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FTTA essential element of 4G network construction



With the popularization of UMTS (3G) technology the demand for data transmission increased significantly. Basic GSM network was based on the use of 900 MHz frequency. With the development of GSM technology other frequencies were used in order to provide signals. Currently 1800 MHz, 1900 MHz as well as 2100 MHz and 2500 MHz frequencies are used. The use of these higher frequencies is associated with the increase of propagation losses in the wavelength square. Therefore, there is a need among operators to increase the capacity of their networks by building new base stations (BTS, node-B). Currently emerging 4G networks (LTE - Long Term Evolution) and also Wi-Max networks require larger number of base stations. In comparison to the 3G (HSPA), the number of antennas of Wi-Max technology has increased fourfold.

At the present time, the use of copper cables between the base station and antenna became financially unviable. Traditional cabling allows one to send signals to a maximum of 50 m. Copper cables are very susceptible to power loss which negatively affects network coverage (antenna). The latest system used in mobile technologies is FTTA (Fiber To The Antenna). It is a solution for connecting the base station (RRU) with antenna that uses optical fiber as a medium. With the use of special optical fiber cables it is possible to install systems which are resistant to a wide range of temperatures (operating temp. from 20 to 70°C). In the case of active devices with some part of commutation routed outside the housing, IP 67 hermetic connectors of ODVA type should be used.

The use of FTTA cables reduces the costs and simplifies the installation compared to copper cables. It also signifies a smaller number of signal strengthening devices and 40% lower power consumption of the system.

Methods of connecting FTTA between RRU and BBU

FTTA connection can be done in 2 ways:

- point – point
- point – multi-point

The point - point solution is a direct connection between RRU and BBU (base band unit). The advantage of using such a solution is simple and fast installation. However, in the case of a large number of antennas on one mast it is required to install up to a dozen or so FTTA cables.

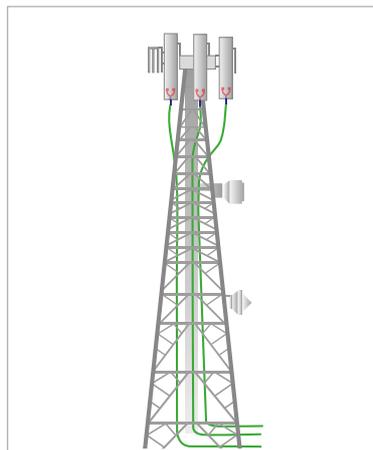


Fig.1. FTTA - connection of point - point type between RRU and BBU

Point - multi-point solution eliminates the problem of a large number of cables routed along the mast. When using antenna distribution box, installers have to lay one multifibre cable and connect the short FTTA cables between the distribution frame on RRU.

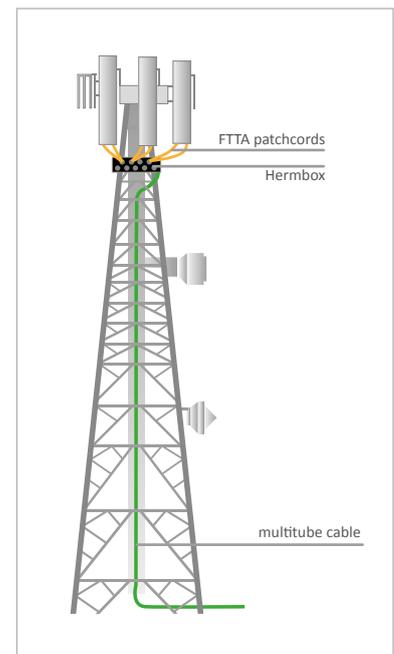


Fig.2. FTTA - point - multi-point connection between RRU and BBU

Comprehensive solutions for network construction in FTTA technology

We offer our customers comprehensive solutions and products for network construction in FTTA technology.

Depending on the active equipment, FTTA cables are made in:

- single mode version
- multimode version (mainly 50/125 um)



Pic. 1. Patchcord FTTA

Manufactured cables are available with connectors:

- LC, SC, E2000
- hermetic IP67 of ODVA LC type.

Customers can order cables of any length.

For customers who demand greater strength, FTTA cables are manufactured with final lengths secured with a special metal tube. This increases the cable's fault tolerance.



Pic. 2 ODVA LC Connector



Pic.3 FTTA cable with metal tube

The use of Hermboss antenna distribution box allows one to bring to the top of the mast one multifibre cable (up to 16 fibers - 8 full duplex channels), and then distribute the signals using short FTTA patchcords.



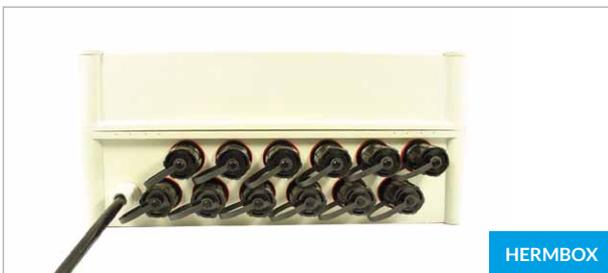
Pic. 4 Hermboss antenna distribution box

The advantage of using FTTA is a significant reduction of investment costs (CAPEX) by:

- space saving - reduction of signal strengthening devices
- significant reduction of the system's power consumption
- simplified installation - cables of smaller diameter and weight.



Cable with ODVA Connector



HERMBOX



LC connector in ODVA

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