

Multi Channel Monitor Software

V 1.0

ADVANTEST

1. Outline

This application software is for U3700+2ch (OPT10) series two channel spectrum analyzer. (From now on SPA) When the U3700 (+OPT10) series and this software are combined and used, we can obtain the level of assignment frequency at assignment time interval. The frequency can be specified up to 62 channels or less according to the frequency list. Moreover, the measurement data is preserved in the CSV file. Therefore, the data analysis after it measures it can be facilitated. We are very happy if it helps even a little by the radio wave monitor etc. (This software is free software.)

2. System configuration

Spectrum Analyzer:	U3741+OPT10, U3751+OPT10, (U3771/72+OPT10) Other U3841, U3851, (and U3872) operate, too. However, please set the Measurement Time by about 1.3 times of measuring time. (As for the U3800 series, the measurements end faster than the U3700 series because measuring time is fast.)
Initial setup:	Please confirm the setting of SPA, because this software doesn't set the following matters. Trace 1001 points, AT command mode, ATT, Pre-Amp, Switch of input terminal Hi or Lo in U3771/U3772/U3872. (A detailed setting of SPA can be done before the <u>START</u> key to this software is pressed.)
PC OS:	Windows XP/2000. (Recommendation)
Interface:	LAN

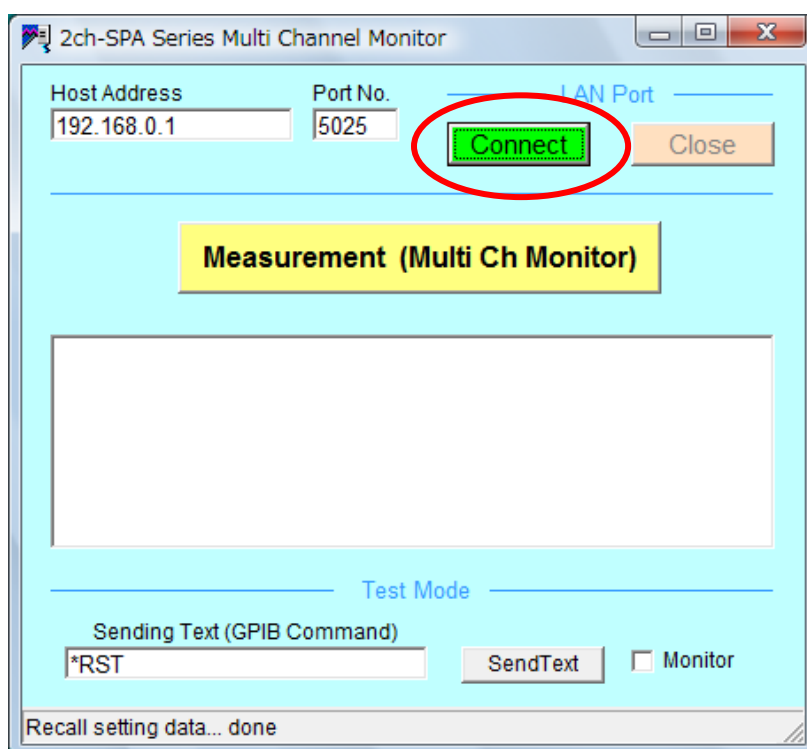
3. Install sample software U3700 MultiCH Monitor in the personal computer.

- Download the sample software from the Advantest home page and unpack the file.
- The installer is in the folder "PackageForU3700".
- The manual is in the folder "Manual".

