

Test of new samples from AF  
sub1 and comparison with  
earlier batch tape 170

May 27, 2020

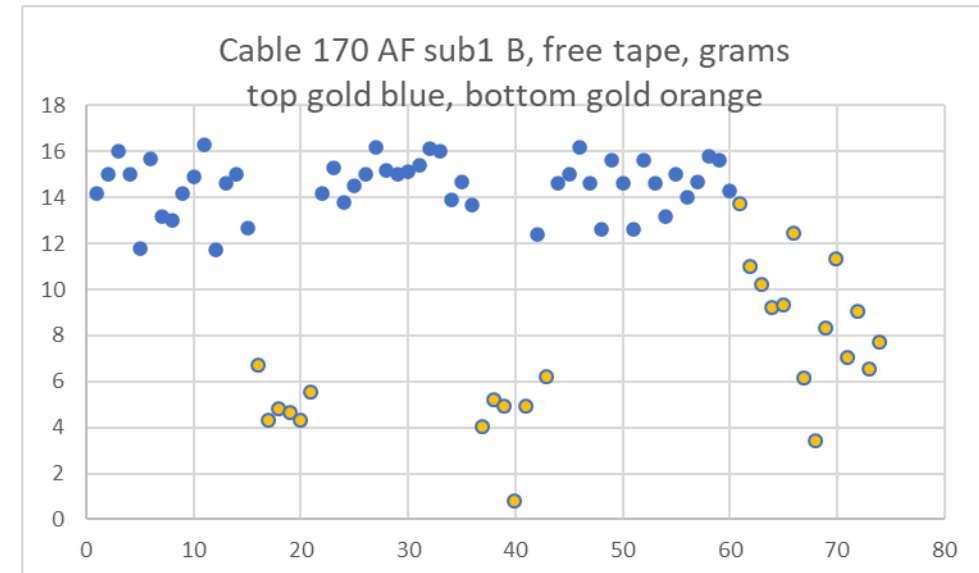
# Samples received May 2020 from Vendor Altaflex sub1 with new gold pad process



- These are short sections of the tape, 3 modules long
- Sample 1 is free and was bonded with double stick tape support
- Sample 2 was laminated to an aluminum plate with epoxy
- No time or access for CF cocure
- Pads labeled A = top gold
- Pads labeled B = bottom gold

