

VHF/UHF PORTABLE MONITORING AND DF EQUIPMENT

MODEL: VHF-EWT-X

DETECT • INTERCEPT • IDENTIFY • LOCATE • ANALYZE • DECIDE • ACT

COMPACT. POWERFUL. PRECISE. BUILT FOR MODERN WARFARE.

SYSTEM OVERVIEW

The VHF-EWT-X is a next-generation, portable Electronic Warfare (EW) system designed to detect, intercept, identify, locate and analyze a wide range of radio frequency signals. It delivers real-time situational awareness, accurate direction finding, content recovery (except encrypted signals) and comprehensive threat intelligence in a compact, rapidly deployable package.

- WIDEBAND MONITORING**
30 MHz – 3 GHz
- REAL-TIME DIRECTION FINDING**
AOA / TDOA / Hybrid
- SIGNAL ANALYSIS & CONTENT RECOVERY**
- THREAT LIBRARY & AUTO RECOGNITION**
- LOOK-BACK COLLECTION & PLAYBACK**



GENERAL CHARACTERISTICS & DESIRED OUTPUT

- a. Intercept, monitor, finding direction and relocation of all types of signals within range with high accuracy both for fixed and moving targets.
- b. Perform simultaneous monitoring and recording of individual frequencies, lists of frequencies and frequency ranges.
- c. Detect and configure burst and frequency agile short-time signals with subsequent automatic processing including content recovery (except encrypted signals) available in the library.
- d. Classify, demodulate, decode a frequency spectrum and provide output in terms of audio, graphical and other functional formats.
- e. Carry out online and offline analysis of available spectrum in the library.
- f. Content recovery shall be done (except encrypted signals). A comprehensive array of modulation types should be available.
- g. Should support look back collection to go back in time and collect and perform required signal analysis.

MISSIONS SUPPORTED

- | | |
|-----------------------|----------------------------------|
| SIGINT / COMINT | ELINT / RADAR DETECTION |
| COMMUNICATION JAMMING | DRONE DETECTION & NEUTRALIZATION |
| BATTLEFIELD AWARENESS | FORCE PROTECTION |

KEY FEATURES

- Real-time signal detection and classification
- Direction finding (DF) and geolocation
- Electronic attack (EA) and jamming (optional)
- Threat library & auto-recognition
- Look-back collection & playback
- Modular, transportable design
- Secure, encrypted communications
- Remote operation & control
- All-weather, rugged design
- Low SWaP (Size, Weight and Power)
- Easy to deploy and operate

MONITORING RECEIVER SPECIFICATIONS

Frequency Range	30 MHz to 3 GHz
Frequency Accuracy	< 1 ppm
Receiver Sensitivity	≤ -110 dBm or more
Real Time Bandwidth	40 MHz (Narrow & Wideband, Multiple Channels)
Tuning Resolution	1 Hz
Demodulation Techniques	<ul style="list-style-type: none"> • AM, FM, LSB, USB, ISB, CW, IQ, QM, Pulse (All Variations) • PM, FSK, PSK, QAM, All SDR Demodulations • Inclusion of Latest Demodulation Techniques
Scan Characteristics	
• Memory Scan	Min. 4 Memory Scanning Plans (Max. up to 1000 Frequencies)
• Frequency Scan	Min. 2 Programmable Sub Bands
Other Capabilities	<ul style="list-style-type: none"> • Simultaneous monitoring & recording • Burst & frequency agile signal detection • Look-back collection & offline analysis • Audio, graphical & data output formats

DIRECTION FINDER SPECIFICATIONS

Frequency Range	30 MHz to 3 GHz
DF Accuracy	≤ 3° RMS
Minimum Signal Duration	1 ms
DF Rate	Min. 20 DF results/min (Depending on resolution)
Scanning Speed	Up to 10 GHz/s
Direction Finding Mechanism	Correlative Interferometer DF (Real-time AOA) TDOA and Hybrid AOA/TDOA Mechanism Supported
Gain Control	Manual and Automatic

