Mapping the SCCP PD Information Byte

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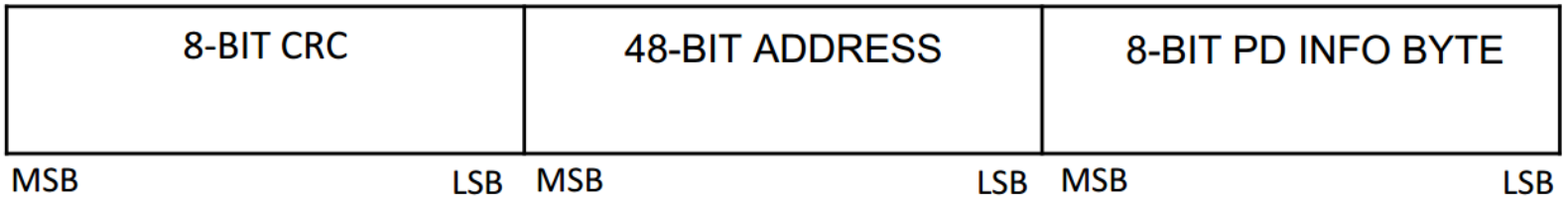
Presentation Objectives

- Propose a scheme for mapping the PD’s power class and PHY type to the SCCP PD information byte.

SCCP PD Information Byte



- As part of the SCCP read address command transaction, the PD responds LSB first with the PD information byte, then a 48-bit address, and finally with a CRC byte.
- The information byte contains information about the power class of the PD as defined in Table 104-1 and the type(s) of Ethernet the PD can support.

PD Information Byte Map

Table 104–8—PD information byte map

Bit(s)	Name	Description	R/W
TBD	Class	PD class code	RO
TBD	Type	PD type code	RO
TBD	*TBD*	misc. info	RO

- The PD information byte mapping of bits to the class and type fields is defined in Table 104-8 and is currently TBD.

Proposed PD Information Byte Mapping

Bits	Name	Description	R/W
b[7:5]	Type	Type: 1XXb – type A (100BASE-T1) X1Xb – type B (1000BASE-T1) XX1b – unsupported PHY	RO
b[4]	Reserved	Reserved. Always returns 1	RO
b[3:0]	Class	Power class (see table 104-TBD)	RO

- D1.1 Table 104-1 has 8 defined voltage/power classes and 1 undefined class.
  - Reserve at least 4 bits for the power class field.
- Reserve at least 3 bits for the PD type field.
  - Use a ‘1-hot’ encoding scheme for PDs that can support multi-rate data applications.
  - Anticipate 10BASE-T1 being added to the standard.
- What to do with the remaining bit?

All Permutations Class Table with SCCP Codes

System Class														
	I (12V unreg)	I (12V unreg)	II (12V reg)	II (12V reg)	II (24V unreg)	II (24V unreg)	III (24V reg)	III (24V reg)	III (48V unreg)	IV (48V unreg)	V (48V reg)	V (48V reg)	VI (Open)	Show in table 104-1?
$V_{PSE\_PI(max)}$ (V)[1]	18	18	18	18	36	36	36	36	60	60	60	60	-	yes
$V_{PSE(min)}$ (V)	6	6	14	14	12	12	21.6	21.6	24	24	43.2	43.2	-	no
$V_{PSE\_PI\ (min)}$ (V)[1]	5.54	5.84	12.93	13.63	11.09	11.68	19.95	21.02	22.17	23.36	39.91	42.05		yes
$R_{PSE}(\Omega)$	4	1	4	1	4	1	4	1	4	1	4	1	-	no
$I_{PI(max)}$ (A)	0.11	0.16	0.27	0.37	0.23	0.32	0.41	0.58	0.46	0.64	0.82	1.15	-	yes
$R_{Loop(max)}$ (Ω)[2]	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	-	no
$V_{PD(min)}$	4.80	4.80	11.20	11.20	9.60	9.60	17.28	17.28	19.20	19.20	34.56	34.56	-	yes
P_{VPSE} (W)	0.69	0.96	3.73	5.23	2.74	3.84	8.89	12.44	10.97	15.36	35.55	49.77	-	no
P_{PSE} (W)[3]	0.63	0.93	3.45	5.09	2.53	3.74	8.21	12.11	10.14	14.95	32.84	48.44	-	no
P_{PD} (W)[4]	0.55	0.77	2.99	4.18	2.19	3.07	7.11	9.95	8.78	12.29	28.44	39.81		yes
$K=(P_{VPSE}-P_{PD})/P_{PSE}$	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20		no
SCCP Class Code (binary)	0000	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100-1111	no
(decimal)	0	1	2	3	4	5	6	7	8	9	10	11	12-15	no

[1] V_{PSE_PI} is the voltage measured at the PSE PI for all load conditions.

[2] R_{Loop} is the round trip link segment resistance.

[3] P_{PSE} is the maximum power the PSE is required to source as measured at the PI.

[4] P_{PD} is the power available at the PD PI.

Summary

- A scheme for mapping the fields in the SCCP PD information byte to PD class and type was proposed.

Questions?