Transmission values of long reach cables

IEEE P802.3 10SPE SG AdHoc

Dieter Schicketanz: Reutlingen University
Matthias Fritsche: HARTING Electronics
Roland Dold: METZ CONNECT

Long reach

Last webconference August 31 it was presented that the long reach in industrial surroundings were done with a special cable.

It is therefore already installed but used at frequencies below 1 MHz.

The cable has very stringent mechanical and thermal specifications.

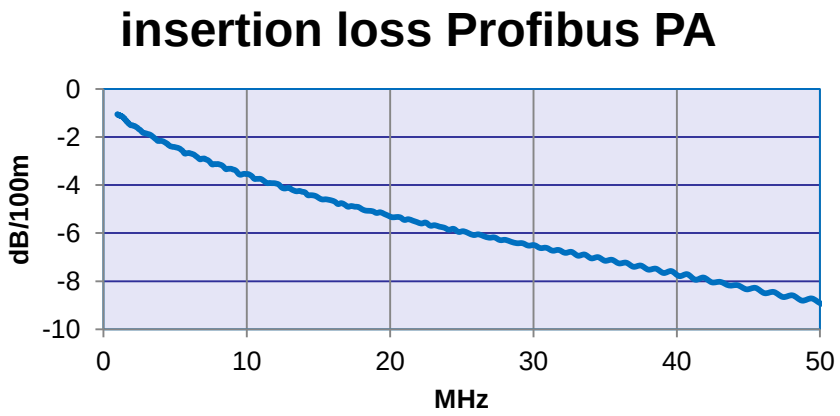
In Europe it belongs to a family of specifications where the two major ones have a copper wire diameter of 1.05 mm^2 (AWG16) and 0.8 mm^2 (AWG18). They are widely installed.

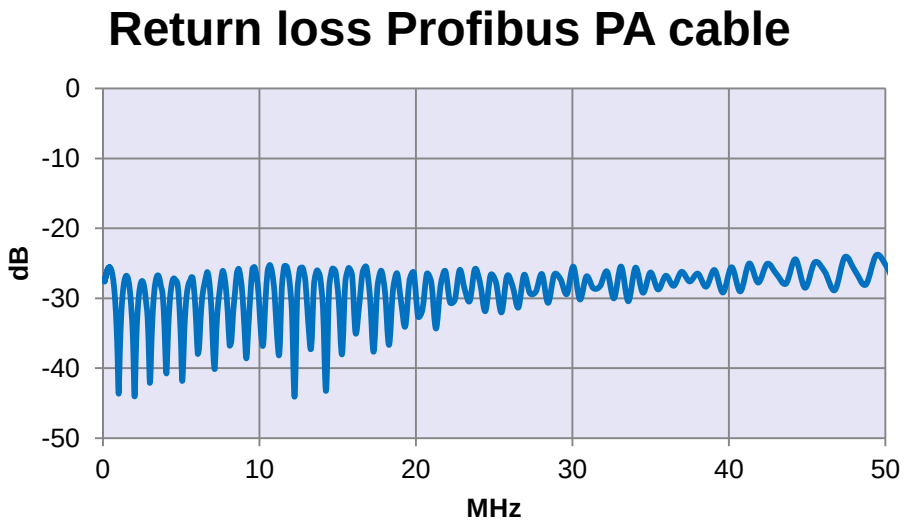
The one measured was the 1.05 cable with an overall diameter of 8mm.

Shown are the not specified measurement of insertion loss and return loss.

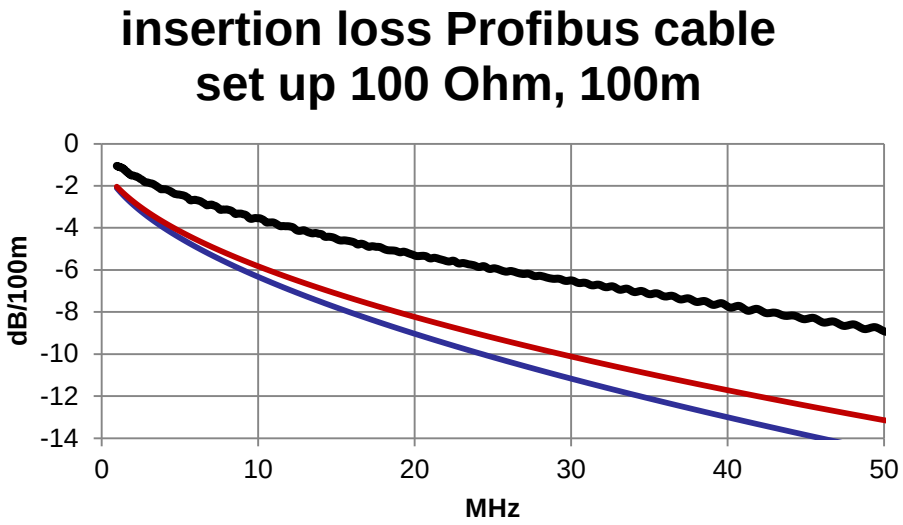
The return loss shows the good impedance behavior of this construction and the insertion loss is very low.

Preliminary measurement results on a 100m sample, 1.05 mm wire diameter, 100 Ohm reference



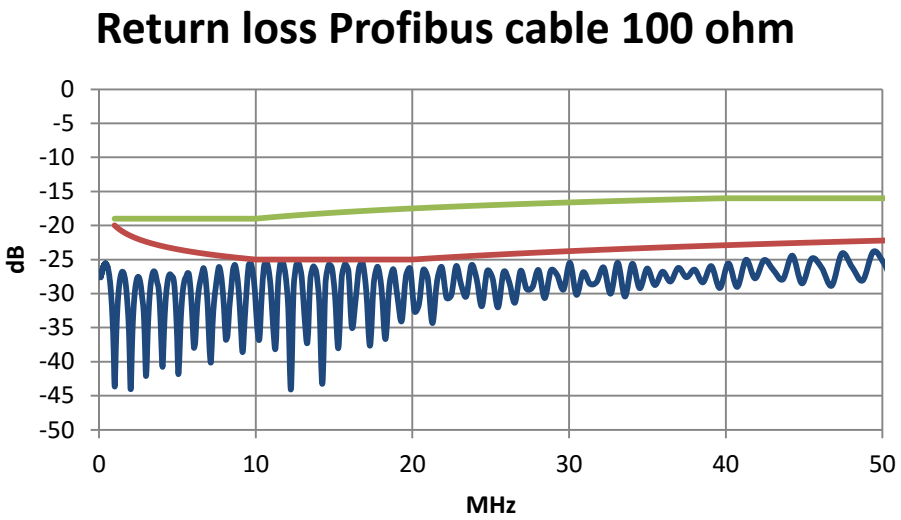


Insertion loss comparison:



100m measured profibus cable
Calculated cable portion Type B 802.3bp upscaled from 40m to 100m
Calculated 100 m cat5 cable

Return loss comparison :



Measurement

IEC data cables definition

Type B 802.3bp channel values (connectors will have no influence at these frequencies)