Power over Coax Inductor

IEEE 802.3dm

September, 2025

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Supporters

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Background

- A single inductor was previously suggested for ACT PHY
  - https://www.ieee802.org/3/dm/public/0125/Houck_3dm_02_0121_5.pdf
- Chini showed that the presented inductor is not consistent with datasheet
  - https://www.ieee802.org/3/dm/public/0725/Chini_3dm_01c_07272025.pdf
- Subsequently, it was stated by the contributor of the ACT presentation that the “mystery” single inductor was the result of an “error” in the datasheet
- This presentation shows that datasheet for the actual NEW inductor and compares it to the original OLD inductor
- It is observed the Actual NEW inductor DOES NOT MEET the requirements for ACT

What was presented for ACT

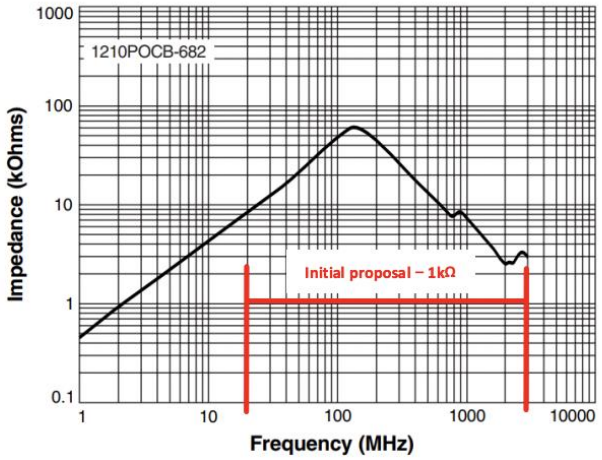
- This bullet states that the Old Inductor on the right-hand side has issues for broadband noise rejection
- Proposes the New inductor on the left.

Turned out,
the New PoC inductor
DOES NOT EXIST!!

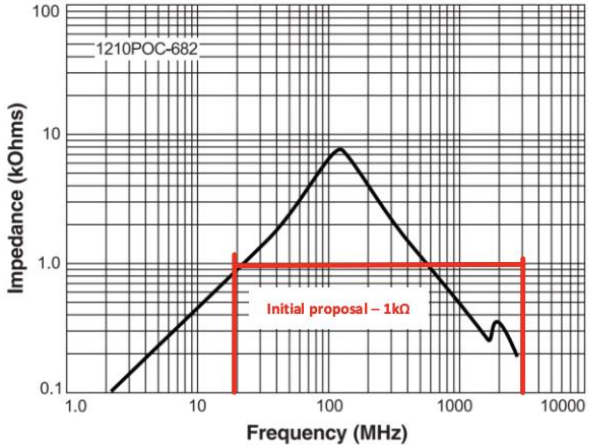
Can ACT Achieve 1 inductor Solution

- Older PoC inductors have issues meeting the broadband noise rejection required for 802.3dm
- New PoC inductors are able cover broadband noise rejection required with broadband impedance response

New PoC Inductor



Old PoC Inductor

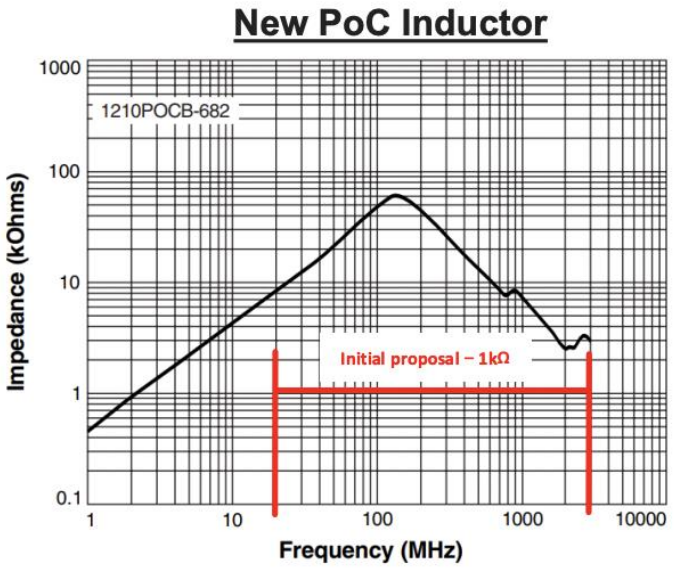


Referenced: https://www.coilcraft.com/getmedia/9804936a-6bb5-49a8-bcd2-09eba1192490/1210pocb.pdf
Referenced: https://www.coilcraft.com/getmedia/5e8de018-68c5-4442-84ce-d5212c44660c/1210poc.pdf

