SpectrumShot

Software for the GSP-9300 Spectrum Analyzer

QUICK START GUIDE

REVISION 1.1 JULY 2014

ISO-9001 CERTIFIED MANUFACTURER

GW INSTEK

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Good Will Instrument Co., Ltd.

No. 7-1, Jhongsing Rd., Tucheng Dist., New Taipei City 236, Taiwan.

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SOFTWARE INSTALLATION

Before running SpectrumShot, first install the NI-488.2 software. You can download the NI-488.2 software from the National Instruments website.

Please Visit: http://www.ni.com

GSP-9300 spectrum analyzer users can download SpectrumShot from the official GW Instek website.

Please Visit: http://www.gwinstek.com/en/index.aspx

SpectrumShot allows you to use simple mouse-controlled tools to work with the GSP-9300 Spectrum Analyzer.

The software can be run with any PC using Windows 8(32/64 bit), Windows 7 (32/64 bit), Vista or XP operating systems.

To install SpectrumShot, select the spectrumshotsetup.msi file. The Setup Wizard will guide you through the installation process.

REMOTE CONTROL INTERFACE SETTING

GSP-9300 spectrum analyzer has four different remote control interfaces: GPIB, RS-232, LAN, and USB.

The remote control interface can be set by pressing:

System → More 1/2 [F7] → RmtInterface Config [F2].

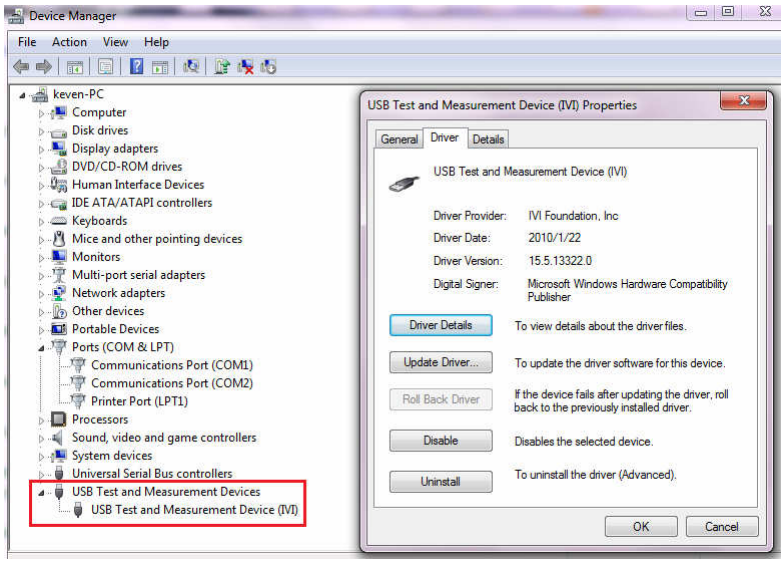
This will allow you to set up the GPIB Address, LAN IP Address, RS-232 Baud Rate and USB Mode.

You can follow the following instructions to ensure that the spectrum analyzer is successfully recognized by the PC.

USB Interface

As can be seen above, to perform remote control via the USB interface, the USB Mode should be changed from Host to Device so that the spectrum analyzer can be detected by the PC.

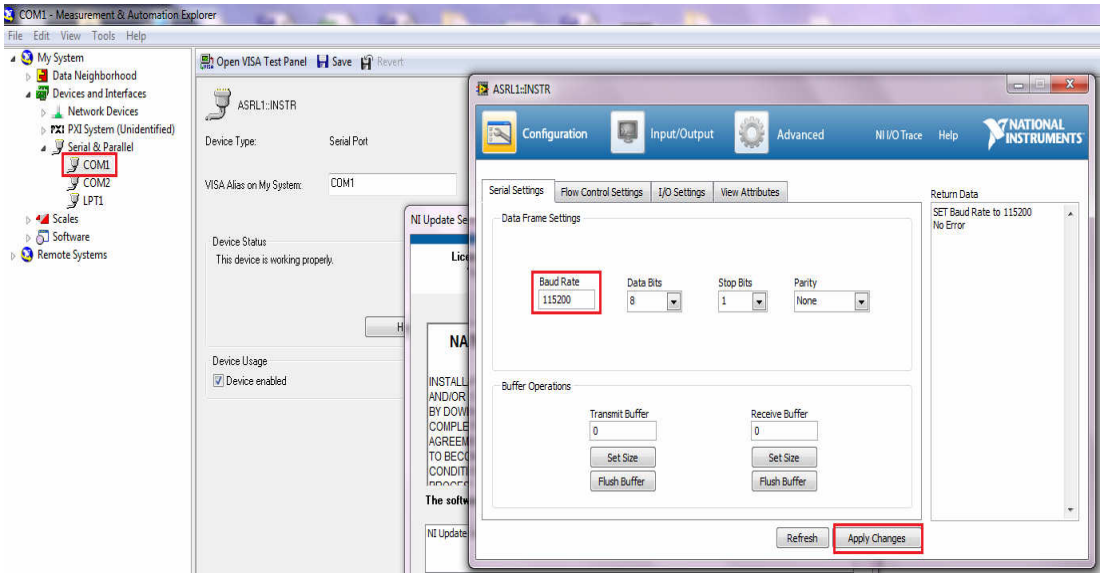
You can check that the spectrum analyzer IVI driver is recognized by the PC by going to the Windows Device Manager via the Windows Control Panel.



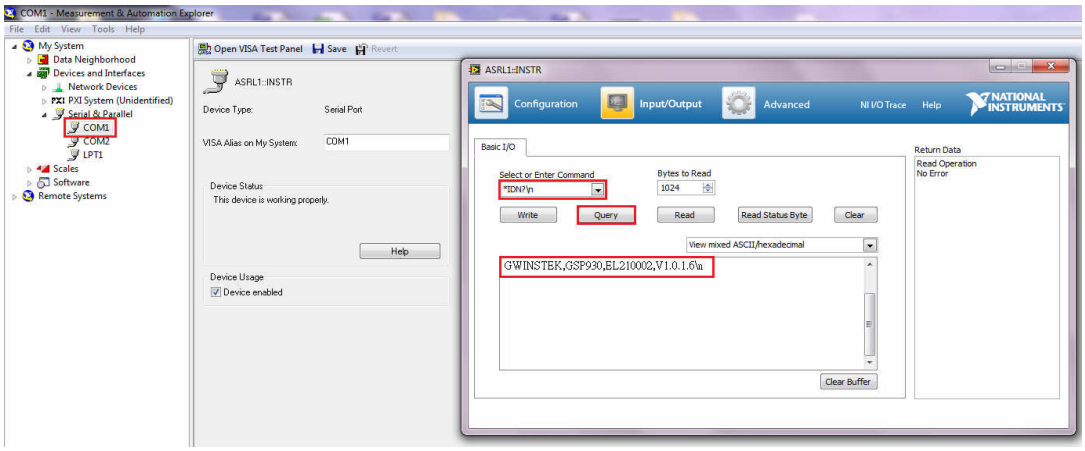
RS232 Interface

If you need to control the spectrum analyzer using the RS-232 interface, the RS-232 Baud Rate should be set first. The spectrum analyzer has a default baud rate of 115200.

You can use the NI 488.2 software to verify whether the connection is successful. You can also set the Baud Rate to 115200 in NI 488.2. Make sure to use the correct COM port. The COM port used depends on the PC. In the diagram below for example, we have used COM port one.

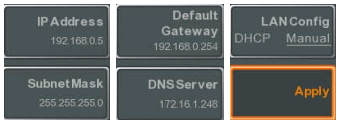


To check that data can be read from the spectrum analyzer, you can go to the NI 488.2 Input/Output setting and execute the *IDN?\n command.



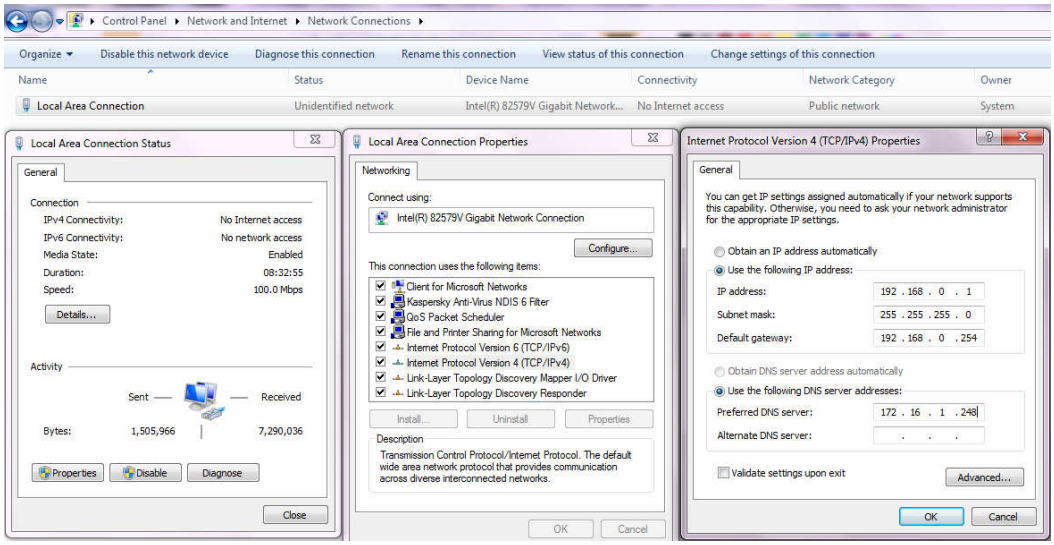
LAN Interface

If you need to control the spectrum analyzer using the LAN interface, the IP address must be set first. By default, the IP address setting is set to DHCP. When using DHCP an Ethernet Hub or Switch will automatically detect a DHCP device.

