BP3580/BP3591
Start Guide

Version 1.01

1 Notice

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2 Introduction

Thank you for considering the products of ROHM CO., LTD. You read the following before using the products.

(i)　　　Please use the products in the right way.

(ii)　　　It is important to keep this guide.

This guide shows the way that connected between the BP3580/BP3591 and the UART(Universal Asynchronous Receiver) of attachment.

You can read the other guides the following.

■Specification for TCP/IP buit in WLAN（bu1805gu_tcpip_wlan_spec_vxxx.pdf）

■Specification for Hardware of BP3591（bp3591_hardware_spec-vxxx.pdf）

■Specification for Hardware of BP3580（bp3580_hardware_spec-vxxx.pdf）

■Specification for Hardware of BP359C

■Specification for Hardware of BP359D

■Specification for Hardware of BP359C-accessories

The above guides are possible to download from [saport of the WLAN] in the home page.
（http://micro.rohm.com/jp/download_support/wireless_lan_system/）

3　Revision History

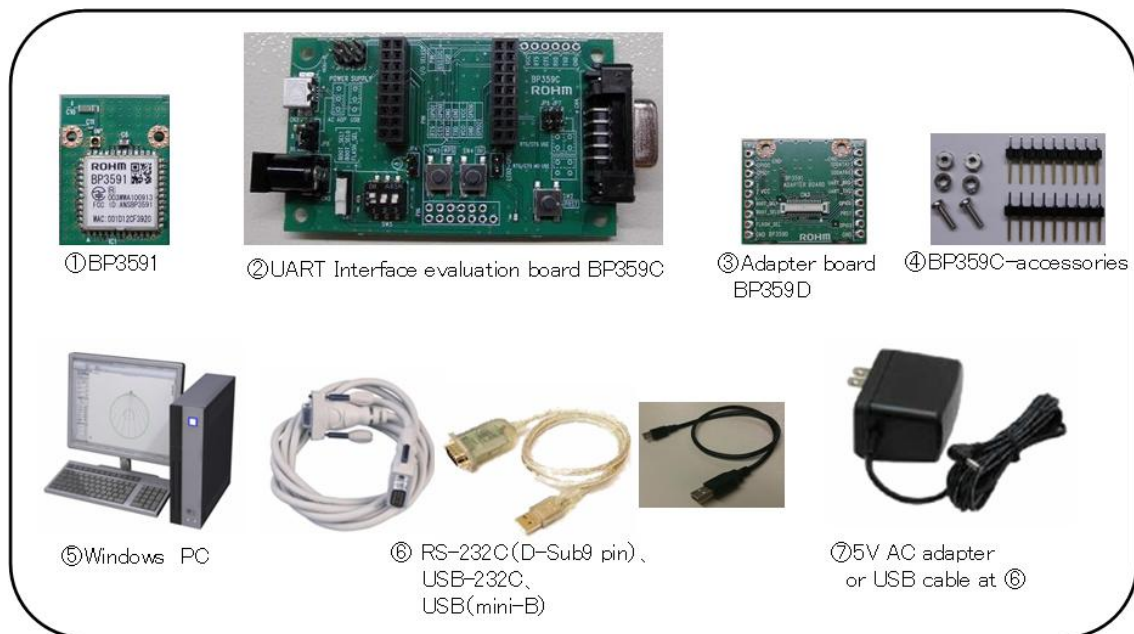| Ver.	Date	Descriptive Revision	Reviser
1.00	2012/07/25	First Edition	ROHM
1.01	2013/02/01	The item addition by change of an evaluation board	ROHM

4　Contents

5　Set up

5.1　Flow of Set up

Flow of Set up is shown the following.

　　　【STEP 1】　Equipment Confirmation

　　　【STEP 2】　UART Connection

　　　【STEP 3】　Serial Communication Set up

5.2　【STEP1】Equipment Confirmation

Please　prepare the equipments as allow.

■Hardware

①BP3591　②UART Interface evaluation board BP359C　③Adapter board BP359D　④BP359C-accessories

⑤Windows　PC　⑥ RS-232C (D-Sub9 pin)、USB-232C、USB(mini-B)　⑦5V AC adapter or USB cable at ⑥

①～④ are purchased from ROHM CO., LTD or agency.

⑤～⑦ are necessary to prepare your own.

⑥ is conversion cable.

It recommends UC-SGT (made in ELECOM) and SRC06USB (made in Arvel).

⑦ is necessary the following when you use.

(The inside diameter is φ5.5mm, the outside diameter is φ2.1mm, the length is more than 9.5mm)

The power supply is required the more than 5V/1A.

■Software

| 名称	内容
① fwimagexxx_xxx_UART_TCPxx.fbin	It is a firmware. File name contains version number and it might be different from the one stated on the left column. It is possible to download from [saport of the WLAN] in the home page.（http://www.rohm.co.jp/index.html）
② BU1805_FLASH_WRITER_xxx_AREA_1.bin or BU1805_FLASH_WRITER_xxx_AREA_2.bin	It is a program that in order to write the firmware (FLASH MEMORY WRITER). File name contains version number and it might be different from the one stated on the left column. The end of file name (AREA1 or AREA2) shows the area of flash. The way of download is the same as above.
③ Terminal Software	Terminal software is possible that serial communication and transmission of binary file. This guide utilizes Tera Term that free software of Windows. Tera Term is able to download from the following. (http://sourceforge.jp/projects/ttssh2/)

