

Part G Setting, Calibration and Testing

This part contains information for setting, calibrating and testing the TA703-01-0000 Change Over Module after initial installation or servicing. It contains the following information:

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1 Internal Link Setting

All internal link settings are by dip switch. Four dip switches SW100, SW201, SW400 and SW401 provide separate, adjustable internal links on the TA703-01-0000 PCB to allow the Change Over Module to perform as described in the table below. See the diagram on page G5 for dip switch locations.

Note: Some switches are unused.

Note: Shaded fields indicate defaults setting.

SW100

Switch	on	off	comment
1-16	Repeater	Base Station	
2-15	Repeater	Base Station	
3-14			not connected
4-13			not connected
5-12			not connected
6-11	Talk Through	Base Station	
7-10	enable	disable	Tx-key B
8-9	enable	disable	Tx-key A

SW 201

Switch	on	off	comments
1-16	off	on	remaining combinations not allocated
2-15	on Mode A	off Mode B	
3-14	off	off	
rest of SW201	on	off	
4-13			not used
5-12	link Rev Pwr A-B	Rev Pwr separate	
6-11	disable Fwd Alm A I/P	enable Fwd Alm A I/P	
7-10	disable Fwd Alm B I/P	enable Fwd Alm B I/P	
8-9	link Fwd Pwr A-B	Fwd Pwr separate	

SW 400

Switch	on	off	comments
1-16	fwd pwr A 1k to V+	just open coll to Gnd	
2-15	rev pwr A 1k to V+	just open coll to Gnd	
3-14	mute A 1k to V+	just open coll to Gnd	
4-13	RSSI A 1k to V+	just open coll to Gnd	
5-12	PSU A 1k to V+	just open coll to Gnd	
6-11			not used
7-10	All alm-A comm Gnd	All alm A comm float	
8-9	All alm A N/C 1k to V+	All alm A N/C float	

SW 401

Switch	on	off	comments
1-16	fwd pwr B 1k to V+	just open coll to Gnd	
2-15	rev pwr B 1k to V+	just open coll to Gnd	
3-14	mute B 1k to V+	just open coll to Gnd	
4-13	RSSI B 1k to V+	just open coll to Gnd	
5-12	PSU B 1k to V+	just open coll to Gnd	
6-11			not used
7-10	All alm B comm to Gnd	All alm B comm float	
8-9	All alm B N/C 1k to V+	All alm B N/C float	

2 Calibration

Note: All internal adjustments have been preset during manufacturing. If re-adjustment is required proceed as follows:

2.1 RSSI

Receiver RSSI output levels need to be set as per the instructions in the T800 service manual. The procedure that follows uses the UHF receiver as an example

- Apply a carrier to produce 2V DC at the RSSI input of the TA703-01-0000. For a correctly set up UHF T800 receiver that should occur at a RF input level of -110dBm. The RSSI level can be measured at R323 for Base A and at R306 for Base B. Otherwise disconnect the receiver and apply 2V to PL1-14 for Base A and 2V to PL2-14 for Base B.
- Put a DC voltmeter probe on TP301 or pin 1 of IC14 and adjust RV300 to read 2.6V
- Put a probe on TP305 or pin 7 of IC14 and adjust RV301 for a reading of 2.6V.

Verifying RSSI operation

1. Select Base A
2. Ensure that both Bases provide the same 2V RSSI voltage
3. Increase the RSSI voltage of Base B slowly, either by increasing the RF input or by increasing the simulated DC input. Stop when DR300 lights up and the TA703-01-0000 changes over.
4. This should take place around the 6dB increase in RF power or after a 0.4V increase in Return to level to normal and reset system
5. Repeat 1 to 4 with Base A and B swapped. In this case DR301 lights up
6. With Base B as the active one, increase RF level of Base B to 70dB. D302 lights up and change over is ignored.
7. Repeat 6 with Base A as the active one.

RSSI level	D300	D301	D302	comment
below -75dB				
A=B	off	off	on	
A>B by 6dB	off	on	on	
B>A by 6dB	on	off	on	
above -75dB	*	*	off	* = undefined

2.2 Forward Power

1. Activate the relevant transmitter and check that it produces its nominal power
2. Reduce the output power by 3dB
3. Adjust front panel preset for the forward power till the associated LED turns on.

