

## 1.2 Specifications

### 1.2.1 Introduction

The performance figures given are minimum figures, unless otherwise indicated, for equipment tuned with the maximum switching range and 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 EIA and ETS specifications. However, there are several parameters for which performance according to the CEPT specification is given. Refer to Section 1.2.6 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.

The terms "wide bandwidth", "mid bandwidth" and "narrow bandwidth" used in this and following sections are defined in the following table.

	Channel Spacing	Modulation 100% Deviation	Receiver IF Bandwidth
Wide Bandwidth	25kHz	±5.0kHz	15.0kHz
Mid Bandwidth	20kHz	±4.0kHz	12.0kHz
Narrow Bandwidth	12.5kHz	±2.5kHz	7.5kHz

### 1.2.2 General

Number Of Channels .. 128 (standard)<sup>1</sup>

Supply Voltage:

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

Supply Current:

Transmit - T856 .. 5.5A (typical)  
 - T857 .. 750mA  
 Standby .. 150mA (typical)

Operating Temperature Range .. -20°C to +60°C

1. Additional channels may be factory programmed. Contact your nearest Tait Dealer or Customer Service Organisation.

## Dimensions:

Height	.. 183mm
Width	.. 60mm
Length	.. 320mm

## Weight

.. 2.1kg

## Time-Out Timer (optional)

.. 0 to 5 minutes adjustable in 10 second steps

## Tail Timer

.. 0 to 5 seconds adjustable in 100ms steps

## Transmit Key Time

.. &lt;30ms

## Transmit Lockout Timer

.. 0 to 1 minute adjustable in 10 second steps

**1.2.3 RF Section**

## Frequency Range

.. 400-520MHz (refer to Section 1.4 and Section 1.5)

## Modulation Type

.. FM

## Frequency Increment

.. 5 or 6.25kHz

## Switching Range

.. 8MHz (i.e.  $\pm 4$ MHz from the centre frequency)

## Load Impedance

.. 50 ohms

## Frequency Stability

..  $\pm 1$ ppm,  $-20^{\circ}\text{C}$  to  $+60^{\circ}\text{C}$ 

(see also Section 1.4 and Section 1.5)

## Adjacent Channel Power (full deviation):

Wide Bandwidth (WB) ( $\pm 25$ kHz/ $15$ kHz B/W)	.. -75dBc
Mid Bandwidth (MB) ( $\pm 20$ kHz/ $12$ kHz B/W)	.. -70dBc
Narrow Bandwidth (NB) ( $\pm 12.5$ kHz/ $7.5$ kHz B/W)	.. -65dBc

(Transmitter switching must comply with ETS 300 113)

## Transmitter Side Band Noise:

(no modulation, 15kHz bandwidth)

At $\pm 25$ kHz	.. -95dBc
At $\pm 1$ MHz	.. -105dBc

Intermodulation	.. -40dBc with interfering signal of -30dBc .. -70dBc with 25dB isolation & interfering signal of -30dBc (PA with output isolator)
T856 Mismatch Capability:	
Ruggedness	.. refer to your nearest Tait Dealer or Customer Service Organisation
Stability	.. 3:1 VSWR (all phase angles)
Radiated Spurious Emissions:	
Transmit	.. -36dBm to 1GHz .. -30dBm 1GHz to 4GHz
Standby	.. -57dBm to 1GHz .. -47dBm 1GHz to 4GHz
Conducted Spurious Emissions: (T856 Only)	
Transmit	.. -36dBm to 1GHz .. -30dBm 1GHz to 4GHz
Standby	.. -57dBm to 1GHz .. -47dBm 1GHz to 4GHz
Power Output:	
T856 - Rated Power	.. 25W (see Duty Cycle)
- Range Of Adjustment	.. 5-25W
T857	.. 1W ±300mW
Duty Cycle (T856 Only)	
	.. 100% @ 25W at +25°C
	.. 25% @ 25W at +60°C
	.. 100% @ 10W at +40°C

## 1.2.4 Audio Processor

### 1.2.4.1 Inputs

Inputs Available .. line, microphone and CTCSS

Line Input:

Impedance	.. 600 ohms (balanced)
Sensitivity (60% modulation @ 1kHz)- With Compressor	.. -50dBm
Without Compressor	.. -30dBm

Microphone Input:

Impedance	.. 600 ohms
Sensitivity (60% modulation @ 1kHz)- With Compressor	.. -70dBm
Without Compressor	.. -50dBm

**1.2.4.2 Modulation Characteristics**

Frequency Response (below limiting) .. flat or pre-emphasised (optional)

Line And Microphone Inputs:

Pre-emphasised Response-Bandwidth .. 300Hz to 3kHz (WB & MB)  
 .. 300Hz to 2.55kHz (NB)  
 Below Limiting .. within +1, -3dB of a 6dB/octave pre-emphasis characteristic  
 Flat Response .. within +1, -2dB of output at 1kHz

Above Limiting Response .. within +1, -2dB of a flat response (ref. 1kHz)

Distortion .. 2%

Hum And Noise:

Wide Bandwidth .. -55dB (300Hz to 3kHz [EIA]) typical  
 Mid Bandwidth .. -55dB (CEPT)  
 Narrow Bandwidth .. -50dB (CEPT)

Compressor (optional):

Attack Time .. 10ms  
 Decay Time .. 800ms  
 Range .. 50dB

**1.2.4.3 CTCSS**

Standard Tones .. all 37 EIA group A, B and C tones plus 13 commonly used tones

Frequency Error (from EIA tones) .. 0.08% max.

Generated Tone Distortion .. 1.2% max.

Generated Tone Flatness .. flat across 67 to 250.3Hz to within 1dB

Modulation Level .. adjustable

Modulated Distortion .. <5%

**1.2.5 Microcontroller**

Auxiliary Ports:

Open Drain Type .. capable of sinking 2.25mA via 2k2Ω  
 V<sub>ds</sub> max. .. 5V

## **1.2.6 Test Standards**

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

### **1.2.6.1 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).

### **1.2.6.2 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.

### **1.2.6.3 Telecommunications Industry Association**

#### **ANSI/TIA/EIA-603-1992**

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