Characterizing Split-Symmetric Responses

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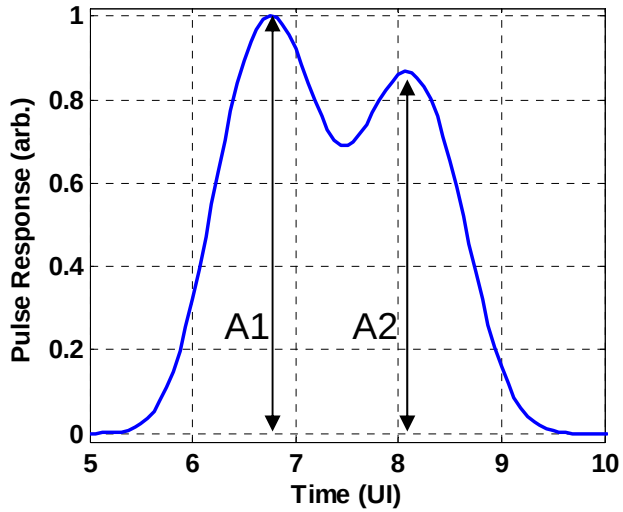
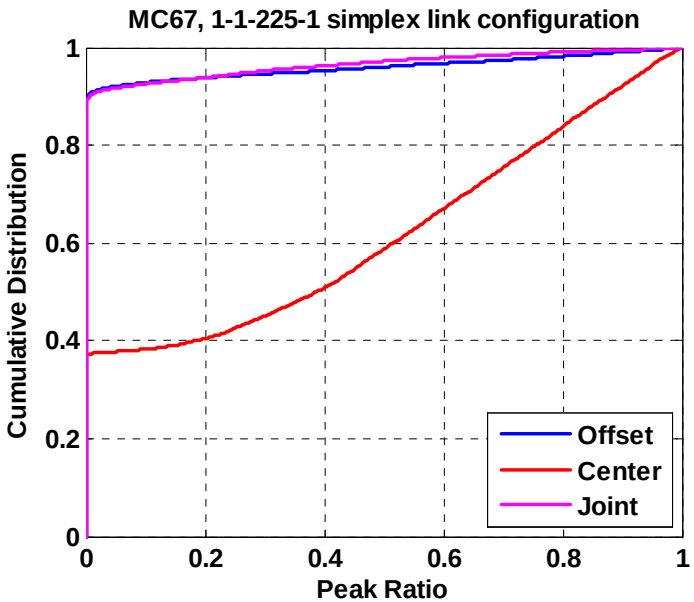
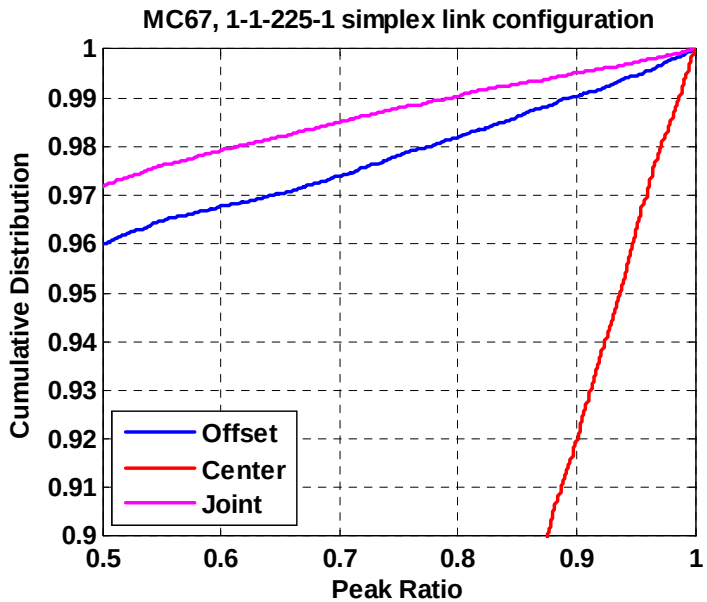
Characterizing Split-Symmetric Response