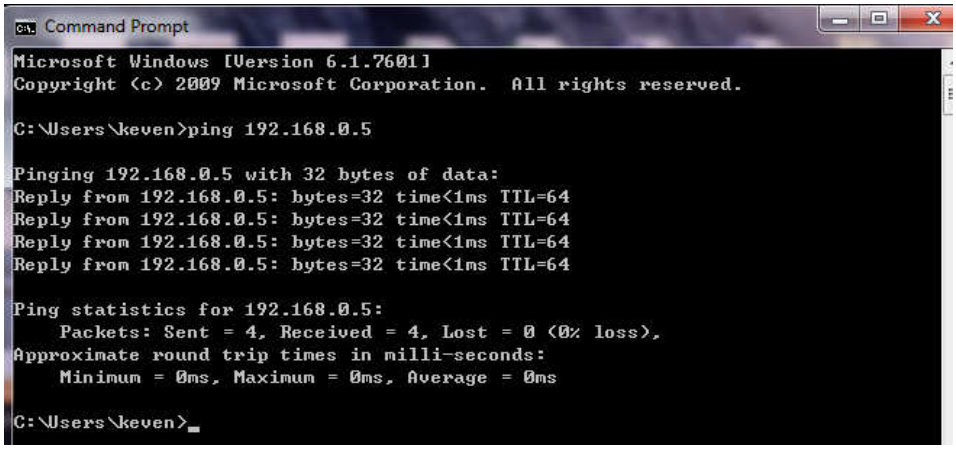


If you need to manually set the IP address to directly connect with a computer, please follow the figures shown above. After setting the spectrum analyzer IP address, select Apply [F6] to finish the setup.

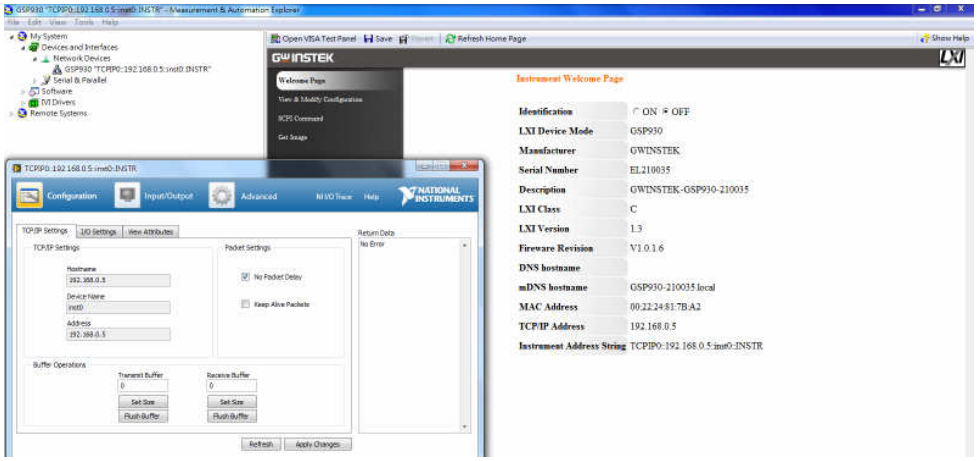
Besides manually setting up spectrum analyzer IP address, the IP address on the PC should be under the same domain, please refer to the figure below.



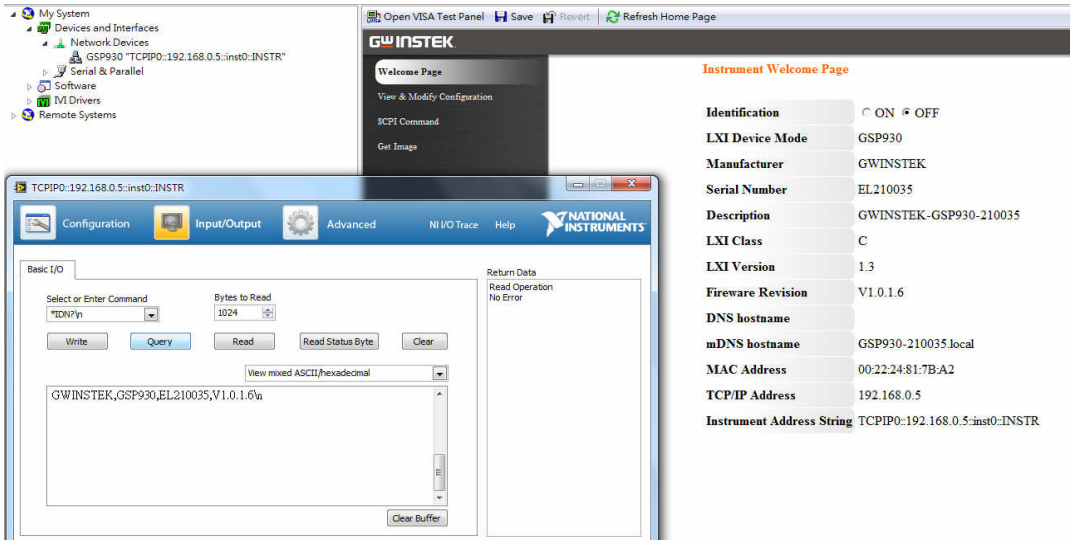
You can ping the IP to verify whether the connection is successful or not. Please refer to the diagram below that shows a successful connection.



You can also use NI 488.2 software to verify whether the connection has been completed. Please refer to the diagram below.



To check that data can be read from the spectrum analyzer, you can go to the NI 488.2 Input/Output setting and execute the *IDN?\n command.



GPIB Interface

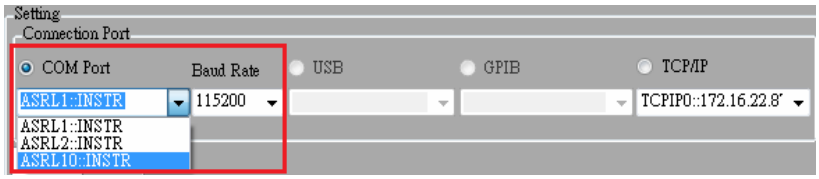
If you need to control the spectrum analyzer using the GPIB interface, the GPIB address must be set first. By default, the GPIB address is 3. GPIB is an optional extra.

If you need to use the NI GPIB to USB Adaptor (GWInstek GTL-251), then the NI-488.2 driver should be installed in advance.

You can use the NI 488.2 software to verify whether the connection is connected successfully, the procedure is similar to the LAN verification above.

The default interface for SpectrumShot is RS-232. When a PC cannot recognize the spectrum analyzer USB or GPIB Modules, 'Invalid' will be displayed on the USB and GPIB interfaces on SpectrumShot.

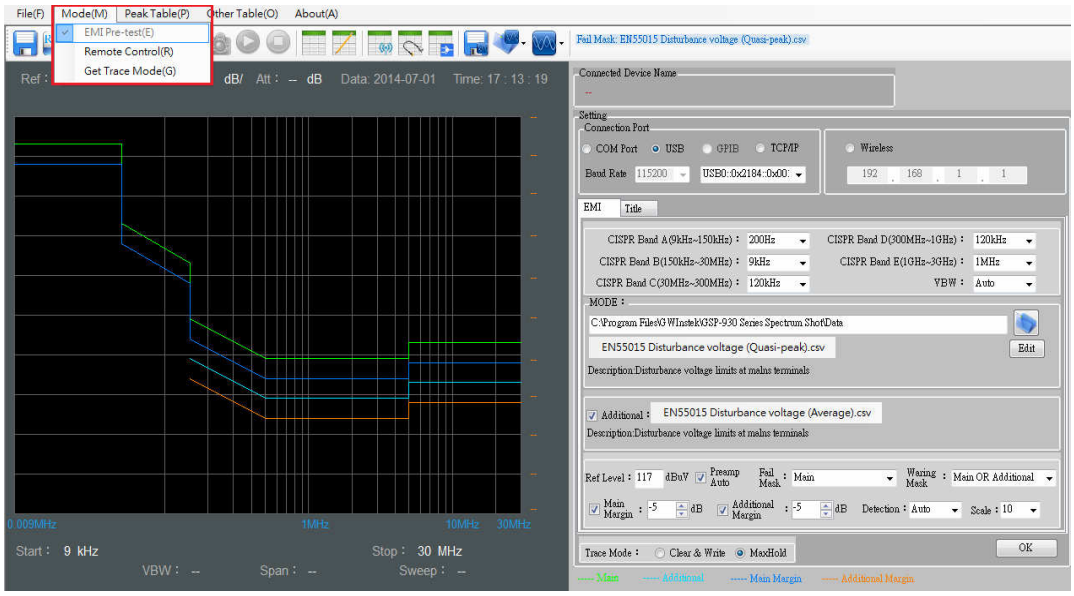
If the RS-232 COM Port interface is used, The RS-232 Baud Rate in SpectrumShot needs to be same as baud rate shown for the COM port that is used by the spectrum analyzer.



