

Instructions for the installation and use of 2.4 GHz WLAN/WIFI equipment

By the means of Rantelon's 2.4 GHz WLAN/Wi-Fi equipment it is possible to enhance the range of a wireless local area network, be that inside a warehouse or a dwelling or from one house to another. It can also be used for sharing an internet online connection with nearby neighbours or friends who are not able to install LAN cables due to long distance or other obstacles. Trees, buildings and other obstacles decrease the allowable distance substantially.

SPA9-75F, SPAP9-75F and SRA6-75F antennas have the characteristic impedance of 75 ohms and can be used with inexpensive F-connectors and the standard 75 ohm characteristic impedance television cable (RG-6). At the same time, WLAN/WIFI devices (Access Points and PCI/USB cards) need to be equipped with transitions that transform the 75 ohm characteristic impedance into the 50 ohm input impedance of the device.

According to characteristic impedance, there are two types of cables: the 75 ohm and the 50 ohm ones. Different characteristic impedances of different cables is related to cable ability of enduring most power at 30 ohms of characteristic impedance, which is important for a transmitter with high-level output, while at 77 ohms of characteristic impedance cable attenuation is minimal. In the case of 75 ohm and 50 ohm characteristic impedance cables with equal outer diameter, the attenuation is smaller for the cable with 75 ohm characteristic impedance. Because of the low output, cable power tolerance parameters are not relevant, and thus the transition to 75 ohms at the given realization is completely justified.

SPA9-50N, SPAP9-50N and SRA6-50N antennas have the 50 ohm characteristic impedance and do not require a transformer for a connection with the WLAN/WIFI devices.

Since we are dealing here with high frequencies, the F-connectors need to be connected to the cable with special care. It is advisable to make the cable between the antenna and a WIFI device as short as possible and to avoid the prolongation of the cable with intermediate connecting transitions (male-male and female-female type of F-adapters), since at the high frequencies the losses caused by the poor matching of the transitions are great. RG-6 type of television cable would have the attenuation of 0.3 to 0.4 dB/m. Generally, the length of the cable should remain less than 20 meters, but it also depends on the strength of the signal. If the use of a longer cable is required, it is advisable to use the thicker RG11 type of a cable. The use of a coppered ironcore cable is also highly effective, since at high frequencies only a thin surface metal layer will conduct the signal.

If users are scattered, Access Point should use a omni-directional diagram (360 degrees) antenna (SRA6-75F or SRA5-50N) instead of a directional panel antenna. This antenna can be attached only in the 10 cm distance from the lower end. In that case, the attachment does not affect the parameters of the antenna. A plastic clamp can be replaced with a metal one.

Placing the panel antenna in front of a parabolic dish, it is possible to achieve the gain of *ca* 20 dB. However, one should take notice that in Estonia the permitted radiated power limit is at 100mW (RTL 2001, 130, 1890). In that case one should use devices that allow the lowering of transmitter output. For the given realization, one should use the SPAP9-75F or SPAP9-50N panel antennas that have a fastening hoop that allows them to be attached at the focus of the parabolic dish. In the case of an offset dish, the dish antenna should be attached to a mast so that a holder, that helps to keep the panel antenna in the focus of the parabola, would be directed upwards. Thus it is easier to direct the parabolic dish horizontally.



With the PDW2-2326F, PDW2-2226N , PDW2-2326F or PDW2-5060N(R) power divider it is possible to connect two antennas with a single device or two devices with a single antenna. In comparison to usual dividers employed in satellite television, PDW2-2326F has substantially smaller attenuation.