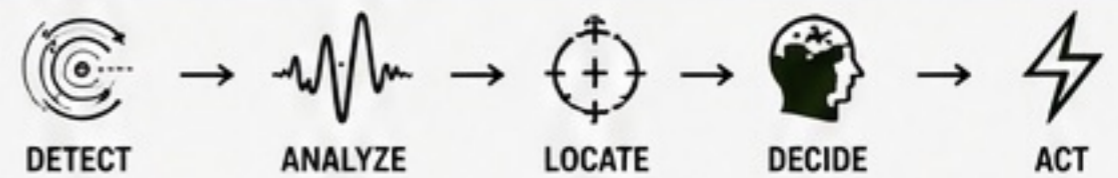
TECHNICAL SPECIFICATIONS

Operating Temperature	-30°C to +60°C
Power Supply	Battery / Generator / Solar (Optional)
Power Consumption	< 300 W (Typical)
System Weight	~80 kg (Configurable)
Deployment	Rapid Deployable (Fixed / Mobile / Manpack)
Communication	Encrypted IP / SATCOM / HF / VHF / UHF
Environmental	MIL-STD-810G Compliant
MTBF	> 10,000 Hours

SYSTEM ARCHITECTURE



OPERATIONAL WORKFLOW



LOOK-BACK COLLECTION & PLAYBACK
Go back in time, collect and perform required signal analysis

APPLICATIONS

- TACTICAL OPS
- BORDER SECURITY
- MARITIME DOMAIN AWARENESS
- AIR DEFENSE SUPPORT
- HOMELAND SECURITY
- CRITICAL INFRASTRUCTURE PROTECTION

WIDEBAND MONITORING | PRECISE DIRECTION FINDING | ADVANCED SIGNAL ANALYSIS | MISSION-READY ANYWHERE

DETECT FURTHER. | DECIDE FASTER. | DOMINATE THE SPECTRUM.

ANALYZING CAPABILITY



SOFTWARE

All required software for instant analysis to be installed in the system.



SIGNAL INTERCEPTION

- (1) For encrypted and hopping signals, at least finding the emitter location is appreciated.
- (2) Digital recording and replay for further use of received signals.
- (3) SDR interception to be done automatically utilizing different techniques.



AUTOMATIC CLASSIFICATION AND PROCESSING

Automatic/manual signal processing with user-defined rules via script editor. Operator can classify and process signal manually with offline analyzer.



LIBRARY / DATABASE

- (1) The system contains a comprehensive database which automatically detects, demodulates and decode any signal.
- (2) It will show alarm on the previously recorded signal, if it appears again.



SIMULTANEOUS RECORDING OF MULTIPLE SIGNALS

- (1) It shall provide enhanced capabilities through post processing of recorded signals.
- (2) Provide systematic management of recorded signals.



HARDWARE ARCHITECTURE

The proposed system should be able to integrate with the same manufacturer's existing systems.



ANALYZING CAPABILITY (CONTINUED)

- (1) Minimum 02 narrowband channels are to be analyzed at a time.
- (2) Universal and a wide range of latest decoders are also to be installed to analyze complex signals including SDR signals. List of such decoders should be provided.

(a)	(b)	(c)	(d)
<ul style="list-style-type: none"> • Narrowband Analysis • Wideband Spectrum Analysis • Waterfall & Spectrogram • Real-time Signal Monitoring 	<ul style="list-style-type: none"> • Latest Digital Decoders • SDR Signal Decoding • Protocol Decoding • Demodulation & Decryption (Except Encrypted) 	<ul style="list-style-type: none"> • Automatic Classification • Rule-based Processing • Script Editor (User-defined Rules) • Manual Analysis 	<ul style="list-style-type: none"> • Comprehensive Signal Library • Auto Detection & Recognition • Alarm on Previously Recorded Signals • Library Update Support

ADDITIONAL ANALYSIS FEATURES

- | | |
|--|---|
| <ul style="list-style-type: none"> ✓ Encrypted & Hopping Signal DF ✓ Look-back Collection & Playback ✓ Multi-channel Recording & Analysis | <ul style="list-style-type: none"> ✓ Digital Recording & Replay ✓ Offline Analysis & Reporting ✓ Data Export in Multiple Formats |
|--|---|

ANTENNA SYSTEM



GENERAL FEATURES

- (1) It should be Omni directional antenna used for DF functionality and also compatible with the existing system.
- (2) Tripod to be provided for use on light vehicle and ground.
- (3) Segments to be mentioned.
- (4) It should provide suitable combination for flexible antenna operation.



