

PC GUI MANUAL

Protek A734

4.4
GHz

Handheld
Spectrum Analyzer



INTRODUCTION

This Operating Manual represents design, specifications, overview of functions, and detailed operation procedure of Protek A734 Spectrum Analyzer, to ensure effective and safe use of the technical capabilities of the instruments by the user.

Spectrum Analyzer operation and maintenance should be performed by qualified engineers with initial experience in operating of microwave circuits and PC. Below you will find the abbreviations used in this Manual:

PC - Personal Computer

DUT - Device Under Test

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1

GENERAL OVERVIEW

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1 GENERAL OVERVIEW

A734 is the spectrum analyzer to measure the frequency with the range from 100 kHz to 4.4 GHz. With the latest RF technology, A734 offers high sensitivity, accuracy and dynamic range at an affordable and reasonable price.

A734 PC Program provides functions to check the data measured at the terminal on the remote personal computer (PC). The A734 terminal and the PC are connected via Ethernet. The terminal collects and sends the measured values to the PC and the PC controls the terminal configuration and sets and save the trace information based on the collected data according to the given conditions.

1.1 Software Installation

A734 PC Program is operated from a Windows® based PC using our application software.

1.1.1 System Requirements

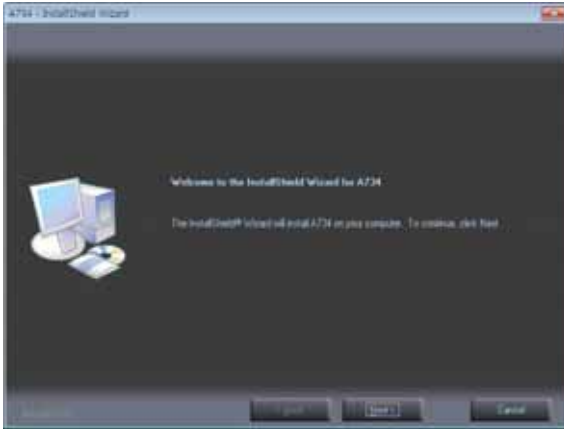
A734 PC Program is compatible with Windows® operating systems. You must have at least 20 MB of free disk space, 1 GB of RAM, USB 2.0 and a 1 GHz processor, and internet access for a one-time calibration data download.

Your computer must have the "Microsoft .net framework" version 3.5 or newer installed. If you do not already have a newer version, please install it from the CD.

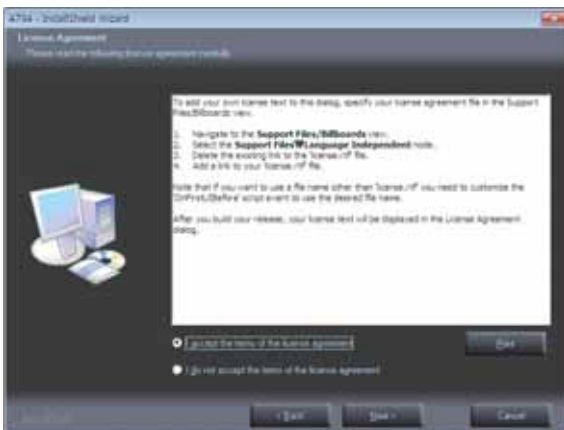
1.1.2 Installation A734 Software

The instructions to install PC program is as follows.

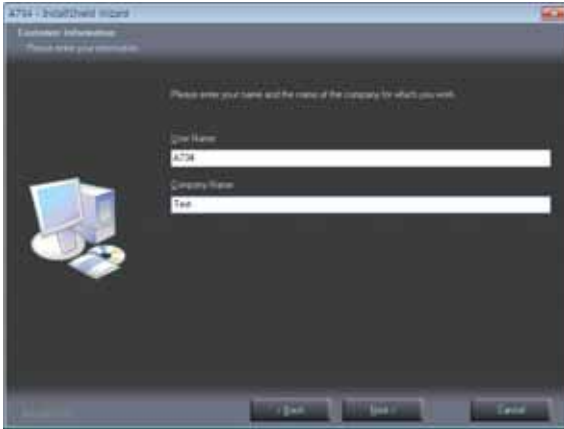
- 1) Execute the installation file from CD or downloaded.
- 2) Installation window will appear as the following picture when the installation file is executed. Click Next to proceed to the next step. Otherwise, click Cancel.



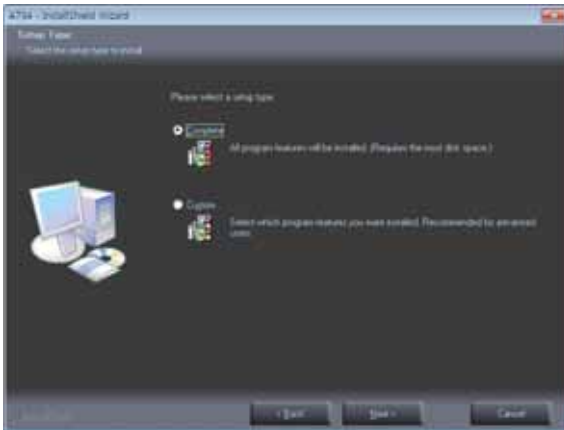
- 3) The window about License Agreement will appear as the following picture when Next is clicked in 2). Click 'I accept the terms license agreement' to proceed to the next step. Otherwise, click Cancel.



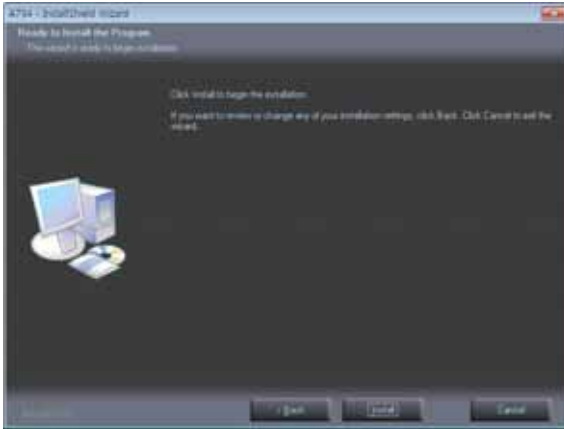
- 4) The following window will appear if Next is clicked in 3).



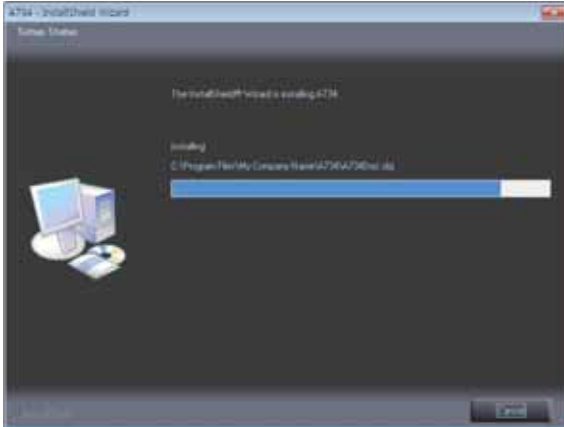
- 5) The window is changed as the following picture if Next is clicked after typing in User Name and Company Name.



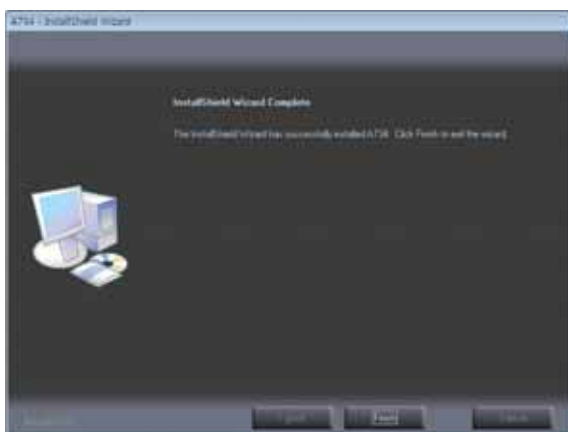
- 6) The following window will appear if Next is clicked after selecting Complete or Custom.



- 7) Click Install to continue the installation.
- 8) Setup Status window will appear as the following picture if Install is clicked in 7).



- 9) The following window will appear when the installation is completed, and the installation will be finished if Finish is clicked.



1.2 Running the software

As explained in 1.1.2, double click 'A734.exe' file to execute the program after installation.

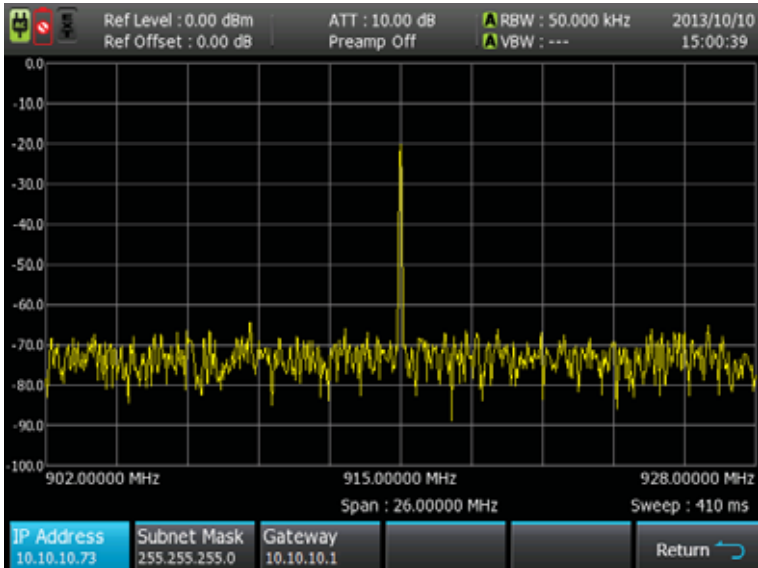


The executed screen does not show any trace as the above picture because there is no Sweep data due to the disconnection with Terminal. The way of connection to Terminal is as follows.

1.2.1 Terminal IP Setting

- 1) Connect the Ethernet cable linked to PC with A734 Ethernet terminal.
- 2) Select "System" button out of the A734 Keypad buttons.
- 3) Select "Setting >" button in A734 Bottom Menu.
- 4) Select "IP Set >" button in the subordinate menu of Setting.
- 5) Set the IP by using Numeric key of A734 after selecting IP

Address.

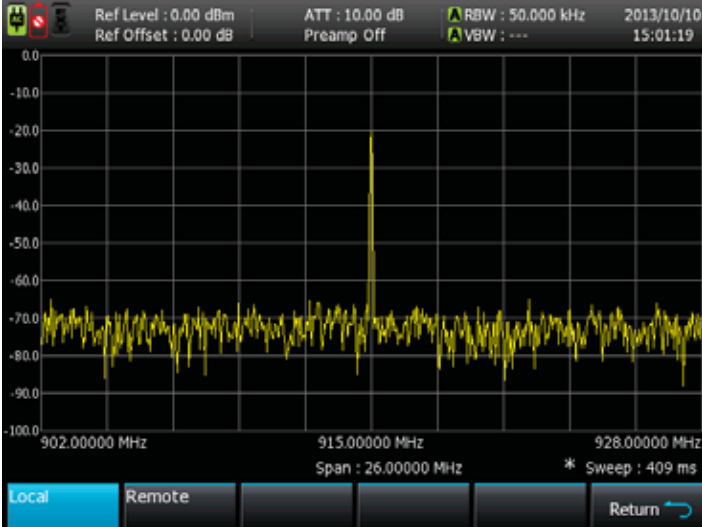


- 6) Set Subnet Mask(F2) and Gateway(F3) in order after selecting IP Address(F1).
- 7) Select Information(F5) after selecting front “System” button to check if the set IP above is the same as the IP currently set for the Terminal.

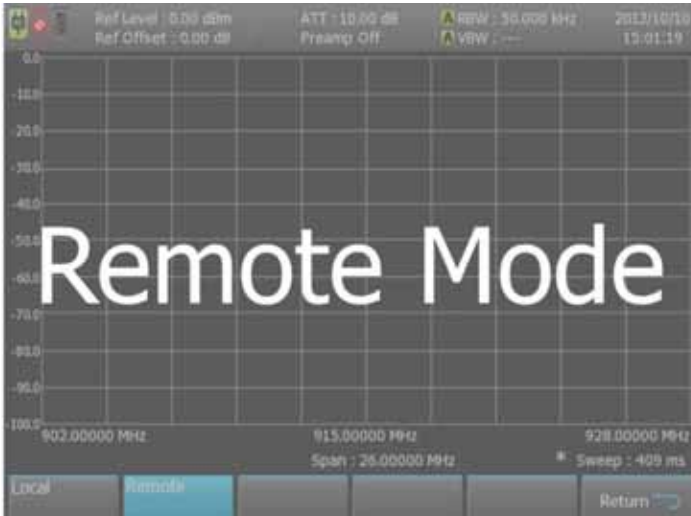


1.2.2 Terminal Remote Setting

- 1) Select “System” button out of A734 front Keypad.
- 2) Select “Lo / Re >”(F3) button in A734 Bottom Menu.
- 3) Confirmation window will appear if F2 “Remote” button is selected from the subordinate menu of “Lo / Re >”. Then, press Enter to proceed to Remote Mode.

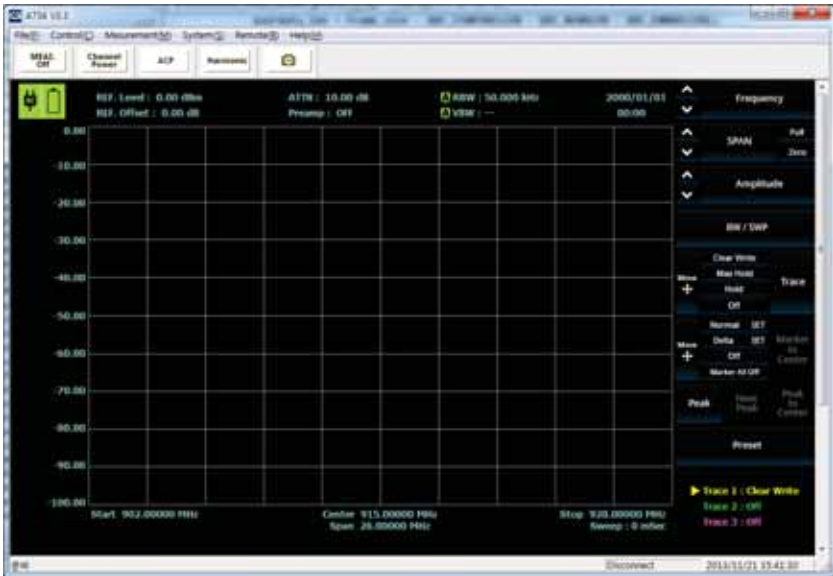


- 4) The LCD Backlight will be set to the lowest level after entry, and “Remote Mode” will be displayed on LCD.

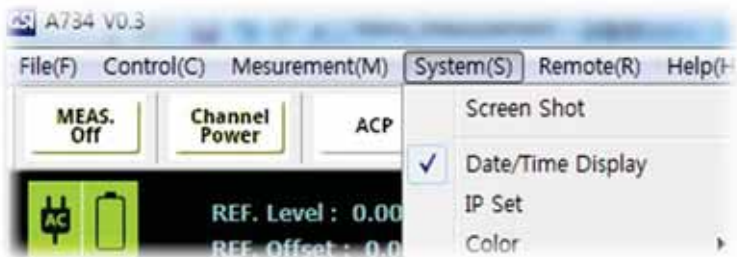


1.2.3 PC Setting

- 1) Execute A734.exe file. A734 window will appear after executing the file as follows.



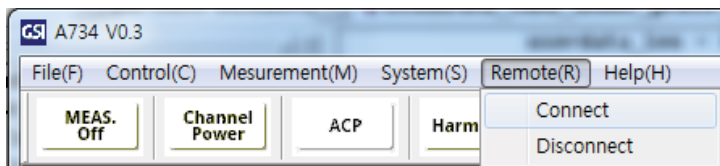
- 2) Select IP Set which is a subordinate menu of System.