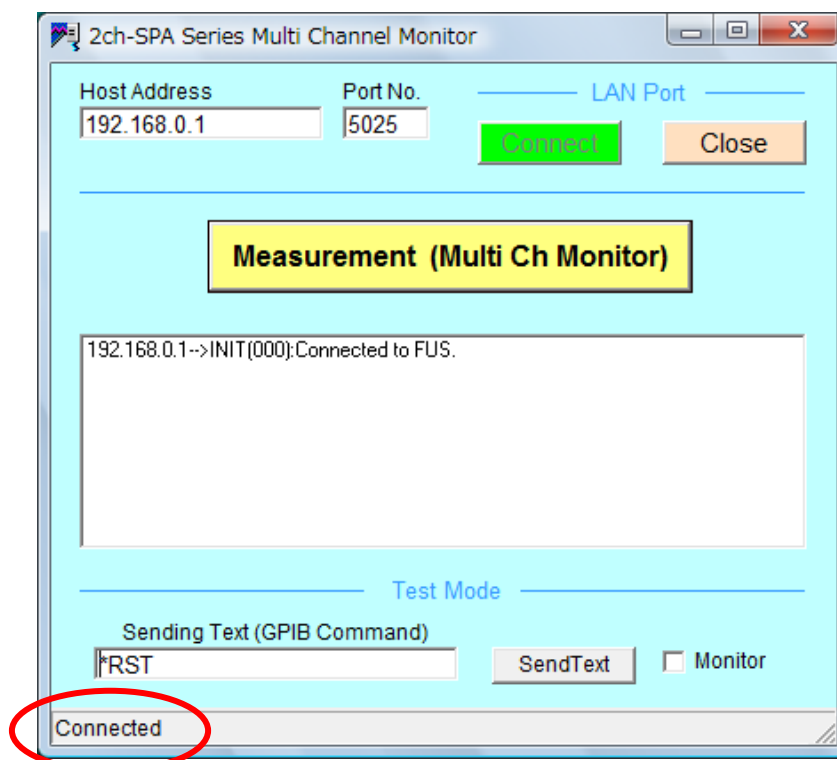
4. Start the sample software.

- Connect the SPA with the personal computer. (Please refer to Chapter 10.)
- Execute: "Start" - "Program" - "U3700 MultiCH_Monitor V10"
- Set the Internet Protocol address of SPA. (Port No. is 5025.)

*When the Connect key is pressed, the personal computer is connected with SPA.



* When the connection is completed, "Connected" is displayed in the message line.



*The reference: SPA can be accessed from the Test Mode.

The GPIB command is written in Sending Text Box, and it is possible to send it to SPA.
(Moreover, when the Monitor is checked, communication LOG is displayed.)

Data can be acquired by sending the query command (CF? etc).

When the Send Text key is pressed in the above-mentioned, SPA is initialized.

(Please make Monitor Off before pushing the Measurement (Multi Ch Monitor) key.)

5. Measurement Screen: It is displayed when the Measurement (Multi Ch Monitor) key is pressed.

*Measurement Sequence

- 1) Decide the measurement mode.
- 2) Make or confirm the measured frequency table.
- 3) Decide the Measurement Time and the Time Interval (/Band). (Approximately)
- 4) Push the SPA Setup and do the measurement preparation.
- 5) Push the START and begin measuring.
- 6) When the measurement ends, it stops automatically. (Data is saved if auto save is on.)
- 7) The measurement ends on the way if STOP is pressed. (The data save menu appears.)

The screenshot shows the 'Measurement (Multi Channel Monitor)' window. It features a top section with 'Measurement Mode' (Normal (Sample), Power AVG = 10, Max / Min), a 'Frequency List' button, and checkboxes for 'Preset SPA' and 'Peak Search'. To the right is a 'Directory' field with 'Auto Save' checked and a 'Comment' field. Below this are 'Measurement Time' (60 min) and 'Time Interval/ Band' (2 sec) fields. A row of buttons includes 'SPA Setup', 'START', 'STOP', and 'Close'. A large empty box occupies the center. At the bottom is a status bar with fields for Date, Time, Freq-1, LV1-1, LV1-2, Judge, Freq-2, LV2-1, LV2-2, Judge, and Comment. Red boxes with letters A through G label specific elements: A points to the Measurement Mode section, B to the Frequency List button, C to the Time Interval/ Band field, D to the SPA Setup button, E to the START button, F to the Directory field, and G to the STOP button.

A. Measurement Mode

Normal (Sample) : The level of the assignment frequency is got.

Power AVG (N) : As for the measurement, Power Average is set.

: Then, the level of the assignment frequency is got.

Max/Min : As for the measurement, TraceA-Max, TraceB-Min are set.

: Then, the level of the assignment frequency is got.

Peak Search : It looks for the utmost level in the channel band.

Preset SPA : The measurement is started after initializing SPA.

B. Measurement Frequency Table (The Frequency List key is pressed.)

The screenshot shows the 'Frequency List and Conditions' window with two sections: Band-1 and Band-2. Each section contains frequency setup parameters and measurement conditions.

