

The Impedance Analyzer Sample Application is a sample application for use with impedance analyzers.

(1)

This software provides the following functionality:

- LCR mode measurement
- Configuration of LCR mode measurement conditions
- Display of LCR mode measured values
- Saving of LCR mode measurement data
- ANALYZER mode measurement
- Configuration of ANALYZER mode measurement conditions
- Display of ANALYZER mode measured values as a graph
- Display of ANALYZER mode measured values as a list
- Saving of ANALYZER mode measured value lists
- Calculation of measurement accuracy
- Calculation of the measurement range
- Acquisition of measurement screens
- Measurement of communications times

(2)

The sample application provides the following six measurement methods:

- Frequency characteristics (measurement while varying the frequency)
- Power characteristics (measurement while varying the power)
- Voltage characteristics (measurement while varying the voltage)
- Current characteristics (measurement while varying the current)
- Time interval measurement (measurement over a user-specified time interval) ^{*1}
- "Acquire by pressing ENTER" measurement (one-time measurement) ^{*1}

^{*1} LCR mode only

(3)

Supported operating systems	Windows 10 (32-bit/64-bit) Windows 11
Software environment	Microsoft .NET Framework 4.0
CPU	1 GHz or greater
RAM	512 MB or greater
Display resolution	1024 X 768 pixels or greater
Hard disk	At least 5 MB available
Communications interfaces	RS-232C, GPIB, USB, LAN

Table 1-1 Operating environment

The following cables are required in order to connect the impedance analyzer to a computer:

- RS-232C connection: RS-232C cross cable (9-pin female to 9-pin female)
- GPIB connection: National Instruments GPIB-USB-HS
- USB connection: USB cable (AB type)
- LAN connection: LAN cross cable

(4)

This software can be used with the following products:

- IM7580A
- IM7581
- IM7583
- IM7585
- IM7587

The start screen is displayed when the Impedance Analyzer Sample Application is launched.

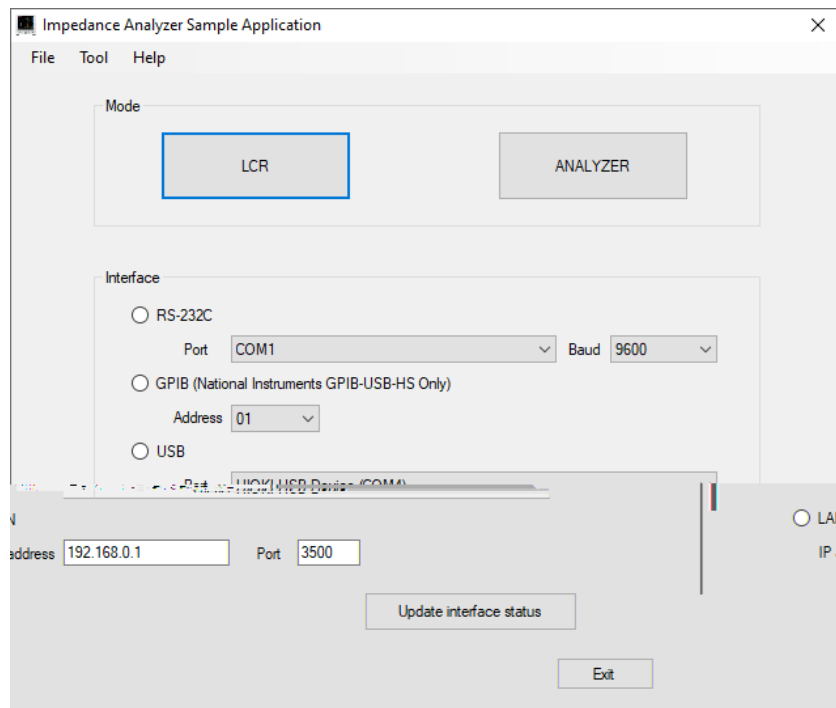
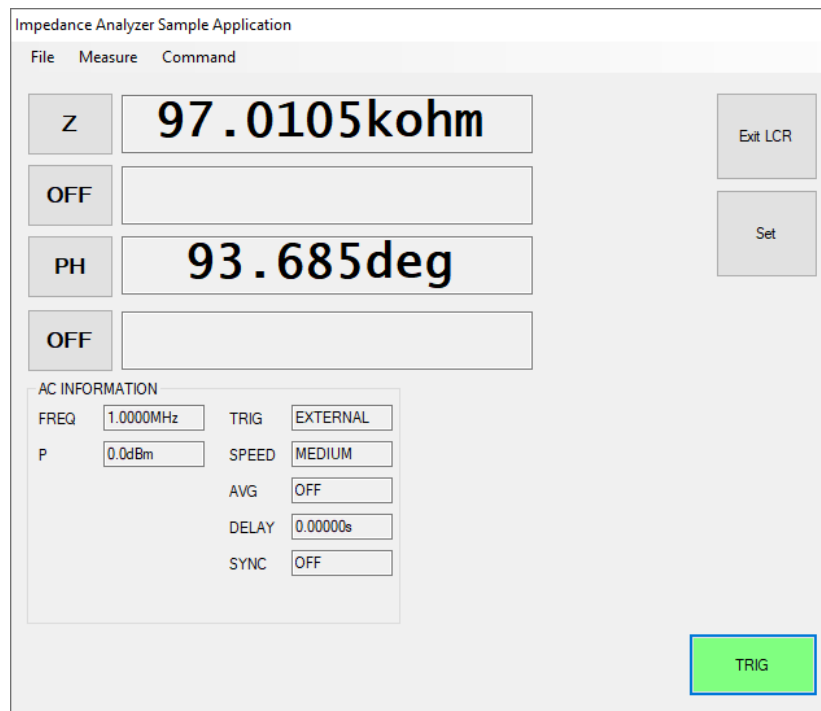


Figure 2-1 Start screen

Select the interface you're using to connect the impedance analyzer and switch to a function screen.

