

| Application: | Originator : | Version : | Dept.          | Date :                         |
|--------------|--------------|-----------|----------------|--------------------------------|
| PWC          |              | 1.2.2 ENG | PC/PE/ID/PM/QA | Jan . 07 <sup>th</sup> , 201 6 |

< PWC >

For:

**NAUTIZ X4**  
**NAUTIZ X8**

User's Guide

---

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# Chapter 1. Configuring the WLAN Connection

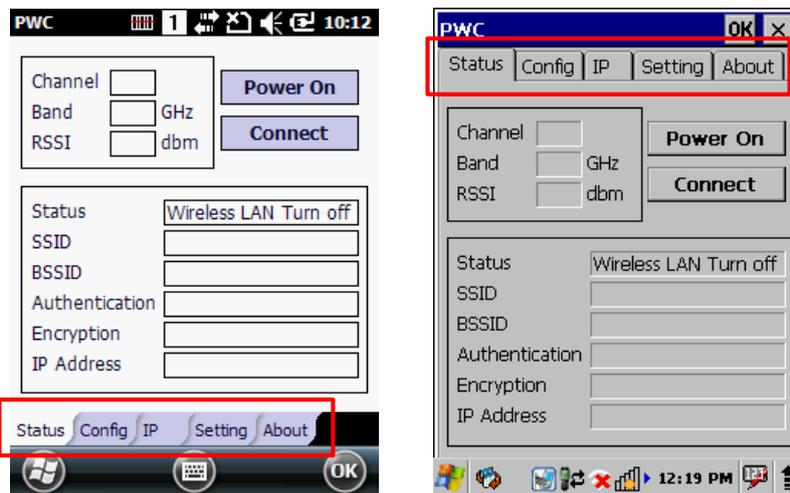
## 1-1 Introduction

This PM WLAN Client (PWC ) User's Guide is relevant for fundamental WLAN connection of Point Mobile terminals.

|                        |                |
|------------------------|----------------|
| Windows Mobile 6.5 Pro | Windows CE 6.0 |
| NX4                    |                |
| NX8                    |                |

The layout of the PWC application window differs slightly depending on the Windows operating system.

For example, on terminals running Windows CE, the access tabs for additional screens appear near the top of the window instead of near the bottom of the window for Windows Mobile device.



However, the content of the window is consistent for all supported OS versions unless otherwise noted.

## 1-2 Accessing the WLAN PWC

WLAN PWC icon displays on command bar.

The shape of the icon matches the status displays on Status Tab of the WLAN PWC application window.

Note: To see the command bar and WLAN PWC status icon, you would need to change Home Screen setting for Windows Mobile. (Start -> Setting -> Home -> default check box disable)

### 1-2-1 PWC Tray Icon

| Shape   | Meaning  | Matching Status                    |
|---|--|------------------------------------|
|    | The radio is <ul style="list-style-type: none"> <li>• Disabled</li> </ul>                              | RADIO OFF                          |
|    | The radio is <ul style="list-style-type: none"> <li>• Idle</li> <li>• Not connecting</li> </ul>        | INACTIVE<br>DISCONNECT<br>SCANNING |
|  | The radio is <ul style="list-style-type: none"> <li>• Associating</li> <li>• Authenticating</li> </ul> | ASSOCIATING<br>AUTHENTICATING      |
|  | The connection is authenticated with a valid DHCP address  | COMPLETE                           |

If you Tap PWC Tray Icon, PWC executes. (Double Tap for Windows CE)

### 1-2-2 PWC Supplicant Icon

| Shape   | Meaning                        |
|---|--------------------------------|
|  | Disabled                       |
|  | Searching                      |
|  | Connecting                     |
|  | Connected<br>(signal strength) |

A radio signal strength indicator appears on command bar near the bottom of the screen.

The quantity of bars highlighted indicates the strength of the signal when the radio is transmitting.

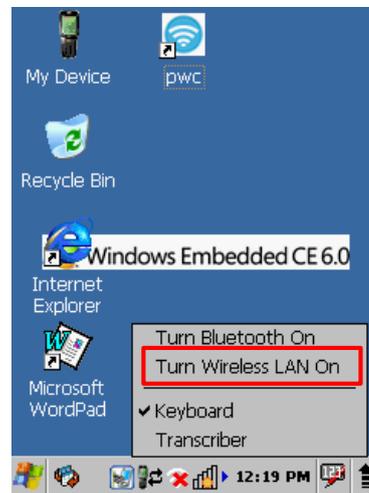
If the radio is not transmitting, a small "x" appears over the bar.

### 1-3 Enabling the WLAN Radio Driver

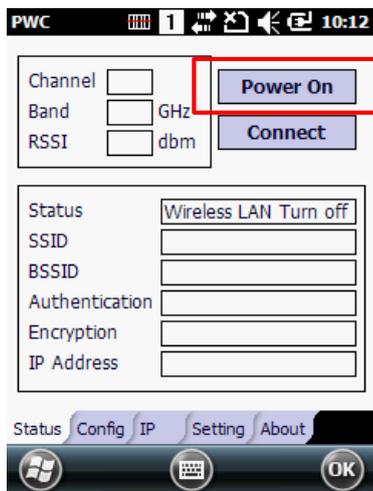
The WLAN Driver must be enabled for the radio to transmit a signal. You cannot connect to a network unless the radio is enabled. There are two ways in order to enable WLAN Driver, Wi-Fi Turn on/off from command bar and from PWC Control.

#### 1-3-1 OS Control

|                        |   |
|------------------------|---|
| Windows CE 6.0         | Tap upward arrow on command bar, and select Turn Wireless LAN On    |
| Windows Mobile 6.5 Pro | Start -> Setting -> Connections -> Wireless Manager -> Select Wi-Fi |



#### 1-3-2 PWC Control

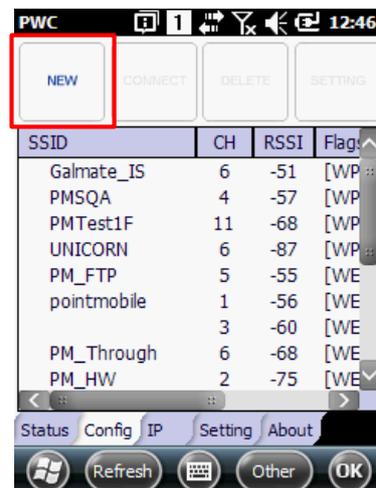


## 1-4 Establishing a Connection

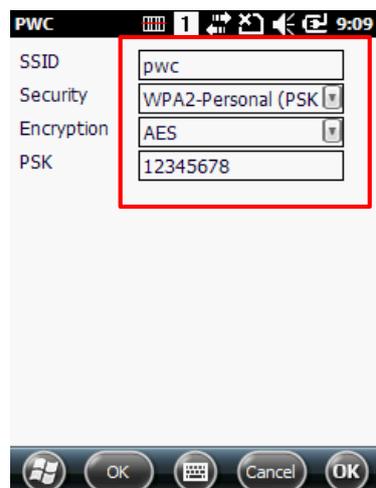
1. Tap Icon on command bar or Tap Start -> PWC (Double Tap for Windows CE)



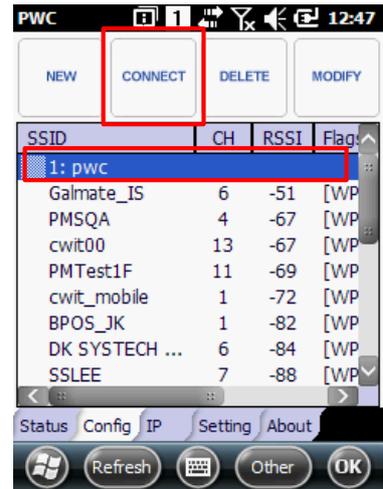
2. Tap the Config Tab on PWC page
3. Tap NEW Button of Config Tab Window.