5.3 【STEP2】Assembly of BP359D

The following describes assembly of BP359D. Please solder pin-header at BP359D as the following figure.
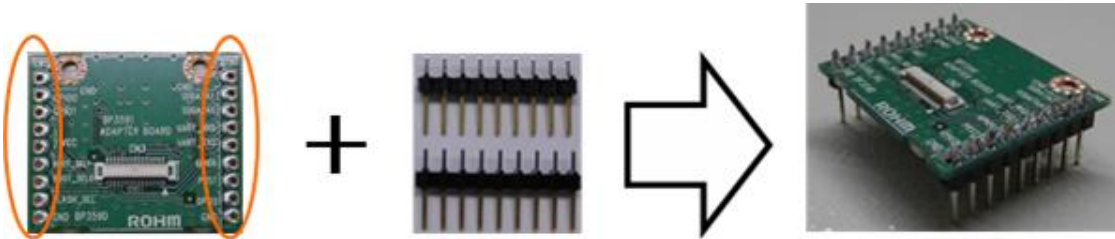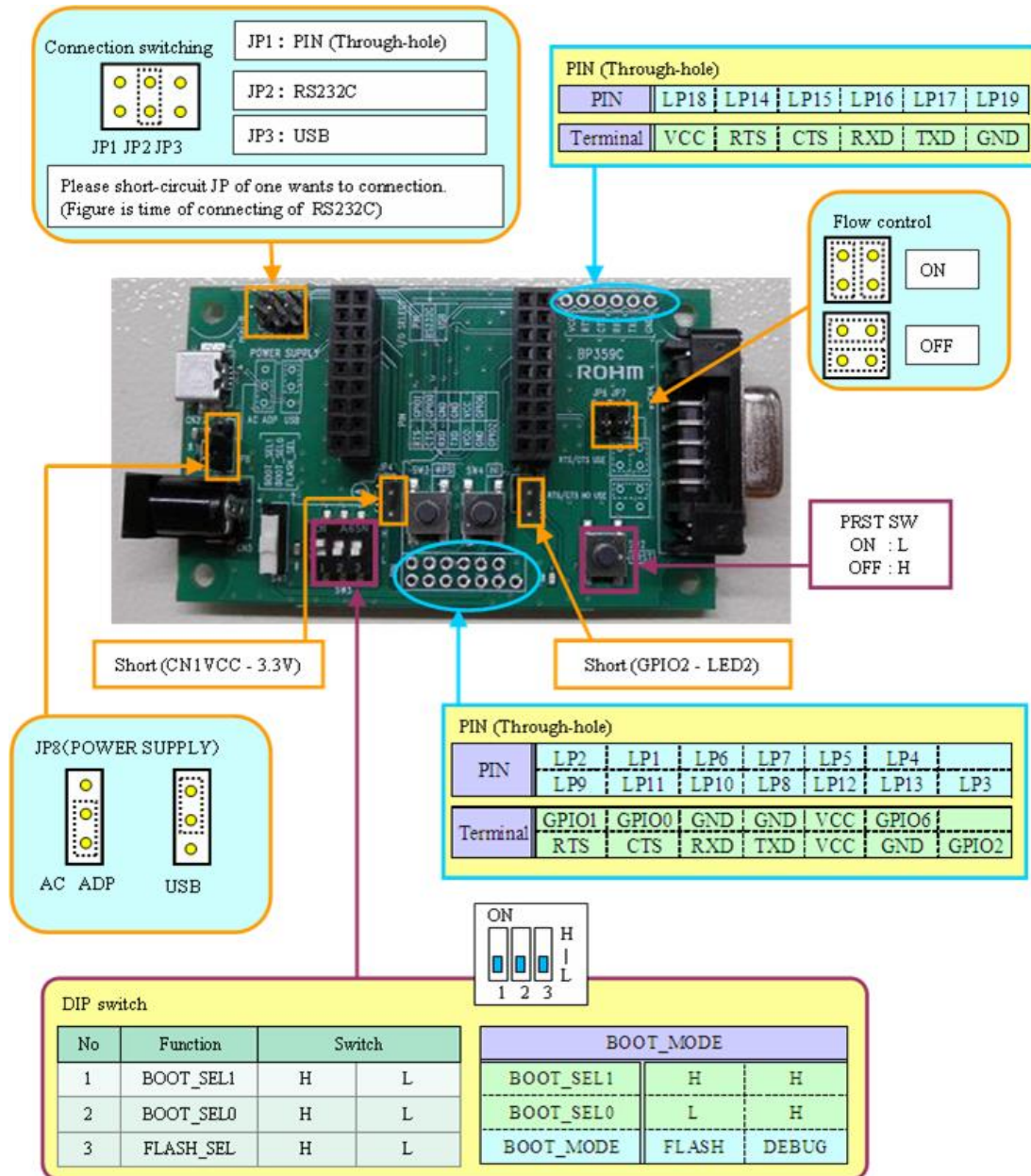

5.4 【STEP2】 UART Connection

This figure shows the part name of UART.

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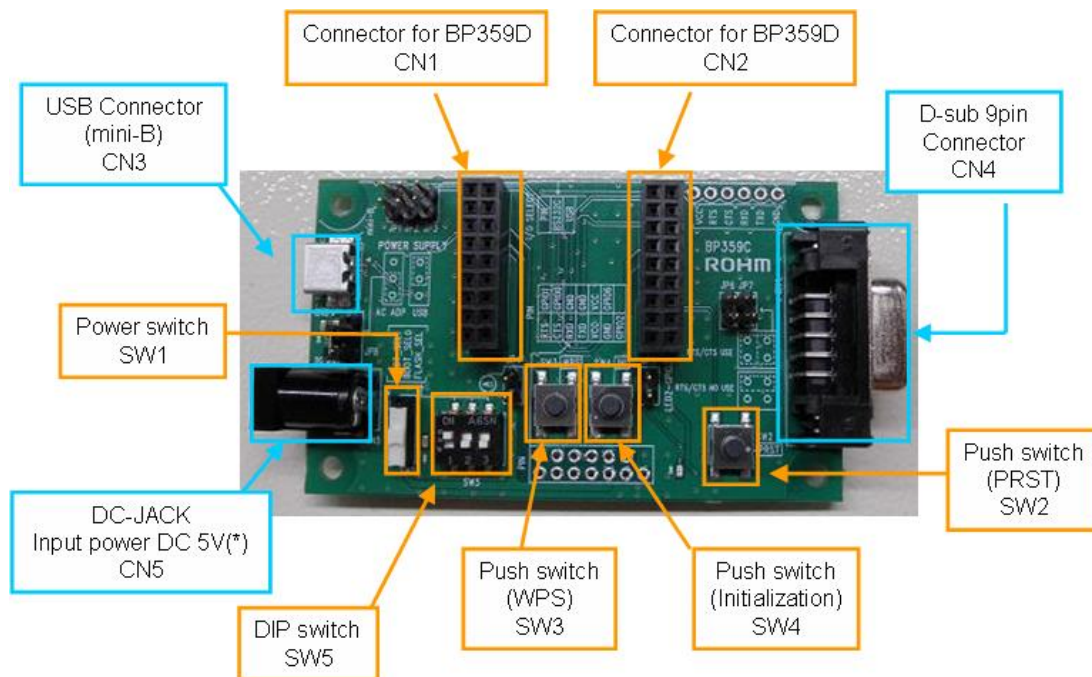
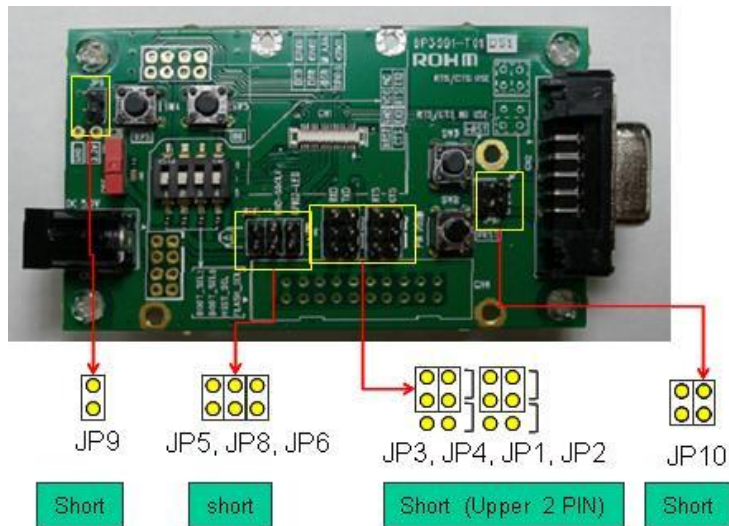(Supplementary explanation)

