

AVAILABLE IN  
MID-BAND, VHF,  
UHF AND 800

# SIERRA

## TAIT SIERRA REPEATERS/BASE STATIONS

Sierra's *your* fixed station because you choose exactly the capabilities you want, then it grows along with your company. And Sierra helps you sell your customers with solid benefits:

Sierra's modular design benefits you and your customers.

1. You and your customers save money on expensive rental space by installing two base stations, repeaters or one of each in the same cabinet. Quicker, easier maintenance cuts costs.
2. Your station changes with your needs. It's a base station, a repeater, a base station *and* a repeater or one now and the other later.
3. Your station has less downtime because you service modules easier onsite and remove fewer modules for more extensive maintenance. With extra cards you stay on the air even when one part is down for maintenance.

Sierra's quality benefits you and your customers:

1. You get a 2-year warranty (compare *that*).
2. Sierra works immediately — out of the box.
3. Reliable construction and modular design cuts downtime.
4. Standard conventional parts are easier to replace.

Sierra's features benefit you and your customers:

1. Delivery is usually in 30 working days.
2. Serve more customers with Sierra's broader 400-520 Mhz band.
3. Choose XTALs or T.C.X.O. for multiple channel capacity.
4. Available in cross-band configurations in mid-band, VHF, UHF and 800.
5. Repeat weaker signals with Sierra's high UHF receive capability.
6. Your station comes ready for E/M signaling to connect with microwave.
7. Get built-in, balanced 600 ohm inputs/outputs.
8. Sierra's heavy-duty (50 amp) power supply give you extra power capacity for better reliability and maintenance.
9. Be secure and safe with Sierra's full-locking door.
10. Sierra's fully removable, lift-off door makes maintenance easier.

11. Your service switch cuts power to *all* components for safer maintenance.

12. Cut manufacturer service time with overnight service on modules shipped UPS.

13. Your seamless, fully welded, heavy-gauge steel cabinet won't loosen in transit or on site.

14. Your entire station fits a 19" rack frame.

Cheaper alternatives get you on the air for less but *being cheap* costs you more because it means:

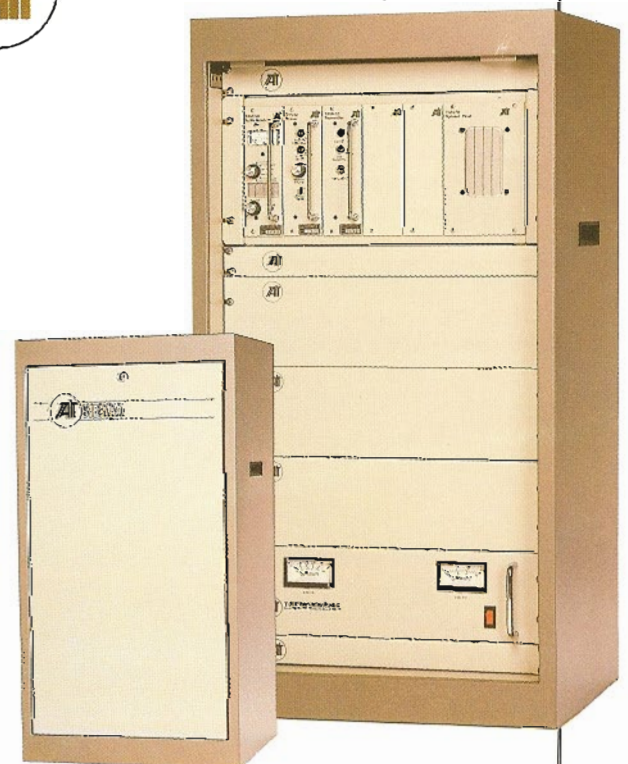
- Less capability, warranty and lifespan
- More service, downtime and customer inconvenience
- Harder reconfiguration and expansion

You don't worry about weather extremes with Sierra, either. Sierra's working today in the Arctic, the desert and the tropical rain forest. An Alaskan repeater, buried under an avalanche all winter, was dug out in the spring, its cabinet bent but its electronics ready to power up and go to work!

That's Tait reliability, and that's why you'll rely on your Sierra.



Tait Electronics-USA, Inc.



## SPECIFICATIONS Repeaters/Base Stations

	High Sierra System UHF R/BUH1	High Sierra System Mid Band R/BMH1	High Sierra System VHF R/BVH1	High Sierra System 800 R/B8H1
<b>General Specifications</b>				
Frequency range	400 to 520 MHz	66 to 88 MHz	136 to 174 MHz	800 to 960 MHz
Channel capacity	1 to 8 ext. selectable	1 to 8 ext. selectable	1 to 8 ext. selectable	1 to 8 ext. selectable
Switching Range	5 MHz receive, 8 MHz transmit	2 MHz receive, 6 MHz transmit	3 MHz receive, 8 MHz transmit	6 MHz receive, 8 MHz transmit
Primary Power	110V AC, 60 Hz	110V AC, 60 Hz	110V AC, 60 Hz	110V AC, 60 Hz
Secondary Power	+13.8V DC	+13.8V DC	+13.8V DC	+13.8V DC
Width/Depth/Height	21" W x 17.5" D x 33" H	21" W x 17.5" D x 33" H	21" W x 17.5" D x 33" H	21" W x 17.5" D x 33" H
Shipping Weight (Typical)	200 lbs.	200 lbs.	200 lbs.	200 lbs.
<b>Transmitter Specifications</b>				
TX current	20 amps at 100 watts	11 amps at 50 watts	20 amps at 100 watts	2 amps at 5 watts
RF Power (watts)	2,5 to 25, 50, 100, 200	1, 10 to 50	2,5 to 25, 50, 100, 250	1 to 5, 90
Frequency stability	+ 2.5 ppm, -30°C to +60°C	+ 2.5 ppm, -30°C to +60°C	+ 2.5 ppm, -30°C to +60°C	+ 1.5 ppm, -30°C to +60°C
Modulation	Direct FM ± 5 kHz	Direct FM ± 5 kHz	Direct FM ± 5 kHz	Direct FM ± 5 kHz
Spurious emissions	-86 dBc	-86 dBc	-86 dBc	-86 dBc
FM noise and hum Below 60% modulation	-55 dBc	-55 dBc	-55 dBc	-55 dBc
Audio response	Within +1, -3 dB of a 6 dB/octave pre-emphasis	Within +1, -3 dB of a 6 dB/octave pre-emphasis	Within +1, -2 dB of a 6 dB/octave pre-emphasis	Within +1, -2 dB of a 6 dB/octave pre-emphasis
<b>Receiver Specifications</b>				
RX current	Standby, 280 mA Full audio, 700 mA	Standby, 280 mA Full audio, 700 mA	Standby, 280 mA Full audio, 700 mA	Standby, 280 mA Full audio, 700 mA
Frequency stability	+ 2.5 ppm, -30°C to +60°C	+ 2.5 ppm, -30°C to +60°C	+ 2.5 ppm, -30°C to +60°C	+ 1.5 ppm, -30°C to +60°C
Sensitivity 12 dB SINAD (Single channel)	-117 dBm (0.32 uV)	-117 dBm (0.32 uV)	-117 dBm (0.32 uV)	-117 dBm (0.32 uV)
Selectivity	90 dB	95 dB	95 dB	85 dB
Spurious rejection	100 dB	100 dB	100 dB	100 dB
Intermodulation	85 dB	85 dB	85 dB	80 dB
Squelch sensitivity	6 dB to 20 dB SINAD	6 dB to 20 dB SINAD	6 dB to 20 dB SINAD	6 dB to 20 dB SINAD
FM noise & hum	-55 dB	-55 dB	-55 dB	-50 dB
<b>Audio Specifications</b>				
Line input impedance	600 Ohm balanced	600 Ohm balanced	600 Ohm balanced	600 Ohm balanced
Line output impedance	600 Ohm balanced	600 Ohm balanced	600 Ohm balanced	600 Ohm balanced
Output level	+10 dBm into line 1W into 3.5 Ohm speaker	+10 dBm into line 1W into 3.5 Ohm speaker	+10 dBm into line 1W into 3.5 Ohm speaker	+10 dBm into line 1W into 3.5 Ohm speaker
Distortion	2% into line 3% into speaker	2% into line 3% into speaker	2% into line 3% into speaker	2% into line 3% into speaker
		(Preliminary until product release April 1991)	(Preliminary until product release December 1990)	(Preliminary until product release December 1990)