4. Type in SSID on Network Window.
5. Select a specific Security method from the drop-down list according to the Access Point (AP)
6. Select Encryption method according to Security setting
7. Tap OK after type in keys or passwords.



8. You may find SSID appears on Config Tab list.
9. Select SSID from the list and tap Connect.



10. The Status Tab appears displaying the connection status.



## 1-5 Config Tab

You can manage connections and configurations of AP on the Config tab.

### 1-5-1 Using the Scan Feature

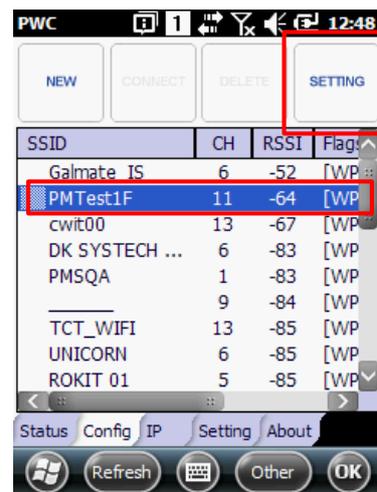
Activated the Config Tab queries for AP lists for devices in range of the terminal, and AP results appears on the Scan window with SSID, Channel, Signal Strength, Flags information.

### 1-5-2 Config Tab Columns

|                 |  |
|-----------------|--|
| SSID            | Displays the Name of the Access Point  |
| Channel         | Displays the operating channel number for Access Point                         |
| Signal Strength | Displays the current signal strength for Access Point                          |
| Flags           | Displays the association mode and encryption required to connect to the device |

1. Tap the Access Point after you've selected an item from the lists. "Setting" top menu appears; once you tap the menu, it opens the Network Window

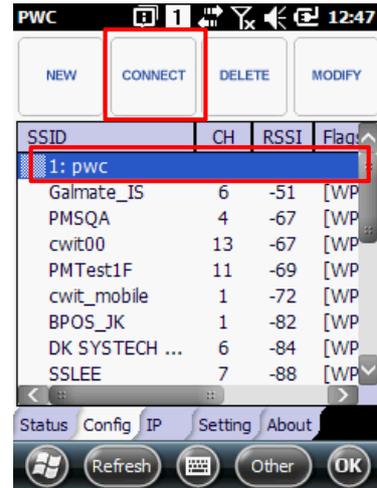
2. If you select Access Point from queried lists, basic Security, Encryption will fill automatically with previous set AP information. You can select/enter additional information and tap 'OK'.



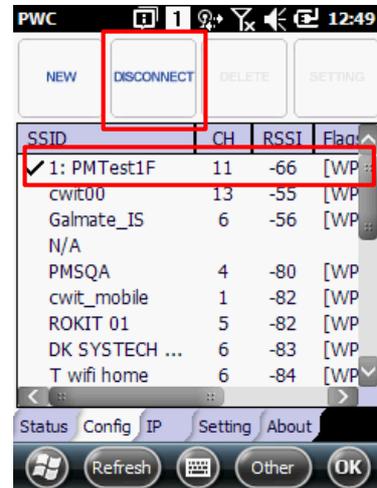
### 1-5-3 Activating the Configuration

1. There will be a number appointed to Access Point which is already saved.

Tap the AP, and tap 'connect' from the top menu to connect the saved AP.



2. You can tap the connected Access Point from SSID lists and tap 'Disconnect' from the top menu in order to disconnect.



3. When you tap the Access Point from the list, there are more functions you can use, such as Modify, Delete, Export, and Import

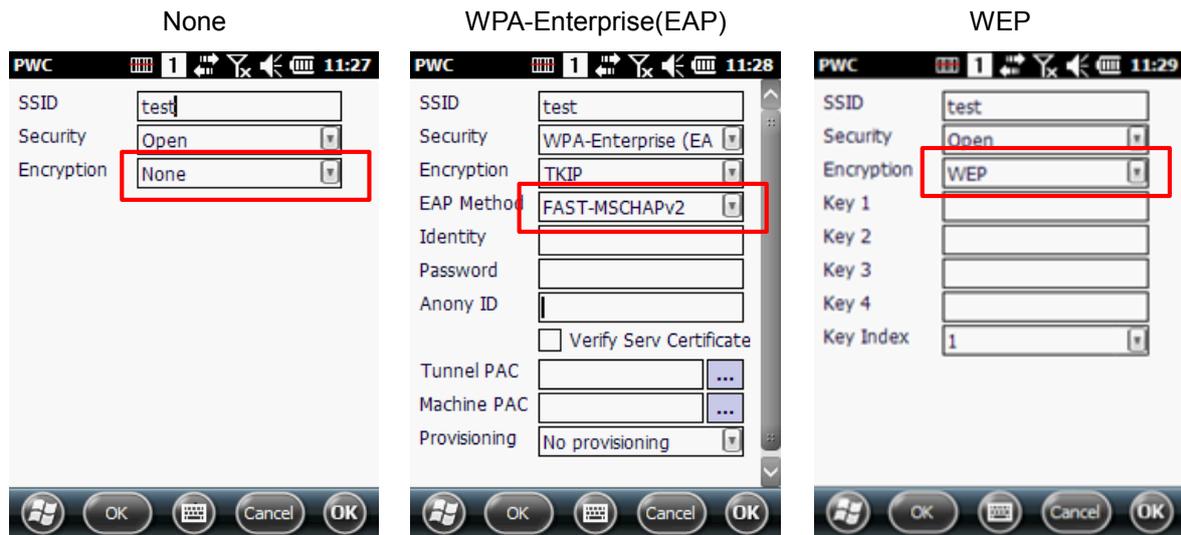
### 1-5-4 Config Tab Functions

|              |   |
|--------------|---|
| New          | Add new Access Point manually (Hidden AP)   |
| Modify       | Change settings for the selected AP   |
| Delete       | Delete the selected AP  |
| Connect      | Connect the selected AP   |
| Disconnect   | Disconnect the selected AP  |
| Refresh      | Scan AP in range of terminal and renew the information                                  |
| Export       | Save the AP information as a file   |
| Import       | Open the saved AP information as file.  |
| Auto Profile | Enables to active or deactivate automatic profile selection as per its signal strength. |



## 1-6 Network Window

You can access the Network window by doing tapping 'New' from Config Tab, selecting an AP from SSID lists and tapping 'setting' from AP list pop-up menu, or selecting an existing configuration and tapping 'Modify'.



### 1-6-1 Security

The security mode you select from the list. You can find the drop-down list by tapping arrow on right.