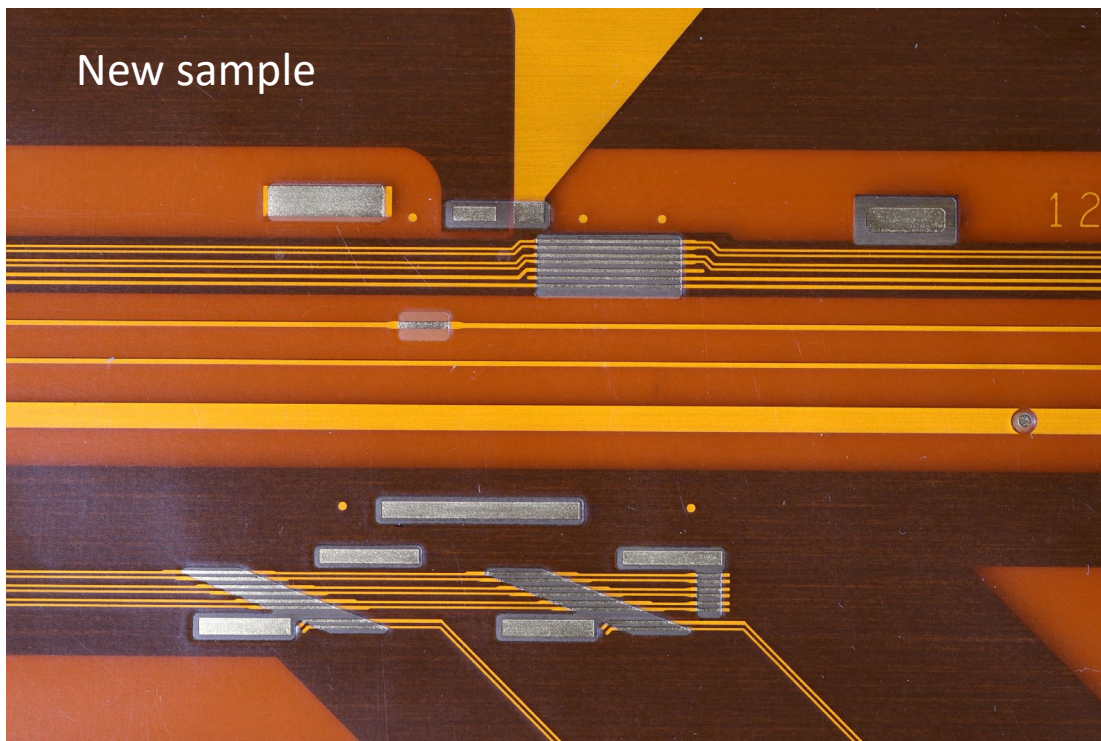
# Visual comparison

- We used tape 170 from the earlier Altaflex sub1 batch for comparison
- On this tape the region B (bottom gold = orange dots) pads had systematically weaker bonds and heal lift failures than region A (top gold = blue dots)
- Tape 170 B type pads are very reflective as compared to A type
- New samples A and B pads are visually much similar





