
6. Test Procedure

6-1 List of Equipment

DC Power Supply

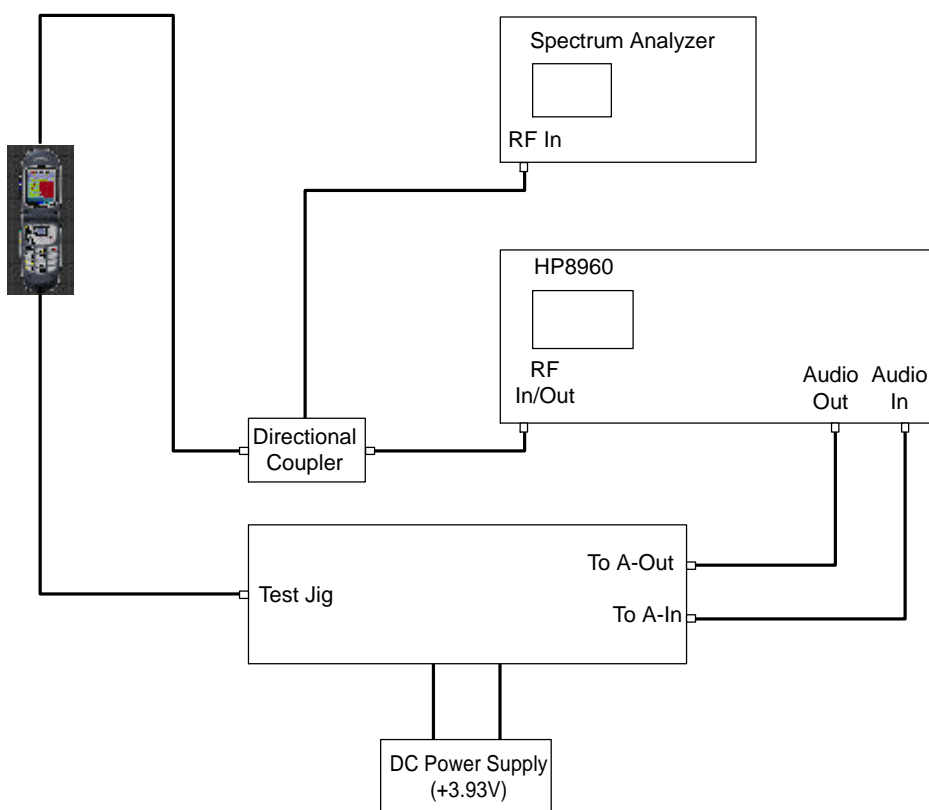
Test Jig

Test Cable

CDMA Mobile Station Test Set HP8285A, HP8960, CMD-80, etc

Spectrum Analyzer(include CDMA Test Mode) HP8596E

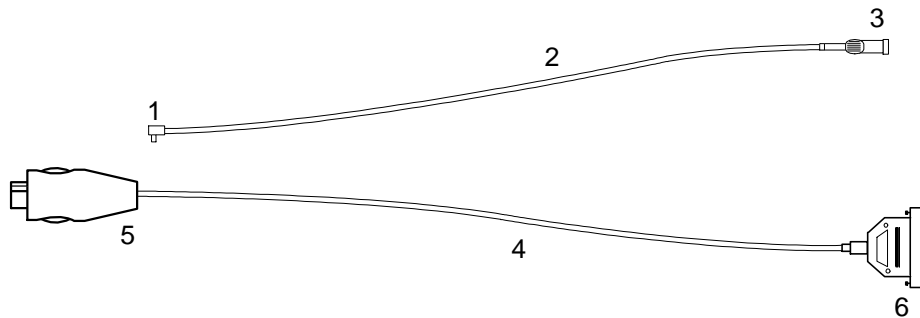
6-2 Configuration of Test



CAUTION : The test jig and data cable has a voltage drop of 0.15V at Max power output, you'd better set the DC power supply to 4.15V for normal test condition.
(Nominal voltage of battery is 4.0V at cellular phone)

