



EPM Waveform SECOM-V R&S® GS 3003S

Secure communications for land forces

SECOM-V is a combination of COMSEC and TRANSEC for encrypted communications of voice and data in the frequency-hopping mode.

- ◆ High-jamming resistance
- ◆ Secure voice/data communications
- ◆ Flexible networking
- ◆ Crystal clear digital voice



ROHDE & SCHWARZ

Effective protection against eavesdropping and interference is more than ever indispensable in modern radiocommunications. This particularly applies to military radio services, where not only confidentiality of information is at stake but radio channels are also deliberately impaired by powerful jammers.

The new R&S®M3xR radio families use electronic protection measures (EPM) that are optimally adapted to individual missions and counter both of these threats. The new development SECOM-V from Rohde & Schwarz was implemented as a software option running on the R&S®MR3000 tactical transceivers, and covers all military VHF/UHF bands in the frequency range from 30 MHz to 108 MHz and 121 MHz to 512 MHz.

Networking

SECOM-V is attuned to the requirements of land forces, where the implementation and management of complex network structures for up to a few hundred users are in the foreground. The, as a rule, hierarchical command structure of the armed forces should be mapped as far as possible in the communications network. To this end, users can be organized in networks using the same frequency pool and the same key – one each for TRANSEC and COMSEC. Several networks can be grouped to form networks that are orthogonal to each other. This reliably excludes mutual interference and impairment.

Possible address modes are point-to-point, point-to-multipoint and broadcast.

Network synchronization and access can be controlled by each user. Methods such as late net entry and hailing are available for this purpose.

Time offsets between user units, the result of extended off-line periods for example, are compensated by the system either automatically or initiated by the user. System-inherent active and passive services are available for time acquisition:

- ◆ Late traffic entry automatically restores an interrupted connection (e.g. tunnel effect)
- ◆ Late net entry enables users with a valid key to access the network even if they have no network time (e.g. after replacing a radio)

Various frequency-hopping modes

SECOM-V offers different hop modes that can be selected by the user depending on the quality of the channel used (number of jammed frequencies, bit error ratio of available channels).

Standard frequency hopping (FH)

In this mode, the whole hop set (total of all channels in the network) is used for both link setup and user data transmission.

Digital fixed frequency (DFF)

In this case, link setup and data transmission are performed on a fixed frequency while synchronization of the frequency hop method is maintained.



High jamming resistance

A major feature of SECOM-V is its high immunity to jamming. This is due to frequency hopping and particularly to the excellent error correction of the FEC module. Reed-Solomon coding together with optional redundant transmission ensures reliable communications even on "poor" channels. A user data rate between 600 bit/s and 16 kbit/s can be selected depending on the channel quality. SECOM-V supports "autobaud", which means that it is not necessary to set the data rate at the receiver site. Information about the current data rate is transmitted automatically during link setup. The vocoder used for voice transmission uses a low data rate despite its excellent speech quality. Thus the advantages of FEC can also be used in voice communications.

COMSEC

The COMSEC part of SECOM EPM is based on the RSCA crypto algorithm newly developed by Rohde & Schwarz. This uses key lengths of up to 256 bits (approx. 10^{77} variants). Assuming even uninterrupted transmission, the same bit sequence would not be repeated until after about 2×10^9 years. The integrated RSCA crypto algorithm can be adapted to user requirements. With this concept, each user can benefit from a specific COMSEC module. The keys required for EPM can be distributed by appropriate hardware (fill gun) or serial cable directly from a PC. Irrespective of this, all keys used by SECOM are only available in "black" (i. e. encrypted) form.

Ordering information

Designation	Type	Order No.
EPM Waveform SECOM-V	R&S®GS 3003S	6095.4759.02





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