



MULTIPLE MIRROR TELESCOPE OBSERVATORY

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MMTO INTERNAL TECHNICAL MEMORANDUM 88-5

Subject: The Use of the IBM PC IEEE-488 Control of the HP 3582A Spectrum Analyzer

From: D. Barlow

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I. INTRODUCTION

This report outlines the use of the IBM PC to read out the data in the HP 3582A spectrum analyzer. The data must be taken using the manual switch settings on the front panel of the 3582A. Once the data are in the 3582A then the PC can read out the data, store it in a disk file, and then print out the spectrum for hard copy records. The programs written so far are very basic in their intent and do not begin to make full utilization of the powerful tool we have in joining a computer to the 3582A spectrum analyzer. Future additions to the software are expected as the applications arise.

II. HARDWARE NOTES

The IEEE-488 interface card for the PC is a GPIB-PC IIA board made by National Instruments. The PC IIA is set to its default settings, as called out in the users manual. A Hercules Graphics Card must be used because the software is written specifically for it. An Epson (IBM compatible) parallel type printer must be used and the printer plugged into the Hercules Graphics Card on board printer port.

The IEEE-488 address for the spectrum analyzer is DEV 11. Specific information on the use of the HP 3582A spectrum analyzer can be found in the operations manual.

III. SOFTWARE NOTES

The software was developed in TURBO-PASCAL by J. Montgomery. The software drivers for the IEEE-488 interface are transparent to the user and are not covered in this memo. The user interface follows a menu-driven format and is very straightforward to use. A list of desired changes to the existing programs is being kept separate from this memo.

IV. TO READ DATA FROM THE HP 3582A SPECTRUM ANALYZER:

1. Be sure you are in the NAGEL program before you collect your data in the 3582A. Type "NAGEL" and then manually collect the data with the 3582A front panel switches. After the data have been taken, continue to answer the questions asked.

NOTE: If you collect the data and then run NAGEL, the 3582A resets itself and you lose your data.

2. The data currently read out of the 3582A are the Display memory only. This makes it very important to have a frozen display, i.e., use the RMS averaging mode after the averaging is complete.
3. Data can be stored in any valid DOS file name.
4. It is useful to use the comment line to record your 3582A front panel switch settings, because the computer cannot read them and the information will be lost unless written down somewhere:

DC,ISOL,HANN,RMS8,FILE:filename

5. Be sure the clock and date are correct as the program accesses the time-day and stores it in the data file.
6. To move on to the plotting routine press "Q" to quit when asked to do so.

NOTE: Currently in the Plot-Print program the horizontal axis is displayed as frequency bins and not in actual frequency. The frequency span plotted is displayed (printed) and frequency can be derived by some hand waving. If accurate frequency information is desired it is recommended to print out the plot and then, with the recorded data still displayed on the 3582A, move the cursor around and write down the characteristic peak frequencies as read off the 3582A screen.

V. TO PLOT DATA ON SCREEN AND PRINT SPECTRUM:

1. Type "PNAGEL" and then answer the questions.
2. After the plot has been displayed, a screen dump can be done by pressing "SHIFT-PRTS 1."
3. To exit the plot and continue type "D" then "RTN."