

NAM features can be programmed as follows:

**Notes:**

- If you enter the NAM program mode, each item shows the currently stored data. Go to the next item by pressing **OK**.
- You can modify the data by entering a new data.
- If you enter a wrong digit, press **CLR** to delete the last digit. Press and hold **CLR** to delete all digits.
- To scroll items backwards or forwards, press the **VOLUME** button on the left side of the phone.

**(1)GENERAL SETUP**

| LCD Display                                                   | Key in                          | Function                                                                                         |
|---------------------------------------------------------------|---------------------------------|--------------------------------------------------------------------------------------------------|
|                                                               | MENU,8,2,0                      | -selects NAM programming                                                                         |
| Enter Lock<br>??????                                          | *****                           | -Enter 6-digit code(MSL)                                                                         |
| Svc Menu<br>1:Phone#<br>2.General<br>3:NAM<br>4:Reset Browser | 2                               | -Choose 'General'                                                                                |
| ESN<br>B0000000                                               | Volume **                       | -Electronic Serial Number of the phone is displayed                                              |
| CAI version<br>3                                              | Volume **                       | -Common Air Interface version is displayed                                                       |
| SCM<br>01101010                                               | Volume **                       | -Station Class Mark displays the power class, transmission, slotted class, dual mode.            |
| Lock Code<br>0000                                             | Volume **<br>4-digit code<br>OK | Lock code, current status is displayed<br>-to change, enter new code.<br>-stores it              |
| Slot Mode<br>Yes                                              | ** * or # **<br>OK              | Slot mode. 'Yes' indicates the slot mode.<br>-changes the status.<br>-stores it.                 |
| Slot Index<br>2                                               | Volume **<br>0-7<br>OK          | Slot mode index. The higher,the longer sleeping time<br>-to change, enter new one.<br>-stores it |

## (2)SETTING UP NAM

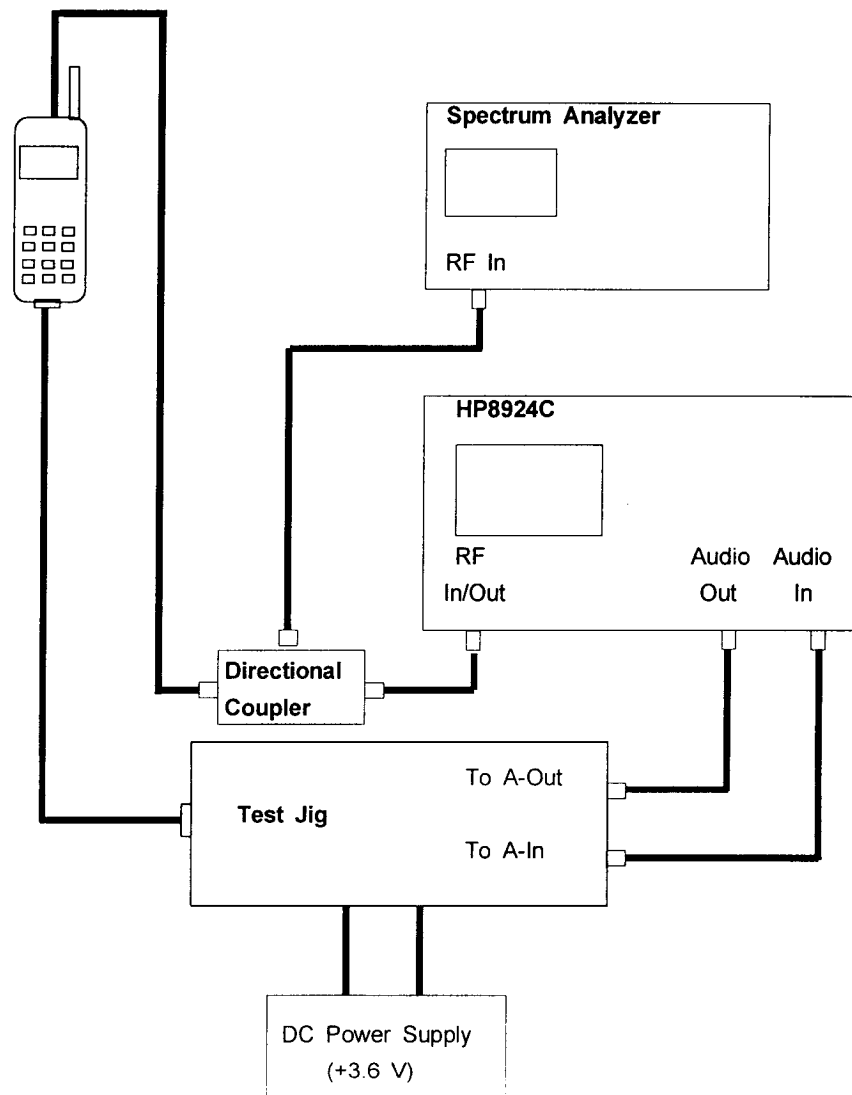
| LCD Display                                                   | Key in             | Function                                                                                            |
|---------------------------------------------------------------|--------------------|-----------------------------------------------------------------------------------------------------|
| Svc Menu<br>1:Phone#<br>2.General<br>3:NAM<br>4:Reset Browser | 3                  | -Choose 'NAM'                                                                                       |
| IMSI_MCC<br>310                                               | number<br>OK       | IMSI Mobile Country Code,current code is displayed.<br>-to change, enter new one.<br>-stores it.    |
| IMSI_MNC<br>00                                                | number<br>OK       | IMSI Mobile Network Code,current code is displayed.<br>-to change, enter new one.<br>-stores it.    |
| CDMA ACCOLC<br>7                                              | class number<br>OK | CDMA Access Overload Class,current status is displayed.<br>-to change,enter new one.<br>-stores it. |
| CDMA HOME SID<br>Yes                                          | .. or ..<br>OK     | CDMA Home system ID, current ststus is displayed.<br>-changes the status.<br>-stores it.            |
| CDMA fSID<br>Yes                                              | .. or ..<br>OK     | CDMA foreign SID, current ststus is displayed.<br>-changes the status.<br>-stores it.               |
| CDMA fNID<br>Yes                                              | .. or ..<br>OK     | CDMA foreign NID, current ststus is displayed.<br>-changes the status.<br>-stores it.               |
| HOME SID #1<br>4120                                           | number<br>OK       | SID written in the list, current ststus is displayed.<br>-to change, enter new one.<br>-stores it.  |
| NID #1<br>65535                                               | number<br>OK       | NID written in the list, current ststus is displayed.<br>-to change, enter new one.<br>-stores it.  |