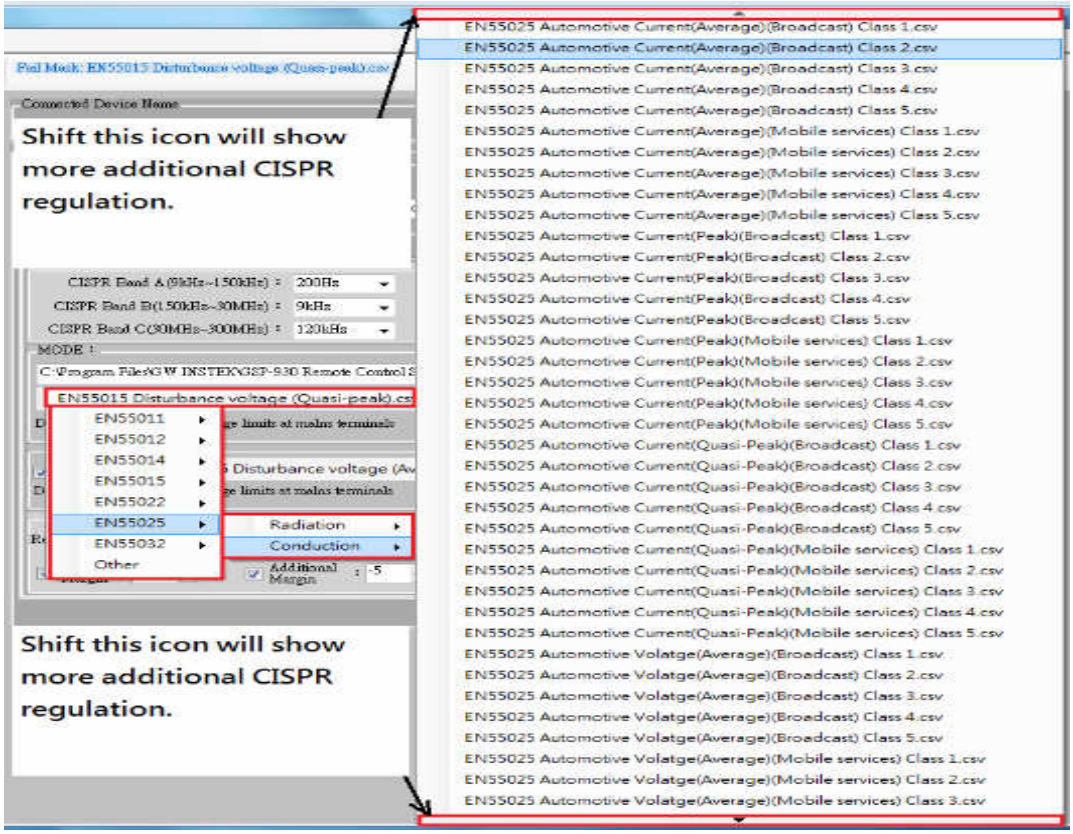
When the PC recognizes the spectrum analyzer, the USB interface will be valid and ready to use when SpectrumShot is turned on.

SPECTRUMSHOT SOFTWARE EMI PRE-TEST MODE

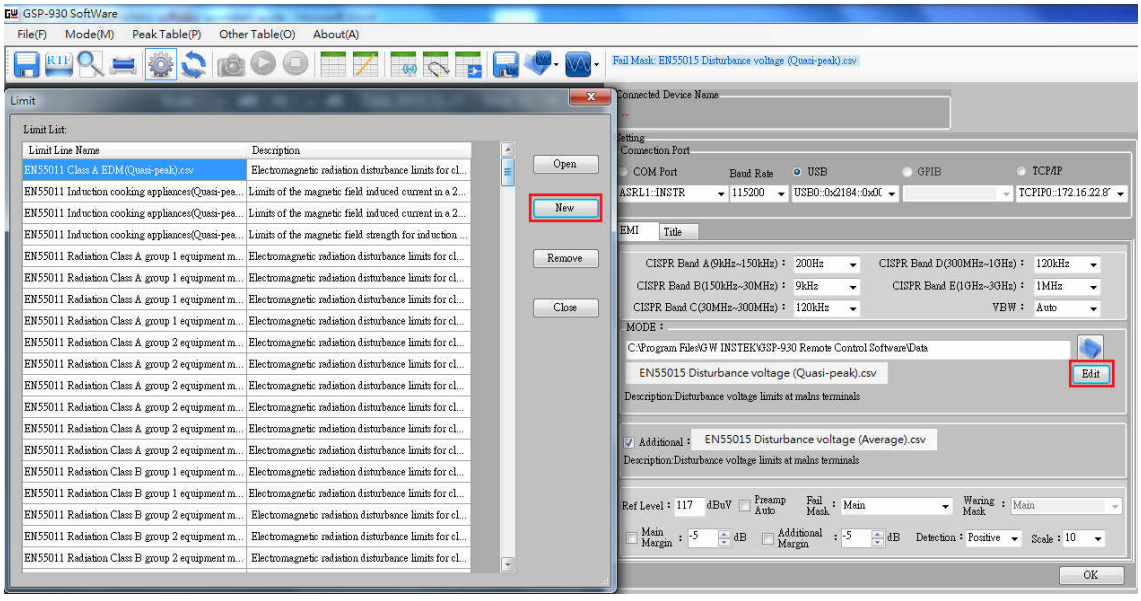
The default mode of SpectrumShot is EMI Pre-test mode.

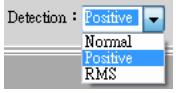


You can select the required CISPR EMI regulation, including conduction and radiation measurement within SpectrumShot.

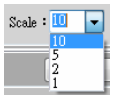


If you wish to establish related regulations, you can set these by pressing the 'Edit' button, then 'New'.

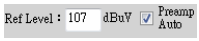




The default Detector is Normal detector, which can switched to Positive peak detector to search the peak point.

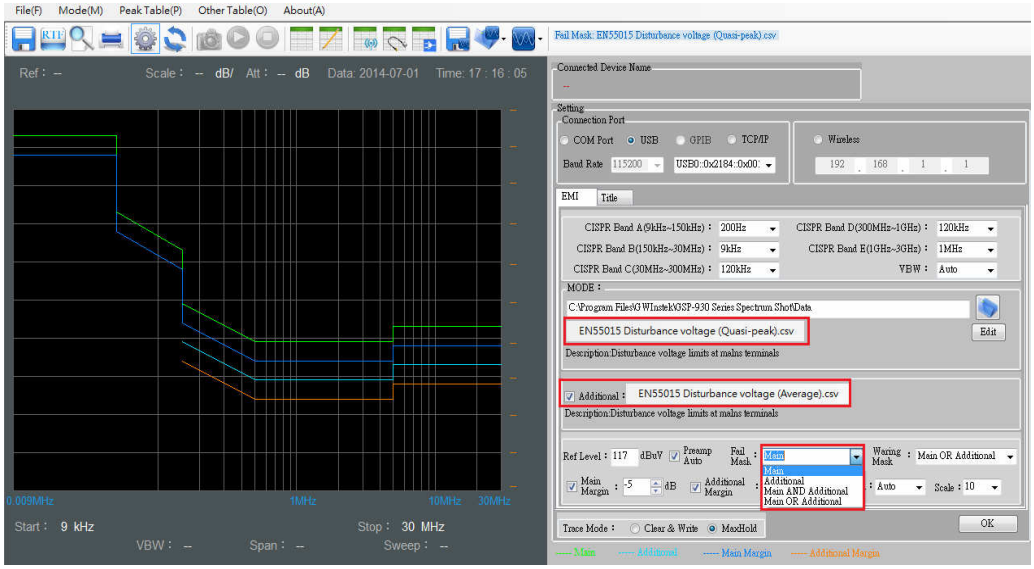


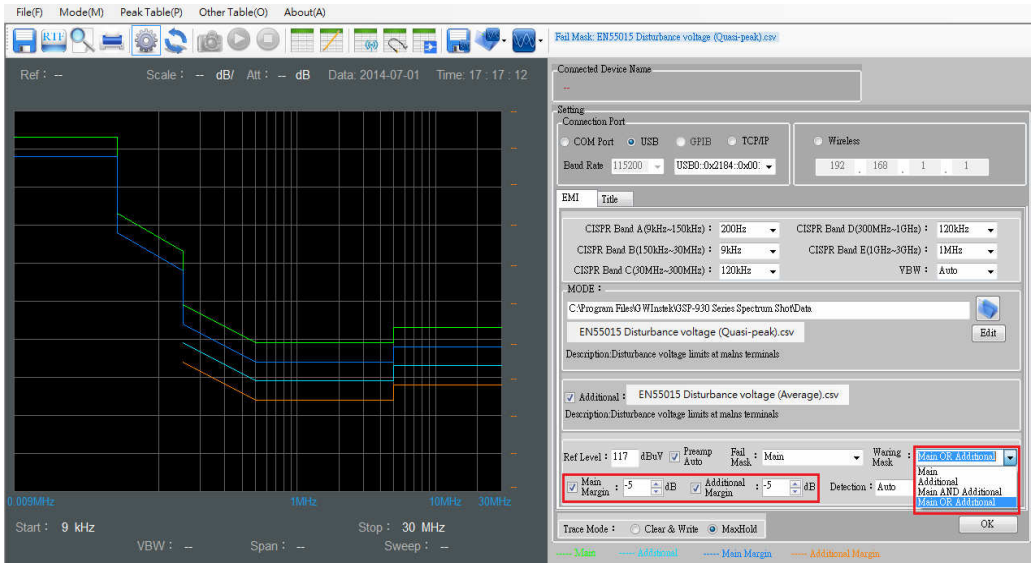
The default Scale is 10dB / div.