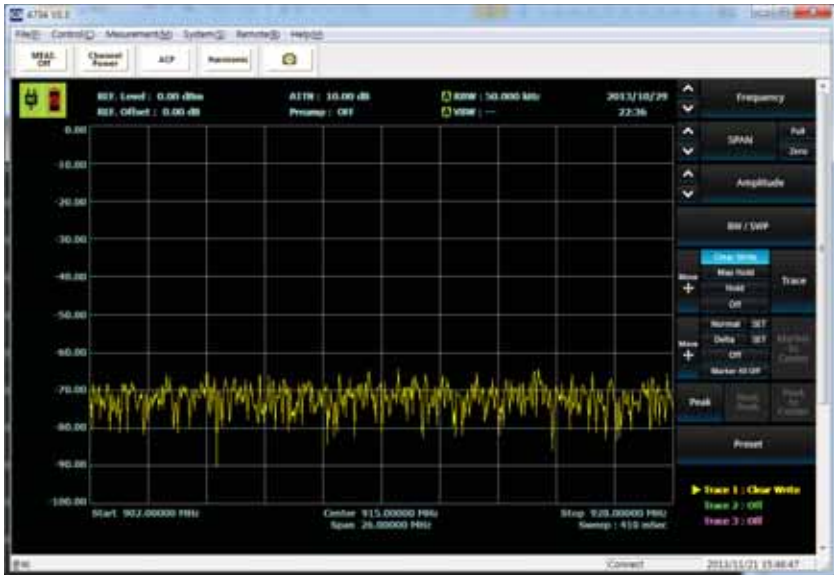
- 3) Type in the Terminal IP Address set in 1.2.1 in PC IP Setting window, and select “OK” button.



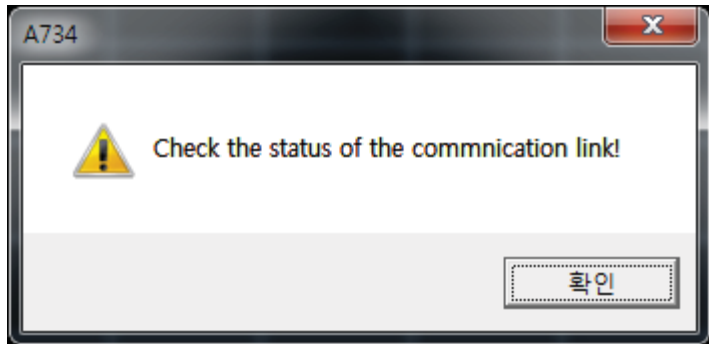
- 4) After IP setting, select 'Connect' which is a subordinate menu of Remote.



If it is well connected, Connect is indicated on the bottom right of the GUI. Trace is normally shown by Sweep.



Unless the communication is okay by bad connection cable or terminal, “Disconnect” is indicated on the bottom right of GUI as well as a warning window regarding Link error will appear.



*Notice

In case of the appearance of the warning window, check the connection cable. If the cable is okay, check the settings of Terminal, PC, and PC GUI

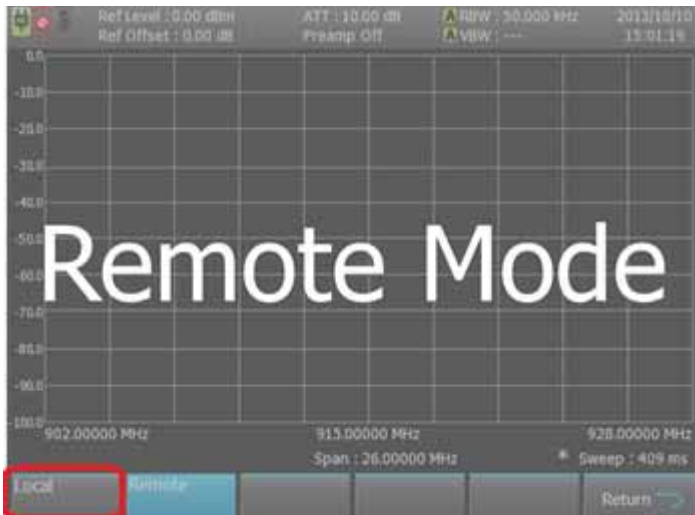
1.3 Disconnect & Terminate software

The instructions to cancel PC program and Remote Status of Terminal is as follows. Change the Mode setting for Terminal. For PC program, close the PC program being executed, or just disconnect the communication link to change the IP.

1.3.1 Terminal Mode Change (Remote → Local)

The way to change the mode of Terminal is as follows.

- 1) Set Local mode by selecting F1 in the status of Remote.



- 2) A confirmation window regarding mode change will appear on LCD if Local(F1) is selected as follows.

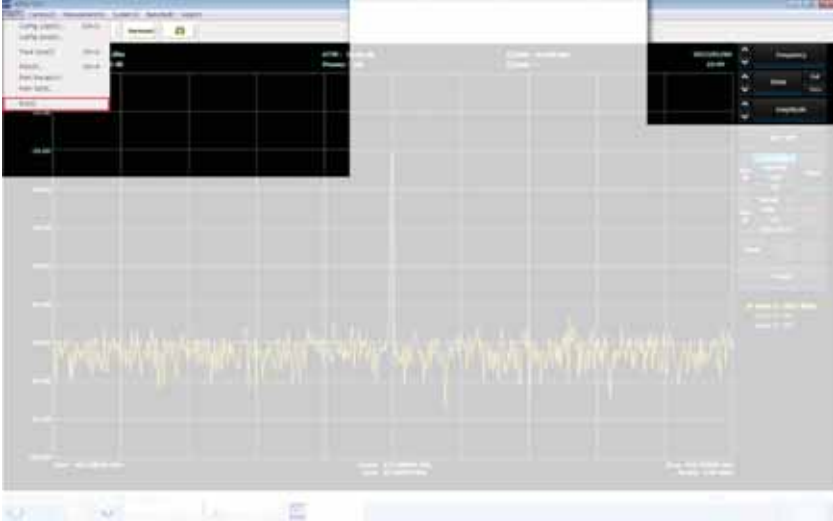


- 3) 'Enter' will activate Local mode, and 'ESC' will keep Remote mode.

1.3.2 PC Program Termination & Disconnect

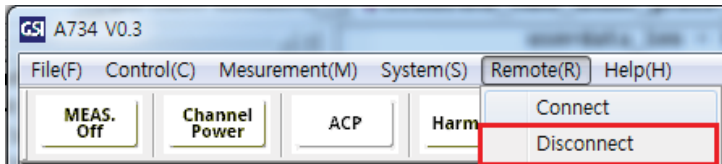
There are two ways to terminate the program.

- 1) Select Exit which is a subordinate menu of File to terminate program.
- 2) Select located on the top right of the window to terminate the program.

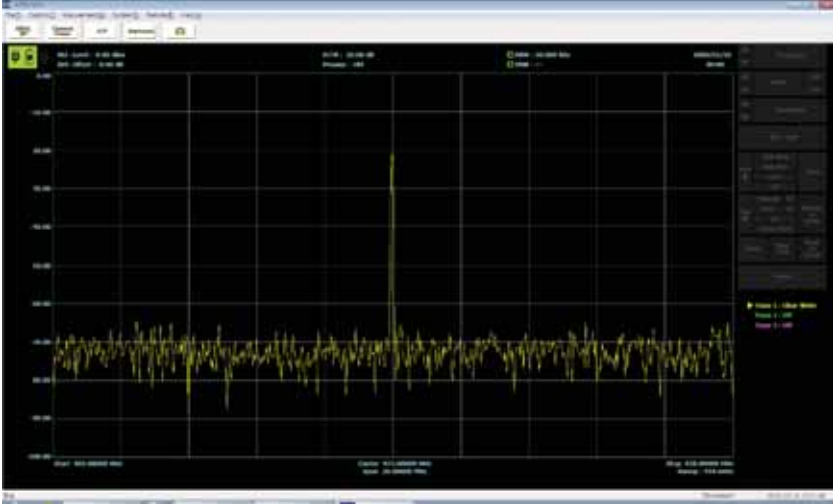


Disconnect the communication link with Terminal as follows in case only the communication with Terminal is disconnected without terminating the program.

- 1) Select Disconnect which is a subordinate menu of Remote.



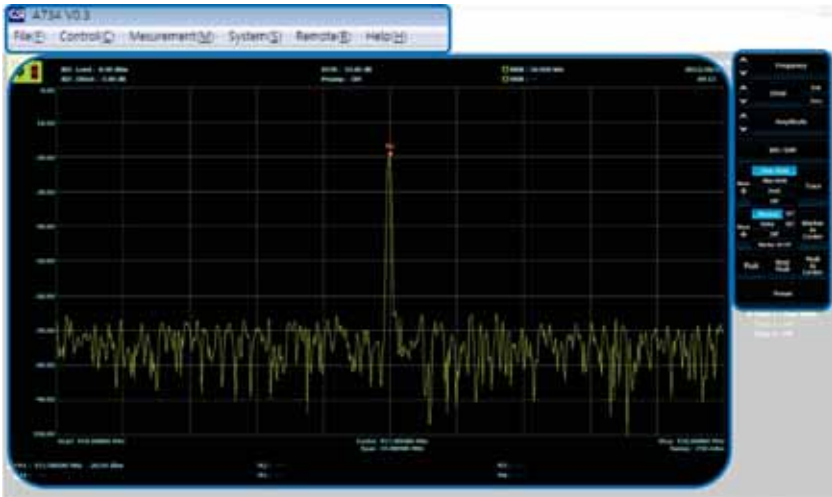
- 2) Check if GUI status is the same as below after selecting Disconnect.



Disconnect is displayed, and Side menu is inactivated in the state of Disconnect as above picture. The last trace before the termination is shown on the display, and the time is shown as Default.

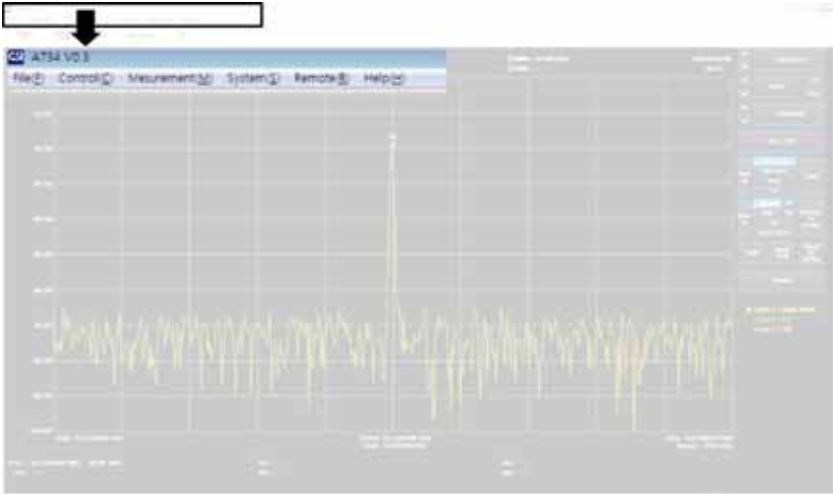
1.4 Main Window Descriptions

A734 PC Program consists of three parts as follows. Top main menu, Right side control menu, Trace window are them, and the explanation of each function is shown in the chapter of explanation.



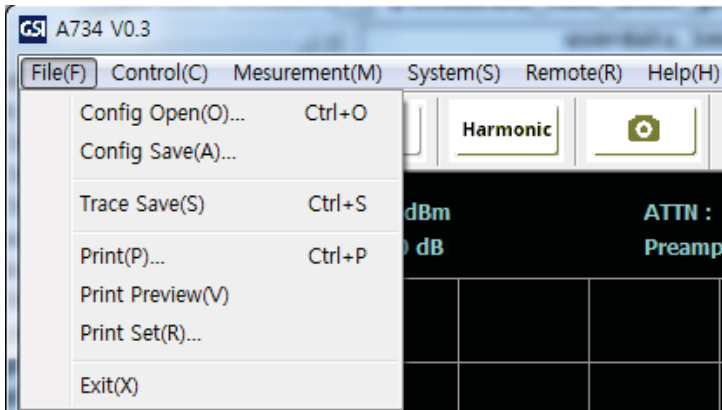
1.4.1 Top Menu Description

Top menu is composed of File, Control, Measurement, System, Remote, and Help. The subordinate functions for each menu are as follows.



- **File**

File consists of 7 items as the following picture. Configuration setting can be saved or loaded, and Trace information can also be saved. Further, there are print and exit functions.

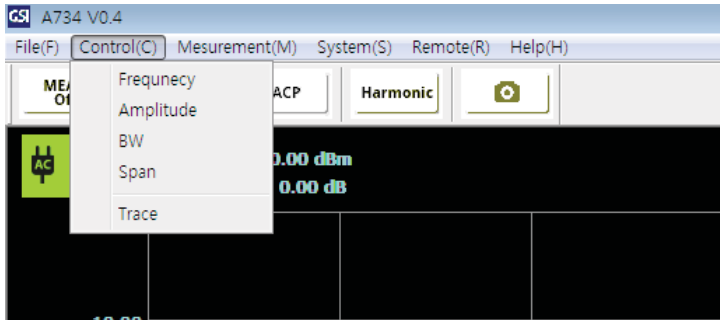


Please refer to the following description for each function.

Item	Description
Config Open(O)	Checks and applies the cfg file saved with Config Save (A). When moving to the folder where the cfg file has been saved with the Config Save (A), you can view the cfg file saved. Select the file and click Open at the right bottom to apply the selected configuration (the local config save file cannot be loaded.) Cfg file which has been saved by cfg
Config Save(A)	Saves the current configuration as a cfg file. When executing this file, the Config folder where the A734 PC Program is saved is set to the default save path. You can save the cfg file in this default folder or specify your desired folder to save it and save the file in the specified folder.
Trace Save(S)	Saves the current sweep data as a csv file. When selecting this menu, a dialog window appears; here, you can set the path and the file name and then save the data as a file.
Print(P)	Prints the current screen with a printer.
Print Preview(V)	Previews the screen to be printed.
Print Set(R)	Sets the printer to be used for printing.
Exit(X)	Exits the program.

- **Control**

The Control menu provides five Trace window control functions as follows:

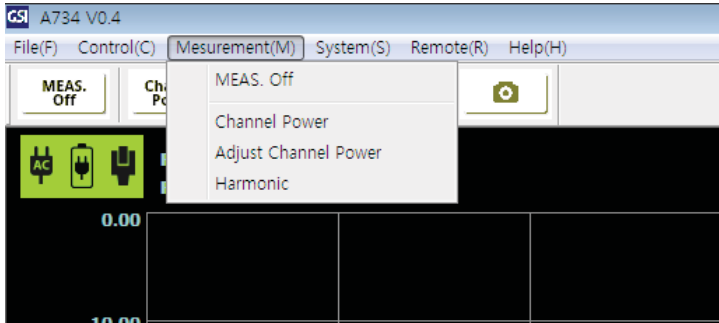


The following table shows brief description of the Control functions. The detailed description is given in Chapter 2.

Item	Description
Frequency	Adjusts the frequency. You can control all frequency items (see 2.1).
Amplitude	Controls the Amplitude item. Select this menu to open the window control amplitude; here, you can change the amplitude items (see 2.3).
BW	Controls items related to bandwidth (BW) and sweep (SWP). Select this menu to open the BW / SWP control window (see 2.4).
Span	Controls items related to span. Select this menu to open the Span control window (see 2.2)
Trace	Controls items related to Trace. Select this menu to open the Trace control window (see 2.6).

- **Measurement**

The Measurement menu provides the functions to measure Channel Power, Adjust Channel Power (ACP) and Harmonic or to reset the measurement functions.

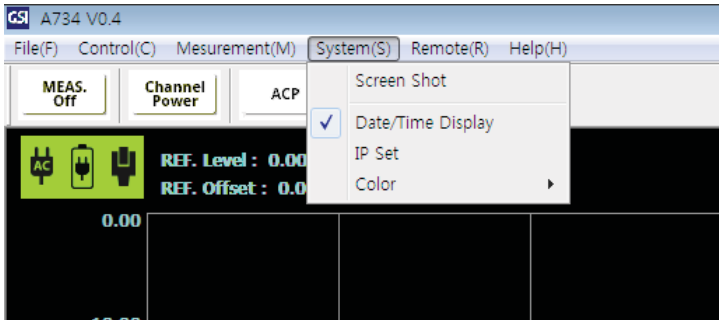


The following table shows brief description of the Measurement functions. The detailed description is given in Chapter 2.

Item	Description
MEAS. Off	Resets the Measurement functions enabled; it resets Channel power, ACP and Harmonic enabled.
Channel Power	Measures the channel power. Select this menu to open the window for setting the channel bandwidth (see 2.8).
Adjust Channel Power	Measures the ACP. Select this menu to open the window for setting the channel bandwidth and the channel space (see 2.8).
Harmonic	Measures the harmonic. Set the carrier signal to measure to Center and then select this menu to view the 2 nd Harmonic measurement result (see 2.8).