New sample



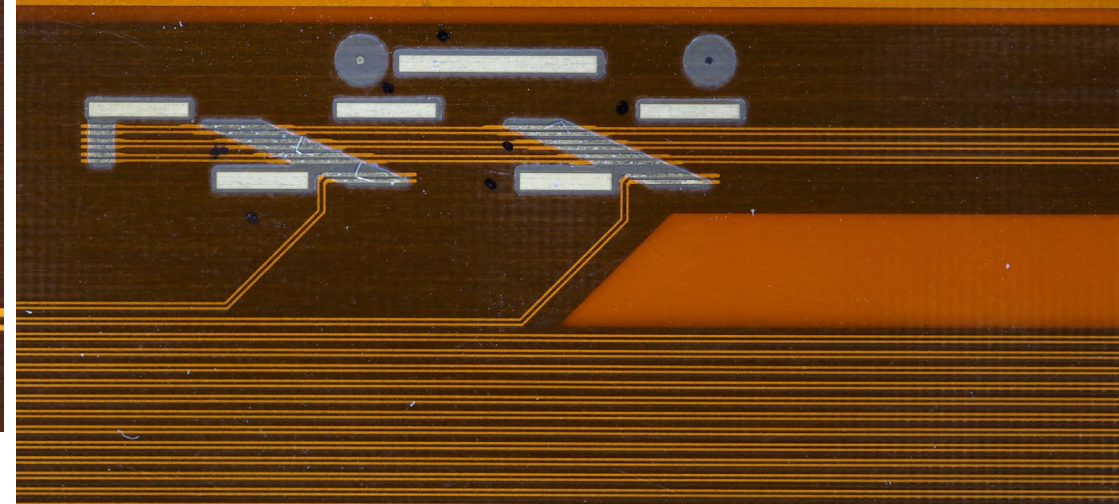
Tape 170 from earlier batch

*Region 3*

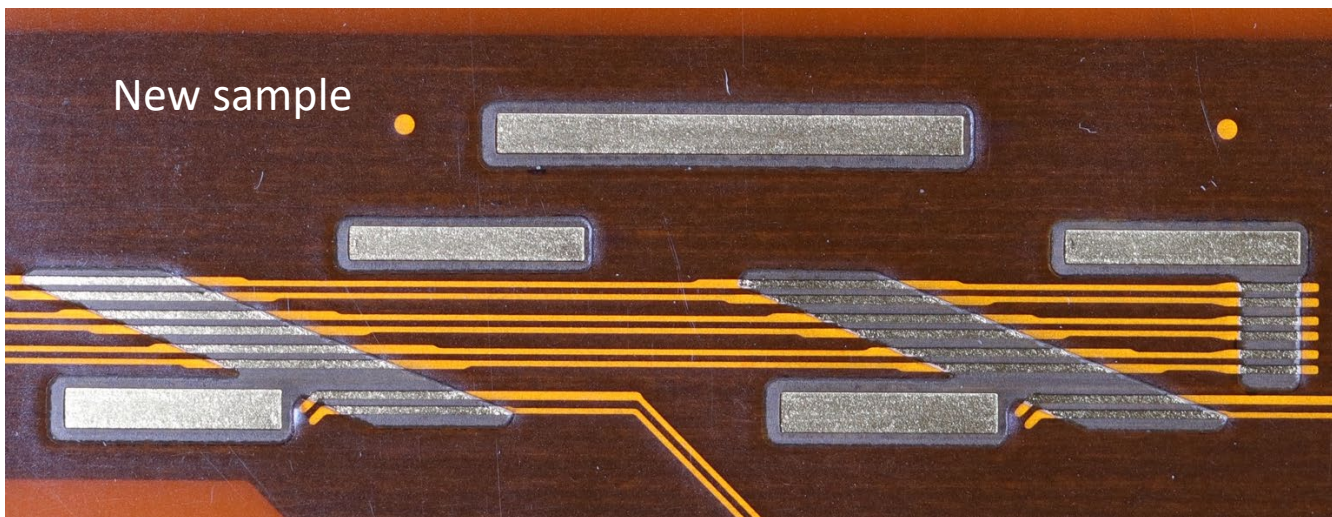


Tape 170 from earlier batch

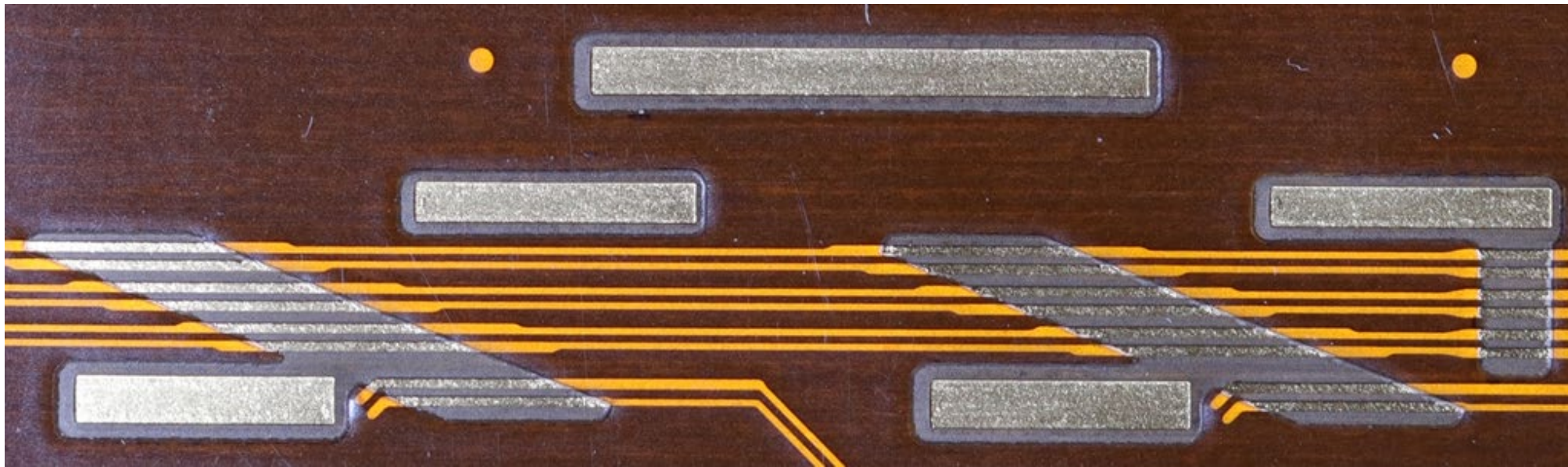
*Region 2*



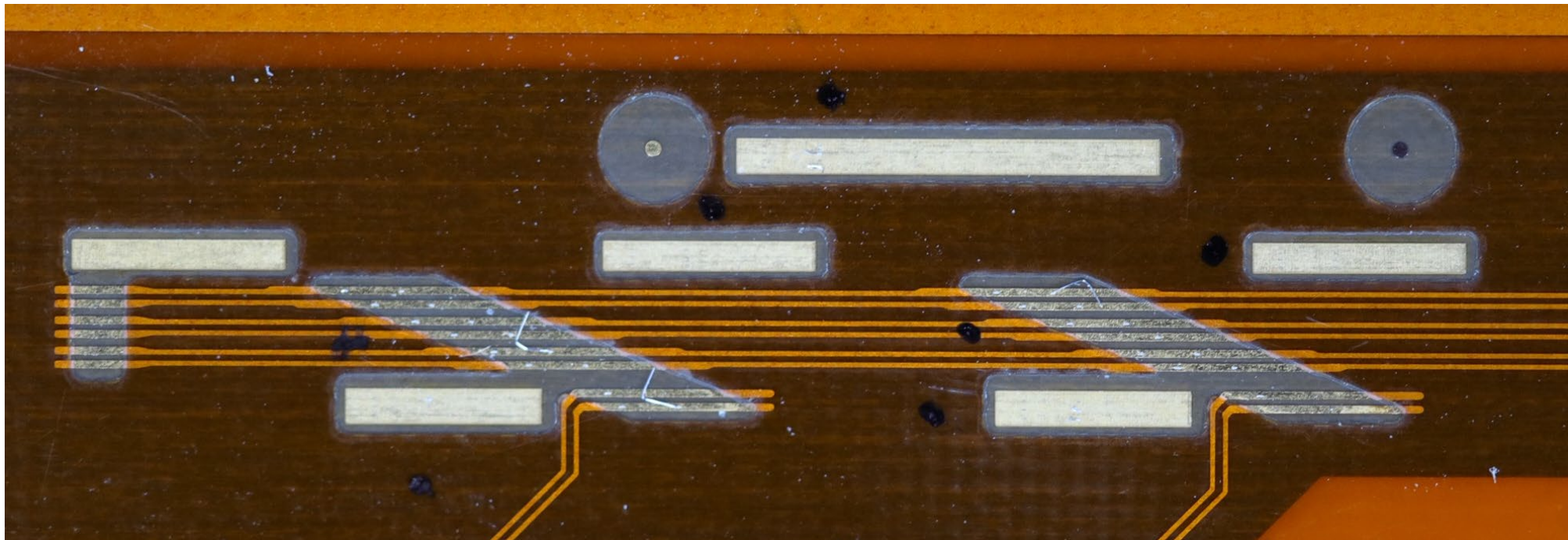
New sample







New  
Sample



Tape 170  
From earlier  
batch

# Observation

- On the new samples the gold surface on the bottom gold and top gold look very similar
- On the earlier batch (Tape 170-173) from AF-sub1, the bottom gold was very smooth and had a “matte” reflection/optical character. Bonds were systematically weaker on the bottom gold and fine on the top gold.

# Bonding tests, wire breaks

- We performed bond pull tests on both Sample 1 and Sample 2, both and A and B type pads (grams)
- They were not distinguishable statistically
- There were no heal lifts
- Conclusion: new pad metallization meets or exceeds our specification

	Sample 1	Sample 1	Sample 2	Sample 2
	A	B	A	B
number	102	102	102	82
average	15.3	14.8	14.7	14.8
st dev	1.22	1.73	1.41	1.25
minimum	11.8	9.2	9.8	9.3