1. [Open / Shared](#)
2. [IEEE 802.1X](#)
3. [WPA-Personal & WPA2-Personal](#)
4. [WPA-Enterprise & WPA2-Enterprise](#)
5. [WPA-CCKM & WPA2-CCKM](#)
6. [Ad-Hoc](#)



### 1-6-1-1 Open / Shared

It is opened authentication method, there is no additional authentication necessary



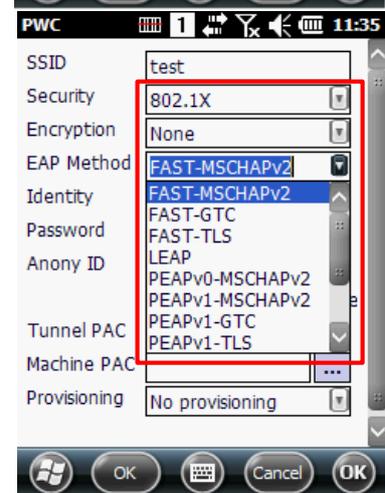
### Supported Encryption Methods

**WEP**

### 1-6-1-2 IEEE 802.1X

IEEE 802.1X supports the following EAP methods.

1. LEAP
2. PEAPv0-MSCHAPv2
3. PEAPv1-MSCHAPv2
4. PEAPv1-GTC
5. PEAPv1-TLS
6. FAST-MSCHAPv2
7. FAST-GTC
8. FAST-TLS
9. TLS
10. TTLS-MD5
11. TTLS-MSCHAPv2
12. TTLS-GTC



#### ● Completing the EAP Fields

| Field                    | Description  |
|--------------------------|--|
| Identity                 | This is for Identity method. The identity value can be up to 63 ASCII characters.  |
| Password                 | This is for Password method. It uses password to authorize the access.   |
| Anonymous ID             | This is for Tunnel Method. This creates a tunnel through which the real to pass through Tunnel.                          |
| Client Cert.             | This is for a method which needs user certification. User certification file can be loaded..                             |
| Tunnel PAC & Machine PAC | This is for EAP-FAST Method PAC Key can be loaded.   |
| Provisioning             | Provisioning refer to service activation of providing information. You may select which information to open with option. |

### Supported Encryption Methods

**WEP**

### 1-6-1-3 WPA-Personal & WPA2-Personal

The PSK field is where you put Pre-Shared Key.  
This field can be filled with either ASCII keys or hexadecimal keys.  
ASCII Key can be accepted between 8-63 characters long and  
a HEX key must be 64 characters long and can  
only accept hexadecimal digits. (A~F, 0~9)



#### Supported Encryption Methods

**TKIP**

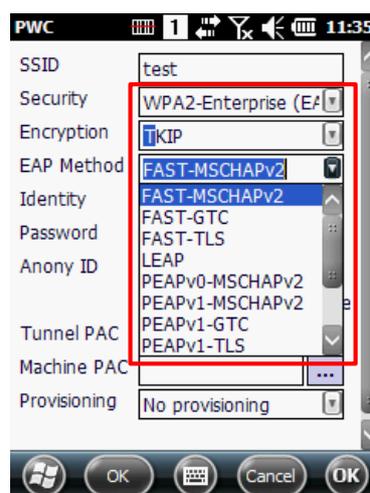
**AES**

**TKIP+AES**

### 1-6-1-4 WPA-Enterprise & WPA2-Enterprise

The following EAP methods are supported.

1. LEAP
2. PEAPv0-MSCHAPv2
3. PEAPv1-MSCHAPv2
4. PEAPv1-GTC
5. PEAPv1-TLS
6. FAST-MSCHAPv2
7. FAST-GTC
8. FAST-TLS
9. TLS
10. TTLS-MD5
11. TTLS-MSCHAPv2
12. TTLS-GTC



Note : For details, See **Completing the EAP Fields.** ([page 11](#))

#### Supported Encryption Methods

**TKIP**

**AES**

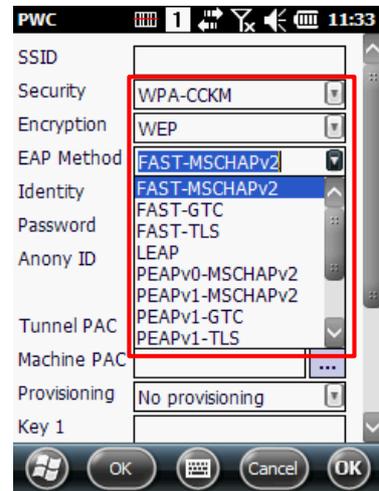
**TKIP+AES**

### 1-6-1-5 WPA-CCKM & WPA2-CCKM

The following EAP methods are supported as IEEE 802.1X and WPA-Enterprise.

There are more various encryption methods including, CKIP, CMIC support.

1. LEAP
2. PEAPv0-MSCHAPv2
3. PEAPv1-MSCHAPv2
4. PEAPv1-GTC
5. PEAPv1-TLS
6. FAST-MSCHAPv2
7. FAST-GTC
8. FAST-TLS
9. TLS
10. TTLS-MD5
11. TTLS-MSCHAPv2
12. TTLS-GTC



Note : For details, see **Completing the EAP Fields.** ([page 11](#))

### Supported Encryption Methods

**WEP**

**CKIP**

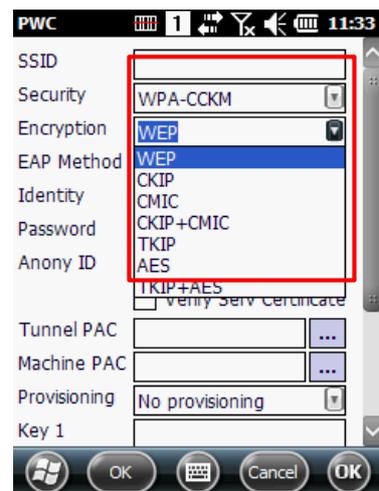
**CMIC**

**CKIP+CMIC**

**TKIP**

**AES**

**TKIP+AES**



## 1-7 Common Configurations

Common Configurations explains the most common network configuration in detail including:

[WEP](#)

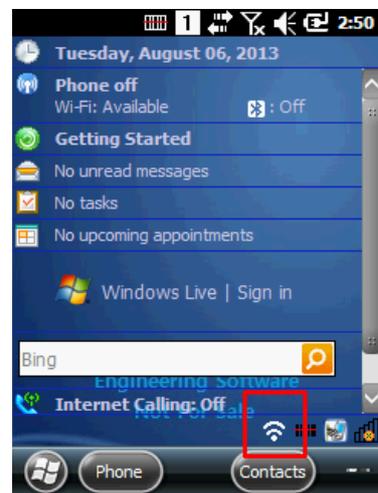
[PEAPv1-MSCHAPv2](#)

[WPA-PSK](#)

### 1-7-1 WEP

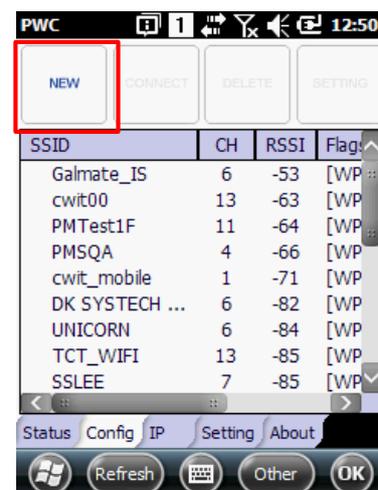
When you select Open for Security, you can select WEP as Encryption, and when you select Shared for Security, WEP Encryption will be applied automatically.