2.3 Reverse Power

1. Activate the relevant transmitter and check that it produces its nominal power
2. Replace the load with a 3dB pad only
3. Adjust front panel preset for the reverse power till the associated LED turns on.

2.4 Power Supply and Battery

1. Reduce power supply level to 10.8V
2. Adjust the front panel preset to the associated LED turns on

2.5 Repeater Audio: Receiver to Transmitter



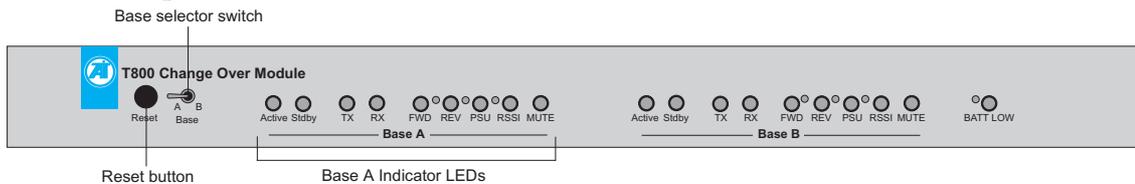
For repeater setup, readjust receiver line output for -10dBm.

3 External Adjustments

Once installed, The TA703-01-0000 Change Over Module requires a series of adjustments. These adjustments must be carried out on a live system by introducing defined good conditions and defined error conditions.

3.1 Front Panel Adjustments - Base A

The adjustment trim pots are located just above the red LEDs on the left half of the Change Over Module front panel as shown.



- On front panel, select Base A.

3.1.1 Reverse Power

- Terminate the transmitter aerial output with a 3dB 50 Ohm attenuator. Do not terminate with 50 Ohm load. The termination represents a SWR of 5:1. Over 25% of the transmit power is reflected back into the transmitter.
- Activate the transmitter by pressing the Tx Key button at the front of the exciter/transmitter.
- Adjust the reverse power change over level so that the Change Over Module just changes over.
- Change the termination of the transmitter back to 50 Ohm and press reset on the Change Over Module.

3.1.2 Forward Power

- Activate the transmitter by pressing the Tx Key button at the front of the exciter/transmitter.
- Ensure that the power is set to the nominally required output power into a 50 Ohm load at the aerial output.
- Tune the power level down to 60% of nominal output power.
- Adjust the forward power change over level so that the Change Over Module just changes over.
- Re-adjust transmitter power to nominal power.

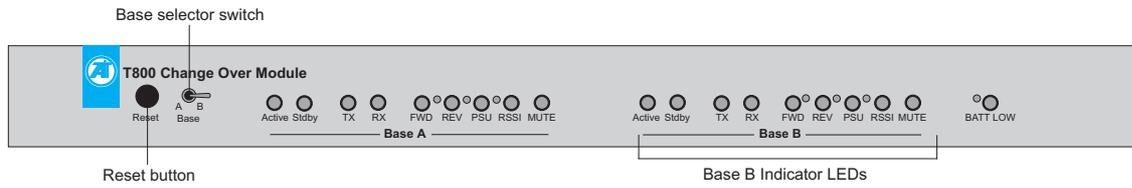
3.1.3 PSU

The PSU has been preset during manufacturing. If adjustment is required proceed as follows:

- Reduce the Supply voltage of Base A slowly to +10.5V.
- If the Change Over Module has not changed over adjust the PSU preset resistor. Note this preset operates counter clockwise. To increase the PSU fault trigger level turn the preset counter clockwise.
- Return supply level to nominal +13.8V

3.2 Front Panel Adjustments - Base B

The adjustment trim pots are located just above the red LEDs on the right half of the front panel of the Change Over Module.



- To test Base B, switch the base switch to position B and press the reset button.
- Repeat instructions for Base A (previous page).

4 Test Procedure

The procedure below describes the tests carried out prior to shipping the product. Note that they specify the use of a TA703 Test Jig.

