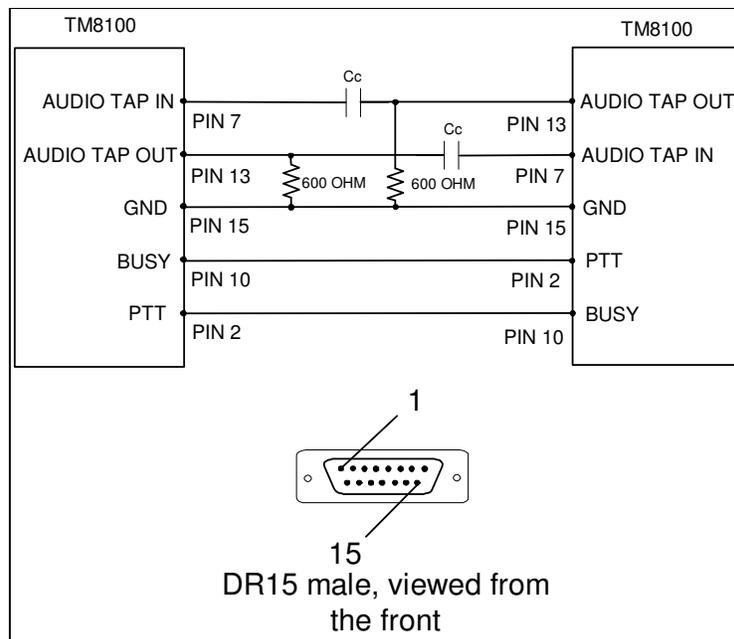


This technical note explains how to configure the TM8100 radio for Audio Linking operation either as Back-to-Back or Cross Band Repeater.

### CROSS BAND INTERCONNECT LEAD



For voice applications the value of  $C_c$  should be at least 100nF. For high-speed (baseband) data applications then the recommended value for  $C_c$  is 4.7 $\mu$ F. The capacitor needs to be non-polarised type.

The simplest way to create a 600-Ohm resistor is by using 2 x 1k2 resistors in parallel.

# RADIO PROGRAMMING

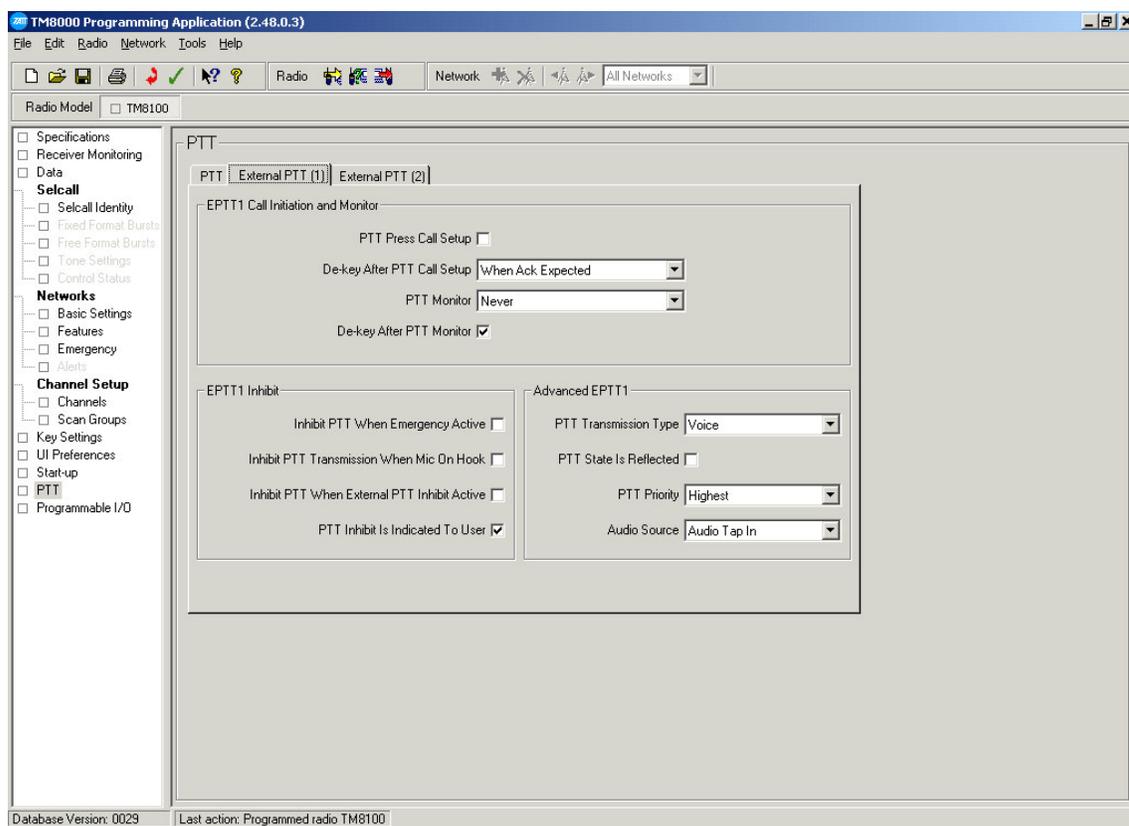
The settings below need to be programmed into both radios to enable cross band operation.

