



MILITARY  
COMMUNICATION  
SYSTEMS

# Cheetah 3

TACTICAL MILITARY SDR: VHF / UHF\*



# Cheetah 3

30 Mhz to 170/512Mhz\*  
VERSATILE MILITARY COMMUNICATIONS





## “VERSATILE MILITARY COMMUNICATIONS SYSTEMS”

The **Cheetah 3** is a compact, rugged and lightweight wideband military radio that offers uncompromised communication for tactical missions. The radio offers continuous communication across the VHF and UHF bands. The standard and optional advanced modems as well as GPS/GLONASS receiver are integrated into the radio allowing flexible operation. Advanced features such as Fast Frequency Hopping (FFH), Advanced Encryption Standard (AES) and One-Time-Pad (OTP) encryption and Digital Voice provides a secure and reliable communication. The CHEETAH3 SDR is designed for tactical missions, but is configurable for mobile and base station applications. The Power output is up to 10Watt across the 30-512MHz and combined with an external amplifier, up to 50Watts can be achieved.

### Ergonomic and Rugged Design

At only 2 kg, the radio is one of most advanced wideband radios in its class. Enclosure in epoxy powder-coated T6-Aluminium casing ensures compliance to MIL-STD-810G specifications. The user-friendly, intuitive interface and controls ensure quick and effective navigation during set-up and operation.

### Robust and Reliable Communication (Combat Net)

The Cheetah3 radio is based on a true digital, software defined platform, covering the spectrum from 30 MHz to 512 MHz. Waveforms conforming to NATO and U.S. military standards are supported by the optional advanced data modem allowing interoperability with other systems. The optional advanced modem facilitates processed and unprocessed high speed data with flow control and automatic repeat requests (ARQ) allowing error-free transmission for Tactical Combat Network Applications.

### Data Transfer Rate

Encrypted data transfer of up to 2 400 bps is attained by the standard modem. The optional advanced data modem further enriches the data capability of the radio. Both modems enable secure military tactical messaging, chat and situational awareness over the radio link. Depending on the waveform selected, data rates of up to 96 000 bps can be obtained. Future data rates will extend to 384 000 bps.

### Extended Battery Life

The advanced power management system, superior low voltage components and latest power control techniques incorporated into the radio results into a low stand-by power consumption of only 3.5 W. With the advanced battery composition the radio can provide a standby time of up to 45 hours and an operation time with advanced features on of up to 20 hours. A Li-Ion battery of 13 Ah at the nominal 12 V is standard and quick to replace with a handy spare to extend operation.

### Transceiver

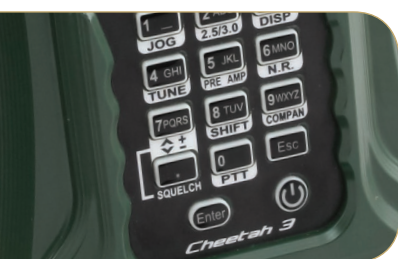
High performance VHF and UHF filters ensure harmonic suppression and adjacent channel rejection to offer superior selectivity. State of the art components ensure communications in rural and urban environments.

### ECCM

The option of end-to-end encryption is integrated and enables high grade security of data and voice transmissions. Optional Multiple Independent Levels of Security (MILS) are available to users. This enables advanced features like frequency hopping (up to 600 hops per second) and one-time-pad encryption.

### Integrated Satellite Positional Receiver

The integrated GPS / GLONASS receivers and antenna provides time, position and heading information which can be viewed on screen in the field. User selectable standards are Lat/Long, MGRS or UTM which can be sent via secure encrypted messaging for C4I purposes..





- Modes: FM, AM, CW, USB, LSB, FSK, MSK (Standard) BPSK, QPSK, QAM (optional)
- Wideband SDR: 30- 175 MHz / 30 - 512 MHz\* (All modes)
- Integrated modems, GPS / GLONASS receiver
- Built in PTT, speaker & microphone
- Compact, lightweight and rugged design
- Fast Frequency Hopping and Digital Voice
- Long battery life
- 3 m water immersion
- 3 year warranty
- MIL-STD-810 G



## Cheetah 3 SPECIALISED ACCESSORIES



### Handsets / Headsets

High quality Mil spec handsets and headsets are available to select from. This includes normal handsets, head wearable "bowman" style, "In the ear" clandestine or full enclosed headsets for noise reduction.

