

IEEE802.3bt
LLDP adhoc

Meeting #2: Rev 002B, Tuesday June 20, 2017

Yair Darshan
IEEE802.3bt LLDP adhoc chair
Microsemi
ydarshan@microsemi.com

Meeting # 02 Attendees.

Yair Darshan, Microsemi



Proposed Agenda for meeting #01

- Starting at 18:00 IDT. Ending at 19:00 IDT.
Chad has volunteered to take notes of this meeting.

#	Time	Subject	Owner
1	18:00 – 18:05	<ul style="list-style-type: none">•Introduction•Patent policy•approving meeting minutes from last meeting•Approving proposed Agenda for this meeting	Yair
2	18:05 – 18:15	LLDP finalizing concept review per D2.5	Yair
3	18:15 – 18:35	Reviewing A.I. from last meeting.	Group
4	18:35 – 18:50	Do we need the $Y=A+B$ as currently in the spec? <ul style="list-style-type: none">• Lennart presentation• Yair inputs for the reasons we did it and possible ways to improve it.• Discussion	Group
5	18:50 – 19:00	Summarizing of A.I. and points of agreements	Group



Introduction and other businesses 09:00 – 09:05

- **The purpose** of this ad-hoc is to resolve LLDP state machine related comments from D2.4 and related issues for PSE and PDs prior sponsor ballot for D3.0.
- **Patent Policy**
 - Please read the Patent Policy slides at <http://www.ieee802.org/3/patent.html> prior the meeting.
 - Approving meeting minutes from last meeting
- **Meetings process.**
 - During the meeting: Questions only after presenter done with his presentation.
 - Follow the agenda as much as possible. Other issues can be tabled to be discuss later at the meeting, over the reflector, or at the next meeting agenda.
 - Discussions over the reflector prior the meeting is valuable and saves time during the meeting to reach consensus.
 - **After the meeting, please send your affiliation and attendance confirmation by email.**



LLDP concept review as agreed in D2.5 – Updated per the current text Proposal for a change marked in RED.

- (See slide 16 for meeting #1 Table that was not complete and now it is updated per current D2.5 text that was based on darshan_08_0317.pdf as the approved base line):

PD requested power value	PSE allocated power value	PD requested power value Mode A	PD requested power value Mode B	PSE allocated power value Alternative A	PSE allocated power value Alternative B
--------------------------	---------------------------	---------------------------------	---------------------------------	---	---

Part of Figure 79-3

#	PSE Type	Operating over	Connected to a PD	TLV field		
				Y	A	B
				pd_requested_power pse_allocated_power	pd_req_power_mode(A) pse_allocated_power_Alt(A)	pd_req_power_mode(B) pse_allocated_power_Alt(B)
1	3/4	4-pairs	SS	1-999	0	0
2	3/4	2-pairs	SS	1-999	0	0
3	3/4	4-pairs	DS	1-999, Y=A+B <i>Lenart: Suggestion: Y=0.</i>	1-499	1-499
4	3/4	2-pairs	DS	1-499, Y=A+B <i>Suggestion: Y=pd_req_power_mode(X) and Y=pse_allocated_power_Alt(X) where X is the active pairset</i>	1-499. (* if this mode/Alt is inactive, set to value 0. <i>To resolve #297, delete mode.</i>	1-499. (* if this mode/Alt is inactive, set to value 0. <i>To resolve #297, delete mode.</i>
5	1/2	2-pairs	DS	1-499 May Y=A+B <i>Lenart: Set Y=0. Yair: If new fields are used, do the same as in row 4.</i>	1-499. (* if this mode/Alt is inactive, set to value 0. <i>To resolve #297, delete mode</i>	1-499. (* if this mode/Alt is inactive, set to value 0. <i>To resolve #297, delete mode</i>

(*) See IDLE state in Figure 145-45 and Figure 145-46 for supporting this use case.

Note: The case that PSE operating over 4-pairs connected to dual-signature PD that a pairset is active after some time delay from the other pairset is covered by row 4 in the spec. As a result, one row was removed from this Table.



LLDP concept review as in D2.5 – Details

Proposal for a change marked in RED.

