

PCB Production Specification

LMP LOFAR 2.0

PCB nr.: 03118

Organisatie / Organization		Datum / Date
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3.0	21-02-2022	-	Update for tender docs
3.1	11-3-2022	-	Update after review

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1 Introduction

1.1 Document Scope

This document presents technical PCB production specification for the LMP, LOFAR2 Mid-Plane. For all specification is the **ODB++ DATA IS LEADING**

1.2 Applicable documents (AD)

Ref.nr.	Document number	Rev.	Title	File name
AD.1	PPD00067	0.1	PCB Production data LMP (ODB++ file)	lmp_21022022.tgz

1.3 Reference documents (RD)

Ref.nr.	Document number	Title	Author
RD.1	PMS00047	PMS LMP, LOFAR2.0 MID PLANE, LOFAR 2.0, PCB-03118	G.W.Schoonderbeek

1.4 List of Terms and acronyms

BOM	Bill Of Material
IPC	Association Connecting Electronics Industries
PCB	Printed Circuit Board

2 IPC Quality Requirements

The board have the following IPC requirements:

2.1 Board:

IPC requirement	Comment
IPC 2222B	Board type 3 (Multilayer Printed Board without blind and/or buried vias)
IPC 2221A	Performance Class 2 (Dedicated Service Electronic Products). Reducibility Level B (High Design Complexity - Standard)
IPC A-600	Class 2 (Dedicated Service Electronic Products)
IPC SM-840	Solder Resist
IPC 4101	Laminate Material

2.1.1 Bare board testing

- Impedances on all impedance layer shall be tested according IPC-TM-650 2.5.5.7. Both single ended and differential impedance will be <10% with the specified impedance. A report showing compliance shall be delivered with the board or send to schoonderbeek@astron.nl

Remarks

PCB supplier should send ASTRON the test results after board testing.

3 Specifications

PCB nr.	03118-02
Title	LMP
Number of Layers	16
Size of the PCB	435.3 X 395.25 (mm) +/- 0.1 mm
Placement components	SMD Top/Bottom, Through-hole Top/Bottom
Number of signal layers	4
Number of plane layers	12
Number of Non-signal layers	2 (mask)
Silkscreen	top and bottom (user layer)
Number of Pins	6154
Number of Nets	604
Number of Components	145
Number of Vias	799
Vias filling	N.A.
Total number of Trough Holes	7225
Smallest hole diameter	0.4 mm Through Hole (finished size)
Smallest route size	0.125mm
Smallest Isolation / clearance	0.15mm
PCB material and type	ISOLA I-SPEED
Material thickness	Total 3.3 mm
Copper thickness	See master drawing
Etch Tolerance	10%
Via Plating	Through >20um
Finishing	LF HASL
Impedance trace on layer	See section appendix
Hole tolerances	See drill drawing.
Reports	All reports showing correct production have to be delivered. See Master Drawing notes pag. 6
PCB Testing	Electrical test (open circuit/short circuit)

4 List of Files

ODB++	Lmp_21022022.tgz
Statistics	On request

5 Filled & capped via

The via's should be filled according **IPC4761 TYPE VII** via (filled and capped via), see Figure 1

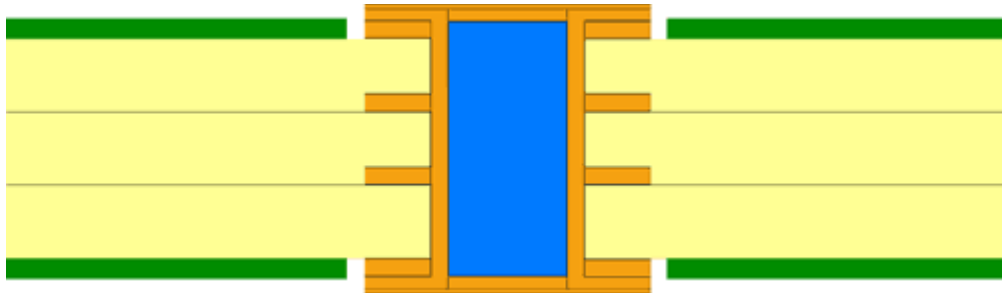


Figure 1 Filled and capped via

6 General

For technical information contact can be made with;

Designer: *Gijs Schoonderbeek (ASTRON)*
 Phone; (+31) (0)521 595 110
 E-mail; schoonderbeek@astron.nl

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
A															
B															
C															
D															
E															
F															
G															
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MASTERDRAWINGNOTES

PCB Specifications

[1] Fabricate boards in accordance with IPC6011 / IPC6012 CLASS

[2] Finished boards must meet quality and conformance testing and inspection as specified

[3] Drill boards using drill data, drill pattern and hole schedule. Hole locations may vary within 0.125mm max. about true position.