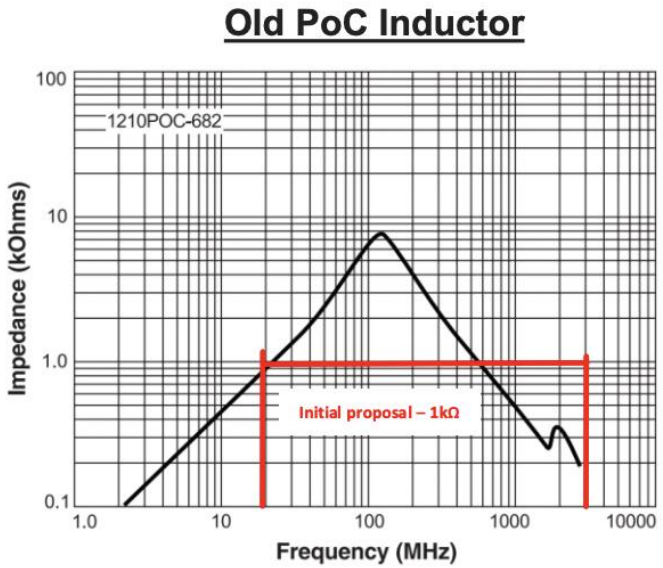
Above slide is as it was presented in
https://www.ieee802.org/3/dm/public/0125/Houck_3dm_02_0121_5.pdf

Actual Inductor charts shown side by side!

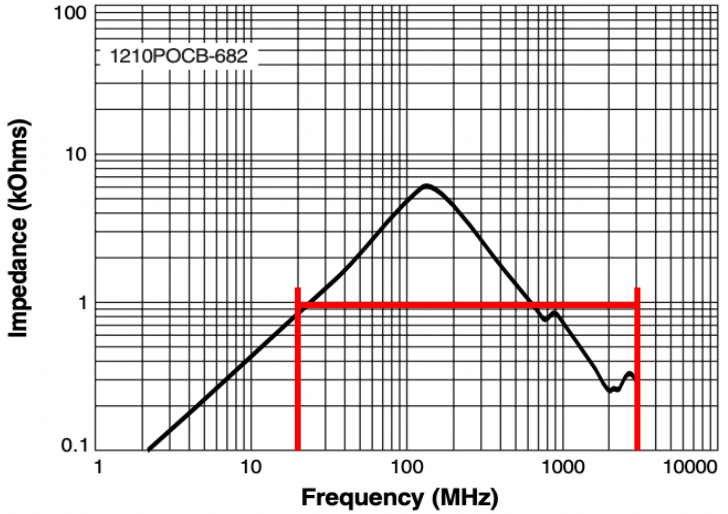
Claimed NEW inductor



Actual OLD inductor



Actual NEW inductor (according to the datasheet)



- "Claimed" NEW and "Actual" NEW are mismatched by a factor of 10x
- Old and Actual NEW are not very different from each other
- ACT presentation already stated that the OLD inductor is not sufficient.

Summary

- Previous **ACT** presentation stated that existing Old single 6.8uH inductor can not meet broadband noise cancellation requirements of ACT
- A NEW “mystery” inductor that was supposed to solve the problem was presented.
- There were suggestions to put the “new” magic inductor into the *annex of the standard*.
- It is now clear that the proposed New inductor does not exist.
- The Actual NEW inductor is very similar to the OLD inductor, which is already stated to not work for ACT.
- Actual **ACT** inductor value and characteristics not shown at IEEE and remains a mystery**!**

Thank You