You can perform LCR mode measurement.



Impedance Analyzer Sample Application

File Measure Command

Z 97.0105kohm

OFF

PH 93.685deg

OFF

AC INFORMATION

FREQ 1.0000MHz TRIG EXTERNAL

P 0.0dBm SPEED MEDIUM

AVG OFF

DELAY 0.00000s

SYNC OFF

Exit LCR

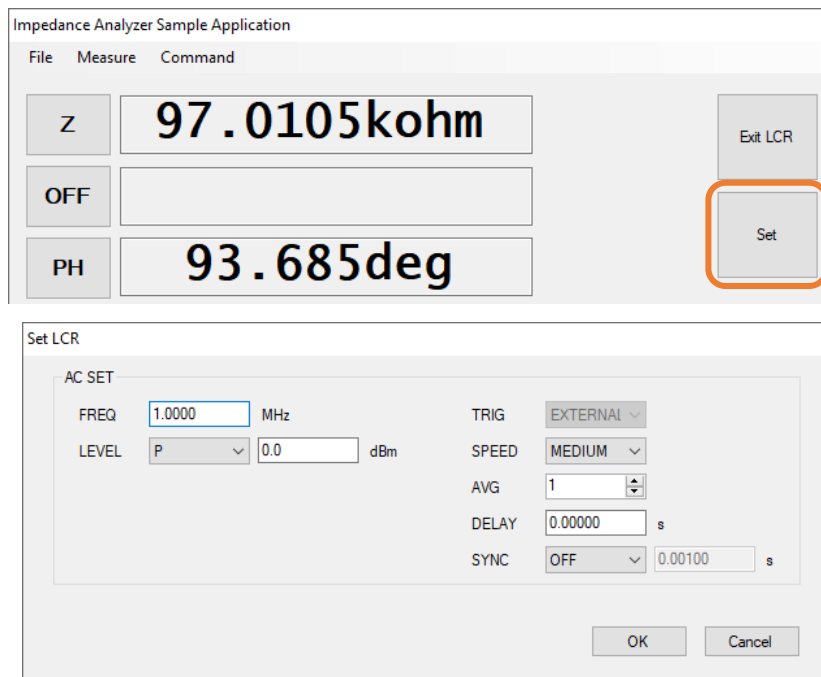
Set

TRIG

Figure 3-1 LCR mode screen

(1)

You can set the measurement conditions used in LCR mode.



Impedance Analyzer Sample Application

File Measure Command

Z 97.0105kohm

OFF

PH 93.685deg

Exit LCR

Set

Set LCR

AC SET

FREQ 1.0000 MHz

LEVEL P 0.0 dBm

TRIG EXTERNAL

SPEED MEDIUM

AVG 1

DELAY 0.00000 s

SYNC OFF 0.00100 s

OK Cancel

Figure 3-2 LCR settings screen

(2)

You can make measurements while varying the frequency, power, voltage, or current. Measurement data can be saved as a Microsoft Excel or CSV file.

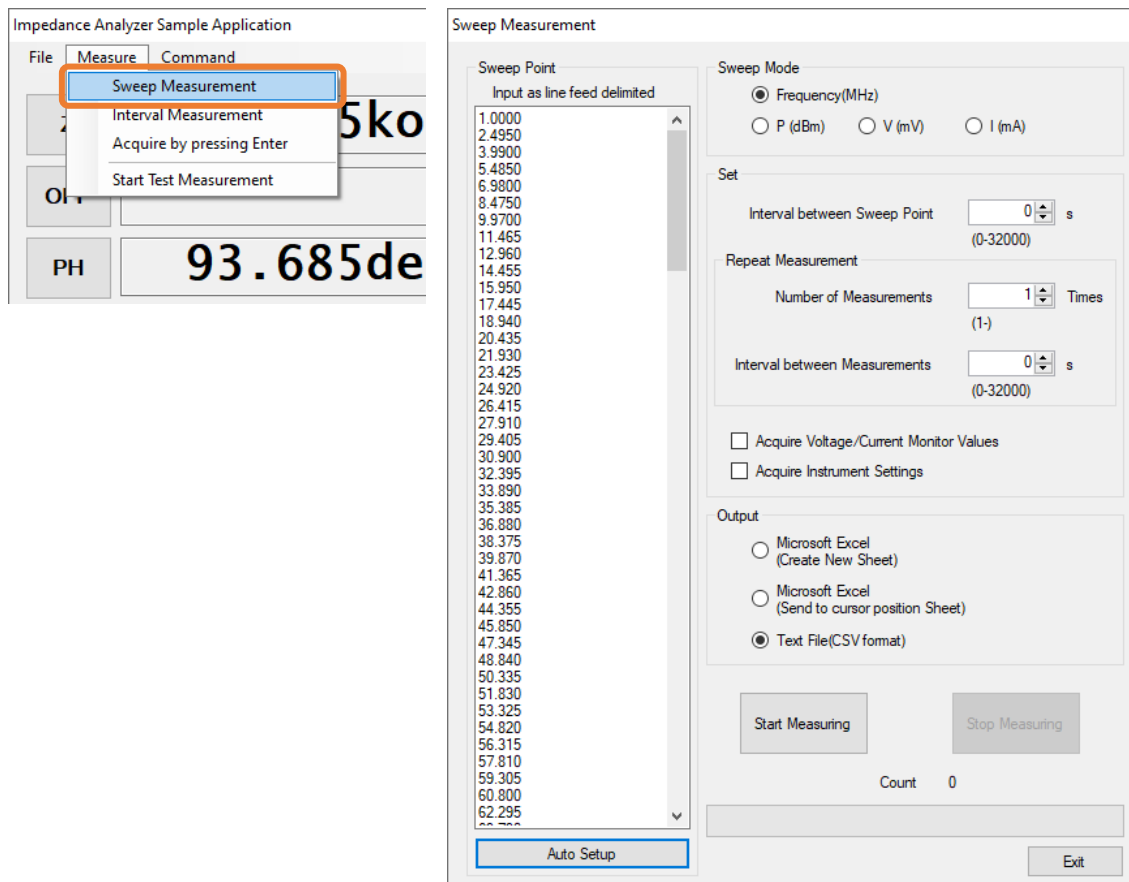


Figure 3-3 Frequency/voltage/current characteristics measurement screen

You can set automatically set sweep points by specifying the start value, end value, and number of data points.