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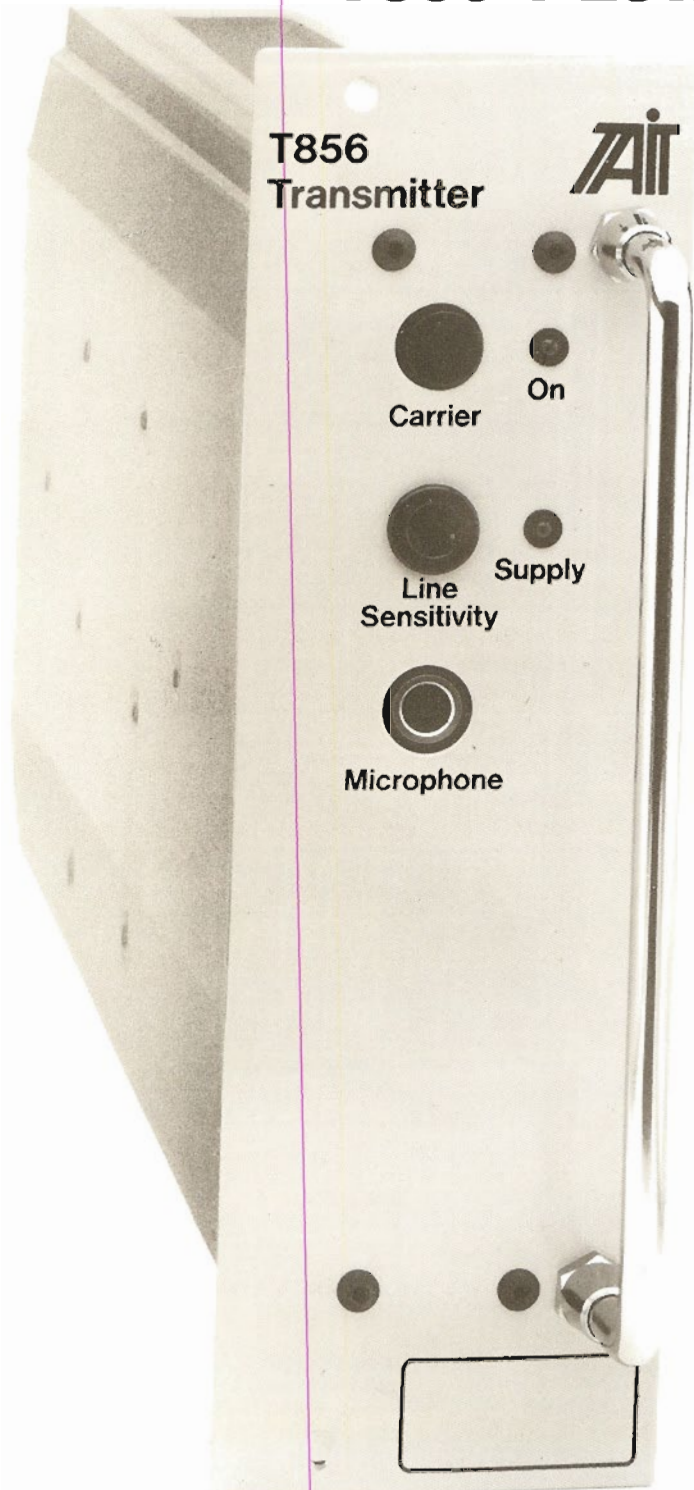
Worldwide: New Zealand, Australia,  
United Kingdom, Singapore

*Tait does it!*



# TAIT **T800** BASE STATION

## T800 1-25W TRANSMITTERS




High performance 1-25W Transmitters for Base Station or Repeater applications. Designed to satisfy the most stringent requirements and provide exceptional ruggedness and versatility.

T800 Transmitters can be configured with other T800 Series modules to produce a system specific to individual needs.

The use of frequency synthesis allows instant selection of channel frequency along with multichannel capability.

The single main circuit board is housed in a fully enclosed die-cast chassis for superior stability and durability.

- Voice or data compatible.
- T800 system designed for standard 483 mm (19 inch) rack.
- Compact plug-in modular construction.
- Up to 128 selectable channels.
- Easy access for servicing.
- Wide range of options.

 **Tait Electronics**

# T800 TRANSMITTER SPECIFICATIONS

Performance is measured in accordance with EIA-152-C

## GENERAL

	T836	T856	T881
Frequency Range	136-174MHz	400-520MHz	800-960MHz
Switching Range	8MHz		
RF Channels	128		
Channel Spacing	12.5, 25 or 30kHz	12.5, 25 or 50kHz	12.5, 25 or 50kHz
Operating Voltage	10.8 to 16V		
Standard Test Voltage	13.8V		
Supply Current	4.5A max	5.0A max	2.0A max
Standby Current	120mA		
Frequency Stability	2.5 or 1ppm	2.5, 2 or 1ppm	1.5 or 1ppm
Operating Temperature	-30 to +60°C		
Dimensions H x W x D	191 x 60 x 320mm		
Weight	2.1kg		

## PERFORMANCE

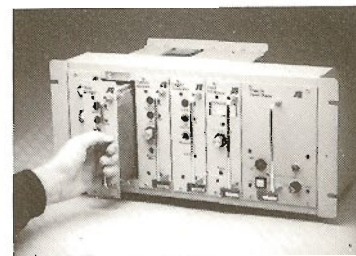
Rated RF Power	25W	25W	5W
Range of Adjustment	5-30W	1-28W	1-7W
Duty Cycle @ 60°C	30%	25%	40%
@ 25°C	100%	100%	100%
Spurious Emissions			
Transmit	-36dBm to 1GHz -30dBm to 4GHz		
Standby	-57dBm to 1GHz -47dBm to 4GHz		

## AUDIO

600 Ohm Balanced Line	
With Compressor	-50 to +10dBm
Without Compressor	-30 to +10dBm
Line Distortion	2% @1KHz, 60% dev
Microphone	
With Compressor	-70dBm
Without Compressor	-50dBm

## OPTIONS

- A wide range — enquire at Tait Electronics
- Complete Base Stations in cabinets
- Compact modular Portable Repeaters
- Monitoring and Control from a central computer
- Trunking and Paging systems
- Multichannel CTCSS decoder



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# T800 Technical Specifications

## 5 - 25W Transmitters

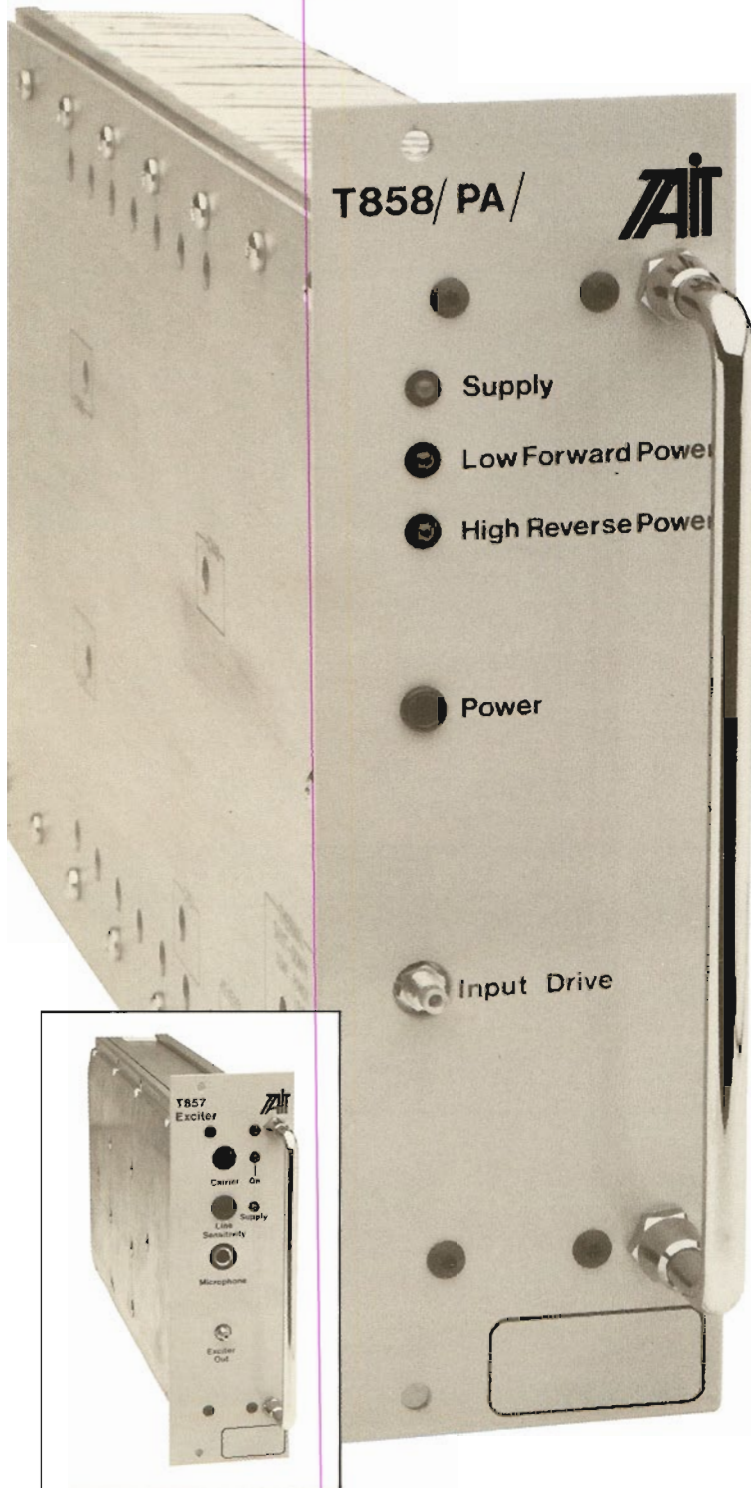
GENERAL	T826	T836	T856	T881
Frequency Range (MHz)	66-88	136-174	400-520	800-960
Switching Range (MHz)	8			
RF Channels	128			
Channel Spacing (kHz)	12.5, 25 or 30		12.5, 25 or 50	
Operating Voltage (V)	10.8 to 16.0			
Standard Test Voltage (V)	13.8			
Supply Current (A)	4.5		5.0	2.0
Standby Current (mA)	120			
Frequency Stability (ppm)	±2.5 or ±1		±2.5, ±2 or ±1	±1.5 or ±1
Operating Temperature (°C)	-30 to +60			
Dimensions H x W x D (mm)	191 x 60 x 322			
Weight (kg)	2.1			
<b>PERFORMANCE</b>				
Rated RF Power (W)	25		5	
Range of Adjustment - typical (W)	5 - 25		1 - 7	
Duty Cycle @ 60°C @ 25°C	30% 100%		40% 100%	
Spurious Emissions Transmit Standby	-36 dBm to 1GHz / -30 dBm to 4GHz -57 dBm to 1GHz / -47 dBm to 4GHz			
Adjacent Channel Power (full deviation) Narrow Band (dBc) Wide Band (dBc)	-65 (±12.5 kHz / 7.5 kHz B/W) -75 (±25 kHz / 15 kHz B/W)			
Transmitter Side Band Noise (no modulation, 15 kHz B/W) at ±25kHz (dBc) at ±1MHz (dBc)	-95 -105		-88 -100	
<b>AUDIO</b>				
600Ω Balanced Line With Compressor (dBm) Without Compressor (dBm)	-50 to +10 -30 to +10			
Line Distortion	2% @ 1kHz, 60% dev.			
Microphone With Compressor (dBm) Without Compressor (dBm)	-70 -50			
Hum and Noise Narrow Band (dB) Wide Band (dB)	-50 (CEPT) -55 (300 Hz to 3kHz [EIA])		-45 -50	

