

Waveform data acquisition (GPIB) sample software V1.0

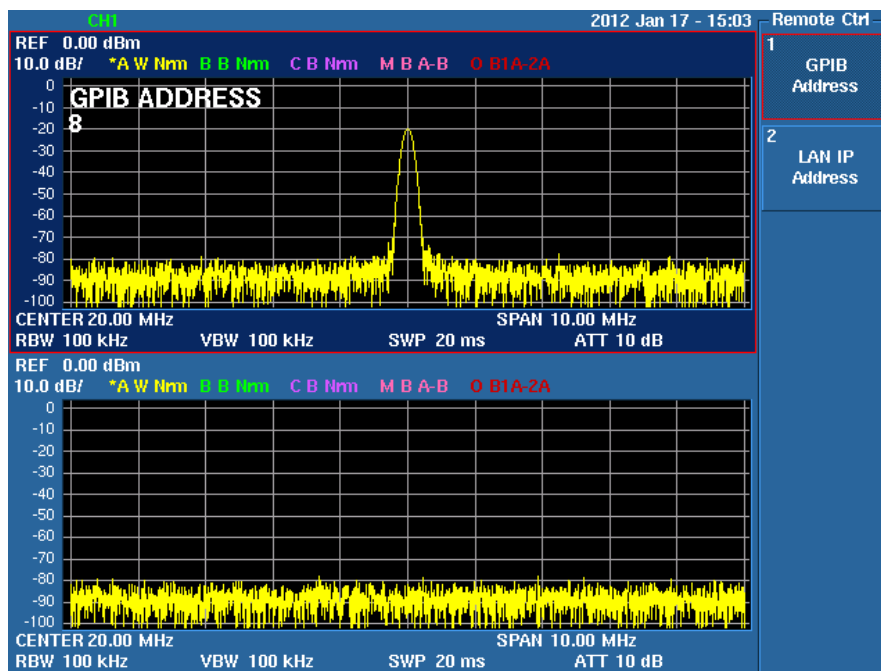
Advantest

1 . Install the U3800 GPIB GetTrace sample software to PC.

- Installer is in the PackageForU3800 folder.
- Source files are in the Source (STD) folder and refer from Visual Basic.
(There is the Trace- Bin, ASCII, Real Data; Time Domain IQ Real Data.)

2 . The GPIB address of SA (Spectrum Analyzer) U3800 series is set "8".

- SYSTEM – Config. – Remote Control – GPIB Address
- In initialization, it is set to 8. It changes if necessary.
(Photograph below is GPIB Address 8.)

