UNITS: um | Prepreg > Pressed um < Copper | Dk Frequency: 100 MHz | Impedance: ohms | Total Board Thickness: 1920.24 um

Layer No.	Via	Description	Layer Name	Material Type	Dielectric Constant	Dielectric Thickness	Copper Thickness	Trace Clearance	Trace Width	Current (Amps)	Characteristic Impedance (Zo)	Edge Coupled Differential (Zdiff)	Broadside Coupled Differential (Zdbs)	Notes
		Soldermask		Dielectric	3.3	12.7								
1	200	Signal	Top	Conductive			35.56	150	175	0.46	62.55	99.28		Signal
		Prepreg		370HR; 1086; Rc= 63% (100MHz)	4.02	78.74								Tg=180C; Df=0.0169
		Prepreg		370HR; 1086; Rc= 63% (100MHz)	4.02	78.74								Tg=180C; Df=0.0169
2		Plane	GND	Conductive			17.78							GND
		Core		370HR; 2-1086; Rc=59% (100MHz)	4.09	152.4								Tg=180C; Df=0.0163
3		Signal	Signal	Conductive			17.78	200	100	0.19	54.15	101.86	73.1	Signal
		Prepreg		370HR; 1086; Rc= 63% (100MHz)	4.02	78.74								Tg=180C; Df=0.0169
		Prepreg		370HR; 1086; Rc= 63% (100MHz)	4.02	78.74								Tg=180C; Df=0.0169
4		Plane	GND	Conductive			17.78							GND
		Core		370HR; 2-1086; Rc=59% (100MHz)	4.09	152.4								Tg=180C; Df=0.0163
5		Signal	Signal	Conductive			17.78	200	100	0.19	54.15	101.86	67.74	Signal
		Prepreg		370HR; 1086; Rc= 63% (100MHz)	4.02	78.74								Tg=180C; Df=0.0169
		Prepreg		370HR; 1086; Rc= 63% (100MHz)	4.02	78.74								Tg=180C; Df=0.0169
6		Plane	GND	Conductive			35.56							GND
		Core		370HR; 2-1086; Rc=59% (100MHz)	4.09	152.4								Tg=180C; Df=0.0163
7		Plane	VCC	Conductive			35.56							VCC
		Prepreg		370HR; 1086; Rc= 63% (100MHz)	4.02	78.74								Tg=180C; Df=0.0169
		Prepreg		370HR; 1086; Rc= 63% (100MHz)	4.02	78.74								Tg=180C; Df=0.0169
8		Signal	Signal	Conductive			17.78	200	100	0.19	54.15	101.86	83.14	Signal
		Core		370HR; 2-1086; Rc=59% (100MHz)	4.09	152.4								Tg=180C; Df=0.0163
9		Plane	GND	Conductive			17.78							
		Prepreg		370HR; 1086; Rc= 63% (100MHz)	4.02	78.74								Tg=180C; Df=0.0169
		Prepreg		370HR; 1086; Rc= 63% (100MHz)	4.02	78.74								Tg=180C; Df=0.0169
10		Signal	Signal	Conductive			17.78	200	100	0.19	54.15	101.86		Signal/Power
		Core		370HR; 2-1086; Rc=59% (100MHz)	4.09	152.4								Tg=180C; Df=0.0163
11		Plane	GND	Conductive			17.78							GND
		Prepreg		370HR; 1086; Rc= 63% (100MHz)	4.02	78.74								Tg=180C; Df=0.0169
		Prepreg		370HR; 1086; Rc= 63% (100MHz)	4.02	78.74								Tg=180C; Df=0.0169
12		Signal	Bottom	Conductive			35.56	150	175	0.46	62.55	99.28		Signal
		Soldermask		Dielectric	3.3	12.7								

Target Impedance	Tol +/-%	Layer No.	Trace Clearance	Trace Width	Current (Amps)	Characteristic Impedance (Zo)	Edge Coupled Differential (Zdiff)	Broadside Coupled Differential (Zdbs)	Notes
Pair 1	10	1	150	175	0.46	62.55	99.28		
Pair 1	10	3	200	100	0.19	54.15	101.86	73.1	
Pair 1	10	5	200	100	0.19	54.15	101.86	67.74	
Pair 1	10	8	200	100	0.19	54.15	101.86	83.14	
Pair 1	10	10	200	100	0.19	54.15	101.86		
Pair 1	10	12	150	175	0.46	62.55	99.28		

Via Span Definitions					
From	To	Hole Size	Tol +/-	Aspect Ratio	Via Type
1	12	200	76.2	7.66:1	PTH

Company:	Nikhef		**ICD Stackup Planner**
Project Name:	ETpathfinfer	**Fabricator::**	
Designer/Email:		Contact/Email:	
SP File Name::	12 Layer FMC Breakout.stk	Design Revision:	
Excel File Name::	12 Layer FMC Breakout.xlsx	Date::	22-4-2021

Min. Track/Gap (Outher)	0.15/0.15
Min. Track/Gap (Inner)	0.15/0.15
SMD Pads Top	749
SMD Pads Bottom	0
Minimum Pitch	0.50mm
Minimum Annular Ring	0.25mm
Total no. of holes	699
Largest hole size	2.7
Smallest hole size	0.25
No. of hole sizes	4
Connector Gold	No
Peel-Off mask	No
Scoring	No
Internal routing	No
Manufacturer's Logo	Yes, See drawing PCB-002
Date Marking	Yes, See drawing PCB-002
UL Marking	Yes, See drawing PCB-002

1. GENERAL
   1. Fabricate PCB in accordance with IPC-6012B, Class 2 and IPC-6013 when applicable.
   2. Bow and twist shall be 0.75% or less, measured in accordance with IPC-TM-650, method 2.4.22.
   3. Artwork may be adjusted by the PCB fabricator to compensate for manufacturing process tolerances or impedance requirements.
   4. All dimensions are mm.