- Define “Peak Ratio” to characterize split-symmetric response
- Peak Ratio = A2 / A1
  - A1 = amplitude of largest peak
  - A2 = amplitude of 2nd largest peak
  - Ignore other (smaller) peaks
- If only one peak exists, define peak ratio = 0



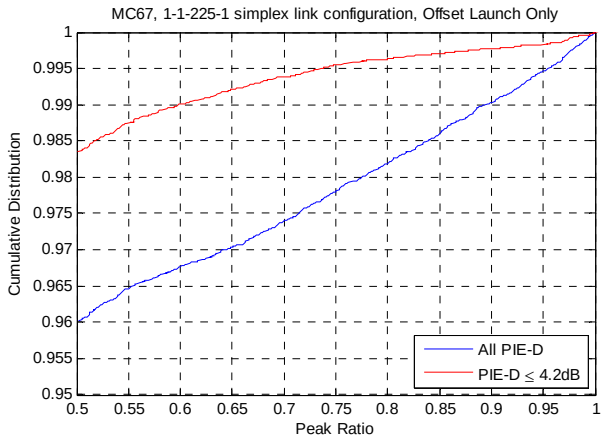
MC67 Simulation Results

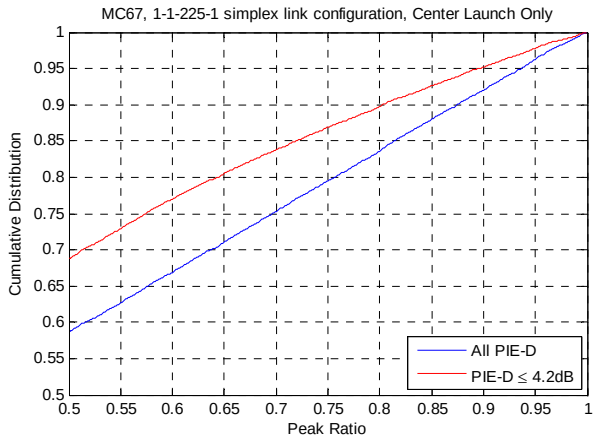


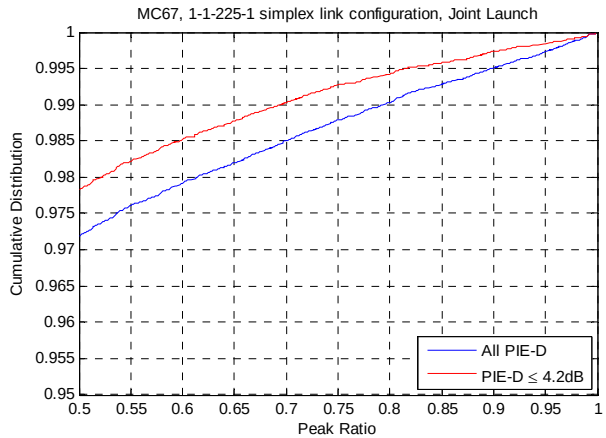


- All links included, i.e. $0 \leq$ PIE-D $\leq \infty$
- Split pulses more common for center launch, but exist for all launches
- Peak Ratio 99%-tile ~0.8 for joint launch
  - Current split-symmetric stressor has peak ratio = 0.95
  - Not too bad for 300m, but pessimistic for 220m