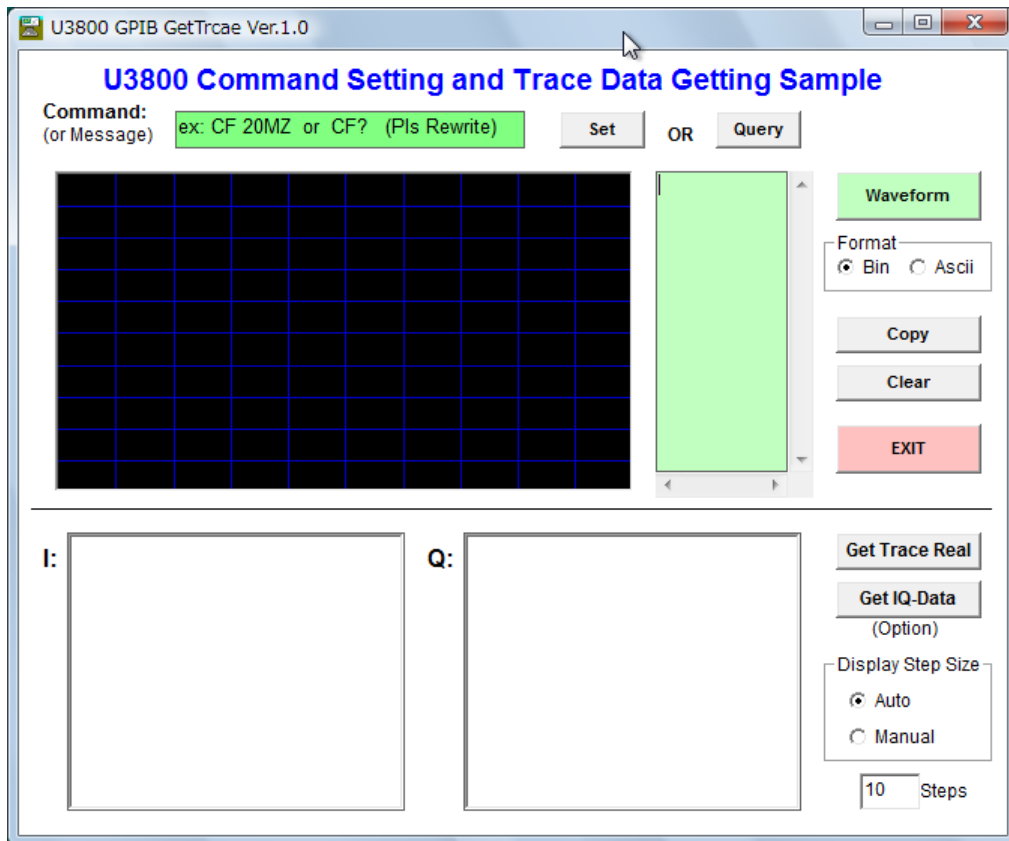


3 . Connect the GPIB cable.

- Spectrum Analyzer is connected with the personal computer with the GPIB cable.
(The GPIB card is specified NI)

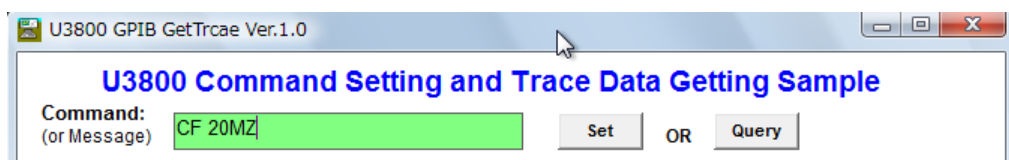
4 . **Start the sample software.**

- Press START of PC and select U3800 GPIB GetTrace and execute GPIB GetTrace.



5 . **Control the Spectrum Analyzer.**

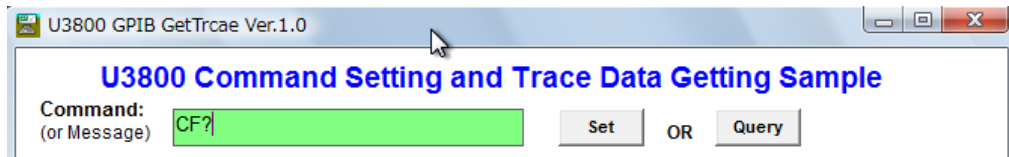
- The GPIB command is written in the frame of COMMAMD, and the "Set" button is pushed.
However, it is only a set command. (The query command: refer to chapter-6)
(example : Center Frequency 20MHz: CF 20MZ)



6 . The parameter data of Spectrum Analyzer is acquired.