Band-1: Frequency Setup

- CH1(H) / CF = Channel Freq.(MHz) 968 + Step Freq 40 x N <16 (31)
- SPAN = Start (MHz) 900 Stop (MHz) 1300 CHBW: 36
- CH2(V) / CF = Channel Freq.(MHz) 988 + Step Freq 40 x N <16 (31)
- SPAN = Start (MHz) 900 Stop (MHz) 1300 CHBW: 36

Measurement Conditions (Band-1):

- Ref.L: 80 dB/Div: 5 dB
- Units: ☒ dBuV ☐ dBm
- RBW: 100 kHz VBW: 100 kHz SWP: 80 ms
- Alarm: Upper 100 Lower 0 ☐ Beep On
- Recall buttons: Recall-1, Recall-2, Recall-3, Recall-4, Recall-5

Band-2: Frequency Setup

- CH1(H) / CF = Channel Freq.(MHz) 1208 + Step Freq 30 x N <15
- SPAN = Start (MHz) 1100 Stop (MHz) 1500 CHBW: 27
- CH2(V) / CF = Channel Freq.(MHz) 1223 + Step Freq 30 x N <15
- SPAN = Start (MHz) 1100 Stop (MHz) 1500 CHBW: 27

Measurement Conditions (Band-2):

- Ref.L: 80 dB/Div: 5 dB
- Units: ☒ dBuV ☐ dBm
- RBW: 100 kHz VBW: 100 kHz SWP: 80 ms
- Alarm: Upper 100 Lower 0
- Save buttons: Save-1, Save-2, Save-3, Save-4, Save-5

Set the Start frequency and Stop frequency of the SPAN frequency to cover the measurement frequency. As for frequency point N, specification N+1 times are measured. When the setting is completed, Save can be done. Recall is possible later. (Five files available) The check box such as CH2(V) is On/Off of the measurement. (Band1/CH1 is always on.)

- C. Measurement Time** (A few error margins are caused because measuring time is different by the measurement mode and the capacity of the file.)

Measurement Time: Total measurement time is set. (Unit: minutes)

Time Interval/ Band: Interval Time/Band is set. (Unit: seconds)

It becomes twice the Interval Time when two bands are set.

A set limit: about 7 days or less at 32 frequencies and 10 sec time interval.

The file size: about 6 M bytes at 32 frequencies, 10 hours, 2 sec time interval.

Note) the capacity of the file increases when the point increases, so you should increase the interval of time or decrease measuring time.

- D. Measurement preparation** (Push the SPA Setup key.)

You check the measurement parameter, and push the SPA Setup key.

The item is displayed when there is an error and the measurement is not done.

If it is error-free, the START key becomes effective.

- E. Measurement** (Push the START key.)

The measurement is begun. As for the key, only the STOP key becomes effective.

"Detailed setting"

It is possible to set it to SPA in detail before the measurement begins.

There is an item not set and set it according to the model, please. (U3771/72, U3872)

The SPA LOCAL key is pressed and SPA panel is made effective.

Hi and Lo of the input terminal in U3771/U3772/U3872, ATT and Pre-Amp, etc. are set.

- F. Measurement End** (Measurement data is saved.)

If it is Auto Save ON when the measurement ends, the file named Data+yyyy+mm+dd+hh+nn.csv is made for the directory written in Directory Box. (yyyy:year, mm:month, dd:day, hh:hour, nn:minute) If you want to change the directory, first you make your DIR using windows menu. Then, you write your DIR name to the Directory Box, so the CSV file will be written in your DIR.

- G. Manual Stop** (Push the STOP key.)

The measurement can be stopped before the measurement is not completed.

At that time, the measurement data save menu is displayed. When data is saved, you push YES. When No is selected, the STOP key is effective. And, the data archive menu appears when the STOP key is pressed again. When data is preserved, the STOP key becomes invalid.

6. Measurement

Measurement (Multi Channel Monitor)

Measurement Mode

☒ Normal (Sample)

☐ Power AVG = 10

☐ Max / Min

Frequency List

☐ Preset SPA

☐ Peak Search

Directory: ☒ Auto Save

C:\Program Files\U3700 MultiCH Monitor

Comment: (one time) ☐ 123456789abcde

Measurement Time: 60 min

Time Interval/ Band: 2 sec (without Measurement Time)