PSE	Use the following PSE fields	PD	Use the following PD fields
4-pair	PSE allocated power PSE allocated power Alternative (X)=0	Single-Signature. Type 1, Type 2	PD requested power PD requested power Mode (X)=0
Type 3 or 4. Operating over 2-pair.	<ul style="list-style-type: none"> PSE allocated power PSE allocated power Alternative (X). <i>Fill in 0 in the inactive field of PSE allocated power Alternative (X).</i> PSE allocated power = A+ B (**) <i>(or PSE allocated power =PSE allocated power Alt (X) where X is the active Alternative)</i> 	Dual-signature	<ul style="list-style-type: none"> <i>Fill in 0 in the inactive field of PD requested power Mode (X).</i> <i>(Delete to resolve #279)</i> PD requested power Mode A and B. PD requested power = A+B (**) <i>(To replace with Y=mode(X) where X is the active mode)</i>
Type 1 or 2. Operating over 2-pair.	<ul style="list-style-type: none"> PSE allocated power (*May) PSE allocated power = PSE allocated power Alternative A + B (**) <i>(Lennart suggest to set to zero.</i> <i>Yair: If PSE allowed to use this fields, it is better to use PSE allocated power =PSE allocated power Alt (X) where X is the active Alternative))</i> 	Dual-signature	<ul style="list-style-type: none"> <i>Fill in 0 in the inactive field of PD requested power Mode (X).</i> <i>(Delete to resolve #279)</i> PD requested power Mode A and B. PD requested power = A+B (**) <i>(To replace with Y=mode(X) where X is the active mode)</i> PD requested power Mode B (**)
Operating over 4-pair.	<ul style="list-style-type: none"> PSE allocated power Alternative A and B PSE allocated power = PSE allocated power Alternative A + PSE allocated power Alternative B <i>(Lennart suggest to set to zero)</i> 	Dual-signature	<ul style="list-style-type: none"> PD requested power Mode A and B PD requested power = PD requested power Mode A + PD requested power Mode B <i>(Lennart suggest to set to zero)</i>

(*May) PSE allocated power Alternative (X) may not used by legacy PSE.

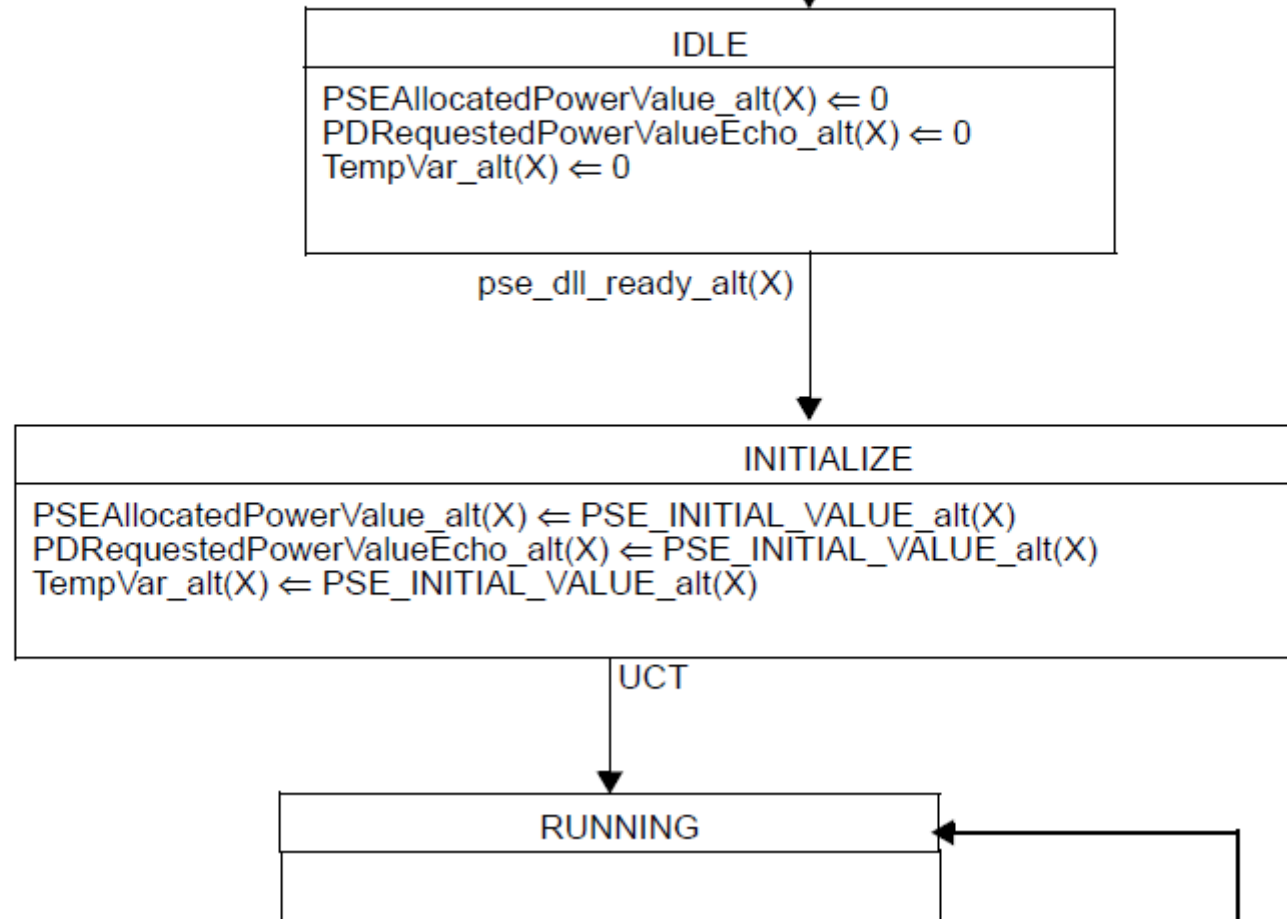
(**) Why we need Y=A+B, see Annex and see alternative solutions i.e. PSE allocated power =

