802.3bp
Cabling parameters
to s-parameters naming

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Purpose

- Cabling parameters to s-parameters naming

Signal impairments naming an s-parameters

•Signaling impairments naming and s-parameter designations derived from the four port network illustrated in Figure 1.
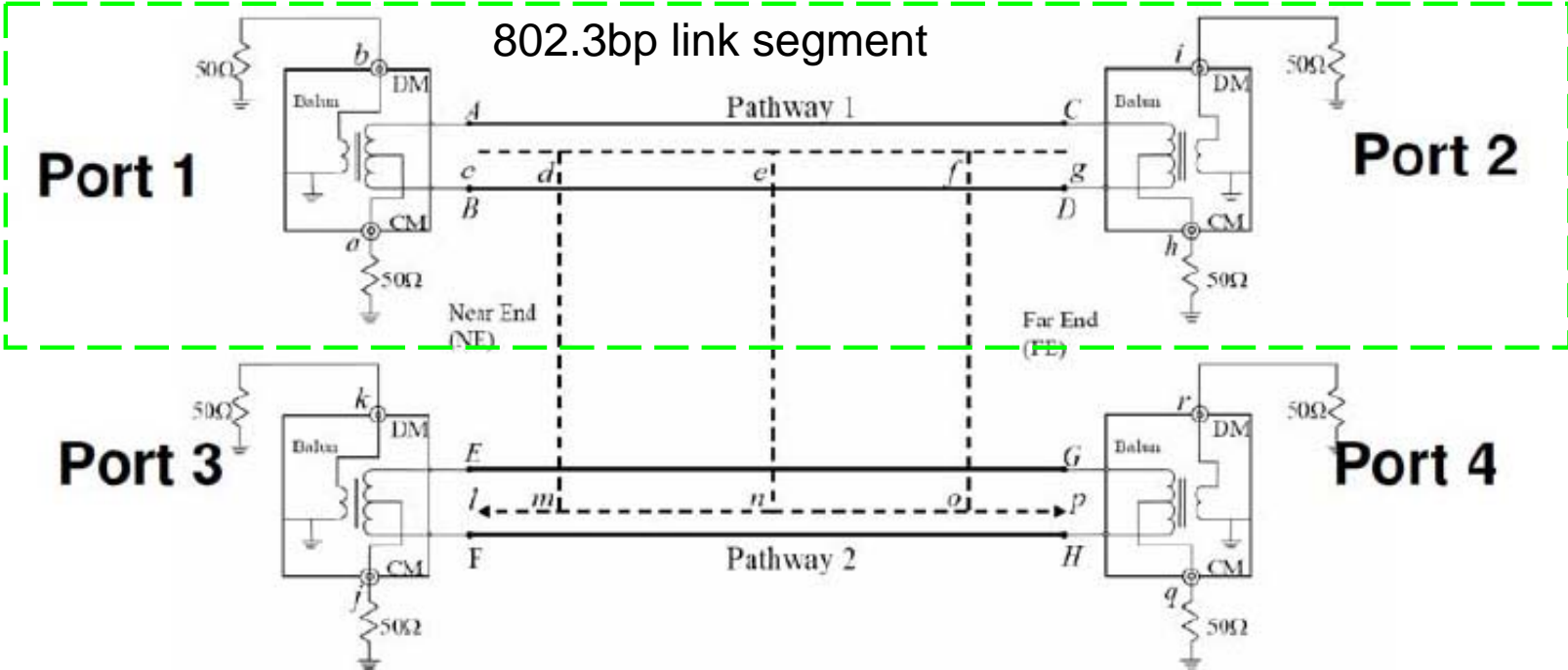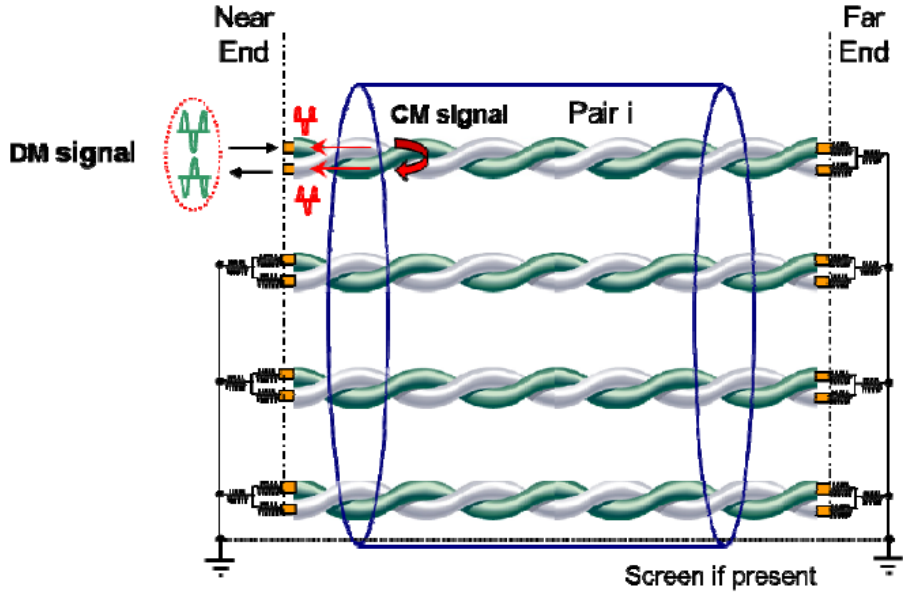

