1. Installing the Program

Installing the Main Program

Run TSP_PC_Program2.11_Setup.EXE, and follow the screen instructions.

☞ Caution: Do not change the program installation path.

Installing the Default File

Run TSP Default Install V1.00.exe, and follow the screen instructions.

☞ Caution: Do not change the program installation path.

1.1 Serial Port Select Window

When the program is run, a serial port selection window will appear as shown above.   Select the port to use.

Note: Some new-model notebook PCs are not equipped with serial ports.   The notebook PC users can use USB-to-serial conversion connectors. At this time, the port number is usually set 4 or higher.

1.2 Radio Band Select Window
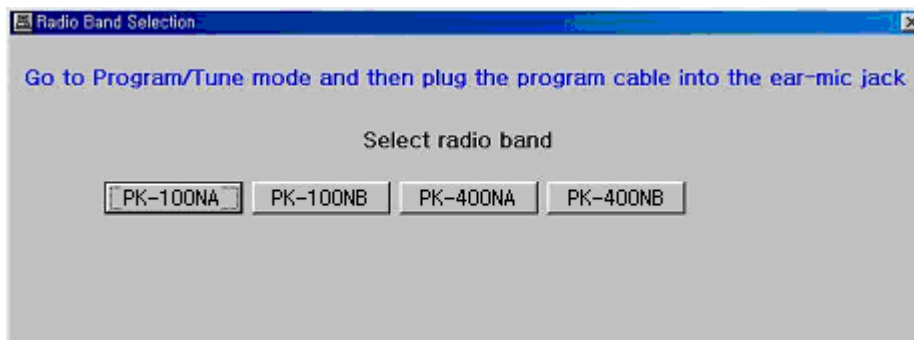
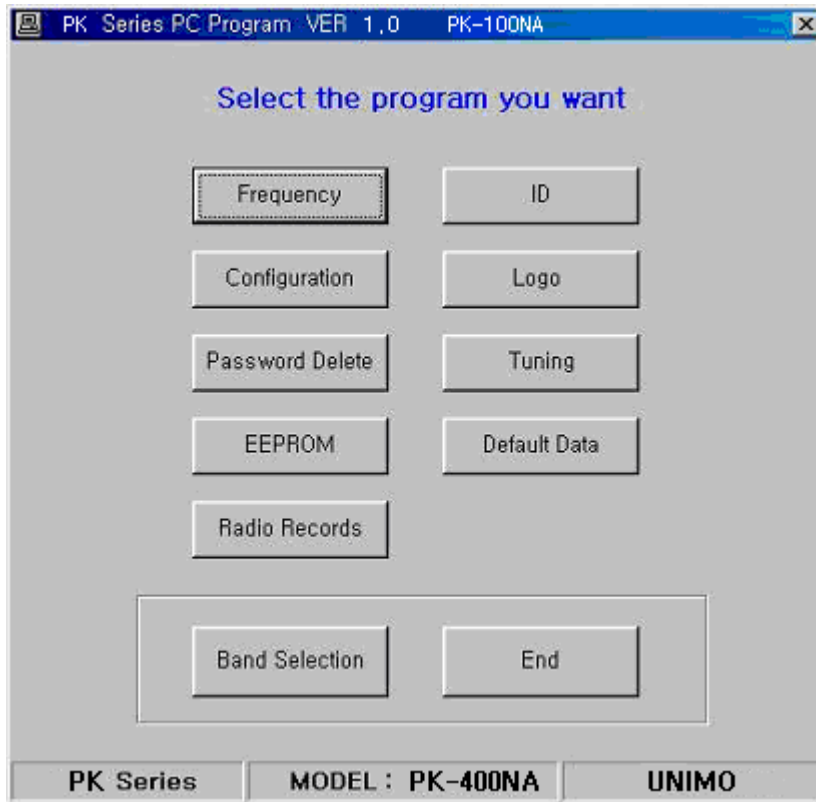In the above window, the user can select the radio band for the radio.

After entering into the Program or Tune mode, connect the program cable. Then, select the radio band. After the user clicks on a button in the above window, the program will communicate with the radio and go to the next process only if the selected band is same as the actual radio's band.

Note: In case a communication error message occurs, make sure that the radio is operating in Program or Tune mode and the cable is correctly connected.

If there is no default file for the corresponding model, the program will be ended.

Entering into Tune mode : Press **"M"** button on one side of the radio, and turn on the power.

Entering into Program mode : press **"E"** button, and turn on the power.

1.3 Main Window

In the above window, the user can make settings of the radio.

1.3.1 Description of Buttons

Frequency	To go to a window to set the group and input frequency in the channel
ID	To go to a window to set the DTMF ID and the 5-tone ID
Configuration	To go to a window to turn on/off various features of the radio and set the time interval
Logo	To go to a window to edit the logo, to read/write the data in the radio, and read/write files
Password Delete	To delete the password set in the radio without going to another window
Tuning	To go to a window to adjust performance of the radio like output, modulation, reception sensitivity, etc.,
EEPROM	To go to a window to directly read and edit the EEPROM of the radio.
Default Data	To go to a window to compare and change the default file and the data saved in the radio.
Radio Records	To go to a window to manage radio information like the type of the radio, the default file creation date, etc.,
Band Selection	To go to a window to select the radio band
End	To end the program

1.4 Frequency Input Window

The channel name has maximum 10 digits.

The user should input the Rx/Tx frequency within the range displayed on the status bar.   The user should select proper values for N/W (Narrow/Wide), RX Tone, TX Tone, Scan, and Power fields from the combo box.   RX Step, TX Step, and Shift fields are editable by the user, and the data is automatically inputted in these fields according to user's inputting the frequency. In other words, if the user inputs the Rx frequency, default values selected in the Input Default Tab of the Input Setting Up Window will be automatically filled in blank fields. However, if the fields are not blank, default values will not be automatically inputted.   Tx setting can be made in the same ways as Rx settings.