PSE allocated power Alternative X and PD requested power = PD requested power Mode (X) when X is the active pairs.

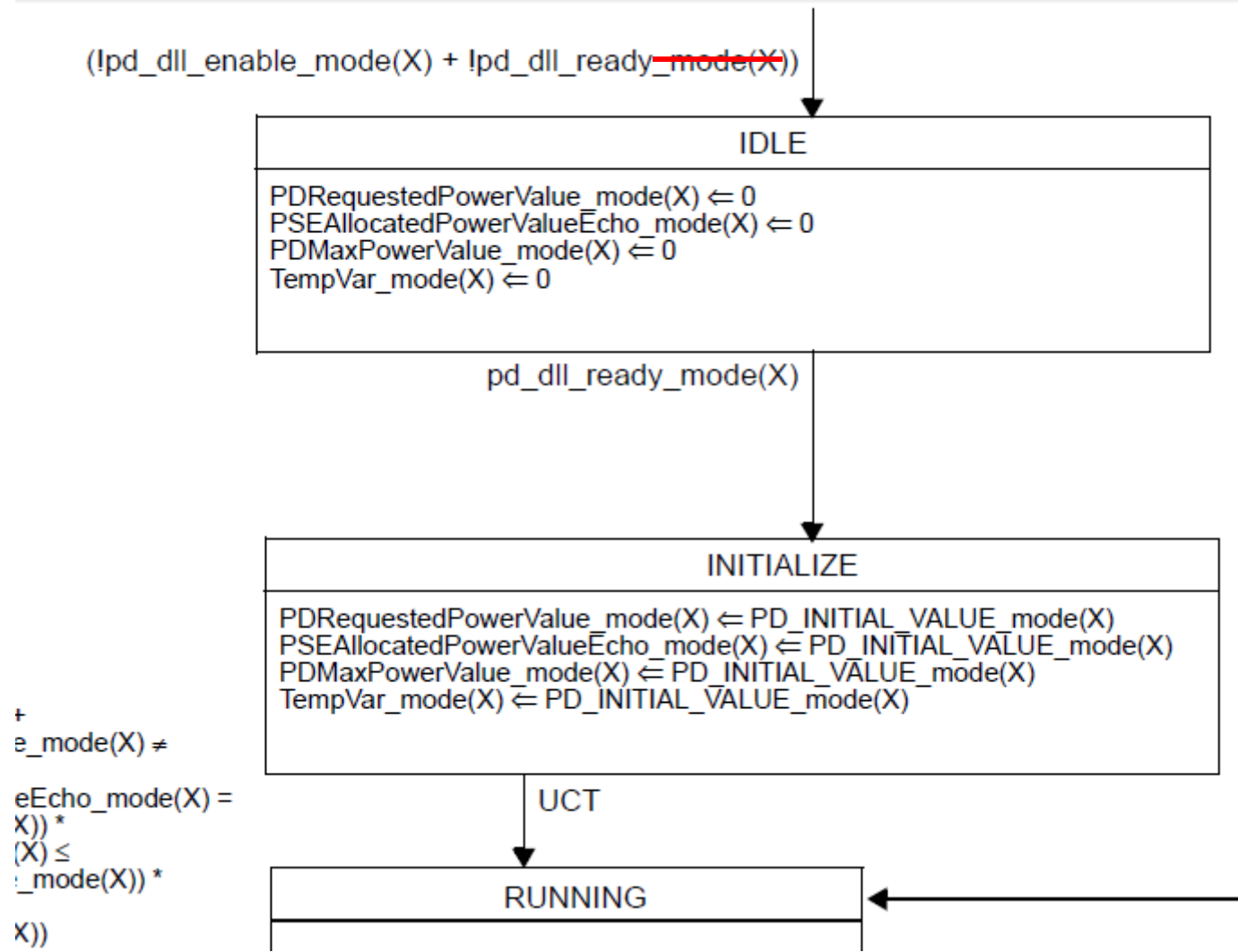


Comment #297 D2.4 (Page 75 line 12 in D2.5) Figure 145-43

$(!pse_dll_enable_alt(X) + !pse_dll_ready_alt(X)) * (sig_type = dual)$



Comment #297 D2.4 (Page 75 line 12 in D2.5) - Figure 145-44
 Proposal for a change marked in RED.



LLDP concept review as agreed in D2.5 – Updated per the current text Proposal for a change marked in RED.

■ Discussion

- The Table in previous slide is the current concept per D2.5. This closes questions from meeting #1 regarding item 4 and item 5 in the Table presented in meeting #1 (See Annex) regarding if it should be $Y=A+B$ or $Y=A$ or $Y=B$.

Yair+Lennart discussion:

- $Y=A+B$ can be replaced to $Y=\text{mode}(X)$ in the PD and $Y=\text{Alt}(X)$ in the PSE. This is alternative solution to argument #1 in Annex A and will resolve the double information of A, B and $Y=A+B$ confusion argument raised by Lennart.
- We have the information of total available power in the field “PSE maximum available power” in 79.3.2.6e. This resolve argument #2 in Annex A.
- To resolve #297, Lennart suggests: In order to request power on the unpowered pairset, see proposed changes in the red text. In addition, the `pd_dll_ready_mode(X)` need to be changed to `pd_dll_ready` to allow progressing to the INITIALIZE state in case PD want power on the unpowered pairset. No changes required in the PSE portion.
- Yair it will work:
 - To change from `pd_dll_ready_mode(X)` to `pd_dll_ready` in the PD state machine.
 - To change “if this mode/Alt is inactive, set to value 0” to “if this Alt is inactive, set to value 0” i.e. keep this requirement only to PSE.
- Group to review and confirm.



Comment #297 D2.4 (Page 75 line 12 in D2.5)

