

Discovery/Identification Proposals

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- 1) 25Khz low pass filter across TX & RX pair
 5us pulse, 1ms rate, 3.1V out
 High voltage back > Short/loopback
 Attenuated voltage back > Powerable device
 Nothing > Air or legacy
 Time window check on echo
- 2) 880Khz low pass filter between TX & RX pair
 1us pulse, unique FLP codeword within Autonegotiation
 Returned codeword > Loopback device
 100ns (normal) pulse, same codeword as above
 Returned codeword > Short
 No codeword > powerable device
 Only changes are creating the codeword & pulse elongation
- 3) Oscillation Bridge
 Low, current limited voltage is applied between TX & RX pair
 Current > 45mA – Short, etc.
 Current < 45 and constant – Legacy or air
 Current oscillating – Powerable device
 Will not pass 1500V isolation (as implemented)
- 4) Current Pulses
 Low energy current pulse between feeding pairs
 1.5ma, 3ms duration – inspect behavior
 3ma, 3ms duration – inspect behavior
 Powerable device if both inspections pass.
 Uses same current monitoring system for sense as management system, overload and underload detection

False Positive

	Method 1	Method 2	Method 3	Method 4	Legacy
Loop back	Detect	Detect	Detect	Detect	Detect/ LED
Full Short	Detect	Detect	Detect	Detect	No error
Partial Short	Pot misdt	Detect	Detect	Detect	Some errors
Legacy	Detect / ND	Detect / ND	Detect / ND	Detect / ND	OK
Pwr Device	~0 probability	~0 probability	Detect	~0 probability	N/A
Cross talk	N/A ¹	N/A ²	TBD	TBD	Per 802.3
Random Plug	Ok	Ok	Ok	Ok	N/A
Telephone	Ok	Ok	Ok	Ok	Ok
ISDN	NWTL	NWTL	NWTL	NWTL	Damage
Test Equip	Further Study Required				Ok
Isolation	Ok	Ok	No	Ok	Ok
Digital Phone	Further Study Required				
T1 / E1	Ok	Ok	Ok	Ok	Ok
ATM 25.6	Ok	Ok	Ok	Ok	Ok
ATM 155	Further Study Required				
Firewire UTP	Further Study Required				
Digital PBX	Further Study Required				

¹ Cross talk appears as DC levels, which will not pass through the transformers used for coupling.

² Cross talk appears as DC levels, which will not pass through the transformers used for coupling.

DTE Power via MDI SG

Token Ring 4/16	Ok	Ok	Ok	Ok	Ok
Token Ring 100	Ok	Ok	Ok	Ok	Ok
POTS	Ok	Ok	Ok	Ok	Per Spec

Test Conditions:

Loop Back – A connection between each wire of TX and RX of pair 1 & 2, and connection between discreet wires of pairs 3 & 4.

Full Short – Connections between all 8 wires.

Partial Short – Connections between a few of the 8 wire in any combination.

Legacy – Connection from a Powering device to a 802.3 compatible device that is not powerable.

Pwr Device – Connection from a Powering device to another powering device via a standard loop back cable for pairs 1 & 2 and any combination of wire between pairs 3 & 4.

Cross talk – coupling of signals throughout the wiring plant from one pair to another.

Random plug – the effects of inserting a device (legacy, powerable or other) into the powering device at a time point other than the proposed starting point of the algorithm.

Telephone – A type 500/2500 handset.

ISDN – An ISDN Terminal Adapter TE/1 S/T .

Test Equip – Any of a number of test equipment

Isolation – can be constructed to preserve 1500 V isolation requirement.

Digital Phone – Proprietary PBX station equipment

T1 / E1 – Digital telephone interface at 1.544 / 2.048 MHz

ATM – ATM over a UTP interface (rate/interface?)

Firewire UTP – IEEE 1394 over UTP.

Digital PBX – connection to the proprietary interface PBX.

Token Ring – IEEE 802.5 with RJ-45 interface

POTS – Plain Old Telephone Interface (48Vdc + nom 90VAC ring on 4 & 5)