

BOARD CHARACTERISTICS

Copper Layer Count: 8 Board Thickness: 1.6180 mm
 Board overall dimensions: 130.0000 mm x 170.0000 mm
 Min track/spacing: 0.1000 mm / 0.1000 mm Min hole diameter: 0.1500 mm
 Copper Finish: ENIG Impedance Control: Yes
 Castellated pads: No Plated Board Edge: No
 Edge card connectors: No

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 AND FITNESS FOR A PARTICULAR PURPOSE. Please see the CERN-OHL-P v2
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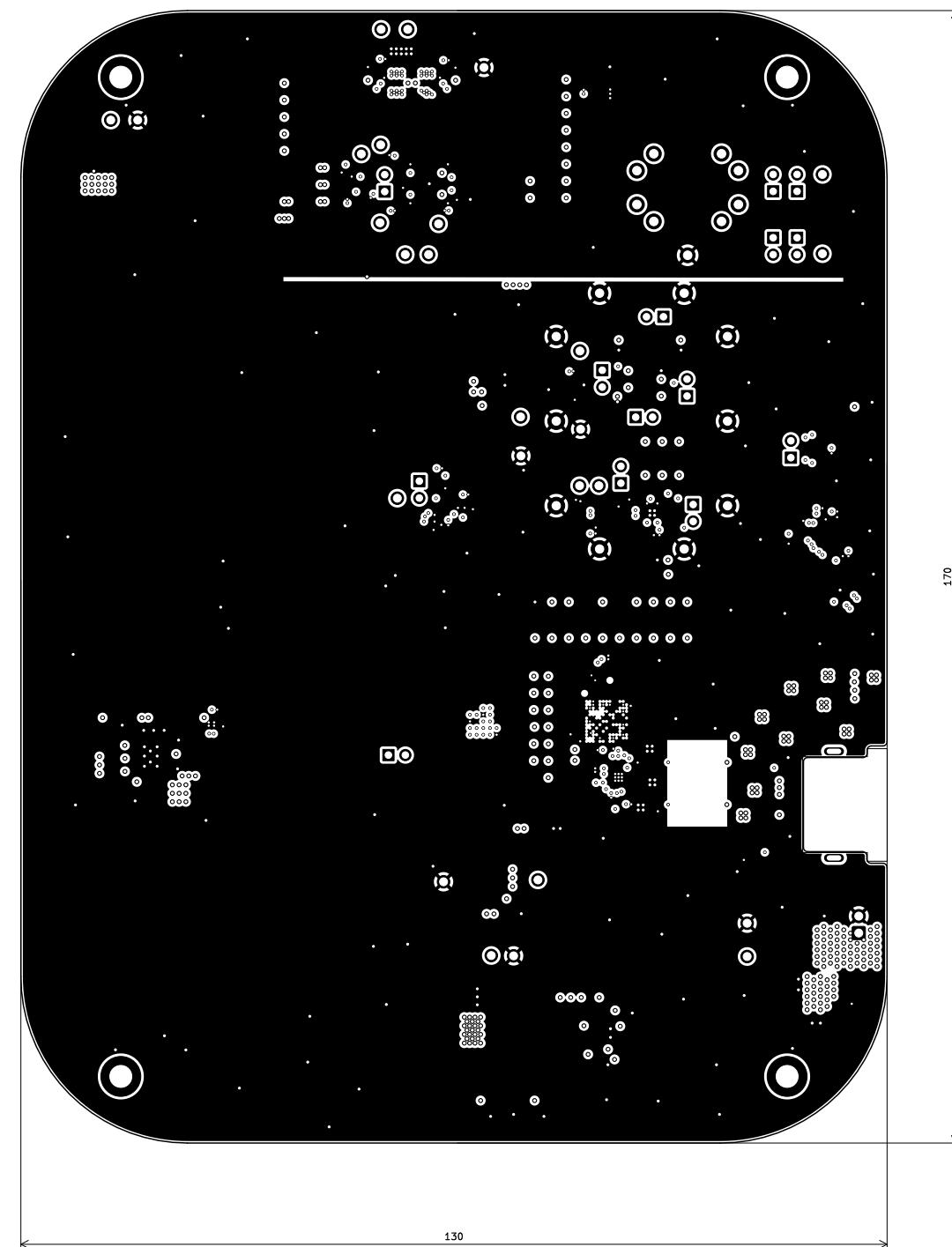
Layer Name	Type	Material	Thickness (mm)	Color	Epsilon R	Loss Tangent
F.Silkscreen	Top Silk Screen	Not specified	0 mm	White	1	0
F.Paste	Top Solder Paste		0 mm		1	0
F.Mask	Top Solder Mask	Not specified	0.01 mm	Black	3.3	0
F.Cu	copper		0.035 mm		1	0
Dielectric 1 (1/2)	prepreg	FR4-7628*1	0.218 mm	FR4 natural	4.4	0.02
Dielectric 1 (1/2)	prepreg	FR4-7628*1	0.203 mm	FR4 natural	4.4	0.02
PWR.Cu	copper		0.03 mm		1	0
Dielectric 2	core	FR4	0.075 mm	FR4 natural	4.6	0.02
signal1.Cu	copper		0.03 mm		1	0
Dielectric 3 (1/2)	prepreg	FR4-1080*1	0.069 mm	FR4 natural	3.91	0.02
Dielectric 3 (1/2)	prepreg	FR4-1080*1	0.069 mm	FR4 natural	3.91	0.02
signal2.Cu	copper		0.03 mm		1	0
Dielectric 4	core	FR4	0.075 mm	FR4 natural	4.6	0.02
signal3.Cu	copper		0.03 mm		1	0
Dielectric 5 (1/2)	prepreg	FR4-1080*1	0.069 mm	FR4 natural	3.91	0.02
Dielectric 5 (1/2)	prepreg	FR4-1080*1	0.069 mm	FR4 natural	3.91	0.02
signal4.Cu	copper		0.03 mm		1	0
Dielectric 6	core	FR4	0.075 mm	FR4 natural	4.6	0.02
GND.Cu	copper		0.035 mm		1	0
Dielectric 7 (1/2)	prepreg	FR4-7628*1	0.203 mm	FR4 natural	4.4	0.02
Dielectric 7 (1/2)	prepreg	FR4-7628*1	0.218 mm	FR4 natural	4.4	0.02
B.Cu	copper		0.035 mm		1	0
B.Mask	Bottom Solder Mask	Not specified	0.01 mm	Black	3.3	0
B.Paste	Bottom Solder Paste		0 mm		1	0
B.Silkscreen	Bottom Silk Screen	Not specified	0 mm	White	1	0

