



# IEEE 802.3at Task Force

## Phihong /UNH

### Midspan BLW Testing

#### results



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# Agenda



- Objectives
- Test Setup
- Test Results
- Summary





# Objectives

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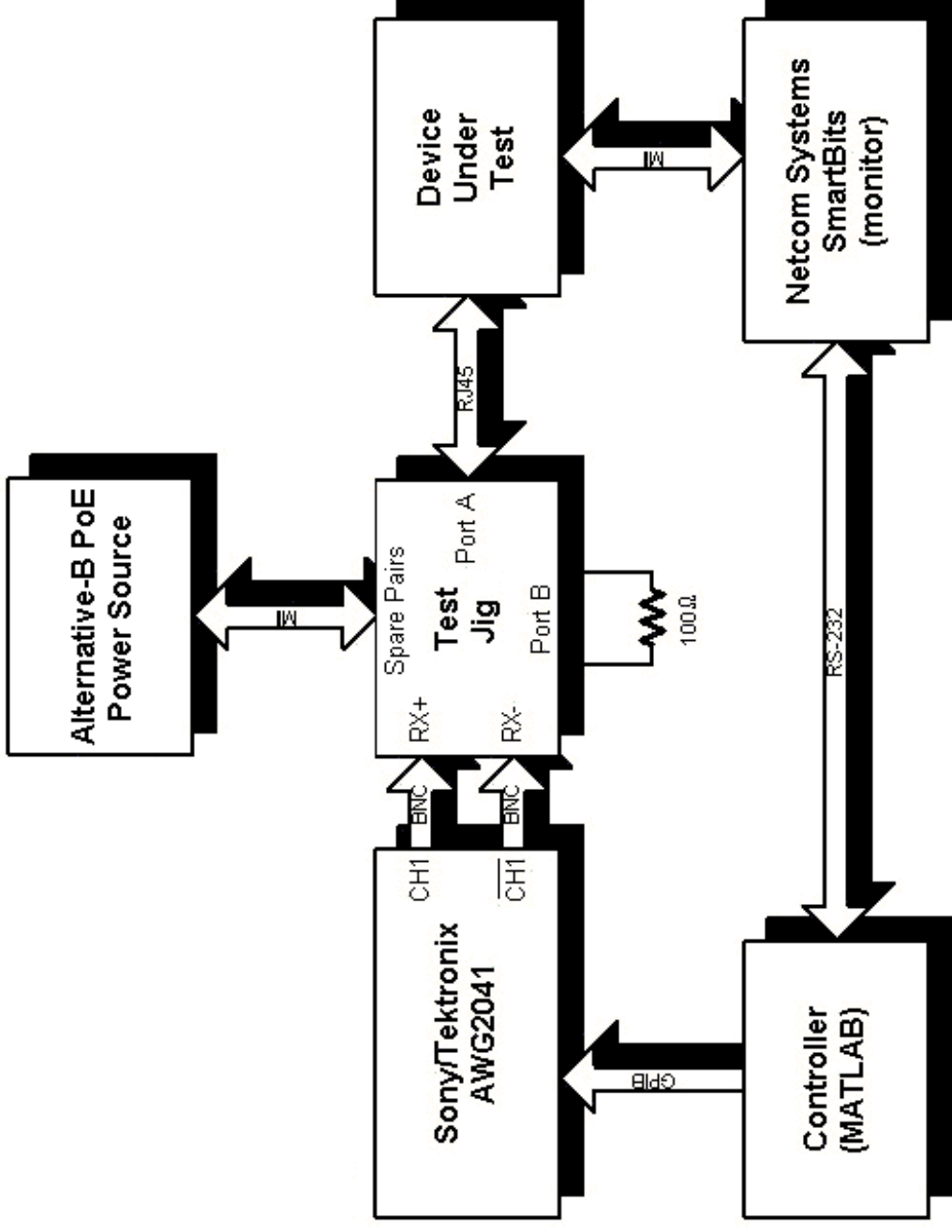
- Show by UNH test data that a midspan on Alt A doesn't cause more BLW packet loss than a channel without a midspan.