1.4.1 Menu Description

New	To delete inputted data and renew the status
Read File	To read group and channel data from "*. fre" file
Write File	To write data in "*. fre" file
Print	To print out the data
Main Window	To go back to the main window
Input Setting	To display the Input Setting window (Refer to Section 5-2.)
RxToTx Copy	To copy the Rx frequency and the Rx tone to Tx frequency and the Tx tone

Read Radio   To read the data from the radio

Write Radio   To write the data displayed on the screen in the radio

1.4.2 Shift "ON" or "OFF"

GR	CH	Name	N/W	RX					TX			
				FRQ	Step	Tone	Scan	Shift	FRQ	Step	Tone	Power
	1	[CH-001]	Wide	139,000000 MHz	12,5K	No Tone	NO	YES	139,000000 MHz	12,5K	No Tone	HIGH
	2	[CH-002]	Wide	139,012500 MHz	12,5K	No Tone	NO	YES	139,012500 MHz	12,5K	No Tone	HIGH
	3	[CH-003]	Wide	139,025000 MHz	12,5K	No Tone	NO	YES	139,025000 MHz	12,5K	No Tone	HIGH
	4	[CH-004]	Wide	139,037500 MHz	12,5K	No Tone	NO	YES	139,037500 MHz	12,5K	No Tone	HIGH

In case of using the Radio, there's a possibility that buddy channel could be happen on the Frequency Input Window program. Normal Shift Default value is "YES" but there's a buddy channel happen, need to choose Shift Value " NO "..
In case Shift value is "YES", Q508 on the below circuit diagram is "ON", Crystal(X10) Oscillated frequency range is the value of C516 + C514(3p+20p) and this is normal oscillated. If Buddy channel is happen, need to change shift value "NO" and then Q508 will be "OFF" and Crystal(X10) Oscillated Frequency range will be operated only C516(3p), and frequency range is higher so that harmonic frequency will be changed.

Buddy Channel : In case Receiving frequency range and MPU(U500) are same with harmonic frequency of clock frequency, and it receives harmonic frequency in the same time so that sensitivity is drop down and noise comes up.
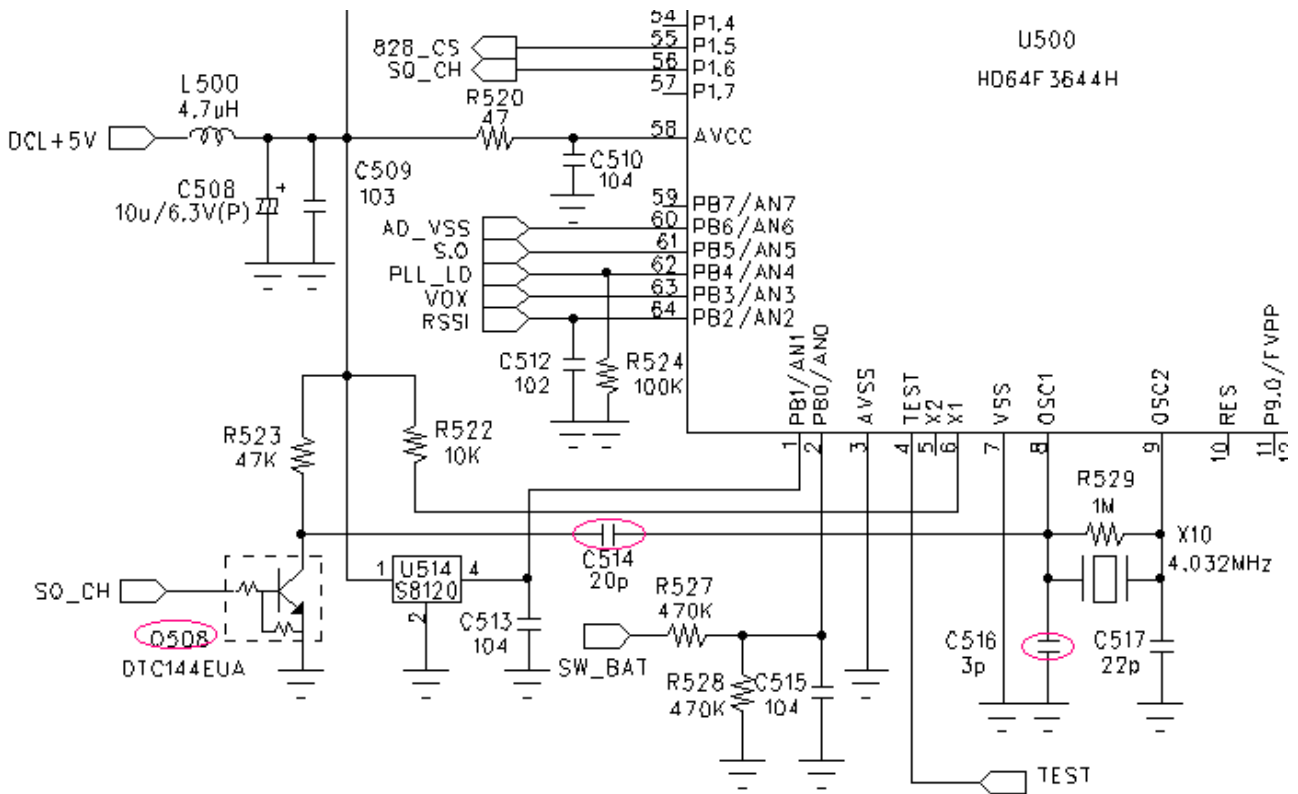
Figure 10.1 Shift "ON" or "OFF" circuit diagram

