

SCA #1 & #2 issue investigation

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nSB SCA #1 & #2 issue

Paolo pointed out that the problem could be with timing and suggested us to check where it is exactly: uplink or downlink, i.e. SCA has a problem with receiving the commands or GBTx with receiving a response.

To check it we performed the following tests:

Uplink

Alternation of the clock driver strength (4 bit register, our default value is 4'b0000 - the max current). We can change this value only for groups of eLinks. Concerned group contains SCAs #1, #2, #4, #6 & #21.

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Uplink - continue

We checked the behaviour of our system decreasing modulation current value. At the beginning SCA #1 was inaccessible, SCA #2 was ok. At the value of 9-10 (dec) SCA #1 appeared, but with "timeout" errors, further decreasing in the range 11-14 improves the situation, errors disappeared, sometimes we observe "floating" "second reading" problem, but then it also goes away. But together it improves in SCA #1 second reading appears at SCA #21.

We also tried to change data driver strength - no visible changes.

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Downlink

We can select which type of phase alignment (between data & clock) use:

- Static phase selection
- Training mode (not working)
- Automatic phase tracking

In our default config we use static phase selection, but all the phases set to zero. We tried Automatic phase tracking and with it we can see all SCAs and communicate without timeout errors (sometimes there are second readings, but could be also firmware problem)

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Automatic mode cannot be used in operation, because of SEU vulnerability, so the next step is to find and set the proper phase values for eLinks.