SPA Setup START STOP Close

Date	Time	Freq-1	LV1-1	LV1-2	Judge	Freq-2	LV2-1	LV2-2	Judge	Comment
2012-04-24	14:10:42	1403200000	39.33		Pass	1433200000	14.80		Pass	
Measurement Counter = 10 / 900										
2012-04-24	14:10:46	0968000000	37.99		Pass	100				
2012-04-24	14:10:46	1048000000	37.80		Pass	108				
2012-04-24	14:10:46	1128000000	36.90		Pass	116				
2012-04-24	14:10:46	0988000000	37.86		Pass	102				
2012-04-24	14:10:46	1068000000	37.08		Pass	110				
2012-04-24	14:10:46	1148000000	38.41		Pass	118				
2012-04-24	14:10:46	1208000000	39.46		Pass	123				
2012-04-24	14:10:46	1268000000	38.45		Pass	129				
2012-04-24	14:10:46	1328000000	39.64		Pass	135				
2012-04-24	14:10:46	1388000000	39.01		Pass	141				
2012-04-24	14:10:46	1223200000	38.01		Pass	125				
2012-04-24	14:10:46	1283200000	39.24		Pass	131				
2012-04-24	14:10:46	1343200000	38.35		Pass	137	3200000	11.75	Pass	
2012-04-24	14:10:46	1403200000	37.40		Pass	143	3200000	22.99	Pass	123456789abcde
Measurement Counter = 11 / 900										

Date : Time : Freq-1 LV1-1 LV1-2 Judge : Freq-2 LV2-1 LV2-2 Judge : Comment

The cursor can be displayed when the display line increases. You can select cursor mode. TOP: No Scroll Middle: Scroll and Stop Below: Scroll

When the check is put in the comment check box, the comment is added to the measurement data of that time. Afterwards, the comment data is not cleared though the comment check box is cleared. When the check is put in the comment check box again, the comment is added. Example: Displayed "123456789abcde"

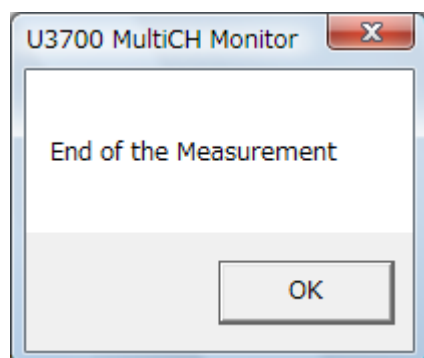
7. End

When the measurement has not ended, the measurement is terminated with the STOP key. The measurement screen is closed from the measurement screen with the CLOSE key.

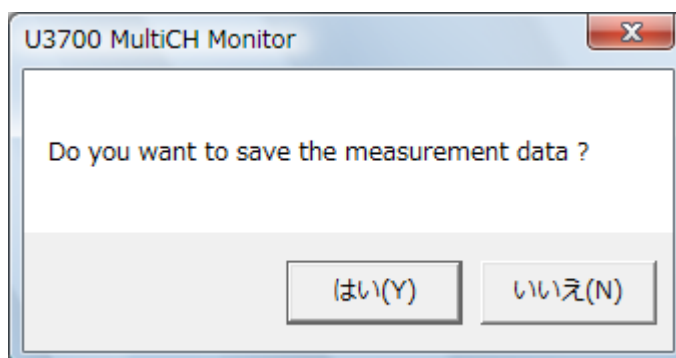
LAN connection is ended with the CLOSE key to the initial screen, and the program is ended by "X" mark.

8. Others Menu (Message display)

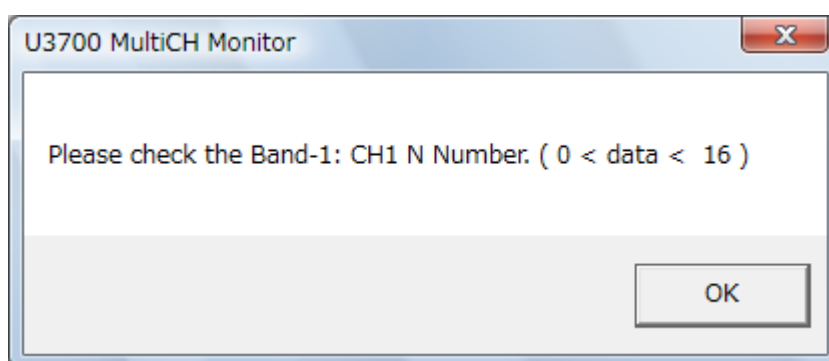
*When the measurement ended.



