

MODERN MILITARY HF - ANTENNAS OF COMMUNICATION CARS

Igor Grigorov, RK3ZK
antentop@mail.ru

I have a small collection of information about old and modern military HF antennas used over the World. Presently, two modern automobile HF antennas are described at the article. The antennas are written "as it is," i.e., I give all information, that I have had. I know, the information is not complete at all, but, nevertheless, the information is interesting and it can help somebody to make own 'car antennas.'

The basic types of military antennas, which for a long time were used on communication cars, were construed during and before the World War II. After WW-II researches for new antennas for communication cars was renewed. Below we shall consider two new type of car antennas which have appeared in army after the World War-II still are in use on modern communication car. There are magnet antennas and DDRR antennas, that began to be used for communication cars (under my information) rather recently - in the middle of 70s years of the 20 century.

Mag Loop antennas of communication cars for 150-80 meters

As usual a magnet antenna of the range is installed on a communication car as it is shown in **Figure 1**. The magnet antenna ensures sure communication in radius of 200 kms at the daylight time and up to 400 kilometers at the night time.

Figure 1 Magnet antenna on a communication car

The magnet antenna at marching condition is installed parallel to the car roof (see. **Figure 1a**) and does not hinder to ride the car under low bridges or under trees in forests. The magnet antenna stands in operating position with the help of an electric motor or by operator hand. **Figure 1b** shows the zenith magnet antenna in the operating position.

The magnet antenna (item 2, **Figure 1b**) is tuned in resonance on the operating frequency with the help of variable capacitor (item 3, **Figure 1b**), which is weatherproofed by hermetic box (item 4, **Figure 1b**). The variable capacitor is turned with the help of an electric motor. The magnet antenna is drove by a small loop (item 1, **Figure 1b**) that is installed in

corner of the magnet antenna. Driven loop is coupled to the transmitter with the help of a coaxial cable by characteristic impedance of 100 Ohm. The sizes of the army magnet antenna for operation in 150 - 80 meters are exhibited in **Figure 1b**.

Mag Loop antennas of communication cars for meters

Also magnet antennas are used for operation in HF ra 60 meters. Such magnet antenna has smaller contrasted to magnet antenna intended for operation meters. Magnet antenna for 90-60 meters owing to sizes is installed or above the roof of the cabin of comn

car (see **Figure 2**) or at back edge of the car (see **Figure 3**). At this installation of mag loop the roof of the car is free to place other antennas or some more electronic equipment. The sizes of the magnet antenna for operation in 90 - 60 meters are exhibited in **Figure 2** and **Figure 3**.

Figure 2 Magnet antenna above the roof of the car cabin

Figure 3 Magnet antenna on the back edge of the car

The magnet antennas shown in **Figures 1-3** usually are made of an aluminum bent tube in 20- 40 millimeters in OD and 2-3 millimeters thick.

Magnet antennas for 150 -90 meters is not intended for operation when a communication car is moving. But Magnet antennas for 90 - 60 meters can be used when a communication car is moving.