## **5. TUNE-UP PROCEDURE TEST PROCEDURE**

## LIST OF EQUIPMENT

- DC Power Supply
- Test Jig
- Test Cable
- CDMA Mobile Station Test Set HP8924C, HP83236A, CMD-80, etc
- Spectrum Analyzer(include CDMA test mode) HP8596E

## CONFIGURATION OF TEST



## CHANGE TO TEST MODE

A. To change the phone from Normal Mode to test Mode, You should enter the following keys.

" 4 7 \* 8 6 9 # 1 2 3 5 "

B. The command •0 1"(Suspend) is entered to start test.

C. To finish the Test Mode, You should enter the command " 0 2 ".

## CHANNEL SELECTION AND TX POWER OUTPUT LEVEL CONTROL

### 1. AMPS

A. You should change the phone from Normal Mode to AMPS Test mode

" 0 1 , 2 0 1 0 0 0 1 , 0 2 "

B. The command •0 1"(Suspend) is entered to start test.

C. You should enter the following keys.

" 0 9 X X X X #, 0 7, 7 3 X, 7 2 X X X "

- If you enter the command "0 9", You can select the channel

ex) 0 9 0 3 8 3 (under-bar means channel number)

- The command "0 7" means Carrier On (Carrier Off : •0 8•)

- If you enter the command "7 3", You can select power mode.

(" 0 " : High Power Mode - above 0dBm,

" 1 " : Low Power Mode - below 0dBm)

- If you enter the command "7 2", You can control the power output level.