- **System**

The System menu allows you to save the measurement screen as an image file, to control the status line which displays the time, to set the IP address, and to change the color configuration.

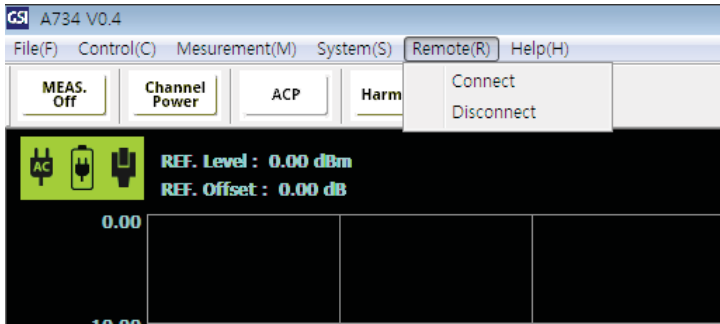


The following table describes each functions of the System menu.

Item	Description
Screen Shot	Saves the measurement screen as a file (see 2.8)
Date/Time Display	Controls the setting of the status line at the bottom of the window. If it is checked with ✓, the status line is displayed. Otherwise, the status line is not displayed.
IP Set	Sets the terminal IP required for remote access (see 1.3).
Color	Changes the background color of the Trace window. If Default is selected with ✓, it is set to black, If White Background is selected with ✓, it is set to white.

- **Remote**

The Remote menu sets or resets connection with the terminal.

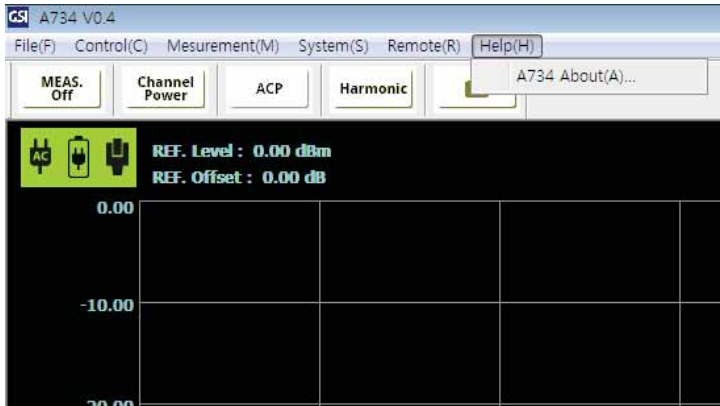


The following table describes each of the Remote functions.

Item	Description
Connect	Connects to the terminal via Ethernet (see 1.2)
Disconnect	Disconnects from the terminal via Ethernet (see 1.3).

- **Help**

The Help menu provides A734 PC program version information and the A734 AS-related information.



The following table describes the Help menu (A734 About(A)).

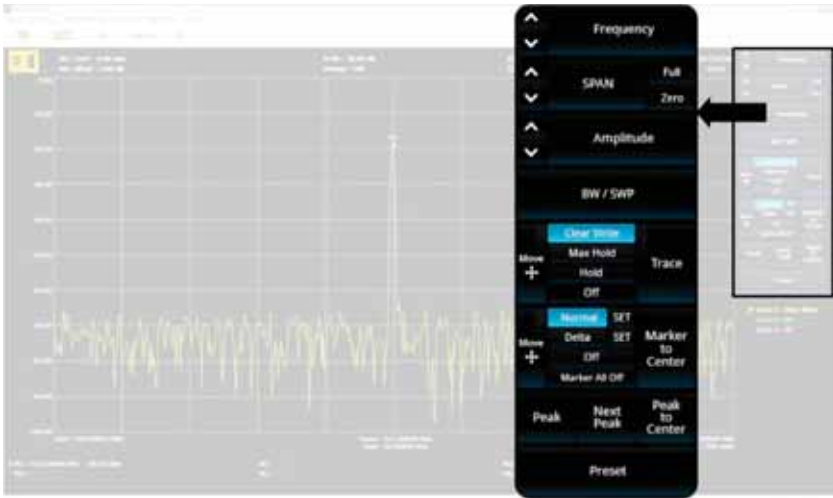
Item	Description
A734 About(A)	Displays the A734 PC Program version information and the A734 AS-related information.

Select 'A734 About(A)' and the following window appears.



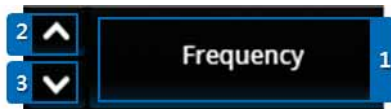
1.4.2 Side Menu Description

The Side menu provides the Control functions, described in 1.4.1, as icons and additional functions for user convenience. The Control functions provided are Frequency, Span, Amplitude, BW/SWP and Trace the additional functions are Marker, Peak and Preset.



Each button provides its own functions.

Frequency



1 Displays the window to enter information related to frequency. (The window is the same with the Frequency window of the top menu 'Control'. See 2.1.)

2 Increases the center frequency as much as the CF step setting.

3 Decreases the center frequency as much as the CF step setting.

Span



Displays the window to enter information related to span.
1 (The window is the same with the Span window of the top menu 'Control'. See 2.2)

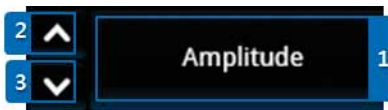
2 Increases the span to the Wide Span in 1-2-5 sequence.

3 Decreases the span to the Narrow Span in 1-2-5 sequence.

4 Sets to Full Span (Start 200 MHz ~ Stop 4.4 GHz).

5 Sets to Zero Span.

Amplitude



1 Displays the window to enter information related to Amplitude.
(The window is the same with the Amplitude window of the top menu 'Control'. See 2.3)

2

Increases the REF.Level as much as the Scale/DIV setting.

3

Decreases the REF.Level as much as the Scale/DIV setting.

BW / SWP

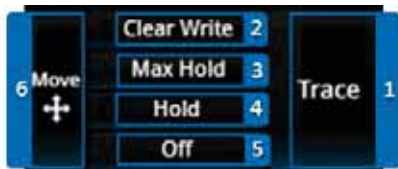
1

BW / SWP

1

Displays the window to set values related to RBW, VBW and Sweep. (The window is the same with the BW/SWP window of the top menu 'Control'. See 2.4).

Trace



1

Displays the window to enter information related to Trace. (The window is the same with the Trace window of the top menu 'Control'. See 2.5)

2

Sets the status of the selected trace to Clear Write.

- 3 Sets the status of the selected trace to Max Hold.
- 4 Sets the status of the selected trace to Hold.
- 5 Sets the status of the selected trace to Off.
- 6 Selects the Trace level from 1 to 3 (changed as 1 → 2 → 3 as clicking the button).

Marker



- 1 Sets the selected marker frequency to Center Frequency.
- 2 Sets the selected marker to Normal.
- 3 Sets the frequency of the selected normal marker.
- 4 Sets the selected marker to Delta.
- 5 Sets the frequency of the current Delta marker.

6 Sets the selected marker to Off.

7 Sets all of the currently-set markers to Off.

8 Selects the Trace level from 1 to 3 (changed as 1 → 2 → 3 → 4 → 5 → 6 as clicking the button).

Peak

1 Sets the marker on the highest amplitude point among the measured sweep data.



2 Moves the marker to the amplitude point just lower than the current amplitude point.

3 Sets the highest amplitude point among the measured sweep data as the center frequency.

Preset

1

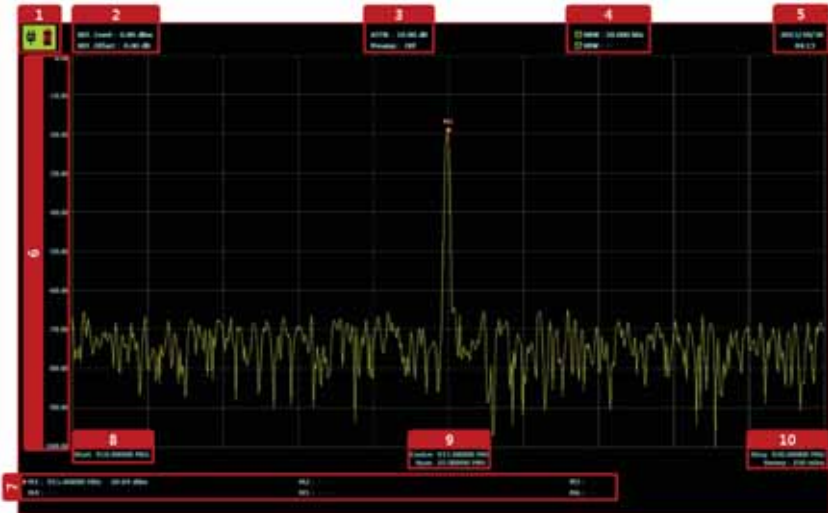
Preset












1



Changes the configuration setting to the default setting.

1.4.3 Trace Window Description

The Trace window shows the Sweep data and the current configuration information, such as AC power state, battery state, Ethernet connection icon, information of key amplitude, frequency, span, BW/SWP information and the setting status of marker and trace settings. Following figure and table shows the Trace window and description of each configuration.



No.	Name	Control	Descriptions
1	AC Power		 - AC power adaptor state: connected
			 - AC power adaptor state: disconnected
	Battery & Charge		 - Battery is connected to AC power - Battery is fully charged
			 - The equipment is operating with battery - Battery capacity is Full
			 - The equipment is operating with battery - Battery capacity is Low
			 - Battery is being charged. - Battery capacity is almost Full
			 - Battery is being charged. - Battery capacity is almost Low
			 - Battery is removed
2	Ref Level	Amplitude	 - Displays the top line amplitude value in the chart.
	Ref Offset	Amplitude	 - Displays the Ref. level offset value.
3	ATT	Amplitude	 - Displays the Internal Attenuator setting - 4 levels: 0-5-10-15

	Preamp	Amplitude		- Displays the Internal Amplifier setting: On/Off
4	RBW	BW / SWP		- Displays the Resolution Bandwidth value
			-	- RBW has been set to Auto
	VBW	BW / SWP		- RBW has been set to Manual
			-	- Displays the Video Bandwidth value
				- VBW has been set to Auto
				- VBW has been set to Manual
5	Date & Time			- Displays the current date and time
6	Scale/Div	Amplitude		- Displays the amplitude for the current Ref. Level and Scale/Div
7	Marker Table	Normal Delta		- Displays the Frequency, Amplitude for the marker - Up to six markers can be set
8	Start Freq.	Frequency		- Displays the current Start Frequency
9	Center Freq.	Frequency		- Displays the current Center Frequency
	Span	Span		- Displays the current Span
10	Stop Freq.	Frequency		- Displays the current Stop Frequency
	Sweep Time			- Displays the Sweep Time for the current conditions

2

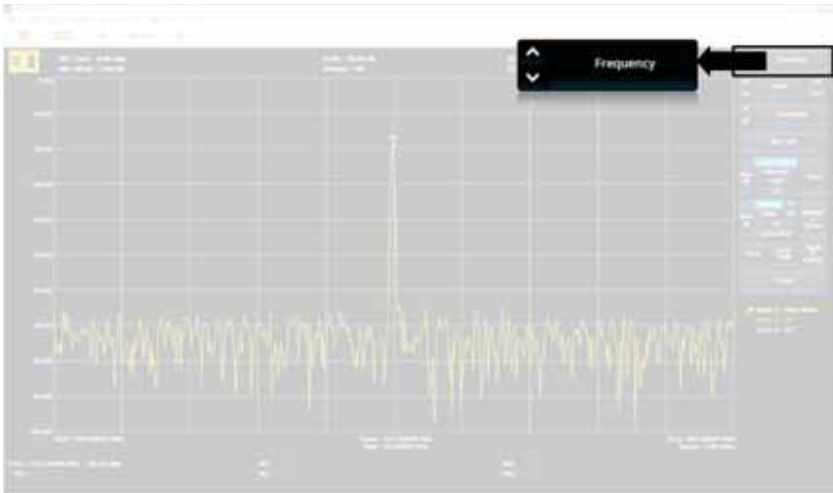
CONTROL

PC GUI
MANUAL

2 CONTROL

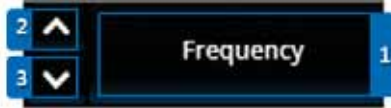
2.1 Frequency

The Frequency menu provides functions to set the frequency range to measure. You can change key Frequency control items such as Center Frequency, Start Frequency, Stop Frequency and CF Step. The frequency range which can be measured by the A734 is from 100 kHz to 4.4 GHz.



There are two ways to open the Frequency control window; using 'Control' described in 1.4 or using the Frequency block in the Side menu. The Frequency block shown in the above provides following functions as described in 1.4.2.

Frequency

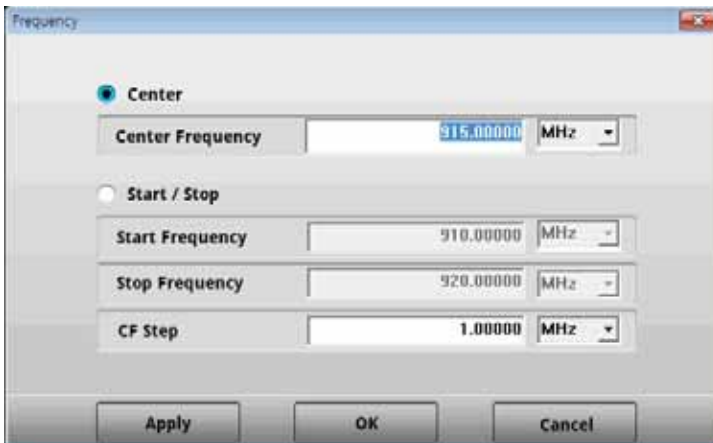


1 Displays the window to enter information related to frequency.

2 Increases the center frequency as much as the CF step setting.

3 Decreases the center frequency as much as the CF step setting.

^ and v of the Frequency block are used to move the center frequency as much as the CF step setting. Any additional window appears and just clicking the button applies the input to the program. Clicking Frequency displays the window to control the Frequency items as shown below.

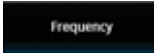


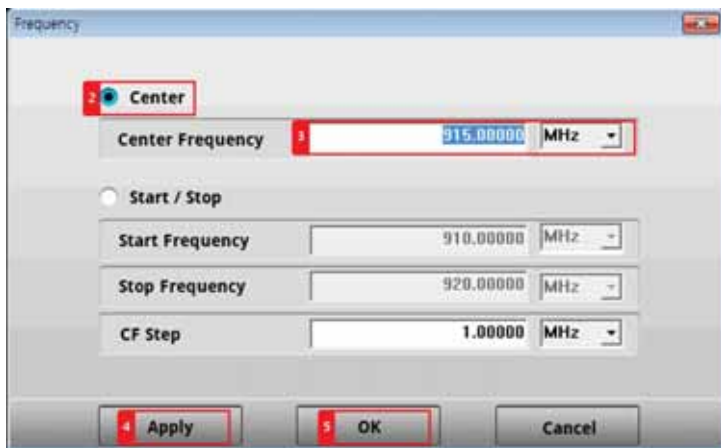
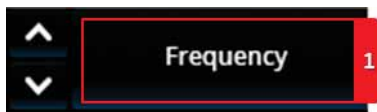
As shown in the above figure, you can choose either of Center or Start / Stop with the radio button 'Center'. To change the center frequency, choose

Center above Center Frequency to . Choosing Center’ disables the Start Frequency and the Stop Frequency as shown above and no input is allowed. The CF Frequency can be always entered regardless of setting whichever of Center or Start/Stop. Choosing Start/Stop’ allows you to change the Start Frequency and the Stop Frequency.

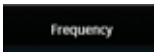
Item	Select	Description
Center Frequency	Center	Enter the center frequency to set. Span is same.
Start Frequency	Start/Stop	Enter the start frequency to set. Span is different according to the start frequency to be changed.
Stop Frequency	Start/Stop	Enter the stop frequency to set. Span is different according to the stop frequency to be changed.
CF Frequency	Both	Enter the CF frequency to set.
Apply	Both	Changes the sweep information with the changed frequency information. The window is not closed.
OK	Both	Changes the sweep information with the changed frequency information. The window is closed.
Cancel	Both	Cancels the setting. The Frequency control window is closed.