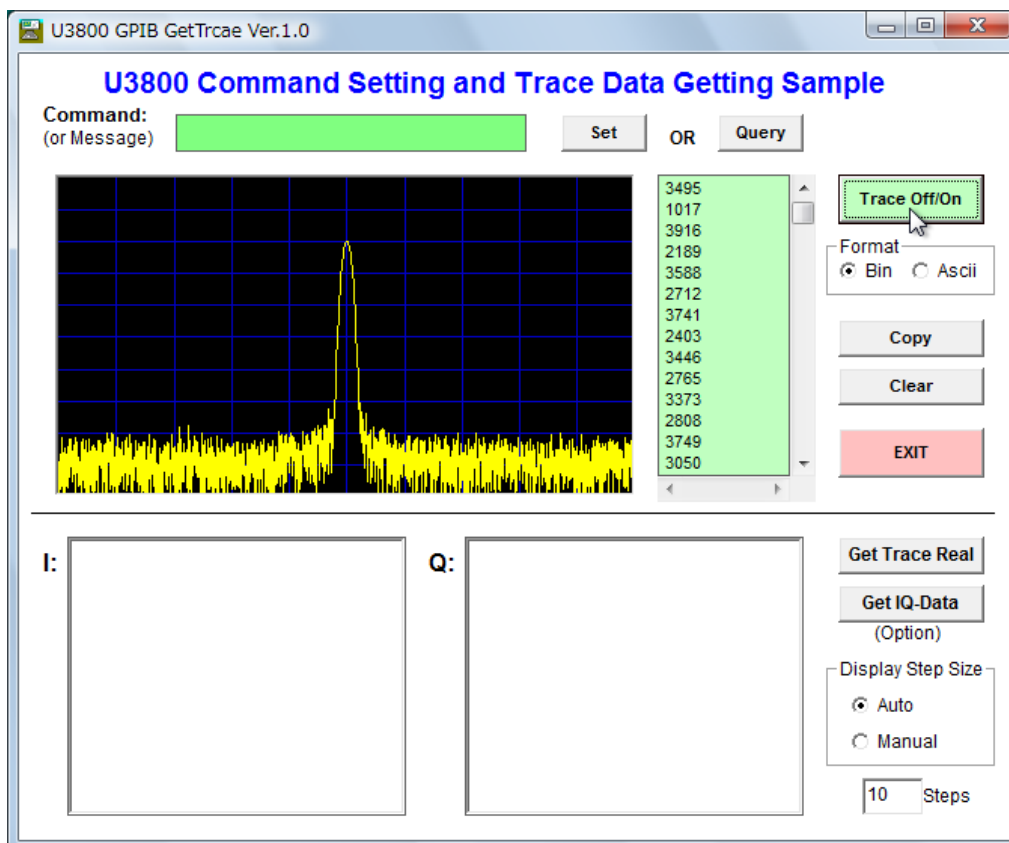
- The GPIB command is written in the frame of COMMAMD, and the "Query" button is pushed. However, it is only a query command.

(example : Reading of Center Frequency: CF?)