Figure 1 Four port network

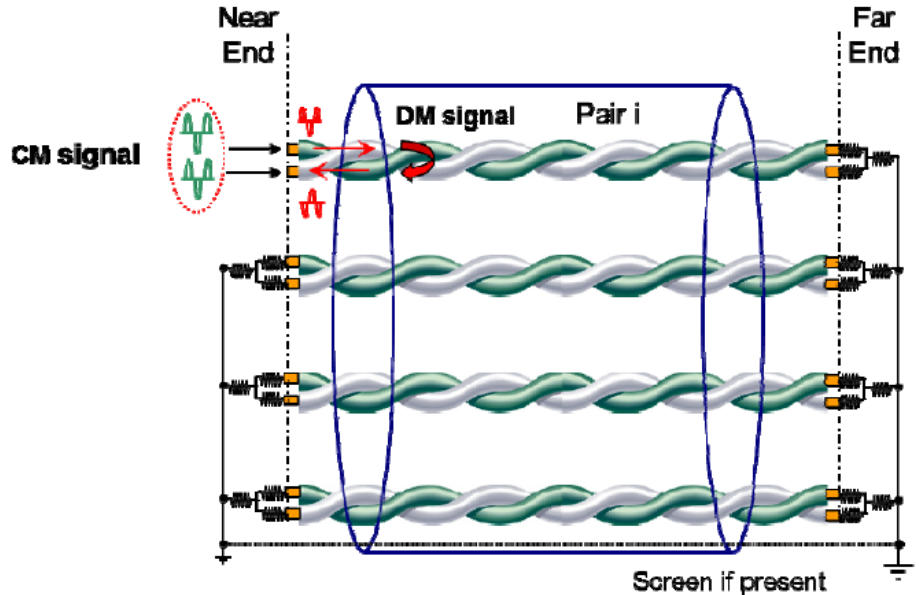# Port mapping–signal impairments to s-parameters

802.3bp link segment

		Port 1		Port 2		Port 3		Port 4	
Port 1	cc	Scc11	RLcc11	Scc12	ILcc12	Scc13	NEXTcc13	Scc14	FEXTcc14
	cd	Scd11	TCLcd11	Scd12	TCTLcd12	Scd13	NEXTcd13	Scd14	FEXTcd14
	dc	Sdc11	LCLdc11	Sdc12	LCTLdc12	Sdc13	NEXTdc13	Sdc14	FEXTdc14
	dd	Sdd11	RLdd11	Sdd12	ILdd12	Sdd13	NEXTdd13	Sdd14	FEXTdd14
Port 2	cc	Scc21	ILcc21	Scc22	RLcc22	Scc23	FEXTcc23	Scc24	NEXTcc24
	cd	Scd21	TCTLcd21	Scd22	TCLcd22	Scd23	FEXTcd23	Scd24	NEXTcd24
	dc	Sdc21	LCTLdc21	Sdc22	LCLdc22	Sdc23	FEXTdc23	Sdc24	NEXTdc24
	dd	Sdd21	ILdd21	Sdd22	RLdd22	Sdd23	FEXTdd23	Sdd24	NEXTdd24
Port 3	cc	Scc31	NEXTcc31	Scc32	NEXTcc32	Scc33	RLcc33	Scc34	ILcc34
	cd	Scd31	NEXTcd31	Scd32	NEXTcd32	Scd33	TCLcd33	Scd34	TCTLcd34
	dc	Sdc31	NEXTdc31	Sdc32	NEXTdc32	Sdc33	LCLdc33	Sdc34	LCTLdc34
	dd	Sdd31	NEXTdd31	Sdd32	NEXTdd32	Sdd33	RLdd33	Sdd34	ILdd34
Port 4	cc	Scc41	FEXTcc41	Scc42	FEXTcc42	Scc43	ILcc43	Scc44	RLcc44
	cd	Scd41	FEXTcd41	Scd42	FEXTcd42	Scd43	TCTLcd43	Scd44	TCLcd44
	dc	Sdc41	FEXTdc41	Sdc42	FEXTdc42	Sdc43	LCTLdc43	Sdc44	LCLdc44
	dd	Sdd41	FEXTdd41	Sdd42	FEXTdd42	Sdd43	ILdd43	Sdd44	RLdd44