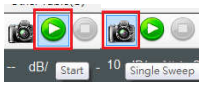
The default Ref level is 107dBuV (0dBm). The preamplifier will be turned on while the Ref Level is equal to or less than 77dBuV (-30dBm). When performing a general conduction test, the Ref Level is set between 117~107dBuV. However, the Ref Lev is set below 77dBuV when performing radiation measurements as this is mainly used for measuring weak interference signals.

Take the lighting regulation EN55015 for instance. If you wish to see the Quasi-peak and Average Limitation line simultaneously, you can tick the box next to 'Additional' in order to display the Average Limitation line. You may also choose one option from the 'Fail Mask' column if you need to run a PASS/FAIL judgment on the limitation line.



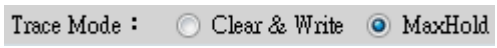


Press the OK button after finishing all the settings.



Press the green "play" button to execute the EMI Pretest mode and to perform a continuous sweep or select the 'camera' button to a run single sweep.

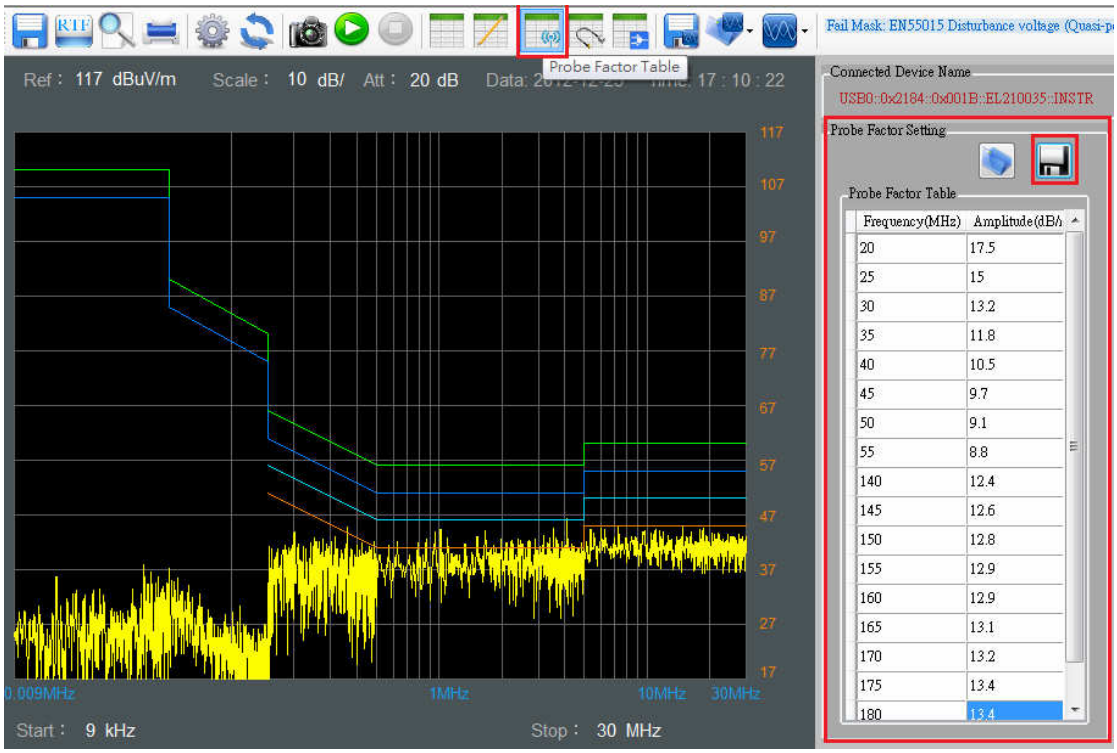
Press the orange "stop" button to stop the sweep function on the execution screen of SpectrumShot.



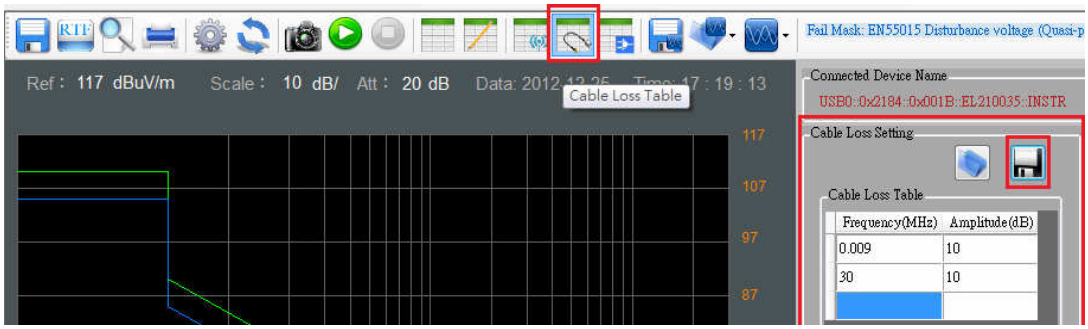
Clear & Write: The spectrum analyzer continuously updates the display with each sweep.

MaxHold: The maximum points are maintained for the selected trace. The trace points are updated each sweep if new maximum points are found.

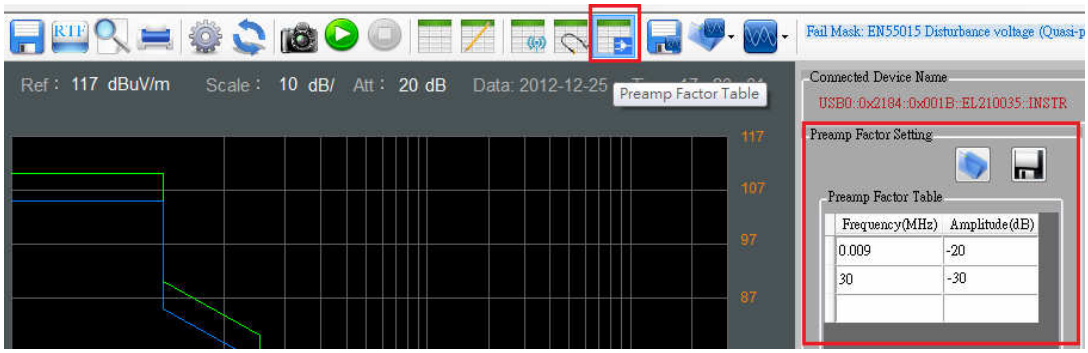
Take Broadband Biconical Antennas for example. If you need to insert a probe factor or a transducer factor, you can fill in the information in this column and save.



If you know the insertion loss of the cable, LISN, or pulse limiter, it can be inserted and stored in this column.

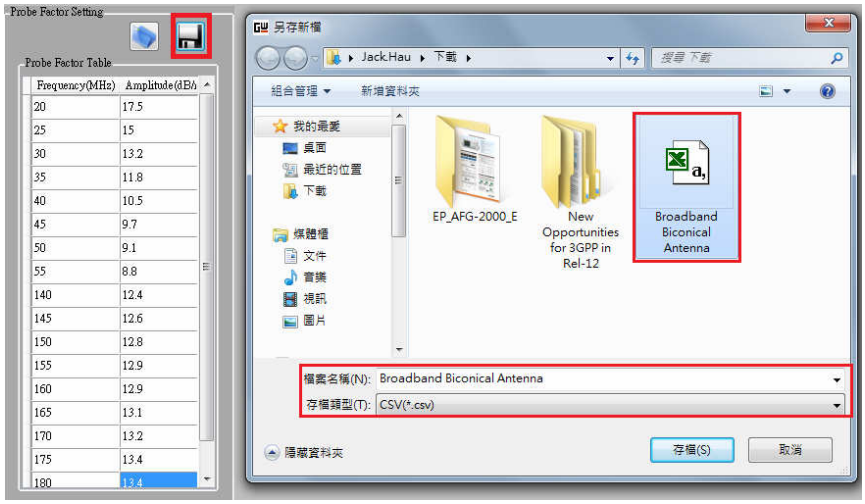


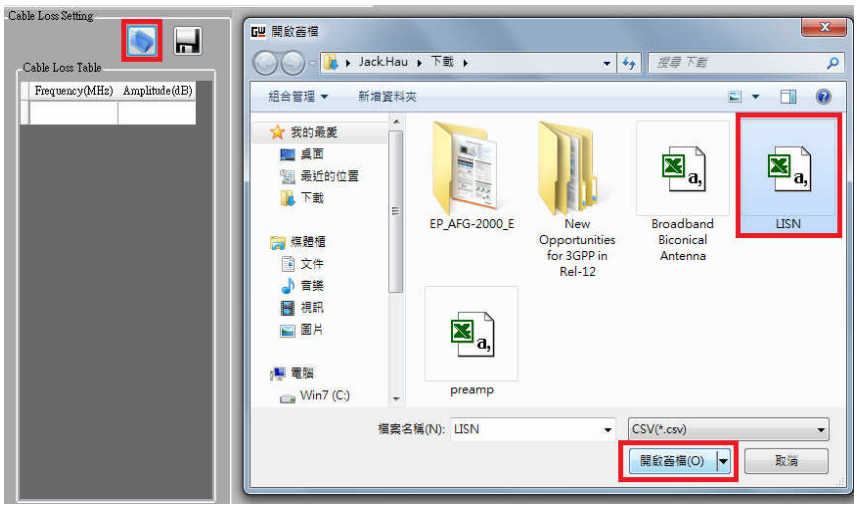
The Gain value should be set below zero when you connect the Spectrum Analyzer with external pre-amplifier.