Split-Symmetric vs. Launch vs. PIE-D



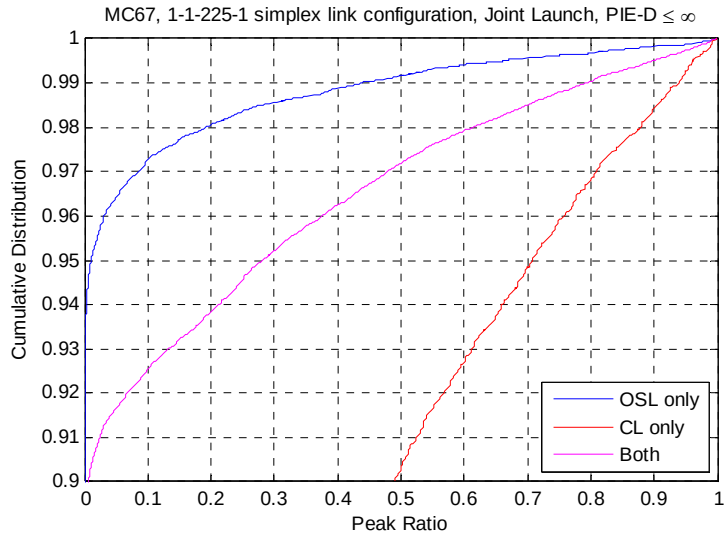


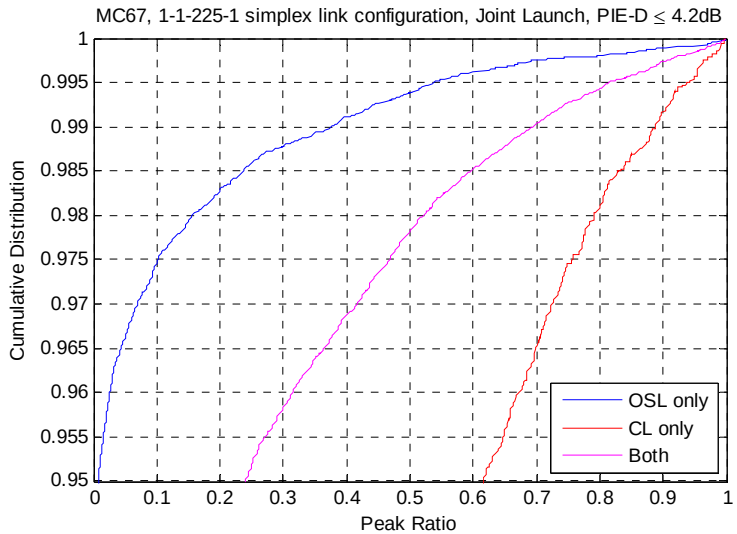


- Compare "passing" links (PIE-D $\leq$ 4.2dB) against total population
  - Split symmetric occur but are rare for OSL, more common for CL & JL
- Joint launch statistics
  - 22% are CL
  - 78% are OSL
  - Relative weighting similar for all links (PIE-D $\leq \infty$) or "passing" links (PIE-D $\leq$ 4.2dB)

Joint Launch & Split-Symmetric

- Joint launch population
  - ~5% of OSL cases are potential split-symmetric
- Possible options
  - With current stressor, support comment #15
    - Increase OMA for split-symmetric case
  - Retarget stressor peak ratio to match 99 %-tile of joint launch (1:0.8)
    - Leave OMA for split-symmetric case unchanged?
  - Replace split-symmetric with pure symmetric





Candidate Stressors

- Stressors created using methodology described in ewen_1_0305.pdf
  - Constraints modified to target desired shape

- Split-symmetric with peak ratio ~ 0.8

Index	A1	A2	A3	A4	MSE	PIE-D	TSM	# peaks	Pk Ratio	Peak Δt
1	0.000	0.526	0.056	0.417	0.064	3.86	0.661	2.00	0.800	1.438
2	0.000	0.475	0.119	0.406	0.050	4.07	0.629	2.00	0.867	1.313

- Pure symmetric

Index	A1	A2	A3	A4	MSE	PIE-D	TSM	# peaks	Pk Ratio	Peak Δt
1	0.101	0.389	0.437	0.073	0.024	3.85	-0.021	1.00	0.000	0.000
2	0.110	0.349	0.445	0.095	0.028	4.09	-0.050	1.00	0.000	0.000
3	0.111	0.353	0.435	0.101	0.037	4.20	-0.050	1.00	0.000	0.000