- Comment #297 D2.4 (D2.5 Page 78 line 46)
"If Mode (X) is non-active while the other mode is active, the inactive PD requested power value Mode (X) field value shall be set to 0."
 - What is this trying to do ? The PD may wish to ask for power on an unpowered Mode...

Suggested Remedy

Strike sentence.

- ACCEPT IN PRINCIPLE.

no changes to draft.

An LLDP ad hoc was formed

Yair: What we are trying to do is:

- In Figure 145-45 and Figure 145-46 power control state diagrams when connected to dual-signature PD, we add in D2.3 an IDLE state in order to resolve non active Alternative(X) or no active mode(X) by setting the relevant variables to zero prior going to INITIALIZE state.
 - Figure 145-45: PSEAllocatedPowerValue_alt(X), PDRequestedPowerValueEcho_alt(X) and TempVar_alt(X)
 - Figure 145-46: PDRequestedPowerValue_mode(X), PSEAllocatedPowerValueEcho_mode(X), PDMaxPowerValue_mode(X) and TempVar_mode(X)



Comment #297 D2.4 (Page 75 line 12 in D2.5)

Discussion:

Yair: See concept description for why we did it.

A.I: Group to verify that they are OK with the state machine in Figure 145-43 and Figure 145-44.

- Lennart response: The proposed response to this comment is to adopt:
 - To change from `pd_dll_ready_mode(X)` to `pd_dll_ready` in the PD state machine.
 - To change “if this mode/Alt is inactive, set to value 0” to “if this Alt is inactive, set to value 0” i.e. keep this requirement only to PSE.
- **Group to discuss.**



Comment #130, #293 D2.4 (D2.5 Page 74 line 11)

Added text, "Type 1 and Type 2 devices shall not support the Type 3 and Type 4 extension."

Incorrectly blocks legacy types from using TLVs, Power status, System setup, PSE maximum available power, Autoclass, and Power done. The existing text does indicate what legacy Types are required to place in all Type 3 and Type 4 extension fields.