[4] All holes are plated through unless noted otherwise.

Minimum copper plating in plated holes to be 25um.

Maximum copper plating in plated holes to be 50um.

[5] Plating primary and secondary side: HASL

[6] Minimum annular ring: internal: 20um external: 25um

[7] Bow and twist shall not exceed 0.75% measured in accordance with IPC-TM Method 2.4.22.

[8] Differential pair impedance tolerance less than 10%

[9] Construction to be soldermask over bare copper (SM0BC)

Apply to primary and secondary sides in accordance with IPC-SM-840 (Class T).

[10] Soldermask thickness 5um min. / 30um maximal.

[11] Soldermask to be light green in color and transparent.

[12] PCB Repairs: Repairs of damaged traces is not permitted.

[13] Non-Functional pads can be removed.

Testing

[14] All bare boards shall be electrically tested using CAD generated netlist data. Electrical testing shall follow the guidelines established by IPC-ET-652. Guidelines and requirements for electrical testing of unpopulated printed boards.

[15] For each production batch the line impedance of controlled impedance lines (100 Ohm and or 50 Ohm) on all impedance layers shall be tested in accordance IPC-TM-650 Method 2.5.7.

Other

[16] Board fabricator shall apply serial number, date code and UL Marking at the indicated location on the primary side.