2.1.1 Center Frequency Change

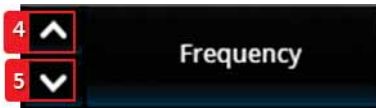
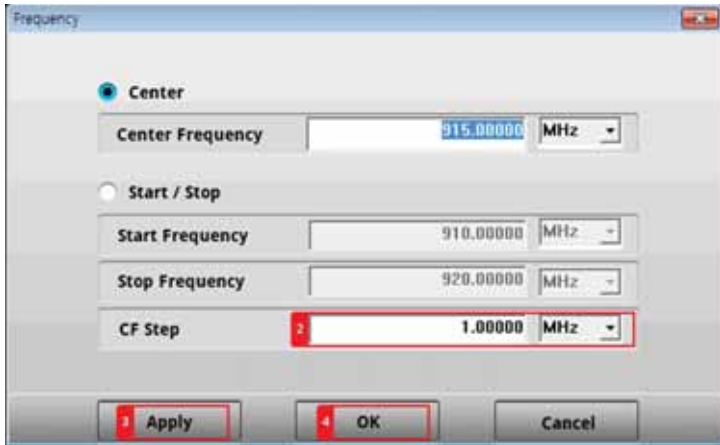
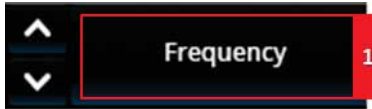
- 1) Click  or click Top menu -> Control -> Frequency.
- 2) Check that 'Center' is selected.
- 3) Enter the frequency value and unit in the Center Frequency input box and drop-down box.
- 4) Click the Apply or OK button to apply the setting.



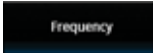
2.1.2 Up/Down Key Function (Frequency)

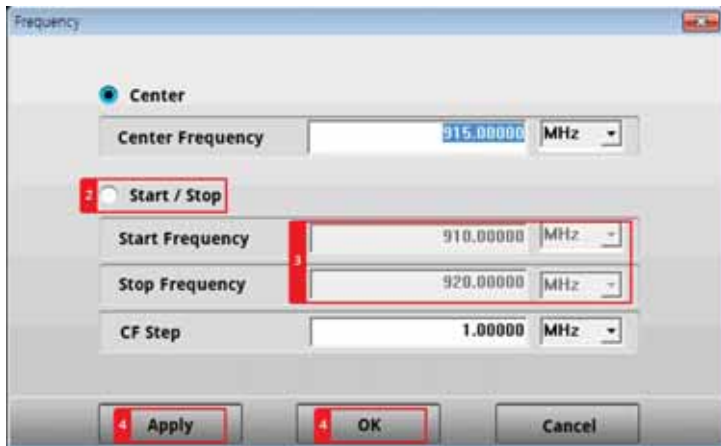
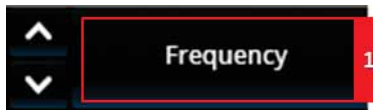
- 1) Click  or click Top menu -> Control -> Frequency.
- 2) Enter the CF Step value and unit in the CF Step input box and drop-down box.

- 3) Click the Apply or OK button to apply the setting.
- 4) Click  to increase the center frequency in the Trace window as much as the CF Step set in 2)
- 5) Click  to decrease the center frequency in the Trace window as much as the CF Step set in 2)



2.1.3 Start & Stop Frequency Change

- 1) Click  or click Top menu -> Control -> Frequency.
- 2) Choose 'Start/Stop'.
- 3) Enter the frequency value in the Start Frequency input box and select the unit in the drop-down box or the Stop Frequency input box and drop-down box.
- 4) Click the Apply or OK button to apply the setting.



2.2 SPAN

The Span menu provides functions to set the frequency range to measure, i.e., the width of the Trace window. You can directly enter the value but the menu provides Full Span and Zero Span for user convenience.

The A734 span range is from 600 Hz to 4.3999 GHz or Zero Span.

According to the setting, the sweep speed is changed. Generally, as the span value increases, the sweep time increases. Reversely, as the span value decreases, the sweep time decreases.



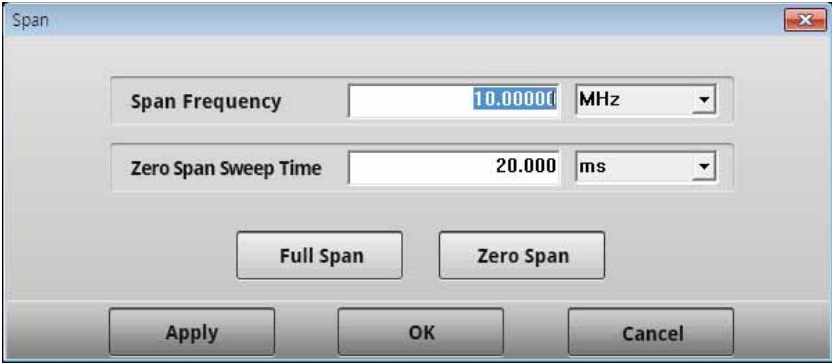
There are two ways to open the Span control window; using 'Control' described in 1.4 or using the Span block in the Side menu. The Span block shown in the above provides following functions as described in 1.4.2

Span



- 1 Displays the window to enter information related to span.
- 2 Increases the span to the Wide Span in 1-2-5 sequence.
- 3 Decreases the span to the Narrow Span in 1-2-5 sequence.
- 4 Sets to Full Span (Start 200 MHz ~ Stop 4.4 GHz).
- 5 Sets to Zero Span.

^ and v of the Span block are used to change the span in the 1-2-5 sequence. Any additional window appears and just clicking the button applies the input to the program. Clicking Span displays the window to control the Span items as shown below. The Full is an execution key to set the span to Full Span and the Zero is an execution key to set the span to Zero Span.



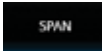
As shown in the above figure, the Span control window consists of several buttons, input boxes and drop-down boxes: Span Frequency input box and drop-down box, Zero Span Sweep Time input box and drop-down box, and buttons to set the span range to Full or Zero Span. The following table shows description of each item in the Span control window.

Item	Description
Span Frequency	Enter the span frequency to set. Center Frequency is fixed.
Zero Span Sweep Time	Set the sweep time while the span is set to Zero Span. Range: 10 ~ 2000 msec
Full Span	Sets to Full Span. Full Span Range: 200 MHz ~ 4.4 GHz
Zero Span	Sets to Zero Span. X-axis: changed to the Time domain.
Apply	Changes the sweep range to the span setting. The window is not closed.
OK	Changes the sweep range to the span setting. The window is closed.
Cancel	Cancel the setting. The Span control window is closed.

Notice

When changing the span, fix the Center Frequency and change the Start/Stop Frequency. When the Start Frequency value or the Stop Frequency value reaches the limit, a warning message is displayed and the span cannot be adjusted no more.

2.2.1 SPAN Change

- 1) Click  or click Top menu -> Control -> Span.
- 2) Enter the span value in the Span Frequency input box and select the unit in the drop-down box.
- 3) Click the Apply or OK button to apply the setting.



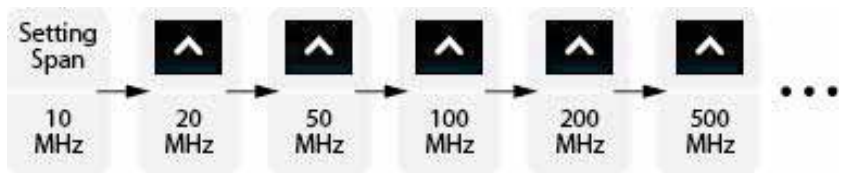
Notice

The available span frequency range is from 600 Hz to 4.3999 GHz. If the value is out of this range, a warning message appears.

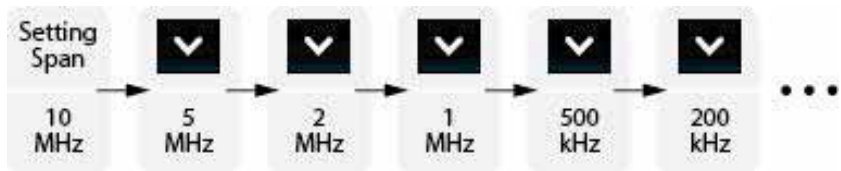
2.2.2 Up/Down Key Function (SPAN)

Span Sequence indicates the sequence of changed span values by using the Up or Down key in the Span block of the Side menu. The A734 Span Sequence changes in the order of 1 → 2 → 5 with a specified rule. Clicking \wedge at the default 10 MHz span, the span is set to 20 MHz with 1 → 2 → 5 sequence. Clicking \wedge at 20 MHz again, the span is set to 50 MHz with 1 → 2 → 5 sequence. Like \wedge , \vee decreases the span value in the order of 5 → 2 → 1 → 5 → 2 → 1 → 5 whenever it is clicked. The Span sequence means that the first digit of the span setting value will increase or decrease in the order of 1 - 2 - 5.

[Up (\wedge) key operation]



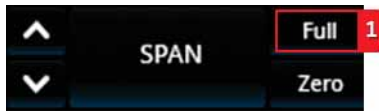
[Down (\vee) key operation]



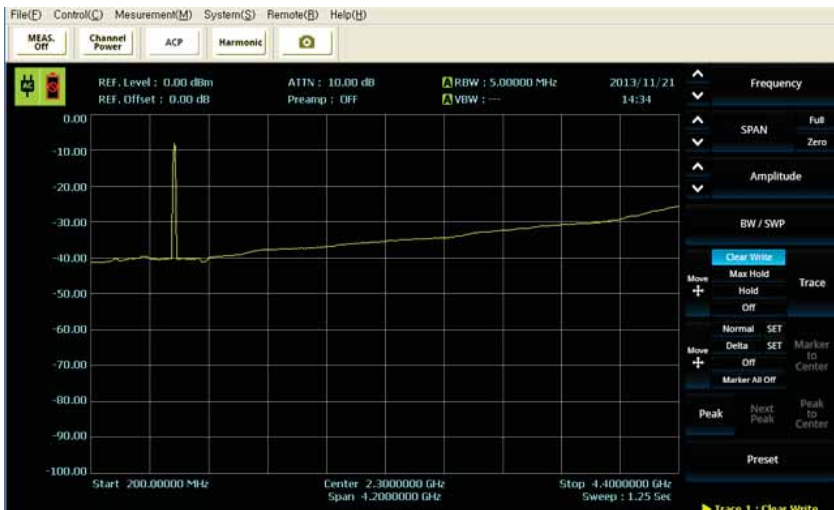
2.2.3 Full SPAN

Full Span sets the Start Frequency and the Stop frequency of the Trace window to Max. Set it as follows.

- 1) Click **Full** or the Full button in the Span control window.



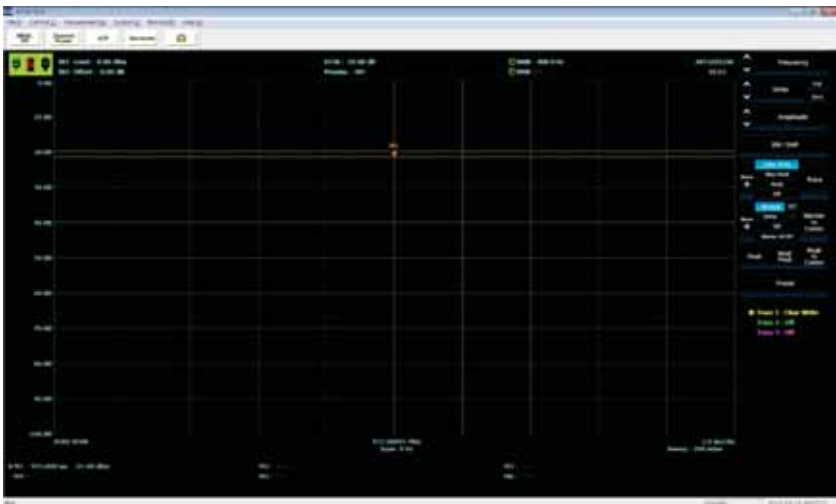
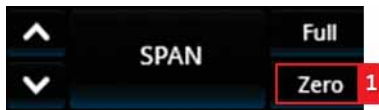
When Full Span is executed, the Start Frequency is set to 200 MHz and the Stop Frequency is set to 4.4 GHz.



2.2.4 Zero SPAN

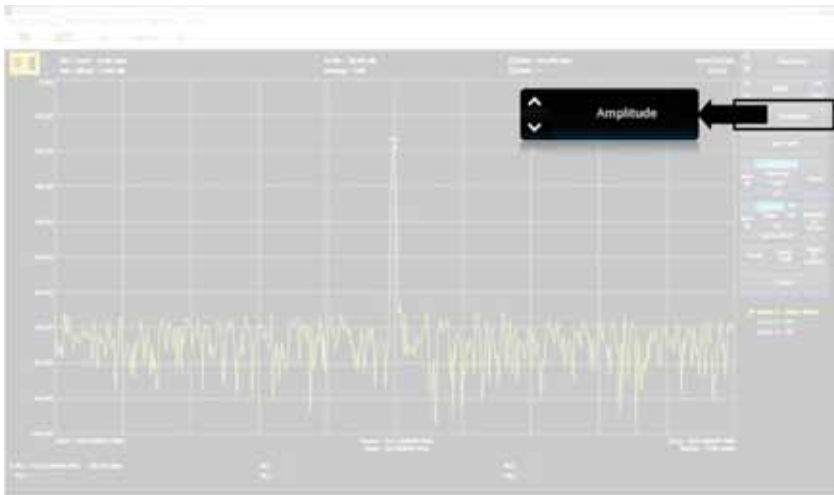
Zero Span sets the X-axis to the time domain, not to the frequency domain, and displays the measurement result value. The Y-axis displays the amplitude without any change and the units are Watts and dBm.

- 1) Click **Zero** or the Zero Span button in the Span control window.



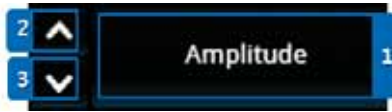
2.3 Amplitude

The Amplitude menu provides functions to control the Y-axis in the Trace window. It allows you to set Reference Level of the Graticule for the Trace window and to control Attenuation and Pre-Amp. In addition, you can set the width of one grid in the Graticule and change the amplitude unit. Ref. Offset can be changed to compensate the loss between the terminal and the DUT.



There are two ways to open the Amplitude control window; using 'Control' described in 1.4 or using the Amplitude block in the Side menu. The Amplitude block shown in the above provides following functions as described in 1.4.2.

Amplitude



Displays the window to enter information related to Amplitude.

1

(The window is the same with the Amplitude window of the top menu 'Control'. See 2.3)

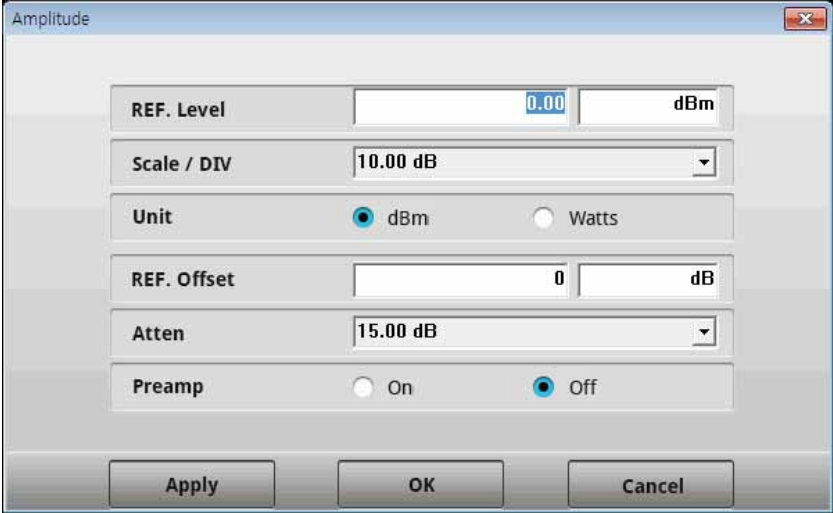
2

Increases the REF.Level as much as the Scale/DIV setting.

3

Decreases the REF.Level as much as the Scale/DIV setting.


\wedge and \vee of the Amplitude block are used to increase or decrease the Ref.Level by one grid of the Graticule, i.e., to change the REF.Level as much as the Scale/DIV setting. Clicking Amplitude displays the window to control the Amplitude items as shown below. The following table shows description of each Amplitude item.