### Fill Gun: (Scorpion)

The Scorpion Fill Gun is designed for field programming. Once programmed, teams can be dispatched with secure fill guns to upload new radio channels and secure keys into installed radios.



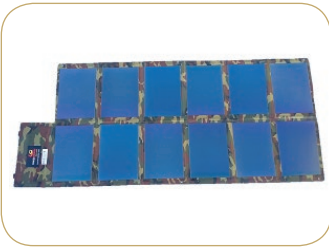
### High Capacity Battery

The 12V, 13 Ah battery provides operational times long enough to complete a daily mission, quick change with the twist off, twist on to change field charged batteries ensure extended mission times.



### Field Charging

The Cheetah3 has an internal battery charger and can thus recharge the battery from solar and any other DC source between 9 and 35V. Flexible portable solar panels are available to provide power sources for charging and operating the radio in the field.



### Mobile & Rack Configurations

Various configurations can be implemented for mobile, base station, in-band and cross-band repeater applications pairing with another Cheetah3 or Leopard1 and Afractal2. Specially designed dampers can be custom designed and made for any weight and application.

### Programming and Software

Application software suite is available to control and program the radio channels and features via RS232 or Ethernet Encrypted tactical military data transfer such as messaging, file transfer, (text, image, sound, video), GPS/GLONASS mapping, data encryption, ECCM, can be set up and managed with Windows, 7/8/10 on any Tablet, Laptop or PC. (Encryption can be AES, Twofish, Serpent)



### Antennas

Various wideband or band specific antennas can be provided according to the application or requirements. All antennas are Military Specifications and selected for high performance and durability.

### Radio Remote Control / Operation

Various remote control and operate options are available. Utilizing the RRIU and two wire, remote operation of up to 2000 meters is achieved. Up to 1000's of meters can be achieved via Ethernet / Fiber optic to program, control and operate all radio features.



### Backpack Options

Various custom backpack options can be provided. A backpack may include provision the radio and optional accessories such as flexible solar charger, tablet/terminal, spare batteries, various antennas, water bottle and spare magazine pouches. Backpacks manufactured to customer specifications and desired colors.



### Advanced Optional Modem

The integrated advanced modem provides the radio with additional functions such as Encryption, Secure Digital Voice, extended high speed data transfer and wave-form capability. E-mailing options are also supported.



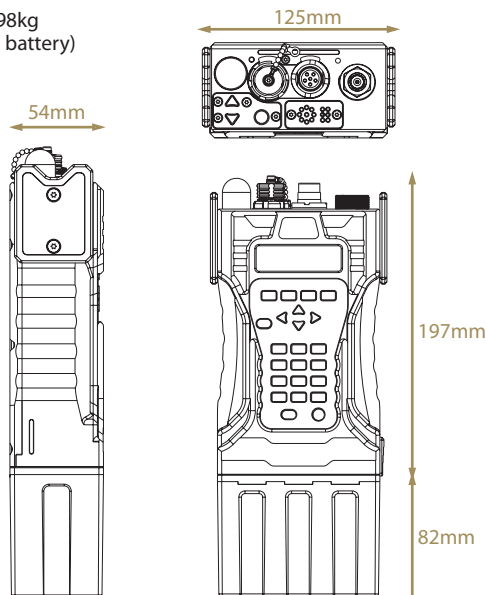
### Dual RF Power Amplifier

The Dual Afractal2 Power Amplifier incorporates two separate power amplifiers with 2 Radio inputs. The Cheetah3 can be connected to Radio 2 inputs to provide the excitation for the VHF/UHF PA and controlled by Cheetah3 radio interface. The automatic three-port antenna switch will select appropriate VHF or UHF antenna. Improved performance can thus be obtained for mobile or base station operations by implementing band-specific high gain antennas. The power amplifier provides 125 W PEP from 1.6 - 30 MHz for a Leopard1 radio and 100W from 30 - 88MHz, 50 W from 110 - 512 MHz from the Cheetah3 radio.