## **PTT: External PTT 1**

PTT Transmission Type = Voice.

PTT Priority = Highest

Audio Source = Audio Tap In.



## Programmable I/O = Digital I/O Settings

	AUX_GPI04	AUX_GPI05
<b>Direction</b>	Output	Input
<b>Label</b>	Busy / Rx Gate	PTT
<b>Action</b>	Signalling Audio Mute Status	External PTT 1
<b>Active</b>	Active High	Active High
<b>Debounce</b>	0	0
<b>Signal State</b>	Momentary	None
<b>Mirrored To</b>	None	None

The screenshot shows the TM8000 Programming Application (2.48.0.3) interface. The main window is titled "Programmable I/O" and displays a table of I/O pins. The table has columns for Pin, Direction, Label, Action, Active, Debounce, Signal State, and Mirrored To. The selected pin is AUX\_GPI04, which is configured as an Output with the label "BUSY" and the action "Signalling Audio Mute Status". Below the table, there are "Action Parameters" for the selected pin, including Emergency Mode (Stealth), Mute Audio Input (Audio Tap In), Mute Audio Output (Speaker Audio Path), and Unmute Audio Output (Speaker Audio Path). The interface also shows a tree view on the left with categories like Specifications, Receiver Monitoring, Data, Selcall, Networks, Channel Setup, Key Settings, UI Preferences, Start-up, PTT, and Programmable I/O.

Pin	Direction	Label	Action	Active	Debounce	Signal State	Mirrored To
AUX_GPI1	None	None	No Action	None	None	None	None
AUX_GPI2	Input	NONE	No Action	Low	0	None	None
AUX_GPI3	Input	NONE	No Action	High	0	None	None
AUX_GPI04	Output	BUSY	Signalling Audio Mute Status	High	None	Momentary	None
AUX_GPI05	Input	PTT	External PTT 1	High	0	None	None
AUX_GPI06	None	None	No Action	None	None	None	None
AUX_GPI07	None	None	No Action	None	None	None	None
IOP_GPI01	None	None	No Action	None	None	None	None
IOP_GPI02	None	None	No Action	None	None	None	None
IOP_GPI03	None	None	No Action	None	None	None	None
IOP_GPI04	None	None	No Action	None	None	None	None
IOP_GPI05	None	None	No Action	None	None	None	None
IOP_GPI06	None	None	No Action	None	None	None	None
IOP_GPI07	None	None	No Action	None	None	None	None
CH_GPI01	None	None	No Action	None	None	None	None

Action Parameters:

- Emergency Mode: Stealth
- Mute Audio Input: Audio Tap In
- Mute Audio Output: Speaker Audio Path
- Unmute Audio Output: Speaker Audio Path
- Home Channel: 1
- Preset Channel: 1

Database Version: 0029 | Last action: Programmed radio TM8100

## Audio I/O Settings

Rx/PTT Type	RX	EPTT1
Tap in	None	T5
Tap in Type	A - Bypass In	A - Bypass In
Tap in Unmute	On PTT	On PTT
Tap Out	R2	None
Tap Out Type	D - Split	C - Bypass Out
Tap Out Unmute	Busy Detect + Subaudible	On PTT

TM8000 Programming Application (2.48.0.3)

File Edit Radio Network Tools Help

Radio Model  TM8100

Specifications  
 Receiver Monitoring  
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 Selcall Identity  
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 Key Settings  
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 Start-up  
 PTT  
 Programmable I/O

Programmable I/O

Digital | Audio | BCD

Rx/PTT Type	Tap In	Tap In Type	Tap In Unmute	Tap Out	Tap Out Type	Tap Out Unmute
Rx	None	A - Bypass In	On PTT	R2	D - Split	Busy Detect + Subat
Mic PTT	None	A - Bypass In	On PTT	None	C - Bypass O	On PTT
EPTT1	T5	A - Bypass In	On PTT	None	C - Bypass O	On PTT
EPTT2	None	A - Bypass In	On PTT	None	C - Bypass O	On PTT

Database Version: 0029 | Last action: Programmed radio TM8100

## **CROSSBAND OPERATION**

1. Inject into the receiving radio an on channel RF signal of – 70dBm with a 1 kHz tone and the deviation set to either 3 kHz Wide Band or 1.5 kHz Narrow Band.
2. Check the transmit deviation on the radio that is transmitting the deviation should be 3 kHz Wide Band (+/- 200Hz) or 1.5 kHz Narrow Band (+/- 200 Hz).
3. If the radio is being used in a cross band application. For example linking a VHF channel to UHF channel then both audio path directions will need to be checked.

**If you require any clarification or further information please contact the National Support Centre on 0800 MOBILE (0800 662453).**

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