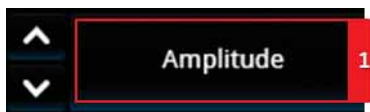


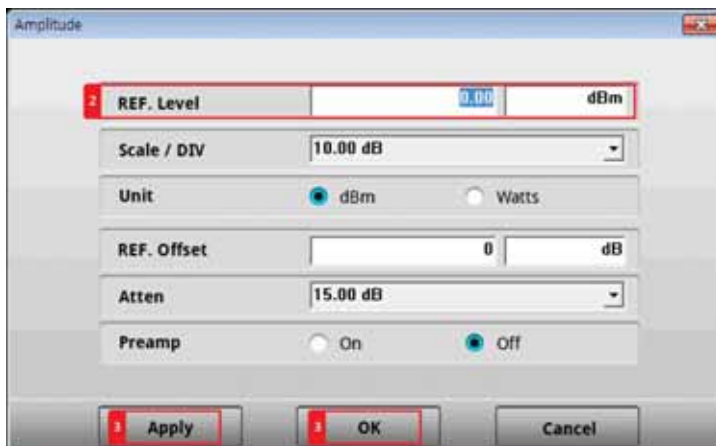
Item	Select	Description
Ref.Level		Sets the top value of Graticule. Range: +20 dBm ~ -80 dBm
Scale/Div		Sets the width of one grid of Graticule. Select one of 0.2, 0.5, 1, 2, 5, and 10 dB.
Unit	<input checked="" type="radio"/> dBm <input type="radio"/> Watts	Displays the amplitude in dBm scale. Displays the amplitude in Watts scale.
Ref.Offset		Compensates the measurement result as much as the Ref.Offset specified and displays the compensated value. Range: +300 dB ~ -300 dB
Atten		Changes the internal attenuator setting Select one from 0 dB, 5 dB, 10 dB and 15 dB.
Preamp	<input checked="" type="radio"/> On	Sets to Preamp On.

	<input checked="" type="radio"/> Off	Sets to Preamp Off.
Apply		<p>Changes the Amplitude items with the information set in the Amplitude control window.</p> <p>The window is not closed.</p>
OK		<p>Changes the Amplitude items with the information set in the Amplitude control window.</p> <p>The window is closed.</p>
Cancel		<p>Cancels the setting. The Amplitude control window is closed.</p>

2.3.1 Ref Level Change



- 1) Click  or click Top menu -> Control -> Amplitude.
- 2) Enter the span value in the Ref.Level input box and select the unit in the drop-down box in the Amplitude control window.
*Range: +20 dBm ~ -80 dBm
- 3) Click the Apply or OK button to apply the setting.

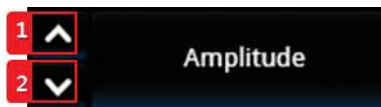





2.3.2 Up/Down Key Function(Amplitude)

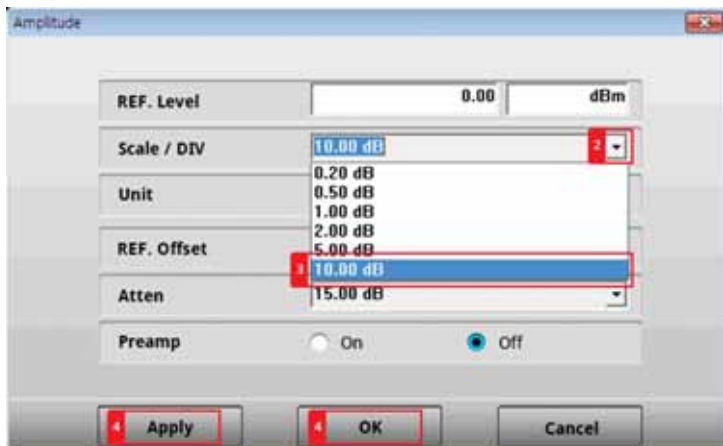
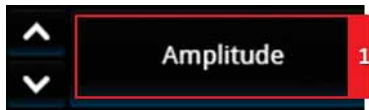
^ and v of the Amplitude block are used to increase or decrease the Reference Level by one grid. The size of one grid is same with the value set in Scale/dB and with one grid of Y-axis in the Trace window. The value of each grid on the Y-axis in the Trace window is displayed and the values of the Y-axis are increased or decreased by one grid whenever the Up/Down keys are clicked. The operation sequence is as follows:

- 1) Click  to increase the Y-axis of the Trace window by one grid.
- 2) Click  to decrease the Y-axis of the Trace window by one grid.




2.3.3 Scale/Div Change

- 1) Click  or click Top menu -> Control -> Amplitude.
- 2) On the Amplitude control window, click the right arrow of the Scale/Div.
- 3) Check the drop-down box and then select a desired value.
*Values: 0.2dB, 0.5dB, 1.0dB, 2.0dB, 5.0dB, 10dB
- 4) Click the Apply or OK button to apply the setting.

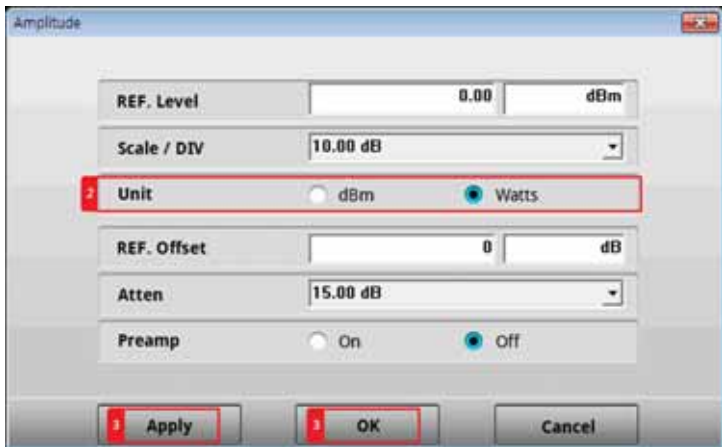


2.3.4 Unit Change

- 1) Click  or click Top menu -> Control -> Amplitude.
- 2) Choose a unit from the Unit drop-down box: either of dBm or


Watts.

- 3) Click the Apply or OK button to apply the setting.



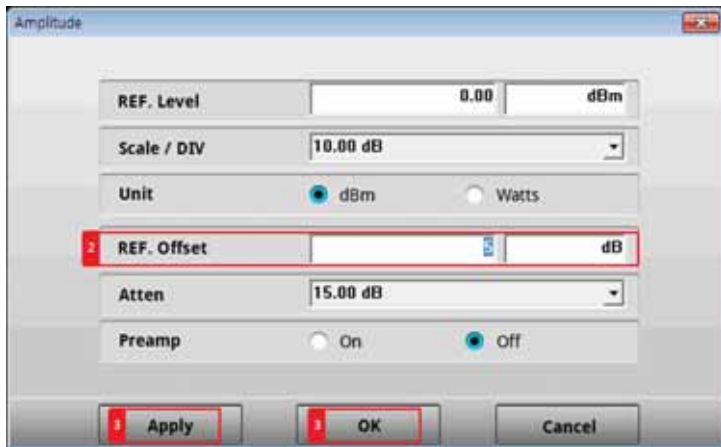
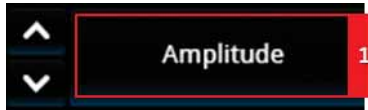
2.3.5 Ref. Offset Change

When you need to compensate a specific measurement value, you can use Ref. Offset. For example, apply the Ref.Offset to compensate the cable loss between A734 and DUT. When the Ref.Offset is set, the Ref.Level is changed and the measurement values are compensated as much as the Ref.Offset setting value.

- 1) Click  or click Top menu -> Control -> Amplitude.
- 2) Enter the Ref.Offset value in the Ref.Offset input box of the Amplitude control window.


*Range: +300 dB ~ -300 dB

- 3) Click the Apply or OK button to apply the setting.

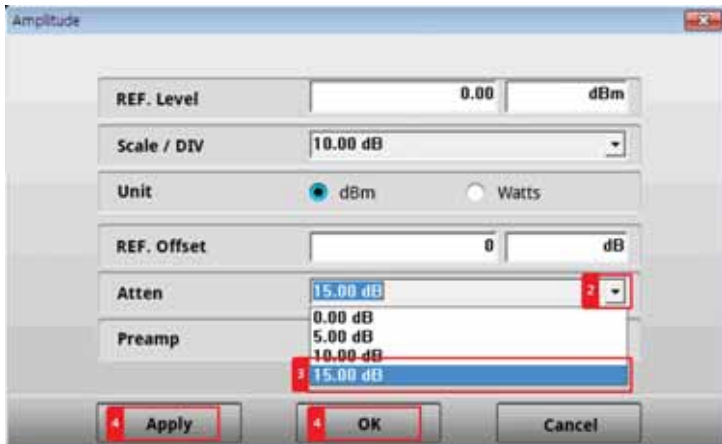
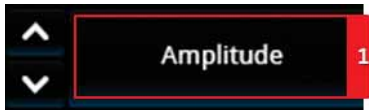


2.3.6 Attenuator Change

To protect the internal circuit of A734 and prevent saturation, you should change the setting value of the attenuator in A734 according to the input signal size. Generally, as the attenuator setting value gets lower, the noise floor gets lower. Reversely, as the attenuator setting value gets higher, the noise floor gets higher.

- 1) Click  or click Top menu -> Control -> Amplitude.
- 2) Click the right arrow of the Atten in the Amplitude control window.

- 3) Check the drop-down box and choose the one value.
*Values: 0dB, 5dB, 10dB, 15dB
- 4) Click the Apply or OK button to apply the setting.




Notice

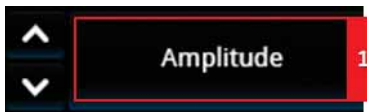
- 0 < Ref.Level ≤ 10dBm → Atten= 10dBm or higher (i.e., only 10dB and 15dB are available)
- 10 < Ref.Level → Atten=15dBm (no other values are available)

2.3.7 Preamp Change

You can turn on or off the pre-amplifier in the A734 to measure the low input signal. When Preamp is set to On, the internal gain increase, the sensitivity increases and the LO feed-thru decreases. Generally, it can be

used when the attenuator value is set to 0dB and the -20 dBm signal or lower signals are measured.

- 1) Click  or click Top menu -> Control -> Amplitude.
- 2) Choose On or Off of the Preamp of the Amplitude control window.
- 3) Click the Apply or OK button to apply the setting.

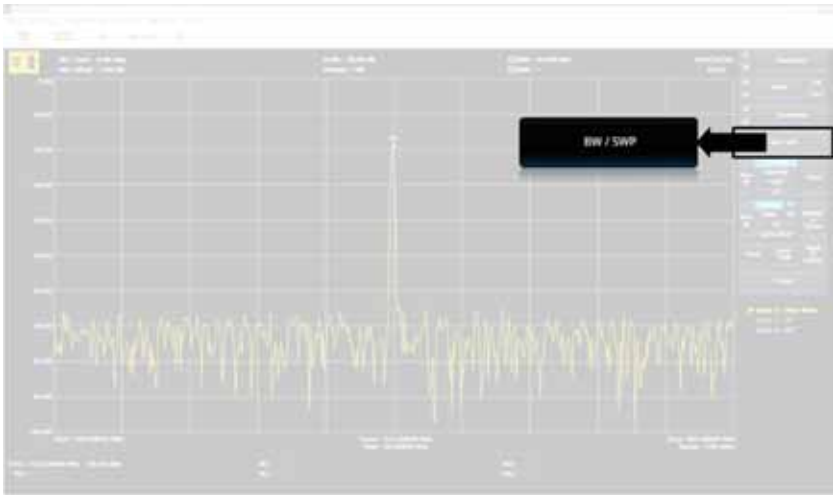


Notice

When the input signal power is high, saturation may occur. Therefore, the Preamp should be On only when the input signal power is low; it is recommended to turn on the preamp only when the input signal is -20 dBm or lower.

2.4 BW/SWP

The BW/SWP menu allows you to set the data sampling of the input signal, FFT size, detect method and video processing to express the trace on the Trace window. The RBW and the VBW can be set to either of Auto or Manual. When they are set to Auto, the values are automatically changed to the values specified in the Span setting. As the VBW value cannot be set to the value larger than the RBW value, the VBW value is same with the RBW value in Auto mode. Like the Auto mode, when the RBW value is adjusted to the value smaller than the VBW value in the Manual mode, the VBW value is changed to the value same with the RBW value.



There are two ways to open the BW/SWP control window; using 'Control' described in 1.4 or using the BW/SWP block in the Side menu. The BW/SWP block shown in the above provides following functions as described in 1.4.2.

BW / SWP

1

BW / SWP

1

Displays the window to set values related to RBW, VBW and Sweep.

Click the BW/SWP button in the above table and the BW/SWP control window appears as shown below. The following table shows description of the BW/ SWP control functions.

The screenshot shows a dialog box titled "BW/SWP" with a close button in the top right corner. The dialog contains the following controls:

- RBW:** Radio buttons for "Auto" (selected) and "Manual". A dropdown menu is to the right.
- VBW:** Radio buttons for "Auto" (selected) and "Manual". A dropdown menu is to the right.
- Sweep Type:** A dropdown menu showing "Continuous".
- Sweep Time:** A dropdown menu showing "Fast".
- Detector:** A dropdown menu showing "Sample" and an empty dropdown menu to its right.

At the bottom of the dialog are three buttons: "Apply", "OK", and "Cancel".

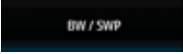
Item	Select	Description
RBW	<input checked="" type="radio"/> Auto	Automatically sets the RBW value according to the Span setting.
	<input type="radio"/> Manual	Manually sets the RBW value among the available RBW values in the list, according to the Span setting.

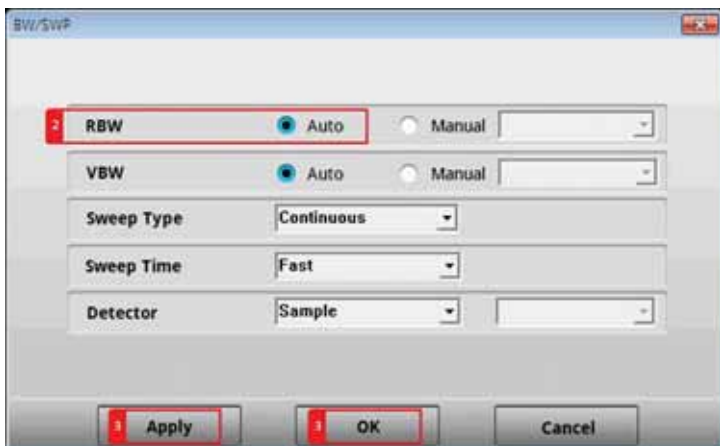
VBW	<input checked="" type="radio"/> Auto	Automatically sets the VBW value according to the Span setting.
	<input type="radio"/> Manual	Manually sets the VBW value among the available VBW values in the list, according to the Span setting.
Sweep Type		Sets the sweep data to Single or Continuous.
Sweep Time		Adjusts the amount of analyzed data by trace and displays the measurement result. Available only when the RBW / VBW is 3.2kHz or lower.
Detector		Sets the data detector type. Values: Max, Min, Sample, Average (Power, Voltage, Log)
Apply		Changes the BW/SWP values to the values set in the BW/SWP control window. The window is not closed.
OK		Changes the BW/SWP values to the values set in the BW/SWP control window. The window is closed.
Cancel		Cancels the setting. The BW/SWP control window is closed.

2.4.2 RBW Change

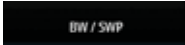
You can set the RBW to either of Auto or Manual. If it is set to Auto, the RBW value is automatically changed according to the Span setting. If it is set to Manual, the available RBW values are listed up according to the Span setting and you can select one of the values. Change the RBW value in the following procedure.

[Setting to Auto]

- 1) Click  or click Top menu -> Control -> BW/SWP.
- 2) Choose the Auto radio button in the BW/SWP control window.
- 3) Click the Apply or OK button to apply the setting.



[Setting to Manual]

- 1) Click  or click Top menu -> Control -> BW/SWP.
- 2) Choose the Manual radio button of the RBW in the BW/SWP control window.
- 3) Choose a desired RBW value from the drop-down box.
- 4) Click the Apply or OK button to apply the setting.