1.5 Input Setting Window

1.5.1 Default Value
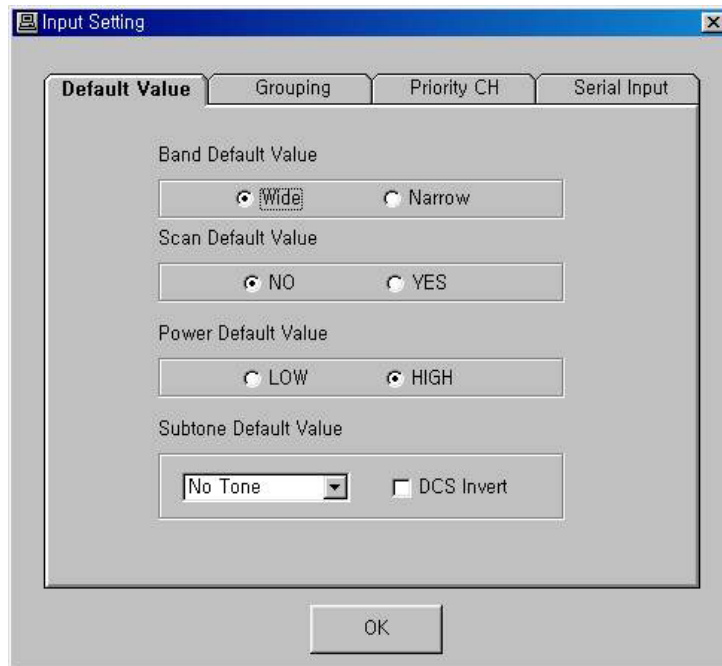
.If Band, Scan, Output, and Sub Tone fields are empty when inputting the Tx frequency and the Rx frequency, values inputted in the above window will be automatically inputted in these fields. However, when these fields .already have values, values set in the above window will not be inputted.

1.5. 2 Grouping
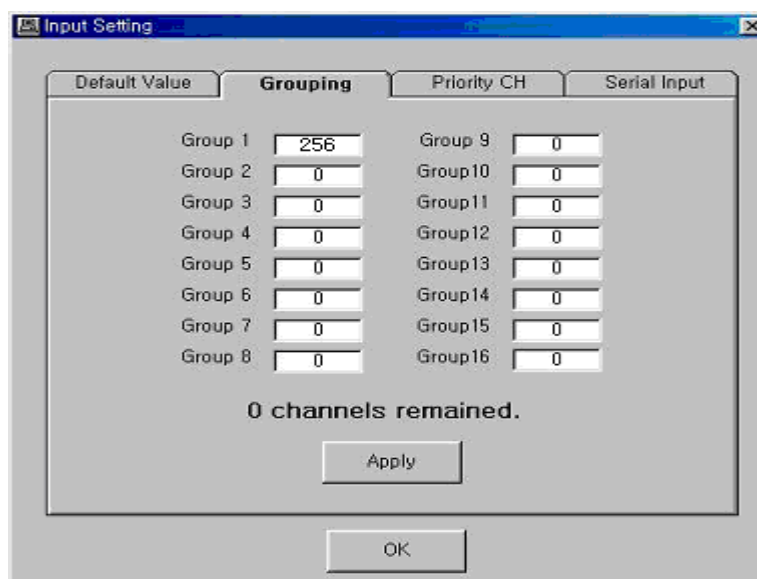
The above window is to allocate channels to groups.   There can be maximum 128 channels.

☞Caution: After allocating channel, click on "Apply" button to apply the allocation.

1.5.3 Priority CH
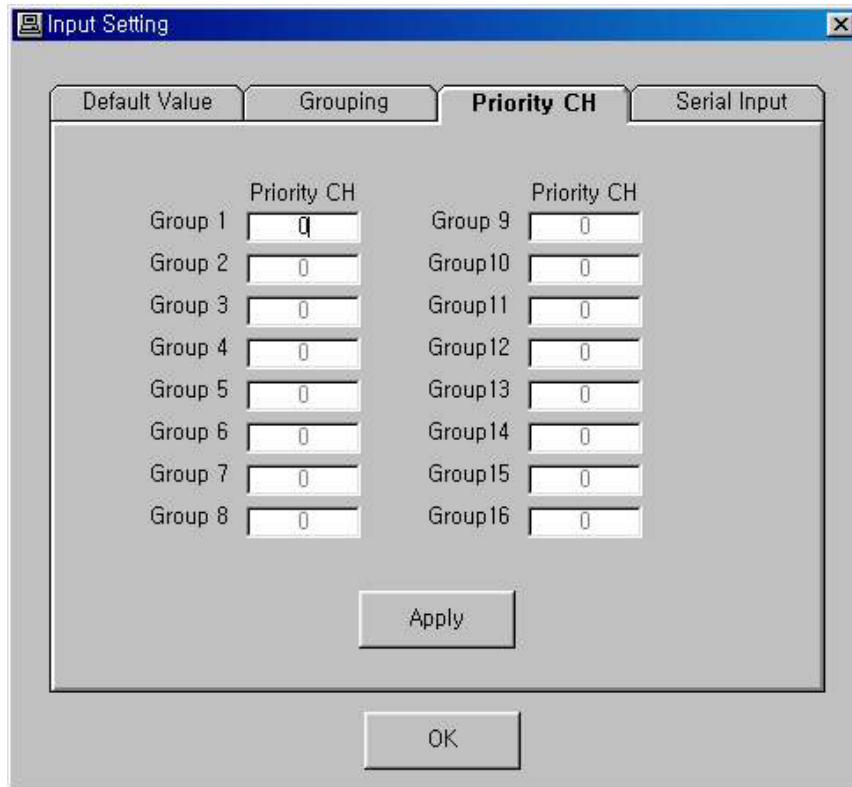
The above window is to set the priority scan channels of each group. Only the groups with the allocated channels are activated and editable, and only scan channels can become priority scan channels.

Caution: After selecting priority scan channels, click on "Apply button" to apply the selection.

