

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)¹

Supply Voltage:

Operating Voltage	.. 10.8 to 16V DC
Standard Test Voltage	.. 13.8V DC
Polarity	.. negative earth only
Polarity Protection	.. crowbar diode
Line Keying Supply (if required)	.. -50V DC

Supply Current:

Transmit	- T856	.. 5.5A (typical)
	- T857	.. 750mA
Standby	- T856	.. 165mA (typical)
	- T857	.. 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	.. 322mm
Weight	.. 2.1kg
Time-Out Timer (optional)	.. 0 to 5 minutes ¹ adjustable in 10 second steps
Tail Timer	.. 0 to 5 seconds adjustable in 100ms ² steps
Transmit Key Time	.. <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. ± 4 MHz from the centre frequency)
Load Impedance	.. 50 ohms
Frequency Stability (see also Section 1.4 and Section 1.5)	.. ± 1 ppm, -20°C to +60°C
Adjacent Channel Power (full deviation):	
Wide Bandwidth (WB) (± 25 kHz/15kHz B/W)	.. -75dBc
Mid Bandwidth (MB) (± 20 kHz/12kHz B/W)	.. -70dBc
Narrow Bandwidth (NB) (± 12.5 kHz/7.5kHz B/W)	.. -65dBc
Transmitter Switching	.. complies with ETS 300 113

1. Adjustable from 0 to 10 minutes in PGM800Win version 2.12 and later.

2. Adjustable in 20ms steps in PGM800Win version 2.12 and later.

Transmitter Side Band Noise:
(no modulation, 15kHz bandwidth)

At $\pm 25\text{kHz}$	.. -95dBc
At $\pm 1\text{MHz}$	.. -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 $\pm 300\text{mW}$

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
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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)
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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)
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Distortion	.. 2% max.
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Hum And Noise:

Wide Bandwidth	.. -55dB (300Hz to 3kHz [EIA]) typical
Mid Bandwidth	.. -54dB (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 _{ds} 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.