Following under-bar means AGC code. And you can control the power output level using [SEND] or [END] key.

ex) 7 2 4 7 5

D. After enter the command "9 2" and control the Tx Power Output Level to be each power level step using [SEND] or [END] key , press "OK" key to store Data in EEPROM.

| LEVEL | LCD Display | TX OUPUT POWER  | STORE |
|-------|-------------|-----------------|-------|
| 2     | TXpwr[02]   | +26dBm +2 /-4dB | OK    |
| 3     | TXpwr[03]   | +24dBm +2 /-4dB | OK    |
| 4     | TXpwr[04]   | +20dBm +2 /-4dB | OK    |
| 5     | TXpwr[05]   | +16dBm +2 /-4dB | OK    |
| 6     | TXpwr[06]   | +12dBm +2 /-4dB | OK    |
| 7     | TXpwr[07]   | +8dBm +2 /-4dB  | OK    |

## 2. CDMA

A. You should change the phone from Normal Mode to CDMA Test mode

" 0 1 , 2 0 2 0 3 6 3 , 0 2 "

B. The command •0 1"(Suspend) is entered to start test.

C. You should enter the following keys.

" 0 9 X X X X #, 0 7, 3 4, 7 3 X, 7 1 X X X # "

- If you enter the command "0 9", You can select the channel

ex) 0 9 0 3 6 3 (under-bar means channel number)

- The command "0 7•means Carrier On (Carrier Off : •0 8•)

- If you enter the command "3 4", You can spread the carrier.

- If you enter the command "7 3", You can select power mode.

(" 0 " : High Power Mode, " 1 " : Low Power Mode)

- If you enter the command "7 1", You can control the power output level.

Following under-bar means AGC code. And you can control the power output level using [SEND] or [END] Keys.

ex) 7 1 4 7 5

D. After enter the command "7 4" and control the Tx Power Output Level to be each power level step (TX RAS) using [SEND] or [END] key , press "OK" key to store Data in EEPROM.

### 3. PCS

A. You should change the phone from Normal Mode to PCS Test mode

" 0 1 , 2 0 3 0 6 0 0 , 0 2 "

B. The command \*0 1(Suspend) is entered to start test.

C. You should enter the following keys.

" 0 9 X X X X #, 0 7, 3 4, 7 3 X, 7 1 X X X # "

- If you enter the command "0 9", You can select the channel

ex) 0 9 0 3 6 3 (under-bar means channel number)

- The command "0 7" means Carrier On (Carrier Off : \*0 8\*)

- If you enter the command "3 4", You can spread the carrier.

- If you enter the command "7 3", You can select power mode.

(" 0 " : High Power Mode, " 1 " : Low Power Mode)

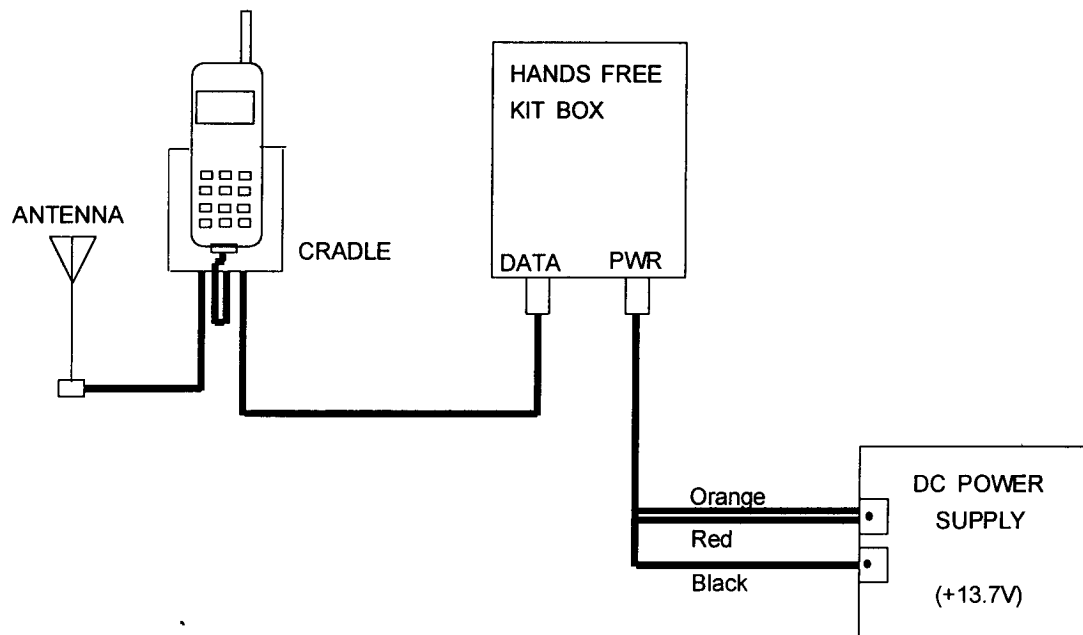
- If you enter the command "7 1", You can control the power output level.