1. Tap the PWC Icon from command bar.



2. Tap the Config Tab

3. Tap New or tap AP SSID which supports WEP Encryption



4. On the Network Window, type in the SSID
5. Select Open or Shred from Security.
6. If you set as Open, select Encryption method as WEP
7. Select Key Index, configure your Key(s)
  - A. 5, 10, 13, 26 digit numbers are supported as Key
  - B. 5, 13 digit numbers are ASCII key,  
10, 26 digit numbers are HEX key.
8. Tap OK and screen goes back to Config Tab



9. Select AP from Config Tab and Tap Connect



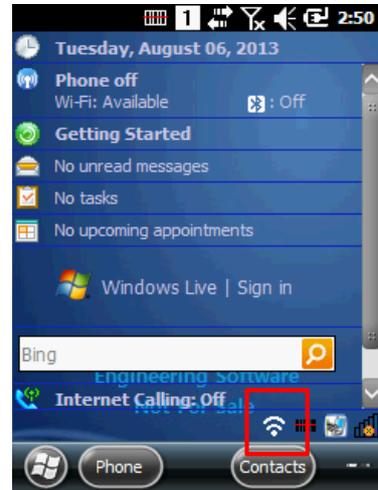
10. The screen goes to Status Tab and tries to connect the network.
11. Status Tab appears displaying the result



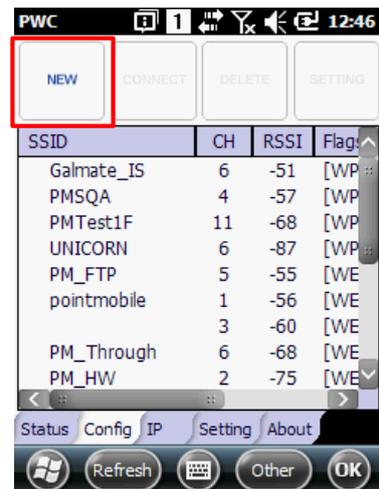
## 1-7-2 PEAPv1-MSCHAPv2

When you select 802.1X or WPA/WPA2-Enterprise for Security, EAP Method appears. You can select among EAP Methods.

1. Tap the PWC Icon from command bar



2. Tap the Config Tab
3. Tap New or tap AP SSID which supports PEAPv1-MSCHAPv2 Method



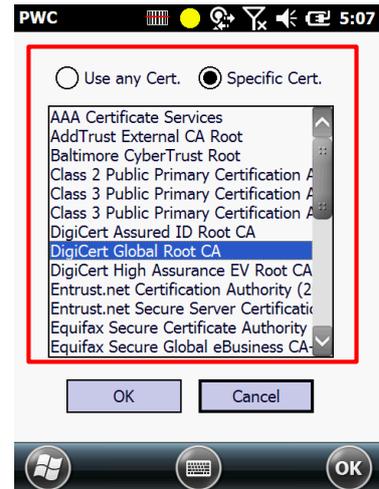
4. On the Network Window, type in the SSID.
5. Select 802.1X or WPA/WPA2-Enterprise from Security
6. Select PEAPv1-MSCHAPv2 from EAP Method
7. Type in Identity and Password
8. Type in Anonymous ID



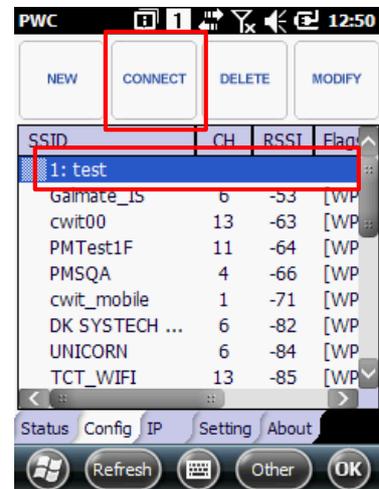
Note : If you select Verify Server Certificate Check Box, PWC verifies authentication from Server.

9. You are use the File system or MS certificate store, when select to Certificate.

10. The MS certificate store is use the all certificate verify or specific certificate.

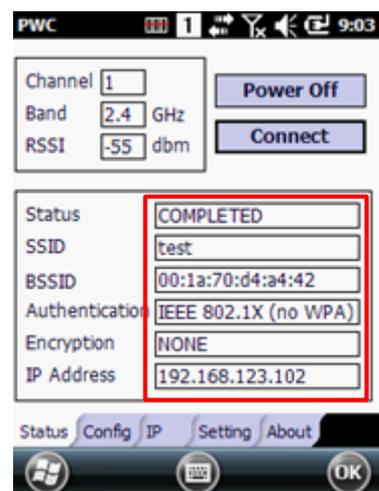


11. Select the AP from Config Tab AP and tap Connect



12. The screen goes to Status Tab and tries to connect the network.

13. Status Tab appears displaying the result

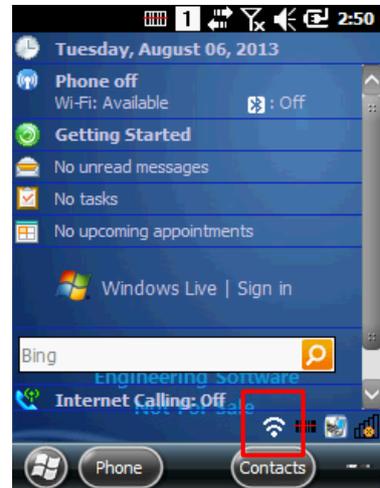


### 1-7-3 WPA-PSK

When you select WPA-Personal / WPA2-Personal for Security, PSK appears.

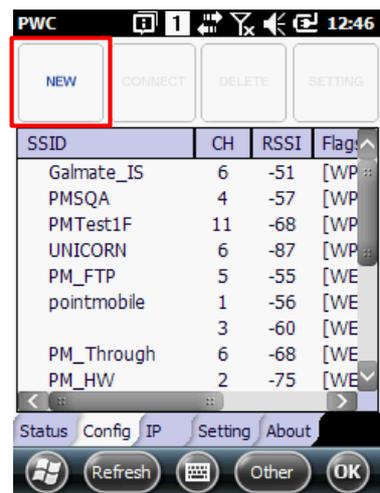
You can select among TKIP, AES, TKIP-AES for Encryption

1. Tap PWC Icon from command bar



2. Tap the Config Tab

3. Tap New or tap AP setting which supports PSK Encryption.



4. On the Network Window, type in SSID

5. Select WPA/WPA2-Personal from Security

6. Select Encryption method from drop-down list (TKIP, AES, TKIP+AES)

7. Type in PSK

8. Tap OK then the screen goes back to the Config Tab



9. Select the AP from Config Tab and tap Connect.



10. The screen goes to Status Tab and tries to connect the network.

11. Status Tab appears displaying the result



## 1-8 Static IP

PWC doesn't not support fixed IP directly.

You can type in fixed IP from Driver Adaptor, then you can have fixed AP through PWC.

[Windows Mobile](#)

[Windows CE](#)

### 1-8-1 Setting up a Static IP on Windows Mobile-based Devices (PM40, PM60)

1. Once you have AP connection, check Default gateway from IP Tab and disconnect communication with AP
2. Tap Start -> Settings -> Connections -> Wi-Fi.
3. Select Driver Adapter, the name of the driver is PWC Intermediate Miniport.