1.5.4 Serial Input
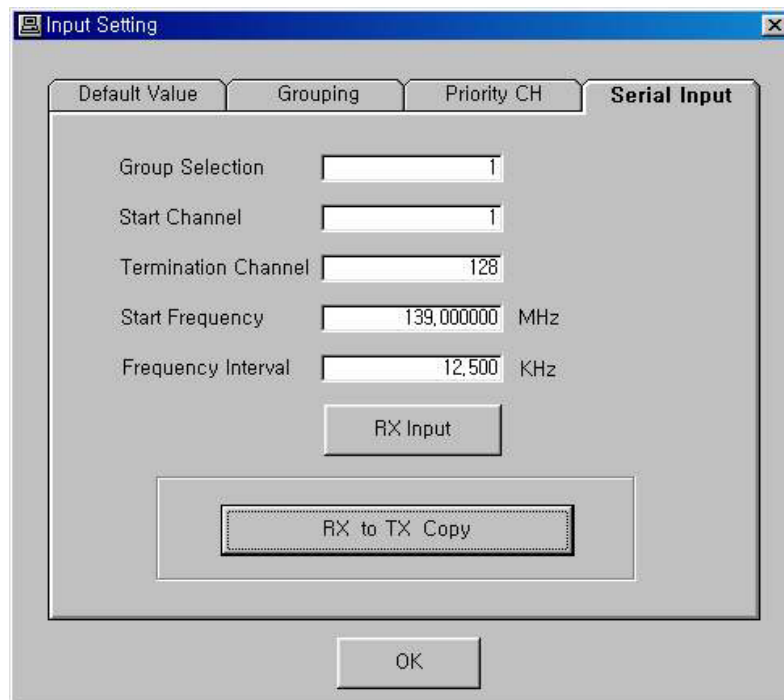
In the above window, the user can input continuous frequencies in each group at the same frequency interval.

Group Selection   To select the group to input the frequency

Start Channel   To select the first channel to input the frequency

Termination Channel   To select the last channel to input the frequency

Start Frequency   To set the start frequency

Frequency Interval   To set the frequency interval to be continuously inputted   (0Hz can be inputted.)

RX Input   To save the received data based on the above input setting

RX to TX Copy   To copy the Rx data to the Tx data

1.6 ID Setting Window
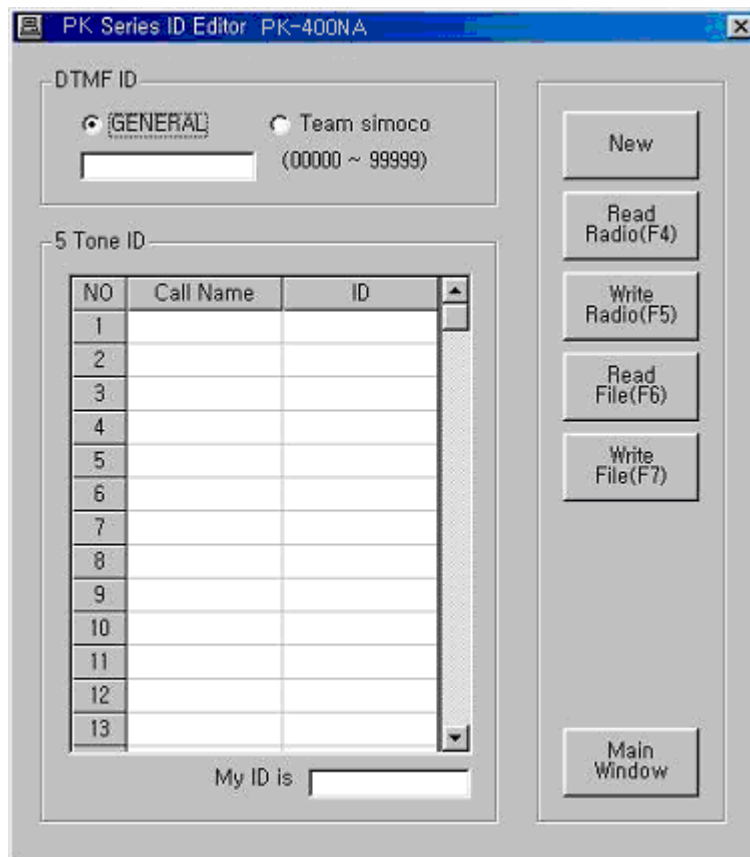
- In the above window, the user can set the DTMF ID and the 5-tone ID.

- The DTMF ID can be inputted up to five digits from 00000 to 99999.

- There can be thirty 5-tone IDs at maximum.

- Input 10 or less alphabetic characters in Call Name fields, and input 5 or less digits in the ID field from 00000 to 99999.

- "A" can be used in the ID representing "All".

- Select the ID number (1 ~ 30) among thirty IDs in MY ID field.

1.6.1 Description of Buttons

New	To delete inputted data and renew the status
Read Radio	To read the data from the radio
Write Radio	To read the data from "*. ID" file
Read File	To read the data from "*. ID" file
Write File	To write the data in "*. ID" file
Main Window	To go back to the main window

☞ Note   UNIMO type in DTMF ID field is only used in Korea.

☞ Note   Grouping example

Group A (1234A)   Jane (12345), John (12346)

Group B (A2468)   Mike (12468), Tommy (32468)