Following under-bar means AGC code. And you can control the power output level using [SEND] or [END] Keys.

ex) 7 1 4 7 5

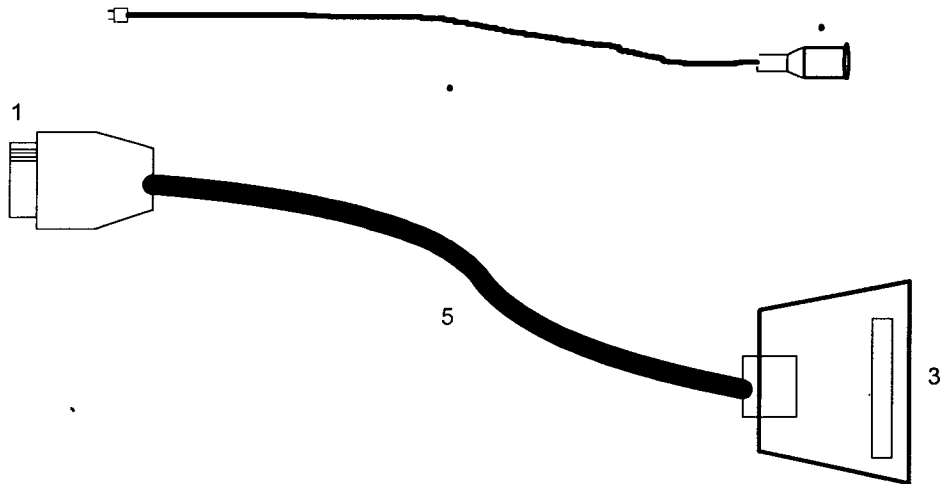
D. After enter the command "7 4" and control the Tx Power Output Level to be each power level step (TX RAS) using [SEND] or [END] key , press "OK" key to store Data in EEPROM.

## CONFIGURATION OF TEST (HANDS-FREE)



## TEST CABLE DESCRIPTION FOR SPH-T100

### 1. TEST CABLE

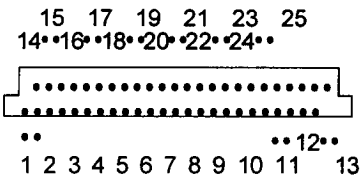


### 2. TEST CABLE CONNECTIONS

|   |                             |
|---|-----------------------------|
| 1 | PLUG CONNECT TO SPH-T100    |
| 2 | BNC CONNECTOR (RF)          |
| 3 | Dsub 25PIN CONNECTOR (DATA) |
| 4 | RF CABLE                    |
| 5 | DATA CABLE                  |

3. Dsub 25 PIN CONNECTOR PIN DESCRIPTION (TEST CABLE 1, BACK SIDE)

| DATA DESCRIPTION | Dsub CONN. PIN NO. |
|------------------|--------------------|
| Vcc              | 4, 5, 6            |
| GND              | 13, 23, 24, 25     |
| PW ON/OFF        | 7                  |
| TX AUDIO         | 10                 |
| TX DATA          | 22                 |
| RX AUDIO         | 12                 |
| RX DATA          | 21                 |
| RSSI             | 8                  |



4. CONVERSION TABLE OF FREQUENCY vs CHANNEL

| T Y P E         | CHANNEL                      | CONVERSION EQUATION                                 | REMARK                         |
|-----------------|------------------------------|-----------------------------------------------------|--------------------------------|
| TX<br>FREQUENCY | 1 ••N•• 799<br>990 ••N••1023 | F=0.03 •• N + 825.00<br>F=0.03 •• (N-1023) + 825.00 | N ; CH NUMBER<br>F ; FREQUENCY |
| RX<br>FREQUENCY | 1 ••N•• 799<br>990 ••N••1023 | F=0.03 •• N + 870.00<br>F=0.03 •• (N-1023) + 870.00 |                                |