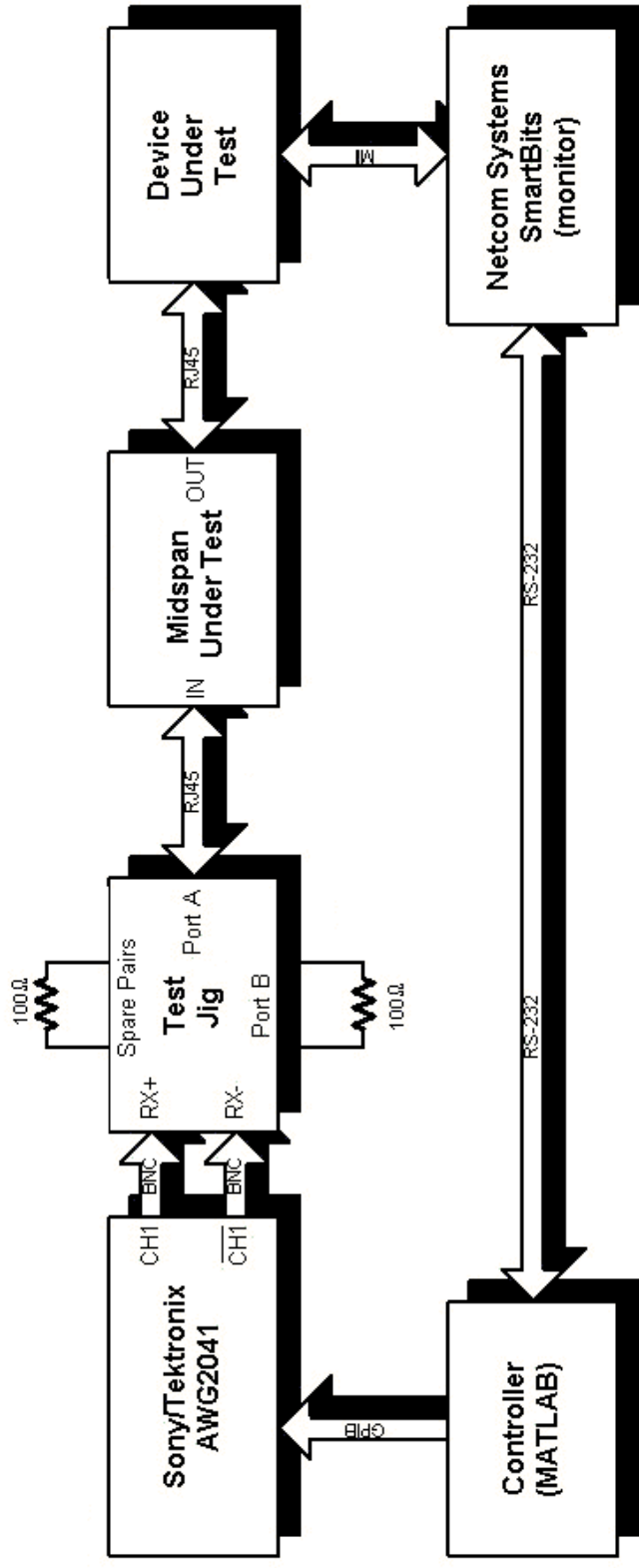
# UNH / Phihong Test Setup

- Ten devices were selected at random and the selection includes both PD and PSE devices.
- The BLW tests employ uni- and bi-directional BLW packets also known as “killer packets”. For each of the two killer packets the rise times are set to 3 and 5ns.
- Each of these cases was run at 0, 75 and 100 meters simulated attenuation. This resulted in a total of 12 cases.
- The killer packets were loaded into the AWG and transmitted to the device. A total of 20,000 packets were transmitted in each case. In order to ensure a bit error rate of 10<sup>-8</sup> (with 95% confidence) the device must not drop more than 7 out of 20,000 packets. Packet reception was monitored with a smartbits.

# Test Setup Diagram W/O Midspan on Alt A



# Test Setup Diagram with Midspan on Alt A





# UNH / Phihong Test Setup

- OCL is the open circuit inductance of the receiver pairs with 8mA current per Clause 25. This is for the device that is being tested. The OCL is used in generating the killer packets.
- The devices are switches, phones/access points. Any PD device was powered with the midspan. The devices are 10/100. I am not sure what is in these devices for BLW compensation.