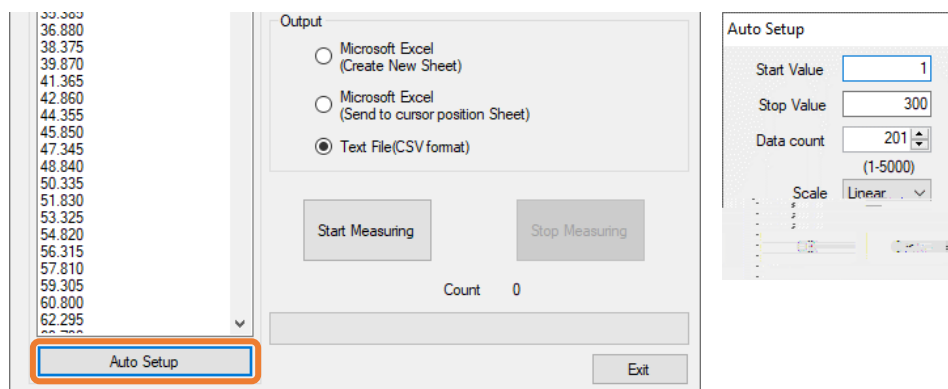


Figure 3-4 Sweep point automatic setup screen

Example CSV file saved during frequency/voltage/current characteristics measurement

MODEL,IM7580A
Serial NO.,000000000
Ver,V1.24

DATE,2023-05-23
TIME,16:03:48

AC SETTINGS
FREQ,300.0000,MHz
P,0.0,dBm
SPEED,MEDIUM
AVG,OFF
DELAY,0.00000,s
TRIG SYNC,OFF

(MHz),AC Status,Z,PH,AC Vmoni,AC Imoni
1.0000,3, 97.9488E+03, 93.910, 446.985E-03, 4.56346E-06
2.4950,3, 27.7508E+03, 90.733, 446.409E-03, 16.0864E-06
3.9900,3, 16.6861E+03, 91.835, 445.878E-03, 26.7214E-06
5.4850,3, 12.0800E+03, 92.763, 445.370E-03, 36.8684E-06
6.9800,3, 9.55111E+03, 93.633, 444.885E-03, 46.5793E-06
:

(3)

You can make measurements at a user-specified time interval. Measurement data can be saved as a Microsoft Excel or CSV file.

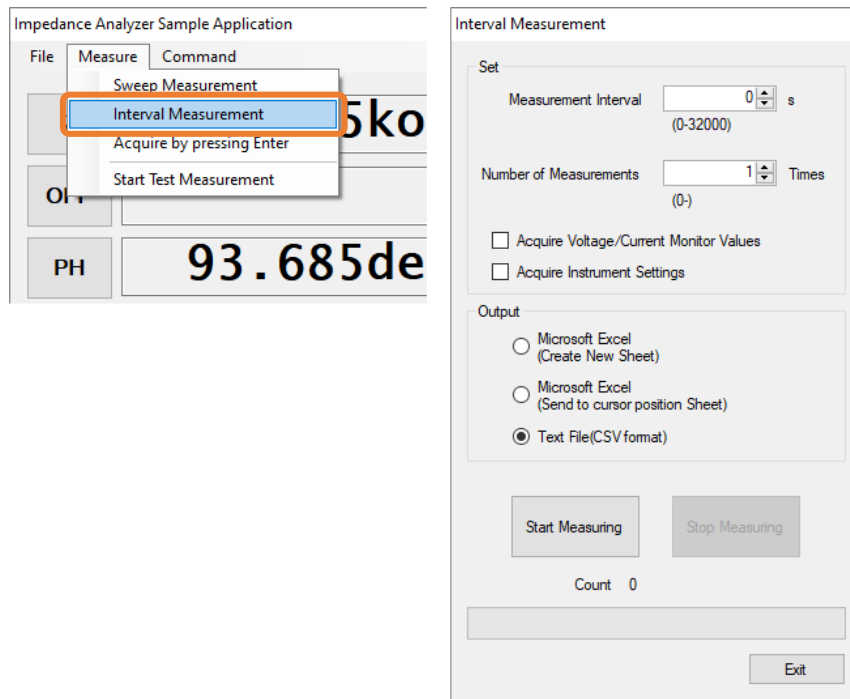


Figure 3-5 Time interval measurement screen

Example CSV file saved during time interval measurement

```
MODEL,IM7580A
Serial NO.,000000000
Ver,V1.24

DATE,2023-05-23
TIME,16:05:57

AC SETTINGS
FREQ,300.0000,MHz
P,0.0,dBm
SPEED,MEDIUM
AVG,OFF
DELAY,0.00000,s
TRIG SYNC,OFF

DATE,TIME,AC Status,Z,PH,AC Vmoni,AC Imoni
2023-05-23,16:05:57,3, 189.283E+00, 81.252, 353.765E-03, 1.86898E-03
2023-05-23,16:05:57,3, 189.270E+00, 81.251, 353.760E-03, 1.86908E-03
2023-05-23,16:05:57,3, 189.277E+00, 81.250, 353.763E-03, 1.86902E-03
2023-05-23,16:05:57,3, 189.286E+00, 81.252, 353.766E-03, 1.86895E-03
2023-05-23,16:05:57,3, 189.276E+00, 81.249, 353.762E-03, 1.86903E-03
:
```

(4)

You can make measurements whenever the ENTER key is pressed. Measurement data can be saved as a Microsoft Excel or CSV file.