## AMPS MODE

| TEST ITEM       | STEP | PROCEDURE                                                                                                                                                                                                                                                                                                                                                                     |
|-----------------|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. PREPARE      | a    | Connect the test equipment                                                                                                                                                                                                                                                                                                                                                    |
|                 | b    | Enter the test mode: press [ 4 7 * 8 6 9 # 1 2 3 5 ]<br>Select AMPS mode: Press in test mode [ 2 0 1 0 0 0 1 ]                                                                                                                                                                                                                                                                |
|                 | c    | If you press a wrong key, press [#] key and then enter new command.                                                                                                                                                                                                                                                                                                           |
|                 | d    | To exit the test mode at any time : press [0 2]                                                                                                                                                                                                                                                                                                                               |
| 2. RF POWER     | a    | Set the channel 383 : Press [0 9 0 3 8 3]<br>(Ch number must be 4 digits)                                                                                                                                                                                                                                                                                                     |
|                 | b    | Turn the carrier on, and set the power level 2<br>: press [0 7, 7 3 0 #, 1 0 2 #]                                                                                                                                                                                                                                                                                             |
|                 | c    | Measure the RF Power Output : + 26 dBm +2/ -4 dB<br><br>Note 1 : In case of using the antenna cable, must compensate for the cable loss(1.4dB).<br><br>Note 2 : To prevent from damaging the hhp, must measure by calibrated test equipment.<br><br><u>Warning !</u><br><br>Adjustments without calibrated equipment can result in excessive heat and will void the warranty. |
|                 | d    | Power level control mode is [1 0 X]<br>Adjust power level by using [SEND] or [END]key, and store.<br>: press [9 2]                                                                                                                                                                                                                                                            |
|                 | e    | Then measure the power output for each level by pressing [OK] or [••] at every step .                                                                                                                                                                                                                                                                                         |
|                 | f    | Then turn carrier off : press [0 8]                                                                                                                                                                                                                                                                                                                                           |
| 3. TX FREQUENCY | a    | Set the channel 383 : press [0 9 0 3 8 3]                                                                                                                                                                                                                                                                                                                                     |
|                 | b    | Turn the carrier on : press [0 7]                                                                                                                                                                                                                                                                                                                                             |
|                 | c    | Measure the tx frequency : 836.490MHz •• 2.5ppm (••2090Hz)                                                                                                                                                                                                                                                                                                                    |
|                 | d    | Turn the carrier off : press [0 8]                                                                                                                                                                                                                                                                                                                                            |

| TEST ITEM          | STEP | PROCEDURE                                                                                                                                              |
|--------------------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4. VOICE DEVIATION | a    | Set the channel 383 : [0 9 0 3 8 3]                                                                                                                    |
|                    | b    | Send the RF power, and set TX audio unmute<br>:press [0 7, 4 6, 4 5, 1 4]                                                                              |
|                    | c    | Turn the carrier on, and set the power level 2                                                                                                         |
|                    | d    | Set the audio generator output to 1kHz, 3.0Vrms<br>Measure the TX voice deviation by using the HPF of 20Hz and the LPF of 99kHz. (spec : ••12kHz less) |
|                    | e    | To adjust the peak deviation,<br><br>(••) Press [6 3] and use the [SEND] or [END] key<br><br>(••) Store the peak deviation : press [OK]                |
|                    | f    | Set the audio generator output to 1kHz, 100Vrms.                                                                                                       |
|                    | g    | Measure the TX voice deviation by using the HPF of 50Hz and the LPF of 15kHz. (spec : ••2.9 kHz ••10%)                                                 |
|                    | h    | To adjust the compressor off deviation : press [45], and use [SEND] or [END] key. (spec : ••2.9 kHz ••0.2 kHz)                                         |
|                    | i    | Store the compressor off deviation : press [OK]                                                                                                        |
|                    | j    | To adjust the compressor on deviation : press [44], and use [SEND] or [END] key. (spec : ••2.9 kHz ••0.2 kHz)                                          |
|                    | k    | Store the compressor on deviation : press [OK]                                                                                                         |
|                    | l    | Turn the carrier off, and TX mute : [0 8, 1 3]                                                                                                         |
| 5. ST DEVIATION    | a    | Set the channel 383 : press [0 9 0 3 8 3]                                                                                                              |
|                    | b    | Turn the carrier on, and set the power level 2                                                                                                         |
|                    | c    | Set ST : press [1 6]                                                                                                                                   |
|                    | d    | Measure the TX ST deviation by using the HPF of 20Hz and the LPF of 15kHz.<br>(spec : ••8 kHz 10%)                                                     |
|                    | e    | To adjust the deviation ; press [66], and use [SEND] or [END] key.                                                                                     |
|                    | f    | Store the deviation code in EEPROM : press [OK]                                                                                                        |
|                    | g    | Turn the ST and the carrier off : press [1 7, 0 8]                                                                                                     |

