MI 1005 Medical Network Isolator

Insulation Statement

Return Loss and Insertion Loss

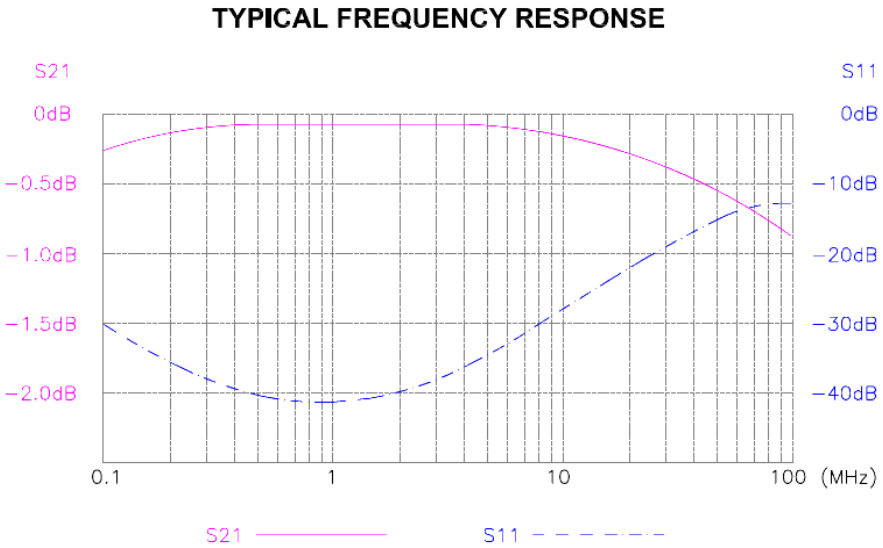
The return loss occurs in all wired and optical transmission media.
It is a logarithmic value of the ratio between transmitted and reflected energy. For metallic cables the return loss is the ratio of input energy to reflected energy. These reflections occur caused by inhomogenities within the cable or the RF connector.

A high dB value represents a good return loss.

The term Insertion Loss is either used in the high-frequency technology or the fiber optic technology as well. It is a logarithmic value in decibels (dB) that indicates the insulation that is caused by a 4 pole, that is inserted into the transmission medium or the transmission line.

This may be an RF connector or a contact acting to create a filter, couplers, bias tee, crossover, fiber optic connector, splice, or any other component that insulates the transmitted. The insertion loss is always related to a specific frequency or wavelength range. Therefore, the specification of a curve or the values at certain frequencies is necessary.

There are two curves shown in the datasheet of the MI 1005. The S21 curve shows insertion loss and the S11 curve shows return loss.



The MI 1005 is characterized by Return Losses of more than -10db at frequencies of 100 MHz and a low insertion loss of less than -1,1 dB.
These values are excellent for a passive isolator.

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Comprehensible review of attenuation in use

In a new network installation in the University Hospital Magdeburg in Germany one measurement per Cat.6 data line was performed, once with and once without the MI 1005 Network isolator. The reference plug of the measuring device was connected to the patch field, the measurement device was connected with a 0.5m patch cable to the wall outlet in the specific room. Thus the reference length of the signal line was the distance between the patch field and the wall outlet plus the wall outlet module plus the 0,5m patch cable.

The 'Normal' measurement without MI 1005 is marked with 22/1/x/x.
The 'insulator' measurement with MI 1005 is marked with 22/1/x/x/ISOLATOR

Kabelkennung	Übersicht	Grenzwert	Länge	Reserve	Datum/Uhrzeit
22/1/C/8	PASS	EN50173 Channel Class E	39.3 (m)	6.0 dB	25/11/2008 15:05
22/1/C/8-ISOLATOR	FAIL	EN50173 Channel Class E	41.0 (m)	-11.8 dB	25/11/2008 15:08
22/1/D/8	PASS	EN50173 Channel Class E	16.3 (m)	4.1 dB	25/11/2008 15:50
22/1/D/8-ISOLATOR	FAIL	EN50173 Channel Class E	18.0 (m)	-17.0 dB	25/11/2008 15:51
22/1/D/2	PASS	EN50173 Channel Class E	31.9 (m)	0.4 dB	25/11/2008 16:17
22/1/D/2-ISOLATOR	FAIL	EN50173 Channel Class E	33.6 (m)	-16.8 dB	25/11/2008 16:18
22/1/C/19	PASS	ISO11801 Channel Class D	50.2 (m)	15.2 dB	22/12/2008 15:23
22/1/C/19-ISOLATOR	FAIL	ISO11801 Channel Class D	51.6 (m)	-1.8 dB	22/12/2008 15:24
22/1/C/20	PASS	ISO11801 Channel Class D	50.2 (m)	15.2 dB	22/12/2008 15:25
22/1/C/20-ISOLATOR	FAIL	ISO11801 Channel Class D	51.4 (m)	-1.8 dB	22/12/2008 15:27

The measurement failed as expected, because the isolation transformers in the network isolator and the missing shield caused this error. But with this measurement the total influence of the MI 1005 to the insulation of the signal line (Patch field, cable length, wall outlet, patch cable) could be measured in meters. The result of this measurement was, that the MI 1005 extends the total signal line length at round about 1,5m. This "extension" of the signal line is independent of the length of the line and indicates, that there is a static extension effect of the MI 1005 of 1.5m.

Kontakt:

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