Jumper PIN and DIP Switch of UART

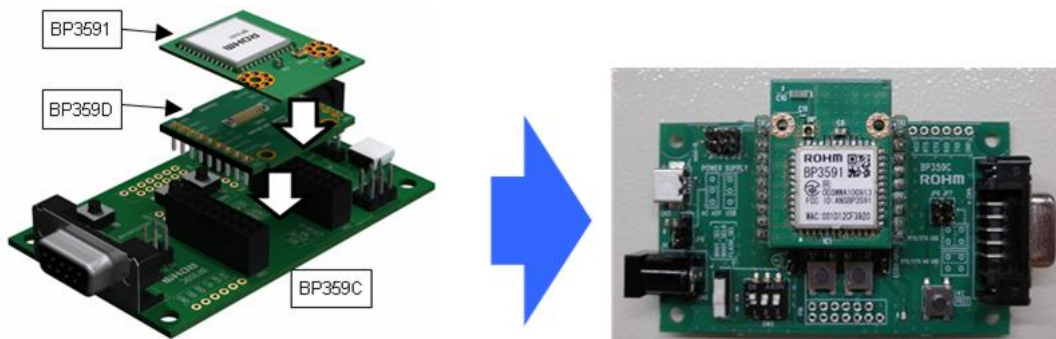* The jumper pin is using to A2 series (made in HIROSE).

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・Power supply : AC adapter

・Connection with PC : RS-232C

The following describes Connection BP359C.

Please set Jumper PIN such as the following figure.

Please set the BP3591 and BP359D to P359C such as the following figure.

Please connect between UART and Power Supply, PC.

Please turn off Power Supply Switch (Red Switch) when connected UART.

Hardware setting is completed.

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5.5 【STEP3】Serial Communication Set up

This guides utility Tera Term.

Tera term is possible to download the following.
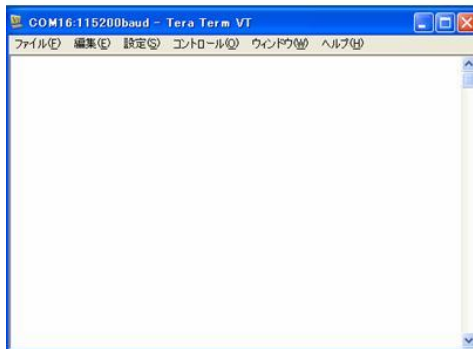
http://sourceforge.jp/projects/ttssh2/

Please double-click the icon (Tera term) and start Tera Term after downloading.

Please go on the following process after starting.

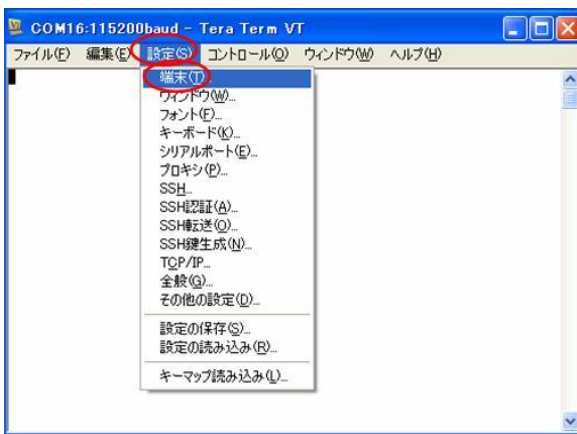Double-click the icon on the Desktop.

Tera Term will be opened.

Initial setting value is modified by own environment.

It sets the setting value in order to operate normally.

It sets [Terminal].

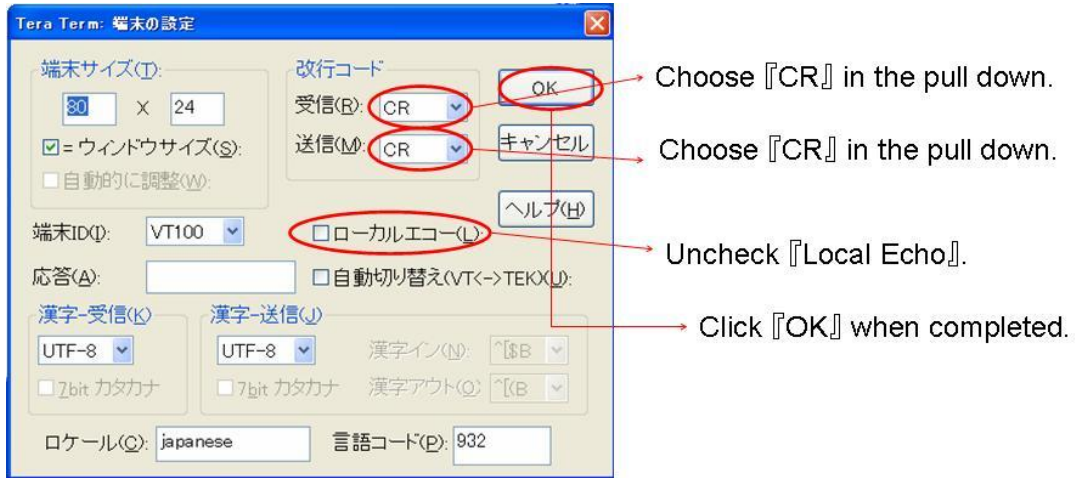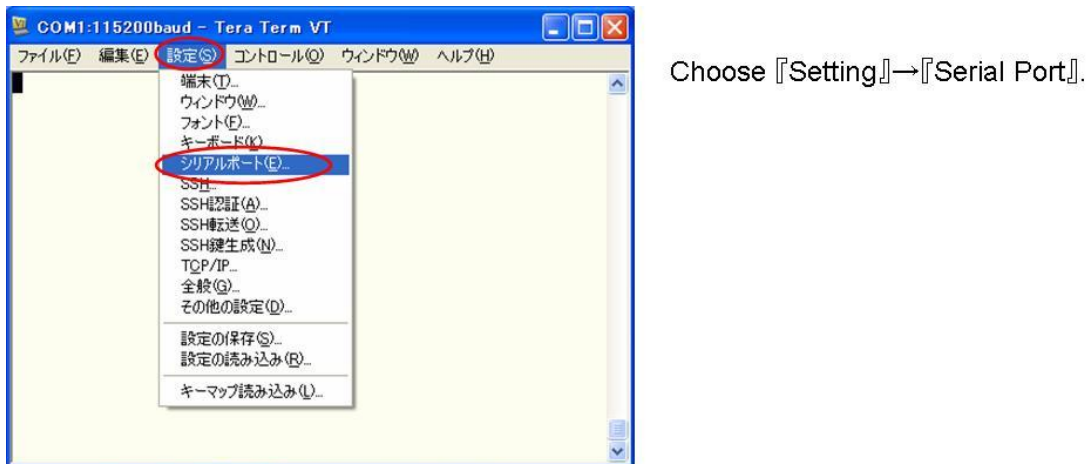Choose 『Setting』→『Terminal』.