|                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |       |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| .....               | ....                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | ..... |
| 6. SAT<br>DEVIATION | a Set the channel 383 : [0 9 0 3 8 3]<br>b Turn the carrier on, and set the power level 2<br>c Set the Voice State and SAT on : press [4 6, 3 2 1 #]<br>d Measure the TX SAT deviation by using the HPF of 20 Hz and the BPF of 6 kHz. (spec : ••2kHz ••10%)<br>e To adjust the deviation within specification : press [64], and use [SEND] or [END] key.<br>f Store the deviation code in EEPROM: press [OK]<br>g Turn the SAT and the carrier off : press [3 3, 0 8]                                      |       |
| 7. WBD<br>DEVIATION | a Set the channel and carrier on : [0 9 0 3 8 3, 0 7]<br>b WBD on : [3 4]<br>c Measure the WBD deviation by using the HPF of 20 Hz and the LPF of 99 kHz. (spec : •• 8 kHz ••10%)<br>d To adjust the WBD deviation : press [6 5], and use [SEND] or [END] key.<br>e Store the deviation code in EEPROM : press [OK]<br>f Turn the carrier off : press [0 8]                                                                                                                                                 |       |
| 8. RX AUDIO         | a Set the equipment as below.<br>RF frequency : 881.49 MHz<br>Input RF level : - 80 dBm<br>Modulation frequency : 1 kHz<br>Frequency deviation : 8 kHz<br>b Set the channel 383 and the Voice State :<br>press [0 9 0 3 8 3, 4 6]<br>c Set the RX audio unmute : press [1 2]<br>d Set compandor on : press [4 4]<br>e Adjust the expander on audio level : press [6 1]<br>Use [SEND] or [END] key.<br>f Store the expander on audio level :press [OK]<br>g Finish the test and exit test mode : press [0 2] |       |

## CDMA MODE

| TEST ITEM                   | STEP                                         | PROCEDURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-----------------------------|----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. PREPARE                  | <p>a</p> <p>b</p> <p>c</p> <p>d</p>          | <p>Connect the test equipment</p> <p>Enter the test mode: press [ 4 7 * 8 6 9 # 1 2 3 5 ]</p> <p>Select AMPS mode: Press in test mode [ 2 0 2 0 3 6 3 ]</p> <p>If you press a wrong key, press [#] key and then enter new command.</p> <p>To exit the test mode at any time : press [0 2]</p>                                                                                                                                                                                                                                           |
| 2. FREQUENCY ACCURACY       | <p>a</p> <p>b</p> <p>c</p> <p>d</p> <p>e</p> | <p>Set the channel 363: press [0 9 0 3 6 3]</p> <p>Turn the carrier on and set the power level.<br/>: press [0 7, 7 3 0 #, 7 1 X X X]</p> <p>Measure the frequency accuracy<br/>(spec: <math>\pm 300\text{Hz}</math>)</p> <p>To adjust the Frequency Accuracy<br/>: press [8 9] and use [SEND] or [END] key.</p> <p>Store the Frequency Accuracy in EEPROM: Press [OK]</p>                                                                                                                                                              |
| 3. OCCUPIED CDMA BANDWIDTH  | <p>a</p> <p>b</p> <p>c</p>                   | <p>Set the channel 363: press [0 9 0 3 6 3]</p> <p>Turn the carrier on and set the power level.<br/>: press [0 7, 3 4, 7 3 0 #, 7 1 X X X]</p> <p>Measure the Band Width. (spec: 1.32MHz)</p>                                                                                                                                                                                                                                                                                                                                           |
| 4. LIMITATIONS ON EMISSIONS | <p>a</p> <p>b</p> <p>c</p>                   | <p>Set the channel 363: press [0 9 0 3 6 3]</p> <p>Turn the carrier on and set the power level.<br/>: press [0 7, 3 4, 7 3 0 #, 7 1 X X X]</p> <p>Measure the spurious at <math>F_c \pm 900\text{kHz}</math>, <math>F_c \pm 1.98\text{MHz}</math>, <math>2F_c</math>, <math>3F_c</math>, <math>1/2F_c</math><br/>spec: <math>F_c \pm 900\text{kHz}</math> below 42dBc/30kHz<br/><math>F_c \pm 1.98\text{MHz}</math> below 54dBc/30kHz<br/>Outside Receive Band <math>43+10\log(\text{PY})</math><br/>PY: Mean output power in watts</p> |
| 5. GATED POWER & TIME       | <p>a</p> <p>b</p> <p>c</p> <p>d</p> <p>e</p> | <p>Set the Service option: 2</p> <p>Set the Data Rate: Eighth (1200bps)</p> <p>Registering: HHP --&gt; HP8924C</p> <p>Call : HP8924C --&gt; HHP</p> <p>Measure the Gated Power &amp; Time<br/>spec: Gated Power at least 20dB<br/>Gated Time - Rising Time : below 7us<br/>Falling Time : below 7us<br/>Burst Time : below 1.247ms</p>                                                                                                                                                                                                  |