TYPICAL PERFORMANCE FIGURES: Specifications are subject to change without notice and shall not form part of any contract. They are issued for guidance purposes only. For further information please check with your nearest Tait office or authorised dealer



# TAIT T800 BASE STATION

## T800 50-100W TRANSMITTERS



High performance 50-100W Transmitters for use in Base Station or Repeater applications. Designed to satisfy the most stringent requirements and provide exceptional ruggedness and versatility.

T800 Exciter and Power Amplifier combinations form Transmitters which can be configured with other T800 Series modules to produce a system specific to individual needs.

The transmitter is fully rated for continuous duty at elevated temperatures, but features thermal protection for exceptional or fault conditions.

Coupled output stages provide improved transmitter intermodulation performance and continued operation in the unlikely event of a fault in one of the output amplifiers.

The single main circuit board is housed in a die-cast chassis for superior stability and durability.

- Voice or data compatible.
- T800 system designed for standard 483 mm (19 inch) rack.
- Compact plug-in modular construction.
- Easy access for servicing.
- Alarm circuitry and metering facilities.
- Automatic power foldback thermal protection.
- Wide range of options.



Tait Electronics

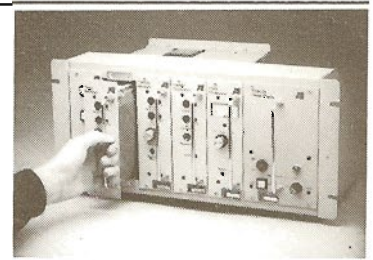
# T800 TRANSMITTER SPECIFICATIONS

Performance is measured in accordance with EIA-152-C except where the ETS-B standard is appropriate.

GENERAL	T827/T828	T837/T838	T857/T858	T857/T859	
Frequency Range	66-88MHz	136-174MHz	400-520MHz	400-520MHz	
Switching Range	8MHz				
RF Channels	128				
Channel Spacing	12.5, 25 or 30kHz	12.5, 25 or 30kHz	12.5 or 25kHz	12.5 or 25kHz	
Operating Voltage	10.8 to 16V				
Standard Test Voltage	13.8V				
Supply Current	11.7A max	11.0A max	11.7A max	25.0A max	
Standby Current	170mA				
Frequency Stability	2.5 or 1ppm	2.5 or 1 ppm	2.5, 2 or 1ppm	2.5, 2 or 1ppm	
Operating Temperature	-30 to +60°C				
Dimensions H x W x D	191 x 120 x 320mm	191 x 120 x 320mm	191 x 120 x 320mm	191 x 180 x 320mm	
Total Weight	5.2kg	5.2kg	5.2kg	5.6kg	
<b>PERFORMANCE</b>	Rated RF Power	50W	50W	50W	100W
	Range of Adjustment	10-60W	10-60W	10-60W	20-105W
	Duty Cycle	100%			
	Intermodulation (ETS-B) with 25dB o/p Isolator	-70dBc			
	Spurious Emissions				
	Transmit	-36dBm to 1GHz -30dBm to 4GHz			
	Standby	-57dBm to 1GHz -47dBm to 4GHz			
<b>AUDIO</b>	600 Ohm Balanced Line				
	With Compressor	-50 to +10dBm			
	Without Compressor	-30 to +10dBm			
	Line Distortion	2% @ 1KHz, 60% dev			
	Microphone				
	With Compressor	-70dBm			
	Without Compressor	-50dBm			

## OPTIONS

- *A wide range — enquire at Tait Electronics*
- *Complete Base Stations in cabinets*
- *Compact modular Portable Repeaters*
- *Monitoring and Control from a central computer*
- *Trunking and Paging systems*
- *Multichannel CTCSS decoder*



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# T800 Technical Specifications

## 50 - 150W Transmitters

GENERAL	T827 / T828	T837 / T838			T857 / T858	T857 / T859	T881 / T889	
Frequency Range (MHz)	66-88	136-174			400-520		800-870	
Switching Range (MHz)	8							
RF Channels	128		255 / 750		128			
Channel Spacing (kHz)	12.5, 25 or 30		12.5 or 25		12.5, 25 or 50			
Operating Voltage (V)	10.8 to 16.0							
Standard Test Voltage (V)	13.8							
Supply Current (A)	11.7	28	16	12.6	12	23	27	
Standby Current (mA)	170							
Frequency Stability (ppm)	±2.5 or ±1		±2.5	±2.5, ±2 or ±1			±1.5 or ±1	
Operating Temperature (°C)	-30 to +50							
Dimensions H x W x D (mm)	191 x 120 x 340					191 x 180 x 340		
Weight (kg)	5.2					5.6		
<b>PERFORMANCE</b>								
Rated RF Power (W)	50	150	100	50	100	90		
Range of Adjustment - typical (W)	10 - 60	100-150	25 - 100	10 - 60	20 - 105	20-100		
Duty Cycle @ 60°C @ 25°C	100% (50W) 100%	100% 100%		100% (50W) 100%		100% 100%		
Intermodulation - ETS300-086 (dBc) with 25 dB o/p isolator	-70							
Spurious Emissions Transmit Standby	-36 dBm to 1GHz / -30 dBm to 4GHz -57 dBm to 1GHz / -47 dBm to 4GHz							
Adjacent Channel Power (full deviation) Narrow Band (dBc) Wide Band (dBc)	-65 (±12.5 kHz / 7.5 kHz BW) -75 (±25 kHz / 15 kHz BW)							
Transmitter Side Band Noise (no modulation, 15 kHz BW) at ±25kHz (dBc) at ±1MHz (dBc)						-95 -105		-88 -100
<b>AUDIO</b>								
600Ω Balanced Line With Compressor (dBm) Without Compressor (dBm)	-50 to +10 -30 to +10							
Line Distortion	2% @ 1kHz, 60% dev.							
Microphone With Compressor (dBm) Without Compressor (dBm)	-70 -50							
Hum and Noise Narrow Band (dB) Wide Band (dB)	-50 (CEPT) -55 (300 Hz to 3 kHz (EIA))			-45 (CEPT) -55 (300 Hz to 3 kHz (EIA))			-45 -50	

TYPICAL PERFORMANCE FIGURES: Specifications are subject to change without notice and shall not form part of any contract. They are issued for guidance purposes only. For further information please check with your nearest Tait office or authorised dealer.