Magnet antenna on a communication car

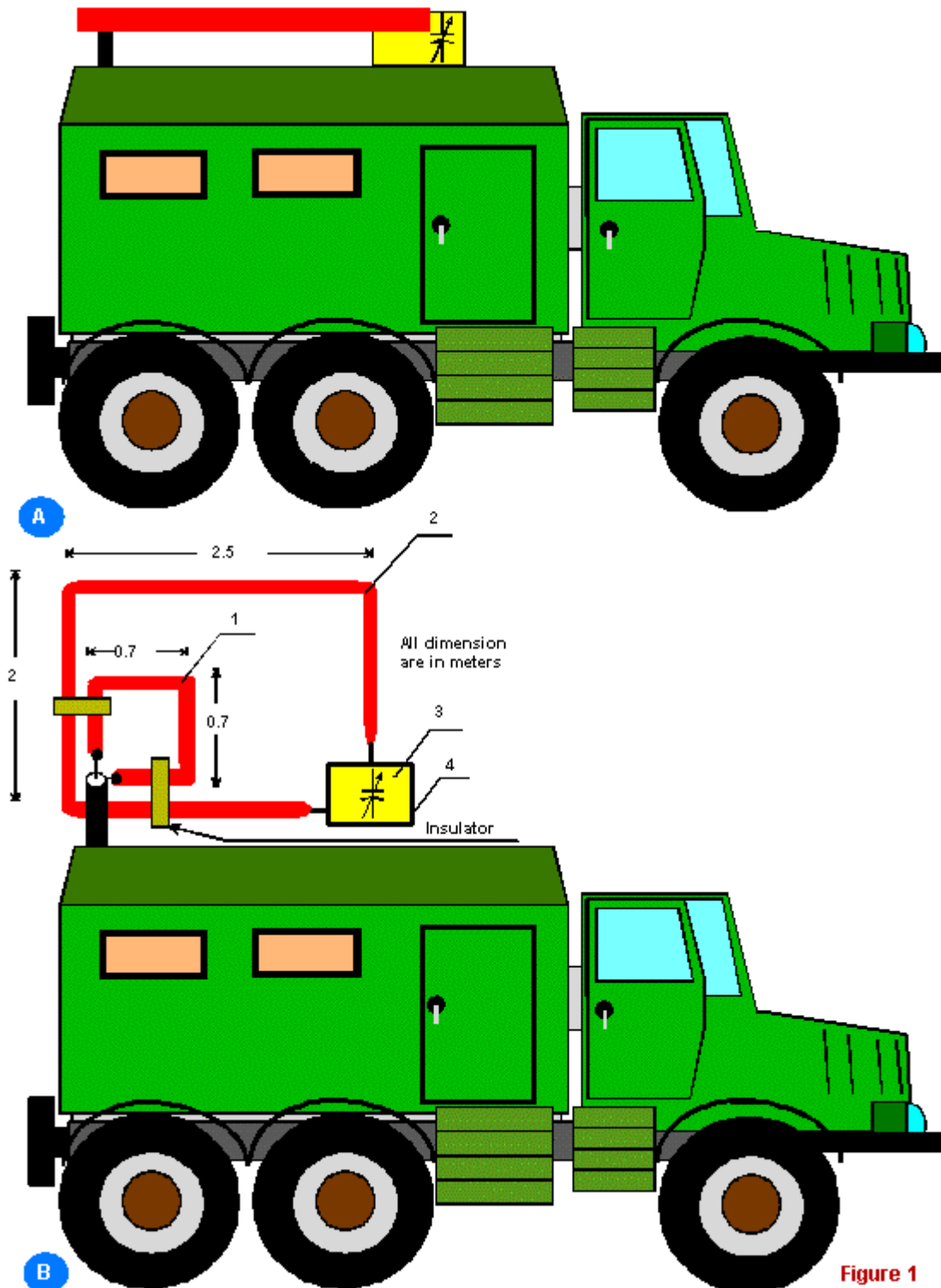


Figure 1

Antennas DDRR in military communication

Antennas DDRR are used in military communication of many countries. Figure 4 shows the schematic of antenna DDRR. Say simple the antenna represents a tube bent in shape of letter "L". The length of the 'L'

is little smaller the quarter wave of the high lower range of the antenna, but the length 'L' not less the lower operation range of the antenna. Antenna DDRR to resonance by the variable capacitor C which is driven by electric motor M. Antenna DDRR, as usual, is made of aluminum tube in 20-40 millimeters OD.