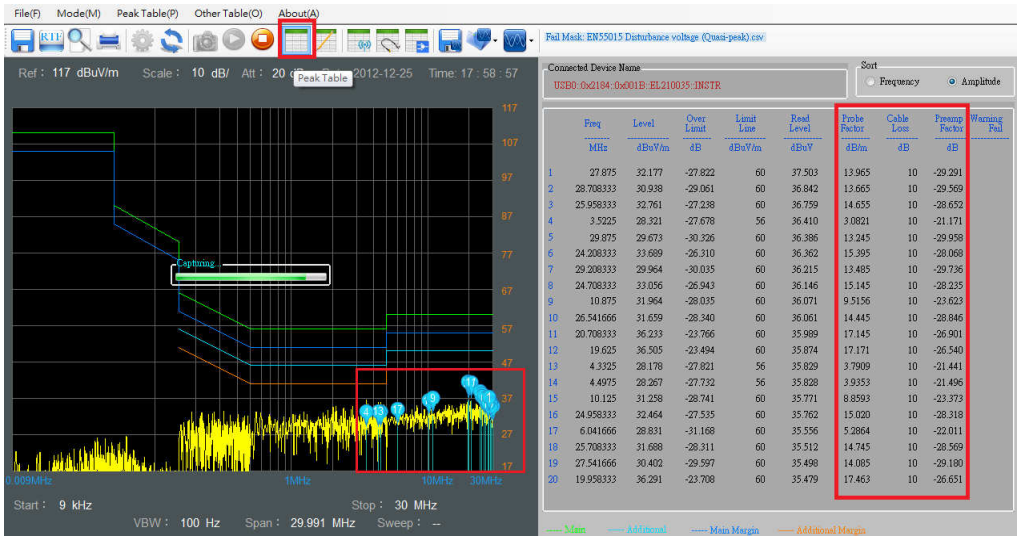
The Probe, cable loss and Pre-amp settings are saved in a *.csv format, which can be opened and edited by Microsoft Excel.

You can recall the Probe, cable loss and Pre-amp settings after restarting SpectrumShot.

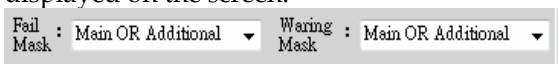


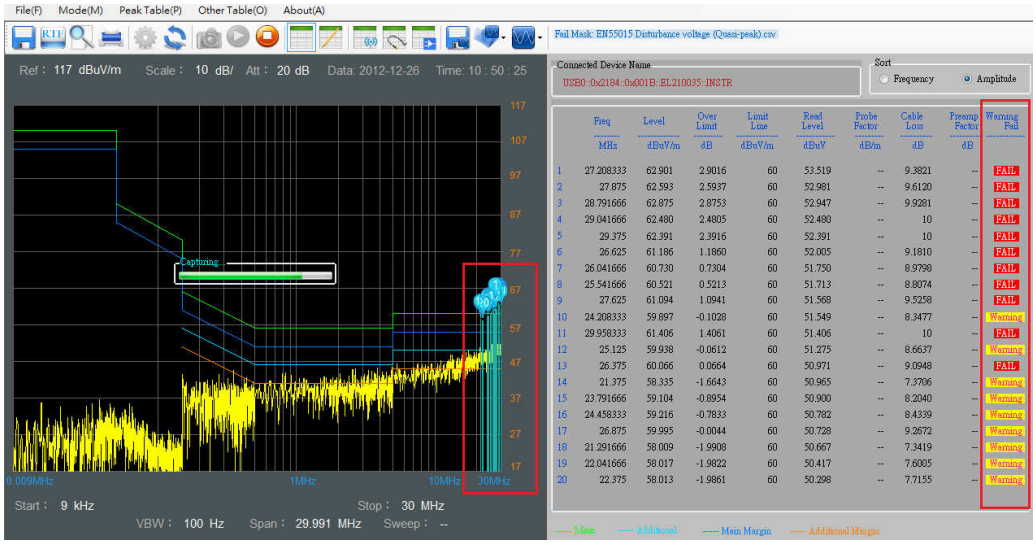


You can search the frequency and amplitude of the 'Warning or Fail' masks under the Peak Table option. Here, the the Probe factor, Cable loss or Preamp factor may also be shown on the diagram. The Peak Table option will search for 20 peak points in the test result.

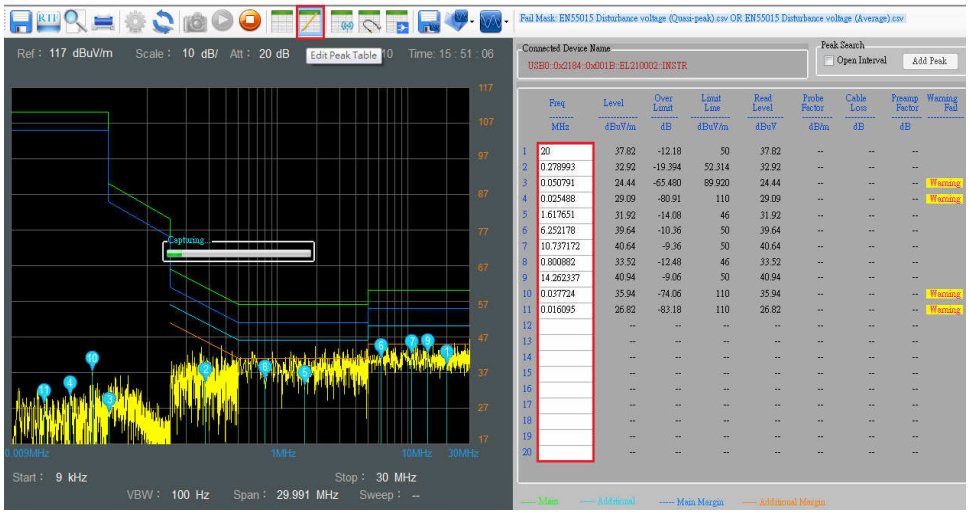


When some frequency points exceed the Fail/Warning Mask, 'Warning" or "Fail' will be displayed on the screen.



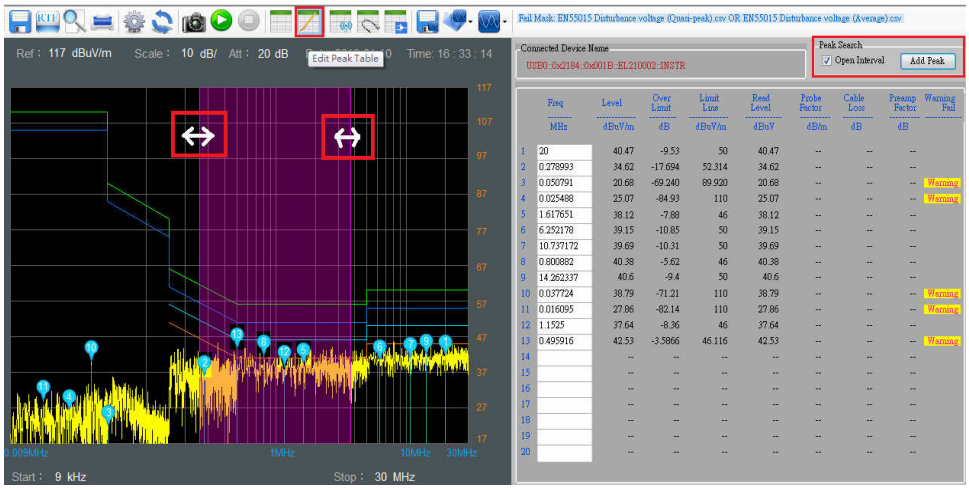


The peak points can be user-defined with the Edit Peak Table function. You can directly click the SpectrumShot test result with a mouse or fill-in the frequency column. Refer to the graph demonstrated below.



You can tick the 'Open Interval' check box in the Peak Search panel. A purple-colored background will be displayed on the screen to indicate the bandwidth.