TECHNICAL FEATURES

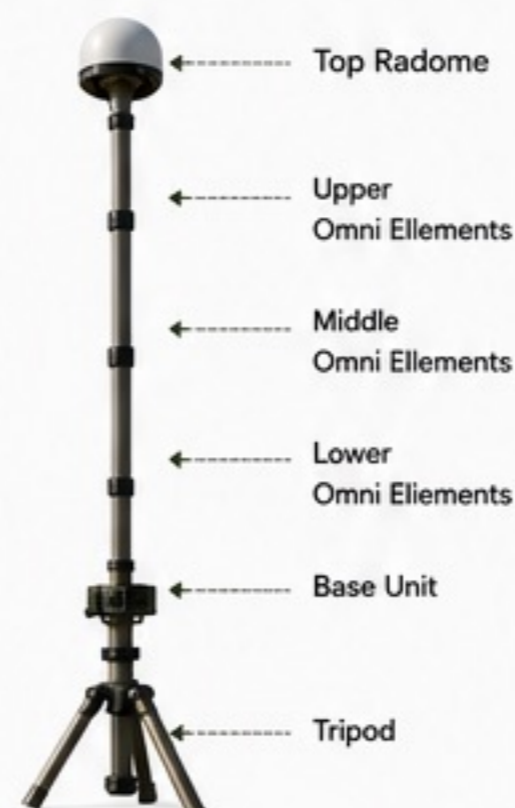
- (1) Frequency range: 30 MHz to 3 GHz (for direction finding and monitoring purpose). However, wider band with multiple sub ranges are also appreciated.
- (2) Capability: Suitable for monitoring and Direction-Finding operation
- (3) Frequency sub-ranges:

SUB-RANGE	FREQUENCY RANGE
(i) 30 – 88 MHz (VHF Low Band)	30 – 88 MHz
(ii) 88 – 174 MHz (VHF High Band)	88 – 174 MHz
(iii) 174 – 512 MHz (UHF Band)	174 – 512 MHz
(iv) 512 MHz – 1 GHz (Extended UHF Band)	512 MHz – 1 GHz
(v) 1 GHz – 3 GHz (SHF Lower Band)	1 GHz – 3 GHz

- (4) Polarization: Vertical
- (5) Field Strength Capability: $\leq 10 \text{ dB}\mu\text{V/m}$



ANTENNA CONFIGURATION (SEGMENTS)



ACCURACY

$\leq 3^\circ \text{ RMS}$
(on calibration base and for 30 dB SNR)



WEIGHT WITH ALL ACCESSORIES

Maximum 20 Kg

DEPLOYMENT OPTIONS



GROUND DEPLOYMENT



VEHICLE MOUNTED

ANTENNA HIGHLIGHTS

- ✓ Omni-directional for 360° Coverage
- ✓ Compatible with Existing Systems
- ✓ Wideband Frequency Coverage (30 MHz – 3 GHz)
- ✓ High Accuracy DF Performance
- ✓ Lightweight & Portable
- ✓ Flexible Configuration & Easy Deployment



PORTABLE



RAPID DEPLOYMENT



HIGH PERFORMANCE



MULTI-MISSION CAPABLE



BUILT FOR MODERN WARFARE

POWER SYSTEM



The system is designed to operate reliably from a stable AC power source with integrated UPS support for continuous mission operation.

POWER SOURCE & BACKUP



POWER SOURCE

- 1. Through AC Inlet.
- 2. Comply (Brand: Testform, model: 63XN) Online UPS, will be backup 30 min.

POWER SYSTEM SPECIFICATIONS

	Rated Voltage	AC 220 Volt (±10%)
	Rated Frequency	50 Hz for AC
	Power Source	Through AC Inlet
	UPS Compatibility	Comply
	Recommended UPS	Brand: Testform
	UPS Model	63XN
	Backup Duration	Minimum 30 Minutes
	Power Distribution	Integrated protected distribution system
	Deployment Type	Fixed / Mobile / Field Deployable

COMMON FEATURES OF THE SYSTEM



GRAPHICS USER INTERFACE (GUI)

- GUI shall provide various features frequency, bandwidth, and demodulation, squelch etc separately.
- Emitter location is displayed on the map with various details of the location. Especially, Latitude-longitude to be displayed on both the online and offline map. It should display the bearing as well.

