

SATCOM

WIDEBAND MILITARY
SDR RADIO



Leopard 1

H - 1.6 MHz to 30 MHz

HV - 1.6MHz to 170 MHz

VU - 30MHz to 512 MHz

HU - 1.6 MHz to 512 MHz

GTAU - 112MHz to 160MHz

GTAU - 225MHz to 400MHz

VERSATILE MILITARY COMMUNICATIONS

Leopard 1

H - 1.6 MHz to 30 MHz **HV** - 1.6 MHz to 170 MHz **VU** - 30 MHz to 512 MHz
HU - 1.6 MHz to 512 MHz **GTAV** - 112 MHz to 160 MHz **GTAU** - 225 MHz to 400 MHz



DURABLE AND TOUGH DESIGN TO MIL-STD-810G

The Leopard radio is the lightest and compact wideband military radio in its class, weighing only 3.5kg without battery. The battery options are Li-Ion packs at 13Ahr (1kg) or 26Ahr (1.8kg). The enclosure is milled from T6-Aluminium; surface treated and powder-coated to ensure ingress protection at a depth of 3meters for a duration exceeding 3 hours.

STANDARD FEATURES

Standard integrated features include Antenna Tuner, Forward and reflective power Indication, SWR and S-Meters, Frequency Jog, Compandor, Noise Reduction, Satellite Position Receiver, Ad-Hoc Channel Scan, SelCall, Text/Data Modem, Voice Scrambler, Zeroize and built-in battery charger.

Interface capabilities allow for all kinds of Headsets, Handsets, Intercom, ROIP, Cross Patch (Relay / Repeater), RF power Amplifier and External Tuners.

ECCM - UNCOMPROMISED COMMUNICATION

Communication Security includes COMSEC (Secure Digital Voice) which eliminates eavesdropping, and TRANSEC (Fast Frequency Hopping) for stealth operations and Jamming prevention. COMSEC and TRANSEC can be enabled simultaneously for the ultimate secure operations.

AUTOMATIC ANTENNA TUNING

Antenna Matching is optimized to VSWR of 1:1.5 or better with the built-in Antenna Tuner for Sectional Whip and Long Wire antennas from 1.6 to 30Mhz. Initial load measurement, tuning and storing of parameters are quick. Re-tuning from stored values with same antenna is rapid. When connected to an external tuner, the internal tuner is disabled and the same user steps controls the external tuner automatically. Forward Power, Reflected Power and VSWR is continuously displayed on the screen.

ENCRYPTION

The Radio can be set up by user to require a User PIN before booting up.
A username and a unique 128-bit user license key is required for any external connection via RS232.
The End User has capability to create its own ENCRYPTION keys for Voice, Data and Hopping with the Satcom Mission Planning (profiling) Application.

- Encryption of simple text with the standard built in modem is on EAS128.
- Encryption of Voice, Text and Data with the advanced internal modem is done on AES256.
- The Fast Frequency Hopping Algorithm has two user selectable options, OTP or AES128

Changing the encryption or hopping key during missions is quick.

COMBAT NET, TACTICAL CHAT, FILE TRANSFER & BATTLEFIELD AWARENESS

The Leopard1 SDR can be securely operated and controlled from Local or Remote Secured Proprietary and PC display devices for advanced applications.

- TacTalk Application adds tactical Encrypted DIGITAL VOICE, CHAT, TEXT, FILE Transfer and E-Mail.
- TacTalk+ Application adds Front-Line Battle Field Awareness.
- Tactical Data Terminals such as the ST-4 enabled Front-Line Battle field awareness without PC display devices.
- Legacy Radio networks can be tied into the Leopard1 SDR network with the ST-1 terminal

HANDSETS AND HEADSETS

The radio interface can accommodate a wide variety of audio devices which includes but is not limited to military-standard handsets, headsets with passive and active Noise Reduction, as well as VOX and Bone Transducer technology for a hands-free operation.

REPEATERS AND RE-BRO

By connecting any 2 Satcom radios with the AUX cable, a tactical repeater or re-broadcasting configuration is possible with minimal menu intervention. Purpose made repeater racks include a duplexer, band pass filter, power supply and charger for medium to long term repeater deployments. Repeaters and re-bro systems utilizing a Leopard and any legacy radio is possible using a cross patch box.

CONFIGURATION SOFTWARE APPLICATION

The Configuration Software runs on Ruggedised PC's, Laptops or Field Tablets with Windows, enabling users to configure radios with all network parameters such as Channels, Address Book, Quick Messages, Call Sign and ALE network.