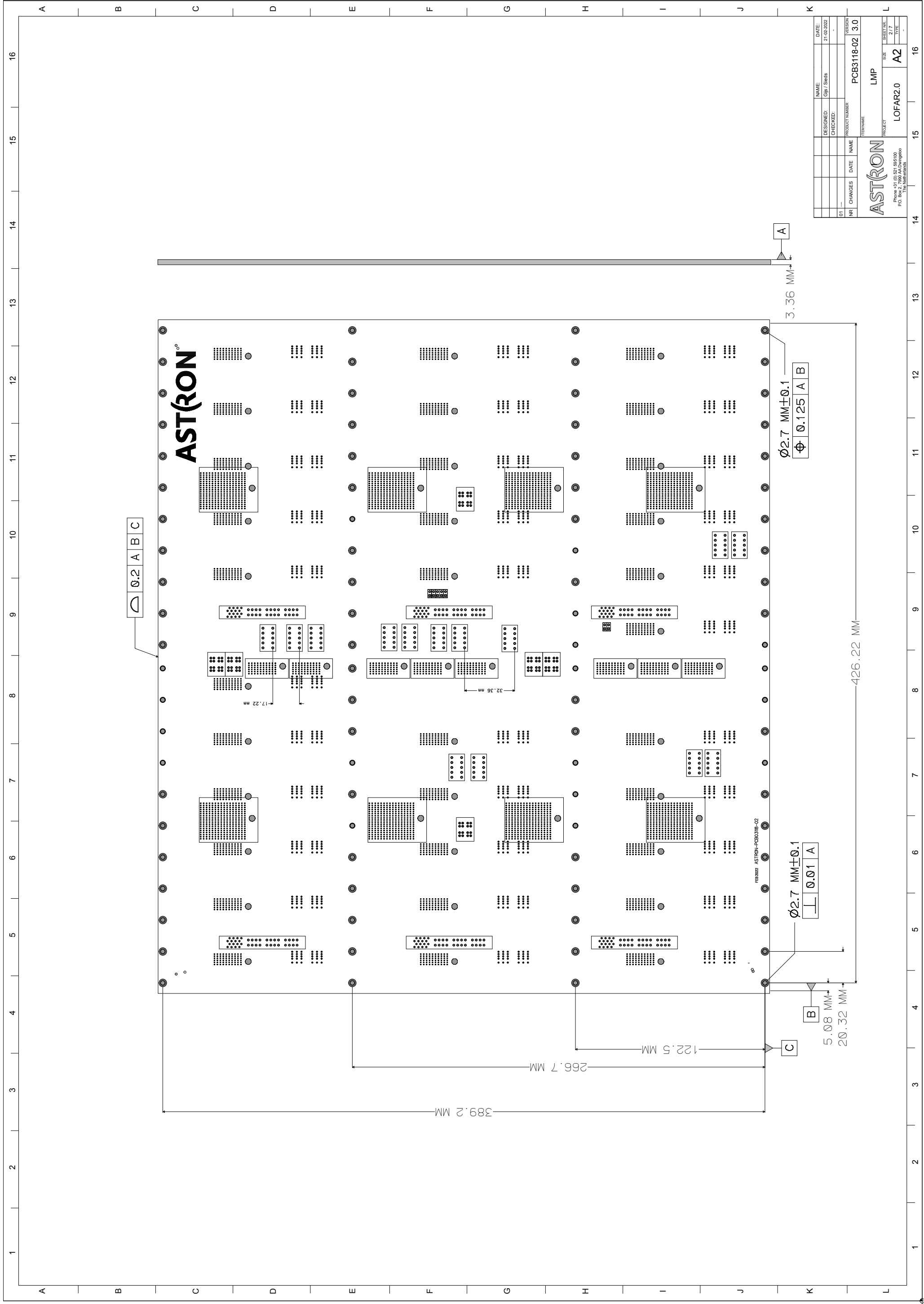
Assembly Specifications

[18] All boards shall be assembled according IPC-A-612 Class 2 specification for Type 2 Class 2 boards

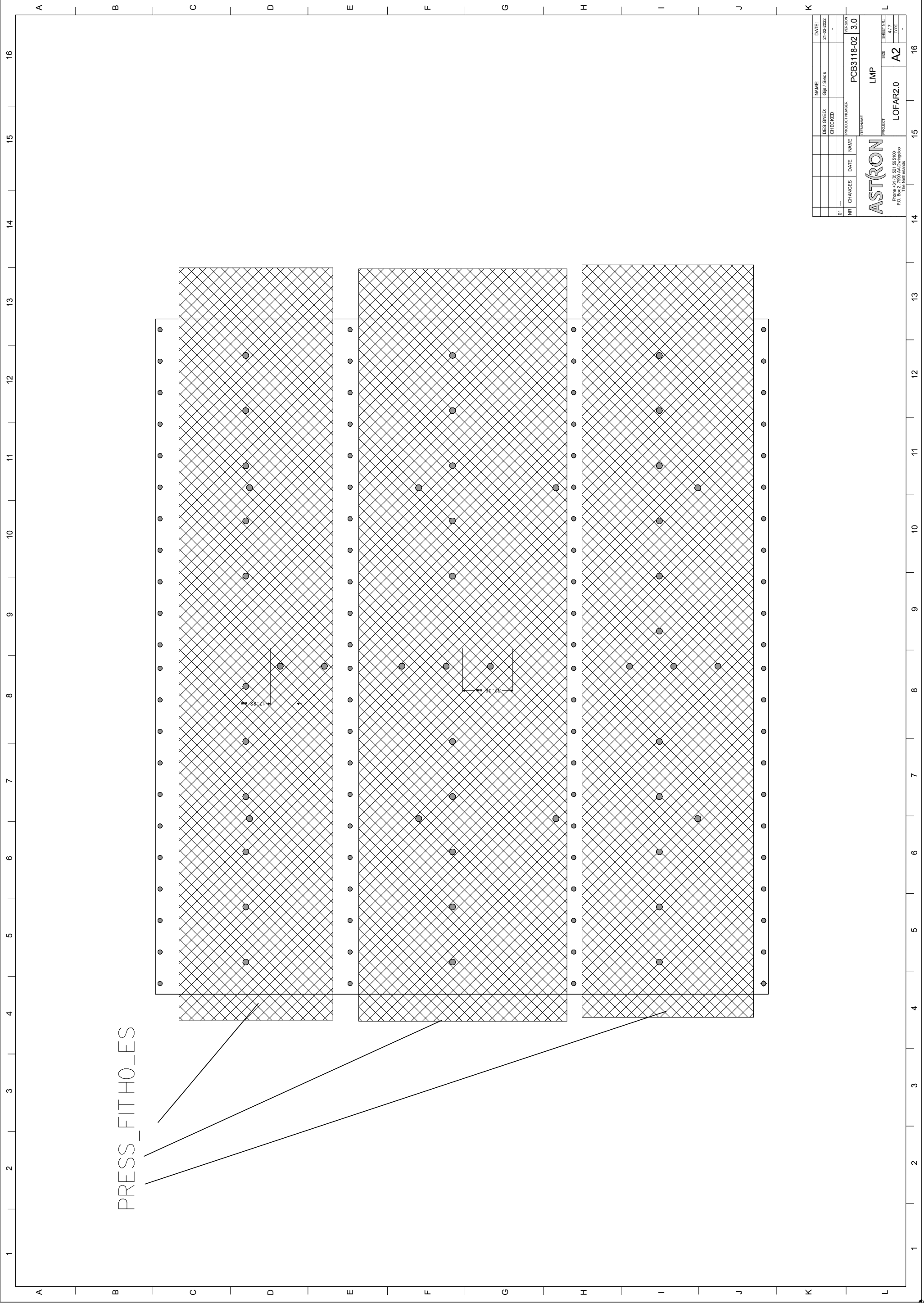
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NR	CHANGES	DATE	NAME	PRODUCT NUMBER		ITEM NAME		DESIGNED: GJM / Smda		NAME		DATE:		21-02-2022	
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				PCB3118-02				3.0							
				LMP											
				LOFAR2.0				A2							
				SIZE				SHEET NO.							
				1 / 7				TYPE							
				-											

