1 T889 General Information

This section provides a brief description of the T889 power amplifier, along with detailed specifications and a list of types available.

The following topics are covered in this section.

1.1 Introduction

The T889 is an FM base station power amplifier designed for single or multichannel operation within the 850 to 870MHz frequency range. The rated output power capability is 20 to 70W.

The PA comprises a broad band, two stage drive amplifier whose output is split to drive four separate output stages. The outputs from these final stages are then recombined and filtered before being fed to the output socket. This type of balanced output stage offers two advantages over single ended types:

- improved intermodulation performance in the presence of high signal levels from adjacent transmitters;
- enhanced reliability: if one of the four output stages fails, the transmitter can still produce half its rated power.

VSWR and thermal protection are incorporated into the basic design, while monitoring and alarm signals are available for both forward and reverse power. The output power is adjustable from the front panel.

The main PCB is mounted directly on a die-cast chassis/heatsink. For long-term reliability, five high quality, low loss Teflon PCBs are sweated to the main PCB in areas of high RF current. Extensive use is also made of the latest surface mount technology.

Forced air cooling for the heatsink is provided on the T889 by a fan, which is activated whenever the transmitter is keyed. Thermal sensors will also activate the fan automatically if the internal temperature reaches an unacceptable level.

The T889 has a width of 120mm and occupies a double space in a Tait rack frame, which has the ability to accommodate up to seven standard modules.

1.2 Specifications

1.2.1 Introduction

The performance figures given are minimum figures, unless otherwise indicated, for equipment operating at standard room temperature (+22°C to +28°C) and standard test voltage (13.8V DC).

Ambient temperature is defined as the temperature of the air at the input to the cooling fan mounted on the heatsink.

Where applicable, the test methods used to obtain the following performance figures are those described in the EIA specification. Refer to Section 1.2.3 for details of test standards.

Details of test methods and the conditions which apply for Type Approval testing in all countries can be obtained from Tait Electronics Ltd.

1.2.2 General

Frequency Range	.. 850-870MHz
Power Output:	
Rated Power	.. 70W
Range Of Adjustment	.. 20 to 100W (typical)
Input Power	.. 4-5W
Duty Cycle Rating	.. 70W continuous to +60°C ambient temperature .. 100W continuous to +25°C ambient temperature .. 100W @ 55% duty cycle to +60°C ambient temperature
Intermodulation (PA with output isolator)	.. -70dBc or -40dBi[1] with 25dB isolation & interfering signal of -30dBc (ETS 300 086)
Mismatch Capability:	
Ruggedness	.. refer to your nearest Tait Dealer or Customer Service Organisation
Stability	.. 5:1 VSWR (all phase angles)

1. dBi denotes the level of intermodulation product relative to the interfering signal.

Supply Voltage:

Operating Voltage	.. 10.8 to 16V DC
Standard Test Voltage	.. 13.8V DC
Polarity	.. negative earth only
Polarity Protection	.. crowbar diode

Maximum Supply Current (@ 100W):

Standby	.. 50mA
Transmit	.. 27A (22A typical @ 850MHz)

Operating Temperature Range .. -30°C to +60°C ambient temperature

Dimensions:

Height	.. 183mm
Width	.. 120mm
Length	.. 340mm

Weight .. 3.5kg

1.2.3 Test Standards

Where applicable, this equipment is tested in accordance with the following standards.

1.2.3.1 European Telecommunication Standard

ETS 300 086 January 1991

Radio equipment and systems; land mobile service; technical characteristics and test conditions for radio equipment with an internal or external RF connector intended primarily for analogue speech.

1.2.3.2 Telecommunications Industry Association

ANSI/TIA/EIA-603-1992

Land mobile FM or PM communications equipment measurement and performance standards.

1.3 Product Codes

The three groups of digits in the T880 Series II product code provide information about the model, type and options fitted, according to the conventions described below.

The following explanation of T880 Series II product codes is not intended to suggest that any combination of features is necessarily available in any one product. Consult your nearest Tait Dealer or Customer Service Organisation for more information regarding the availability of specific models, types and options.

Model

The Model group indicates the basic function of the product, as follows:

T88X-XX-XXXX
T885 receiver
T881 5W transmitter
T889 70W power amplifier

Type

The Type group uses two digits to indicate the basic RF configuration of the product.

The first digit in the Type group designates the frequency range:

T88X-**X**X-XXXX
'1' for 800-870MHz
'2' for 860-910MHz
'3' for 890-960MHz

The second digit in the Type group indicates the channel spacing and is not applicable to power amplifiers:

T88X-X**X**-XXXX '0' for all power amplifiers

Options

T88X-XX-**XXXX** The Options group uses four digits and/or letters to indicate any options that may be fitted to the product. This group is currently not used for the T889 power amplifier.

1.4 Standard Product Range

The following table lists the range of standard T889 types (i.e. no options fitted) available at the time this manual was published. Consult your nearest Tait Dealer or Customer Service Organisation for more information.

Frequency Range (MHz)	850-870
PA Type: T889-	10

You can identify the PA type by checking the product code printed on a label on the rear of the heatsink (Figure 1.1 in Part A shows typical labels).