ORDERING NOTES

PCB:	* Product Type: Industrial/Consumer electronics * Different Design: 1 * Delivery Format: Single PCB * PCB Thickness: 1.6 mm * PCB Colour: Black * Silkscreen: White * Material Type: FR4—Standard TG 135–140 * Surface Finish: ENIG * Gold Thickness: 2 U" * Outer Copper Weight: 1 oz * Inner Copper Weight: 1 oz * Specify Layer Sequence: No * Impedance Control: Yes * Layer Stackup: JLC081611-7628 * Via Covering: Epoxy Filled & Capped * Min Via Hole Size/Diameter: 0.15mm * Board Outline Tolerance: ±0.2mm(Regular) * Confirm Production File: Yes * Mark on PCB: 2D barcode (Serial Number) * Printing: Number Only * Prefix: * Unique Number: Keep * Starting Value: 0001 * 2D Barcode Position: Specify Position * Gold Fingers: No * Castellated Holes: No * Press-Fit Hole: No * Edge Plating: No	PCB Advanced Options: * 4-Wire Kelvin Test: Yes * Paper Between PCBs: No * Appearance Quality: IPC Class 2 Standard * Silkscreen Technology: Ink-Jet/Screen Printing Silkscreen * Package Box: With JLCPCB Logo
PCBA:	* PCBA Type: Standard * Assembly Side: Both Sides * Edge Rails/Fiducials: Added by JLCPCB * Confirm Parts Placement: Yes * Parts Selection: By Customer	
PCBA Advanced Options:	* Photo Confirmation: No * Conformal Coating: No * Packaging: Antistatic Bubble Film * Solder Paste: Sn96.5%, Ag3.0%, Cu0.5% * Add Paste for Unpopulated Pad Opening: No * Others: No * Board Cleaning: No * Bake Components: No * Depanel Boards & Edge Rail Before Delivery: No * Flying Probe Test: No * Nitrogen Reflow Soldering: No	



Item Number: BR-103907	Tolerances Specified per Decimal Place Unless Otherwise Specified	Linear: X. ±0.2	Angular: X. ±1
Description: Sonar Development Board		X.X ±0.1	X.X ±0.5
		X.XX ±0.05	X.XX ±0.1
Unpop. PCB: BR-103907-001 RevB	PCBA: BR-103907-002 RevB		
Size: USLetter	Date:	Scale: 1:1	
KiCad E.D.A. 9.0.5	Sheet:		Id: 1/6