## PCS MODE

| TEST ITEM                   | STEP                  | PROCEDURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-----------------------------|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. PREPARE                  | a<br>b<br>c<br>d      | <p>Connect the test equipment</p> <p>Enter the test mode: press [ 4 7 * 8 6 9 # 1 2 3 5 ]<br/>Select AMPS mode: Press in test mode [ 2 0 3 0 6 0 0 ]</p> <p>If you press a wrong key, press [#] key and then enter new command.</p> <p>To exit the test mode at any time : press [0 2]</p>                                                                                                                                                                                                 |
| 2. FREQUENCY ACCURACY       | a<br>b<br>c<br>d<br>e | <p>Set the channel 363: press [0 9 0 6 0 0]</p> <p>Turn the carrier on and set the power level.<br/>: press [0 7, 7 3 0 #, 7 1 X X X]</p> <p>Measure the frequency accuracy<br/>(spec: ••300Hz)</p> <p>To adjust the Frequency Accuracy<br/>: press [8 9] and use [SEND] or [END] key.</p> <p>Store the Frequency Accuracy in EEPROM: Press [OK]</p>                                                                                                                                       |
| 3. OCCUPIED CDMA BANDWIDTH  | a<br>b<br>c           | <p>Set the channel 363: press [0 9 0 6 0 0]</p> <p>Turn the carrier on and set the power level.<br/>: press [0 7, 3 4, 7 3 0 #, 7 1 X X X]</p> <p>Measure the Band Width. (spec: 1.32MHz)</p>                                                                                                                                                                                                                                                                                              |
| 4. LIMITATIONS ON EMISSIONS | a<br>b<br>c           | <p>Set the channel 363: press [0 9 0 6 0 0]</p> <p>Turn the carrier on and set the power level.<br/>: press [0 7, 3 4, 7 3 0 #, 7 1 X X X]</p> <p>Measure the spurious at <math>F_c</math>••900kHz, <math>F_c</math>••1.98MHz, <math>2F_c</math>, <math>3F_c</math>, <math>1/2F_c</math>.<br/>spec: <math>F_c</math>••900kHz below 42dBc/30kHz<br/><math>F_c</math>••1.98MHz below 54dBc/30kHz<br/>Outside Receive Band <math>43+10\log</math> (PY)<br/>PY: Mean output power in watts</p> |
| 5. GATED POWER & TIME       | a<br>b<br>c<br>d<br>e | <p>Set the Service option: 2</p> <p>Set the Data Rate: Eighth (1200bps)</p> <p>Registering: HHP --&gt; HP8924C</p> <p>Call : HP8924C --&gt; HHP</p> <p>Measure the Gated Power &amp; Time<br/>spec: Gated Power at least 20dB<br/>Gated Time - Rising Time: below 7us<br/>Falling Time: below 7us<br/>Burst Time: below 1.247ms</p>                                                                                                                                                        |