**UHF BAND**

# TAIT T800 BASE STATION

## T859 100W UHF POWER AMPLIFIER

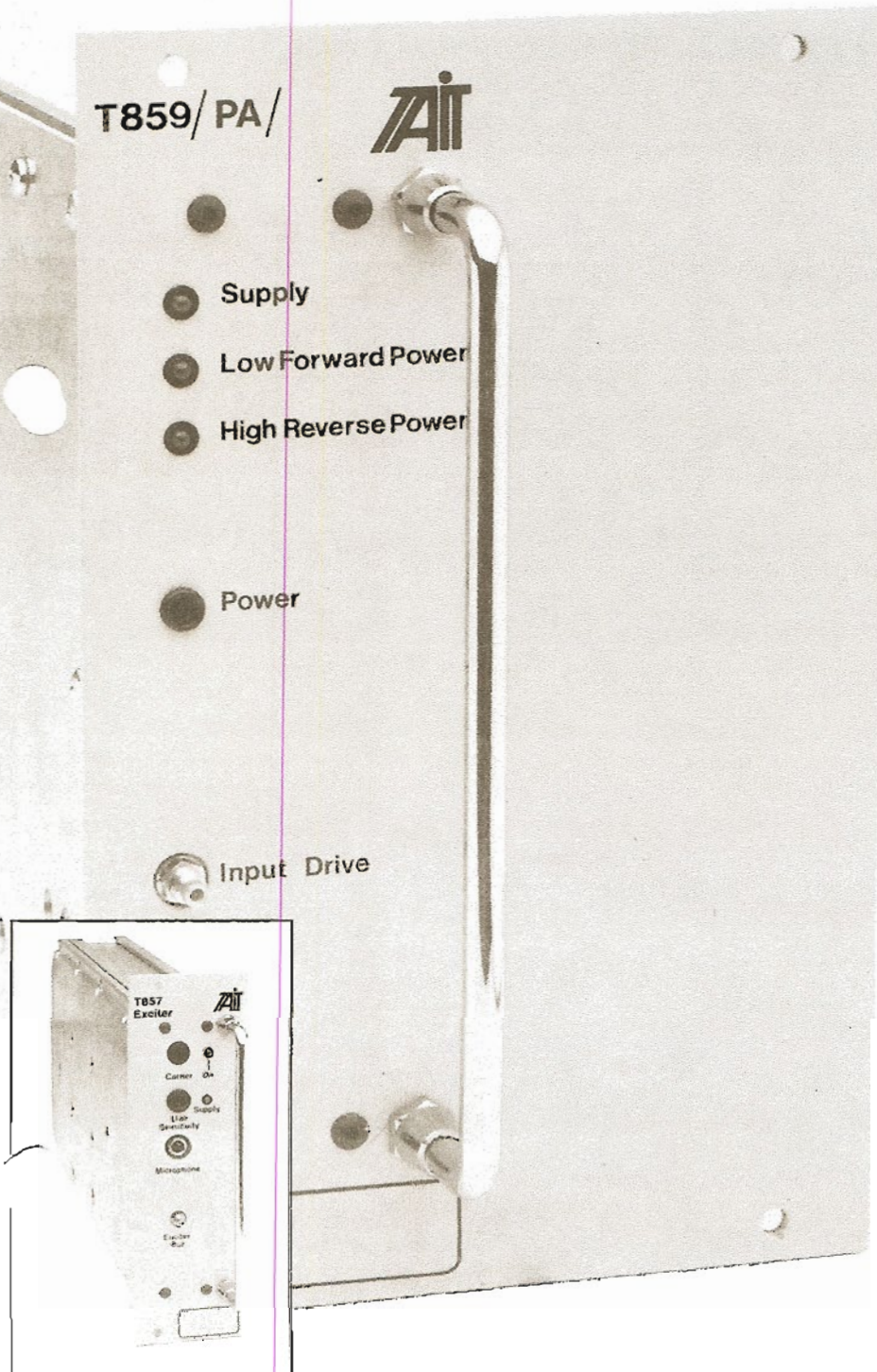
High performance UHF 100W Power Amplifier for use with the T857 Exciter in Base Station or repeater applications. Designed to satisfy the most stringent requirements and provide exceptional ruggedness and versatility.

The T857/T859 combination form a 100W transmitter which can be configured with other T800 Series modules to produce a system specific to individual needs.

A high-reliability fan is employed to force air cool the amplifier which is fully rated for continuous duty at elevated temperatures. It also features thermal protection for exceptional or fault conditions.

Coupled output stages provide improved transmitter intermodulation performance and continued operation in the unlikely event of a fault in one of the output amplifiers. The single main circuit board is housed in a die-cast chassis for superior stability and durability.

- T800 system designed for standard 483mm (19 inch) rack
- Compact plug-in modular construction
- Easy access for servicing
- Alarm circuitry and metering facilities
- Automatic power foldback thermal protection



**Tait Electronics**

# T859 POWER AMPLIFIER SPECIFICATIONS

The T859 PA has been designed for use with the T857 Exciter. Performance is measured in accordance with EIA RS-152B, except where the CEPT Standard is appropriate.

## GENERAL

Frequency Range:	400 to 520MHz
Load Impedance:	50 ohms
Operating Temperature Range:	-30°C to +60°C (-22°F to 140°F)
Supply Voltage: Operating Voltage Standard Test Voltage	10.8V to 16V DC 13.8V DC
Cooling:	Forced air via 12V fan. Fan activated by keying transmitter, or if excessive temperatures reached.

## DIMENSIONS

Height	191mm	(7.5ins)
Width	120mm	(4.7ins)
Length	340mm	(13.4ins)
Weight	3.4kg	(7.4lbs)

## OPTIONS

A wide variety of options are available. Please refer to the T857 Exciter technical information sheet.

## PERFORMANCE

Rated Power:	100W
Range of Adjustment:	25W to 110W
Duty Cycle Rating:	100W continuous to +60°C (140°F)
Switching Range:	8MHz
Intermodulation (CEPT): (PA with output isolator)	-70dBc
Mismatch Capability: Ruggedness Stability	infinite VSWR 5:1 VSWR
Supply Current: Standby Transmit (100W)	50mA 20A
Spurious Emissions (CEPT) Conducted:	Transmit -36dBm to 1GHz -30dBm to 4GHz
Radiated: Transmit	-36dBm to 1GHz -30dBm to 4GHz
Standby	-57dBm to 1GHz -47dBm to 4GHz

For further information consult your nearest Tait Office or Agent. Specifications are subject to change. This equipment has not been approved by the National Regulatory Authority (FCC, DTI, DOTC, RFS, DOC). This equipment is not and may not be offered for sale or lease until approval has been obtained.



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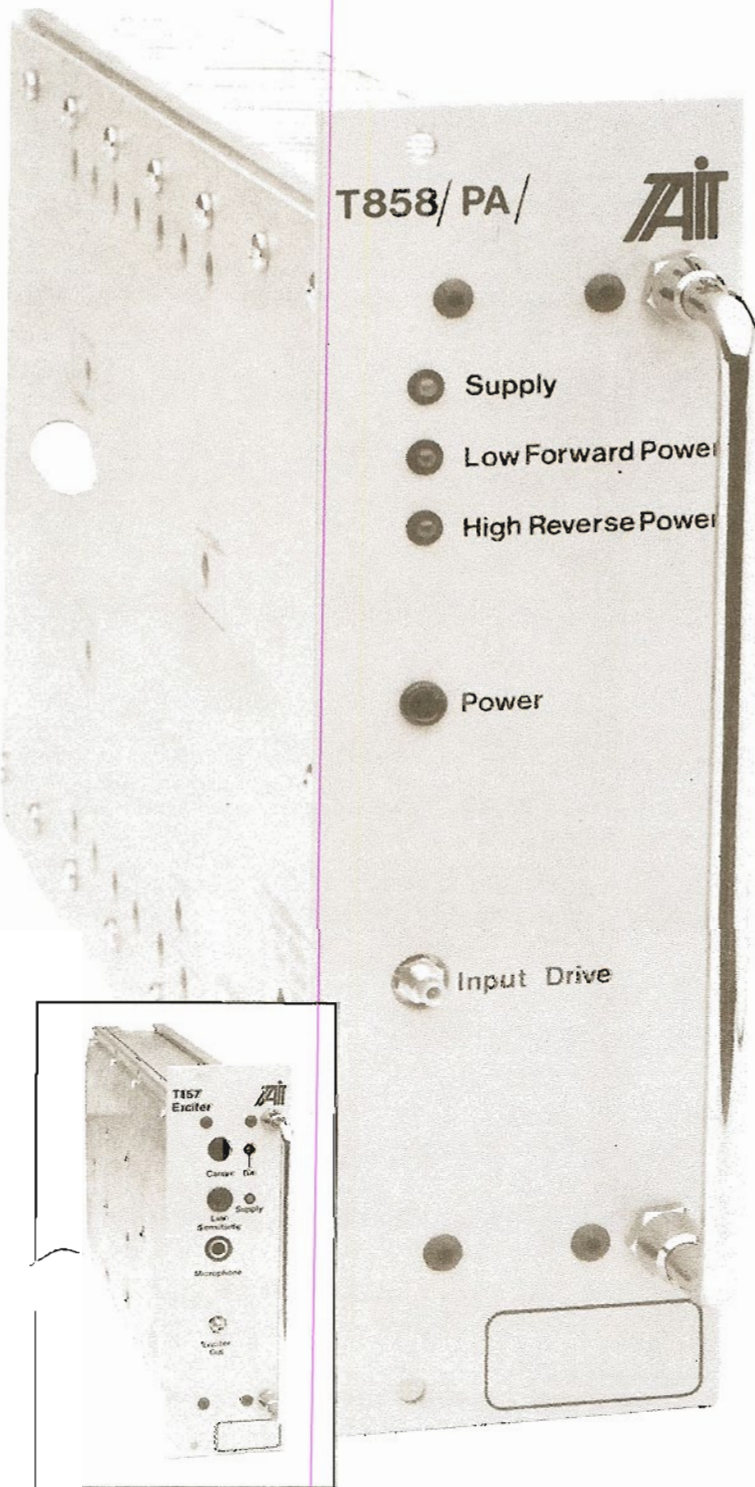


**UHF BAND**

**TAIT**

**T800**  
BASE STATION

## T858 50W UHF POWER AMPLIFIER



High performance UHF 50W Power Amplifier for use with T857 Exciter in Base Station or repeater applications. Designed to satisfy the most stringent requirements and provide exceptional ruggedness and versatility.

The T857/T858 combination form a 50W transmitter which can be configured with other T800 Series modules to produce a system specific to individual needs.

The transmitter is fully rated for continuous duty at elevated temperatures, but features Thermal protection for exceptional or fault conditions.