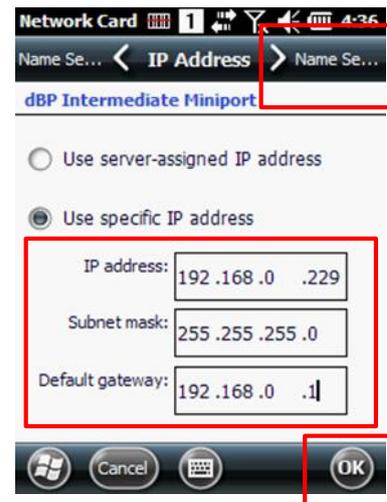


4. Select Use specific IP address and type in numbers accordingly.
  - A. Type in IP address
  - B. Type in Subnet mast
  - C. Type in Default gateway
  - D. Type in DNS on Name Server Tab

5. Tap OK, once you are done

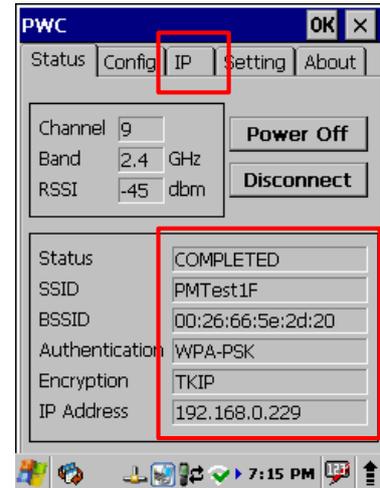
6. Execute the PWT, and configure the wireless connection.

7. Confirm fixed IP and related informations

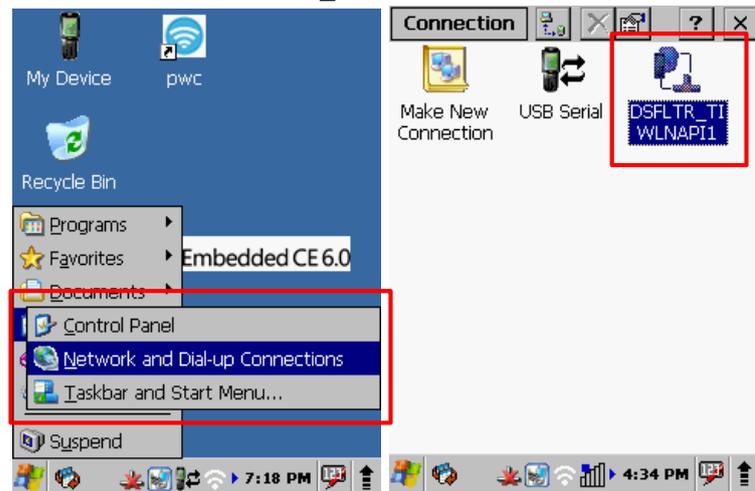


## 1-8-2 Setting up a Static IP on Windows CE-based Devices (PM251)

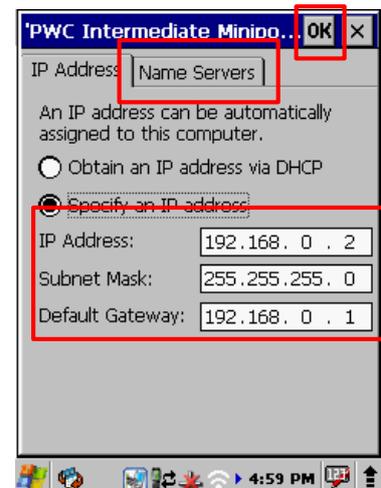
1. Once you have connected with AP and check Default Gateway, then disconnect communication with AP.



2. Tap Start -> Control Panel -> Network and Dial-up Connections
3. Select Driver Adapter, the name of the driver is DSFLTR\_TIWLNAPI1.



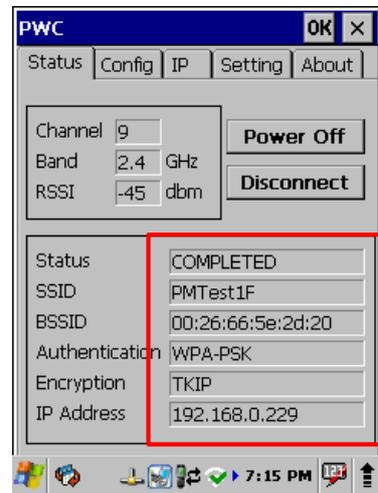
4. Select an Specify IP address, type in numbers accordingly.
  - A. Type in IP address.
  - B. Type in Subnet mast
  - C. Type in Default gateway
  - D. Type in DNS on Name Server Tab



5. Tap OK, once you are done

6. Execute PWC, and configure the wireless connection

7. Confirms fixed IP and related informations.

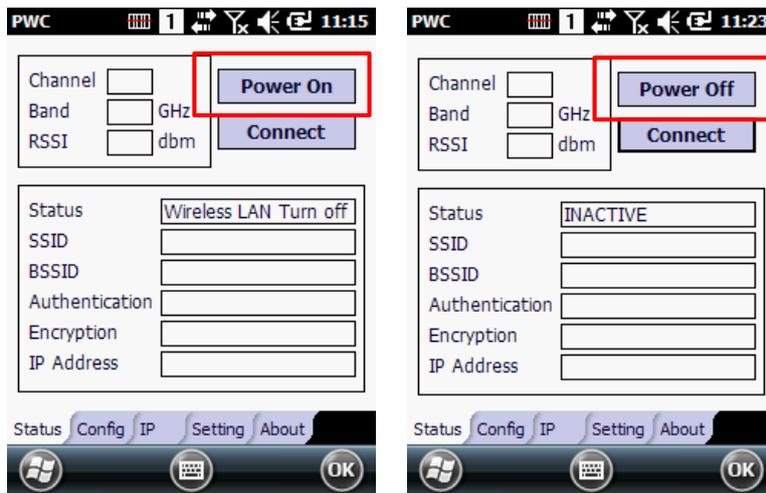


## 1-9 Status Tab

The Status tab displays the current connection status.

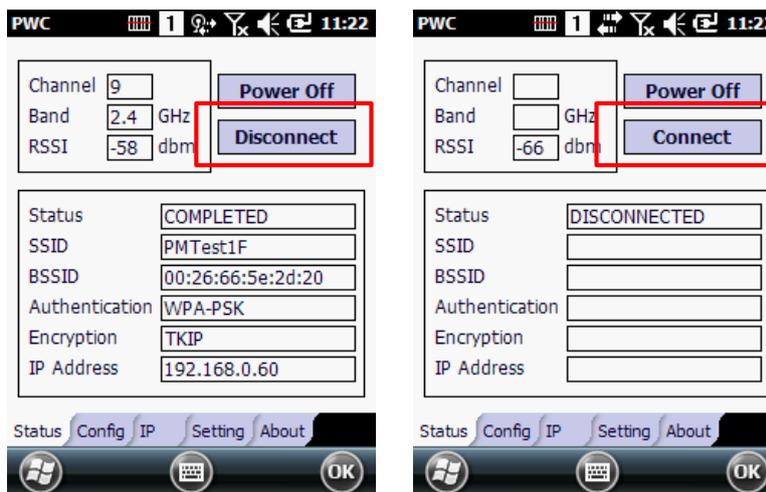
### 1-9-1 Power On/Off

Power On/Off button activate/deactivate Wi-Fi power.