It is opened the following setting display.

Please set such as comments of right figure after opening.

Choose 『CR』in the pull down.

Choose 『CR』in the pull down.

Uncheck 『Local Echo』.

Click 『OK』when completed.

It sets [Serial Port].

Choose 『Setting』→『Serial Port』.

It is opened the setting display the bellow.

Please set such as comments of left figure after opening.

Choose Port (RS232C of USB-232PC) in the pull down.

Choose "115200" in the pull down.

Choose "8bit" in the pull down.

Choose "none" in the pull down.

Choose "1bit" in the pull down.

Click 『OK』when completed.

It can confirm Port (RS-232C or USB-232C) that choosed in above figure

To chose the Port (RS-232C or USB-232C) can confirm the bellow process when pull down Port (P) of above figure.

『Start』
↓
『Control Panel』
↓
『System』
↓
『Hardware』
↓
『Device Manager』
Opened the window such as left figure.

Refer Port that displayed window.
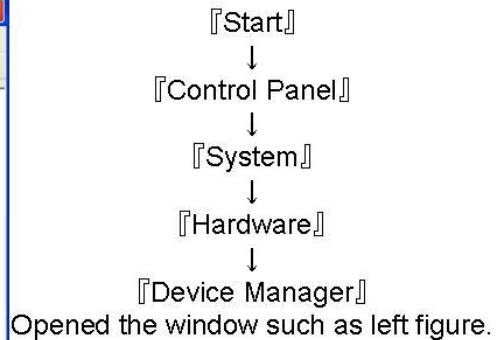
It is completed the setting of Hardware and Software

It explains about [Tutorial], [Process for Writing the Firmware] at next section.

6 Procedure for Writing Firmware

This section explains the process that writing the firmware to mounting the flash memory.
It prepares to operate the UART that used [Flash ROM Load Mode] (Next section ： in order to use at Tutorial).

The way of downloading Firmware to BP3580/BP3591 has two modes ([UART Host Load Mode], [Flash ROM Load Mode]).
It chooses this mode using DIP Switch on the UART.
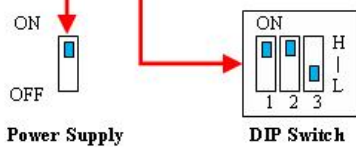It needs to choose the mode when integrated this products.
If you know the detail of this, please confirm [Specification for Hardware of BP3591（bp3591_hardware_spec-vxxx.pdf） 11th section].

Please write Firmware in the following steps.

6.1 BP3591 UART Power ON

Please set DIP Switch of UART such as this figure.
Please turn on power supply switch (Red Switch).

Set "HHL" such as left figure.
↓
Turn ON.

(Supplementary explanation)

Explanation DIP Switch

DIP Switch (terminal name)	Content
DIP SW[1] (B_SEL1)	Choose Start Mode[H:L]
DIP SW[2] (B_SEL0)	LL:USB、LH:SDIO、HL:FLASH、HH:UART
DIP SW[3] (FLASH_SEL)	Choose Flash Memory Area L:AREA1、H:AREA2

It is indicated to terminal software (Tera Term) such as the following.

```
/******************************/
  IEEE802.11n 1x1 LSI BU1805
  Bootloader on ROM
  (C) 2010 ROHM CO.,LTD.
/******************************/
H/w version  = 00000013
ROM version  = 3.0.2
reset_latch  = 00000003
mode3 Serial
ROM>
```

6.2 File Download

It downloads two files from PC to UART (BP3591).

Downloading has a procedure.

Please follow the below.

① Firmware (Ex：fwimagexxx_STA_UART_TCPjp.fbin)

② Program for Writing Firmware (Ex：BU1805_FLASH_WRITER_132_AREA_0.bin）

It explains the display of Tera Term in the writing form.

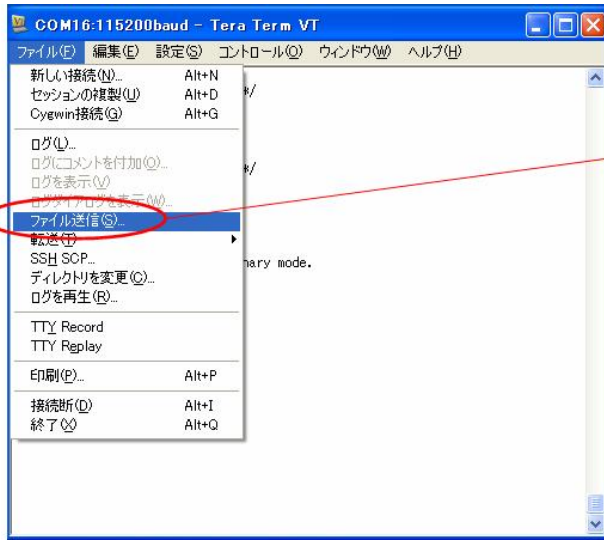Underline and arrow plots are explaining.

```
■At first, it transmits Firmware. <PC→BP3591>
ROM> fld           ────────► It inputs command "fld".
Please send the firmware with Binary mode.
        ┃
        ┗━━► It transmits Firmware (Ex: fwimage424_STA_UART_TCPjp.fbin) by
             binary from terminal software after this display.
```
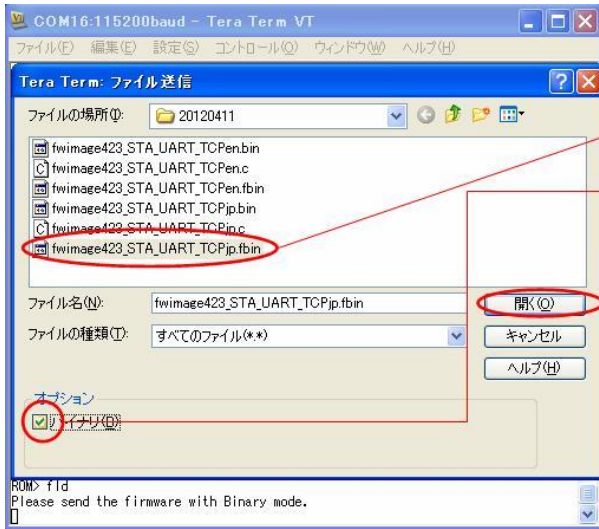
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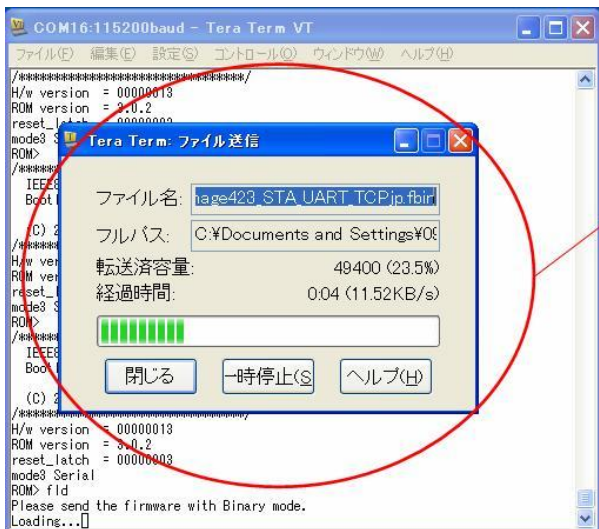It explains the procedure about transmission of binary data.

