz 0.50000 ppm/cm 250.06500 Hz/cm

### tn04076PR1



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d12	0.0002000	sec
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PL1		dB
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PL1 SF01	-4.00 125.7715719	dB
PL1 SF01	-4.00 125.7715719 CHANNEL f2	dB MHz
PL1 SF01 	-4.00 125.7715719 CHANNEL f2 waltz16	dB MHz
PL1 SF01 	-4.00 125.7715719 CHANNEL f2 waltz16 1H	dB MHz
PL1 SF01 	-4.00 125.7715719 CHANNEL f2 waltz16	dB MHz
PL1 SF01 	-4.00 125.7715719 CHANNEL f2 waltz16 1H 75.00	dB MHz ======
PL1 SF01 	-4.00 125.7715719 CHANNEL f2 waltz16 1H 75.00 -2.00	dB MHz ========== usec dB
PL1 SF01 ======== CPDPRG2 NUC2 PCPD2 PL2 PL12	-4.00 125.7715719 CHANNEL f2 waltz16 1H 75.00 -2.00 10.50	dB MHz ======= usec dB dB
PL1 SF01 	-4.00 125.7715719 CHANNEL f2 waltz16 1H 75.00 -2.00	dB MHz ======= usec dB dB
PL1 SF01 ======== CPDPRG2 NUC2 PCPD2 PL2 PL12 PL13	-4.00 125.7715719 CHANNEL f2 waltz16 1H 75.00 -2.00 10.50 10.50	dB MHz ======== usec dB dB
PL1 SF01 ======== CPDPRG2 NUC2 PCPD2 PL2 PL12	-4.00 125.7715719 CHANNEL f2 waltz16 1H 75.00 -2.00 10.50	dB MHz ======== usec dB dB
PL1 SF01 	-4.00 125.7715719 CHANNEL f2 waltz16 1H 75.00 -2.00 10.50 500.1320005	dB MHz usec dB dB dB MHz
PL1 SF01 	-4.00 125.7715719 CHANNEL f2 waltz16 1H 75.00 -2.00 10.50 10.50 500.1320005	dB MHz usec dB dB dB MHz
PL1 SF01 	-4.00 125.7715719 CHANNEL f2 waltz16 1H 75.00 -2.00 10.50 500.1320005	dB MHz usec dB dB dB MHz
PL1 SF01 ====================================	-4.00 125.7715719 CHANNEL f2 waltz16 1H 75.00 -2.00 10.50 500.1320005	dB MHz  usec dB dB dB MHz
PL1 SF01 ====================================	-4.00 125.7715719  CHANNEL f2 waltz16 1H 75.00 -2.00 10.50 500.1320005  ing paramete 32768 125.7577907	dB MHz  usec dB dB dB MHz
PL1 SF01 ====================================	-4.00 125.7715719 CHANNEL f2 waltz16 1H 75.00 -2.00 10.50 500.1320005 ing paramete 32768 125.7577907 EM	dB MHz  usec dB dB dB MHz
PL1 SF01 ====================================	-4.00 125.7715719  CHANNEL f2 waltz16 1H 75.00 -2.00 10.50 500.1320005  ing paramete 32768 125.7577907	dB MHz  usec dB dB dB MHz
PL1 SF01 	-4.00 125.7715719 CHANNEL f2 waltz16 1H 75.00 -2.00 10.50 500.1320005 ing paramete 32768 125.7577907 EM	dB MHz usec dB dB dB MHz ers
PL1 SF01	-4.00 125.7715719  CHANNEL f2 waltz16 1H 75.00 -2.00 10.50 500.1320005  ing paramete 32768 125.7577907 EM 0 1.00	dB MHz usec dB dB dB MHz ers
PL1 SF01	-4.00 125.7715719  CHANNEL f2 waltz16 1H 75.00 -2.00 10.50 10.50 500.1320005  ing paramete 32768 125.7577907  EM 0 1.00 0	dB MHz usec dB dB dB MHz ers
PL1 SF01	-4.00 125.7715719  CHANNEL f2 waltz16 1H 75.00 -2.00 10.50 500.1320005  ing paramete 32768 125.7577907 EM 0 1.00	dB MHz usec dB dB dB MHz ers