Figure 4 Schematic of Antenna DDRR of communication

Magnet antenna above the roof of the car cabin

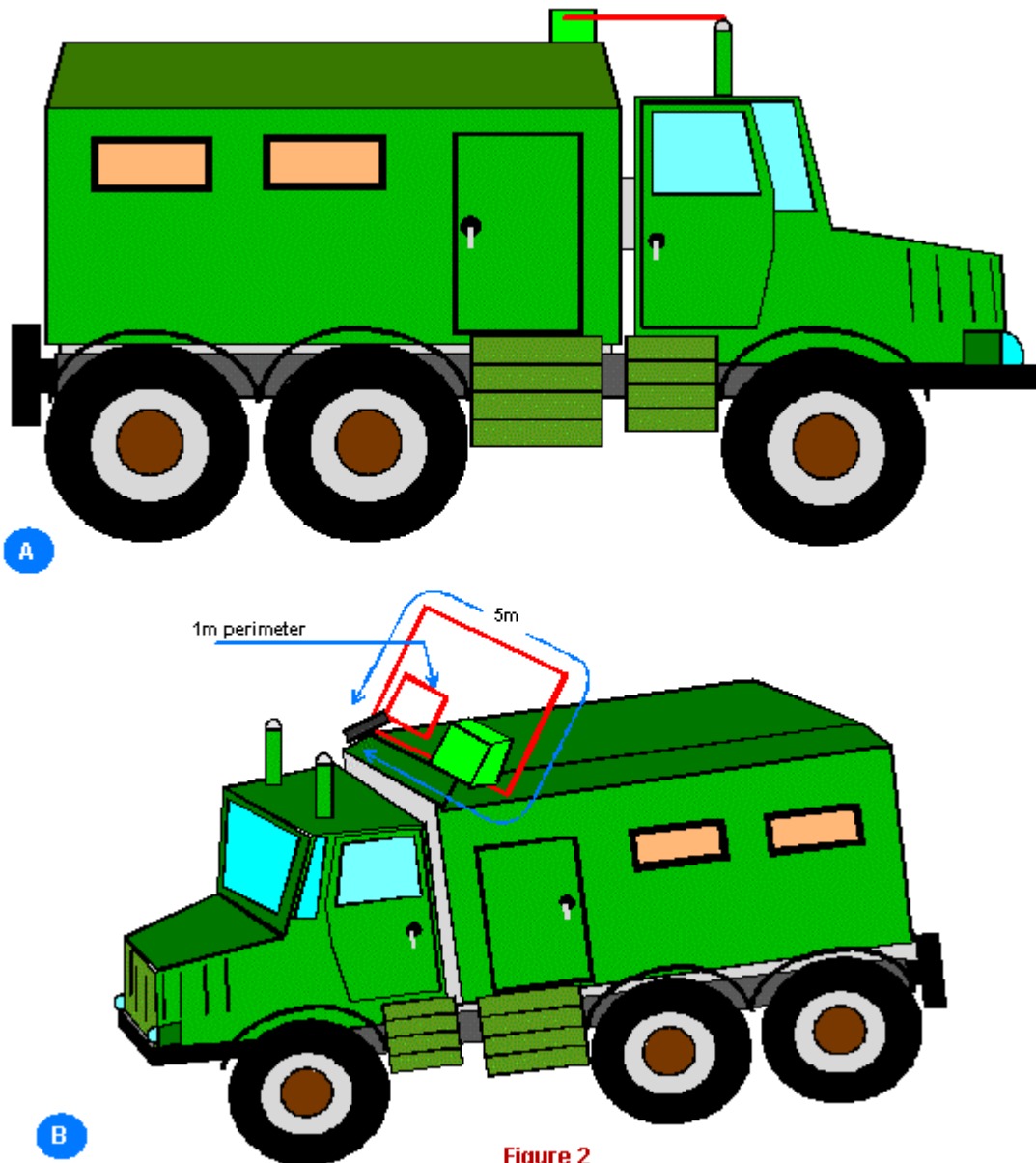


Figure 2

On military vehicles an antenna DDRR usually places on one of edges as it is shown in **Figure 5**. It allows to install other antennas on the roof of the communication car. Antennas DDRR often serve as enclosure of the roof.