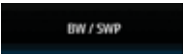


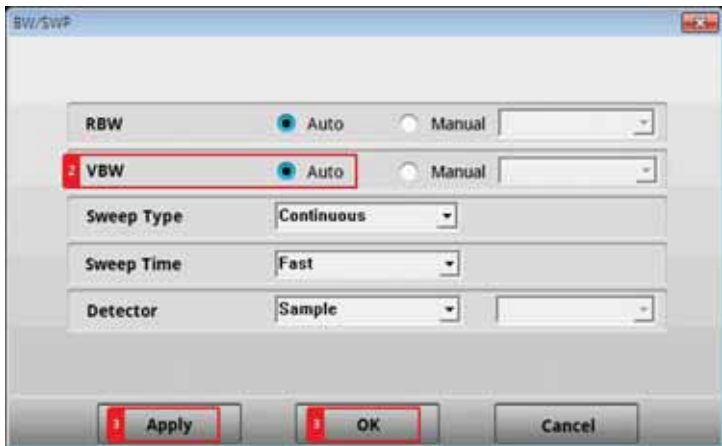
2.4.3 VBW Change

You can set the VBW to either of Auto or Manual. If it is set to Auto, the VBW value is automatically changed to the value same with the RBW value.. If it is set to Manual, the available VBW values are listed up according to the Span setting and you can select one of the values. The


A734 VBW value cannot be set to the value larger than the RBW value. Therefore, regardless of the Auto or Manual setting, when the RBW value is set to the value smaller than the VBW value, the VBW value is automatically set to the value same with the RBW value. Change the RBW value in the following procedure.

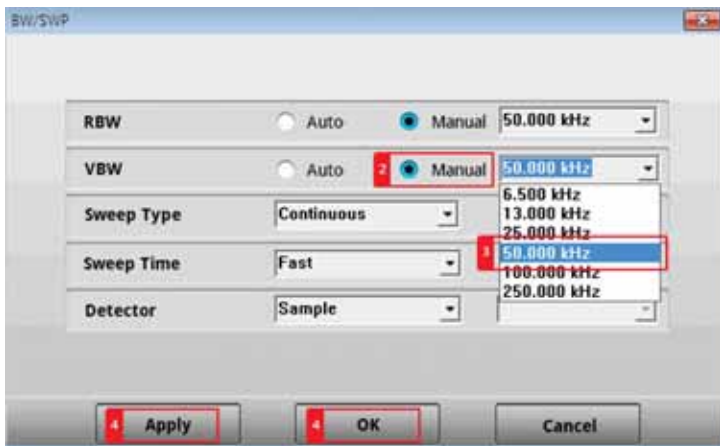
[Setting to Auto]

- 1) Click  or click Top menu -> Control -> BW/SWP.
- 2) Choose the Auto radio button of the VBW in the BW/SWP control window.
- 3) Click the Apply or OK button to apply the setting.



[Manual Setting]

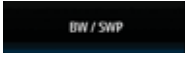
- 1) Click  or click Top menu -> Control -> BW/SWP.
- 2) Choose the Manual radio button of the VBW in the BW/SWP control window.
- 3) Choose a desired VBW value from the drop-down box.
- 4) Click the Apply or OK button to apply the setting.

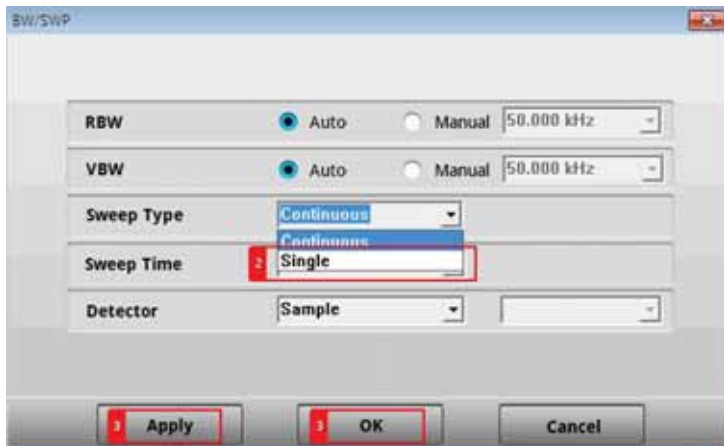


2.4.4 Sweep Type Change

The Sweep Type determines whether to display sweep data continuously or to display sweep data whenever an action is taken. When the Sweep Type is set to Continuous, the measurement result is continuously updated according to sweep. When it is set to Single, the sweep data at the

moment of clicking Single is displayed and the displayed sweep data is kept until the next click of Single. The default setting value is Continuous. To change the value to Single, do as follows:

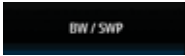
- 1) Click  or click Top menu -> Control -> BW/SWP.
- 2) Choose Single from the drop-down box of the Sweep Type in the BW/SWP control window.
- 3) Click the Apply or OK button to apply the setting.



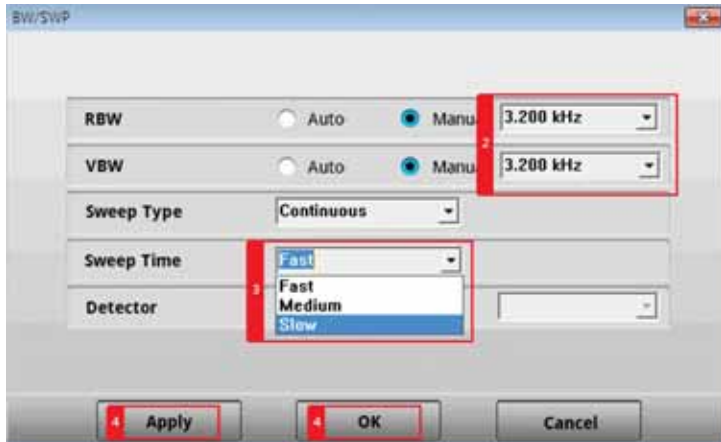
To update the trace with the current sweep data while setting as Single, click the Apply button again. To change to Continuous, choose Continuous, instead of Single, from the drop-down box of the Sweep Type in the BW/SWP control window.

2.4.5 Sweep Time Change

The Sweep Time adjusts the sweep data amount, analyzes the data and then displays the result. When it is set to Fast, the smallest data amount is analyzed and the result is displayed. When it is set to Slow, the largest data amount is analyzed and the result is displayed. The Fast status gives the faster sweep speed than that of the Slow status and the Slow status gives higher accuracy than that of the Fast status. The Sweep Time cannot be applied to all conditions; it can be applied only when the RBW or the VBW is set to 3.2 kHz or less.

- 1) Click  or click Top menu -> Control -> BW/SWP.
- 2) Check whether the RBW or the VBW setting value in the BW/SWP control window is 3.2 kHz or less.
(If the value exceeds 3.2 kHz, change it to 3.2 kHz or less.)
- 3) Choose one among Fast, Medium and Slow from the drop-down box of the Sweep Time in the BW/SWP control window.
- 4) Click the Apply or OK button to apply the setting.






As the speed at the Slow status is 4 ~ 5 times slower than that at the Fast status, there is no change in the trace for a certain period at the Slow status.

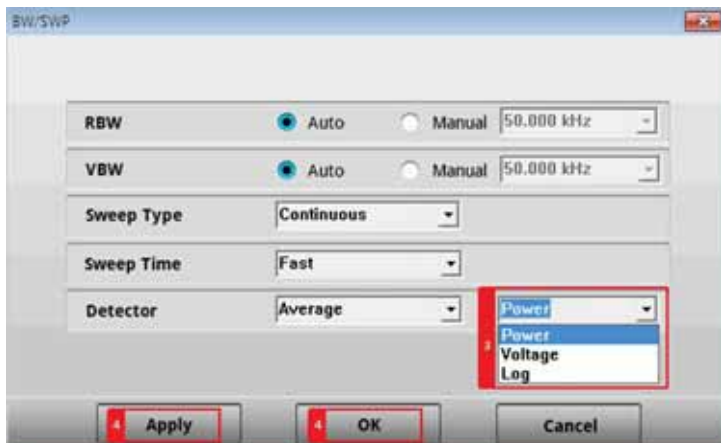
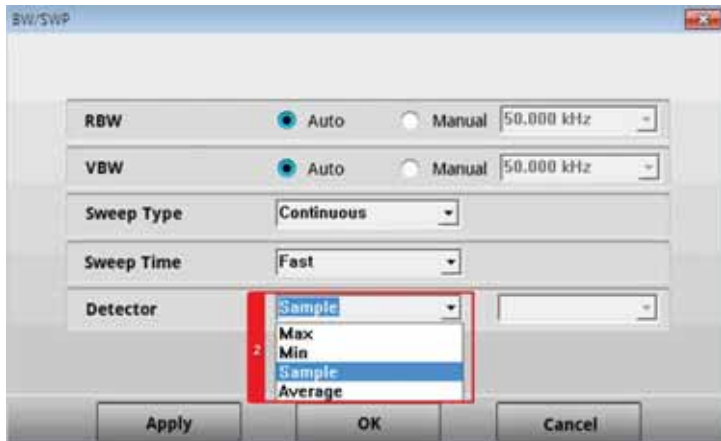
2.4.6 Detector Change

The Detector sets the method to extract data by sampling input signals. You can choose one from Min, Max, Sample and Average. For Average, you can choose one from Power, Voltage and Log. Set this as follows.

- 1) Click  or click Top menu -> Control -> BW/SWP.
- 2) Choose a desired setting from the drop-down box of the BW/SWP control window.
- 3) If Average has been set in 2), choose a desired setting from Power, Voltage and Log in the right drop-down box (If any other one but Average has been set in 2), go to 4).
- 4) Click the Apply or OK button to apply the setting.

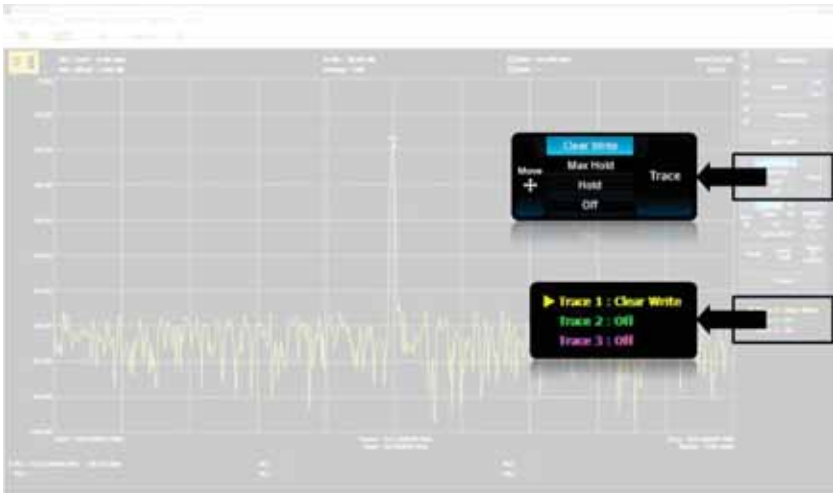
1

BW / SWP



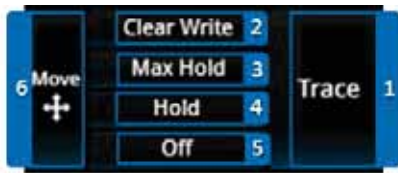
2.5 Trace

With the measured sweep data, up to three traces can be set. The Trace 1, Trace 2 and Trace 3 are distinguished by the color: yellow, green and pink. Each trace is expressed as one of the four statuses. The following figure shows the Trace block of the Side menu.



There are two ways to open the Trace control window; using 'Control' described in 1.4 or using the Trace block in the Side menu. The Trace block shown in the above provides following functions as described in 1.4.2.

Trace



1 Displays the window to enter information related to Trace.

2 Sets the status of the selected trace to Clear Write.

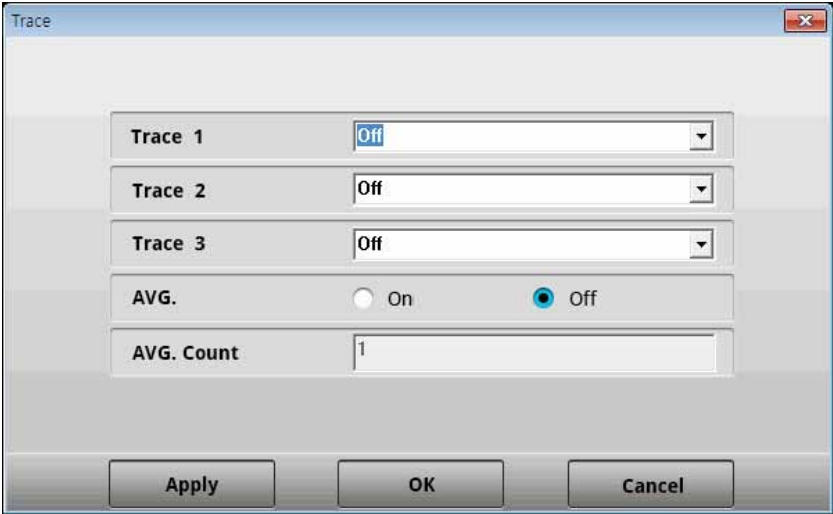
3 Sets the status of the selected trace to Max Hold.

4 Sets the status of the selected trace to Hold.

5 Sets the status of the selected trace to Off.


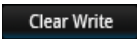
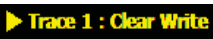



6 Selects the Trace level from 1 to 3 (changed as 1 → 2 → 3 as clicking the button).

Click the Trace in the Trace block and the Trace control window appears. In the control window, you can set the Trace-related items at once. Move, Clear Write, Max Hold, Hold and Off set the status of each trace without opening the Trace control window.



2.5.1 Trace Status Change

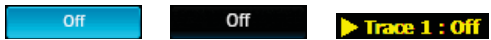
The Trace 1, Trace 2 and Trace 3 are displayed one of four statuses (Clear Write, Max Hold, Hold and Off). To change the setting, select the trace number and then set it to one of the four statuses. The setting status item is colored in blue to indicate that it is enabled and the other three statuses are colored in black to indicate that they are disabled. According to the setting, the Trace status display at the bottom of the Side menu is changed.

Enabled	Disabled	Status	Description
			<ul style="list-style-type: none"> - The selected Detector status; updates the trace with the data collected by the RBW and the VBW.
			<ul style="list-style-type: none"> - Changes the each point value to the maximum value based on the sweep data. - If the current sweep data is larger than the previous sweep data, the value is replaced with the larger one (if it is smaller than the previous sweep data, it is kept as it is.)



- Keeps the trace at the moment of changing to Hold status.

- Even when sweep is done, the trace is not changed at the Hold status.



- Removes the trace from the chart.

There are two ways to open the Trace control window; using the Move button and the status display box or changing in the Trace control window.

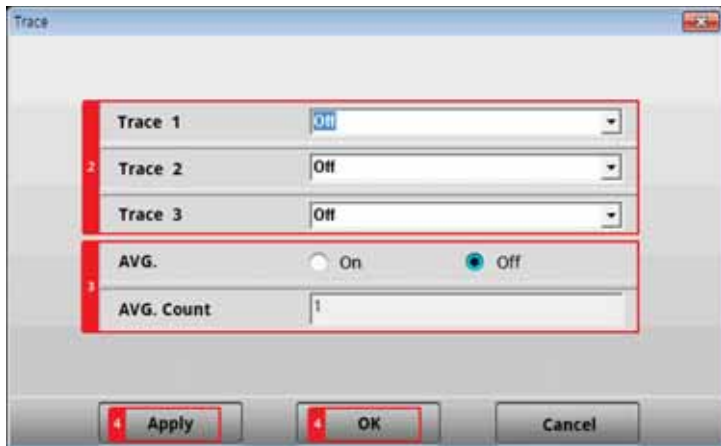
[Move button & Status box]

- 1) Choose the trace to change by using the Move button.
- 2) Choose one from the four statuses for the selected trace: Clear Write, Max Hold, Hold or Off.



[Trace Control box]

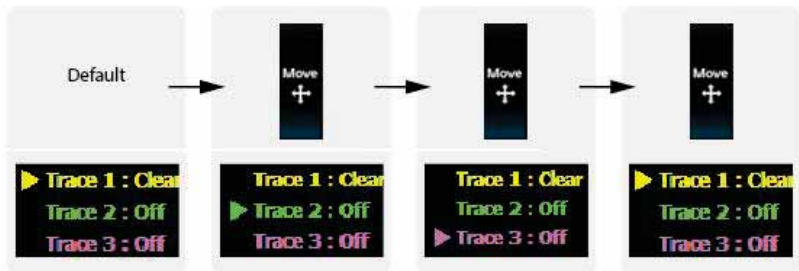
- 1) Click **Trace** or click Top menu -> Control -> Trace.
- 2) Choose one status from Trace 1, Trace 2 and Trace 3 in the Trace control window.
- 3) Set the trace average (AVG.) to On or Off and then enter the value in the Count.
- 4) Click the Apply or OK button to apply the setting.