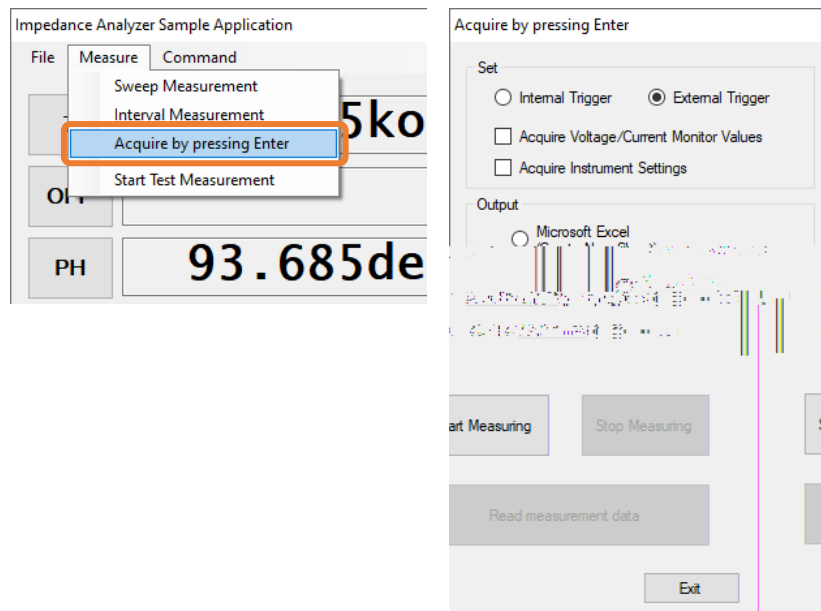


Figure 3-6 "Acquire by pressing ENTER" screen

Example CSV file saved during "acquire by pressing ENTER" measurement

```
MODEL,IM7580A
Serial NO.,000000000
Ver,V1.24

DATE,2023-05-23
TIME,16:08:43

AC SETTINGS
FREQ,300.0000,MHz
P,0.0,dBm
SPEED,MEDIUM
AVG,OFF
DELAY,0.00000,s
TRIG SYNC,OFF

DATE,TIME,AC Status,Z,PH,AC Vmoni,AC Imoni
2023-05-23,16:08:44,3, 189.288E+00, 81.251, 353.767E-03, 1.86893E-03
2023-05-23,16:08:44,3, 189.293E+00, 81.254, 353.769E-03, 1.86889E-03
2023-05-23,16:08:45,3, 189.291E+00, 81.249, 353.768E-03, 1.86891E-03
2023-05-23,16:08:45,3, 189.277E+00, 81.257, 353.763E-03, 1.86902E-03
2023-05-23,16:08:45,3, 189.290E+00, 81.253, 353.768E-03, 1.86892E-03
:
```

(5)

You can perform a series of measurements under the set measurement conditions and display the results.

To start test measurement, choose [Start Test Measurement] on the [Measure] menu.

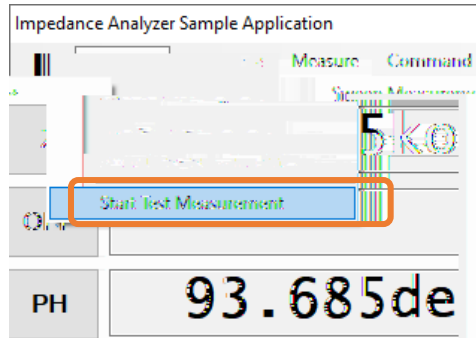


Figure 3-7 "Start Test Measurement" menu command

To stop test measurement, choose [Stop Test Measurement] on the [Measure] menu.

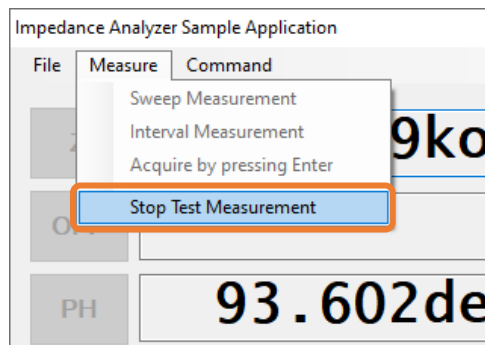


Figure 3-8 "Stop Test Measurement" menu command

You can perform measurements in ANALYZER mode. You can save a graph of measured values as a BMP file, or a list of measured values as a CSV file.