COMPLY



MAP INTEGRATION

- System software shall integrate digital topological base map of Bangladesh (and surrounding), UTM map (BUTM 2010), online open street map, Google map etc in the user interface.
- Both online and offline map (downloaded) to be provided and should be installed as and when required.

COMPLY



CONTROL SOFTWARE

- Software shall provide various function like Measurement, Calibration, Sweep Functions, Trace Functions, Marker Functions, pan Display Function, Monitor receiver functions, Signal analysis function, Task and result management functions Band scan, Channel scan, features etc.
- It shall include mission planning tools/software for the sitting of various stations on the control software map display before moving to the ground.

COMPLY



DATA TRANSFER / STORAGE CAPACITY

- It shall transfer data using flash drive/ external hard disk/ removable disk etc.

YES, FLASH DRIVE



DETERMINATION OF OWN LOCATION (GPS & COMPASS)

- Built-in Electronic GPS to find Lat -Long of own position precisely.
- Electronic compass installed with the system.

COMPLY



INTER COMMUNICATION SYSTEM

- All the stations (both master and slave) are under same network arrangement. Both the station should be connected through a stable radio network for inter-connectivity.
- For this purpose following shall be used:
 - VHF 40 Watt Radio with encryption facilities.
 - Alternative inter communication facilities



INTER-OPERABILITY

The equipment must be compatible and inter operable with the existing monitoring.

COMPLY



EXISTING SYSTEMS



COMPATIBLE



INTEROPERABLE



RELIABLE OPERATION



Designed for reliable, secure and efficient operation in all mission environments.



VHF RADIO LINK

VHF Radio for
Monitoring Receiver and Direction Finder

★★ **MILITARY VERSION** ★★



TECHNICAL SPECIFICATIONS

a. Frequency Range	30 to 88 MHz
b. Channel	5
c. Step Size	30 KHz
d. Power Output	Low: To be mentioned. High: Minimum 40 Watt.
e. Communication Range	Plain: 2 km Urban: 1 km Hilly: 700 meter
f. Electronic Counter Counter Measure (ECCM)	Radio equipment must have in built ECCM features
g. Encryption	AES 256
h. Data Interfaces	Ethernet 8-10 Mbps capacity.
j. Antenna	Flexible steel blade which heavy-duty flexible whip (often gooseneck or foldable to allow tight field maneuvers). 350 MM highly portable. Gain: -15dBi to -5 dBi at 30MHz up to -2dBi to 0dB near 88 MHz.
k. Weight	3 Kg
l. Battery	1. Battery Life: 1000 cycles 2. Type: Lithium

ENVIRONMENTAL CONDITIONS



(1) **Radiation Protection**
Safety arrangements to be provided.



(2) **Temperature**

- Operating temperature range: 0 °C to +55 °C.
- Storage temperature range: -40 °C to +70 °C.



(3) **Humidity**
Minimum 95% non-condensing with self-cooling mechanism and minimum noise level.

MECHANICAL RESISTANCE



(1) **Vibration**

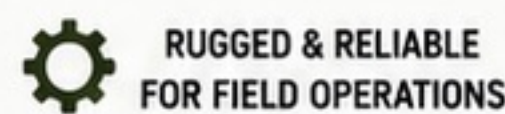
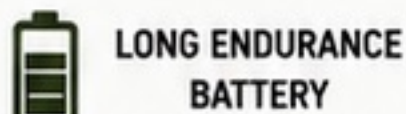
(a) Sinusoidal
As per MIL-STD-810E
Procedure 514.5

(b) Random
As per MIL-STD-810E
Procedure 514.5



(2) **Shock**

As per MIL-STD-810F
Procedure 516.5.



★★ **BUILT FOR RELIABILITY. DESIGNED FOR MISSION SUCCESS.** ★★