


*** Valued Customer: If this stackup is accepted, please add this PDF to the production data package. ***
 *** Preliminary stack up subject to change based on review of final data and technology. ***

Job number: f2888	Material: EM-890K, EM-37B(D)	External Stackup Report Report v1.78	
Part number: APX4, Rev: A	Impedance: Yes		
Customer: UNIVERSITY OF WISCONSIN	Date: 26-Dec-2024		
Panel size: 18X24	Created by: Mohsin Luhar		

Layer	Type	CU Weight	CU %	Material Description	Via Structure	Segment	Glass Style	Material Family	Dielectric constant @ 1GHz	Thickness After lamination [mil]
Soldermask										0.80
1	Mixed	H	12	Press thk = 3.56 mil		Foil	1078(71)	Foil	2.86	1.80
2	Plane	1	88	3.5 mil 1/H		Core	1-1078	EM-890K	2.90	1.20
3	Signal	H	20	Press thk = 3.38 mil		Prepreg	1078(73)	EM-890K	2.84	3.38
4	Plane	1	88	3.5 mil 1/H		Core	1-1078	EM-890K	2.90	3.50
5	Signal	H	20	Press thk = 3.38 mil		Prepreg	1078(73)	EM-890K	2.84	3.38
6	Plane	1	88	3.5 mil 1/H		Core	1-1078	EM-890K	2.90	3.50
7	Mixed	H	20	Press thk = 3.22 mil		Prepreg	1078(71)	EM-890K	2.86	3.22
8	Mixed	1	88	Press thk = 6.26 mil		Foil	106(74)	EM-37B(D)	3.52	2.40
						Prepreg	106(74)	EM-37B(D)	3.52	6.26
							106(74)	EM-37B(D)	3.52	
9	Plane	4	88	5.0 mil 4/4		Core	1-2116	EM-370 (D)	4.05	5.40
10	Plane	4	88	Press thk = 6.26 mil		Prepreg	106(74)	EM-37B(D)	3.52	5.00
							106(74)	EM-37B(D)	3.52	5.40
							106(74)	EM-37B(D)	3.52	
11	Mixed	1	88	Press thk = 3.22 mil		Foil	1078(71)	Foil	2.86	2.40
12	Mixed	H	20	3.5 mil H/1		Core	1-1078	EM-890K	2.95	3.22
13	Plane	1	88	Press thk = 3.38 mil		Prepreg	1078(73)	EM-890K	2.84	0.60
14	Signal	H	20	3.5 mil H/1		Core	1-1078	EM-890K	2.90	3.50
15	Plane	1	88	Press thk = 3.56 mil		Prepreg	1078(71)	EM-890K	2.86	1.20
16	Mixed	H	12			Foil		Foil		3.56
Soldermask										1.80
										0.80

Specification (Over mask on plated copper):	mil
Overall Board Thickness:	88.7
Tolerance:	+8.9/-8.9
Min-Max Board Thickness:	79.8-97.6

Anticipated Board Thickness:	mil
After lamination:	84.51
Over mask on plated copper:	88.51

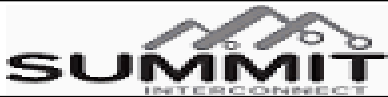
Grain in 18" Dimension

Impedance Table

InSolver

Layer	Impedance Requirement [ohms]	Tolerance [ohms]		Type	Upper Reference	Lower Ref	Designed Line Width [Mil]	Designed Spacing [Mil]	Finished Line Width [Mil]	Finished Spacing [Mil]	Impedance Simulation [ohms]
		+	-								
1	100	10	10	Differential		2	5.5	9.00	5.8	8.70	99.914
1	95	9.5	9.5	Differential		2	6.2	8.30	6.3	8.20	95.529
1	50	5	5	Single Ended		2	7.4		7.3		49.331
3	100	10	10	Differential	4	2	3.4	6.80	3.75	6.45	100.502
3	50	5	5	Single Ended	4	2	3.6		3.9		50.576
3	95	9.5	9.5	Differential	4	2	3.7	6.50	4.1	6.10	95.629
5	100	10	10	Differential	6	4	3.4	6.80	3.75	6.45	100.502
5	50	5	5	Single Ended	6	4	3.6		3.9		50.576
5	95	9.5	9.5	Differential	6	4	3.7	6.50	4.1	6.10	95.629
7	100	10	10	Differential	8	6	3.4	6.80	3.7	6.50	99.873
7	50	5	5	Single Ended	8	6	3.6		3.9		49.795
7	95	9.5	9.5	Differential	8	6	3.7	6.50	4.1	6.10	94.310
12	100	10	10	Differential	11	13	3.4	6.80	3.7	6.50	99.488
12	50	5	5	Single Ended	11	13	3.6		3.9		49.601
14	100	10	10	Differential	13	15	3.4	6.80	3.75	6.45	100.502
14	50	5	5	Single Ended	13	15	3.6		3.9		50.576
16	100	10	10	Differential		15	5.5	9.00	5.8	8.70	99.914
16	50	5	5	Single Ended		15	7.4		7.3		49.331

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Remarks

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- * Any targeted thickness .0046" and greater shall have a minimum tolerance of +/- .001 after lamination.
- * Any targeted thickness .0045" and below shall not be held to the minimum dielectric .0035429" as specified in IPC-6012 section 3.6.2.15. Unless agreed upon in writing from Streamline Circuits Inc. The minimum thickness per this exception shall not be less than .0009839" per IPC-6012 section 3.6.2.17.