MODEL	H	HV	HU	VU	GTAV	GTAU
1.6 - 30MHz (30W)	●	●	●			
30 - 88MHz (18W)		●	●	●		
88 - 170MHz (10W)		●	●	●		
170 - 512MHz (5W)			●	●		
112 - 160MHz (15W AM)					●	
225 - 400MHz (15W AM)						●

FEATURE SUMMARY	
Combat Net Radio Link Establishment	200 / 2000* Programmable 3G ALE 1 channel every 1.35 sec. 2G ALE 2 / 5 CH per second. SELCALL EIA (EEA, CCIR, ZVEI1, ZVEI2) *
Frequency Stability Modes	0.5 ppm / 0.05 ppm* USB/LSB, AM, FM, FSK, MSK (BPSK, QPSK, PSK, QAM, DSSS)*
Power Source	12 VDC (nom) 10 – 36 VDC (operational)
RF Impedance	50-ohm nominal, unbalanced
Dimensions	194W x 78H x 227D mm (excluding Battery) 194W x 78H x 318D mm (13 Ah Battery)
Weight	3.5 kg (excluding Battery)
Interfaces	Serial RS232, (*USB1.1, *Ethernet 10Base-T)
A/F Power + Distortion	External speaker 8 W in 4 ohm, THD 1% Internal Speaker 1 W in 8 ohm, THD 10%
Battery Capacity	Li-Ion (13.0 Ah) 1.2 kg each (Small Battery Pack) Li-Ion (26.0 Ah) 2.2 kg each (Large Battery Pack)
Expected Mission Time	48 hrs (1:1:30) with 13 Ah Battery in Standby mode. 72 hrs (1:1:30) with 26 Ah Battery in Standby mode. 20 hrs (1:1:30) with 26 Ah Battery in full COMSEC MODE
Standard Modem Modes	FSK/MSK
Bit Rates	2400 bps / 1200 bps
Audio Scrambling	Fixed tone inversion Hopping tone inversion*
Power Consumption	340 mA @12 V (Conditional muted)

TRANSMITTER	
Audio Bandwidth	300 to 2550/3000 Hz (Selectable)
Harmonic Suppression	>50 dB
Undesired Side-band Suppression	>60 dB
Spurious Suppression	>60 dB
Antenna Tuning Capability	3 m Whip (3 to 30 Mhz) Profiled Tune Automatic Antenna Tune 1.6 to 80 Mhz Tuner bypass selectable

RECEIVER	
Sensitivity	-125 dBm (SSB) 10 dB SINAD TYP. -116 dBm (AM) 10 dB SINAD TYP. -118 dBm (FM) 12 dB SINAD TYP.
Image Rejection	>80 dB
IF Rejection	>80 dB
Blocking	>90 dB
Audio Output	Handset: Via 6-way connector Internal Speaker: Selectable on/off
Noise Reduction	DSP Proprietary Compander (2:1)
Squelch Modes	Syllabic Voice Detect RF Signal Level CTCSS

STANDARDS	
Environmental	MIL-STD-810G
EMI/RFI	MIL-STD-461E
Operating Temperature	-30 to +65°C
Storage Temperature	-40 to +85°C

TRANSEC*	
FFH (Fast frequency Hopping)	
Hop Sequence	OTP (One Time Pad), AES128, User Specific
Hop Rate	1/2/5/10/20/50/100/200/400/600 hops per second
Hop Widths	100khz, 1,2,5,10,20,40Mhz wide / User defined frequency bands*
Hopping Key	8-digit decimal Key on OTP (One-Time-Pad) or AES128 More than 40,000 nets.
Synchronization	SPHS (Satellite-Pulse-Hopping-Syn-chronization; GPS / GLONASS) OTAHS (Over-The-Air-Hopping-Syn-chronization) *

COMSEC*	
SDV* (Secure Digital Voice)	AES256 Encryption

VOCODER*	DATA RATES (B/S)
MELPe	2400, 1200, (600, 480, 300) *
TWELP	2400, 1200, (600, 480, 300) * (Export Controlled)

DATA CAPABILITIES*	
Advanced Modem	HF / VHF
Narrowband Data	Up to 64000 bps in 12kHz
Wideband Data	Up to 128000 bps in 24 kHz
SUPPORTED WAVE FORMS	PSK / MSK / QAM Proprietary
Standards and Compliance	
MIL-STD & STANAG	

OPTIONAL MODEM	
INTEROPERABILITY	
All VHF/UHF Features are inter operable with the Cheetah3 and Cheetah 3+ Radios.	
Interoperability with other Military Radios is subject to their implementation of MIL-STD and STANAG protocols.	