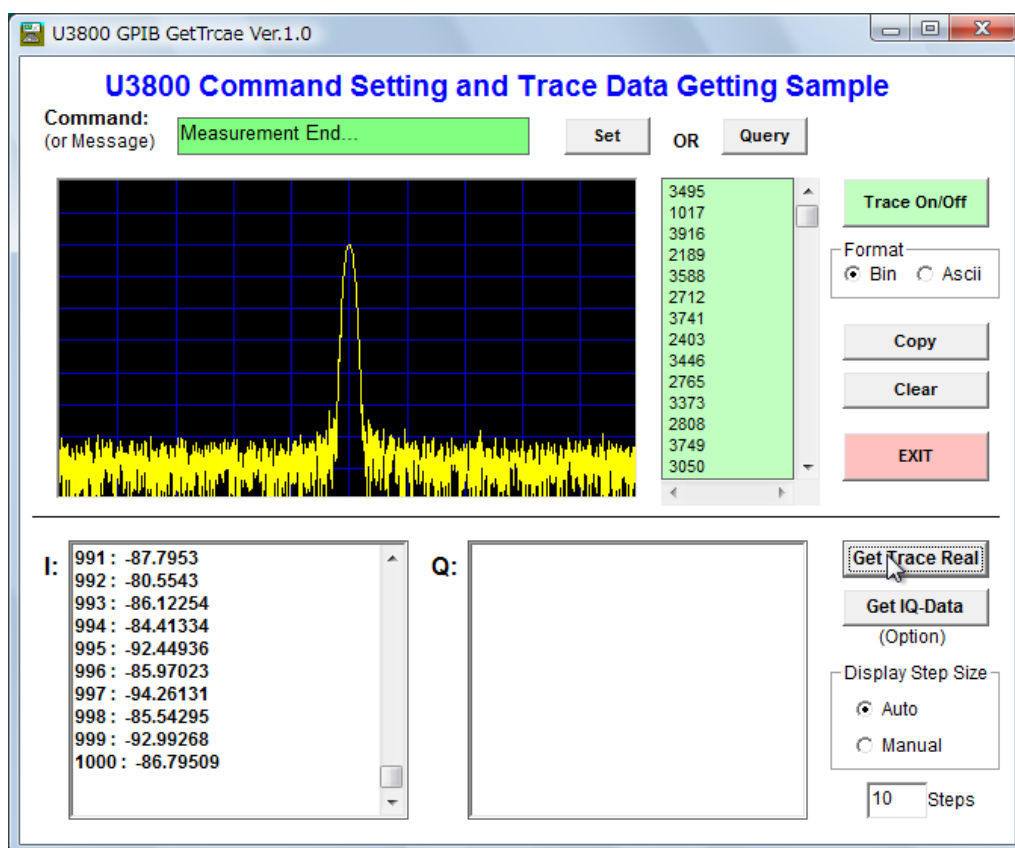


7 . When the Waveform button is pushed, the waveform is seen.

(The key changes into Trace On/Off.)



- The button of Waveform changes into Trace On/Off since the second times.
 - When the Copy button is pushed, waveform data is displayed in a left green frame by the point value. At the same time, it is possible to copy it onto Excel etc, because it is copied onto the clip board of Windows.
 - Clear is deletion key of the screen and the point data.