Layer Name	Type	Material	Thickness (mm)	Color	Epsilon R	Loss Tangent
F.Silkscreen	Top Silk Screen	Not specified	0 mm	White	1	0
F.Paste	Top Solder Paste		0 mm		1	0
F.Mask	Top Solder Mask	Not specified	0.01 mm	Black	3.3	0
F.Cu	copper		0.035 mm		1	0
Dielectric 1 (1/2)	prepreg	FR4-7628*1	0.218 mm	FR4 natural	4.4	0.02
Dielectric 1 (1/2)	prepreg	FR4-7628*1	0.203 mm	FR4 natural	4.4	0.02
PWR.Cu	copper		0.03 mm		1	0
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signal1.Cu	copper		0.03 mm		1	0
Dielectric 3 (1/2)	prepreg	FR4-1080*1	0.069 mm	FR4 natural	3.91	0.02
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signal3.Cu	copper		0.03 mm		1	0
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GND.Cu	copper		0.035 mm		1	0
Dielectric 7 (1/2)	prepreg	FR4-7628*1	0.203 mm	FR4 natural	4.4	0.02
Dielectric 7 (1/2)	prepreg	FR4-7628*1	0.218 mm	FR4 natural	4.4	0.02
B.Cu	copper		0.035 mm		1	0
B.Mask	Bottom Solder Mask	Not specified	0.01 mm	Black	3.3	0
B.Paste	Bottom Solder Paste		0 mm		1	0
B.Silkscreen	Bottom Silk Screen	Not specified	0 mm	White	1	0

ORDERING NOTES

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PCBA:	* PCBA Type: Standard * Assembly Side: Both Sides * Edge Rails/Fiducials: Added by JLCPCB * Confirm Parts Placement: Yes * Parts Selection: By Customer	
PCBA Advanced Options:	* Photo Confirmation: No * Conformal Coating: No * Packaging: Antistatic Bubble Film * Solder Paste: Sn96.5%, Ag3.0%, Cu0.5% * Add Paste for Unpopulated Pad Opening: No * Others: No * Board Cleaning: No * Bake Components: No * Depanel Boards & Edge Rail Before Delivery: No * Flying Probe Test: No * Nitrogen Reflow Soldering: No	

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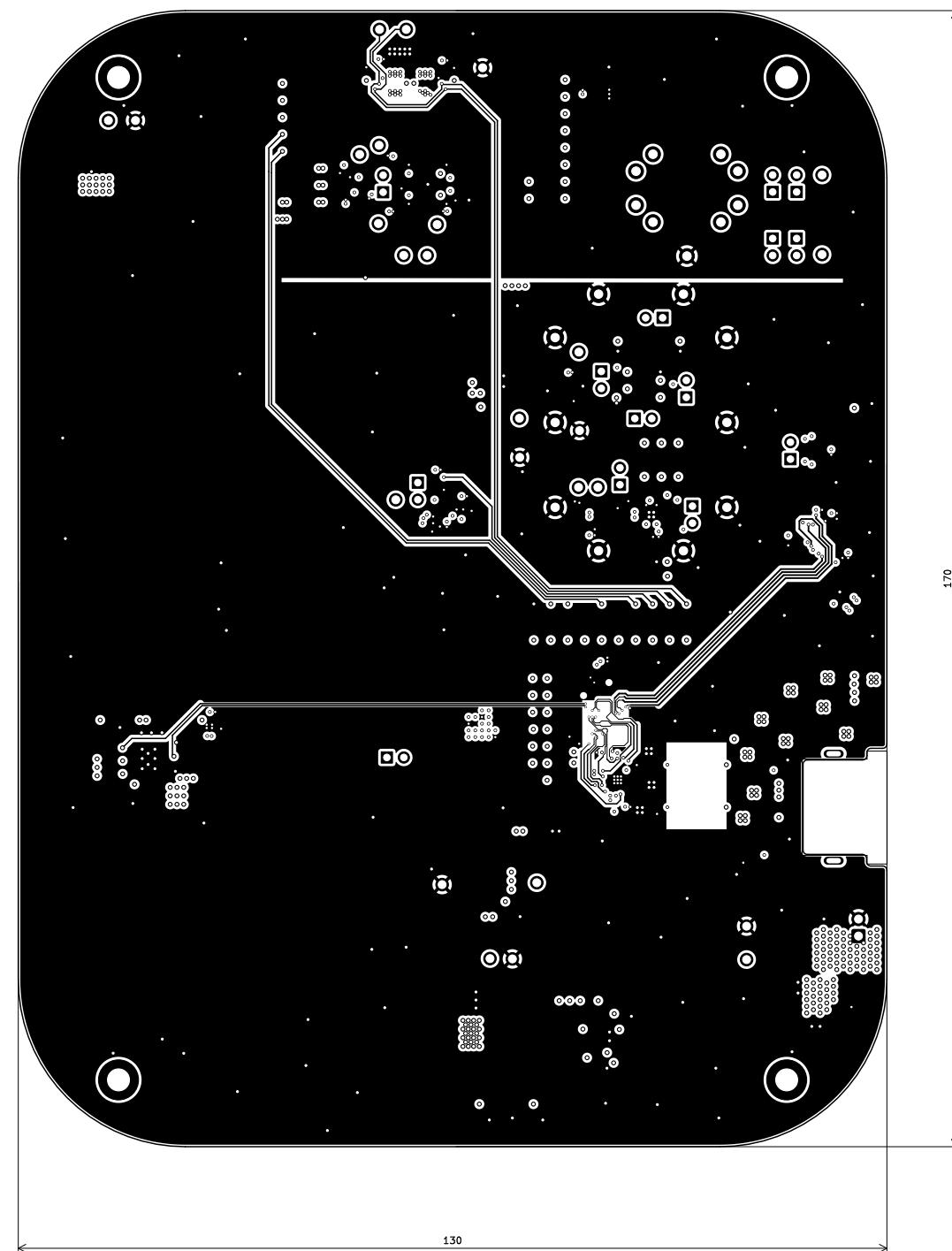
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		X.XX ±0.05	X.XX ±0.1
Unpop. PCB: BR-103907-001 RevB	PCBA: BR-103907-002 RevB		
Size: USLetter	Date:	Scale: 1:1	
KiCad E.D.A. 9.0.5	Sheet:		Id: 2/6