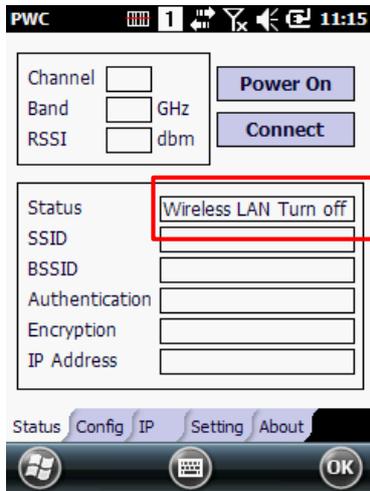


### 1-9-2 Connect / Disconnect

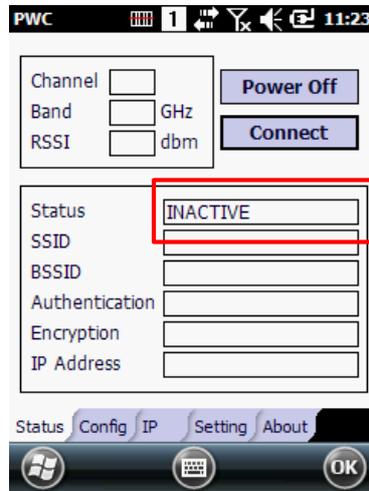
If there is connected AP currently, you can disconnect with the Disconnect button, and if there is configured AP you can reconnect with Connect button.



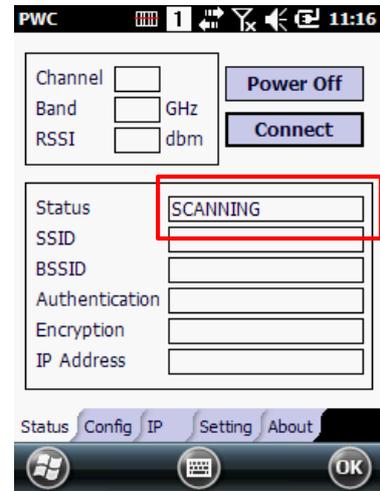
### 1-9-3 Status



Wi-Fi Power is turned off.



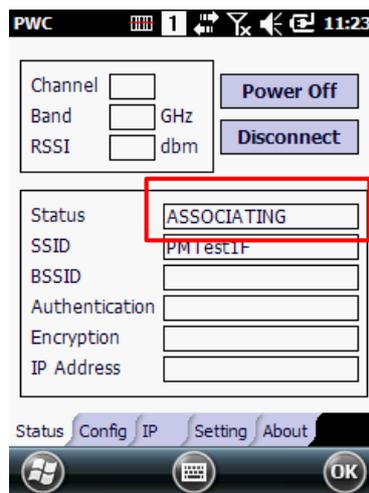
There is either no profile or no activated profiles.



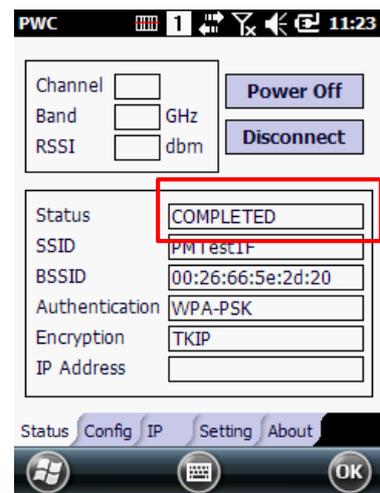
The PWC is searching for AP in range of the terminal.



The radio connection is disconnected.



The terminal connection is associating.



The connection is associated, authentication completed successfully, and active.

- SSID:** This is the name of AP.
- BSSID:** This is the MAC address for AP.
- Authentication:** This is AP authentication method.
- Encryption:** This is AP encryption method.
- IP Address:** This is IP address for AP.
- Channel:** This is the operating channel number for AP.
- Band:** This is the operating band width for AP
- RSSI:** This is the signal strength for AP

# Chapter 2. Working in AD-Hoc Mode

## 2-1 Introduction

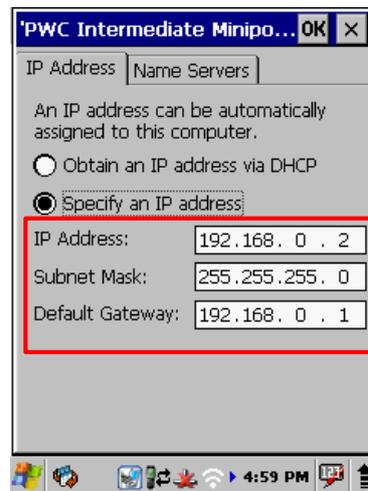
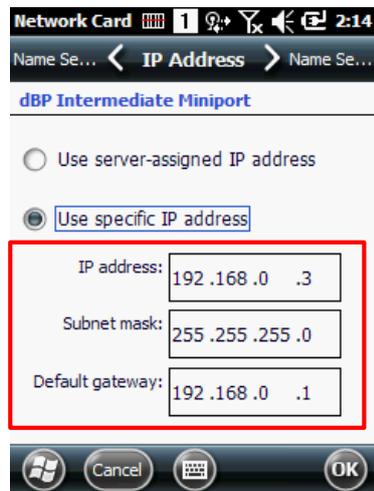
AD-Hoc allows to communicate directly more than one devices without AP.

## 2-2 Requirements

Create Static IPs with the same Default Gateway on both peer devices.

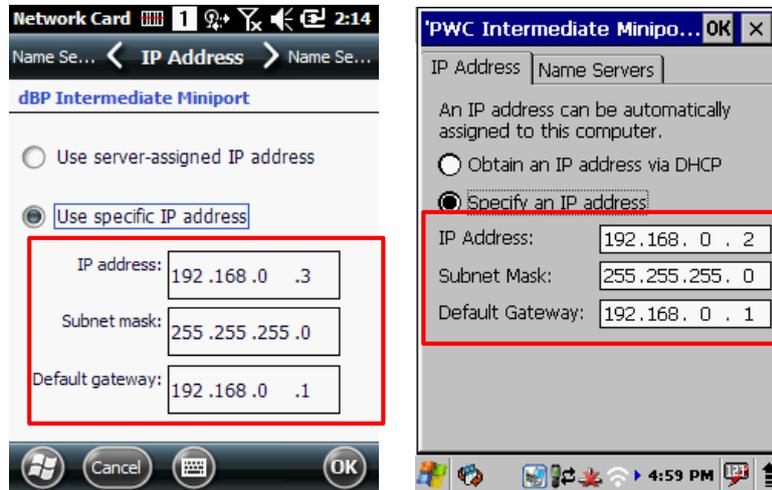
Create AD-Hoc with Profile with same SSID, then both peer devices connects each other..

