TECHNOLOGY AND CAPABILITY COMPARISON OF UAV JAMMING SYSTEMS

The UAV Jamming Platforms

This comparison focuses on the Vanguard ECM, Vanguard VEP1, and SkyGuard systems, all designed primarily for counter-unmanned aerial vehicle (C-UAV or C-UAS) operations, with additional capabilities in some cases like RCIED prevention and communications inhibition.

Vanguard VEP1

The Vanguard VEP1 Manpack Jammer is the jamming solution when EOD Operators require a mobile ECM technology. It is ideal for dismounted deployments, for soldiers on patrol, away from static or base protection or from fixed or vehicle-based systems.

The Vanguard VEP1 Manpack Jammer.

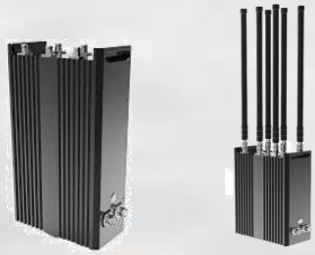
Vanguard ECM

Vanguard ECM High-Power Jammer.

Vanguard ECM is a high-power jamming system designed to prevent the illegal flying of drones, detonation of RCIEDs, and tearing down communications links. The system is a highly flexible software defined Electronic Warfare tool. Vanguard units can be used as a single unit or stacked to form a bigger, more powerful system.

SkyGuard

SkyGuard is a powerful and fully autonomous counter-drone jamming system designed for 24/7 defence against unauthorised UAVs. Integrated with detection tools, SkyGuard offers near-zero false alarms, IFF (Identification Friend or Foe), and immediate jamming upon detection without requiring line-of-sight.



SkyGuard Autonomous Jamming System.

The following tables summarises key technical specifications and capabilities based on latest data from product specification sheets. Note that jamming range can vary based on environmental factors, drone type, and configuration; where not explicitly stated (e.g., for Vanguard ECM), estimates are inferred from power output. Power output for SkyGuard has high Jammer-to-Signal (J/S) ratio confirms strong effectiveness within its' range.

TECHNOLOGY AND CAPABILITY COMPARISON

Category	Vanguard ECM	Vanguard VEP1	SkyGuard
Deployment Type	Vehicle-borne or portable (single or stacked units)	Manpack portable (dismounted, rapid deployment)	Semi-portable autonomous device (stationary or relocatable, integrates with detection)
Frequency Range	20 - 6000 MHz (full coverage across variants)	Variants: A (20-520 MHz + 500-3000 MHz), C (500-3000 MHz + 2500-6000 MHz), D (20-520 MHz dual)	Consumer and commercial ISM bands (e.g., drone-specific like 2.4 GHz, 5.8 GHz; multiband)
RF Output Power	Single: 150-200 W; Stacked: 350-750 W (configurable)	Variants: A (20 W low + 40 W mid), C (40 W mid + 15 W high), D (20 W low dual); Total 40-60 W	Not specified (high J/S ratio >20:1 for effective jamming)
Jamming Range	Not specified; high power suggests >3 km (effective for wide-area protection)	<3 km (omni-directional bubble)	Up to 3 km radius
Weight	Single: <14 kg; Stacked: <30-60 kg	<10.6 kg (including battery; plus, antennas)	12 kg
Dimensions	Single: 350 x 340 x 120 mm; Stacked: Up to 350 x 340 x 438 mm	283 x 335 x 86 mm	120 x 405 x 240 mm
Operating Temperature	-20°C to +55°C	-20°C to +55°C	-20°C to +60°C
Power Supply	20-35 V DC (900 W max; vehicle alternator or battery)	BB2590 military battery (1+ hour runtime) or external supply	AC 100-240 V
Antennas Directionality	Provided (omni-directional implied for protective bubble)	Omnidirectional	Not specified; full 360° coverage across all airspace
IP Rating	IP65 (harsh environments)	IP67 (harsh environments)	Not specified
Key Features	- Software-defined with Jamming Engine for real-time waveforms - Modular stacking for scalability - Health monitoring, VSWR fault detection - Anti-tamper, zeroize - Web server control - Training, support, warranty options	- Adaptive jamming for real-time threats - Integrated web server and optional tablet control - Shock-absorbing mounts for vehicle dismount - Anti-tamper, zeroize, intrusion detection - Detection integration (PDD for up to 7 km passive RF detection)	- 24/7 autonomous operation with near-zero false alarms - High J/S ratio (>20:1) for close-range effectiveness - IFF (Identification Friend or Foe) - No line-of-sight required - Detection integration (SkyEye for immediate response)
Primary Capabilities	- C-UAS (illegal drone prevention) - RCIED detonation prevention - Communications link breaking - High-value asset protection (vehicle or fixed)	- C-UAS (autonomous defense) - RCIED prevention - Communications breaking - Ideal for EOD, patrols, rapid dismount	- C-UAS (drone jamming, focused on consumer/commercial threats) - Autonomous defense against known/unknown vectors