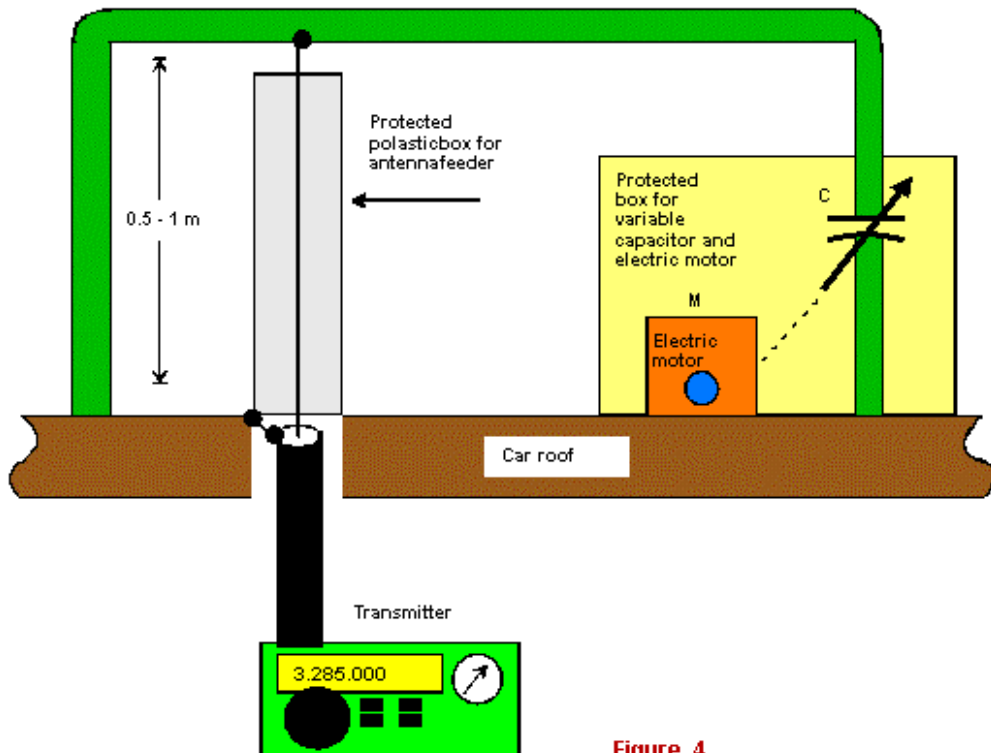
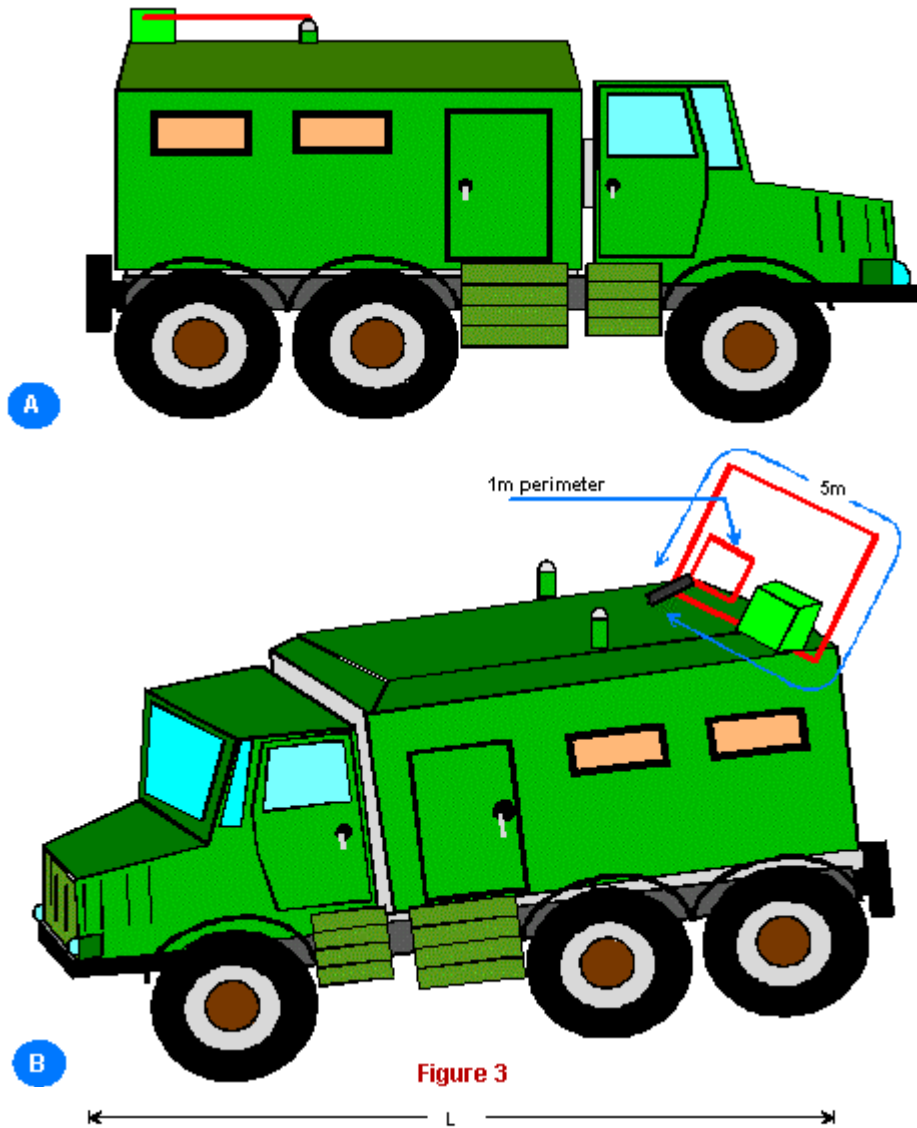
Figure 5 Antenna DDRR on military vehicle