## 2-3 Setting up a Static IP

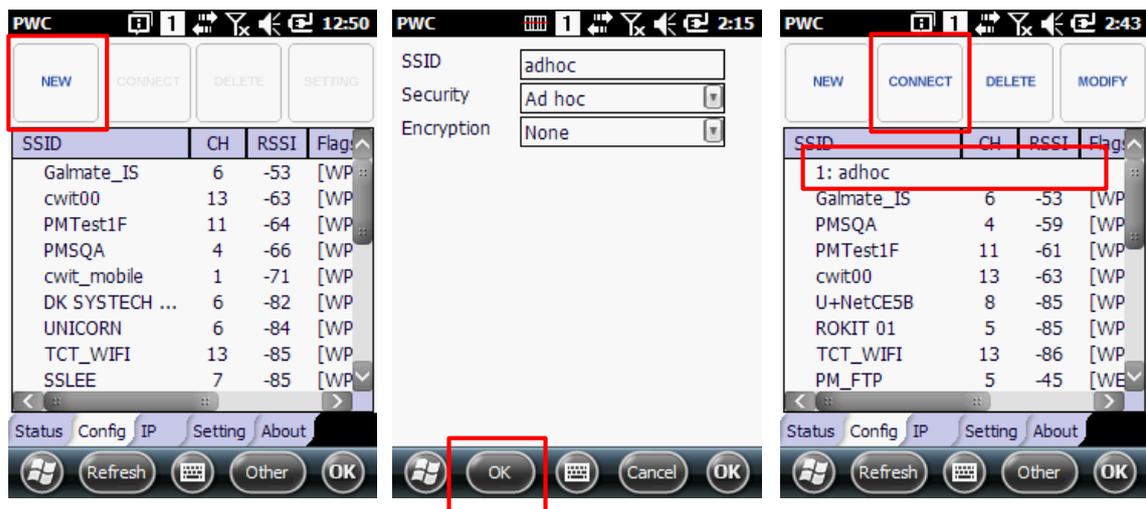


## 2-4 Initiating an AD-Hoc Connection

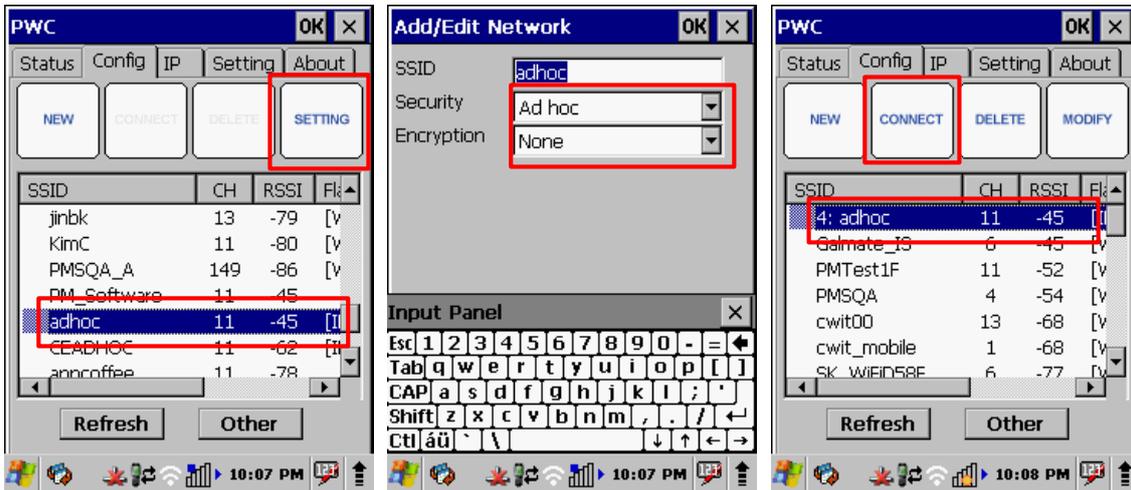
1. Create a Default gateway for a device and type in Static IP.
2. Type in same Default gateway for the other device and Static IP for the device.



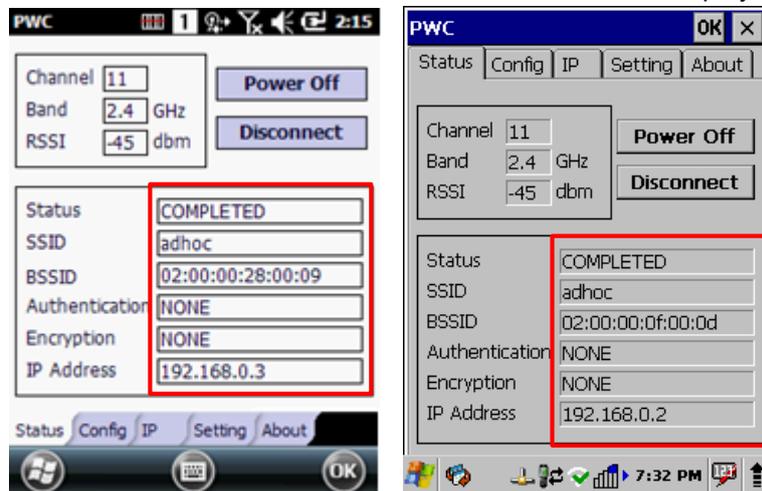
3. Execute PWC, tap New on Config Tab in order to select AP.
4. Put SSID, and change Security to Ad-hoc
5. In order to tighten security set Encryption.
6. Tap OK to save AP Setting
7. Connect to the AP on Config Tab.



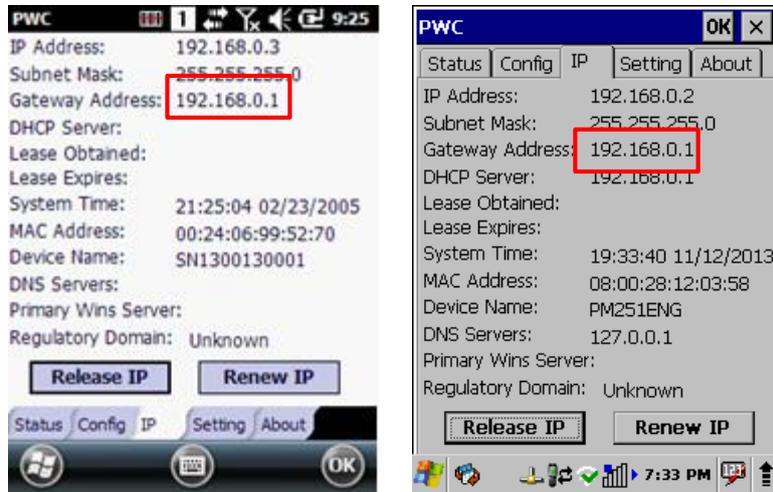
8. Search the SSID from the other device.
9. Select the SSID and set AP
10. If you have set up Encryption then put the information that you have set up
11. Put OK to AP
12. Connect to AP from Config Tab.



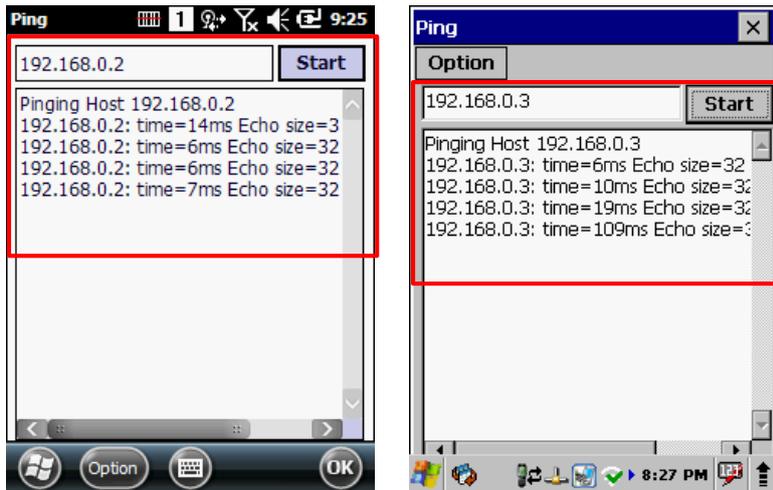
13. Check network connection on Status Tab and confirms Static IP displayed



14. Confirms Default gateway which you typed in IP Tab



15. Tap Start -> Demo -> Ping Demo and you can type in the other device's Static IP and confirms the connection.



# Chapter 3. Administrative Tools

## 3-1 Overview

The PWC offers a number of tools to provide convenience for users except basic AP connection function.