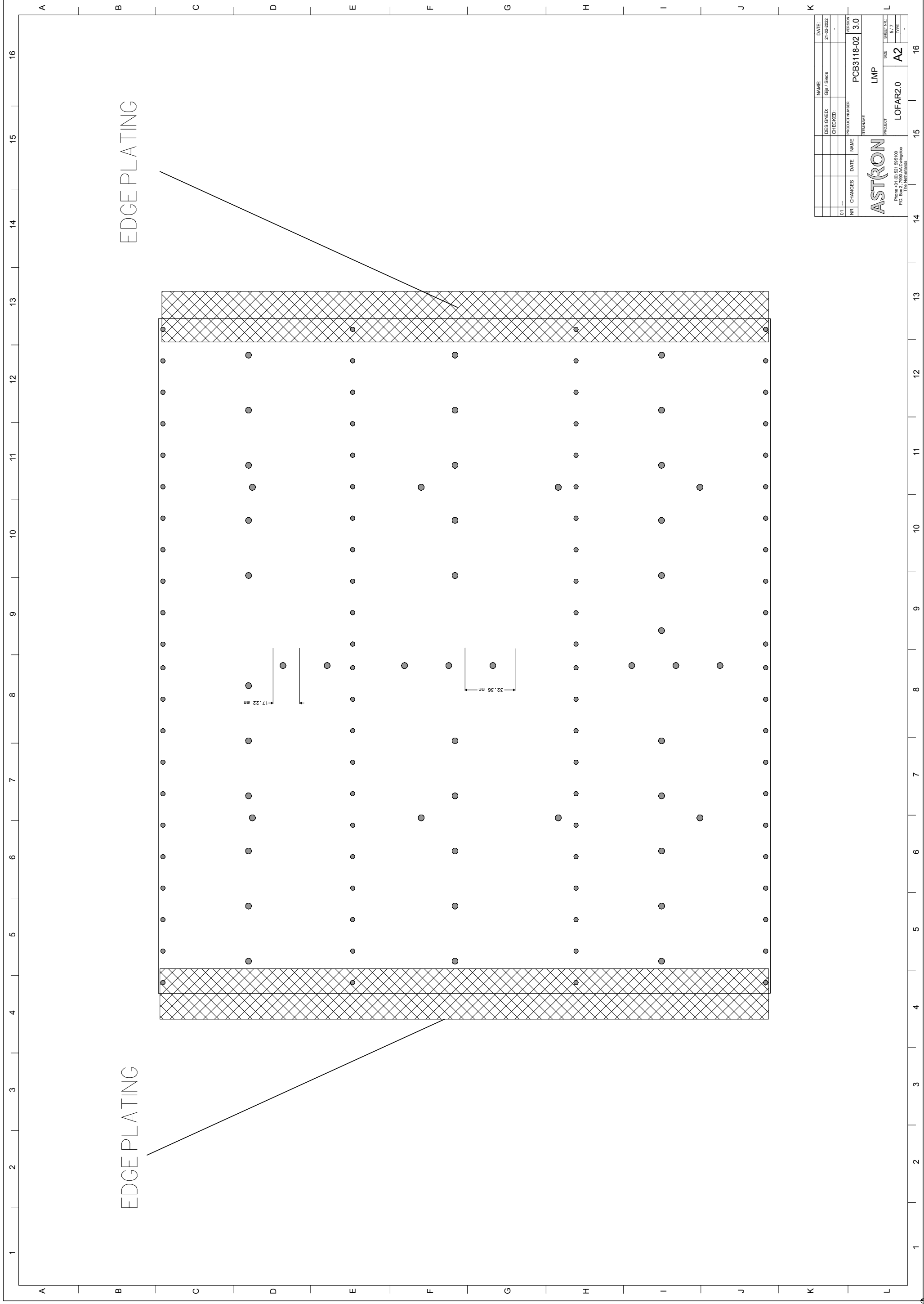
ASTRON

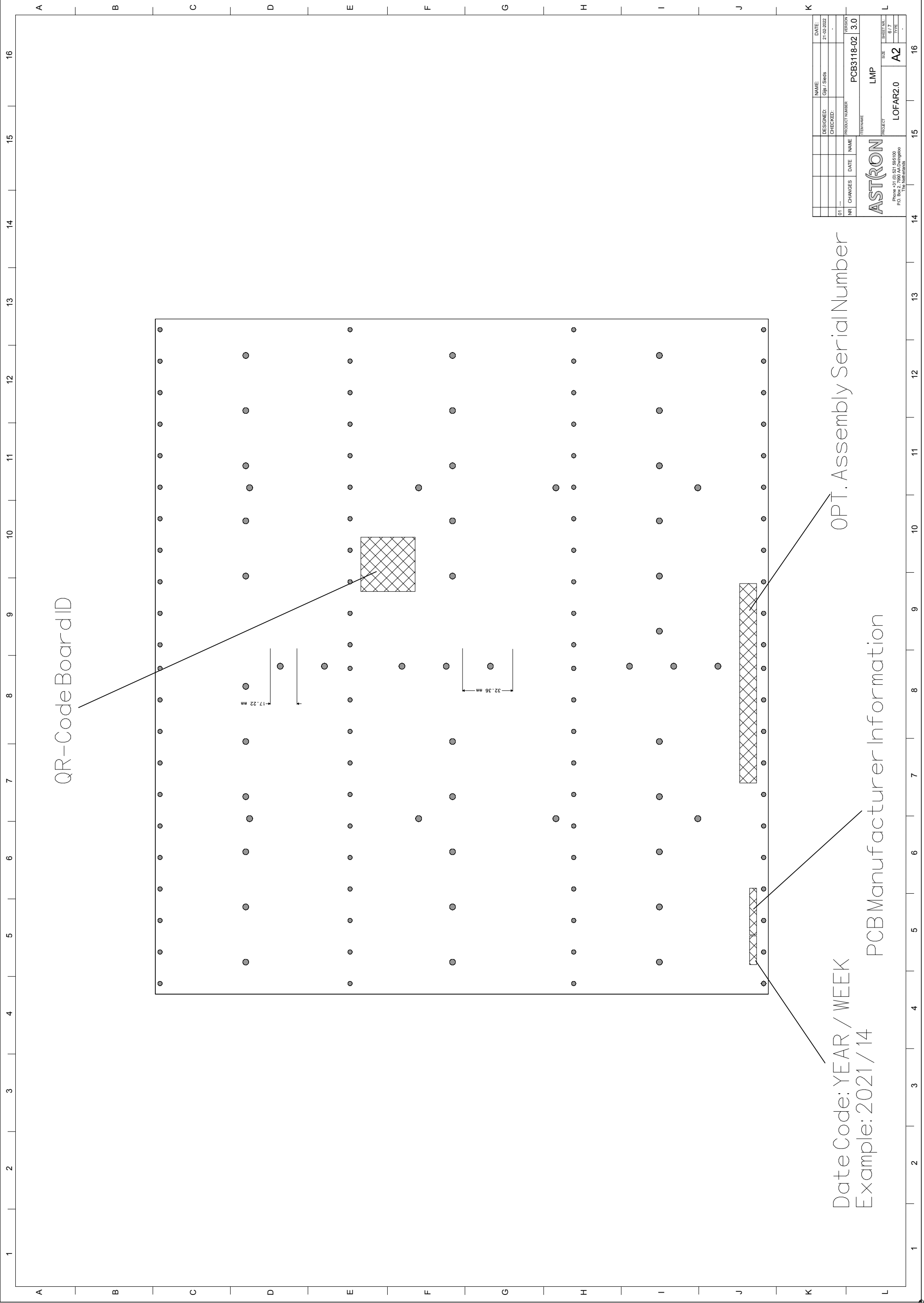
Phone +31 (0) 821 895100
P.O. Box 10000
The Netherlands