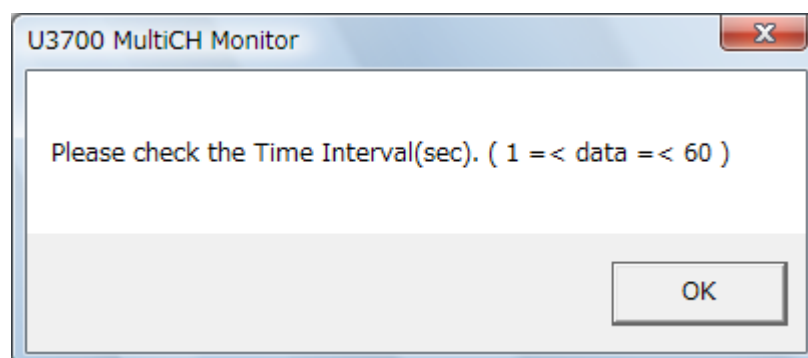
*When the STOP key was pressed.



*N is impossible number at channel setup.



*The time interval is impossible at measurement.



*When the frequency table is saved.



9. CSV File

*All measured frequencies and the levels enter to the row,
and the every intervals data enter to the line.

	A	B	C	D	E	F	G	H	I	J	K
1	2012/4/24	11:07:18	968000000	35.46		Pass	1008000000	36.37		Pass	1048000000
2	2012/4/24	11:07:22	968000000	36.79		Pass	1008000000	35.7		Pass	1048000000
3	2012/4/24	11:07:26	968000000	34.95		Pass	1008000000	35.61		Pass	1048000000
4	2012/4/24	11:07:30	968000000	35.65		Pass	1008000000	36.48		Pass	1048000000
5	2012/4/24	11:07:34	968000000	36.31		Pass	1008000000	36.68		Pass	1048000000
6	2012/4/24	11:07:38	968000000	36.91		Pass	1008000000	38.45		Pass	1048000000
7	2012/4/24	11:07:42	968000000	36.03		Pass	1008000000	33.28		Pass	1048000000
8	2012/4/24	11:07:46	968000000	39.16		Pass	1008000000	38.96		Pass	1048000000
9	2012/4/24	11:07:51	968000000	34.41		Pass	1008000000	37.39		Pass	1048000000
10	2012/4/24	11:07:55	968000000	37.18		Pass	1008000000	35.94		Pass	1048000000
11	2012/4/24	11:07:59	968000000	37.17		Pass	1008000000	36.43		Pass	1048000000
12	2012/4/24	11:08:03	968000000	34.89		Pass	1008000000	36.71		Pass	1048000000
13	2012/4/24	11:08:07	968000000	39.59		Pass	1008000000	36.71		Pass	1048000000
14	2012/4/24	11:08:11	968000000	37.37		Pass	1008000000	36.78		Pass	1048000000
15	2012/4/24	11:08:15	968000000	37.48		Pass	1008000000	37.06		Pass	1048000000
16	2012/4/24	11:08:19	968000000	35.12		Pass	1008000000	36.92		Pass	1048000000
17	2012/4/24	11:08:24	968000000	36.03		Pass	1008000000	36.54		Pass	1048000000
18	2012/4/24	11:08:28	968000000	35.83		Pass	1008000000	35.28		Pass	1048000000
19	2012/4/24	11:08:32	968000000	35.59		Pass	1008000000	36.85		Pass	1048000000
20	2012/4/24	11:08:36	968000000	38.97		Pass	1008000000	36.85		Pass	1048000000
21	2012/4/24	11:08:40	968000000	36.08		Pass	1008000000	36.79		Pass	1048000000
22	2012/4/24	11:08:44	968000000	39.57		Pass	1008000000	36.06		Pass	1048000000
23	2012/4/24	11:08:48	968000000	36.23		Pass	1008000000	35.41		Pass	1048000000
24	2012/4/24	11:08:52	968000000	37.5		Pass	1008000000	36.59		Pass	1048000000
25	2012/4/24	11:08:56	968000000	35.41		Pass	1008000000	37.64		Pass	1048000000