Antennas DDRR also are used on some heavy tanks or BMI (battle machine of infantry). On this military vehicle the antenna DDRR serves as a rail for other hand. Antenna DDRR has mechanically strong design, so it is difficult to damage an antenna DDRR in battle.

Seldom use two antennas DDRR that fed with some phase shift to create special diagram directivity. **Figure 6** shows such antenna array.

Figure 6 Array of antennas DDRR

Antenna DDRR is very strong and allows to do comn when the car is moving. Radio amateurs also can use DDRR for the operation in ether at installation on the r car.



Antenna DDRR on military vehicle

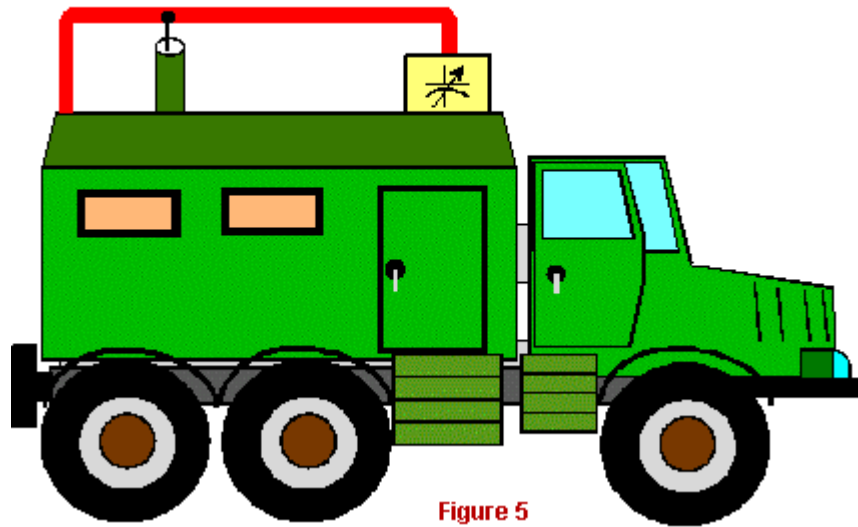


Figure 5

Array of antennas DDRR

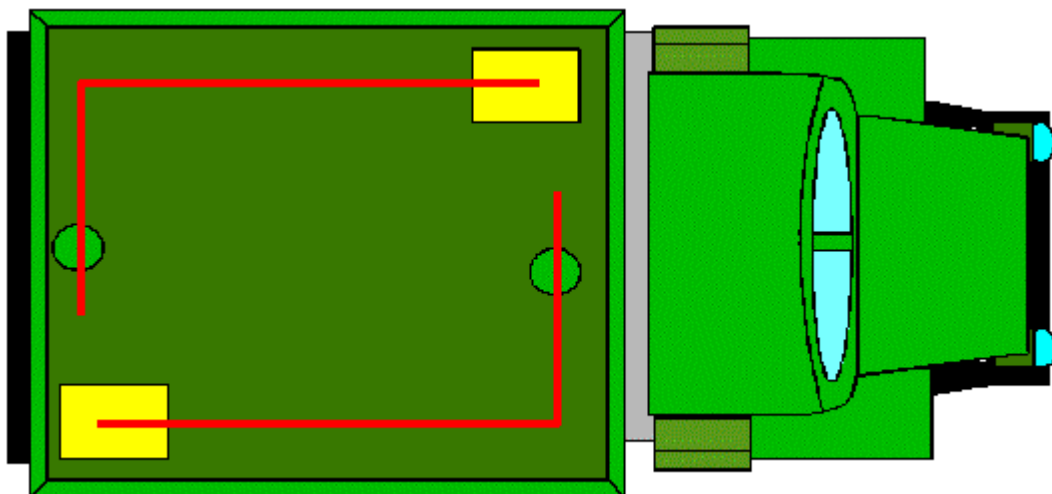


Figure 6

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