



AN/GRC-245A(V) HCLOS™ Radio



Key features

- Tri-Band radio system:
Band 1, 3+ & 4
- Guaranteed high throughput at long range
- Up to 34 Mbps full duplex traffic rate
- Accepts any combination of traffic inputs:
 - Up to Two Digital Trunk Groups
 - One Ethernet 10/100BaseT interface (IP)
- Modular Software Architecture radio:
 - Battle proven SCA V2.2
- IPV4 and IPV6 SNMP Control

Combat proven performance & reliability now with Tri-Band capabilities

The AN/GRC-245(V) HCLOS™ radio is now capable of providing extra capabilities for the warfighter. The radio uses the Software Communications Architecture (SCA) of JTRS to provide operational flexibility and support future growth. The radio provides several operationally beneficial new options:

- A mast mounted RFU adds Band 4 operations
- An increase of traffic capacity to 34 Mbps
- An internal multiplexer accepts up to two digital trunk group inputs and interfaces directly with an Ethernet LAN for transmission over the radio link

The ability to support 16 Mbps and optionally 34 Mbps traffic allows the warfighter faster data transfer between headquarters and easier access to reconnaissance video/intelligence systems data.

Supporting IP Systems

Ultra Electronics continues to support the warfighter by providing communication

capabilities, designed for demanding tactical use. The LAN interface directly supports IP-based area communication systems; the digital trunk groups can be used at the same time to allow smooth migration from legacy systems to IP systems. This feature is also ideal for emergency communications restoration by National Guard and civil defense units and facilitates interoperability with coalition members.

The AN/GRC-245(V) is currently being fielded by the US, Canadian, Chilean, Jordanian and British armed forces and has been selected for the UK FALCON and the US WIN-T systems.

Deployment Flexibility and Frequency Agility

The HCLOS™ radio provides full-duplex operation in Band 1 (225 to 400 MHz), Band 3+ (1350 to 2690 MHz) and Band 4 (4400 to 5000 MHz). The radio consists of a baseband unit (BBU) containing the modem and power supply, a dual-band (Band 1 & 3+) RF unit (RFU) and/or a Band 4 RF unit. The Band 1/3+ RFU can be configured to provide a single band capability if required. The HCLOS™ Spectrum Scan allows the operator to verify that the allocated channel is clear and to determine the spectrum occupancy in the area, as seen by the radio, before setting up a link.

The HCLOS™ RFUs are completely weatherproof and can be deployed outside of the shelter. Using a single coaxial cable, the Band 1/3+ RFU can be deployed at the base of the mast up to 150 m from the BBU to increase the range capability of the transmission system.

The Band 4 RFU is a mast mounted unit that can also be deployed with 150 m separation from the base band unit. The mast mount unit interfaces to an external dish or flat panel antenna.

Multiple Traffic Rates

The HCLOS™ radio supports full-duplex digital traffic at up to 34 Mbps, and is suitable for passing Serial and IP traffic. The radio uses a software programmable digital modem with a bandwidth efficient, advanced Trellis coded modulation scheme providing for error correction.

An optional multiplexer provides the capability to interface to two serial trunk groups and an Ethernet LAN allowing existing systems to increase the data carried by the LOS radio.

Link Alignment Aids

A Digital Voice Orderwire (DVOW) is provided for link engineering. As a link alignment aid, a high-sensitivity orderwire only mode allows rapid link establishment with misaligned antennas.

AN/GRC-245(V) HCLOS™ RADIO – specifications

Frequency Band

- Band 1: 225 to 400 MHz
- Band 3+: 1350 to 2690 MHz
- Band 4: 4400 to 5000 MHz

Channel Spacing

- 125 kHz

Traffic Rates (full duplex)

256, 512, 576, 768, 1024, 1152, 1536, 1544, 2048, 2304, 4096, 8192, 8448, 12288, 13504, 14336, 16384, 16640 kbps with an option of 34368 kbps

Range Capabilities

(typical, for 99.9% availability, full duplex)

- Band 1 256 kbps – 16 Mbps
Greater than 50 km
 - Band 3+ 256 kbps – 34 Mbps
Greater than 55 km*
 - Band 4 256 kbps – 34 Mbps
Greater than 40 km
- * with optional Enhanced Power Mode

SCA Waveforms

- 32 TCM Spectrum Efficient family
- Binary FM (Band 1 & 3+) family
- DPSK EOW only
- Others available as an option

Spectrum Efficiency

- 3.3 bits/s/Hz with 32 TCM waveforms

Interfaces

- The following interfaces are provided for serial traffic:
EIA/TIA-422
G.703 (optional)
Very low latency for real-time control systems

Legacy Interoperability

The HCLOS™ radio supports full over-the-air interoperability with the legacy AN/GRC-226(V) MSE radio. This allows interoperability with unmodified AN/TRC-190(V)1 shelters when JNN is deployed. The radio SCA architecture facilitates the introduction of additional waveforms in the future.

Simple to Operate

The HCLOS™ radio features a proven user-friendly man-machine interface, using a two-line alphanumeric display and a 4 x 5 keypad mounted on the BBU. Control of the radio is menu driven with the ability to remotely control the far-end radio. The radio has an extensive built-in test capability, which allows fault isolation to the module level.

In addition, there are tests to help in system troubleshooting. These include a VSWR check on the cable and antenna system, a spectrum scan to verify the available spectrum, and statistics gathering for improved system maintenance.

ECCM Capabilities

ECCM features include full band Automatic Frequency Control (AFC), Adaptive Power Control (APC), error correction and a hidden framing scheme.

Other Features

The radio can be remotely controlled using the Simple Network Management Protocol (SNMP). The HCLOS™ radio operates on both AC and DC, and will automatically switch to DC when AC power is lost. The radio software can be downloaded from a personal computer for field upgrades.

IP Interfaces

- IP Traffic Interface (optional)
10/100BaseT Ethernet
- Non-Intrusive transport
Transparent to external encryptors and routers
- SNMP V2 and V3 Remote Control Interface
10/100BaseT Ethernet
(IPV4 and IPV6 compatible)

Security

- Embedded AES 256 bit Encryption (optional)

Transmit Power Control

- Automatic and manual with a 20 dB range
- With Enhanced Power Level (EPL) (Band 3+ only) for 3 dB additional transmit power

Emergency Orderwire

- 20 dB more sensitive than traffic mode operation

Power Requirements

- 115/230 VAC 50/60 Hz, < 300 W for Band 1 or 3+ < 200 W for Band 4
- 20-32 VDC, < 250 W for Band 1 or 3+ < 190 W for Band 4

Environmental

- Temperature
-40 °C to +55 °C operating
-40 °C to +71 °C storage

Altitude

- 3,000 m operating
- 12,000 m storage

Humidity

- 95% non-condensing

Mechanical Stress

- IAW MIL-STD-810F

EMC

- IAW MIL-STD-461F

Reliability

- > 5,000 hrs

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