Initial test setup
Set dip switches as in Internal Link Setting on page G3. Set RSSI pots on testjig to mid level Set Fwd Pwr pots to max Set Rev Pwr pots to min Set all switches on testjig to off (white dot) Connect everything together as required Use independent power supplies for Base A and Base B. (Red banana socket on test jig is for second supply)

Test	Conditions	Result
Audio path and C/O	Radio in Base mode	
Base A and Base B	Turn supply on Select TA703 Base A Active On TA703 Active A LED ON On TA703 Standby B LED ON Jig TX-A and RX-A LEDs ON Jig TX and RX Remote LEDs ON Measure impedance to gnd at TA703 Base Sel terminal High	
	Activate Jig Rx-B Gate sw Change over: Jig Active B LED on Jig TX-B and RX-B LEDs ON Jig TX and RX Remote LEDs ON Measure impedance to gnd at TA703 Base Sel terminal Low Switch TA703 to Base B and Reset	
	TA703 Active B LED ON TA703 Standby A LED ON	
TX test Base A	Select Base A active Set Jig Fwd Pwr pot to max Activate Jig Tx RMT Key TA703 Green Tx LED Base A ON Turn Jig fwd pwr pot down to minimum Change over: TA703 Green Tx LED Base B ON TA703 Fwd-A Alarm LED ON Turn Jig Tx RMT Key off Reset system and set TA703 to Base B	

Tx test Base B	Base B active: Set Jig Fwd Pwr pot to max Activate Jig Tx RMT key TA703 Green Tx LED Base B ON Turn Jig fwd pwr pot down to minimum Change over: TA703 Green Tx LED Base A ON TA703 Fwd-B Alarm LED ON Turn Jig Tx RMT B off Reset system and select TA703 Base A	
Remote Tx test	Base A active Activate Jig Remote Tx switch: SK1 TA703 Tx Key Base A ON Activate Jig Remote Tx switch: PL3 TA703 Tx Key Base A ON	
Reverse Pwr Base A	Set Jig Rev Pwr pot A to max Activate Jig Tx Key Base A Change Over: Turn Jig Tx Key off Reset system – Base A active Turn Jig Rev A switch on Activate Jig Tx Key Base A No Change Over Set Jig Rev Pwr pot A to min Reset system and set to Base B	
Reverse Pwr Base B	Set Jig Rev Pwr pot B to max Activate Jig Tx Key Base B Change Over Jig Turn Tx Key off Reset TA703 system Turn Jig Rev B pwr sw on Activate Jig Tx Key Base B No Change over Set Jig Rev Pwr pot B to min	
Receiver test	On TA703 Select Base A Activate Jig Rx-B Gate sw Change Over Jig Mute A Alarm ON Reset TA703 system and select B	
	Activate Jig Rx-A Gate sw Change Over TA703 Mute B Alarm ON Reset TA703 system and select A	
Front panel setup		
Fwd Pwr Base A setup	Setup 1V DC at I/O PAD213	
Fwd Pwr Base B setup	Setup 1V DC at I/O PAD210	
Rev Pwr Base A setup	Setup 1V DC at I/O PAD205	
Rev Pwr Base B setup	Setup 1V DC at I/O PAD202	

PSU Base A setup	Set Base A supply to 10.5V Adjust until PSU-A alarm first appears Reset voltage to 13.8V after test	
PSU Base B setup	Set Base B supply to 10.5V Adjust until PSU-B alarm first appears Reset voltage to 13.8V after test	
Battery test	Adjust Battery pot on testjig to min All Alarm relays start clicking Restore Jig battery voltage TA703 Relays stop clicking	
Internal controls: RSSI setup		
RSSI A setup	Set 4.20V DC at RSSI A - R323 Adjust RV300 to read 2.60V +/- .1V at IC300-1 TP300	
RSSI B setup	Set 4.20V DC at RSSI B - R356 Adjust RV301 to read 2.6V +/- .1V at IC300-7	
RSSI A measure	Set 4.20 DC at RSSI A	0.5V across R331 TP301
RSSI B measure	Set 4.20V DC at RSSI B	0.5V across R332 TP302
RSSI C/O	TA703 Select Base A Set Jig RSSI A to minimum Set Jig RSSI B to max Activate Jig RX-A plus RX-B Gate Changeover: TA703 RSSI A Alarm LED ON	
	Select Base B Reset Set Jig RSSI B to minimum Set Jig RSSI A to max Activate Jig RX-A plus RX-B Gate Changeover: TA703 RSSI B Alarm LED ON	