Suggested Remedy

Strike the called-out text.

ACCEPT IN PRINCIPLE.

OBE by 293

Comment 293 has the following response:

ACCEPT IN PRINCIPLE.

No changes to draft.

LLDP ad hoc was formed.

Discussion:

Yair: The proposed response to delete this text make sense. No reason to block new features from existing Type 1 and 2. Strike the **called out text**.

Geoff: All "shalls" should be in clause 145.

Heath: We agree to delete the text if PSE/ PD requested/allocated power mode A/B is set to zero when Type 1 and Type 2 PSE are used.

Jhon/Yair: In this case of Type 1/2 PSE connected to dual-signature PD, the fields are already defined. We need to focus only on the PSE fields since DS PD has access to all fields.

Lennart: @Heath, makes only sense to PSE allocated power. Doesn't make sense to PD requested power.

Yair: Not clear why @Heath makes sense only to PSE. If PSE can use the new fields for legacy PSEs, why not to use the same rules used in Type 3, 4 PSEs that have access to this field by default. The idea is to enable legacy PSEs to benefit from new features and not to disable them.

Heath A.I to generate comment and remedy for discussion for next time.



New topic – do we need the $Y=A+B$ as currently in the spec?

- Lennart presentation
- Yair inputs for the reasons we did it (See Annex A).
- Discussion



Discussion and A.I for next meeting.

- **In the tbles:** To discuss the red text. Is it also the sum $Y=A+B$ or $Y=X$ where $X=A$ or $X=B$. What is best for delayed operation use case. $Y=A+B$ is always true even when $A=0$ or $B=0$ for some time. For the 2-pair case $Y=X$ is sufficient where X is the active pairset. **See updated table.**
- Heath to generate comment and remedy for discussion for next adhoc meeting.
- Group to verify that they are OK with the state machine in Figure 145-43 and Figure 145-44 regarding IDLE state rational which is to support the case that one of the modes is inactive when the DLL is ready.



Annex A: Why we need $Y=A+B$ as currently in the spec?

Argument #1

- When we do LLDP simulations between Type 1, 2 PSE connected to dual-signature PD we encounter the following problem:
- Type 1, 2 PSE has only the `pse_allocated_power` field. He doesn't know about any other field such `pd_requested_power_modeA` or `B` fields/values.
- It means that PSE Type 1 and 2 can communicate with any PDs with `pse_allocated_power` and `pd_requested_power` fields only.

Now let's see what is going on step by step:

- PD puts values in `pd_requested_power_modeA` and `B` fields (what ever the values are)
- `pd_requested_power_modeA` and `B` fields are send through LLDP protocol and PSE tries to read it.
- PSE has only access to the content of `pd_request_power_value` because it doesn't know any other fields. If the content of `pd_request_power_value` in dual-signature PDs will be zero and not `pd_request_power_value = pd_request_power_value_modeA + pd_request_power_value_MODEb`, the PSE will see ZERO as the `pd_request_power_value` so the `pse_allocated` power value will be ZERO as well. So how it will work?
- The solution is: If in the PD we will set `pd_request_power_value = pd_request_power_value_modeA + pd_request_power_value_modeB` then `pse_allocated_power_value` can work with `pd_requested_power_value`. **Alternative solution for the 2-pair case: `pd_request_power_value = pd_request_power_value_mode(X)` where `X` is the active pairset.**



Annex A: Why we need $Y=A+B$ as currently in the spec? -2

Argument #2

- Imagine that you have a dual signature that want on modeA=45W and modeB=30W.
- But, PSE has only 29W.
- The question is how PSE will allocate the power. Please note the you have a single main power supply and the PSE **first** decides how to allocated power per port (i.e. the power needed per the whole port and then per the alternatives per the PD assigned class for each pair set (this is the only way it works in PSEs).

Now, Per the rules:

- PD mode A wants 45W but PSE has total 29W or <29W or whatever for mode A.
- PD mode B wants 30W but PSE has total 29W or <29W or whatever for mode B.
- So what PSE will do?
- Option 1: PSE will allocate power per the previous ratio (30W/45W). But this is not defined.
- Option 2: PSE will allocate power by splitting the 29W to half for each mode. But this is not defined
- OR option 3: PSE supply the total power as well (The sum field) and PD will decide what to do in order that the whole PD will work or one of the PD modes will work or nothing will work.

This is the best option. Why? Because this scenario is no different than the case when PSE is connected to single signature PD that wants 51W and PSE has only 30W. In this case, you give PD only 30W and let PD to decide how to use it. Please remember that in all dual signature PDs mode A and mode B are talking to each other by a single MCU.