1.7 Configuration Setting Window
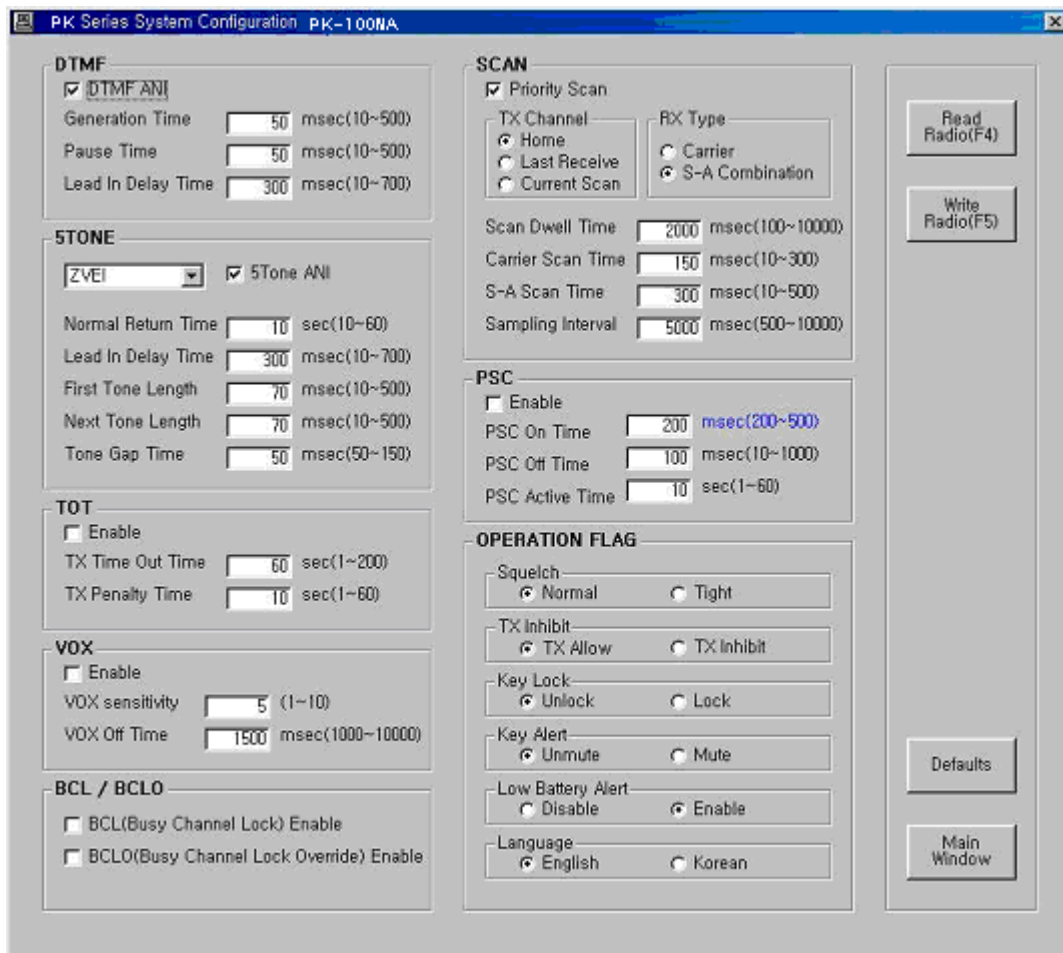
1.7.1 Description of Buttons

Read Radio   To read the data from the radio

Write Radio   To write the data to the radio

Default   To change the settings back to the default status

Main Window   To go back to the main window

1.7.2 DTMF

The user can change settings related to the DTMF ANI that is transmitted once the transmission begins.

DTMF ANI Check box: To decide whether to send the DTMF ID set in the ID Setting Up window once the transmission begins.

Generation Time   Time to generate one digit signal of the DTMF ID

Pause Time   Pause time between the DTMF ID and ID

Lead In Delay Time   Delayed time till the first signal is generated after the DTMF ID generation request is made

1.7.3 5-tone

The user can change settings related to 5-tone ANI and 5-tone Call that are transmitted once the transmission begins.

5-tone Combo box   Select the 5-tone standard set.

5-tone ANI Check box   Decide whether to send the My ID set in the ID Setting Up window once the transmission begins.

Normal Return Time   The radio enters into Selective Call mode from the Normal mode after receiving a call.   However, if the radio does not receive or send any data during the time set in "Normal Return Time" field, the radio will automatically return to Normal mode.

Lead In Delay Time   Delayed time till the first signal is generated after a request is made to generate a 5-tone ANI or 5-tone call signal

First Tone Length   When the first tone among five tones is generated

Next Tone Length   When each of other four tones are generated

Tone Gap Time   Gap between the time when the called party's ID tone is lastly generated and the time when the caller's ID tone is firstly generated when a 5-tone ID is called

1.7.4 TOT

The user can change Time Out Time (TOT) setting to prevent one user's continuous transmission.

In case a user's transmission time exceeds the TOT time, transmission will be automatically stopped.

Enable Check box   Decide whether to use the TOT or not.

TX Time Out Time   Maximum transmission time for each case

TX Penalty Time   Penalty time when the user makes excessive transmission against the allowed time

1.7.5 VOX

The user can change settings related to the VOX that is to recognize and send the audio signal inputted in the microphone.

Enable Check box	To decide whether to use the VOX or not.
VOX Sensitivity	Decide the sensitivity for VOX transmission.
VOX Off Time	When VOX transmission is stopped because there is no constant audio input
☞ Caution	To use VOX features in the PF-series radio, users must purchase the dedicated accessories.
Note	The VOX sensitivity means the level differential between sampling data of input signals, not the simple size of inputted audio signals.

1.7.6 BCL/BCLO

Not to interrupt other users' using the same frequency, the user can change the Busy Channel Lock (BCL) and the Buy Channel Lock Override (BCLO) that limit transmission.

-BCL Enable Check box: Decide whether to set the BCL or not.

-BCLO Enable Check box: Decide whether to set the BCLO or not.

Transmission availability is as shown below depending on the setting:

Carrier	Receive	CH-set	Tone Match	BCL	BCLO	TX
On	-	No Tone	-	Off	Off	×
					On	○
	Tone	Tone	Match		Off	×
					On	○
	Tone	Tone-	Mismatch-		Off	×
					On	×
				Off	-	○
Off	-	-	-	-	-	○

Table 10-1. BCL/BCLO Function Table

1.7.7 Scan

The user can change settings related to the scanning..

Priority Scan Check box	Decide whether to use the prior channel scanning method or not.
TX Channel Radio button	To set the transmission channel to make transmission during scanning
Home	To transmit by using the channel before scanning starts
Last receive	To transmit by using the lastly receive channel during scanning
Current scan	To transmit the currently scanned channel
RX Type Radio button	To set the conditions to stop scanning
Carrier	To stop scanning when the frequency is matched
S-A Combination	To stop scanning when both the frequency and the sub-audio are matched
Scan Dwell Time	If the conditions to stop scanning disappear, the radio checks if these conditions return during the scan dwell time before moving to the next channel.
Carrier Scan Time	Time to inspect if there is any carrier
S-A Scan Time	Time to inspect if the sub-audio is matched
Sampling Interval	Interval to regularly check if there is any carrier in the priority channel when priority scanning stops in a normal channel

Note   Stopping of scanning and reception of the audio data do not always match.   If only the carrier matches when the Rx type is the carrier type and there is the sub-audio data in the currently scanned channel, scanning will stop.   However, in this case, only the Rx lamp will blink and the Audio will not be opened.   On other cases, stopping of scanning and reception of the audio data mostly match each other.