6-3 TEST CABLE CONNECTIONS

6-3-1 TEST CABLE

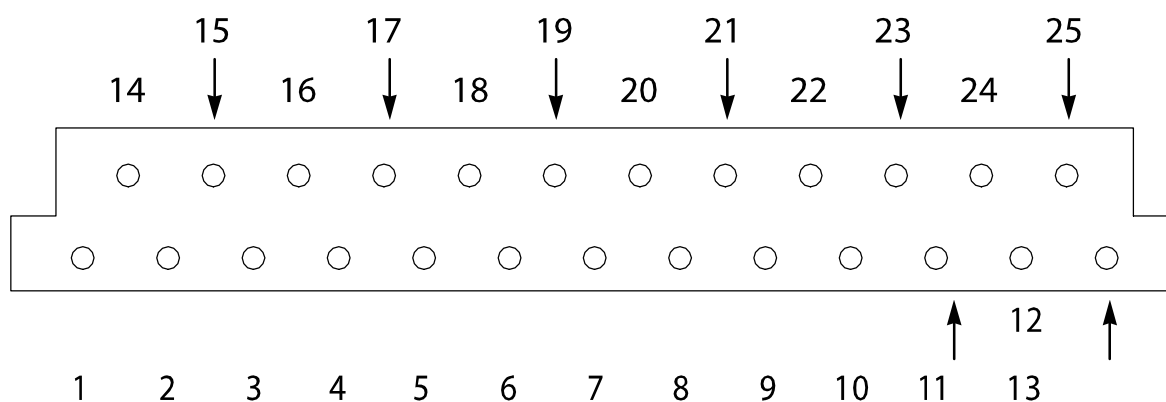


6-3-2 TEST CABLE CONNECTIONS

1	MHC 172
2	RF CABLE (1.4dB Loss for CDMA800, 2.2dB Loss for PCS)
3	BNC CONNECTOR (RF)
4	DATA CABLE
5	Dsub 25PIN CONNECTOR (DATA)
6	PLUG CONNECT TO SCH-A670

6-3-3 Dsub 25 PIN CONNECTOR PIN DESCRIPTION (TEST CABLE 1, BACK SIDE)

DATA DESCRIPTION	Dsub CONN. PIN NO.	DATA DESCRIPTION	Dsub CONN. PIN NO.
DGND	13	V_BUS	16
BATT	5,6	USB_D+	15
HP_PWR	9	USB_D-	3
RX_AUDIO	12	DP_RX_DATA	21
TX_AUDIO	19	DP_RX_DATA	22

**6-3-4 CONVERSION TABLE OF FREQUENCY vs CHANNEL**

T Y P E	CHANNEL	CONVERSION EQUATION	REMARK
TX FREQUENCY	1 N 799	$F=0.03 \times N + 825.00$	N ; CH NUMBER F ; FREQUENCY (CDMA)
	990 N 1023	$F=0.03 \times (N-1023) + 825.00$	
RX FREQUENCY	1 N 799	$F=0.03 \times N + 870.00$	(CDMA)
	990 N 1023	$F=0.03 \times (N-1023) + 870.00$	
TX FREQUENCY	0 N 1199	$F=0.05 \times N + 1850.00$	N ; CH NUMBER F ; FREQUENCY (PCS)
	0 N 1199	$F=0.05 \times N + 1850.00$	

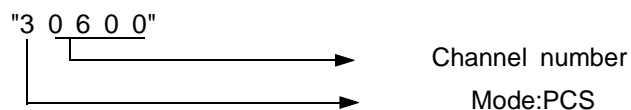
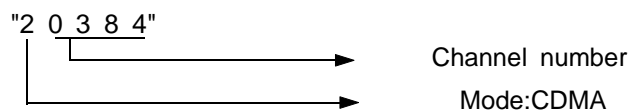
6-4 Test Procedure

6-4-1 Change the test mode

A. To change the phone's state from Normal Mode to Test Mode, You should enter the following keys.

: Press [4 7 * 6 8 # 1 3 5 8 0]

B. The command "21" is mode and channel change.



and Push "OK" key to save.

I value..

C. The command "0 1" is Suspend.

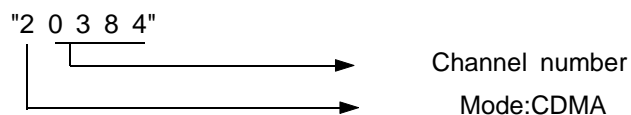
D. To finish the Test Mode, You should enter the command "0 2".

6-4-2 Channel selection and Tx power output level control

CDMA

A. Enter to Test Mode [4 7 * 6 8 # 1 3 5 8 0]

B. The command "21" is mode and channel change



Push "OK" key to save.

C. "0 1" : Suspend.

D. "0 9 0 3 8 4 #" : Set to '384' channel.

E. "0 7" : Carrier On.

F. "3 4" : Spread spectrum to 1.23MHz band width.

G. "71 _ _ _" : Adjust RF power level.

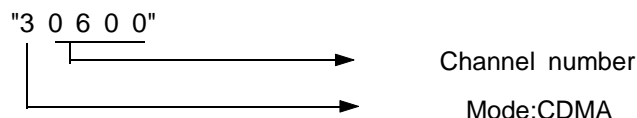
"* * *" means AGC level and AGC
level range is from 000 to 511.

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

PCS

A. Enter to Test Mode [4 7 * 6 8 # 1 3 5 8 0]

B. The command "21" is mode and channel change



Push the Navigation key to save.

C. "0 1" : Suspend.

D. "0 9 0 6 0 0 #" : Set to '600' channel.

E. "0 7" : Carrier On.

F. "3 4" : Spread spectrum to 1.23MHz band width.

G. " 71 _ _ _" : Adjust RF power level.

"* * *" means AGC level and AGC
level range is from 000 to 511.