『File』
↓
Choose『File Transmission』.

Choose Firmware for downloading.

Check-off『Binary（B）』.

Click『Open（O）』.

Opened the window while load.

File is loaded after transmitting binary data.

It is indicated the bellow on the terminal software after transmitting binary data.

The display of version or size is changed by downloading firmware

```
Loading.........completed.
  ver  3.6.2  (UART)
  load 0x10000000(209772 bytes)
ROM>
```

It transmits Program for Writing Firmware such as the above.

This program specify the area that to write flash memory when it written From BP3591 to external flash memory that integrated on the back of UART at next section.

```
■Next, it transmits Program for Writing Firmware <PC→BP3591>.
ROM> fld
Please send the firmware with Binary mode.
Loading.completed.
  ver  1.3.0  (FLASH)
  load 0x10040000(9012 bytes)
ROM>
```

It is completed the file download.

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6.3　Run Program for Writing Firmware

In order to run Program for Writing Firmware, it writes the firmware to external flash memory that integrated on the back of UART.

```
■To run Program for Writing Firmware <BP3591→FLASH MEMORY>.
ROM> fgo        ⟶   It inputs command "fgo".
Flash Writer 1.3.0 Region 1
written 252KBytes.
finished writing successfully!
/****************************/
   IEEE802.11n 1x1 LSI BU1805
   Bootloader on ROM

   (C) 2010 ROHM CO.,LTD.            It will be indicated
/****************************/         after transmission.
H/w version  = 00000013
ROM version  = 3.0.2
reset_latch  = 00000003
mode3 Serial
ROM>
```
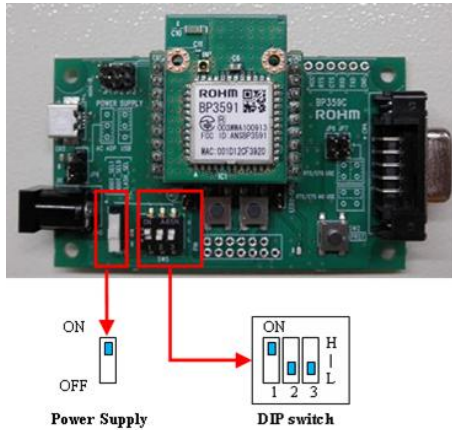
It turns off the power supply of UART after this.

Firmware is loaded to external flash memory.

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6.4 START

Please set DIP Switch of UART such as this figure.

Please turn on the power supply (Red Switch).

Set "HLL" such as left figure.
↓
Turn ON.

It is indicated to terminal software (Tera Term) the bellow.

```
*****************************/
  IEEE802.11n 1x1 LSI BU1805
  Bootloader on ROM


  (C) 2010 ROHM CO.,LTD.
/*****************************/
H/w version  = 00000013
ROM version  = 3.0.2
reset_latch  = 00000002
mode2 Flash region1 boot
/*****************************/
  UART-Wireless Conversion
  Copyright (C) 2010 ROHM CO.,LTD.
/*****************************/

                            If you keep to push the space while [+++···],

                            [+++] will be stopped.
+++++++++
                            If you cannot push the space, please repeat the same
#ver
                            as after pushing the SW2=PRST on the UART.
Show: versions = 3.6.2

                            It inputs command "ver".
                            Please confirm that firmware is updated.
```

6.5 Initialization Setting

Please initialize the setting in order to revise the default setting information, if you change the version of firmware.

It initializes the bellow process.

```
#default permit              ───────────▶   It initializes by"default permit".
Default value of setting success.

#save permit                 ───────────▶   It saves the default setting
Preservation of setting success.             information by "save permit".
```
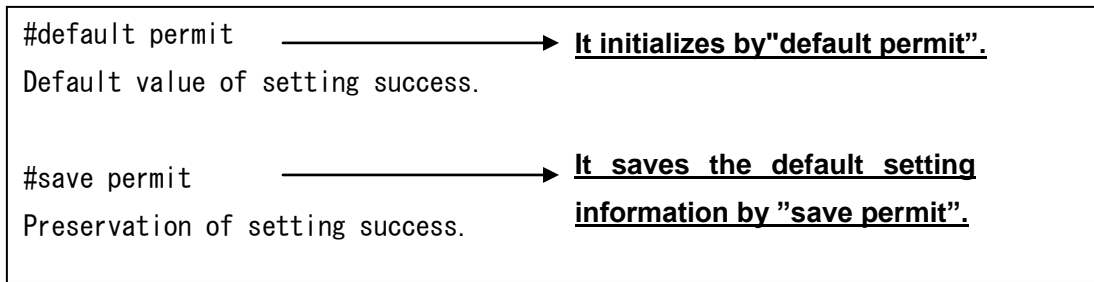
Writing firmware is completed by restarting (push the SW2=PRST on the UART).

*Please refer to 5.4th section (terminal name of UART).

7　Tutorial

This chapter describes the process that connected WLAN using BP3591, Access Point, and PC.