Coupled output stages provide improved transmitter intermodulation performance and continued operation in the unlikely event of a fault in one of the output amplifiers.

The single main circuit board is housed in a die-cast chassis for superior stability and durability.

- T800 system designed for standard 483mm (19 inch) rack
- Compact plug-in modular construction
- Easy access for servicing
- Alarm circuitry and metering facilities
- Automatic power foldback thermal protection
- Convection cooled.



**Tait Electronics**

# T858 POWER AMPLIFIER SPECIFICATIONS

The T858 PA has been designed for use with the T857 Exciter. Performance is measured in accordance with EIA RS-152B, except where the CEPT standard is appropriate.

## GENERAL

Frequency Range:	400 to 520MHz
Load Impedance:	50 ohms
Operating Temperature Range:	-30°C to +60°C (22°F to 140°F)
Supply Voltage: Operating Voltage Standard Test Voltage	10.8V to 16V DC 13.8V DC
Cooling:	Convection

## DIMENSIONS

Height	191mm	(7.5ins)
Width	60mm	(2.4ins)
Length	340mm	(13.4ins)
Weight	3.1kg	(6.8lbs)

## OPTIONS

A wide variety of options are available. Please refer to the T857 Exciter technical information sheet.

## PERFORMANCE

Rated Power:	50W
Range of Adjustment:	10W to 65W
Duty Cycle Rating:	50W continuous to +60°C (140 °F) 60W continuous to +40°C (104°F)
Switching Range: Intermodulation (CEPT): (PA without output isolator)	8MHz -70dBc
Mismatch Capability: Ruggedness Stability	infinite VSWR 5:1 VSWR
Supply Current: Standby Transmit (50W)	50mA 11A
Spurious Emissions (CEPT): Conducted: Transmit	-36dBm to 1GHz -30dBm to 4GHz
Radiated: Transmit Standby	-36dBm to 1GHz -30dBm to 4GHz -57dBm to 1GHz -47dBm to 4GHz

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**UHF BAND**

# TAIT T800 BASE STATION

## T857 UHF EXCITER

T857  
Exciter

AIT

Carrier

On

Line  
Sensitivity

Supply

Microphone

Exciter  
Out

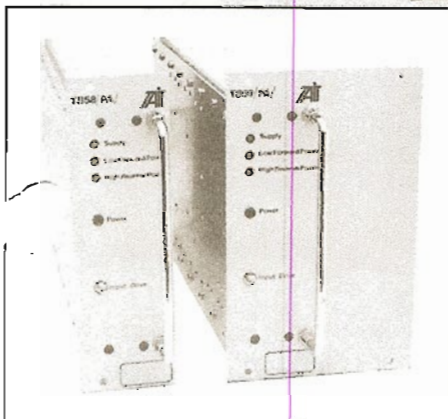
High performance UHF Exciter for use with T858 50W or T859 100W Power Amplifiers in Base Station or Repeater applications. Designed to satisfy the most stringent requirements and provide exceptional ruggedness and versatility.

The T857 Exciter can be configured with other T800 Series modules to form a system specific to individual needs.

The use of frequency synthesis allows instant selection of channel frequency along with multi-channel capability.

The single main circuit board is housed in a fully-enclosing die-cast chassis for superior stability and durability.

- Can be used for voice or data
- Wide range link selectable audio configuration
- T800 system designed for standard 483 mm (19 inch) rack
- Compact plug-in modular construction
- Up to 128 internally selectable channels
- Easy access for servicing
- Broad range of options



**Tait Electronics**

# T857 EXCITER SPECIFICATIONS

The T857 Exciter has been designed for use with the T858 and T859 power amplifiers or optionally, as a 2W stand alone Transmitter. Performance is measured in accordance with EIA RS-152B, except where the CEPT Standard is appropriate.

## GENERAL

Frequency Range:	
Wideband	400-520MHz
Narrowband	400-512MHz
Load Impedance:	50 ohms
Channel Capacity:	
Standard	1
Optional	8
Internally Selectable	128
Operating Temperature Range:	-30°C to +60°C (-22°F to 140°F)
Frequency Stability:	
Standard Version	± 2.5ppm, -30°C to +60°C (-22°F to 140°F)
High Stability Version	± 2ppm, -10°C to +60°C (14°F to 140°F)
Very High Stability Version	± 1ppm, 0°C to +60°C (32°F to 140°F)
Supply Voltage:	
Operating Voltage	10.8V to 16VDC
Standard Test Voltage	13.8VDC

## DIMENSIONS

Height	191mm	(7.5ins)
Width	60mm	(2.4ins)
Length	320mm	(12.6ins)
Weight	2.1kg	(4.6lbs)

## OPTIONS

- A wide variety of options are available. Please enquire at Tait Electronics.
- CTCSS
- Wide range of audio processor configurations
- Transmit and tail timers
- 2W "stand alone" transmitter version
- Remote control
- 4 wire line operation
- Local Monitor facilities

## PERFORMANCE

Power Output:	1W ± 300mW
Switching Range:	8MHz
Modulation Type:	Direct FM
Adjacent Channel Power (full deviation):	
Wideband (15kHz BW @ ± 25kHz offset)	-75dBc
Narrowband (7.5kHz BW @ ± 12.5kHz offset)	-65dBc
Transmitter Sideband Noise: (no modulation, 15kHz BW)	
@ ± 25kHz offset	-95dBc
@ ± 1MHz offset	-105dBc
Radiated Spurious Emissions (CEPT):	
Transmit	-36dBm to 1GHz -30dBm to 4GHz
Standby	-57dBm to 1GHz -47dBm to 4GHz
Audio:	
Inputs available:	Line, microphone and CTCSS
Line Input:	
Impedance	600ohms (balanced)
Sensitivity (60% modulation @ 1kHz)	
With compressor	-50dBm
Without compressor	-30dBm
FM Hum and Noise:	
Wideband (300Hz to 3kHz EIA)	-55dB
Narrowband (CEPT)	-48dB
Distortion:	2%

For further information consult your nearest Tait Office or Agent. Specifications are subject to change. This equipment has not been approved by the National Regulatory Authority (FCC, DTI, DOTG, RFS, DOC). This equipment is not and may not be offered for sale or lease until approval has been obtained.



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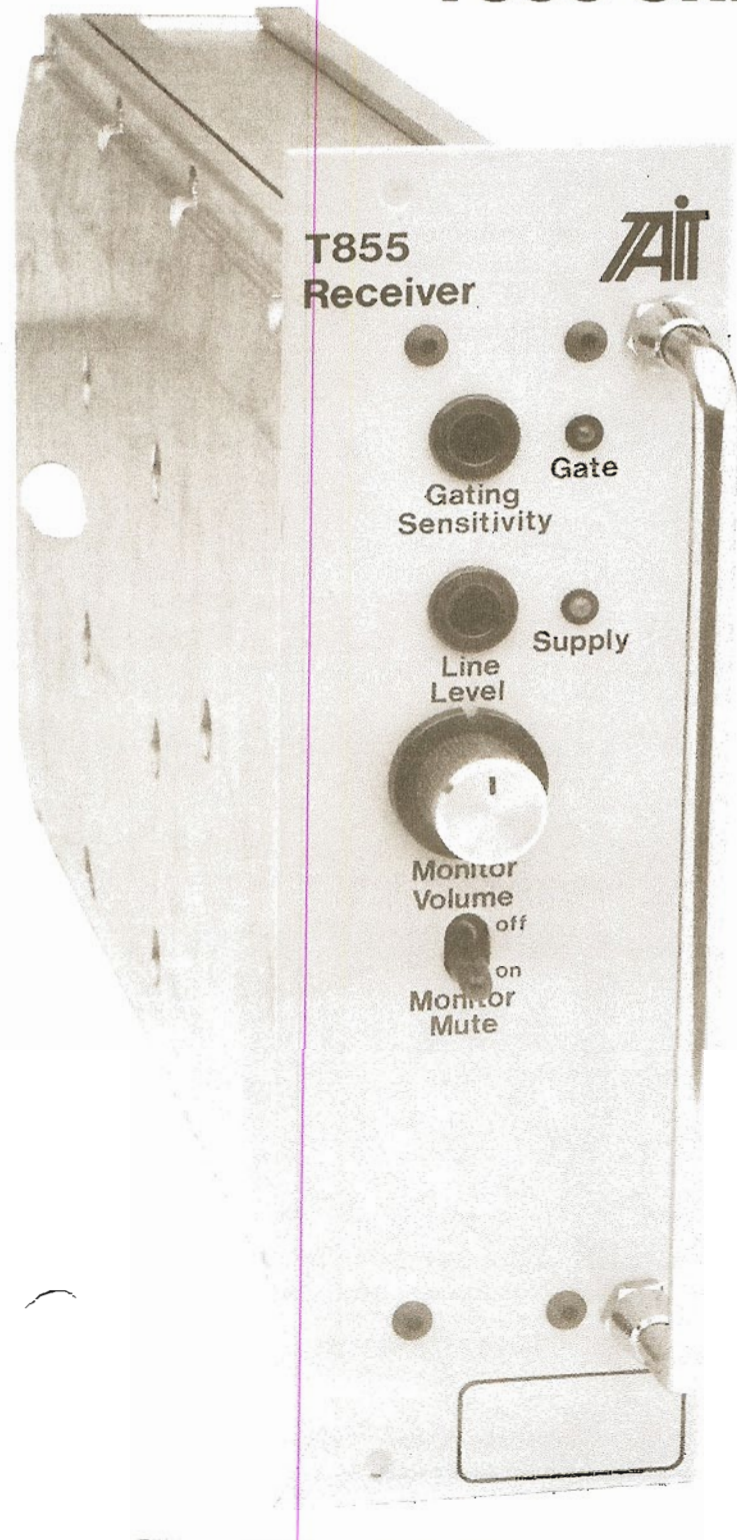
**UHF BAND**

**TAIT**

**T800**

**BASE STATION**

## **T855 UHF RECEIVER**



A high performance UHF Receiver for Base Station or repeater applications. Designed to satisfy the most stringent requirements and provide exceptional ruggedness and versatility.