IMPLEMENTABLE HF FEATURES*	
SSB data Up to 9600 bps in 3 kHz ISB data Up to 19200 bps in 2x3 kHz Standards and Compliance MIL-STD & STANAG	

SUPPORTED WAVE FORMS		
MIL-STD-110A	STANAG 4415	STANAG 4481
MIL-STD-110B	STANAG 4285	STANAG 4065
MIL-STD-110C	STANAG 4529	STANAG 4539

SOFTWARE OPTIONS:	
Automatic Link Establishment (ALE)*	
Radios operates in full COMSEC (SDV) and TRANSEC (FFH) Modes during ALE operations.	
Radio can offer either one or both standards of ALE.	

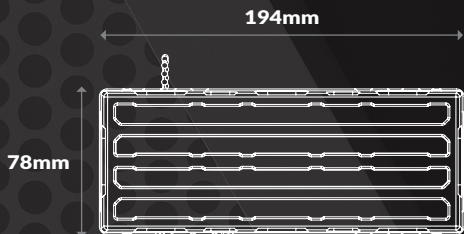
3G ALE (ARCS)	2G ALE
STANAG 4538 FLSU xDL	MIL-STD-188-141B / FED-STD 1045 / FED-STD 1049

TacTalk	RC50
Messaging, Chat, E-mail, File Transfer	Messaging, Chat, E-mail, File Transfer

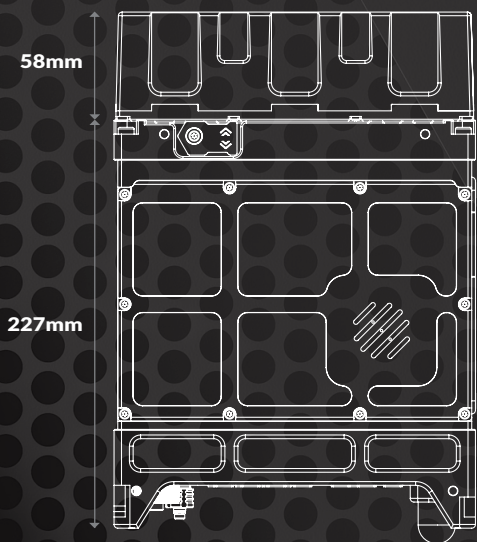
TacTalk-plus
Messaging, Chat, E-mail, File Transfer plus Front line Battlefield Awareness.

* Optional Choices

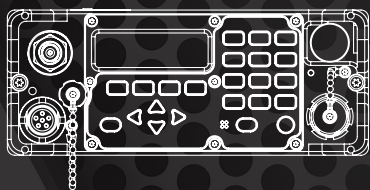
Product specifications are correct at time of print. Please verify specifications with our sales department.



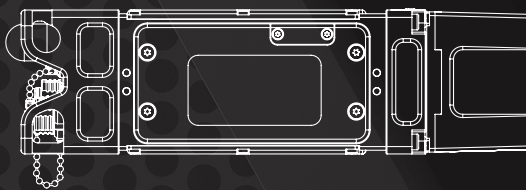
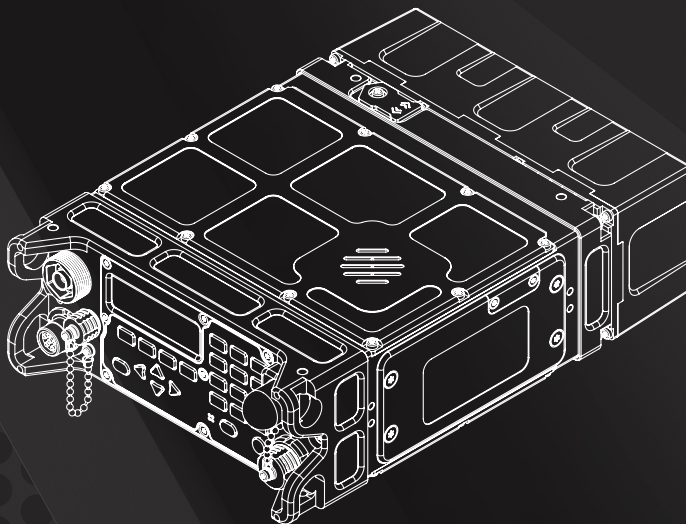
REAR VIEW



TOP VIEW



FRONT VIEW



SIDE VIEW



SATCOM
SECURE AND TACTICAL COMMUNICATIONS
www.sat.com.na

Tel: +264-61-374700
Email: sales@sat.com.na
2 Jakaranda Street
Suiderhof
Windhoek, Namibia