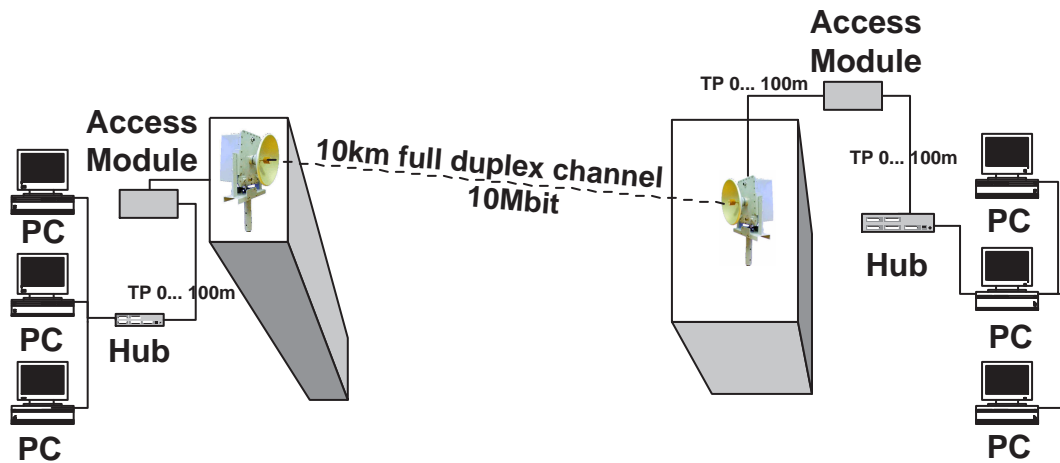


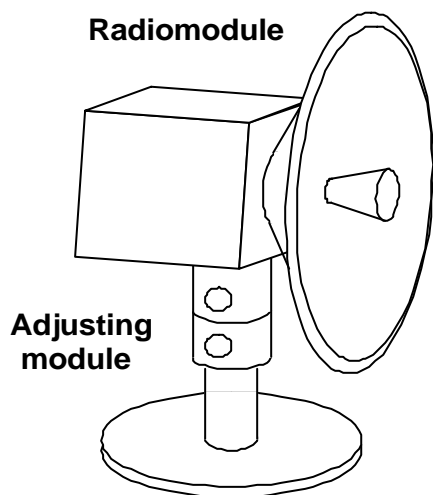
PPC-10/37000 WIRELESS BUILDING-TO-BUILDING LAN BRIDGE



PPC-10/37000 Technical Description

The wireless bridge consists of three main parts:

- Microwave Radio Module with antenna
- Adjusting Module (Stand and Calibrator)
- Module of Access (Radio/LAN converter)



Radio Module

Radio Module consists of microwave module, video module, power supply unit and antenna. The microwave module, video module and power supply unit are located inside whole hermetic case, to which one the antenna dish is firmly mounted. The radio module operates at temperatures from -50°C up to +70°C and does not require an additional protection from direct sunlight, rain/snow and other weather impact.

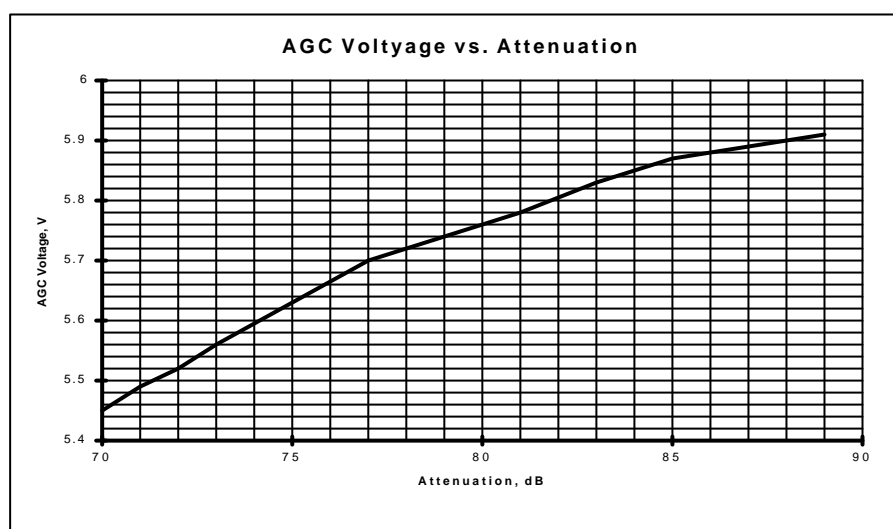
Frequency range of the radio module is at 37 - 39.5 GHz with emission bandwidth of 25 MHz. The nominal output radiating power is 50 mW. An antenna directional pattern is 2° at 35 dB. It allows to provide stable communication on a distance up to 10 km.