 - The transfer form is switched to Binary or ASCII by the Format menu.
(The amount of transfer form and transfer time is changed.)
 - Waveform data is output with the Get Trace Real button by the floating point of 32bits.
 - 1) The display area is a place of I:Data. (1001 points are seen in the scroll.)
 - 2) When a waveform display operates, this function is not possible.
- Moreover, the level unit is dB mode.



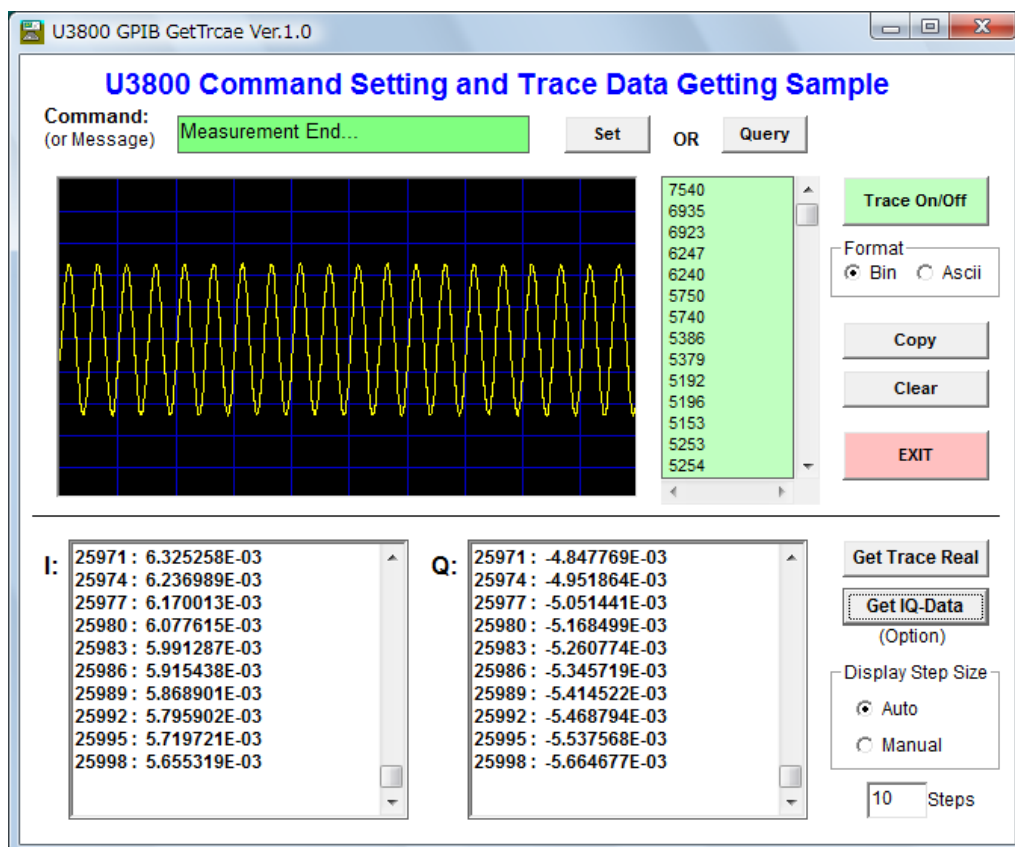
- When the Time Domain analysis is working, the IQ data can be output by the Get IQ-Data button.