The T855 Receiver can be configured with other T800 Series modules to form a system specific to individual needs.

Superior spurious rejection and intermodulation performance make the receiver suitable for use in the harshest RF environments.

The use of frequency synthesis allows instant selection of channel frequency along with multi-channel capability.

The single main circuit board is housed in a fully-enclosing die-cast chassis for superior stability and durability.

- Can be used for voice or data
- T800 system designed for standard 483mm (19 inch) rack
- Compact plug-in modular construction
- Up to 128 internally selectable channels
- Easy access for servicing
- Broad range of options



**Tait Electronics**

# T855 RECEIVER SPECIFICATIONS

Performance measured in accordance with EIA RS-204C, except where the CEPT Standard is appropriate.

## GENERAL

Frequency Range:	400-520MHz
Input Impedance:	50 ohms
Channel Spacing:	
Wideband	25kHz
Narrowband	12.5kHz
Channel Capacity:	
Standard	1
Optional	8
Internally Selectable	128
Operating Temperature Range:	-30°C to +60°C (-22°F to 140°F)
Frequency Stability:	
Standard Version	± 2.5ppm, -30°C to +60°C (-22°F to 140°F)
High Stability Version	± 2ppm, -10°C to +60°C (14°F to 140°F)
Very High Stability Version	± 1ppm, 0°C to +60°C (32°F to 140°F)
Supply Voltage:	
Operating Voltage	10.8V to 16V DC
Standard Test Voltage	13.8V DC

## DIMENSIONS

Height	191mm	(7.5ins)
Width	60mm	(2.4ins)
Length	320mm	(12.6ins)
Weight	2.1kg	(4.6lbs)

## OPTIONS

- A wide variety of options are available. Please enquire at Tait Electronics.
- 8 channel capability
- CTCSS
- De-emphasised or flat audio response
- Received Signal Strength Indicator (RSSI)
- RSSI controlled gating (sensitivity -115dBm to -80dBm)
- Remote control
- 4 wire line operation
- Local Monitor facilities

## PERFORMANCE

Sensitivity (12dB sinad):	
Single Channel	-117dBm (0.32 uV)
Bandsread	-115dBm (0.4 uV)
Switching Range:	5MHz
Selectivity:	
Wideband	90dB
Narrowband (CEPT)	85dB (typical)
Intermodulation:	
Wideband	85dB
Narrowband (CEPT)	85dB (typical)
Spurious and Image Rejection:	100dB
Gating Sensitivity:	Adjustable to -105dBm
Spurious Emissions (CEPT):	
Conducted	-90dBm to 4GHz
Radiated	-57dBm to 1GHz -47dBm to 4GHz
Audio Outputs:	
Line:	
Power	Adjustable to +10dBm
Load Impedance	600 ohms
Distortion	2%
Monitor:	
Power	1W
Speaker Impedance	3.5 ohms
Distortion	3%
Hum and Noise:	
Wideband	-55dB
Narrowband (CEPT)	-45dB

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# TAIT T800

BASE STATION

## T800 RECEIVERS



High performance Receivers for Base Station or Repeater applications. Designed to satisfy the most stringent requirements and provide exceptional ruggedness and versatility.

T800 Receivers can be configured with other T800 Series modules to produce a system specific to individual needs.

Superior spurious rejection and intermodulation performance make the receiver suitable for use in the harshest RF environments.

The use of frequency synthesis allows instant selection of channel frequency along with multi-channel capability.

The single main circuit board is housed in a fully enclosed die-cast chassis for superior stability and durability.

- Voice or data compatible.
- T800 system designed for standard 483 mm (19 inch) rack.
- Compact plug-in modular construction.
- Up to 128 selectable channels.
- Easy access for servicing.
- Wide range of options.



Tait Electronics

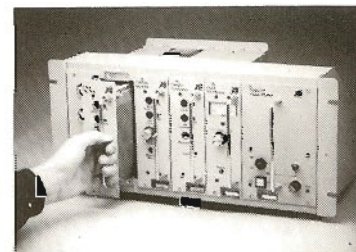
# T800 RECEIVER SPECIFICATIONS

Performance is measured in accordance with EIA/TIA-204D except where the ETS-B standard is appropriate.

GENERAL	T825	T835	T855	T885
Frequency Range	66-88MHz	136-174MHz	400-520MHz	800-960MHz
Switching Range	2MHz	3MHz	5MHz	6MHz
RF Channels	128			
Channel Spacing	12.5, 25 or 30kHz	12.5, 25 or 30kHz	12.5, 25 or 50kHz	12.5, 25 or 50kHz
Operating Voltage	10.8 to 16V			
Standard Test Voltage	13.8V			
Current Consumption	750mA max	750mA max	700mA max	800mA max
Standby Current	350mA	350mA	300mA	400mA
Frequency Stability	2.5 or 1ppm	2.5 or 1ppm	2.5, 2 or 1ppm	1.5 or 1ppm
Operating Temperature	-30 to +60°C			
Dimensions H x W x D	191 x 60 x 320mm			
Weight	2.1kg			
<b>PERFORMANCE</b>	Sensitivity 12dB Sinad -117dBm			
Selectivity @ 25kHz	95dB	95dB	90dB	85dB
or @ 12.5kHz (ETS-B)	90dB	90dB	85dB	80dB
Intermodulation (EIA)	85dB	85dB	85dB	80dB
(ETS-B)	85dB	80dB	80dB	74dB
Spurious Responses	100dB			
Typical Squelch Sensitivity	adjustable up to -105dBm			
Hum and Noise (EIA)	55dB	55dB	55dB	50dB
(ETS-B)	50dB	50dB	50dB	45dB
<b>AUDIO</b>	600Ω Balanced Line +10dBm max			
Line Distortion	≤2%			
3.5Ω Monitor Speaker	1W			
Speaker Distortion	≤3%			

## OPTIONS

- A wide range — enquire at Tait Electronics
- Complete Base Stations in cabinets
- Compact modular Portable Repeaters
- Monitoring and Control from a central computer
- Trunking and Paging systems
- Multichannel CTCSS decoder



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# T800 Technical Specifications

## Receivers

GENERAL	T825	T835	T855	T885
Frequency Range (MHz)	66-88	136-174	400-520	800-960
Switching Range (MHz)	2	3	4	6
RF Channels	128		128	
Channel Spacing (kHz)	12.5, 25 or 30		12.5, 25 or 50	
Operating Voltage (V)	10.8 to 16.0			
Standard Test Voltage (V)	13.8			
Current Consumption - max Audio (mA)	750		700	800
Standby Current (mA)	350		300	400
Frequency Stability (ppm)	±2.5 or ±1	±2.5	±2.5, ±2 or ±1	
Operating Temperature (°C)	-30 to +60			
Dimensions H x W x D (mm)	191 x 60 x 320			
Weight (kg)	2.1			
<b>PERFORMANCE</b>				
Sensitivity 12 dB SINAD (dBm)	-117			
Selectivity - ETS300-086 @25kHz (dB) @12.5kHz (dB)	95 90	90 85	90 85	85 80
Intermodulation EIA (dB) ETS300-086 (dB)	85 85	85 80	85 80	80 74
Spurious Responses (dB)	100		80	100
Typical Squelch Sensitivity	adjustable up to -105dBm			
Hum and Noise EIA (dB) ETS300-086 (dB)	55 50		50 45	
<b>AUDIO</b>				
600Ω Balanced Line	+10 dB max			
Line Distortion (wide band)	≤2%			
3.5 Ω Monitor Speaker (W)	1			
Speaker Distortion	≤3%			