Table 1 Port mapping – s-parameter naming to signal impairment naming

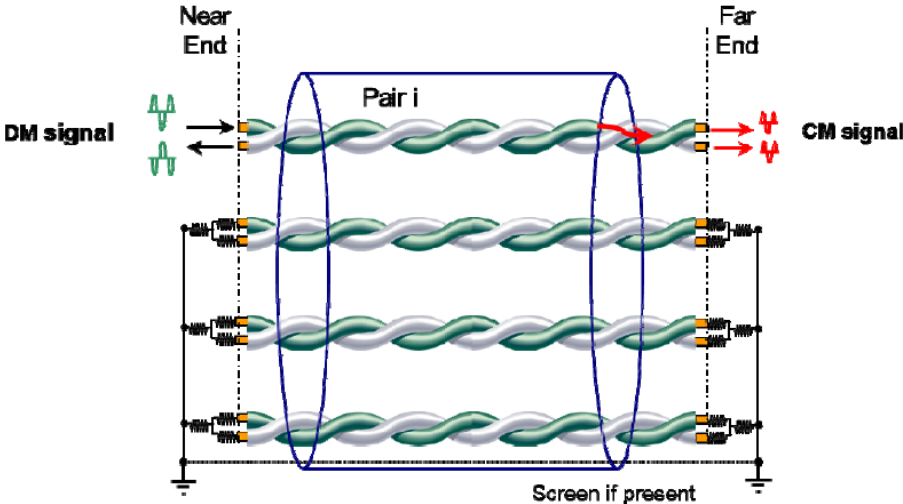# Port mapping–signal impairments to s-parameters

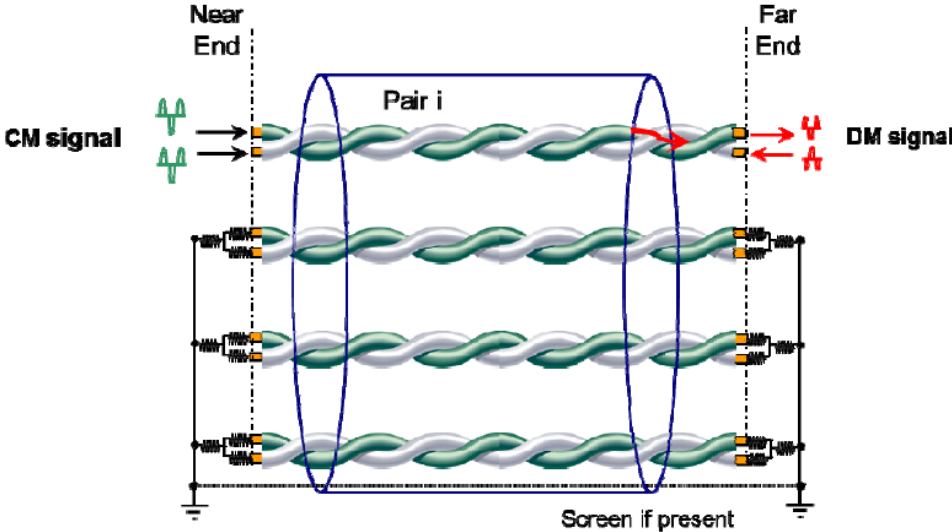

SCD11/SCD22 - Transverse conversion loss (TCL)

SDC11/SDC22 – Longitudinal conversion loss (LCL)

Port mapping–signal impairments to s-parameters

SCD12/SCD21 –
Transverse conversion transmission loss (TCTL)

SDC12/SDC21 –
Longitudinal conversion transmission loss (LCTL)

Link segment transmission parameters (UTP)

97.4.4.1.4 Differential to common mode conversion

The balance of the type A link segment is characterized by the differential to common mode conversion Each type A link segment shall meet the values determined using Equation (97–3) at all frequencies from 1 MHz to 600 MHz.

$$\text{ConversionLoss}(f) \geq \begin{cases} -50 & 10 \leq f \leq 80 \\ 5 \times \ln f - 72 & 80 < f \leq 600 \end{cases} \text{dB} \qquad (97\text{–}3)$$

where

f is the frequency in MHz; $1 \leq f \leq 600$

The function ConversionLoss(f) represents the conversion insertion loss at frequency f.

Editorial Note (to be removed prior to publication): Equation (97–3) needs to be converted into conversion loss.

- SCD12/SCD21 – Transverse conversion transmission loss (TCTL)
- SDC12/SDC21 – Longitudinal conversion transmission loss (LCTL)

802.3bp (1000BASE-T1)