	A	B	C	D	E	F	G	H	I	J
884	2012/4/24	12:08:21	968000000	36.53		Pass	1008000000	40.8		Pass 1C
885	2012/4/24	12:08:25	968000000	36.6		Pass	1008000000	36.56		Pass 1C
886	2012/4/24	12:08:30	968000000	36.26		Pass	1008000000	36.43		Pass 1C
887	2012/4/24	12:08:34	968000000	35.16		Pass	1008000000	36.25		Pass 1C
888	2012/4/24	12:08:38	968000000	37.42		Pass	1008000000	37.18		Pass 1C
889	2012/4/24	12:08:42	968000000	36.31		Pass	1008000000	36.73		Pass 1C
890	2012/4/24	12:08:46	968000000	38.12		Pass	1008000000	36.06		Pass 1C
891	2012/4/24	12:08:50	968000000	37.68		Pass	1008000000	39.71		Pass 1C
892	2012/4/24	12:08:55	968000000	37.85		Pass	1008000000	37.37		Pass 1C
893	2012/4/24	12:08:59	968000000	36.63		Pass	1008000000	35.78		Pass 1C
894	2012/4/24	12:09:03	968000000	35.91		Pass	1008000000	36.42		Pass 1C
895	2012/4/24	12:09:07	968000000	39.2		Pass	1008000000	36.06		Pass 1C
896	2012/4/24	12:09:11	968000000	39.12		Pass	1008000000	36.14		Pass 1C
897	2012/4/24	12:09:15	968000000	37		Pass	1008000000	36.93		Pass 1C
898	2012/4/24	12:09:20	968000000	35.58		Pass	1008000000	38.06		Pass 1C
899	2012/4/24	12:09:24	968000000	36.37		Pass	1008000000	35.77		Pass 1C
900	2012/4/24	12:09:28	968000000	36.21		Pass	1008000000	36.05		Pass 1C
901	2012/4/24	12:09:32	968000000	38.13		Pass	1008000000	37.1		Pass 1C
902										
903	-----	Measure(=1)	Start-F	Stop-F	Ref-Lvl	dBuV(=1)	Hi-Limit	Lo-Limit		
904	Band-1 CH1	1	900	1300	80	1	100	0		
905	Band-1 CH2	1	900	1300	80	1	100	0		
906	Band-2 CH1	1	1100	1500	80	1	100	0		
907	Band-2 CH2	1	1100	1500	80	1	100	0		

10. Set the U3700/U3800 Series Spectrum Analyzer's IP address.

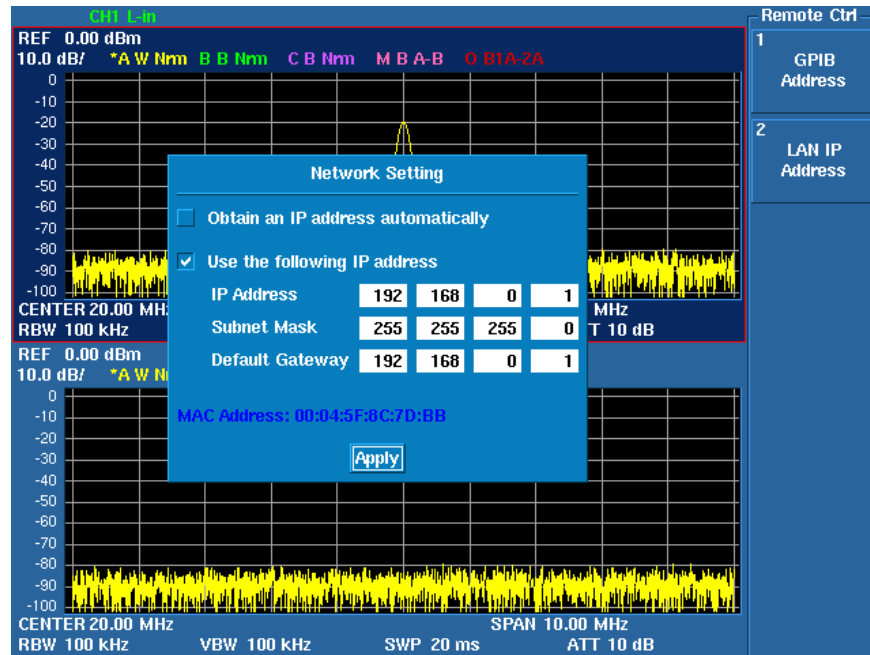
SYSTEM – Config.– Remote Control – LAN IP Address

The following figure shows direct input an IP address example.

You can use DHCP: check the Obtain an IP address automatically, and push Apply.

If you want to connect to fixed address, please ask IP address to network manager.

You get this Analyzer's IP address.



11. Set the PC's IP address.

It is for direct connection. Not necessary for LAN network connection.

For Windows 2000:

My network – Right click - Properties –

Local Area Connection - Right click - Properties –

Internet Protocol (TCP/IP) – Properties

Set IP Address:

This IP address must be set different than the U3700/U3800 Series

Connect LAN cable.

You will need a cross over Ethernet cable for a direct connection.

*Example for PC's IP address setting