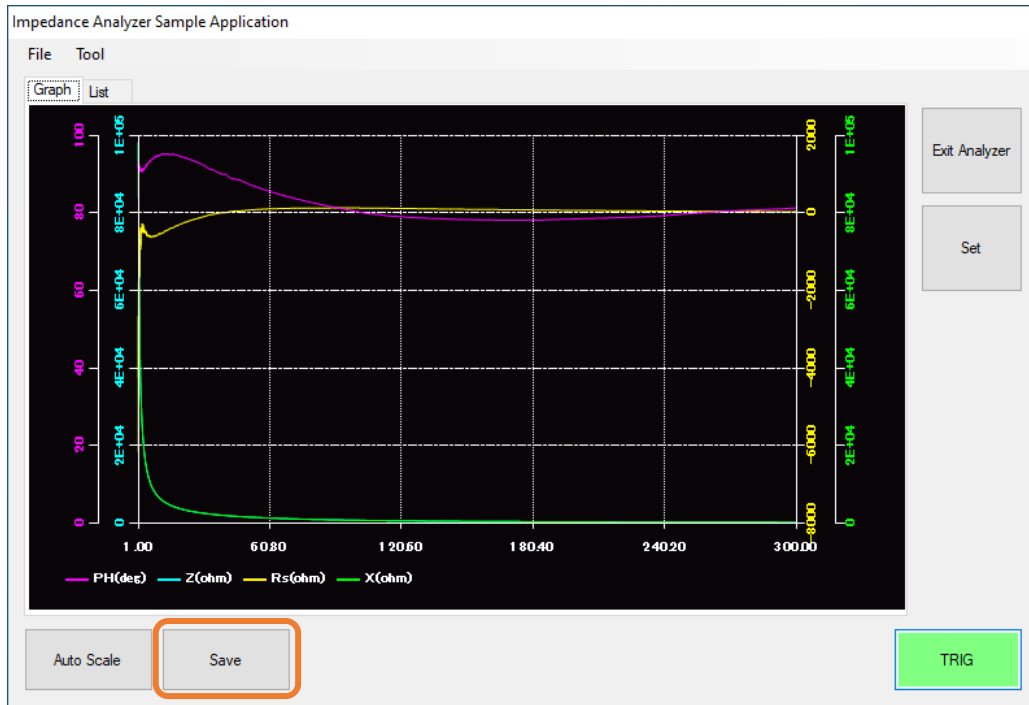


Figure 4-1 ANALYZER mode graph screen

The list screen displays a table of measured values. The 'List' tab is selected. The table has 6 columns: No, FREQUENCY(MHz), Z(ohm), PH(deg), Rs(ohm), and X(ohm). The 'Save' button is highlighted with an orange border.

No	FREQUENCY(MHz)	Z(ohm)	PH(deg)	Rs(ohm)	X(ohm)
1	1.0000	98212.7000	93.6020	-6170.9300	98018.7000
2	1.0289	93464.7000	91.6400	-2674.9900	93426.4000
3	1.0587	87833.5000	92.7780	-4256.8800	87730.3000
4	1.0893	83952.4000	91.2190	-1785.6900	83933.4000
5	1.1208	79851.7000	91.7880	-2491.7200	79812.8000
6	1.1533	75835.5000	92.0910	-2767.1100	75785.0000
7	1.1866	71980.3000	91.6440	-2064.7400	71950.6000
8	1.2210	68337.9000	92.5130	-2995.7800	68272.2000
9	1.2563	65297.5000	91.7680	-2014.4800	65266.5000
10	1.2926	63022.0000	91.5660	-1721.9400	62998.5000
11	1.3300	60918.2000	91.5830	-1682.8300	60894.9000
12	1.3685	58273.9000	90.7730	-786.6410	58268.6000
13	1.4081	55427.3000	91.2640	-1222.4700	55413.8000
14	1.4488	53757.1000	91.7690	-1659.7900	53731.5000
15	1.4907	51239.3000	91.7560	-1570.5000	51215.2000
16	1.5339	50094.4000	91.4070	-1230.0700	50079.3000
17	1.5782	47631.2000	91.2820	-1065.5600	47619.3000

Figure 4-2 ANALYZER mode list screen

(1)

You can set the measurement conditions to use in ANALYZER mode.