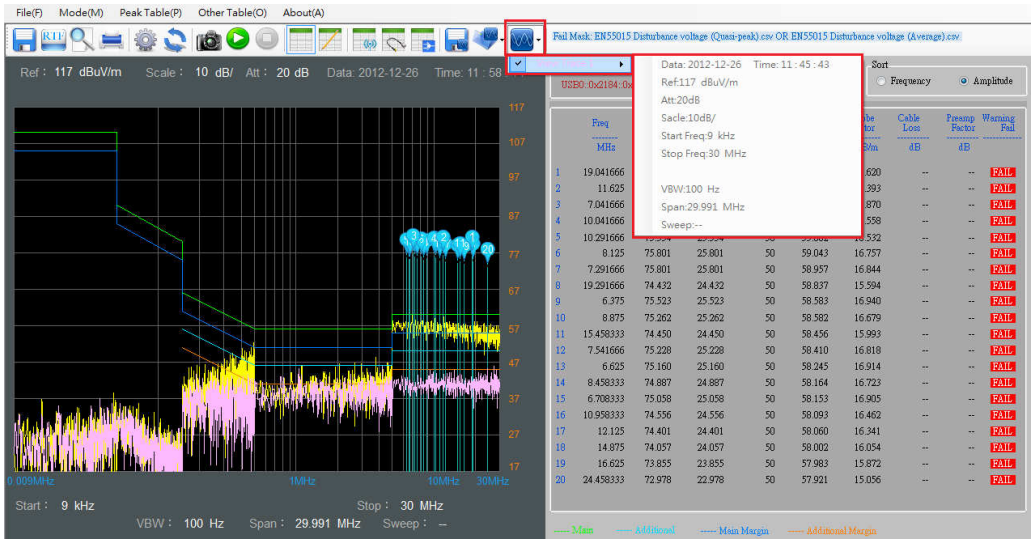
You can use the mouse on the purple background to redefine the bandwidth of the Add Peak Search function.



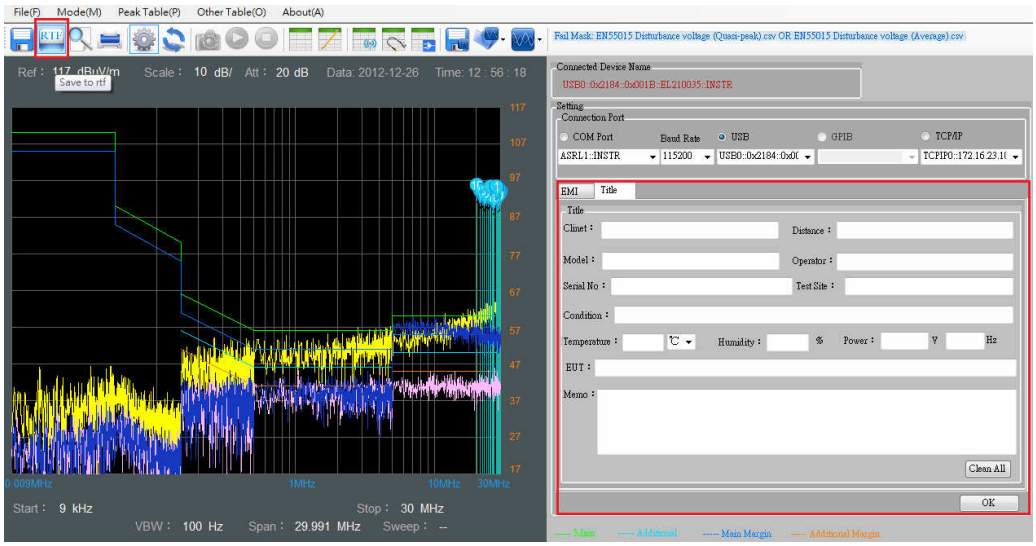
If you need to compare the test results from different DUTs, the test result can be saved as *.CSV file format.

When a *.CSV file is recalled to compare test results, a maximum 10 of test results can be displayed at the same time.

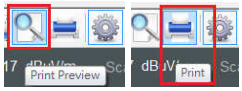
The following is a comparative test result. You can select the “Select View Trace” button to review the spectrum analyzer setting information for Trace 1.



If you want to store the test result of a DUT in a text file, you can press the ‘Save to rtf’ button. The tables will then be saved in the rich text file format(*.rtf). An informative description of DUT can be entered and saved under the “Title” tab.



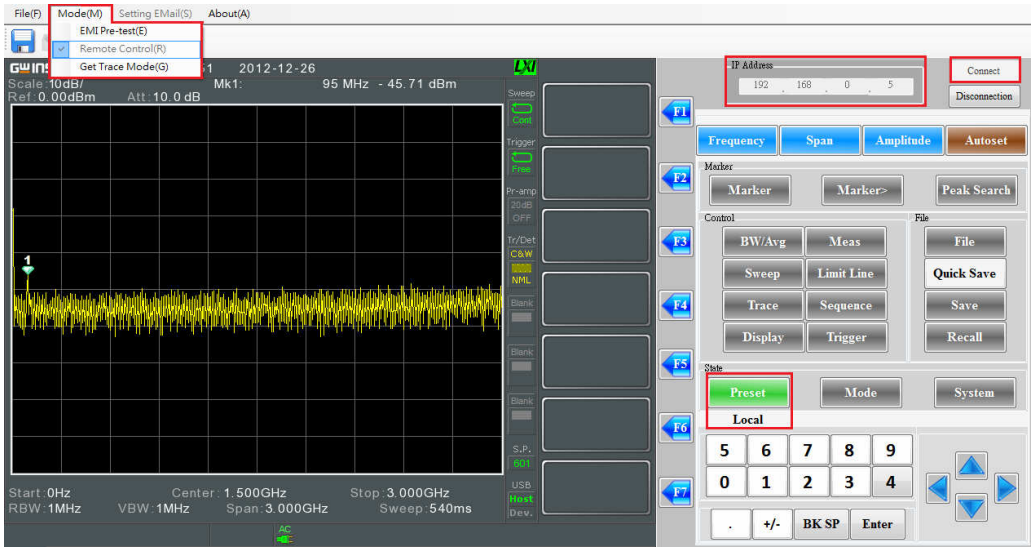
If you need to save the test result as a graph, you can select the ‘Save As’ button to store the result as a *.png file. These files have two save options, Normal or Save Toner.



You may click the ‘Print Preview’ button to preview the graph before printing out or you can click the ‘Print’ button to print the screen directly.

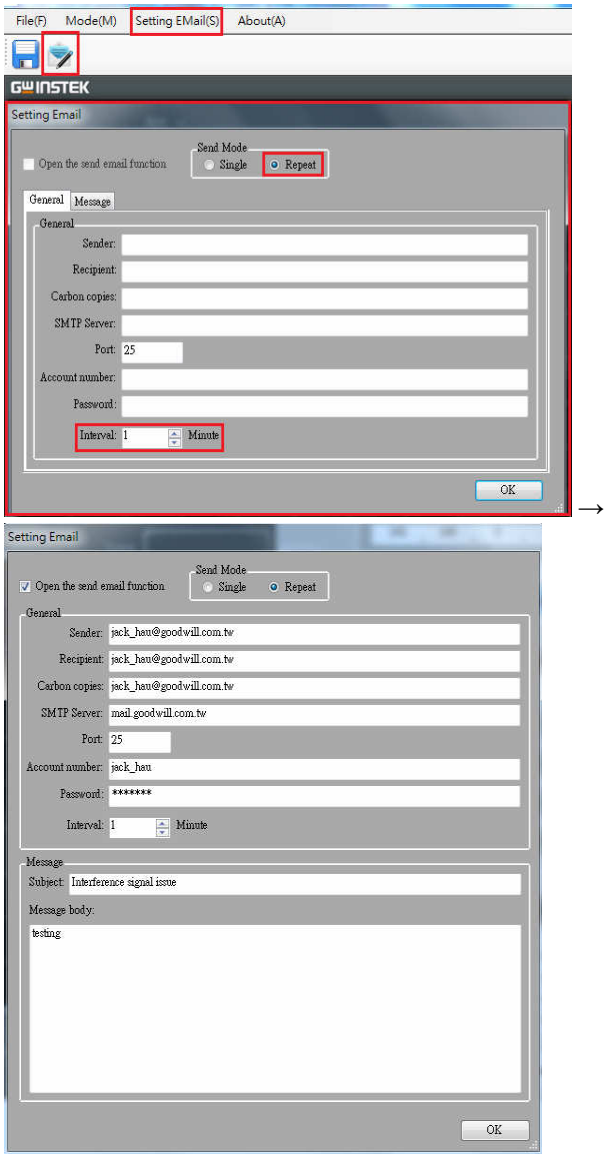
SPECTRUMSHOT SOFTWARE REMOTE CONTROL MODE

If you need to monitor wireless interference signals or to remotely observe signals for a long period of time, you can select the Remote Control mode. The LAN interface is required to connect to the spectrum analyzer under this mode. You can press the "Connect" button to make a connection.



Before connecting, you can set up the 'Setting Email' function. When the general account and message information is filled out, tick "Open the send email function" check box. When the test results match the original setting condition, SpectrumShot will automatically send an email to the address specified.

There are two Send Modes, Single and Repeat. Under the 'Repeat' Send Mode, you will automatically receive an email at a fixed time interval.