1) The IQ data is separated, and the data is displayed in I area and Q area.

2) When a waveform display operates, this function is not possible.

3) When the display line exceeds 10k lines, it becomes 10k lines or less.

If you want the manual step size, you can write it to data box.



8 . End

- EXIT is pushed, and the program is terminated.

Reference: Format and program of waveform data

Trace data on the screen includes data for 501 or 1001 points on the frequency axis. For inputting and outputting data, it is necessary to transfer data for 501 or 1001 points from the left side (start frequency) in order. Each point level is expressed by an integer from 1792 to 14592 (however, if the trace exceeds the upper limit of the vertical scale, a value greater than 14592 is transferred).

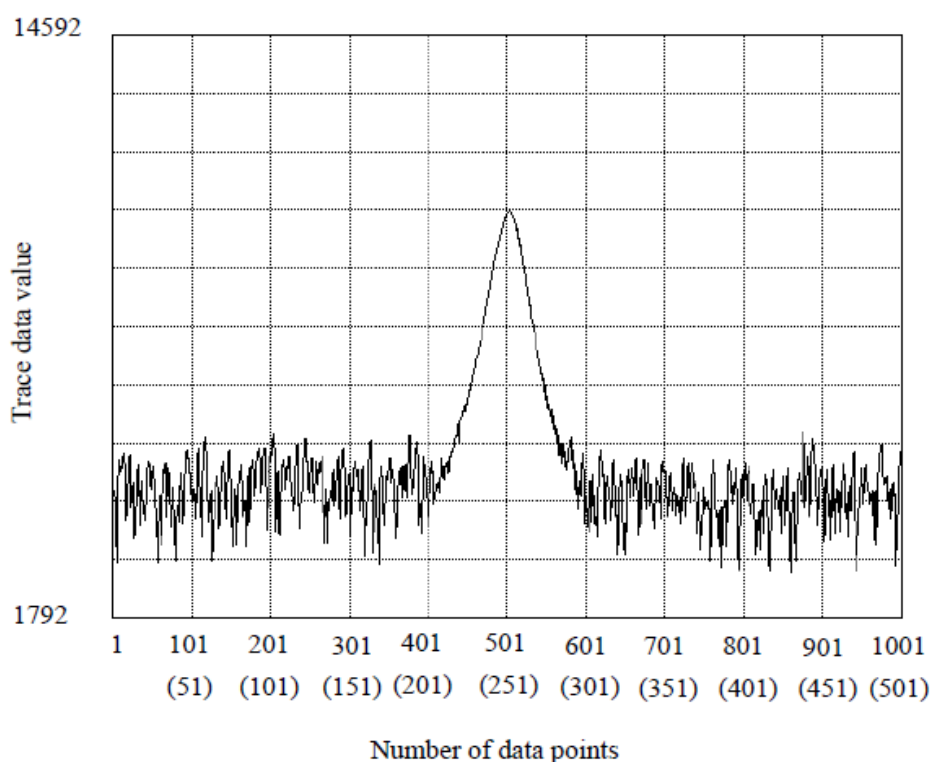


Figure 6-7 Relationship between the Screen Graticule and Trace Data

Trace data can be input or output in either ASCII or binary format.

Table 6-4 Trace Point Specification Codes

GPIB Code	Description
TPS	Sets the number of measurement points to 501.
TPL	Sets the number of measurement points to 1001.

I/O format	Description		
ASCII format	<div><div><div>DDDDD</div><div>↑</div><div>Data for one point</div></div><div><div>CR LF</div><div>↑</div><div>Delimiter</div></div></div> <p>Five-byte data without header</p>		
		Input GPIB code	Output GPIB code
	Memory A	TAA	TAA?
	Memory B	TAB	TAB?
Binary format	<div><div><div>DD</div><div>↑</div><div>High-order byte for 1st point</div></div><div><div>DD</div><div>↑</div><div>Low-order byte for 1st point</div></div><div>.....</div><div><div>DD</div><div>↑</div><div>High-order byte for 1001/501st point</div></div><div><div>DD + EOI</div><div>↑</div><div>Low-order byte for 1001/501st point</div></div><div><div></div><div>↑</div><div>Delimiter</div></div></div> <p>Each point data is divided into two parts: high-and low-order bytes. EOI signal is attached at the end of the data for continuous 1001 points.</p>		
		Input GPIB code	Output GPIB code
	Memory A	TBA	TBA?
	Memory B	TBB	TBB?

Example 1: Waveform data is read by ASCII format. (example of this sample software)

```
Private Sub readdat_ASCII()  
    Call ibdev(0, 8, 0, T10s, 1, 0, spa%)  
    Call ibconfig(spa%, 19, 1)  
    Call ibwrt(spa%, "DLIM0") 'U3751  
  
    Call ibwrt(spa%, "TS")
```

```

Call ibwrt(spa%, "TAA?")
For i = 0 To 1000
    Call ibrd(spa%, trc(i))
Next i
Call ibwrt(spa%, "DLIM0") 'U3751

'Call ibwrt(spa%, "CONTS") 'Cont Sweep
'Call ibonl(spa%, 0) 'Reset GPIB

End Sub

```

Example 2: Waveform data is read by the BINARY format. (example of this sample software)

```

Private Sub read_data_bin()
Dim tr(1000) As Integer
Dim Rslt As Integer, tmp As Integer, i As Integer

    Call ibdev(0, 8, 0, T10s, 1, 0, spa%) ' Set GPIB
    Call ibconfig(spa%, 19, 0) ' Set EOI
    Call ibwrt(spa%, "DLIM2") ' Set EOI @U3751

    Call ibwrt(spa%, "TS") ' One Sweep
    Call ibwrt(spa%, "TBA?") ' Set BIN mode

    Call ibrdi(spa%, tr(), 1001 * 2) ' Read BIN data 1001 points
    For i = 0 To 1000 Step 1
        tmp = tr(i)
        Rslt = (tmp And &HFF&) * 256
        Rslt = Rslt + ((tmp And &HFF00&) / 256)
        trc(i) = Str(Rslt) ' to Buffer 1001points
    Next i
    Call ibwrt(spa%, "DLIM0") 'Reset EOI @U3751
    Call ibconfig(spa%, 19, 1) 'Reset EOI

    'Call ibwrt(spa%, "CONTS") 'Cont Sweep
    'Call ibonl(spa%, 0) 'Reset GPIB

End Sub

```