## 3-2 Config Tab

### 3-2-1 Export

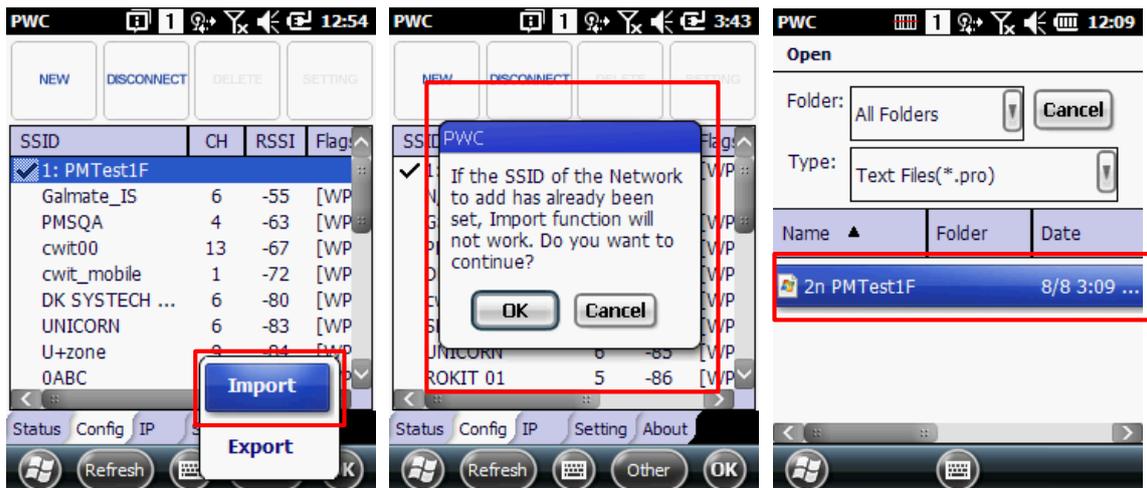
Export function transforms pre-shared AP information to a file on Config Tab.



Note: If you tap OK, the Profile will be named as ID+SSID of the AP. (ex, 2n PMTest1F.pro)

### 3-2-2 Import

Import function loads the AP information file which was created by Export function.

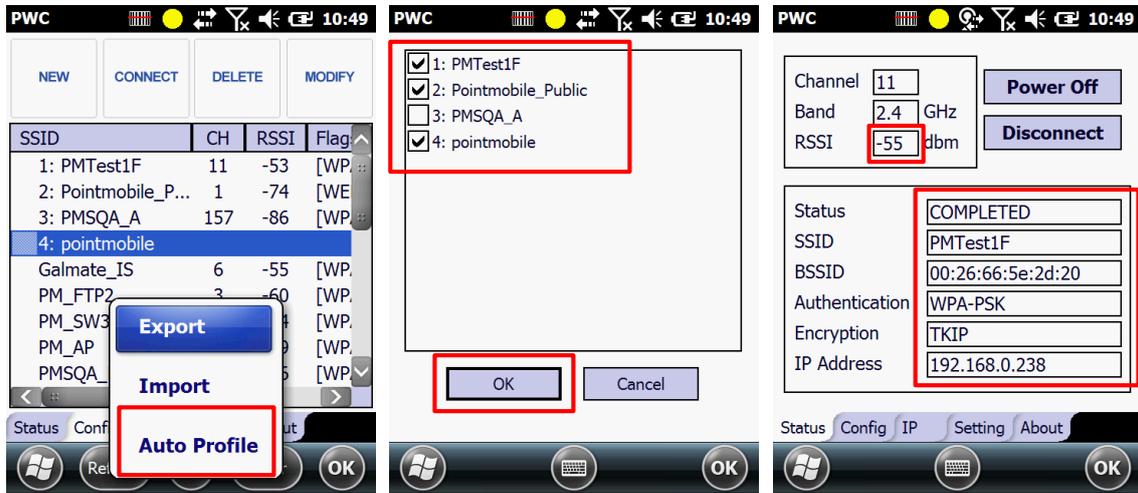


Note: Once a file is selected, AP is set according to the file.

If you have already set up the AP on Config Tab list, then the same SSID can't be Imported.

### 3-2-1 Auto Profile

Enable all profiles on Config Tab to make automatic Network connect as per its strength.



Note : Current network will be disconnected, and it will attempt to connect among activated profiles as per its strength.

### 3-4 Setting Tab

You can either check or change value of each items

#### 3-4-1 Roaming Trigger

Roaming Trigger indicates signal strength which PWC attempts to change AP from one to the other.

#### 3-4-2 BGScan Trigger

The Background scan runs in order to discover and track APs with the same SSID and insert them into AP neighbor list.

#### 3-4-3 Roaming Interval

Length of the time to wait before roaming as a result of low connection quality.

This interval prevents back-and-forth roaming events when the device is in a place where the RSSI is not stable.

#### 3-4-4 CCX Enable

CCX Enable controls the availability of CCX (Fast Roam) function.

#### 3-4-5 Power Mode

Power Mode controls the power supplying amount to WLAN. (Max Power consumes more power than default setting)

#### 3-4-6 Control 802.11d

Control 802.11d controls the availability of Regulatory Domain function.

#### 3-4-7 Control 802.11h

Control 802.11h controls interference with other devices which uses 5GHz frequency and related functions.

#### 3-4-8 Prevent Auto Suspend

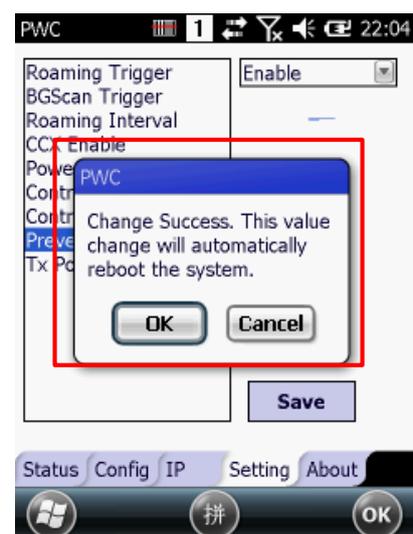
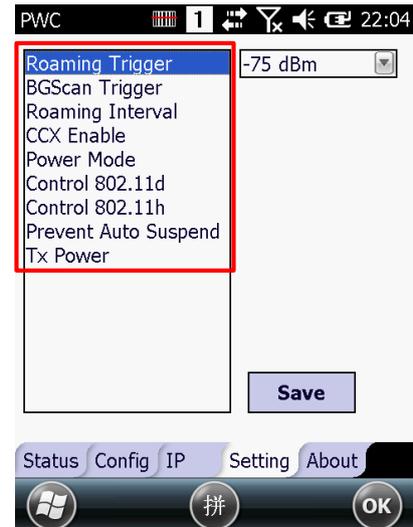
Prevent Auto Suspend controls will not use the auto-suspend function, during connecting to AP.

#### 3-4-9 Tx Power

Tx Power controls transmit max performance with connected AP.

#### 3-4-10 Save

When the setting is done, the system saves the value change, also the device attempts to reboot the system in order to apply the setting change with a pop-up menu. (The changed value applies after system reboot)



## 3-5 About Tab

### 3-5-1 Application Version

Current PWC Version will be displayed.

### 3-5-2 File Version

Supplicant Version information which PWC is currently using, will be on screen.

### 3-5-3 Firmware Version

Current WLAN Firmware Version information is available,



## 3-6 Technical Assistance

3-6-1 Technical support office:

3-6-2 Online Technical Assistance