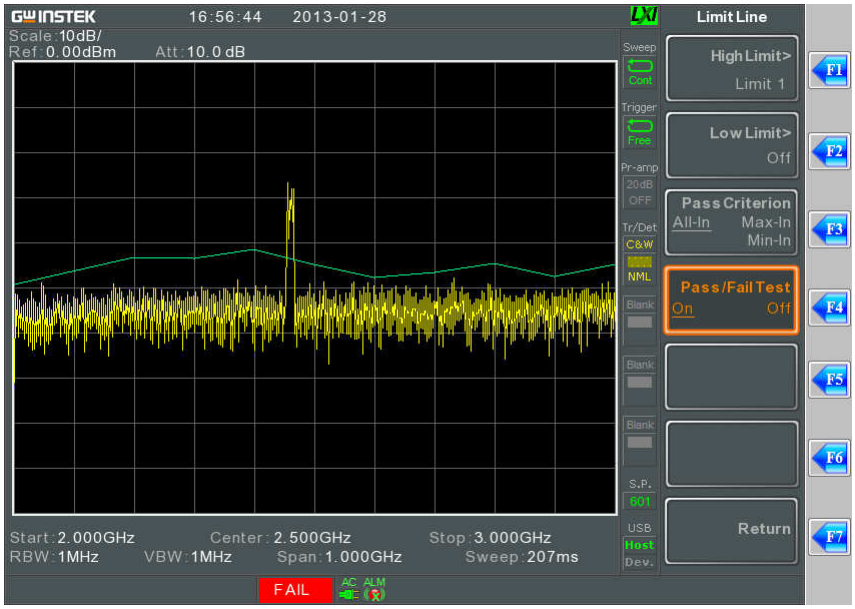


You can select 'Limit Line' to set the measurement triggering condition, the following is an example.

You can follow these steps to set up the Limit line:

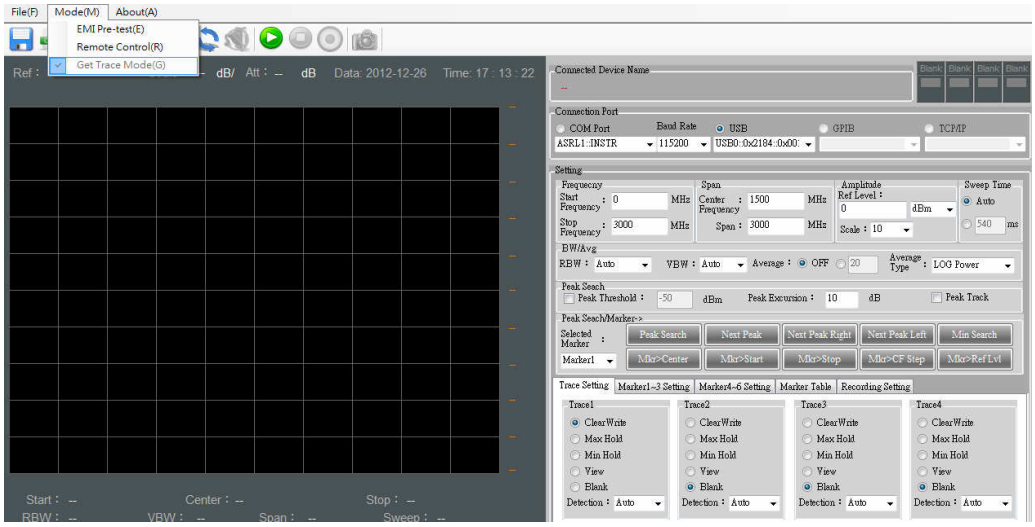
1. Press Limit Line
2. Press Edit Select Limit[F1]
3. Press Trace Data to Limit Line[F3]
4. Press Limit Offset[F2]
5. Enter the Offset Level (Enter the value '15')
6. Press dB [F1]

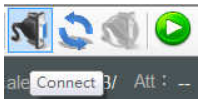
7. Press Create Limit Line Now [F1]
8. Press Return [F7] * twice
9. Press Pass/Fail Test [F2]
10. Press High Limit [F1]
11. Press Limit Line 1 [F1]
12. Press Pass/Fail Test [F4] * twice
13. Limit Line setting is now completed.



SPECTRUMSHOT SOFTWARE GET TRACE MODE

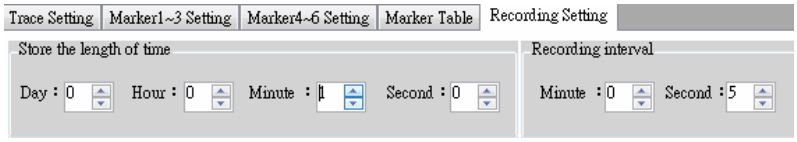
If you would like to record the results of longer test periods, the 'Get Trace Mode' can be used.



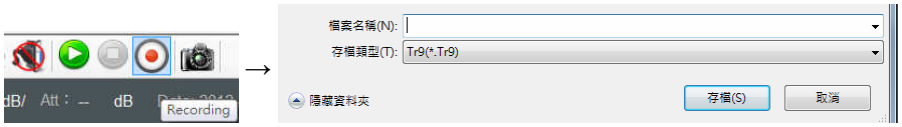


You can select 'Connect' button to connect.

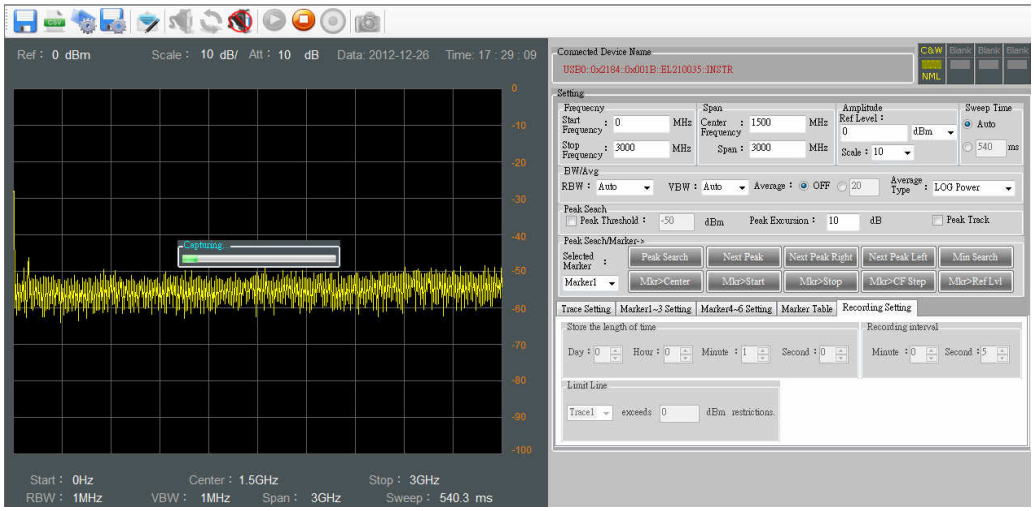
After successfully connecting, select 'Recording Setting' to set up the duration of the recording. The following is the test result of a recording every 5 seconds within a one minute period. This recording time does not include the spectrum analyzer data transfer time.

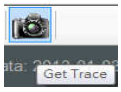


After setting up the recording time, select the 'Recording' button, then save as *.Tr9 format.



When SpectrumShot is saving files for this one minute period, it will pause and wait for 'Recording' button to be pressed again.

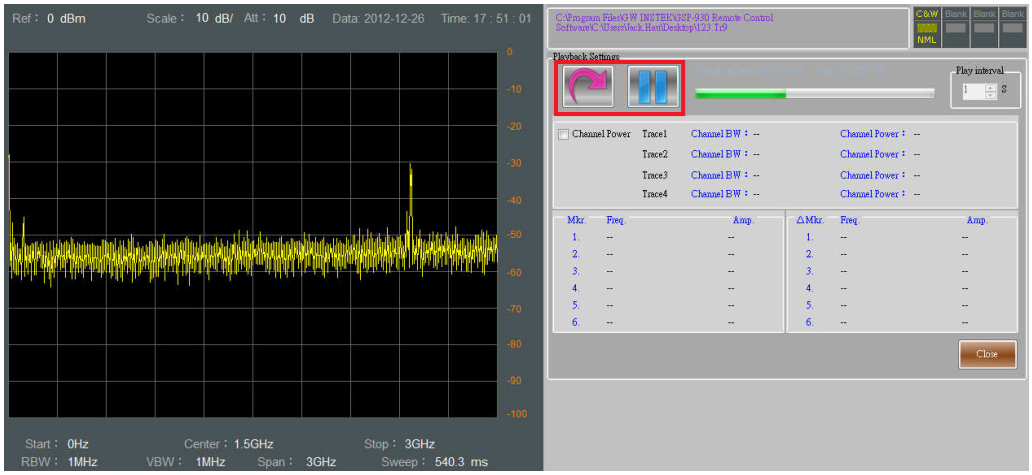




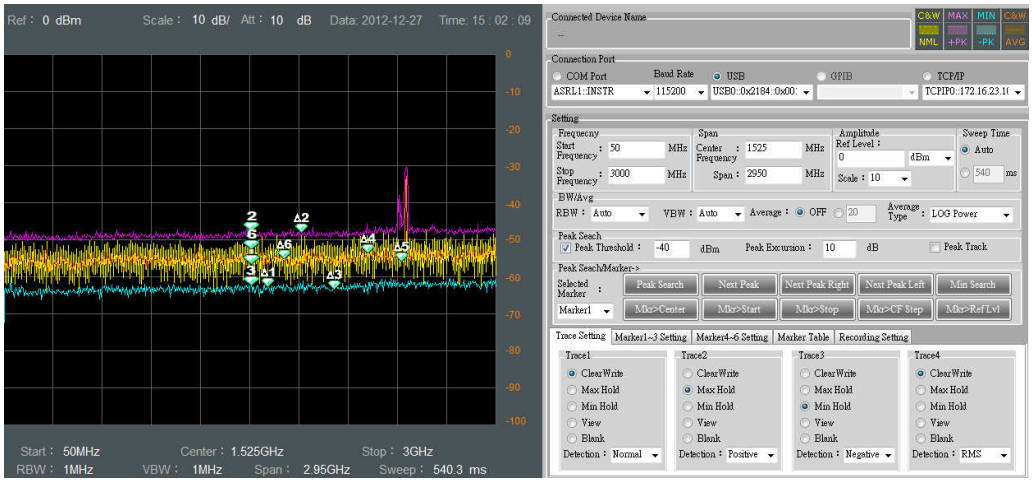
Users can choose 'Get Trace' button to perform a single sweep as a pretest function.