1 2 3 4 5 6 7 8



Layer Name	Type	Material	Thickness (mm)	Color	Epsilon R	Loss Tangent
F.Silkscreen	Top Silk Screen	Not specified	0 mm	White	1	0
F.Paste	Top Solder Paste		0 mm		1	0
F.Mask	Top Solder Mask	Not specified	0.01 mm	Black	3.3	0
F.Cu	copper		0.035 mm		1	0
Dielectric 1 (1/2)	prepreg	FR4-7628*1	0.218 mm	FR4 natural	4.4	0.02
Dielectric 1 (1/2)	prepreg	FR4-7628*1	0.203 mm	FR4 natural	4.4	0.02
PWR.Cu	copper		0.03 mm		1	0
Dielectric 2	core	FR4	0.075 mm	FR4 natural	4.6	0.02
signal1.Cu	copper		0.03 mm		1	0
Dielectric 3 (1/2)	prepreg	FR4-1080*1	0.069 mm	FR4 natural	3.91	0.02
Dielectric 3 (1/2)	prepreg	FR4-1080*1	0.069 mm	FR4 natural	3.91	0.02
signal2.Cu	copper		0.03 mm		1	0
Dielectric 4	core	FR4	0.075 mm	FR4 natural	4.6	0.02
signal3.Cu	copper		0.03 mm		1	0
Dielectric 5 (1/2)	prepreg	FR4-1080*1	0.069 mm	FR4 natural	3.91	0.02
Dielectric 5 (1/2)	prepreg	FR4-1080*1	0.069 mm	FR4 natural	3.91	0.02
signal4.Cu	copper		0.03 mm		1	0
Dielectric 6	core	FR4	0.075 mm	FR4 natural	4.6	0.02
GND.Cu	copper		0.035 mm		1	0
Dielectric 7 (1/2)	prepreg	FR4-7628*1	0.203 mm	FR4 natural	4.4	0.02
Dielectric 7 (1/2)	prepreg	FR4-7628*1	0.218 mm	FR4 natural	4.4	0.02
B.Cu	copper		0.035 mm		1	0
B.Mask	Bottom Solder Mask	Not specified	0.01 mm	Black	3.3	0
B.Paste	Bottom Solder Paste		0 mm		1	0
B.Silkscreen	Bottom Silk Screen	Not specified	0 mm	White	1	0

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PCBA:		* PCBA Type: Standard * Assembly Side: Both Sides * Edge Rails/Fiducials: Added by JLCPCB * Confirm Parts Placement: Yes * Parts Selection: By Customer
PCBA Advanced Options:		* Photo Confirmation: No * Conformal Coating: No * Packaging: Antistatic Bubble Film * Solder Paste: Sn96.5%, Ag3.0%, Cu0.5% * Add Paste for Unpopulated Pad Opening: No * Others: No * Board Cleaning: No * Bake Components: No * Depanel Boards & Edge Rail Before Delivery: No * Flying Probe Test: No * Nitrogen Reflow Soldering: No

