

# 1 T828 General Information

This section provides a brief description of the T828 power amplifier, along with detailed specifications and a list of types available.

The following topics are covered in this section.

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## 1.1 Introduction

The T828 is an FM base station power amplifier designed for single or multichannel operation within the frequency range 66 to 88MHz. The output power capability is 10 to 60W.

The PA comprises a broad band, two stage drive amplifier whose output is split to drive two 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 two output stages fails, the transmitter can still produce one quarter of 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 circuitry is built on a single PCB which is mounted directly on a die-cast chassis/ heatsink. Extensive use is made of surface mount technology.

The T828 has a width of 60mm and occupies a single 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).

Where applicable, the test methods used to obtain the following performance figures are those described in the ETS 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

Power Output:

Rated Power	.. 50W
Maximum Power	.. 60W
Range Of Adjustment	.. 10 to 60W (typical)

**Note:** Actual power used will depend on regulatory requirements.

Input Power .. 1W ±300mW

Duty Cycle Rating .. 50W continuous to +60°C without fan<sup>1</sup>  
 (@ 13.8V supply) .. 60W continuous to +40°C without fan<sup>1</sup>

Intermodulation .. -70dBc or -40dBi<sup>2</sup> with 25dB isolation  
 (PA with output isolator) & interfering signal of -30dBc

Mismatch Capability:

Ruggedness	.. refer to your nearest Tait Dealer or Customer Service Organisation
Stability	.. 5:1 VSWR (all phase angles)

Supply Voltage:

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

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1. The use of a fan is to be preferred at high temperatures. Adequate ventilation must always be provided through base station equipment cabinets.
  2. dBi denotes the level of intermodulation product relative to the interfering signal.

## Maximum Supply Current (@ 50W):

Standby	..	50mA
Transmit	..	11A

## Spurious Emissions:

Conducted	- Transmit	..	-36dBm to 1GHz -30dBm to 4GHz
	- Standby	..	-57dBm to 1GHz -47dBm to 4GHz
Radiated	- Transmit	..	-36dBm to 1GHz -30dBm to 4GHz
	- Standby	..	-57dBm to 1GHz -47dBm to 4GHz

Operating Temperature Range	..	-30°C to +60°C
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## Dimensions:

Height	..	183mm
Width	..	60mm
Length	..	340mm

Weight	..	3.1kg
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### 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.

##### ETS 300 113 March 1996

Radio equipment and systems; land mobile service; technical characteristics and test conditions for radio equipment intended for the transmission of data (and speech) and having an antenna connector.

##### ETS 300 219 October 1993

Radio equipment and systems; land mobile service; technical characteristics and test conditions for radio equipment transmitting signals to initiate a specific response in the receiver.

##### ETS 300 279 February 1996

Radio equipment and systems; electromagnetic compatibility (EMC) standard for private land mobile radio (PMR) and ancillary equipment (speech and/or non-speech).

**1.2.3.2 DTI CEPT Recommendation T/R-24-01**

**Annex I: 1988**

Technical characteristics and test conditions for radio equipment in the land mobile service intended primarily for analogue speech.

**Annex II: 1988**

Technical characteristics of radio equipment in the land mobile service with regard to quality and stability of transmission.

**1.2.3.3 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 T820 Series II product code provide information about the model, type and options fitted, according to the conventions described below.

The following explanation of T820 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:

<u>T82X</u> -XX-XXXX	T825 receiver
	T826 25W transmitter
	T827 exciter
	T828 50W 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:

T82X- <u>X</u> -XXXX	'1' for 66-88MHz
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The second digit in the Type group indicates the channel spacing:

T82X-XX- <u>X</u> XXXX	'0' for wide bandwidth (25kHz)
	'5' for narrow bandwidth (12.5kHz)

### Options

T82X-XX- <u>XXXX</u>	The Options group uses four digits and/or letters to indicate any options that may be fitted to the product. This includes standard options and special options for specific customers. '0000' indicates a standard Tait product with no options fitted. The large number of options precludes listing them here.
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## 1.4 Standard Product Range

The following table lists the range of standard T828 types (i.e. no options fitted and no cyclic keying) available at the time this manual was published. Consult your nearest Tait Dealer or Customer Service Organisation for more information.

Frequency Range (MHz)	66-88
PA Type: T828-	10-0500

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).