Conceptual relationships among TP2, TP3 and budget

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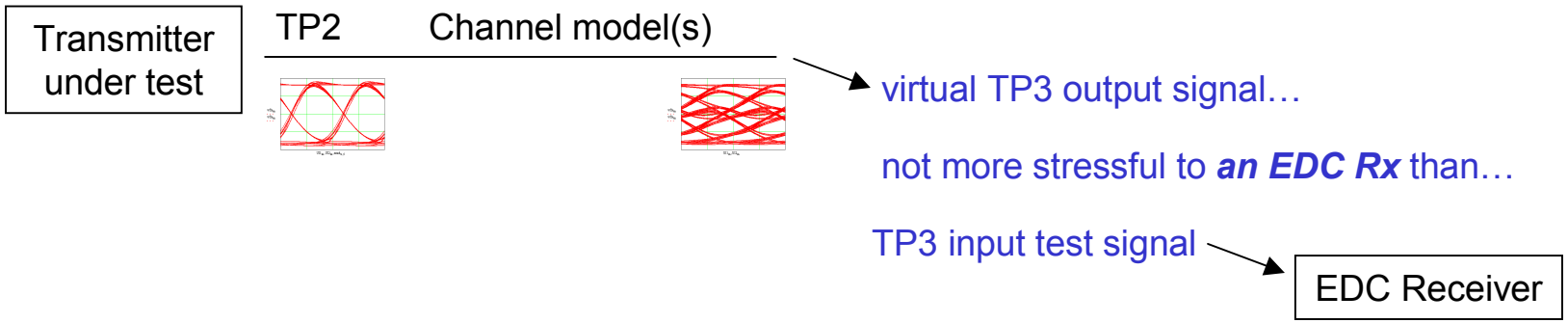
Premises

- per lindsay_02_0904



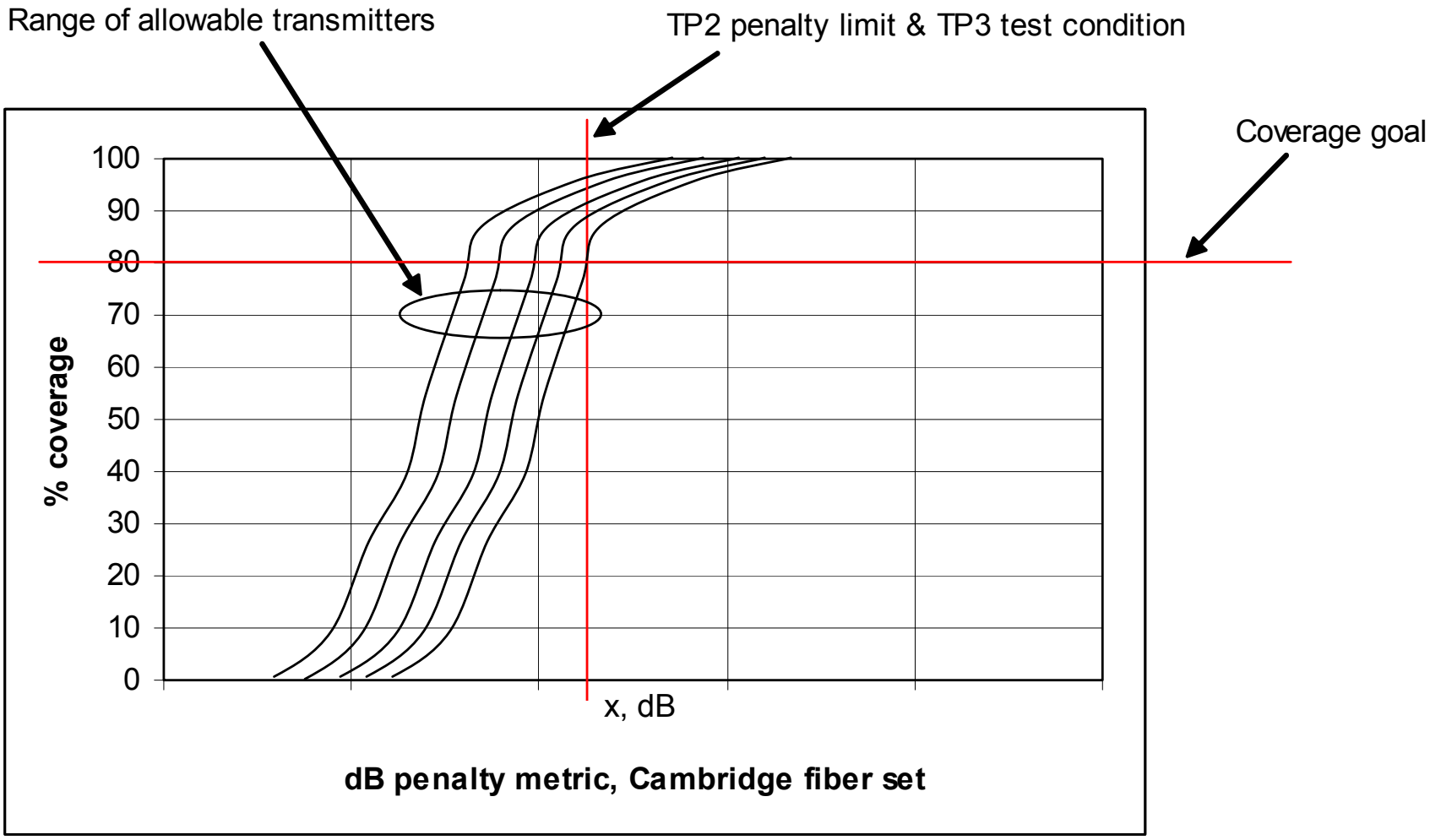
- Stresses and limits must relate to and be controlled by the budget
  - Purpose of tests same as budget: interoperability