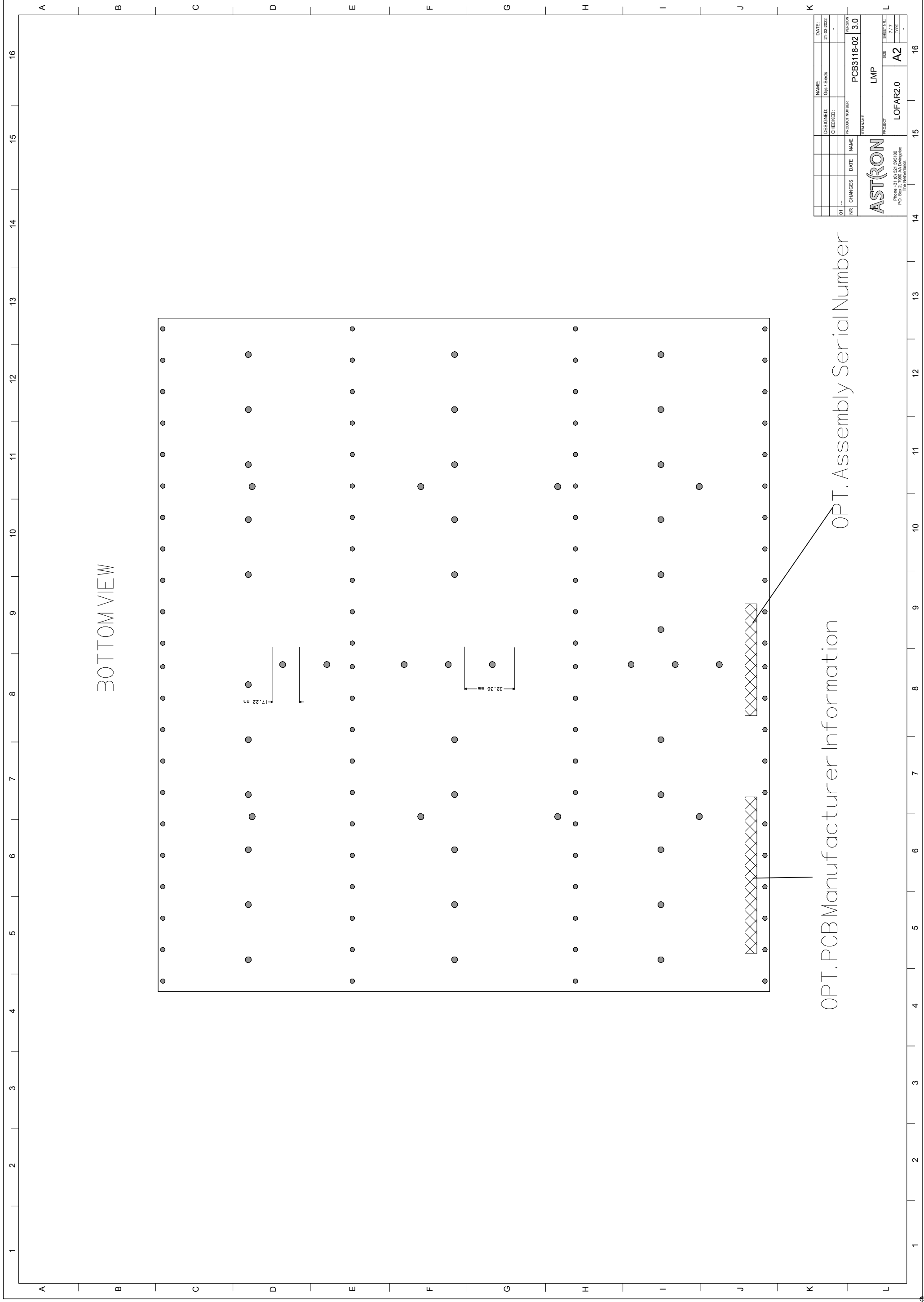


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OPT. PCB Manufacturer Information

OPT.AssemblySerialNumber