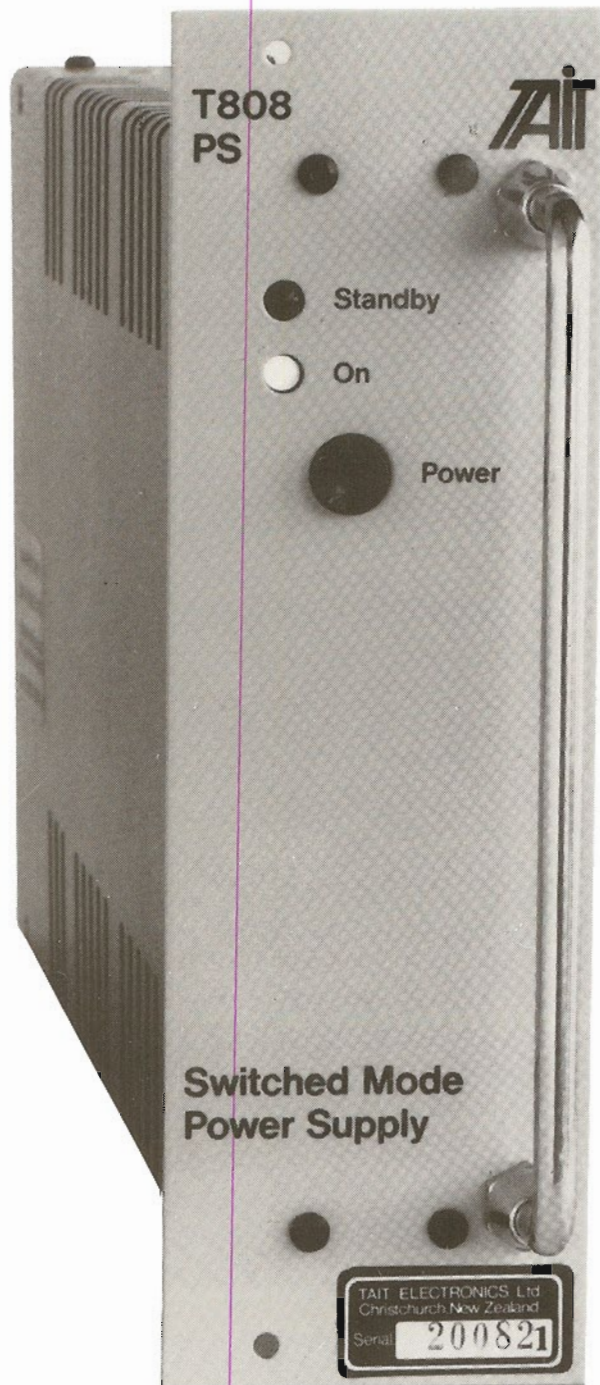
TYPICAL PERFORMANCE FIGURES: Specifications are subject to change without notice and shall not form part of any contract. They are issued for guidance purposes only. For further information please check with your nearest Ait office or authorised dealer.

# TAIT



## BASE STATION

### T807 AND T808 POWER SUPPLIES



High performance Power Supplies for Base Station or Repeater applications. Designed to satisfy the most stringent requirements and provide exceptional ruggedness and versatility.

The T807 and T808 Supplies can be configured with other Tait Base Station modules to form a system specific to individual needs.

Switched-Mode technology provides substantial reduction in size, weight and mains power consumption. The T807 and T808 supplies are also very well protected against line and load fault conditions.

The single main circuit board is housed within a heavy duty ventilated metal case for durability and ease of servicing.

- T800 system designed for standard 483mm (19inch) rack
- Modular construction
- Complies with worldwide electrical safety and EMC standards
- Provision for float charging batteries
- Local or remote sensing of output voltage



### Tait Electronics



# T807 AND T808 POWER SUPPLY SPECIFICATIONS

The T807 and T808 have been designed to power 25/50 watt and 100 watt repeaters respectively.

## AC INPUT

Voltage:	200 to 264V or 100 to 135V, 50/60Hz (Selection by internal switch or wire links)
Input Current: (true RMS)	T807 4A max T808 6A max
EMI Noise Suppression:	Complies with FCC rules Part 15, Sub Part J (Class B Computing Device)

## DC OUTPUT

Voltage:	13.8V (adjustable 11 to 14V)
Voltage Regulation:	±1%
Current: Continuous operation up to +40°C (104°F)	T807 0 to 15A T808 0 to 25A
Continuous operation up to +60°C (140°F)	T807 0 to 12A T808 0 to 22A
75% Duty Cycle up to 60°C, 30 min on	T807 0 to 15A T808 0 to 25A
Hum and Noise:	Less than 20mV pk-pk Less than 10mV RMS
Reverse Bleed Current:	Less than 5mA

## GENERAL

Power Supply Concept:	Switched mode technology Pulse width modulation
Switching Frequency:	160kHz typical
Temperature Range:	-10°C to +60°C (14°F to 140°F) Within specification
Operational:	-30°C to +60°C (-22°F to 140°F)
Isolation:	Input to Output 3750VAC, 50Hz, 1 min Input to Chassis 1500VAC, 50Hz, 1 min Output to Chassis 500VAC, 50Hz, 1 min
Efficiency:	T807 80%, 10 to 15A load T808 80%, 15 to 25A load
Cooling:	T807 Convection T808 Convection and forced air (small internal fan)

## DIMENSIONS

Height:	191mm (7.5ins)
Width:	60mm (2.4ins)
Length:	330mm (13ins)
Weight:	2.5kg (5.4lbs)

## OPTIONS

- \* Monitor Facilities
- \* Although designed for the demanding radio communications industry, the T807/808 can be used in other power supply applications. Please enquire at Tait Electronics about your application.

**ENERGY SAVINGS** — Switched mode technology reduces energy consumption to about half of its conventional linear counterpart.

In the case of the T808 operating on full load at 60% duty cycle, the energy saving will amount to approximately 2000kWh per annum. This will provide substantial energy cost savings over years of operation.

**EXTENSIVE PROTECTION** — The T807 & T808 feature extensive protection circuitry to ensure they are very well protected against faults in the mains supply, load, or temperature extremes. Under most circumstances the protection features are fully self recovering after removing the fault.

**FURTHER INFORMATION** — For further information consult your nearest Tait Office or Agent. Specifications are subject to change without notice.



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**UHF BAND**

**TAIT**

**T859**  
**BASE STATION**

## **SYNTHESIZER & FORCED AIR COOLING**

### **Synthesizer Technology.**

Previous frequency synthesizer designs have rarely been capable of matching the low noise characteristics of the traditional crystal oscillator and multiplier approach. As a consequence, high performance equipment was invariably crystal-based.

However, the T855 Receiver features a synthesizer design which more than matches the performance of previous crystal-based technology.

At the heart of the synthesizer is the VCO which features circuitry of fundamentally low-noise design through the use of a high-Q transmission line resonator. Not only does the noise performance match or better that of most crystal-based designs, but the absence of multiplier stages results in a significantly lower level of spurious products in the oscillator signal.

Frequency stability is guaranteed by a reference TCXO. The synthesizer is programmed via an EPROM, allowing instant channel frequency selection . . . waiting for crystals is a thing of the past.

### **Forced Air Cooling.**

The best way to increase the service lifetime of any high-power electronic equipment is to keep it cool in operation. As failure mechanisms are largely temperature dependent, the likelihood of failure increases exponentially with temperature. This becomes particularly evident when equipment is of a compact

configuration. Therefore, in the case of the T859, a cooling fan has proven to be the single most effective method of extracting extra continuous performance from the heatsink. The equation is simple; forced air cooling means greater reliability.

Furthermore, it has allowed the T859 Power Amplifier to be fully-rated for continuous operation at ambient temperatures of up to +60°C (140°F).

The fan is automatically operated each time the transmitter is keyed, thus maintaining the heatsink temperature at a relatively low but constant level above ambient. Under exceptional conditions where the heatsink temperature may begin to climb above desirable levels, a thermal sensor will activate the fan continuously until such time as the heatsink temperature returns to normal.

In the unlikely event of a fault resulting in unacceptable heatsink temperatures, an additional thermal sensor will reduce the output power of the T859 until, once again, tolerable temperature levels are achieved.

The fans in use on Tait Base Station Equipment have a projected lifetime in excess of 300,000 hours — more than 30 years continuous operation.



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Worldwide New Zealand, Australia, United Kingdom, Singapore



# Tait's High Sierra UHF Repeater

By Rikki T. Lee

If all of your customers had the luxury of independently testing each piece of hardware before they bought it, they'd be able to make better purchasing decisions. And if the test results were excellent, you'd truly win their confidence and loyalty. Although this policy might bring you more satisfied customers, it's probably not too practical to implement.

So we bring you "On the Bench," a regular feature of *RADIO RESOURCE INTERNATIONAL*. It's one way to approach the issue of independent product evaluation, since we provide the testing. Here's how it works: First, a manufacturer voluntarily ships us a new or established product. Then we bring the product to an independent lab for bench testing, along with a list of specifications to test for. Results of testing are published in this column; the manufacturer doesn't see the results until everyone else does.

Even with these conditions, New Zealand's Tait Electronics Ltd. was quite eager for us to analyze one of its most successful products—the "High Sierra" modular repeater/base station systems. Of course, Tait isn't modest about the equipment. According to its marketing brochure, the High Sierra "is for the operator who needs a true top-of-the-line system—the state of the art—the best." So how did it perform in the lab? Before we discuss the results of the test, let's describe the High Sierra.

## Features and Functions

The High Sierra systems are available in mid-band, VHF, UHF and 800 MHz; Tait shipped us its UHF product. Technically speaking, the Model T855 receiver and T856 transmitter modules are synthesized FM base station/repeater equipment for single channel or multichannel operation in the 400-520 MHz range

with a standard power output of 25 watts. (A 100-watt model is also available.) The modules come in 15 versions—differing in frequency range (400-440, 440-480, 480-512 or 480-520 MHz), deviation (10, 5 or 2.5 kHz) and type of temperature-controlled crystal oscillator (2.5, 2 or 1 ppm).

With a modular design, multiple system configurations are possible. According to Tait, the units can be assembled into a wide variety of fixed equipment systems, from a simple land mobile base to a complex linking system operating in hot standby mode. The compact modules allow the user to, says Tait, "put two receivers or transmitters, or one of each, in the space normally occupied by only one repeater." Furthermore, base stations can be converted to repeaters (or vice versa) at any time. The modules also make an easier time of installation and maintenance; just slide one module out and another one in.