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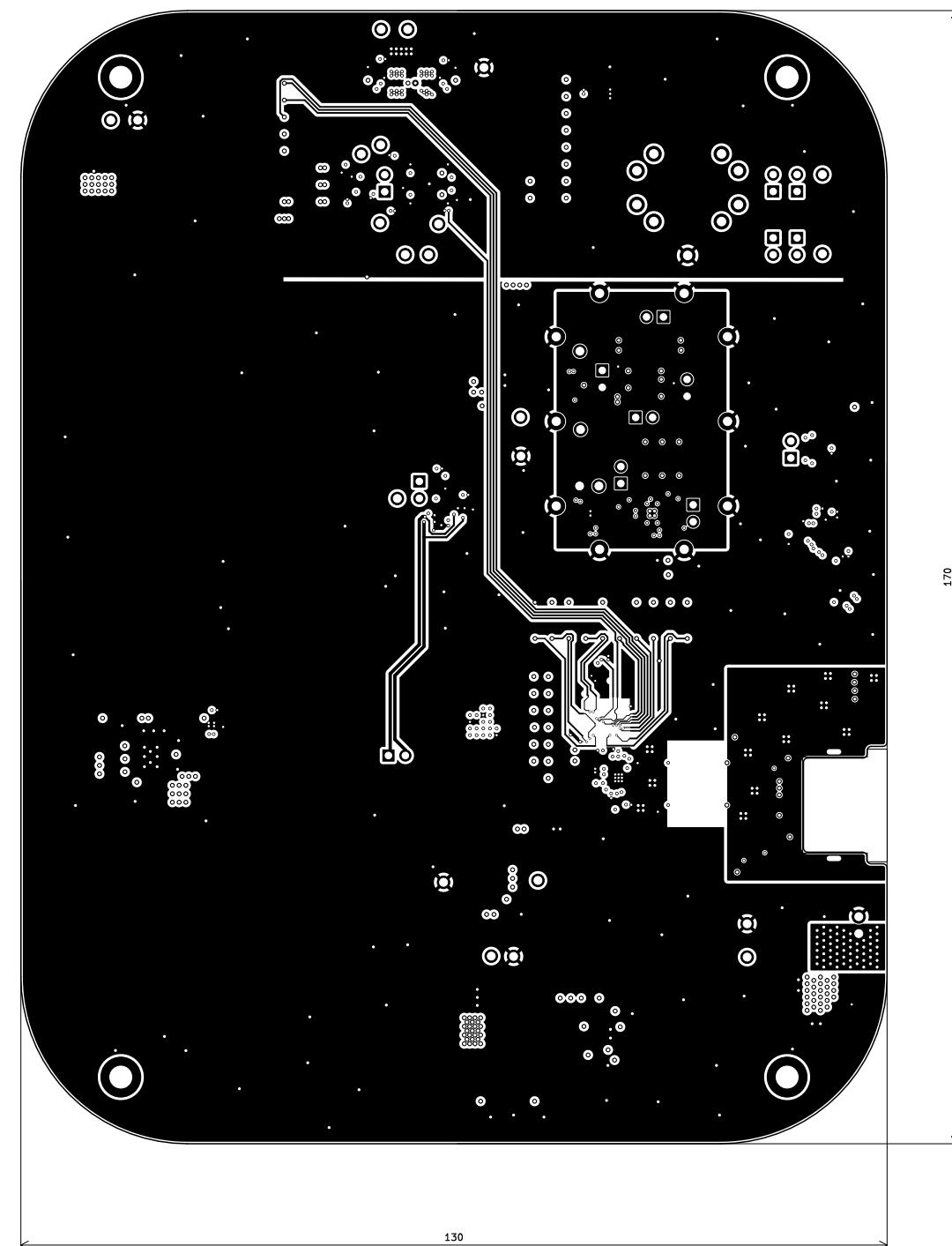
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Description: Sonar Development Board		X.X ±0.1	X.X ±0.5
		X.XX ±0.05	X.XX ±0.1
Unpop. PCB: BR-103907-001 RevB	PCBA: BR-103907-002 RevB		
Size: USLetter	Date:	Scale: 1:1	
KiCad E.D.A. 9.0.5	Sheet:		Id: 3/6

1 2 3 4 5 6 7 8



Layer Name	Type	Material	Thickness (mm)	Color	Epsilon R	Loss Tangent
F.Silkscreen	Top Silk Screen	Not specified	0 mm	White	1	0
F.Paste	Top Solder Paste		0 mm		1	0
F.Mask	Top Solder Mask	Not specified	0.01 mm	Black	3.3	0
F.Cu	copper		0.035 mm		1	0
Dielectric 1 (1/2)	prepreg	FR4-7628*1	0.218 mm	FR4 natural	4.4	0.02
Dielectric 1 (1/2)	prepreg	FR4-7628*1	0.203 mm	FR4 natural	4.4	0.02
PWR.Cu	copper		0.03 mm		1	0
Dielectric 2	core	FR4	0.075 mm	FR4 natural	4.6	0.02
signal1.Cu	copper		0.03 mm		1	0
Dielectric 3 (1/2)	prepreg	FR4-1080*1	0.069 mm	FR4 natural	3.91	0.02
Dielectric 3 (1/2)	prepreg	FR4-1080*1	0.069 mm	FR4 natural	3.91	0.02
signal2.Cu	copper		0.03 mm		1	0
Dielectric 4	core	FR4	0.075 mm	FR4 natural	4.6	0.02
signal3.Cu	copper		0.03 mm		1	0
Dielectric 5 (1/2)	prepreg	FR4-1080*1	0.069 mm	FR4 natural	3.91	0.02
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signal4.Cu	copper		0.03 mm		1	0
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GND.Cu	copper		0.035 mm		1	0
Dielectric 7 (1/2)	prepreg	FR4-7628*1	0.203 mm	FR4 natural	4.4	0.02
Dielectric 7 (1/2)	prepreg	FR4-7628*1	0.218 mm	FR4 natural	4.4	0.02
B.Cu	copper		0.035 mm		1	0
B.Mask	Bottom Solder Mask	Not specified	0.01 mm	Black	3.3	0
B.Paste	Bottom Solder Paste		0 mm		1	0
B.Silkscreen	Bottom Silk Screen	Not specified	0 mm	White	1	0