In the Trace control box, you can set the statuses of Trace 1, Trace 2 and Trace 3 at once and set the AVG. of the selected traces. '*AVG. Count*' can be set up to Max 20 and the average trace is calculated by sweeping the data with the specified count value.

2.5.2 Trace Select

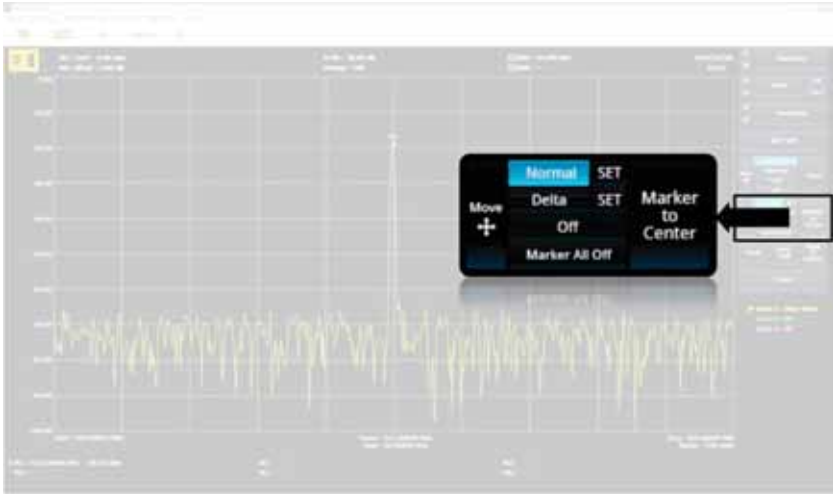
You can change the three selected traces by using the Move button of the Trace block. As shown in the following figure, the default yellow “▶ **Trace 1: Clear Write**” is set. In this status, click the Move button and the ▶ in front of Trace 1 is moved to the Trace 2. Here, click the move button again to move the ▶ in front of Trace 3; the Trace 3 is selected by moving the ▶ to in front of the Trace 3.



As shown in the above table, Trace is selected by using the Move button. And the selected Trace is displayed as the foremost trace on the chart. In other words, selecting Trace 1 displays the yellow trace at the foremost and the marker is located on the yellow trace and displays the point value on the marker table. Like this, selecting Trace 2 displays the green trace at the foremost and the marker is located on the green trace, and selecting Trace 3 displays the pink trace at the foremost and the marker is located on the pink trace.

2.6 Marker

The Marker is used to check the amplitude and frequency information of the point. On the A734 PC GUI, up to six markers can be set and markers are controlled and set by using the Marker block as shown below.



The Marker has no control window but is controlled through the Marker block at the Side menu. The following table describes each item on the Marker block.

Marker



- 1 Sets the selected marker frequency to Center Frequency.
- 2 Sets the selected marker to Normal.

3 Sets the frequency of the selected normal marker.

4 Sets the selected marker to Delta.

5 Sets the frequency of the current Delta marker.

6 Sets the selected marker to Off.

7 Sets all of the currently-set markers to Off.

8 Selects the Trace level from 1 to 3 (changed as 1 → 2 → 3 → 4 → 5 → 6 as clicking the button).

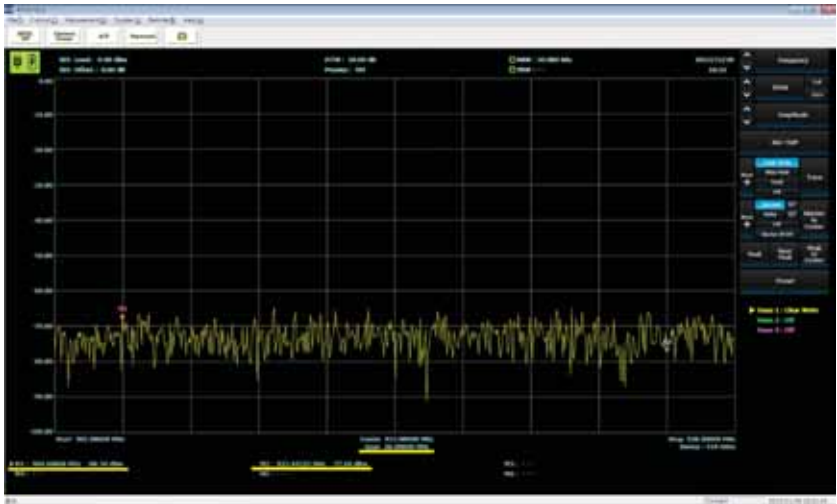
2.6.1 Normal Marker Setting

There are two types of markers you can set on the A734 PC GUI: Normal and Delta. The Normal marker is set by clicking the Normal button in the Marker block. The setting is distinguished by the button color as shown below.



The Normal marker provides functions as follows:

- Displays the Frequency and Amplitude information of the point marked with the Normal marker.
- The Normal marker should not exceed the span range, i.e., from Start Frequency to Stop Frequency.
- The marker is fixed. Therefore, when you adjust the center frequency or span after setting the marker, the marker displays the frequency and amplitude information of the changed point on the fixed location (see the following image.)



a) Before changing the span



b) After changing the span

[Setting Normal Marker]

- 1) While no marker has been set, click the Normal button to set M1 (Marker 1).
(The initial marker location is Center Frequency.)
- 2) Click the Set next to Normal.



- 3) Enter the Frequency information where the Normal marker 1, set in 1), will be located.
- 4) Click the Apply or OK button to apply the setting.



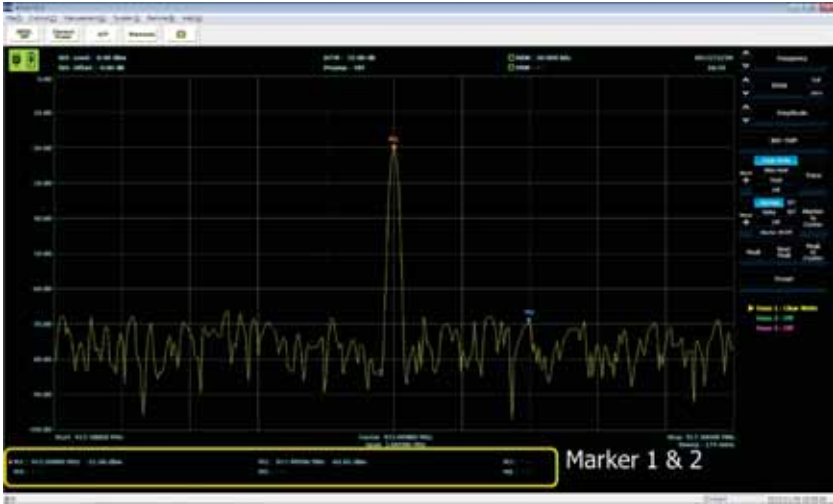
- 5) Click the Move button to select M2. When M2 has been selected, "►" is displayed in front of M2 in the Marker table at the bottom of the chart.
- 6) Click the Normal button while M2 has been selected (Off) to set M2.
- 7) Click the Set next to Normal.



- 8) Enter the Frequency information where the Normal marker 2, set in 6), will be located.
- 9) Click the Apply or OK button to apply the setting.



When setting the Normal marker as described before, the Marker is set as shown in the following figure and the Marker table is displayed at the bottom of the Trace window. The Marker table displays the Frequency and Amplitude information of the current marker. The marker which has not been set is displayed as '----'. Like this, you can set Marker 3 ~ 6 by using the Move button and the Status button.



2.6.2 Delta Marker Setting

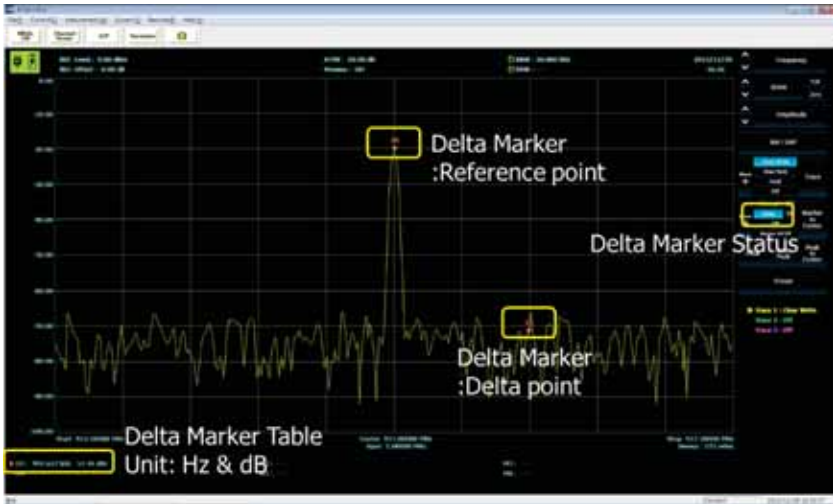
The Delta marker displays the difference between the reference Frequency and Amplitude (set as Normal) and the Frequency and Amplitude of Delta point. In other word, by setting the location where the Delta Marker is On as the reference, move the Delta point to display the gap between the frequency and the amplitude.

On Status	Off Status
Delta	Delta

When the Delta marker is set, the reference point is not changed even though the Center Frequency or Span is changed. Therefore, the Frequency and Amplitude from the reference point to the Delta point regardless of the frequency.

When the marker is changed from Normal to Delta, the main screen

display is changed as shown in the following figure.



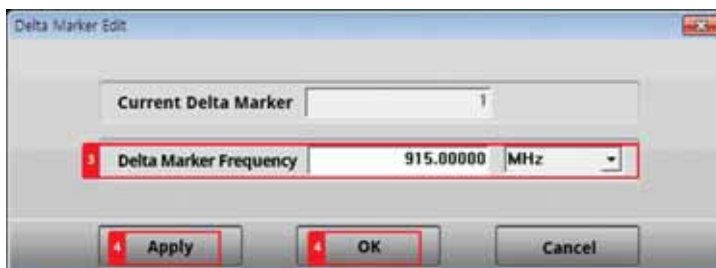
As shown in the above figure, when Delta is enabled, M1 is changed to 1R and 1D and the Marker table displays the difference of Frequency and Amplitude between 1R and 1D. For the Amplitude, the unit is changed to dB.

[Setting Delta Marker]

- 1) When the marker is set to Off or Normal, click the Delta button to set the marker as the Delta marker.
If the marker is Off, the initial location of the Reference Marker (1R) and the Delta Marker (1D) is Center Frequency. If Normal, 1R and 1D are located on the Normal setting point.
- 2) Click the Set next to Delta.



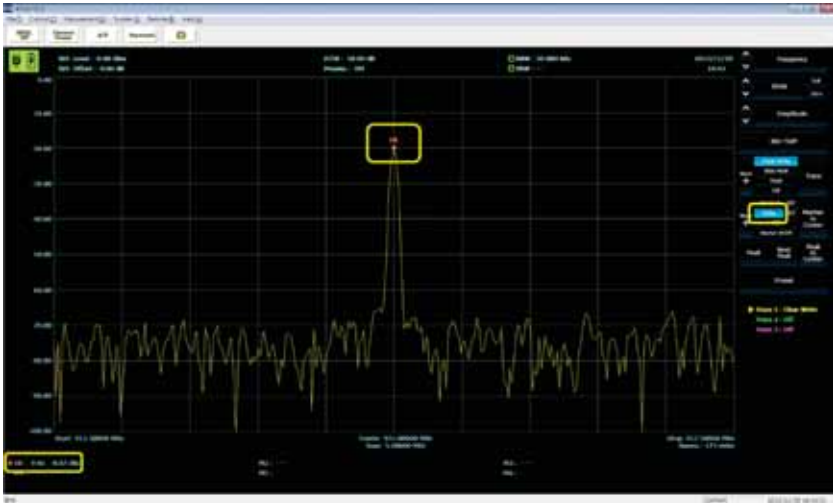
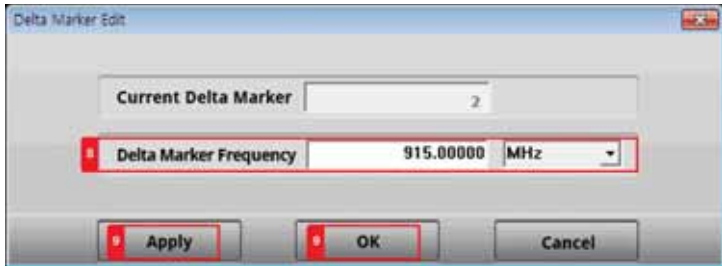
- 3) Enter the frequency information where the 1D, set in 1), will be located.
- 4) Click the Apply or OK button to apply the setting.



- 5) Click the Move button to select M2. When M2 has been selected, “►” is displayed in front of M2 in the Marker table at the bottom of the chart
- 6) Click the Delta button while M2 has been selected to set 2R and 2D.
- 7) Click the Set next to Delta.



- 8) Enter the frequency information where the 2D, set in 6), will be located.
- 9) Click the Apply or OK button to apply the setting.



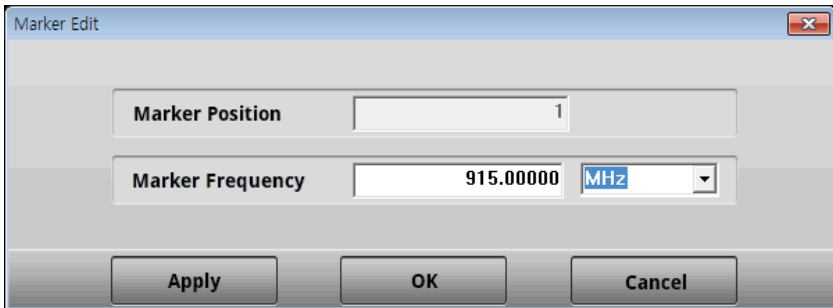
2.6.3 Marker Move

There are three ways to move the marker; by entering the frequency, by clicking the mouse, or by scrolling the mouth wheel.

- **Entering Frequency**

Click **SET** on the right of Normal and Delta and the following Frequency input window appears. Enter the value in the Marker Frequency field to move the marker to the entered frequency

point.



- **Clicking the Mouse**
Select the marker to move and then click the trace point where the marker will be moved.
- **Mouse Wheel Scroll**
Select the marker to move and then scroll the mouse wheel to move the marker to left or right.

2.6.4 Marker Termination

There are two ways to terminate the marker.

- **Off**
 - Terminates the selected marker only.
 - Click the Move button to move to the desired marker and then click Off to terminate the marker.
 - Same for Normal and Delta markers.
 - When clicking Off, the Frequency and Amplitude on the Marker table is changed to “- -”.



- **Marker All Off**
 - Terminates all markers.
 - Terminates all Normal and Delta markers with just one click.
 - When clicking Marker All Off, the Marker table at the bottom of the chart disappears.

2.6.5 Marker to Center

The Marker to Center changes the selected marker point to Center Frequency. If a signal appears on the location which is not the center, select the peak point with a marker and then click the Marker to Center button to change the Center Frequency to the frequency where the marker is located. At this time, Span and the other settings are same.

Notice

The Peak to Center sets the marker on the highest amplitude point among the sweep data on the trace and to moves the peak point to the Center Frequency. Therefore, it is a different function from the Marker to Center. The Marker to Center sets the marker point which is not the peak point as the Center Frequency.


2.7 Peak

The Peak shows the Frequency and Amplitude information of the highest Amplitude point on the measured trace. When the Peak is clicked, the marker is set on the highest Amplitude point on the measured trace. If there is a marker set, the marker with the selected number is moved to the peak point. If there is no marker set, a marker is set on the peak point.



The Peak block consists of three functions. It provides following functions as described in 1.4.2.

Peak



1 Peak 2 Next Peak 3 Peak to Center

1

Sets the marker on the highest amplitude point among the measured sweep data.

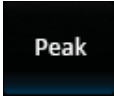
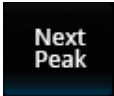
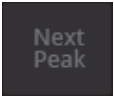
2

Moves the marker to the amplitude point just lower than the current amplitude point.

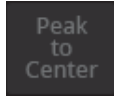
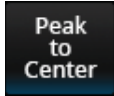
3

Sets the highest amplitude point among the measured sweep data as the center frequency.

The following table shows the detailed functions of Peak block buttons.