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

6-5 CDMA

TEST ITEMS	PROCEDURE
1. PREPARANCE	<p>Set test equipments up.</p> <p>[4 7 * 6 8 # 1 3 5 8 0] : Enter the Test Mode</p> <p>"0 1" : Suspend</p> <p>"0 4" : Current Mode Check</p> <p>Confirm that the phone is in the "CDMA Mode". (If not CDMA Mode, Use Test Command "21""2XXXX" and press the OK Key and enter "0 2" to restart)</p> <p>If you select a wrong key, press " # ", then enter new command. To exit the Test Mode at any time, just press [0 2].</p>
2. FREQUENCY ACCURACY	<p>"0 1" : Suspend.</p> <p>"0 9 0 3 8 4 #" : Set channel to 384.</p> <p>"0 7" : Carrier On.</p> <p>"3 4" : Spread spectrum.</p> <p>"7 1 3 6 0 #" : Set AGC level. Measure the TX frequency : 835.89MHz ±300Hz.</p>
3. OCCUPIED CDMA BANDWIDTH	<p>"0 1" : Suspend.</p> <p>"0 9 0 3 8 4 #" : Set channel to 384.</p> <p>"0 7" : Carrier On.</p> <p>"3 4" : Spread spectrum.</p> <p>"7 1 X X X #" : Enter AGC Code(XXX) to adjust RF Output Power. Measure the bandwidth (spec: 1.23MHz).</p>

<p>4. LIMITATIONS ON EMISSIONS</p>	<p>"0 1" : Suspend.</p> <p>"0 9 0 3 8 4 #" : Set channel to 364.</p> <p>"0 7" : Carrier On.</p> <p>"3 4" : Spread spectrum.</p> <p>"7 1 X X X #" : Enter AGC Code(XXX) to adjust RF Output Power. Measure the spurious at $F_c \pm 900\text{kHz}$, $F_c \pm 1.98\text{MHz}$, $2F_c$, $3F_c$, $1/2F_c$. spec: $F_c \pm 900\text{kHz}$ below 42dBc/30kHz $F_c \pm 1.98\text{MHz}$ below 54dBc/30kHz Outside Receive Band $43+10\log$ (PY) PY: Mean Output Power in watts</p>
<p>5. GATED POWER & TIME</p>	<p>Set the service option 9.</p> <p>Set the data rate Eighth (1200bps).</p> <p>Registering: HHP HP8924C.</p> <p>Call : HP8924C HHP.</p> <p>Measure the Gated Power & Time. spec : Gated Power - at least 20dB Gated Time - Rising Time : below $6\mu\text{s}$ Falling Time : below $6\mu\text{s}$ Burst Time : below 1.25ms</p>

6-6 PCS

TEST ITEMS	PROCEDURE
1. PREPARANCE	<p>Set test equipments up.</p> <p>[4 7 * 6 8 # 1 3 5 8 0] : Enter the Test Mode</p> <p>"0 1" : Suspend</p> <p>"0 4" : Current Mode Check</p> <p>Confirm that the phone is in the "PCS Mode". (If not PCS Mode, Use Test Command "21""3XXXX" and Push the Navigation Key to "OK", and enter "0 2" to restart)</p> <p>If you select a wrong key, press "#", then enter new command.</p> <p>To exit the Test Mode at any time, just press [0 2].</p>
2. FREQUENCY ACCURACY	<p>"0 1" : Suspend.</p> <p>"0 9 0 6 0 0 #" : Set channel to 600.</p> <p>"0 7" : Carrier On.</p> <p>"3 4" : Spread spectrum.</p> <p>"7 1 3 6 0 #" : Set AGC level.</p> <p>Measure the TX frequency : 1880.00MHz \pm300Hz.</p>
3. OCCUPIED CDMA BANDWIDTH	<p>"0 1" : Suspend.</p> <p>"0 9 0 6 0 0 #" : Set channel to 600.</p> <p>"0 7" : Carrier On.</p> <p>"3 4" : Spread spectrum.</p> <p>"7 1 X X X #" : Enter AGC Code(XXX) to adjust RF Output Power.</p> <p>Measure the bandwidth (spec: 1.23MHz).</p>
4. LIMITATIONS ON EMISSIONS	<p>"0 1" : Suspend.</p> <p>"0 9 0 6 0 0 #" : Set channel to 600.</p> <p>"0 7" : Carrier On.</p> <p>"3 4" : Spread spectrum.</p> <p>"7 1 X X X #" : Enter AGC Code(XXX) to adjust RF Output Power.</p> <p>Measure the spurious at $F_c \pm 1.25\text{MHz}$ spec: $F_c \pm 1.25\text{MHz}$ below 42dBc/30kHz</p>

<p>5. GATED POWER & TIME</p>	<p>Set the service option 9.</p> <p>Set the data rate Eighth (1200bps).</p> <p>Registering: HHP HP8924C.</p> <p>Call : HP8924C HHP.</p> <p>Measure the Gated Power & Time.</p> <p>spec : Gated Power - at least 20dB</p> <p> Gated Time - Rising Time : below 6μs</p> <p> Falling Time : below 6μs</p> <p> Burst Time : below 1.247ms</p>
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Note 1 : In case of using the antenna cable, compensation for the cable loss should be added (about 2.1dB for PCS).