ORDERING NOTES

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PCBA:	* PCBA Type: Standard * Assembly Side: Both Sides * Edge Rails/Fiducials: Added by JLCPBCB * Confirm Parts Placement: Yes * Parts Selection: By Customer	
PCBA Advanced Options:	* Photo Confirmation: No * Conformal Coating: No * Packaging: Antistatic Bubble Film * Solder Paste: Sn96.5%, Ag3.0%, Cu0.5% * Add Paste for Unpopulated Pad Opening: No * Others: No * Board Cleaning: No * Bake Components: No * Depanel Boards & Edge Rail Before Delivery: No * Flying Probe Test: No * Nitrogen Reflow Soldering: No	

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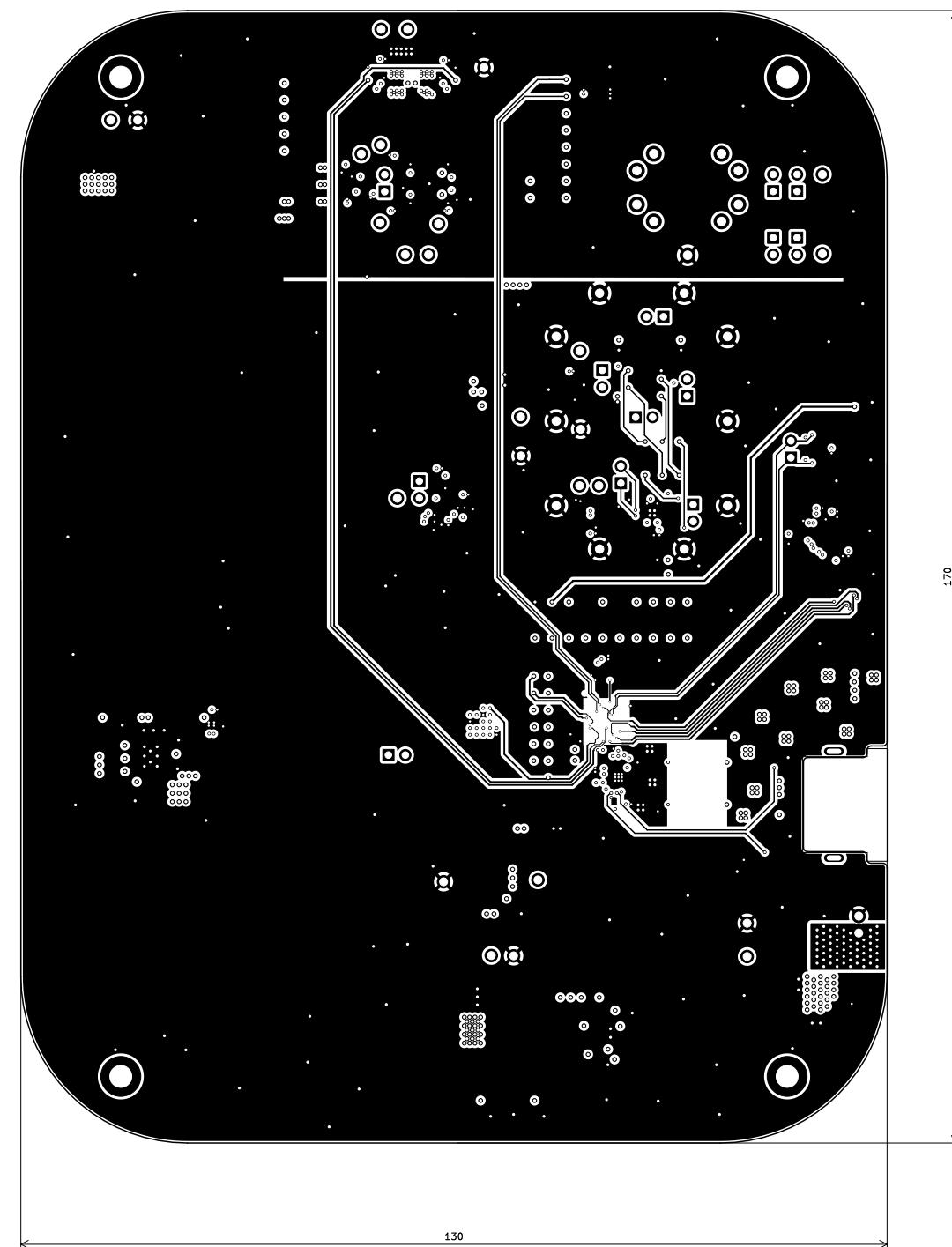
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KiCad E.D.A. 9.0.5	Sheet:		Id: 4/6