Other alternative solution to this problem is to use the field “PSE max available power” which should be the total port power. We need to clarify in 79.3.2.6e that this value is applicable for PSE that supports single-signature and dual-signature.



Annex A: Why we need $Y=A+B$ as currently in the spec? -2

- Argument #3

High level power management care only for the total port power. The power management per pairset is kind of sublayer of the power management system. It is useful to pass the total power through the TLVs field. This is in general how current PSEs systems works.

Other alternative solution to this problem is to use the field “PSE max available power” which should be the total port power. We need to clarify in 79.3.2.6e that this value is applicable for PSE that supports single-signature and dual-signature.



Annexes



Meeting #1 Material

LLDP concept review as agreed in D2.3 - D2.5 – Meeting #1 Discussion

- We agree in D2.3 to fill in the following fields in Figure 79-3 per the following concept (See darshan_08_0317.pdf for approved base line):

PD requested power value	PSE allocated power value	PD requested power value Mode A	PD requested power value Mode B	PSE allocated power value Alternative A	PSE allocated power value Alternative B
--------------------------	---------------------------	---------------------------------	---------------------------------	---	---

Part of Figure 79-3

#	PSE Type	Operating over	Connected to a PD	TLV field		
				Y	A	B
				pd_requested_power pse_allocated_power	pd_req_power_mode(A) pse_allocated_power_Alt(A)	pd_req_power_mode(B) pse_allocated_power_Alt(B)
1	3/4	4-pairs	SS	1-999	0	0
2	3/4	2-pairs	SS	1-999	0	0
3	3/4	4-pairs	DS	1-999 Y=A+B	1-499	1-499
	3/4	4-pairs with time delay until the 2 nd mode is active too	DS	1-999 (**) Y=A+B (To discuss in meeting #2. See A.I. slide)	1-499 (* if this mode/Alt is inactive, set to value 0.	1-499 (* if this mode/Alt is inactive, set to value 0.
4	3/4	2-pairs	DS	1-499 (**) The value of Y=X. X=A or B.	1-499. if this mode/Alt is inactive, set to value 0.	1-499. if this mode/Alt is inactive, set to value 0
5	1/2	2-pairs	DS	1-499	Almost the same as in 4. See details in next slide	

(*) See IDLE state in Figure 145-45 and Figure 145-46 for supporting this use case.

() Per D2.5 it has to be Y=A+B. This is always true even if one of the pairs is inactive.**



Meeting #1 Material – See updates per D2.5 in meeting #2 tables.

LLDP concept review as in D2.5 - Details

PD	Use	PSE	Use
Single-Signature	PD requested power	4-pair	PSE allocated power
Dual-signature	<ul style="list-style-type: none"> • PD requested power Mode (X). • <i>Fill in 0 in the inactive field of PD requested power Mode (X).</i> PD requested power = PD requested power Mode A + PD requested power Mode B.	Type 3 or 4. Operating over 2-pair. (*) Type 3 or 4 when connected To dual-sig PD operating on 2-pair mode	<ul style="list-style-type: none"> • PSE allocated power Alternative (X). • <i>Fill in 0 in the inactive field of PSE allocated power Alternative (X).</i> • PSE allocated power = PSE allocated power Alternative A + PSE allocated power Alternative B
Dual-signature	<ul style="list-style-type: none"> • PD requested power Mode (X). • <i>Fill in 0 in the inactive field of PD requested power Mode (X).</i> • PD requested power = PD requested power Mode A + PD requested power Mode B. 	Type 1 or 2. Operating over 2-pair.	<ul style="list-style-type: none"> • PSE allocated power Alternative (X). • <i>Fill in 0 in the inactive field of PSE allocated power Alternative (X).</i> • (*May) PSE allocated power = PSE allocated power Alternative A + PSE allocated power Alternative B (*May) PSE allocated power Alternative (X) may not used by legacy PSE .
Dual-signature	<ul style="list-style-type: none"> • PD requested power Mode A • PD requested power Mode B • PD requested power = PD requested power Mode A + PD requested power Mode B 	Operating over 4-pair.	<ul style="list-style-type: none"> • PSE allocated power Alternative A • PSE allocated power Alternative B • PSE allocated power = PSE allocated power Alternative A + PSE allocated power Alternative B

(*) Yair: Propose to delete. It is redundant text. In addition, there are some errors, see updated tables in meeting #2 material.