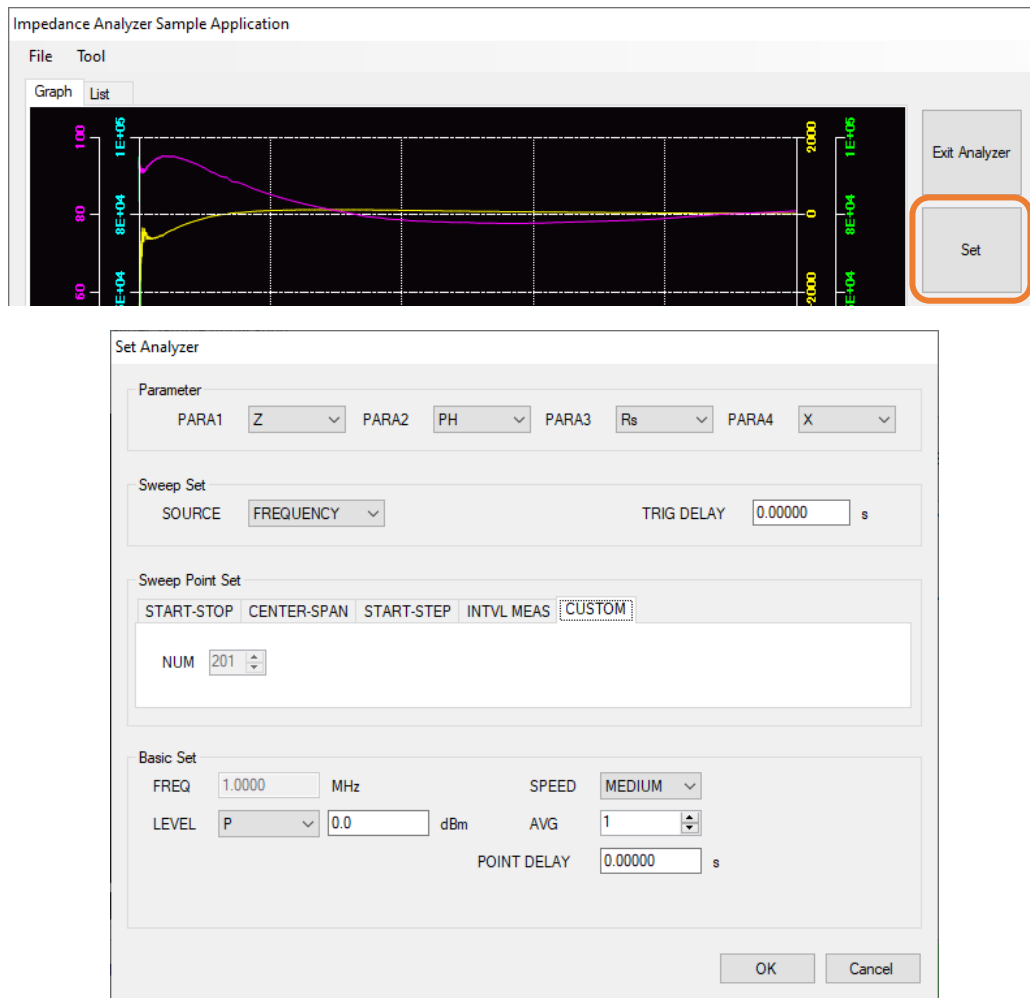
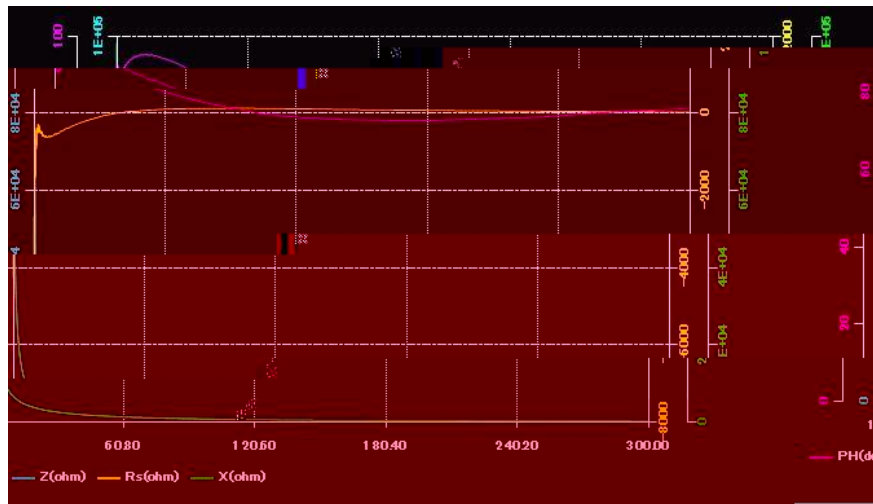


Figure 4-3 ANALYZER settings screen

*Changing the sweep point setting invalidates the calibration.

(3)



(4)

No.	FREQUENCY(MHz)	Z	PH	Rs	X
1	1.0000	98212.7000	93.6020	-6170.9300	98018.7000
2	1.0289	93464.7000	91.6400	-2674.9900	93426.4000
3	1.0587	87833.5000	92.7780	-4256.8800	87730.3000
4	1.0893	83952.4000	91.2190	-1785.6900	83933.4000
5	1.1208	79851.7000	91.7880	-2491.7200	79812.8000
6	1.1533	75835.5000	92.0910	-2767.1100	75785.0000
7	1.1866	71980.3000	91.6440	-2064.7400	71950.6000
8	1.2210	68337.9000	92.5130	-2995.7800	68272.2000
9	1.2563	65297.5000	91.7680	-2014.4800	65266.5000
10	1.2926	63022.0000	91.5660	-1721.9400	62998.5000

:

You can set measurement conditions and calculate the measurement accuracy.

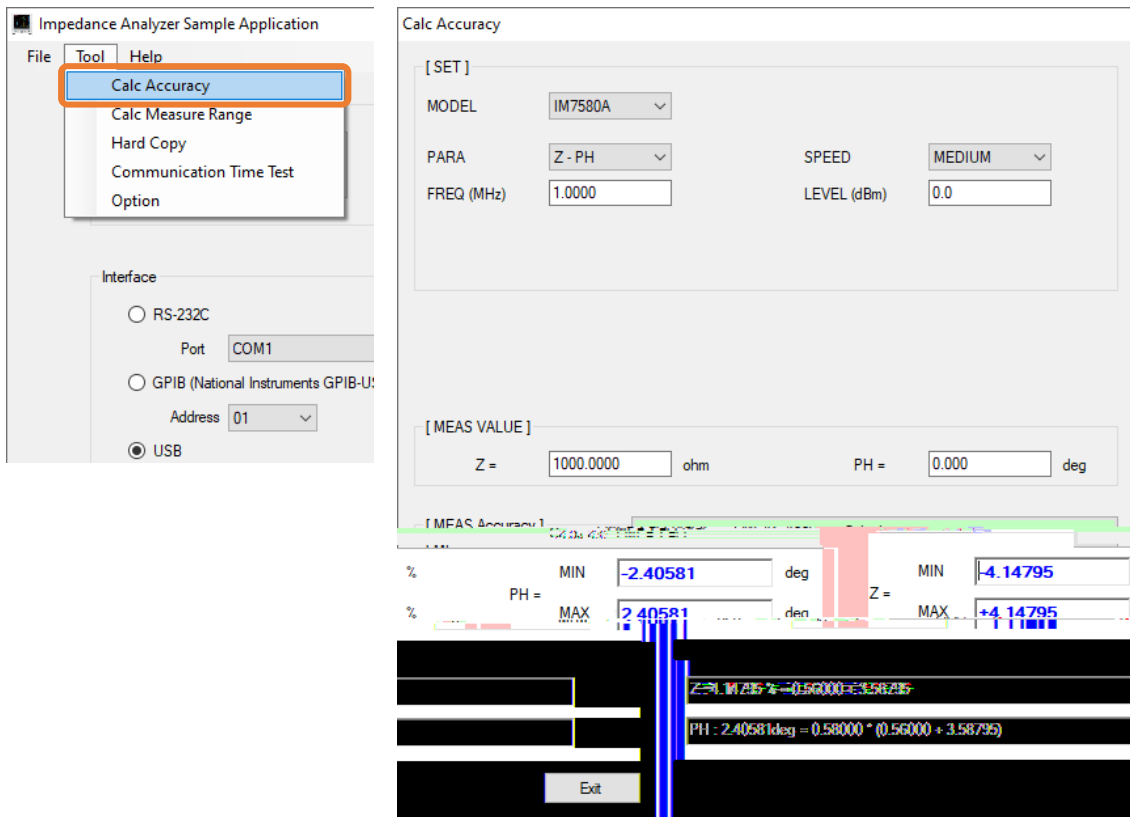


Figure 5-1 Accuracy calculation screen

You can set measurement conditions and calculate the measurement range.