1 2 3 4 5 6 7 8



Layer Name	Type	Material	Thickness (mm)	Color	Epsilon R	Loss Tangent
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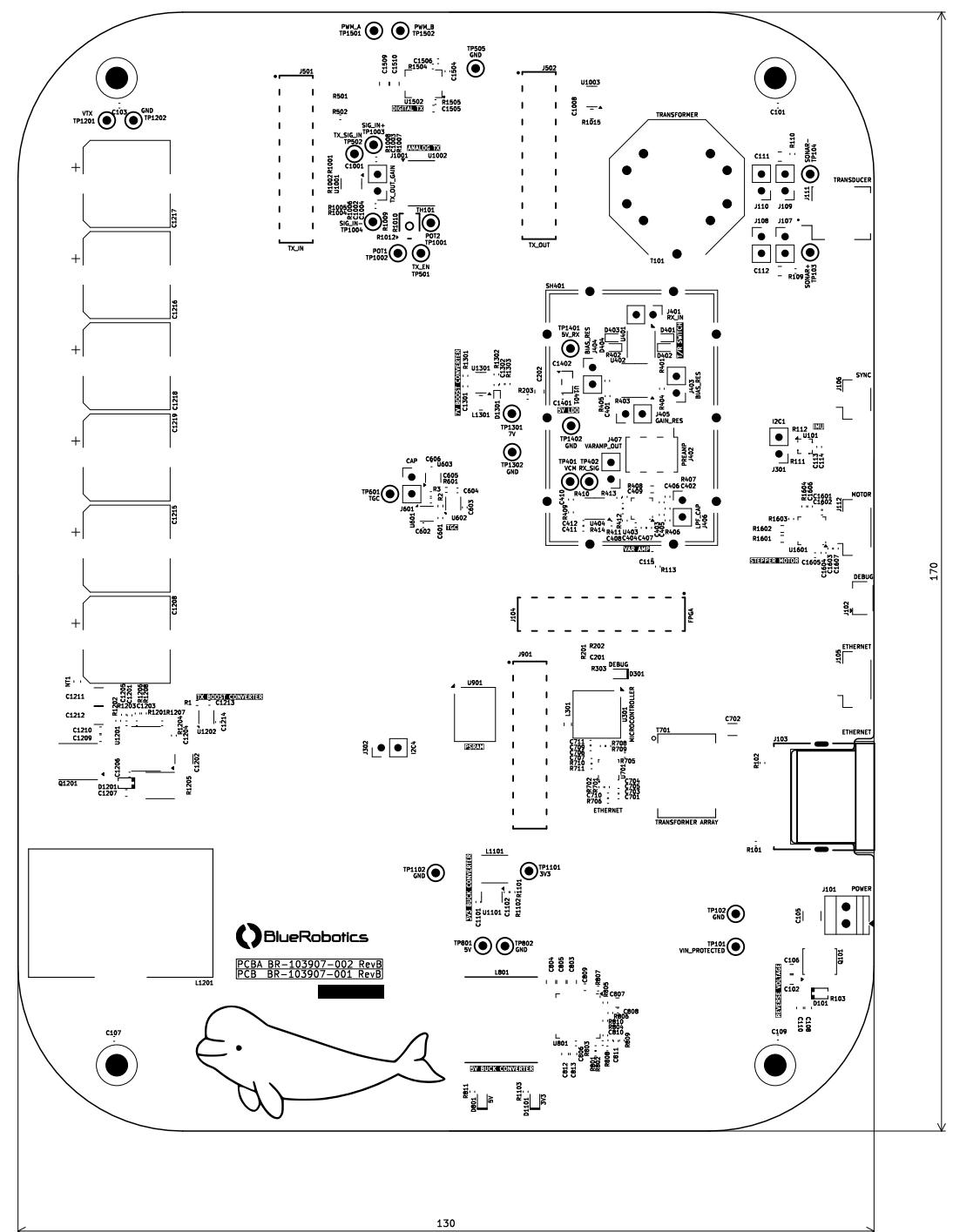
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		X.XX ±0.05	X.XX ±0.1
Unpop. PCB: BR-103907-001 RevB	PCBA: BR-103907-002 RevB		
Size: USLetter	Date:	Scale: 1:1	
KiCad E.D.A. 9.0.5	Sheet:		Id: 5/6