2. MATERIALS
   1. Laminate and prepreg to be ISOLA 370HR or equivalent.
   2. Copper foil to be in accordance with IPC-4562.

3. HOLES
   1. Hole sizes are finished hole sizes after plating.
   2. No hole breakout allowed.

4. FINISH
   1. Apply Liquid Photo Image-able solder mask, color Red, per IPC-SM-840, Class H, to both sides of the board over bare copper.
   2. All exposed conductive pattern areas not covered with soldermask or other plating shall be plated with Electroless Nickel Immersion Gold, ENIG, per IPC-4552, suitable for wire-bonding.
   3. Solder mask images that are the same size as the component pads may be enlarged, but shal not be enlarged beyond 0.05mm per side. All other soldermask shall not be enlarged.
   4. Soldermask overlap on smd lands is not allowed.

5 MARKING
   1. UL logo, manufacturer's identification and date code shall be rendered on the top side of the pcb, in silkscreen.
   2. Silkscreen both sides of the pcb using non-conductive expoxy ink, color white. No ink shall be on exposed pads.

6 TEST REQUIREMENTS
   1. 100% netlist verification using the netlist information in the ODB++ data

REV.	BY	NOTES

FMC BREAKOUT BOARD EXTENDED

PROJECT : ETPATHFINDER

SHEET NAME : PCB SPECIFICATION

ET nr. : 11500.03.01.0

Designed by : Charli

Drawn by : Charli

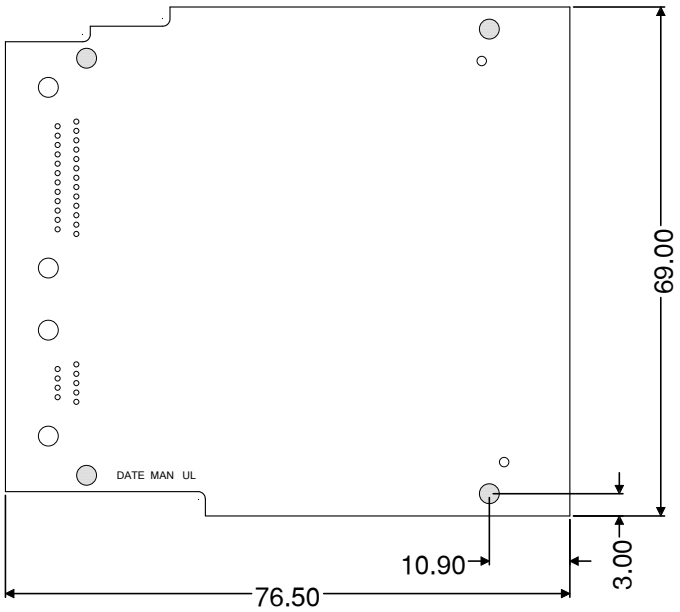
SHEETSIZE : 210 X 297 MM

SHEET 1 OF 3 | A4

Nikhef
Science Park 105 1098XG Amsterdam
+31 (0)20 - 5922000 www.nikhef.nl

Date 2021-04-20

Sheet Number PCB-001



REV.	BY	NOTES

FMC BREAKOUT BOARD EXTENDED

PROJECT : ETPATHFINDER

SHEET NAME : PCB DIMENSIONS

ET nr. : 11500.03.01.0

Designed by : Charli

Drawn by : Charli

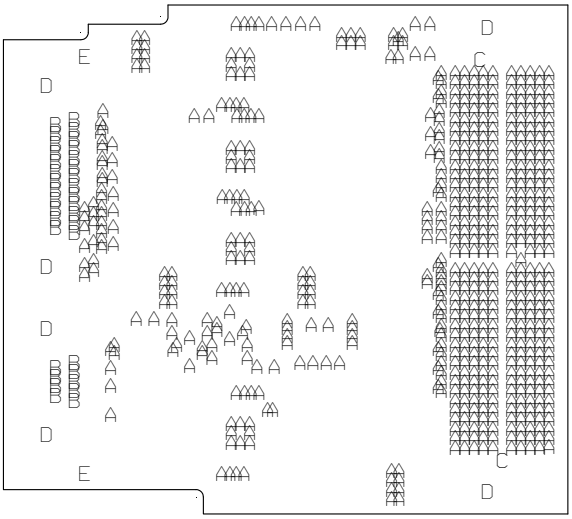
SHEETSIZE : 210 X 297 MM

SHEET 2 OF 3 | A4

Nikhef
Science Park 105 1098XG Amsterdam
+31 (0)20 - 5922000 www.nikhef.nl

Date 2021-04-20

Sheet Number PCB-002



Through Holes All Drills (unless specified) +/- 0.1000 (MM)				
Symbol	Diameter	Tolerance	Plated	Quantity
A	0.2500	+/- 0.0500	Yes	655
B	0.7000		Yes	34
D	2.7000		Yes	6
C	1.3000		No	2
E	2.7000		No	2

REV.	BY	NOTES

FMC BREAKOUT BOARD EXTENDED

PROJECT : ETPATHFINDER

SHEET NAME : DRILL CHART

ET nr. : 11500.03.01.0

Designed by : Charli

Drawn by : Charli

SHEETSIZE : 210 X 297 MM

SHEET 3 OF 3 | A4

Nikhef

Science Park 105 1098XG Amsterdam
+31 (0)20 - 5922000 www.nikhef.nl

Date 2021-04-20

Sheet Number PCB-003