1.7.8 PSC

The user can change settings of the Power Save Control (PSC) that turns on/ff the reception end to save battery energy.

Enable Check box	Decide whether to use the PSC or not.
PSC On Time	When the reception end is turned on while the PSC is on
PSC Off Time	When the reception end is turned off while the PSC is on
PSC Active Time	Time taken till the PSC is activated after one of the following conditions occur: - After transmission ends - After reception ends - After the channel is changed

1.7.9 Operation Flag

The user can change flag settings related to the operation of the radio.

Squelch	To set the squelch sensitivity
TX Inhibit	To decide whether to inhibit transmission of the radio or not
Key Lock	To decide whether to lock the key or not
Key Alert	To decide whether to generate key alert sound or not
Low Battery Alert	To decide whether to generate low battery alert sound or not
Language	To select the language

1.8 Password Release

The user can delete the password of the radio without going to another window.

In the above window, the user can adjust performance of the radio – the transmission output, the MIC modulation, the sub-tone modulation, and the Rx BPF.   Tx characteristics are divided into eight levels at each frequency range, or six levels at each CTCSS frequency range even within one frequency range.   Select narrow band for MIC modulation and wide band for sub-tone modulation.   The Rx BPF is divided into 32 levels according to the frequency range.   Select Narrow Band or Wide Band for the BPF.   Squelch (T) is to set the sensitivity when the squelch level is Tight.   (It is recommended not to change this value.)

1.9.1 Description of Buttons

Read Radio	To read the data from the radio
Write Radio	To write the data to the radio
Read File	To read the data from "*. tun" file
Write File	To write the data in "*. tun" file.
Data View	To go to the Tune Data View window in 10-3
Main Window	To go back to the main window
TX TEST	To test Tx performance
PTT On/Off	To turn on/off Tx output
MIC On/Off	To open or close the path for the signals inputted in the microphone
Same MOD	To apply the MOD of CTC 1 ~ CTC 6 Group set in one frequency range out of eight ranges and the DSC MOD in other frequencies (The audio MOD is not applied.)
RX TEST	To test Rx performance
Audio On/Off	To turn on/off output of the received audio signals
SQ CHK On/Off	To compare the squelch level of the received signal and the inputted squelch level (It is recommended not to change this value.)

1.9.2 Tuning Method

Read the tuning data from the radio.

To tune the Tx performance, press "Tx Test" button, or press "Rx Test" to tune Rx performance.   Go to the next step by clicking on the proper button or pressing "Space" key on the keyboard.

After selecting a tuning item, press "Enter" key.   Then, the setting will be automatically changed so that the user can change the current item.

The user can change the tuning value by pressing Up and Down arrow keys or directly inputting the data.

Tuning should be done from the upper level to the lower level, but the user can tune the next step by pressing "Enter" key at any level.

After completing tuning, save the new values in the radio.

Note   When the user presses "Enter" key, packets are transmitted from the PC to the radio several times to change the setting.   Wait for a while before proceeding.

☞ Caution   Note that tuning is directly related to performance of the radio and carefully perform tuning.

1.9.3 Tune Data View Window

PK Series Tune Data Viewer PK-100NA

TX Tune Data

	136 ~ 140	140 ~ 144	144 ~ 148	148 ~ 152	152 ~ 156	156 ~ 160	160 ~ 162	162 ~ 162
Power(L)	0	0	0	0	0	0	0	0
Power(H)	0	0	0	0	0	0	0	0
Audio MOD(N)	0	0	0	0	0	0	0	0
CTC1 MOD(N)	0	0	0	0	0	0	0	0
CTC2 MOD(N)	0	0	0	0	0	0	0	0
CTC3 MOD(N)	0	0	0	0	0	0	0	0
CTC4 MOD(N)	0	0	0	0	0	0	0	0
CTC5 MOD(N)	0	0	0	0	0	0	0	0
CTC6 MOD(N)	0	0	0	0	0	0	0	0
DCS MOD(N)	0	0	0	0	0	0	0	0
Audio MOD(W)	0	0	0	0	0	0	0	0
CTC1 MOD(W)	0	0	0	0	0	0	0	0
CTC2 MOD(W)	0	0	0	0	0	0	0	0
CTC3 MOD(W)	0	0	0	0	0	0	0	0
CTC4 MOD(W)	0	0	0	0	0	0	0	0
CTC5 MOD(W)	0	0	0	0	0	0	0	0
CTC6 MOD(W)	0	0	0	0	0	0	0	0
DCS MOD(W)	0	0	0	0	0	0	0	0