The Radio Module powering is from 220V main or from an optional 60V DC Power Supply for field use.

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Adjusting Module

The Adjusting Module serves the radio module as a stand and for calibration purpose. The traversing mechanism allows changing the radio module position on 360 ° in horizontal direction and 45 ° in vertical direction. Automatic Gain Control (AGC) voltage (see fig below), gated out on an external connector, is used for tuning direct laying to 'vis-à-vis module' at the other end of wireless bridge. Each radio module ships with an individual calibration notice.



The level of signal attenuation depending on the distance between two Radio Modules can be calculated using the formula:

$$W=20\lg (1.57*R) +48$$

Where W is attenuation (dB) and R is a distance between points of signal transmission (km).

Overall dimensions of the Radio Module with the antenna and adjusting module are no more than 50x50x50 cm, with mass is no more than 20.0 kg.

Wireless bridge PPC-10/37000 was specially designed for a transmitting of the true Ethernet 10 Mbps signals. That makes it absolutely transparent for any data and allows using it with no any additional software and hardware installed.

Connecting of the Radio Module to a LAN segment is made through a Module of Access using standard fifth category twisted pair cable (UTP5). Max UTP5 cable length between the LAN segment (computer) and Module of Access is 100 m, while max UTP5 cable length between the Module of Access and Radio Module is 100 m as well.

The Module of Access is designed for indoor use only. Overall dimensions of Module of Access are 24x12x7 cm, and its mass is no more than 2.0 kg.

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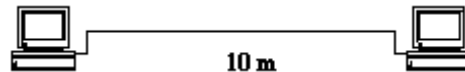
Full-scale testing PPC-10/37000 at urban area

PPC-10/3700 bridge was tested on the network testing area of ELVA-1 company. We made two measurements for the same network configuration:



The LAN segments were connected using the Radio Bridge on distance of 10 km, with a remote server to generate LAN traffic.

To compare, the same segments were combined using a 10 m segment of a UTP5 and a local server was used.



To provide a small level of traffic in this LAN, two computers we used as a configuration with Pentium server (the first LAN segment) and one workstation (the second LAN segment, point to point configuration). There was no difference in the access speed to "local" and "remote" servers in this configuration.

To test wireless channel at high level of LAN traffic we used a number of workstation to achieve 95% load. The same configuration was tested with wireless and UTP5 connection between LAN segments. At this level of load the access speed to a "remote server" was no more than 10 % less when compare with the "local server".

We found the performance decrease for full-load wireless channel depends on a number of collisions that occur because long distance packets delays at the channel. The shorter a wireless channel is, the smaller performance decrease occur with a guaranteed limit at no more than 10% for max channel length of 10 km. For instance, on the 95% loaded wireless channel of 5 km long the performance decrease was at level of about 5% only.

To achieve a highest efficiency and guarantee a customer satisfaction we provide additional recommendations for PPC-10/3700 bridge use at the customer place and conditions.

PPC-10/37000 WIRELESS BUILDING-TO-BUILDING LAN BRIDGE

PPC-10/37000 Technical Characteristics

Operating frequency range of the Radio Module	37-39.5 GHz
Optional bandwidth*	60 GHz
Bandwidth of emission	25 MHz
Output power	50 mW
Antenna gain not less	35 dB
The level of parasitic radiation no more than	50 dB
Data speed, each direction	10 Mbps
Maximum distance between the Radio Modules, no less than	10 km
* For 60 GHz bandwidth	5 km
Length of a connecting cable	
LAN -to- Module of Access	0...100 m
Module of Access -to- Radio Module	0...100 m
The type of a connecting cable	
LAN -to- Module of Access	UTP5
Module of Access -to- Radio Module	UTP5
Main supply	
Radio Module	220 VAC
Module of Access	220 VAC
Consumed power	
Radio Module	50 W
Module of Access	6 W
Weight and overall dimensions	
Radio Module with the antenna and Adjusting Module	20 kg; 50x50x50 cm
Module of Access	2 kg; 24x12x7 cm
Operating temperature	
Radio Module	-50 +70 °C
Module of Access**	+10 +40 °C
Admissible relative humidity	
Radio Module	100 %
Module of Access**	90 %

** For indoor use only.