Name	Enable	Disable	Description
Peak		-	<ul style="list-style-type: none">- Always enabled.- Sets the marker on the highest amplitude point on the measured trace- If there is a marker set, moves the marker to the peak point.
Next Peak			<ul style="list-style-type: none">- Enabled → A marker has been set- Disabled → No marker has been set- Moves the marker to the point of which amplitude is smaller than the current marker point.

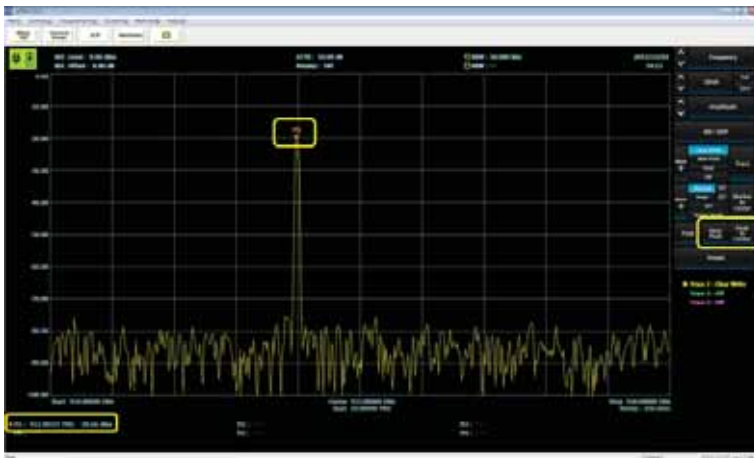
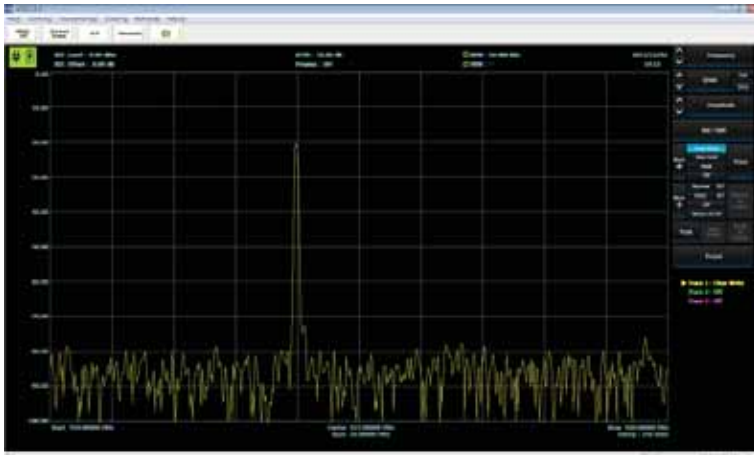
Peak
To
Center



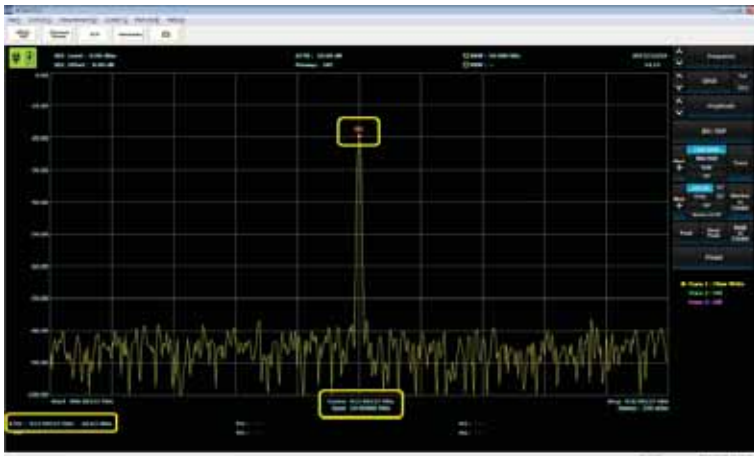
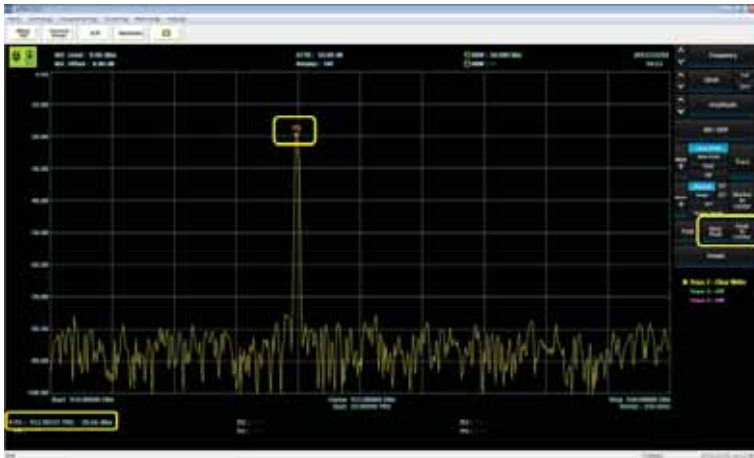
- Enabled → A marker has been set
- Disabled → No marker has been set
- Moves the frequency of the highest amplitude point on the trace which has been measured with the identical span to the Center Frequency.
- As moving to the Center Frequency, moves the marker, too.

As shown in the left figure below, when the amplitude and frequency information of the peak point of the trace is required, click the Peak button to set M1 on the peak point of the trace and the Next Peak and the Peak to Center buttons are enabled.

The Next Peak button and the Peak to Center button are enabled when a marker is set. When the marker is All Off, the buttons are disabled.

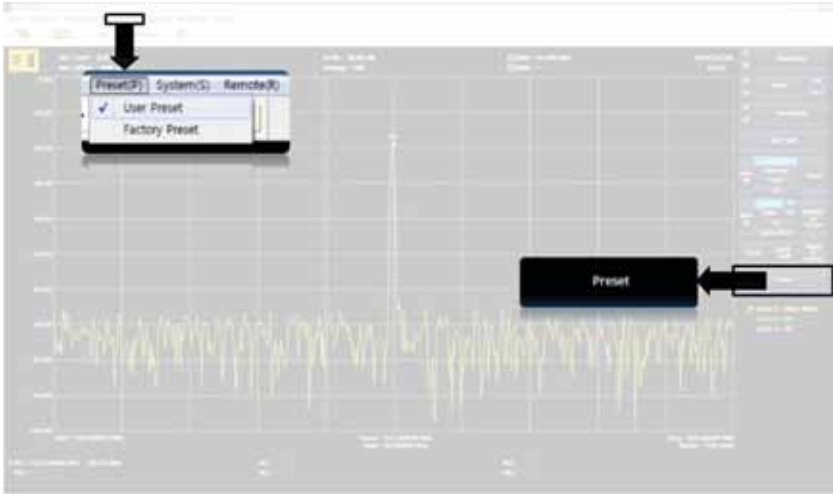


'*Peak to Center*' is used to locate the peak point of the trace to Center Frequency. As shown in the right figure above, when the peak is set or when the marker is Normal, click '*Peak to Center*' and the trace peak point with the identical span is changed to the Center Frequency.



2.8 Preset

The Preset initializes configurations of the equipment. The Preset menu on the top menu provides two options: User Preset and Factory Preset. The following figure shows the location of the Preset button.



In the Preset menu, you can choose either of User Preset or Factory Preset with .

Preset

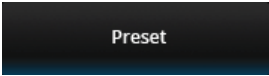
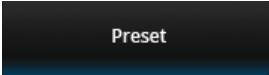
1

Preset

1

Changes the configuration setting to the default setting.

The following table shows how to set and execute the Preset menu.

Name	Check	Action	Description
User Preset	<input checked="" type="checkbox"/> User Preset		- Starts preset with the User Preset set in the terminal.
Factory Preset	<input checked="" type="checkbox"/> Factory Preset		- Starts Factory Preset.




The Factory Preset is the manufacturer-setting which cannot be changed by the user but the User Preset can be changed by the user. Changing the User Preset is not available on the remote GUI but available on the system preset on the local GUI.



2.9 Measure

The A734 PC program provides four user-convenient functions. As shown in the following figure, the functions are included in the Icon block on the top of the main window.



The following table provides a brief description of the functions.

	- Releases all measure functions set.
	- Measures the channel power of the bandwidth set.
	- Measures the channel power, ACPR and ACPL measured with the bandwidth and the channel space.

	- Measures the harmonic element of which center frequency is the carrier frequency.
	- Saves the measurement screen as an image file.

2.9.1 MEAS. Off

The MEAS.Off releases the enabled Channel Power, ACP and Harmonic measurements. When measuring the Channel Power, the ACP or the Harmonic, the main window is changed to each measurement screen. After measuring them, the main window is changed to the default screen and the MEAS.Off measurement function is released.

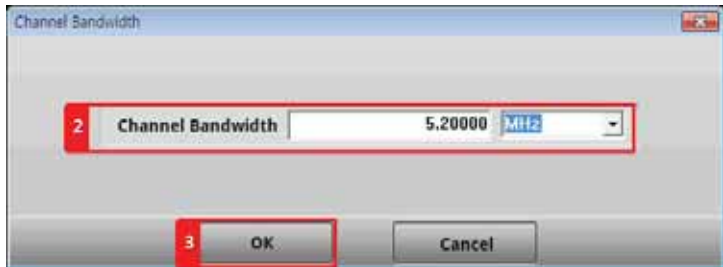
2.9.2 Channel Power

The Channel Power measures the channel power within the set bandwidth. Most of standardized wireless communication has a defined bandwidth. This function is to measure the signal strength of the communication system which has channels; when a user enters the bandwidth, the measurement result is output. You can measure it as follows:

- 1) Click the Channel Power icon on the top.



- 2) Enter the bandwidth in the Channel Bandwidth field.
- 3) Click the OK button.



The default channel bandwidth is the two frequency grids of the chart. If a user changes it, the bandwidth is changed. After entering the bandwidth, click the 'OK' button to change the screen to the channel power measurement mode as shown below.

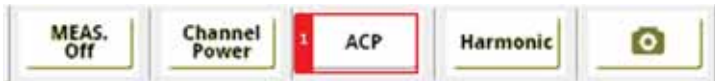


As shown in the above figure, the blue box is the channel bandwidth and the bottom of the blue box displays the channel power measurement result.

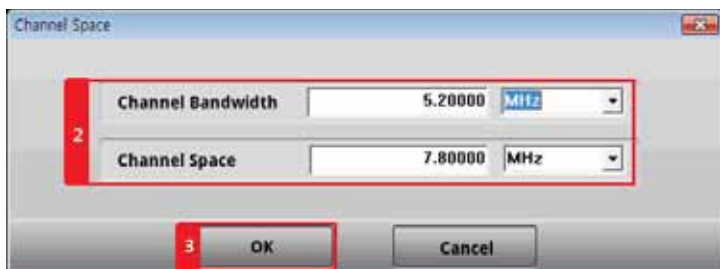
2.9.3 ACP

The ACP measures the signal strength of the adjacent channel to the main channel. You need to set both of the channel bandwidth and the channel space to measure the channel power of the main channel and the adjacent channel and to calculate and display the relative value power. You can measure it as follows:

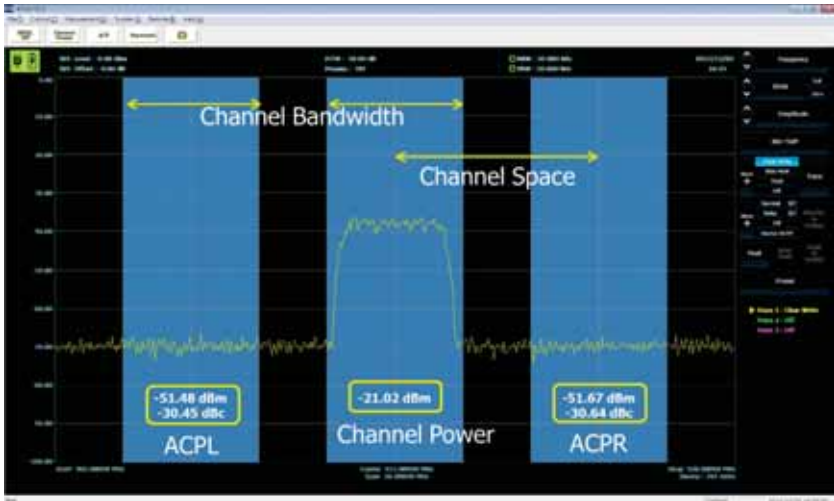
- 1) Click the Channel Power icon on the top.



- 2) Enter the values in the Channel Bandwidth and the Channel Space.
- 3) Click the OK button.



The default channel bandwidth is the two grids of frequency center and the channel space is three grids from the center. When a user changes the bandwidth and space, the changed values are applied. After entering the values, click 'OK' to change the screen to the ACP measurement mode as shown below.



As shown in the above figure, there are three blue boxes in the ACP. The blue box at the center is the main carrier channel power and the left and the right blue boxes are the adjacent channel. The channel bandwidth is the width of each blue box and the channel space is the difference of frequency between the center of the center blue box and the center of the right or left blue box. At the bottom of each blue box, the channel power is displayed. The difference of ACPL (Adjacent Channel Power Left) and ACPR (Adjacent Channel Power Right) from the main channel power is displayed at the bottom of each blue box..

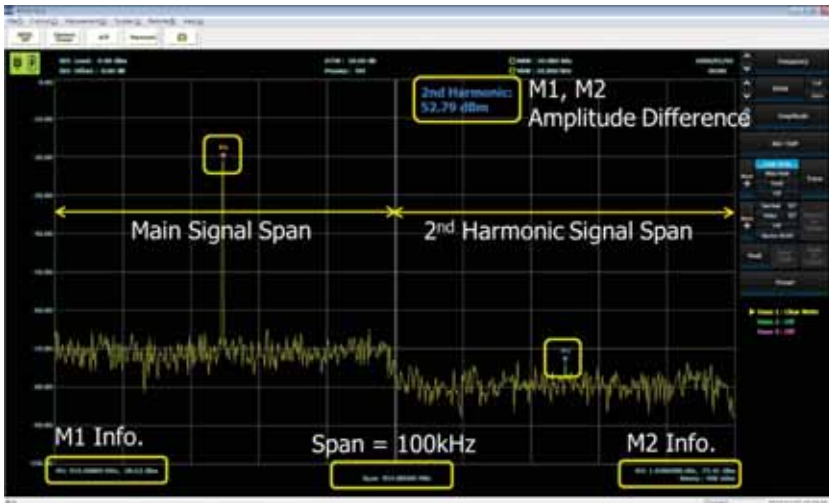
2.9.4 Harmonic

The Harmonic allows you to view the harmonic element comparing to the main signal. You can measure it as follows:

- 1) Click the Harmonic.



- 2) The main window is changed to the Harmonic measurement mode.
 - *The signal should be at the center.

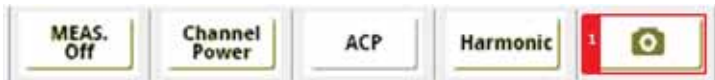


The left five grids are the main signal area and the right five grids are the 2nd Harmonic area. When the Harmonic function is executed, each span is automatically changed to 100 kHz, M1 tracks the peak value of the carrier signal and M2 tracks the peak value of the 2nd Harmonic. At the bottom, the frequency and amplitude information of the M1 and M2 is displayed and the difference of amplitude between the main signal and the 2nd harmonics signal is displayed at the top of the left five grids.

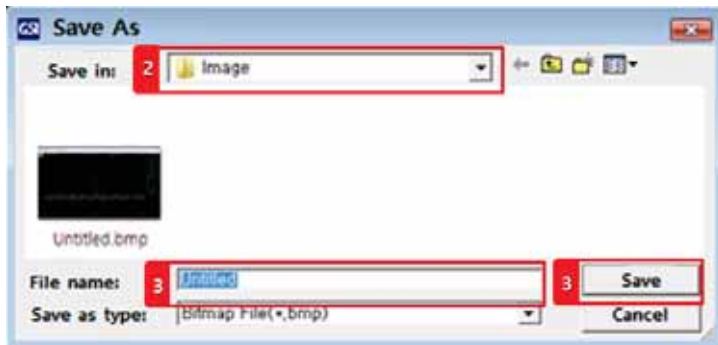
2.9.5 Screen Shot

The camera button located on top of the window takes a shot of screen. The sequence of execution is as follows.

- 1) Click the camera button located on top of the window.



- 2) Select a directory.
- 3) Input a file name.
- 4) Click "Save" button.



Default path is set to \\WA734\\Image, and the path and name of the files can be changed by users. The file format is Bitmap.