BPF

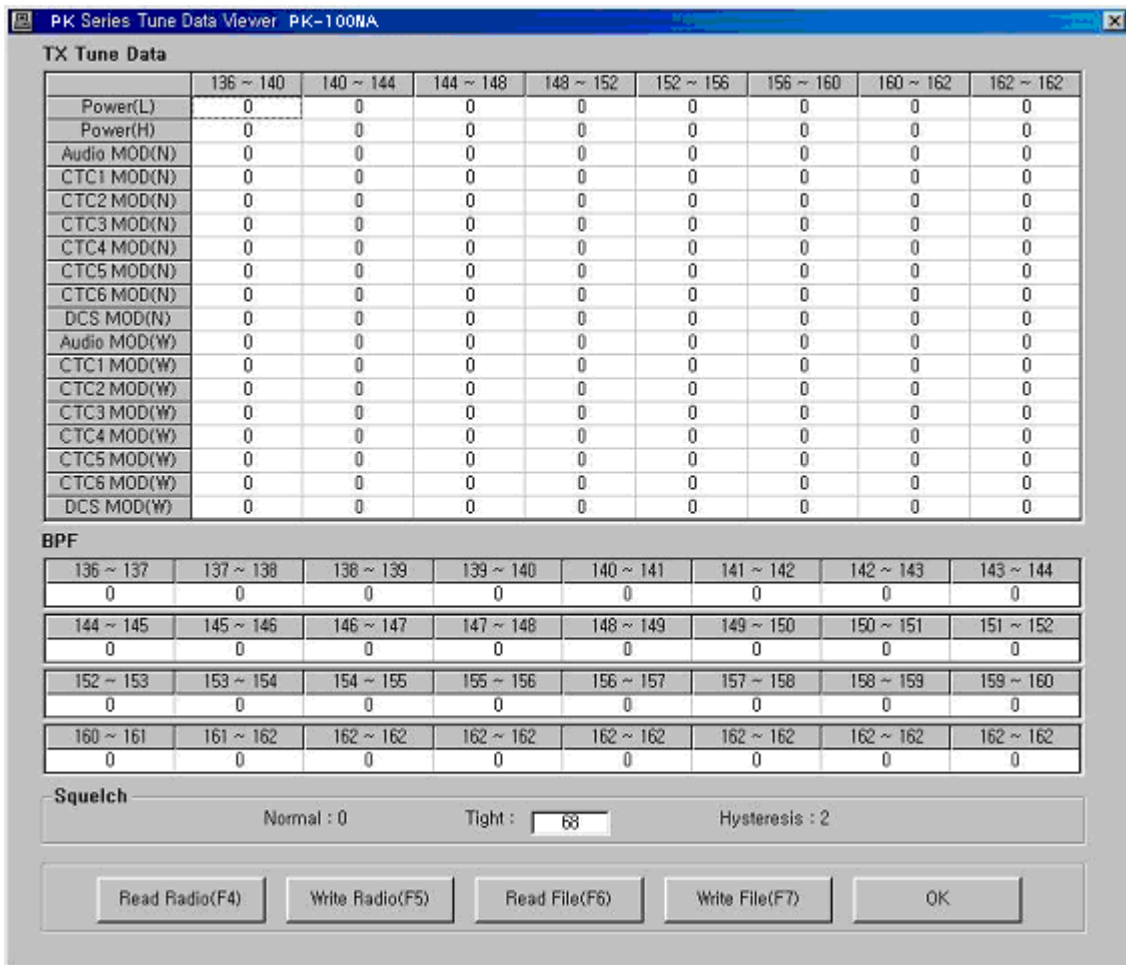| 136 ~ 137	137 ~ 138	138 ~ 139	139 ~ 140	140 ~ 141	141 ~ 142	142 ~ 143	143 ~ 144
0	0	0	0	0	0	0	0
144 ~ 145	145 ~ 146	146 ~ 147	147 ~ 148	148 ~ 149	149 ~ 150	150 ~ 151	151 ~ 152
0	0	0	0	0	0	0	0
152 ~ 153	153 ~ 154	154 ~ 155	155 ~ 156	156 ~ 157	157 ~ 158	158 ~ 159	159 ~ 160
0	0	0	0	0	0	0	0
160 ~ 161	161 ~ 162	162 ~ 162	162 ~ 162	162 ~ 162	162 ~ 162	162 ~ 162	162 ~ 162
0	0	0	0	0	0	0	0

Squelch

Normal : 0   Tight : 68   Hysteresis : 2

Read Radio(F4)   Write Radio(F5)   Read File(F6)   Write File(F7)   OK

In the above window, the user can check the tuning data in each range or directly input the data.

☞ Caution: After changing the data, press "Enter" key to apply the change.

Description of Buttons

Read Radio   To read the data from the radio

Write Radio   To write the data to the radio

Read File   To read the data from "*. tun" file

Write File   To write the data in "*. tun" file

OK   To go back to the Radio Tune window

1.10 EEPROM Memory Map Window
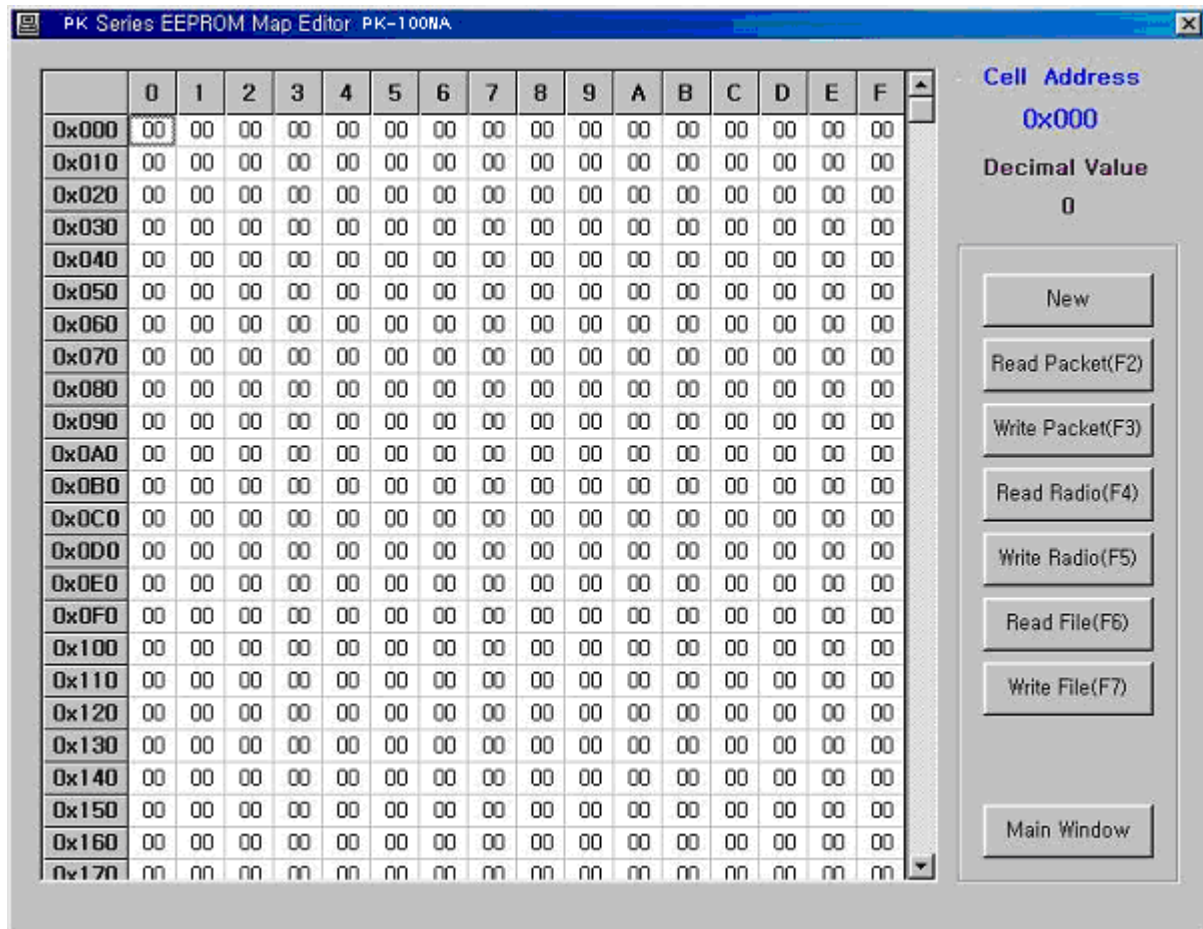
In the above window, the user can read, write, and edit 4kbyte data of the .EEPROM from 0x000 to 0xFFF.