You can click the 'Play' button if you wish to replay the test result. After choosing *.Tr9 file, press the green-colored 'Play' button.

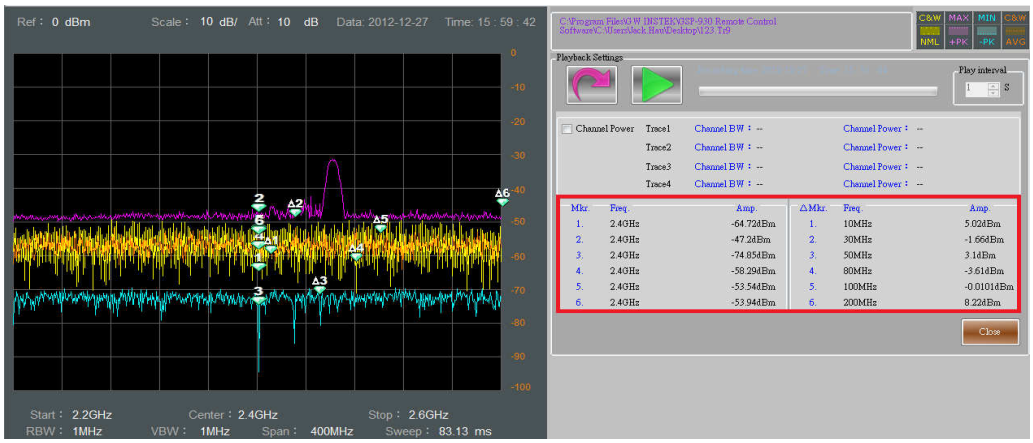
The graph shows the test result screen where you can select the 'Pause' button anytime if you want to observe the result in detail or where you can select the 'Replay' button to review the result. If you wish to return to the parameter setting screen, then press the 'Close' button.



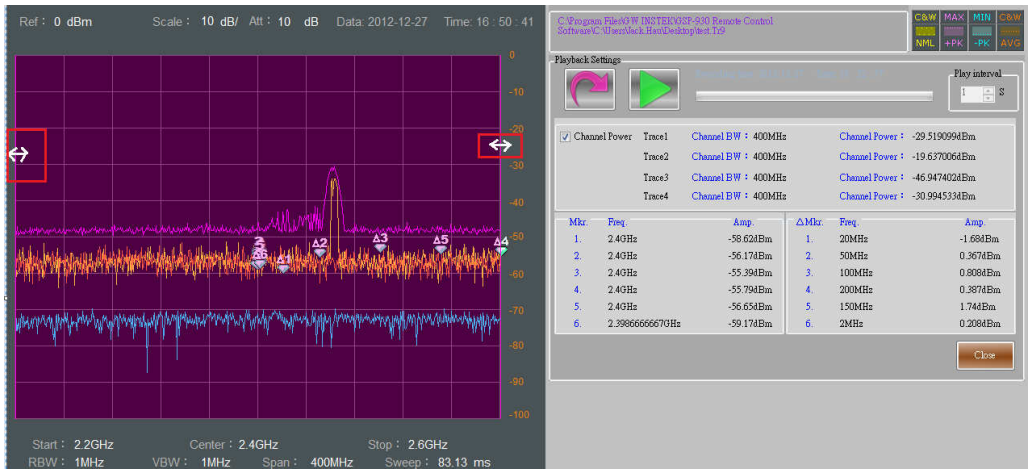
If you wish to display more information, you can turn on the 'Trace Setting' or 'Marker1~6 Setting' Function.



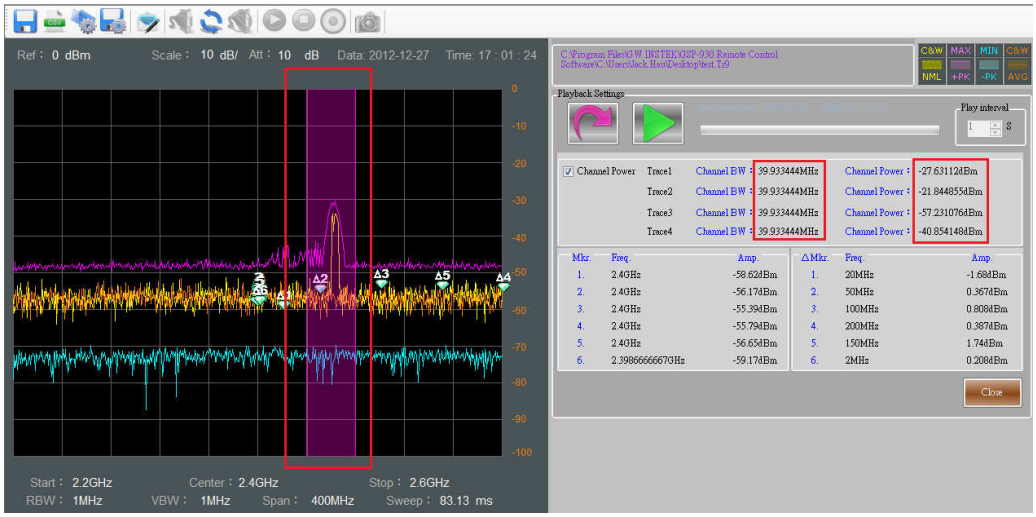
With 'Replay' function, you can see the information for up to 6 sets of markers.



If you want to acquire the 'Channel Power' within the test result, they can tick 'Channel Power' check box. The program will then display a purple background to indicate the bandwidth. You can use the mouse on the purple background to redefine the bandwidth.

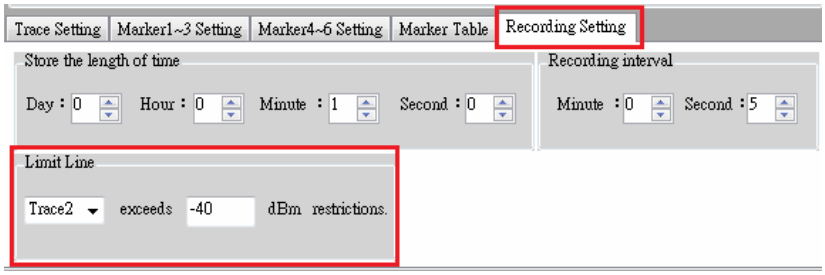


For example, below the 'Channel BW' was set to '40MHz' to measure the 'Channel Power' of 'Trace 1~4'.

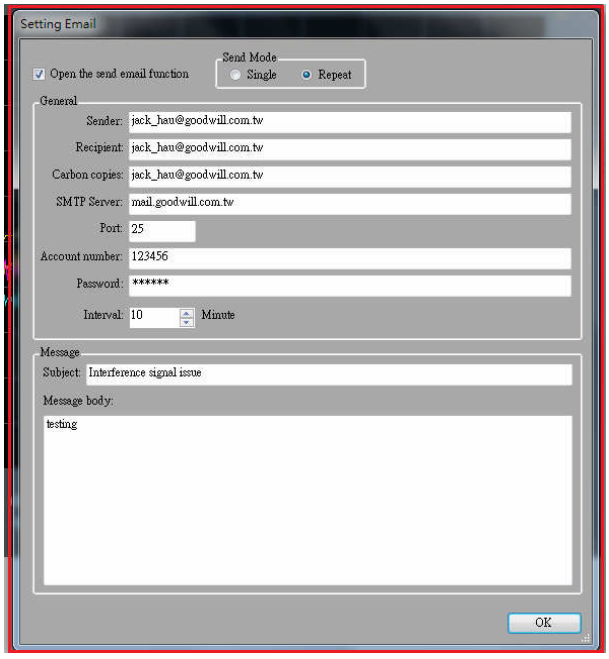


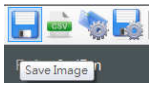
If you want to take advantage of the 'Limit Line' to judge the measurement information, select the 'exceeds' level for Trace 1~4 within the 'Limit Line' setting.

This setting will also allow you to receive an email when the result exceeds the limits via the 'Setting Email' option.



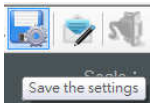
Please fill in the form below before ticking the 'Open the send mail function' check box. When the measurement triggering conditions and Limit Lines have been set up, SpectrumShot will automatically send an email to you. There are two ways of sending an email: 'Single' and 'Repeat'. 'Repeat' sending means that you can set a fixed time interval between each email (e.g. every 10 minutes).





You can choose the 'Save Image' button to save in the *.png format. The image has an option to save as either 'Normal' or 'Save Toner'.

You can choose the 'Save CSV' button to save in the *.csv format. This *.CSV file can be opened by Microsoft Excel.



You can choose the 'Save the settings' button to save as a *.SA9 text file format, which can be opened by Microsoft Word.

After restarting SpectrumShot, you can choose the 'Restore Settings' button to recover the previous 'Get Trace Mode' parameter settings.