



# HPT435

External extra rugged digital high power UHF radio transceiver programmable in frequency ranges from 406.1 to 470 MHz. It has GMSK, DBPSK, DQPSK, 4FSK, D8PSK, and D16QAM modulations with advanced forward error correction and data scrambling. The output power is programmable from 320 mW to 35 W.

It takes incoming data from a JAVAD GNSS receiver through the standard asynchronous serial port, modulates it with GMSK, FSK, PSK or most spectrum efficient QAM modulation and transmits it at RF power output levels from 25 dBm up to 45.44 dBm operating in UHF frequency band (406.1 to 470 MHz).

The UHF transceiver is also capable of receiving RF signals through a 50 Ohm impedance external antenna port. These signals are demodulated and output to the JAVAD GNSS receiver.

HPT435 delivers a reliable radio link at up to 38.4 kbps over the air for the 25 kHz channel spacing, 19.2 kbps for 12.5 kHz, and 9.6 kbps for 6.25 kHz.

The unmatched features of HPT435 include data scrambling, frequency hopping, user selectable transmit output power level, low power consumption sleep modes, autoscanning for base.

The unit's user settings can be changed through the built-in Command Line interface (CLI), Tracy Software or through ModemVU.

# HPT435

## General Radio Specifications

| Parameter   | Specification   |
|---|---|
| Operating Frequency Range                                       | 406.1 - 470 MHz   |
| Channel Spacing   | 25/12.5/6.25 kHz  |
| Data Rate (25kHz Channel Spacing)                               | 9600 bps – DBPSK/GMSK<br>19200 bps – DQPSK/4FSK<br>28800 bps – D8PSK<br>38400 bps – D16QAM                            |
| Data Rate (12.5kHz Channel Spacing)                             | 4800 bps – DBPSK/GMSK<br>9600 bps – DQPSK/4FSK<br>14400 bps – D8PSK<br>19200 bps – D16QAM                             |
| Data Rate (6.25 kHz Channel Spacing)                            | 2400 bps – DBPSK<br>4800 bps – DQPSK<br>7200 bps – D8PSK<br>9600 bps – D16QAM   |
| System Gain for DBPSK modulation (Antenna gain is not included) | 161 dB (for 25 kHz Channel Spacing)<br>163 dB (for 12.5 kHz Channel Spacing)<br>164 dB (for 6.25 kHz Channel Spacing) |
| Roaming Speed for DBPSK modulation                              | 75 mph / 120 km/h   |
| Modulation  | GMSK/4FSK/DBPSK/DQPSK/D8PSK/D16QAM  |
| Nominal Impedance   | 50 Ohms   |
| End to End delay  | 60 ms   |
| Communication Mode  | Time Division Duplex (TDD)<br>Time Division Multiple Access (TDMA)  |
| Maximum Distance Range  | 48 miles / 77 km  |
| Input/Output  | Serial (RS232) up to 115200 bps   |

## Environmental Specifications

| Parameter                   | Specification   |
|-----------------------------|---|
| Temperature                 | Operating –40°C to +60°C<br>Storage –40°C to +85°C                          |
| Environmental               | IP 66   |
| Dimensions (H x W x D)      | 152 mm x 84 mm x 72 mm  |
| Weight                      | 900 g   |
| Power Supply Voltage        | +9 to +16 VDC nominal   |
| Power Consumption (Average) | 120W/38W/300mW – Continuous Transmit/<br>Transmit with 30% duty cycle/Sleep |
| Housing/Color               | Aluminum / Two-tone JAVAD GNSS Green / Gray                                 |
| Antenna Connector           | BNC, 50Ω  |

## Compliance

| Parameter       | Specification |
|-----------------|---------------|
| FCC             | Part 90       |
| Industry Canada | RSS-119       |

## Transmitter Specifications

| Parameter  | Specification  |
|--|--|
| Output Power   | DBPSK/GMSK 25 dBm to 45.44 dBm in 1 dB steps (320 mW to 35W)<br>DQPSK/4FSK 25 dBm to 45.44 dBm in 1 dB steps (320 mW to 35W)<br>D8PSK 25 dBm to 40 dBm in 1 dB steps (320 mW to 10 W)<br>D16QAM 25 dBm to 37 dBm in 1 dB steps (320 mW to 5 W) |
| Output Power Control Accuracy                          | ±1.5 dB (at normal test conditions)  |
| Carrier Frequency Stability                            | ±1.5 ppm initial stability over temp with ±3.0 ppm aging/year  |
| Max. Frequency Error                                   | ±1.0 kHz (at normal test conditions)<br>±1.5 kHz (under extreme test conditions)   |
| Adjacent Channel Power (Conducted) 25/12.5/6.25 kHz CS | Part §90.210 (C, D, E)   |
| Spurious Emission (Conducted)                          | -36 dBm (9 kHz – 1GHz)<br>-30 dBm (1 GHz – 4 GHz)  |
| Spurious Emission (Radiated)                           | -36 dBm (9 kHz to 1 GHz)<br>-30 dBm (1 GHz to 4 GHz)   |

## Receiver Specifications

| Parameter   | Specification   |
|---|---|
| Noise Figure  | 4 dB  |
| Receiver Sensitivity (BER 1x10 <sup>-4</sup> , 25 kHz CS) | DBPSK -116 dBm 25kHz / -117 dBm 12.5kHz<br>DQPSK -115 dBm 25kHz / -116 dBm 12.5kHz<br>D8PSK -110 dBm 25kHz / -111 dBm 12.5kHz<br>D16QAM -106 dBm 25kHz / -107 dBm 12.5kHz<br>GMSK -113 dBm 25kHz / -114 dBm 12.5kHz |
| Dynamic Range   | -115 to -15 dBm   |
| Max. Input Signal Level                                   | -10 dBm   |
| Co-channel Rejection                                      | -8 dB for 25 kHz Channel Spacing<br>-12 dB for 12.5 kHz Channel Spacing<br>-16 dB for 6.25 kHz Channel Spacing  |
| Adjacent Channel Selectivity                              | 70 dB for 25 kHz Channel Spacing<br>60 dB for 12.5 kHz Channel Spacing<br>50 dB for 6.25 kHz Channel Spacing  |

Specifications are subject to change without notice.



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