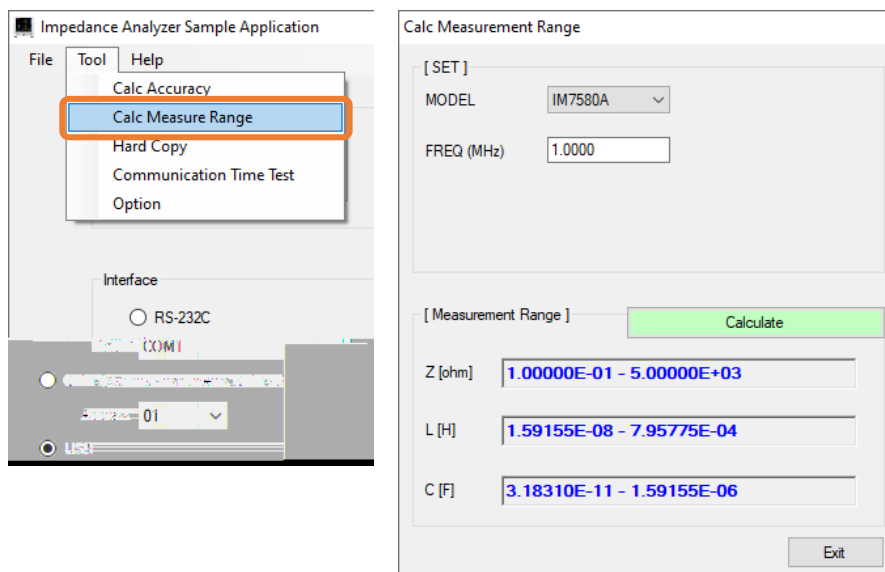


Figure 6-1 Measurement range calculation screen

You can save the measurement screen as a BMP file.