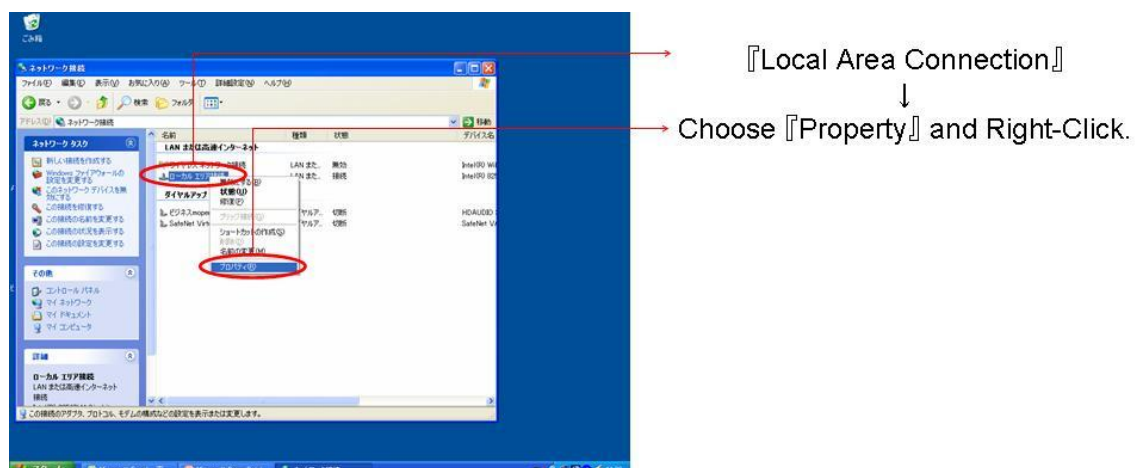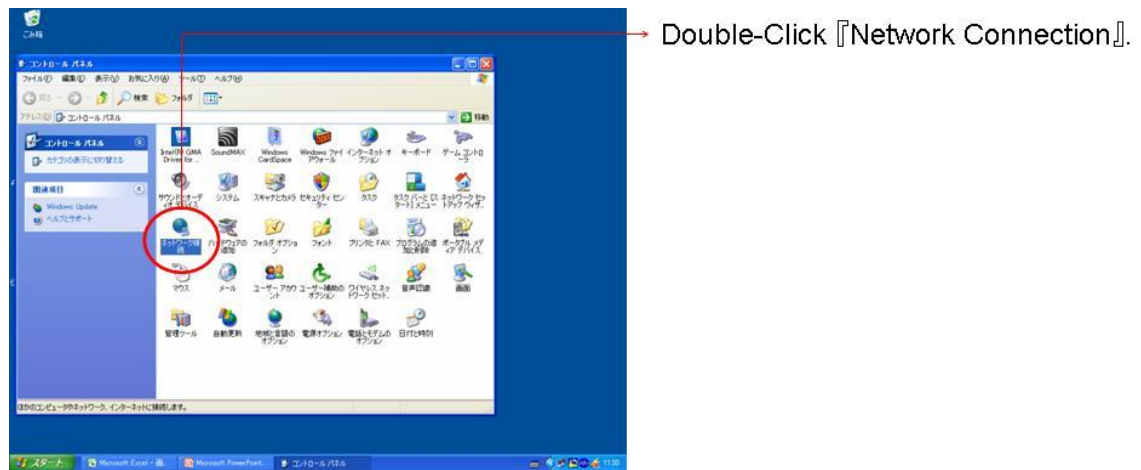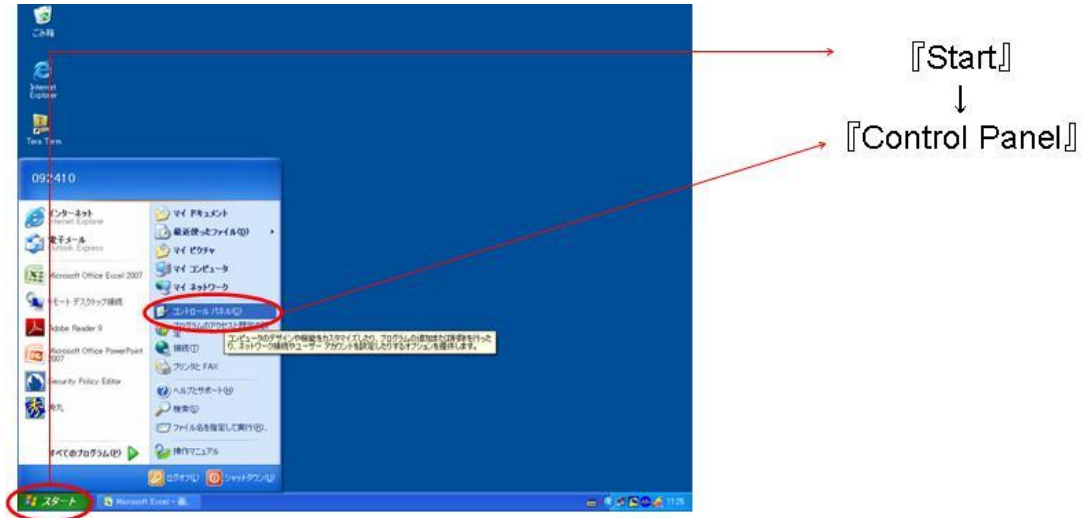It needs to prepare the equipments except [5.2 section].

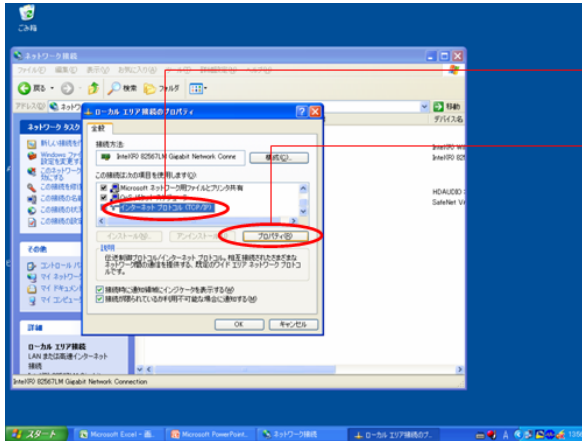⑧LAN Cable (Ethernet)　　　⑨Access Point
(Commercially available)
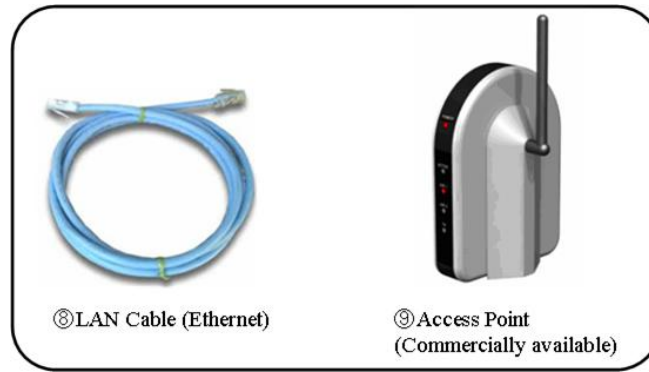
It connects between　①〜⑦　and　⑧⑨　the bellow.
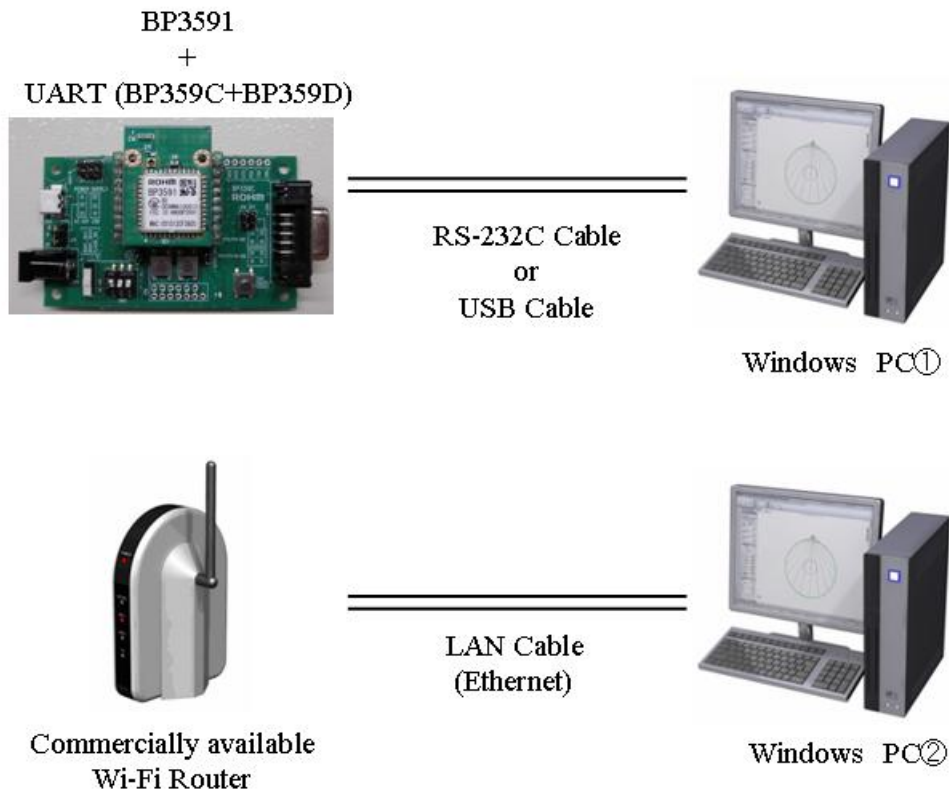
At first, it changes the setting of access point.