# UNH / Phihong Test Results

O = no packets dropped / 20000 = all packets dropped

#	OCL	Atten			No Midspan			With Midspan - Phihong POE30U-560(G)					
		3/uni	5/uni	5/bi	3/uni	5/uni	5/bi	3/uni	5/uni	5/bi			
1	224	0	0	0	1	0	0	0	0	0	0	0	0
		75	0	0	0	0	0	75	0	0	0	0	0
		100	0	0	1	0	0	100	0	0	0	0	2
2	380	0	0	0	0	189	0	0	0	0	19881	0	20000
		75	0	71	17413	18988	0	75	0	154	20000	0	20000
		100	0	8022	16405	18688	0	100	3	7471	20000	0	20000
3	586	0	0	0	0	0	0	0	0	0	0	0	0
		75	0	0	0	0	0	75	0	1	0	0	0
		100	0	0	2	0	0	100	0	0	0	0	0
4	541	0	0	0	20000	20000	0	0	0	0	20000	0	20000
		75	0	0	20000	20000	0	75	0	0	20000	0	20000
		100	7	342	20000	20000	0	100	88	19990	20000	0	20000
5	202	0	0	0	0	0	0	0	0	0	0	0	0
		75	0	0	0	0	0	75	0	0	0	0	0
		100	0	0	0	0	0	100	0	0	0	0	0
6	528	0	0	0	0	0	0	0	0	0	0	0	0
		75	0	0	0	0	0	75	0	0	0	0	0
		100	0	0	0	0	0	100	0	0	0	0	1
7	735	0	0	0	0	0	0	0	0	0	0	0	0
		75	0	0	0	0	0	75	0	0	0	0	0
		100	0	2	0	0	0	100	0	0	0	0	0
8	640	0	0	0	0	0	0	0	0	0	0	0	0
		75	0	0	0	0	0	75	0	0	0	0	0
		100	0	0	0	0	0	100	0	0	0	0	0
9	623	0	0	0	0	0	0	0	0	0	0	0	0
		75	0	0	0	0	0	75	0	0	0	0	0
		100	0	0	0	0	0	100	0	0	0	0	0
10	638	0	20000	20000	20000	20000	20000	0	20000	20000	20000	20000	20000
		75	20000	20000	20000	20000	20000	75	20000	20000	20000	20000	20000
		100	20000	20000	20000	20000	20000	100	20000	20000	20000	20000	20000





# UNH / Phihong Test Results

0 = no packets dropped / 20000 = all packets dropped

#	OCL	No Midspan				With Midspan - Phihong POE60U-560(G)					
		Atten	3/uni	5/uni	3/bi	5/bi	Atten	3/uni	5/uni	3/bi	5/bi
1	224	0	0	0	1	0	0	0	0	1	0
		75	0	0	0	0	0	0	0	0	0
		100	0	0	1	0	0	0	0	0	0
2	380	0	0	0	0	189	0	0	0	20000	20000
		75	0	71	17413	19988	0	121	0	20000	20000
		100	0	8022	18405	19888	2	7589	0	20000	20000
3	588	0	0	1	0	0	0	0	0	0	0
		75	0	0	0	0	0	0	0	0	0
		100	0	0	2	0	0	0	0	0	0
4	541	0	0	0	20000	20000	0	0	0	20000	20000
		75	0	0	20000	20000	75	0	0	20000	20000
		100	7	342	20000	20000	100	0	0	20000	20000
5	202	0	0	0	0	0	0	0	0	0	0
		75	0	0	0	0	75	0	0	0	0
		100	0	0	0	0	100	0	0	0	0
6	528	0	0	0	0	0	0	0	0	0	0
		75	0	0	0	0	75	0	0	0	0
		100	0	0	0	0	100	0	0	0	0
7	735	0	0	0	0	0	0	0	0	0	0
		75	0	0	0	0	75	0	0	0	0
		100	0	2	0	0	100	0	0	0	0
8	640	0	0	0	0	0	0	0	0	0	0
		75	0	0	0	0	75	0	0	0	0
		100	0	0	0	0	100	0	0	0	0
9	623	0	0	0	0	0	0	0	0	0	0
		75	0	0	0	0	75	0	0	0	0
		100	0	0	0	0	100	0	0	0	0
10	638	0	20000	20000	20000	20000	0	20000	20000	20000	20000
		75	20000	20000	20000	20000	75	20000	20000	20000	20000
		100	20000	20000	20000	20000	100	20000	20000	20000	20000



# Test Results Summary



- If a device passes a BLW test without a midspan in-line, it will pass with the addition of the midspan.
- There are a few cases (bolded red) where the addition of the midspan caused the device to go from passing to failing.
- If the device fails the test without the midspan, the addition of a midspan introduces minimal error.
- For the handful of devices tested it seems that if the device can handle BLW packets properly, the addition of a midspan will not introduce enough error to cause significant packet loss.