Layer Name	Type	Material	Thickness (mm)	Color	Epsilon R	Loss Tangent
F.Silkscreen	Top Silk Screen	Not specified	0 mm	White	1	0
F.Paste	Top Solder Paste		0 mm		1	0
F.Mask	Top Solder Mask	Not specified	0.01 mm	Black	3.3	0
F.Cu	copper		0.035 mm		1	0
Dielectric 1 (1/2)	prepreg	FR4-7628*1	0.218 mm	FR4 natural	4.4	0.02
Dielectric 1 (1/2)	prepreg	FR4-7628*1	0.203 mm	FR4 natural	4.4	0.02
PWR.Cu	copper		0.03 mm		1	0
Dielectric 2	core	FR4	0.075 mm	FR4 natural	4.6	0.02
signal1.Cu	copper		0.03 mm		1	0
Dielectric 3 (1/2)	prepreg	FR4-1080*1	0.069 mm	FR4 natural	3.91	0.02
Dielectric 3 (1/2)	prepreg	FR4-1080*1	0.069 mm	FR4 natural	3.91	0.02
signal2.Cu	copper		0.03 mm		1	0
Dielectric 4	core	FR4	0.075 mm	FR4 natural	4.6	0.02
signal3.Cu	copper		0.03 mm		1	0
Dielectric 5 (1/2)	prepreg	FR4-1080*1	0.069 mm	FR4 natural	3.91	0.02
Dielectric 5 (1/2)	prepreg	FR4-1080*1	0.069 mm	FR4 natural	3.91	0.02
signal4.Cu	copper		0.03 mm		1	0
Dielectric 6	core	FR4	0.075 mm	FR4 natural	4.6	0.02
GND.Cu	copper		0.035 mm		1	0
Dielectric 7 (1/2)	prepreg	FR4-7628*1	0.203 mm	FR4 natural	4.4	0.02
Dielectric 7 (1/2)	prepreg	FR4-7628*1	0.218 mm	FR4 natural	4.4	0.02
B.Cu	copper		0.035 mm		1	0
B.Mask	Bottom Solder Mask	Not specified	0.01 mm	Black	3.3	0
B.Paste	Bottom Solder Paste		0 mm		1	0
B.Silkscreen	Bottom Silk Screen	Not specified	0 mm	White	1	0

ORDERING NOTES

PCB:	PCB Advanced Options:
* Product Type: Industrial/Consumer electronics	* 4-Wire Kelvin Test: Yes
* Different Design: 1	* Paper Between PCBs: No
* Delivery Format: Single PCB	* Appearance Quality: IPC Class 2 Standard
* PCB Thickness: 1.6 mm	* Silkscreen Technology: Ink-Jet/Screen Printing Silkscreen
* PCB Colour: Black	* Package Box: With JLCPCB Logo
* Silkscreen: White	
* Material Type: FR4—Standard TG 135–140	
* Surface Finish: ENIG	
* Gold Thickness: 2 U"	
* Outer Copper Weight: 1 oz	
* Inner Copper Weight: 1 oz	
* Specify Layer Sequence: No	
* Impedance Control: Yes	
* Layer Stackup: JLC081611-7628	
* Via Covering: Epoxy Filled & Capped	
* Min via Hole Size/Diameter: 0.15mm	
* Board Outline Tolerance: ±0.2mm(Regular)	
* Confirm Production File: Yes	
* Mark on PCB: 2D barcode (Serial Number)	
* Printing: Number Only	
* Prefix:	
* Unique Number: Keep	
* Starting Value: 0001	
* 2D Barcode Position: Specify Position	
* Gold Fingers: No	
* Castellated Holes: No	
* Press-Fit Hole: No	
* Edge Plating: No	
PCBA:	PCBA Type: Standard
	* Assembly Side: Both Sides
	* Edge Rails/Fiducials: Added by JLCPCB
	* Confirm Parts Placement: Yes
	* Parts Selection: By Customer
PCBA Advanced Options:	
	* Photo Confirmation: No
	* Conformal Coating: No
	* Packaging: Antistatic Bubble Film
	* Solder Paste: Sn96.5%, Ag3.0%, Cu0.5%
	* Add Paste for Unpopulated Pad Opening: No
	* Others: No
	* Board Cleaning: No
	* Bake Components: No
	* Depanel Boards & Edge Rail Before Delivery: No
	* Flying Probe Test: No
	* Nitrogen Reflow Soldering: No

BOARD CHARACTERISTICS

Copper Layer Count: 8 Board Thickness: 1.6180 mm
 Board overall dimensions: 130.0000 mm x 170.0000 mm
 Min track/spacing: 0.1000 mm / 0.1000 mm Min hole diameter: 0.1500 mm
 Copper Finish: ENIG Impedance Control: Yes
 Castellated pads: No Plated Board Edge: No
 Edge card connectors: No

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 for applicable conditions



Item Number: BR-103907	Tolerances Specified per Decimal Place Unless Otherwise Specified	Linear: X. ±0.2	Angular: X. ±1
Description: Sonar Development Board		X. X ±0.1	X.X ±0.5
Unpop. PCB: BR-103907-001 RevB			PCBA: BR-103907-002 RevB
Size: USLetter Date:			Scale: 1:1
KiCad E.D.A. 9.0.5 Sheet:			Id: 6/6