PL1 SF01	-4.00 125.7715719  CHANNEL f2 waltz16 1H 75.00 -2.00 10.50 10.50 500.1320005  ing paramete 32768 125.7577907  EM 0 1.00 0	dB MHz usec dB dB dB MHz ers
PL1 SF01  ===================================	-4.00 125.7715719  CHANNEL f2 waltz16 75.00 -2.00 10.50 10.50 500.1320005  ing paramett 32768 125.7577907 EM 0 1.00 0 1.40	dB MHz usec dB dB dB MHz ers
PL1 SF01  CPDPRG2 NUC2 PCPD2 PL2 PL13 SF02  F2 - Process SI SF WDW SSB LB GB PC  1D NMR plot	-4.00 125.7715719 CHANNEL f2 waltz16 75.00 -2.00 10.50 500.1320005 ing paramete 32768 125.7577907 EM 0 1.00 0 1.40	dB MHz  usec dB dB dB MHz  MHz  Hz
PL1 SF01	-4.00 125.7715719 CHANNEL f2 waltz16 1H 75.00 -2.00 10.50 500.1320005 ing parameti 32768 125.7577907 EM 0 1.00 0 1.40 parameters 20.00	dB MHz  usec dB dB dB MHz ers MHz trs Hz
PL1 SF01  CPDPRG2 NUC2 PCPD2 PL2 PL13 SF02  F2 - Process SI SF WDW SSB LB GB PC  1D NMR plot	-4.00 125.7715719 CHANNEL f2 waltz16 75.00 -2.00 10.50 500.1320005 ing paramete 32768 125.7577907 EM 0 1.00 0 1.40	dB MHz  usec dB dB dB MHz ers MHz trs Hz
PL1 SF01	-4.00 125.7715719  CHANNEL f2 waltz16 1H 75.00 -2.00 10.50 500.1320005  ing paramete 32768 125.7577907 EM 0 1.00 0 1.40  parameters 20.00 200.000	dB MHz  usec dB dB dB MHz ers MHz Hz  cm ppm
PL1 SF01	-4.00 125.7715719  CHANNEL f2 waltz16 1H 75.00 -2.00 10.50 10.50 500.1320005  ing paramete 32768 125.7577907  EM 0 0 1.00 0 1.40  parameters 20.00 200.000 25151.56	dB MHz  usec dB dB dB MHz ers MHz  Hz  cm ppm Hz
PL1 SF01	-4.00 125.7715719 CHANNEL f2 waltz16 1H 75.00 -2.00 10.50 10.50 500.1320005 ing paramete 32768 125.7577907 EM 0 0 1.00 0 1.40 parameters 20.00 200.000 25151.56 -10.000	dB MHz  usec dB dB dB MHz ers MHz  Hz  cm ppm Hz ppm
PL1 SF01	-4.00 125.7715719  CHANNEL f2 waltz16 1H 75.00 -2.00 10.50 10.50 500.1320005  ing paramete 32768 125.7577907  EM 0 0 1.00 0 1.40  parameters 20.00 200.000 25151.56	dB MHz  usec dB dB dB MHz ers MHz  Hz  cm ppm Hz ppm
PL1 SF01	-4.00 125.7715719  CHANNEL f2 waltz16 75.00 -2.00 10.50 500.1320005  ing paramete 0 1.00 0 1.40  parameters 20.00 200.000 25151.56 -10.000 -1257.58	dB MHz  usec dB dB dB MHz  ers MHz  tz  cm ppm Hz ppm Hz
PL1 SF01	-4.00 125.7715719 CHANNEL f2 waltz16 1H 75.00 -2.00 10.50 500.1320005 ing paramete 32768 125.7577907 EM 0 1.00 0 1.40 parameters 20.00 200.000 25151.56 -10.000 -1257.58	dB MHz  usec dB dB dB dB MHz  ers MHz  Hz  cm ppm Hz ppm Hz ppm/cm
PL1 SF01	-4.00 125.7715719  CHANNEL f2 waltz16 75.00 -2.00 10.50 500.1320005  ing paramete 0 1.00 0 1.40  parameters 20.00 200.000 25151.56 -10.000 -1257.58	dB MHz  usec dB dB dB dB MHz  ers MHz  Hz  cm ppm Hz ppm Hz ppm/cm