CAPABILITY GAP COMPARISON

Capability	Vanguard ECM	Vanguard VEP1	SkyGuard
Manpack/Portable Deployment (lightweight, battery-operated for dismounted use)	✓ (single units <14kg)	✓✓ (optimized <10.6kg manpack)	✓ (semi-portable 12kg)
Vehicle-Borne Deployment (integrated mounts for mobile ops)	✓✓ (stackable for high-power vehicle use)	✓ (quick dismount from vehicle)	✗ (stationary/ relocatable)
Broad Frequency Coverage (20-6000 MHz for diverse threats)	✓✓ (full range across variants/stacks)	✓ (variant-dependent, up to 6000 MHz)	✗ (limited to ISM/drone-specific bands)
High RF Output Power (superior for long-range jamming)	✓✓ (150-750W scalable)	✗ (40-60W)	✓ (high J/S ratio >20:1, effective but unspecified W)
Jamming Range (>3km potential)	✓✓ (inferred from high power)	✓ (<3km omni-bubble)	✓ (up to 3km radius)
Integrated Detection (e.g., passive RF for early threat ID)	✗	✓ (PDD up to 7km)	✓✓ (SkyEye integration for autonomous response)
Autonomous Operation (24/7 with minimal user input)	✓	✓	✓✓ (near-zero false alarms, IFF)
Software-Defined Waveforms (real-time adaptive jamming)	✓✓ (Jamming Engine for custom waveforms)	✓✓ (MD1 Technology for evolving threats)	✓ (assumed for modern C-UAS)
Anti-Tamper/Security Features (e.g., zeroize, encryption)	✓	✓	✗ (not specified)
Omnidirectional/360° Coverage (no LOS required)	✓	✓	✓
RCIED Detonation Prevention	✓	✓	✗ (drone-focused)
Communications Inhibition (beyond drones)	✓	✓	✗ (drone-specific)
Battery Power Option (for mobile/off-grid use)	✓ (vehicle battery/alternator)	✓✓ (BB2590, 1+ hour runtime)	✗ (AC 100-240V)
Harsh Environment Rating (IP65+ and wide temp range)	✓ (IP65, -20°C to +55°C)	✓✓ (IP67, -20°C to +55°C)	✓ (-20°C to +60°C, not IP-rated)
Scalability/Modularity (stacking or variants for customization)	✓✓ (stackable units)	✓ (variants A/C/D)	✗ (standalone device)

TECHNOLOGY AND CAPABILITY SUMMARY

In Summary

Vanguard ECM offers the highest power and broadest threat versatility (especially for vehicle/fixed high-threat environments); VEP1 provides the best tactical portability and integrated detection for dismounted users; SkyGuard delivers superior autonomous, drone-focused efficiency with excellent close-range performance for fixed-site security. Selection depends on deployment type (mobile vs. static), threat diversity, and power/mobility needs.

Vanguard VEP1

Vanguard VEP1 prioritises portability and mobility for dismounted operations, with lower power but integrated detection, ideal for tactical teams like EOD or soldiers on patrol.

Vanguard ECM

Vanguard ECM excels in high-power, scalable applications for broader threat coverage (e.g., wide frequency range for diverse signals), making it suitable for vehicle convoys or fixed installations requiring maximum output.

SkyGuard

SkyGuard stands out for autonomous, detection-integrated jamming with strong close-range performance (high J/S ratio), but it's more specialized for drone-specific bands and lacks the broad frequency/power of Vanguard systems. It's well-suited for 24/7 perimeter security where AC power is available.