☞Caution: After changing the data, press "Enter" key to apply the change.

1.10.1 Description of Buttons

New	To delete the inputted data and renew the status
Read Packet	To read 16 values on the current line
Write Packet	To write 16 value in the current line to the radio
Read Radio	To read the data from the radio
Write Radio	To write the data to the radio
Read File	To read the data from "*. rom" file
Write File	To write the data in "*. rom" file
Main Window	To go back to the main window

1.11 Default Value Comparison Window

PK Series Default Data Compare

Default File Data

IF IC Stable Time : 190 ms
RF Power On Delay Time : 10 ms

High Power Battery Level(Low)　　: 161
High Power Battery Level(Middle) : 171
High Power Battery Level(High)　 : 180
Low Power Battery Level(Low)　　 : 162
Low Power Battery Level(Middle) : 172
Low Power Battery Level(High)　 : 181
RX Battery Level(Low)　 : 164
RX Battery Level(Middle) : 174
RX Battery Level(High)　 : 184
Power Off Battery Level : 150

LCD Contrast : 42

RSSI Level 1 : 49　　RSSI Level 2 : 52
RSSI Level 3 : 60　　RSSI Level 4 : 68
RSSI Level 5 : 83

Wide MIC MOD Offset

TEMP	Offset
x <= -30	3
-30 < x <= -23	3
-23 < x <= -17	2
-17 < x <= -10	1
-10 < x <= -3	1
-3 < x <= 3	1
3 < x <= 10	0
10 < x <= 17	0
17 < x <= 23	0
23 < x <= 30	0
30 < x <= 37	0
37 < x <= 43	-1
43 < x <= 50	-1
50 < x <= 57	-1
57 < x <= 63	-2
63 < x	-3

Narrow MIC MOD Offset

TEMP	Offset
x <= -30	3
-30 < x <= -23	3
-23 < x <= -17	2
-17 < x <= -10	1
-10 < x <= -3	1
-3 < x <= 3	1
3 < x <= 10	0
10 < x <= 17	0
17 < x <= 23	0
23 < x <= 30	0
30 < x <= 37	0
37 < x <= 43	-1
43 < x <= 50	-1
50 < x <= 57	-1
57 < x <= 63	-2
63 < x	-3

Radio Data

IF IC Stable Time :
RF Power On Delay Time :

High Power Battery Level(Low)　　:
High Power Battery Level(Middle) :
High Power Battery Level(High)　 :
Low Power Battery Level(Low)　　 :
Low Power Battery Level(Middle) :
Low Power Battery Level(High)　 :
RX Battery Level(Low)　 :
RX Battery Level(Middle) :
RX Battery Level(High)　 :
Power Off Battery Level :

LCD Contrast :

RSSI Level 1 :　　RSSI Level 2 :
RSSI Level 3 :　　RSSI Level 4 :
RSSI Level 5 :

Wide MIC MOD Offset

TEMP	Offset
x <= -30	
-30 < x <= -23	
-23 < x <= -17	
-17 < x <= -10	
-10 < x <= -3	
-3 < x <= 3	
3 < x <= 10	
10 < x <= 17	
17 < x <= 23	
23 < x <= 30	
30 < x <= 37	
37 < x <= 43	
43 < x <= 50	
50 < x <= 57	
57 < x <= 63	
63 < x	

Narrow MIC MOD Offset

TEMP	Offset
x <= -30	
-30 < x <= -23	
-23 < x <= -17	
-17 < x <= -10	
-10 < x <= -3	
-3 < x <= 3	
3 < x <= 10	
10 < x <= 17	
17 < x <= 23	
23 < x <= 30	
30 < x <= 37	
37 < x <= 43	
43 < x <= 50	
50 < x <= 57	
57 < x <= 63	
63 < x	

Read Radio(F4)

Write Default(F5)

Main Window

In the above window, the user can check if the default file of the selected model and the data of the radio are the same.

1.11.1 Description of Buttons

Read Radio   To read the corresponding data from the radio

Write Default   To write the corresponding data of the default file to the radio

Main Window   To go back to the main window

1.12 Radio Management Window

The above window shows information and records of each radio. Information and records have no relation with performance itself of each radio.

1.12.1 Description of Buttons

Read Records   To read information and records from the radio

Main Window   To go back to the main window

1.12.2 Description

Model Name	The model name of the radio
Serial Number	Not displayed in this window.
Manufacturer Tuning Date	The tuning date by the manufacturer
A/S Tuning Date	The tuning date made in the Radio Adjustment window after the product is shipped out.
Default File Date used latest tuning	The creation date of the default file saved after last tuning.
Date of current default file	The creation date of the current default file.