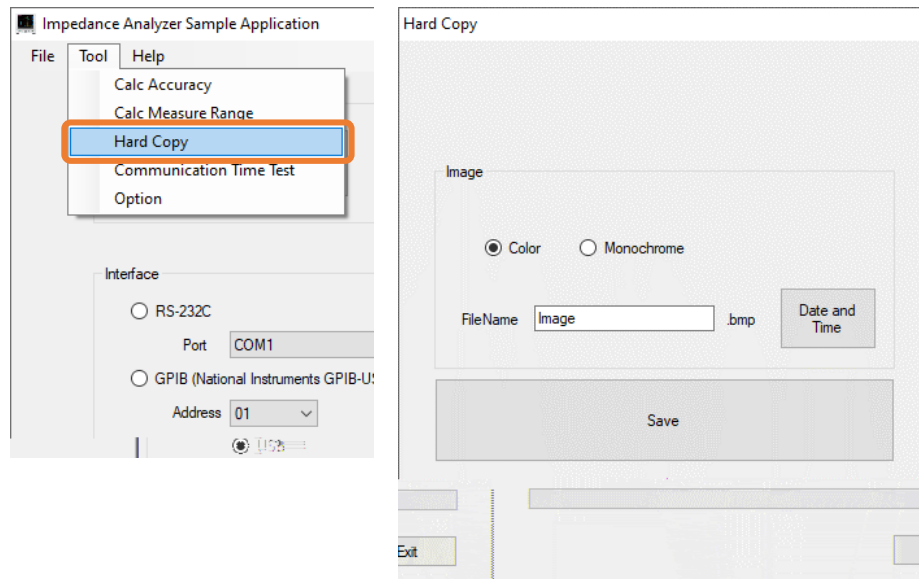


Figure 7-1 Screenshot screen

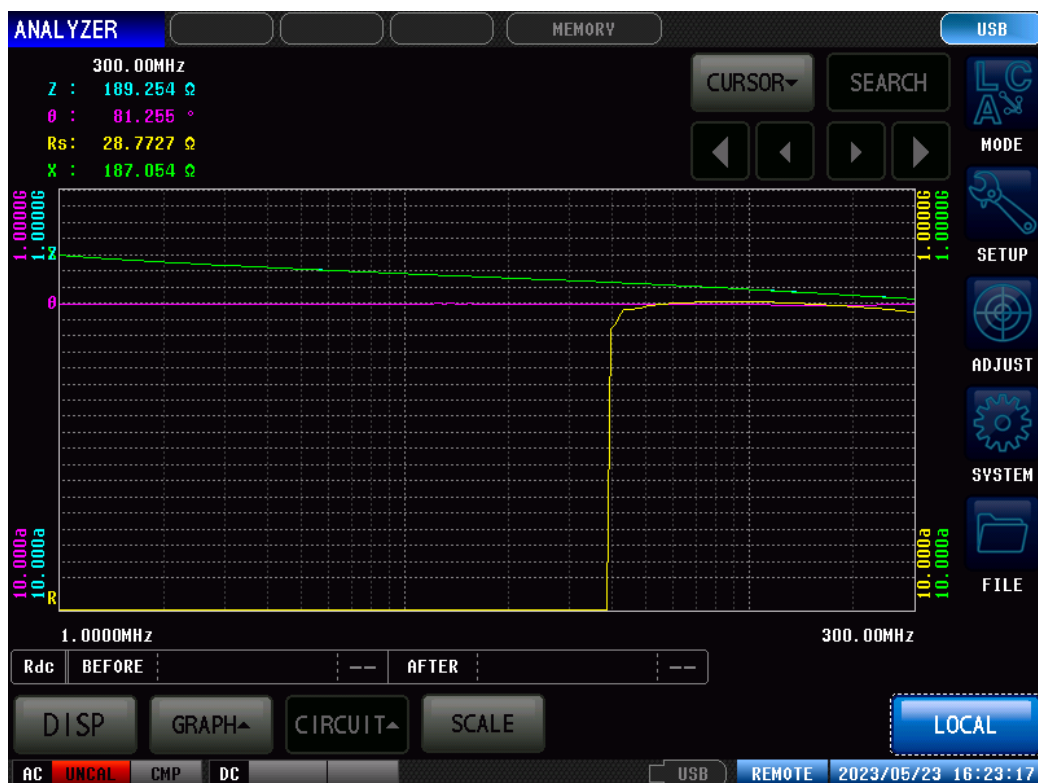


Figure 7-2 Example BMP file created by saving the measurement screen

You can send a communications command and measure the communication time.

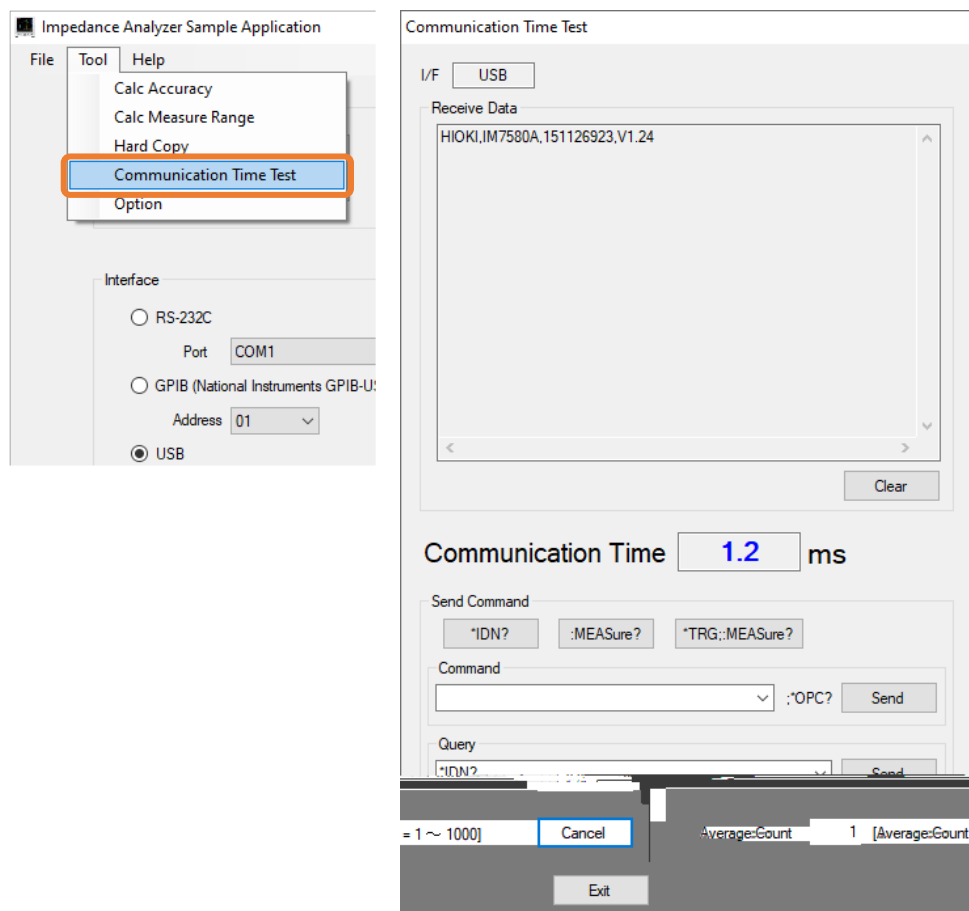


Figure 8-1 Communication time measurement screen

You can set the display language and CSV save format.

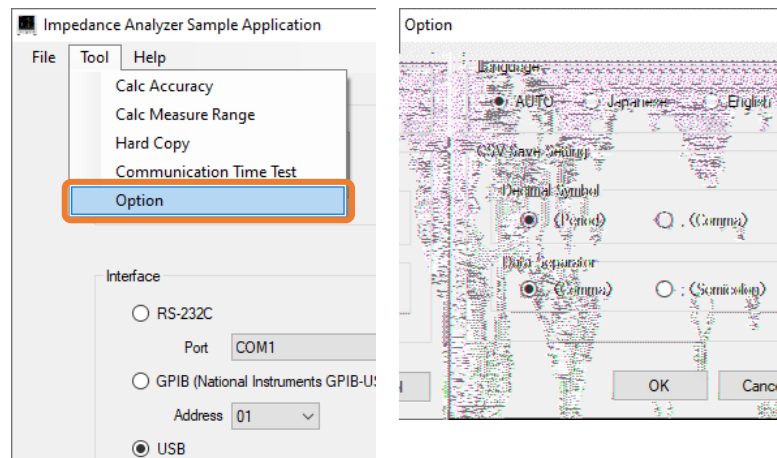


Figure 9-1 Option screen

(1)

You can set the display language.

"AUTO" will automatically switch to the language of the OS.

(2)

You can set the CSV save format.