## Cheetah 3 Dimensions Including Battery

Weight: 1.98kg  
(excluding battery)



## General Information

Combat Net Radio	STANAG5066 PC Data App.
Frequency Range	30-175 MHz / 30-512 MHz*
Channel	200 Programmable
Link Establishment	CTCSS
Frequency Stability	0.5 ppm (0.05 ppm optional)
Modes	FM, AM, CW, USB, LSB, FSK, MSK (standard) BPSK, QPSK, QAM (optional)
Power Source	12Vdc nom. (10-36 Vdc)
RF Input/Output Impedance	50 Ohm unbalanced
Dimensions	125x197x54mm (excl. battery) 125x285x54mm (incl. battery)
Weight	1.98kg (excl. battery) 2.98kg (incl. battery)
Interfaces	Serial RS232, Ethernet 10t*
Audio Power	Handset Speaker 0.5W, 300 $\Omega$ External Speaker 1W, 8 $\Omega$
Battery Capacity	Li-Ion 13Ahr, 1Kg
Expected Battery Life	30 Hrs (1:1:30)
Power Consumption	290mA muted (Depending on options switched on.)

## Transmitter

Power Output	2.5, 10W, 1 watt steps 30-512MHz
Audio Bandwidth	300-2500/3000 Hz selectable
Harmonic Suppression	>45 dB (Typical)
Spurious Suppression	>45 dB (Typical)

## Receiver

Sensitivity	12dB SINAD at -118dBm FM
IF Rejection	>80dB
Audio Output	Handset via 6way connector.
Intercom Interface	Via 6 way/AUX connector
Squelch Modes	Syllabic Voice Detection CTCSS and RF level.

## Environmental

Shock, Vibration & Imersion	MIL-STD-810G
EMI / RFI	MIL-STD-461E
Operating Temperature	-30 to +65°C
Storage Temperature	-40 to +85°C

## ECCM

Hop Sequence	OTP (One Time Pad) AES (Adv. Encryption. Std.)
Hop Rate	1/2/10/20/50/100/200/400/600 ps.
Hop Width	0.1, 1, 2, 5, 10, 20, 40 MHz wide
Hop Mode	User defined frequency bands
Audio Scrambling	Fixed Tone Inversion Hopping Tone inversion*
Data Encryption	OTP / AES 128/256*
Synchronisation	Satellite (min 1x per day or after switch on) External timing source (optional)

## Standard Modem

Modes	FSK/MSK
Bit Rates	2400 bps 1200 bps

## OPTIONAL MODEM AS IMPLEMENTED IN CHEETAH3 RADIO\*

### INTEROPERABILITY

All VHF/UHF Features are interoperable with the Cheetah3 Radio. Interoperability with other Military Radios is subject to their implementation of MIL-STD and STANAG protocols.

### VHF MODEM

MAIN FEATURES	
Narrowband Data	Up to 48000 bps in 12kHz
Wideband Data	Up to 96000 bps in 24 kHz
Standards and Compliance	MIL-STD & STANAG

### SUPPORTED WAVE FORMS

Proprietary

### SOFTWARE OPTIONS:

Digital Voice	600 <sup>1</sup> , 1200 <sup>1</sup> , 2400 Vocoder,
TWELP / MELPe <sup>2</sup>	Auto Data Rate Change
Data and Voice Encryption	AES-256 <sup>1</sup>

### NOTES:

<sup>1</sup> – Export Controlled\*

<sup>2</sup> – US Only

Specifications may change without prior notice. Please verify updated specifications on our web site and reconfirm on order.

\* Denotes Optional Items and Features



MILITARY  
COMMUNICATION  
SYSTEMS

Sat-Com (PTY) Ltd

2 Jakaranda Street  
Suiderhof  
Windhoek  
Namibia

Tel: +264-61-374700

Fax: +264-61-251615

Email: sales@sat.com.na

www.sat.com.na



Management  
System  
ISO 9001:2008

www.tuv.com  
ID 910509229