It sets the network of PC②　the bellow process.

『Start』
↓
『Control Panel』

Double-Click 『Network Connection』.

『Local Area Connection』
↓
Choose 『Property』and Right-Click.
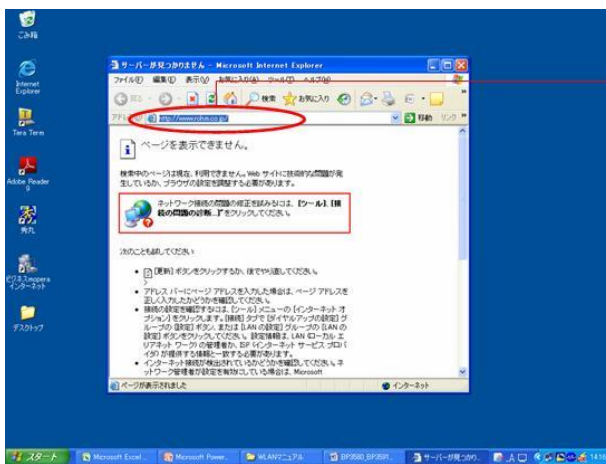
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Point on 『Internet Protocol (TCP/IP）』.
↓
Choose 『Property』.
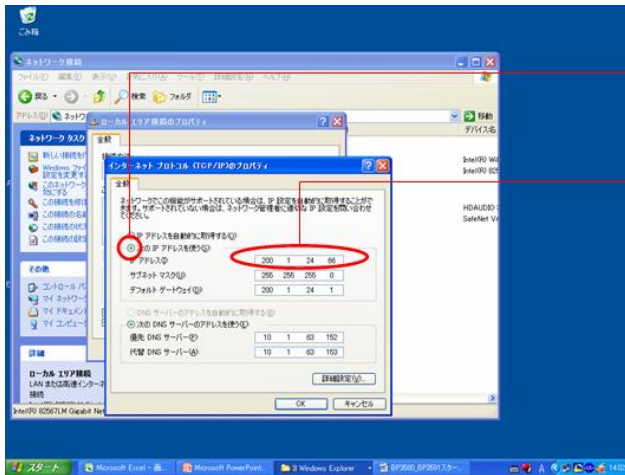
Check-off 『Use next IP Address (S):』

↓

Input 『IP Address (I):』

Open the Browser（Ex: Internet Explorer）.
Input Access Point.

Ex: 192.168.0.1

↓
Generally, Possible to access
WEB Setting Display of Access Point.

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Please change the setting the bellow after opening the web page of access point.

Setting display is changed by difference of Wi-Fi router.

Please find the target items in the setting.

＜Setting items of access point＞

Setting Item	Value
Bandwidth	2.4GHz（B+G+N）
SSID	TEST
Channel	7
Security	none
IP Address	192.168.0.254

Please change the IP Address of PC② to the bellow after the above.

The process of changing is the same as above.

Setting Item	Value
IP Address	192.168.0.2

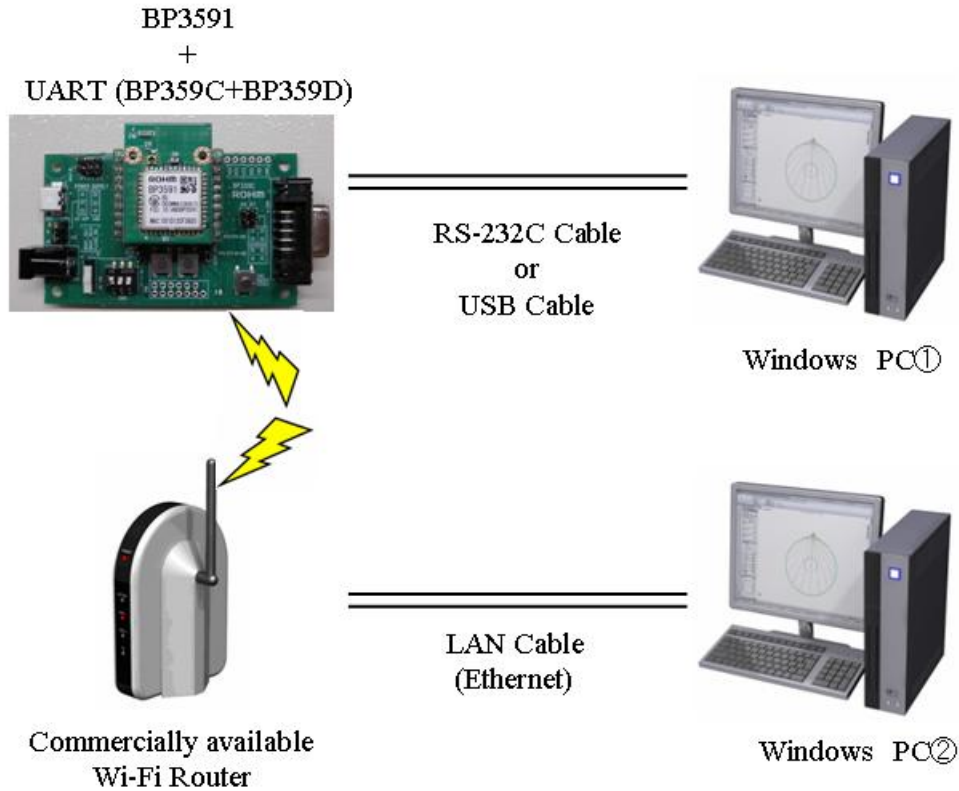Please set the serial port by terminal software (Tera Term).

The way of setting is the same as [5.5 section Serial Communication Set up].

It is completed the setting of PC②.

7.1 WLAN (Wireless Local Area Network)

This figure shows the WLAN Connection between BP3591+UART and access point.

It is setting by terminal software (Tera Term) PC①

It turns on the power supply switch of UART while pushing the space key.

Please execute the bellow commands on the terminal software (Tera Term).

```
#wlan_type set infra          ──▶  Set the BSS type to infra structure.
WLAN: BSS type success.

#wlan_ssid set TEST           ──▶  Set the SSID to "TEST".
WLAN: SSID success.

#save permit                  ──▶  Save the setting.
Preservation of setting success.
```

Please restart UART.