Part A
Correlated penalties and stresses

part A relationships

- TP3 test will include *ref Tx* & emulate channel ISI
  - TP3 test needs to represent combination of ~w/c channels and Tx
- Proposed TP2 test will include the *DUT Tx* & channel ISI
  - *TP2 penalty test limit not greater than TP3 penalty*
- The penalty value should relate directly to budget

Graphical view



part A proposal details

- Use TP3 ISI generator descriptions for TP2 SW test channels
- Use BT4 filter (realizable) & EML source for TP3 ref Tx
  - Combined effects with PG probably ~Gaussian
    - Linear and correctable
- TP3 test condition same as TP2 limit
  - Propose 5 dB (TBD), PIE-D
    - Key budget value
    - 220 meters, 80% w/c offsets within Cambridge set
    - ~70 psec Gaussian pulse at TP2, 20-80%
      - Should offer reasonable flexibility between correctable and uncorrectable impairments at TP2

Part B
Uncorrelated penalties and stresses

part B relationships

- TP3 will add amplitude noise and jitter to emulate RIN, other Tx noise(?), and modal noise
  - This setup will have an OMA/noise ratio and jitter
- Proposed TP2 test must impose limits on amplitude noise and jitter
  - Amplitude noise limit must relate/translate to and be within RIN and other Tx noise portion of TP3 OMA/noise
  - Similar concept for jitter
- The OMA/noise values must relate to budget
  - (other) Jitter may not relate directly to budget, but TP2 and TP3 values should relate closely to each other

part B details

- Limit TP2 rms noise to
  - TBC
    - Same as RIN value used in TP3 test
    - Will MN exist in the test?
  - Allow compensation of ref Rx noise
  - pk-pk limit too?
- Limit TP2 rms jitter to
  - TBD
    - Relate to 0.1 UI SJ used in TP3 test + allow for noise to jitter translation via edge rate
  - pk-pk limit too?

Budget

Budget, vertical stresses and limits

Item	dB	dBm	Comment
Tx_min		-4.5	Min Tx OMA at TP2
Connector loss	1.5		
Fiber loss	0.4	-6.4	Min received OMA at TP3
Consequent_pen	0.2		
Dynamic adaptation penalty	0	-6.6	TP3 stress test OMA, if dynamic impulse shape is not in setup
TP2 uncorrelated penalty	0.4		Max penalty from the uncorrelated TP2 test
Modal noise penalty	0.5		For TP3 test, combine with max uncorrelated TP2 penalty; emulate combination with white noise
TP2 & dispersion penalty, DFE	5		Max penalty from the correleted TP2 test; combined effect of Tx source and ISI generator in TP3 test
Rx implementation penalty	1	-13.5	EDC Rx OMA sensitivity
Matched filter vs. -LR Rx	-0.9	-12.6	LR-equivalent Rx OMA sensitivity

PIE-D vs. PIE-L

- Propose using PIE-D or equivalent for budgeting
  - per Aronson proposal drafted in Ottawa
  - Reduce effort and confusion
  - Appears DFE is required, especially if 300m is desired
- Add Rx implementation penalty