Here are a few other features of the High Sierra system, as reported by Tait:

- The system can be built for any environment, including temperature extremes and other factors. Module housings are cast aluminum, providing better RF shielding; the cabinet is made of seamless, fully welded heavy-gauge steel. The cabinet doors are full-locking and fully removable.
- The product's single-repeater

cross-band capability lets the user repeat UHF-VHF, UHF-800 and VHF-800 with matched transmitter, receiver and amplifier in a single rack frame.

- The system comes with a 50-ampere power supply. A service switch cuts power to all components for safer maintenance.



The Model T855-10 receiver and T856-10 transmitter modules from Tait Electronics, Ltd.

- The entire system measures only 33 inches (84 cm) high. If necessary, a 100-watt system can shrink into only a 10-inch (25 cm) height on a 19-inch (48 cm) rack or even into a portable unit.

- Finally, the High Sierra comes with a two-year warranty. Delivery of the system is usually in 30 working days.

## Results of Bench Testing

Tait shipped us its T855-10 UHF base station receiver module and T856-10 transmitter module. These modules are designed for 400-440 MHz for use in wideband (25 kHz) channel spacing systems. The transmitter had been programmed by

Tait at 408 MHz, the receiver at 439 MHz. (Frequencies can be programmed by the user on a PC.) Both modules were sent already mounted in a 19-inch (48 cm) rack frame.

To test Tait's repeater, we brought it to Denver, Colo.-based Custom Electronics. We asked the lab to check out a number of specs as chosen by our editorial advisors. The lab was not given the published specs found in the promotional material or service manual. Custom Electronics tested the repeater using its IFR Service Monitor Model 1200S. (Other types of test equipment might produce slightly different results.) The lab was impressed with the performance of the product and mentioned its "easy slide-in racks and a nice cabinet design."

**Independent Results**

*Transmitter*

Current 5 A  
 Frequency Stability .0005%

Modulation 4.2 kHz  
 FM Noise and Hum 50 dB  
 Audio Distortion Approx. 3%  
 Power Output 19.1 W

*Receiver*  
 Current—Standby 0.5 A  
 Current—with Full Audio 0.75 A  
 Frequency Stability .0005%  
 Sensitivity (12 dB SINAD) 0.3 µV  
 Squelch Sensitivity Set to .35 µV  
 Audio Distortion 5% at 4.5 W

Audio Response:  
 10 Hz-4 kHz: No loss  
 4 to 8 kHz: 50%  
 Audio Output 5 W  
*Other Specs (Provided by Tait)*

Switching Range 5 MHz receive,  
 8 MHz transmit  
 Primary Power 110V AC, 60 Hz  
 (220 V AC, 50 Hz also available)  
 Secondary Power +13.8 VDC  
 Tx spurious emissions -86 dBc  
 Rx spurious rejection 100 dB  
 Rx intermodulation 85 dB  
 Audio line input and output imped.:  
 600 ohm balanced

Tait's list prices for the complete High Sierra system are US\$5,663 for a 25-watt repeater and US\$6,663 for a 100-watt unit. For more information, contact Tait Electronics Ltd., P.O. Box 1645, Christchurch, New Zealand; call +64 3-358-3399; or fax +64 3-358-3603.

In the United States, contact Tait Electronics USA, (713) 984-8684; or fax (713) 468-6944. **RRI**

*"On the Bench" is a regular feature of RADIO RESOURCE INTERNATIONAL designed to evaluate mobile products currently on the market. Products that are reviewed must be voluntarily sent by the manufacturer.*

*If you would like more information or if you'd like us to test your product, please call Rikki Lee at +1 (303) 771-8616, or send a fax to her at +1 (303) 771-8605.*



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# TAIT PORTABLE REPEATER

## PORTABLE COMMUNICATIONS SYSTEM

The Tait range of Portable Communication equipment has been designed to meet exacting performance specifications at a competitive price, while maintaining the versatility required by end users.

Basic units in both VHF and UHF are built around 4 × 60 mm plug in modules, each unit containing the appropriate transmitter, receiver and duplexer/speaker, leaving one space available for CTCSS, monitoring etc. Space is provided at the rear of the aluminium cabinet for housing 1 or 2 × 12v 6AH batteries. Provision is also made for an external power supply.

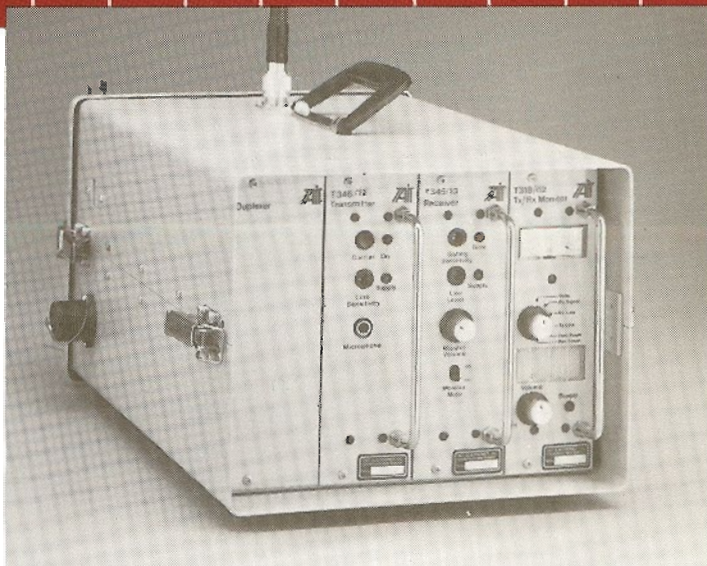
The case is designed to mount four Tait base station modules and one or two 6 ampere-hour sealed lead acid batteries. It is intended for use in any application where a transportable, "showerproof" case is required.

A weatherproof power connector is fitted to all units. This may be used for 12v DC power, or for charging internal batteries. Should both AC and DC be required, provision has been made for the fitting of a 3-way AC power socket.

The front and rear of the unit are protected by clip-on covers fastened by heavy duty latches and sealed with rubber sealing strip.

Within the configuration available, the Tait Portable Communication System has many uses, such as:

- Emergency communication system
- Land survey site repeater
- Construction site repeater
- Repeater site surveys — using the monitor option
- Single line rural telephone system
- Scada/Telemetry applications



## SPECIFICATIONS

Length	425 mm
Width	263 mm
Height	220 mm
Weight	2 kg (without modules & batteries)
DC power	7 pin weatherproof connector, type Amphenol-Tuchel series C16-1
Contact rating	260v AC, 6A (optional: 4 × 440v AC 16A contacts)
Mains connector	IEC 3 Pin Connector
RF input/output	Type N connector on top of case
Batteries	N.B. Batteries not included in basic kit
Recommended type	Yuasa NP 6-12 (12v/6A-hr)
Charging	External Charger recommended
Fitting of modules	Will take up to 4 standard 60 mm modules (guides not included in kit)
Mounting	Rests on 4 rubber feet on base
Environmental conditions	Temperature -10° to +60°C Humidity 0 to 99%

NOTE: WILL SURVIVE TEMPORARY OUTSIDE USE IN RAIN ETC. BUT SHOULD NOT BE INSTALLED OUTSIDE PERMANENTLY WITHOUT PROTECTION.



**Tait Electronics**

# PORTABLE REPEATER

## Operation

### VERSIONS AVAILABLE:

- A** This is the most basic portable repeater unit comprising Transmitter, Receiver and Duplexer only. This allows operation at VHF or UHF and can perform a variety of functions depending on the application. For more detailed information on the individual component units, refer to the appendices of the operating manual.
- B** The difference here is the inclusion of the T318/02 Transmission Monitor. This allows provision for "front line maintenance".
- C** This is essentially the same as Version B, however, it employs the STA2005 battery charging unit. This allows operation of portable repeater for indefinite periods if a mains supply is available to the portable repeater, and may be mounted within the T318/02 monitor. Other external battery chargers are also available.
- D** For use where CTCSS controlled emergency repeaters are required.
- E** Simplex or duplex telemetry/data outstation applications. A wide range of data and telemetry configurations are available.

### ANCILLARY EQUIPMENT

VERSIONS	DUPLEXER/SPEAKER	OPTION	RECEIVER	TRANSMITTER
<b>A</b> Basic Repeater S330/P.R.S. 66/88 MHz	MD77-6 Duplexer T359/02 Speaker	Nil	T335/02	T336/02
S350/P.R.S. 138/174 MHz	MD150-6 T359/02	Nil	T355/02	T356/02
S340/P.R.S. 400/520 MHz	MD400-6 T359/02	Nil	T345/02 T855/02	T346/02 T856/02
<b>B</b> Monitor Repeater	Same 3 units as above	T318/02 Monitor	Same four units as above	
<b>C</b> Monitor Repeater with Battery Charger	Same 3 units as above	STA-2005 PSU and T318/02 Monitor	Same four units as above	
<b>D</b> Repeater with 5 Channels CTCSS	Same 3 units as above	T310/5 CTCSS	Same four units as above	
<b>E</b> Telemetry Outstation	As above or with STA 1521 Coax Relay	Proprietary telemetry equipment	Same four units as above	



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