It turns on while pushing the space key after turning off.

It confirms connecting to access point.

```
#wlan                                          Confirm the setting state
WLAN: BSS type = infra                         by command "wlan".
WLAN: Channel = 11(0x0b)
WLAN: SSID = TEST
WLAN: WEP key =
WLAN: PSK passphrase =
WLAN: Security = none
WLAN: Power management(PM) = off
WLAN: WPS PIN code =
WLAN: WPS Start code = stop
WLAN: Credential Connection = off              It is indicated "Connected"
WLAN: MAC address = 00.1d.12.cf.20.55          when    it    has    succeed
WLAN: Connect status = Connected               connected to access point.
```

It confirms the setting that TCP/IP Network of PC① by terminal software PC①.

```
#ip                                       Confirm the setting state
IP: DHCP = off                            by command "ip".
IP: address = 192.168.0.1                     Confirm IP Address.
IP: Subnet mask = 255.255.255.0
IP: Gateway address = 192.168.0.254
IP: Current address = Static
IP: DNS address = 192.168.0.100
IP: protocol = tcps                       Confirm both the protocol and
IP: Host port = 16384(0x4000)             the port number.
IP: Remote port = 16384(0x4000)
```

It restarts UART.

Please turn on while not pushing the space key after turning off.

```
#
/******************************/

   IEEE802.11n 1x1 LSI BU1805

   Bootloader on ROM


   (C) 2010 ROHM CO.,LTD.
/******************************/
H/w version  = 00000013
ROM version  = 3.0.2
reset_latch  = 00000002
mode2 Flash region1 boot
/******************************/

   UART-Wireless Conversion

   Copyright (C) 2010 ROHM CO.,LTD.
/******************************/
                              ───────▶ It is stopped [+++].

                                        It shifts to terminal mode .
+++++++++++++++++++
```
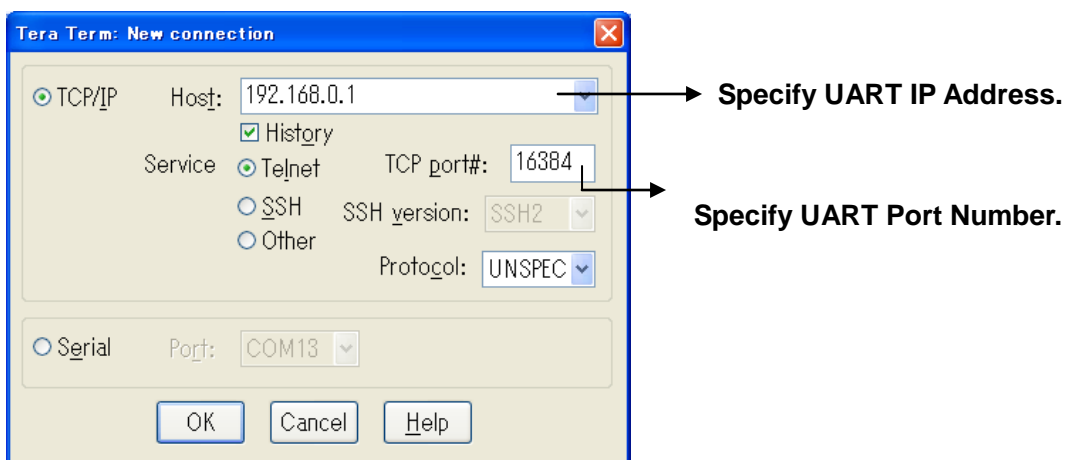
7.2 TCP/IP Connection

It connects the PC① by terminal software (Tera Term) PC②.
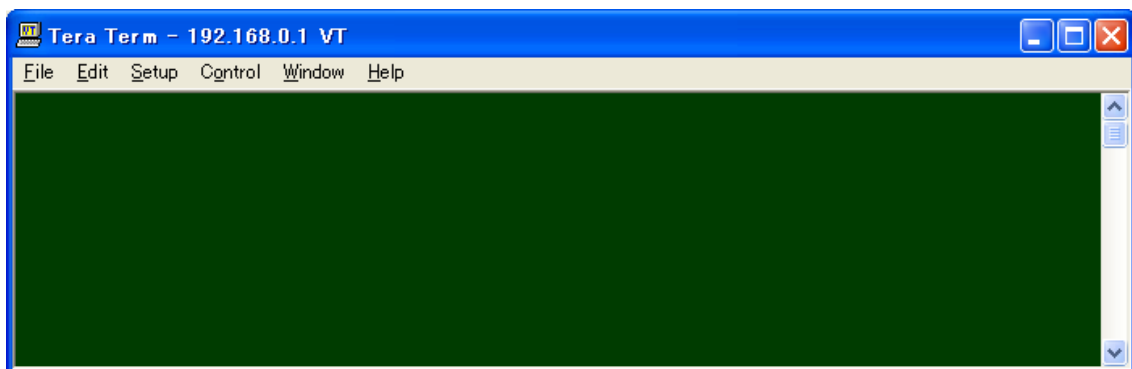
IP Address is the same as [192.168.0.1].

Please click "[File] → [New Connection] "after opening the terminal software (Tera Term) PC②

It will be opened the bellow window

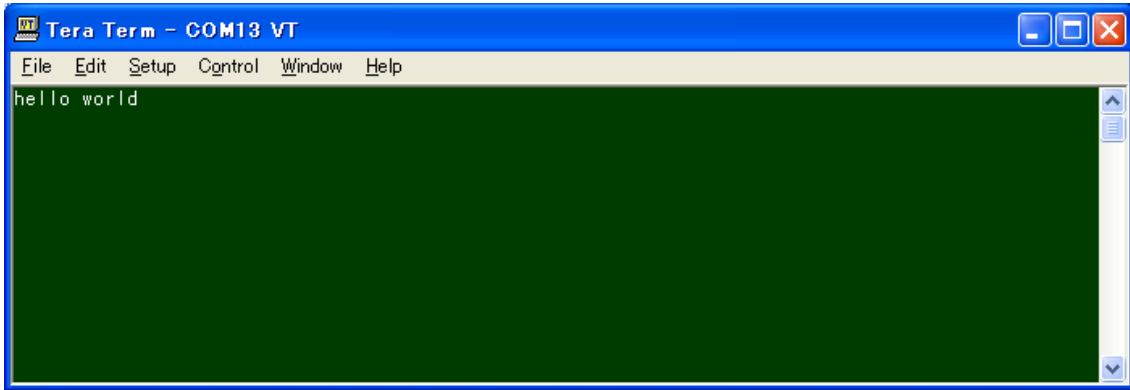Please input the following after opening window.

Specify UART IP Address.

Specify UART Port Number.

It inputs "hello world" by terminal software (Tera Term) PC① or PC② after TCP/IP connection.

It is indicated "hello world" to other side PC.

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It will be indicated to terminal software (Tera Term) if you input the sentence from here.

It is completed about tutorial.

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