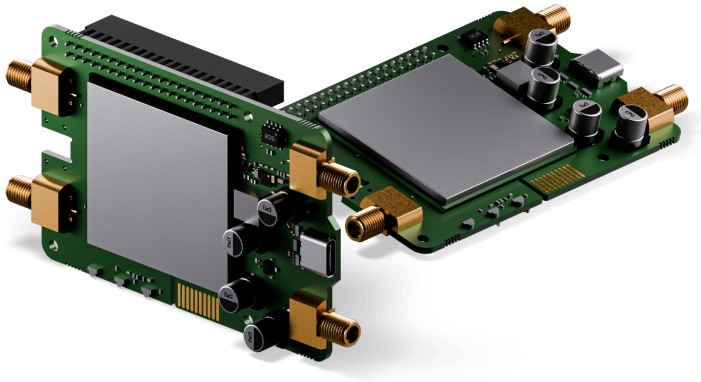
CALYX

Embedded Cellular Raspberry Pi HAT+



Industrial & automation

Energy & utilities

Smart city

Enterprise

OPTIMAL FORM FACTOR

Mount seamlessly on Raspberry Pi 4/5

GPIO MODEM CONTROL

Wake, reset, and manage the modem via Pi pins

PCM ENHANCED AUDIO

Enable clean, low-latency audio transfer

VERSATILE CONNECTIVITY

Choose the right option: 4G Cat 4, 5G Redcap, or full-fledge 5G

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Mobile	
	Calyx 4G / EBD021
Mobile module	4G LTE-FDD (Cat 4) – 75Mbps DL, 50Mbps UL; LTE-TDD (Cat 4) – 65Mbps DL, 35Mbps UL; DC-HSPA+ – 42Mbps DL, 5.76Mbps UL; 3G – 384 kbps DL, 384 kbps UL, 2G – 236.8 kbps DL, 236.8 kbps UL, 2G GPRS – 85.6 kbps DL, 85.6 kbps UL
3GPP Release	Release 9
	Calyx 5G / EBD050
Mobile module	5G Sub-6Ghz SA/NSA 2.4/3.4Gbps DL (4×4 MIMO), 900/550 Mbps UL (2×2); 4G LTE Cat 19 up to 1.6 Gbps DL/ 200 Mbps UL; 3G up to 42 DL/ 5.76 UL Mbps
3GPP Release	Release 16
	Calyx 5G Red Cap / EBD070
Mobile module	5G Sub-6Ghz SA 223 Mbps DL/123 Mbps UL; 4G LTE (Cat 4) up to 195 Mbps DL/105 Mbps UL
3GPP Release	Release 17

USB	
Data rate	USB 2.0 - Calyx 4G / EBD021; Calyx 5G Red Cap / EBD070 USB 3.0 - Calyx 5G / EBD050

40-pin GPIO header	
PWR_KEY	Modem turn on/off. Digital Input, 0 - 3.3 V logic level, active High, to activate use pulse (≥500 ms)
Modem wakeup	Wake up modem from a sleep mode. Digital Input, 0 - 3.3 V logic level, active High - Calyx 4G / EBD021; Digital Input, 0 - 3.3 V logic level, active Low - Calyx 5G / EBD050; Calyx 5G Red Cap / EBD070
Modem reset	Resets the modem. Digital Input, 0 - 3.3 V logic level, active High

Power	
USB type C	5 VDC
40-pin GPIO header	On a 40-pin header, 5 VDC and 3.3 VDC

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Physical Interfaces	
Status LEDs	1 x Power, NET IND, NET STAT
SIM	1 x SIM slot (Nano SIM - 4FF), push-pull
Power	On a 40-pin header/USB power
USB	USB Type-C receptacle
	Calyx 4G / EBD021; Calyx 5G Red Cap / EBD070
Antennas	2 x SMA for Mobile
	Calyx 5G / EBD050
Antennas	4 x SMA for Mobile

Physical Specification	
Weight	57 g
Mounting options	WIth included mounting kit
	Calyx 4G / EBD021; Calyx 5G Red Cap / EBD070
Dimensions (W x H x D)	56 x 23.11 x 95.48 mm
	Calyx 5G / EBD050
Dimensions (W x H x D)	56 x 23.11 x 100.8 mm

Operating Environment	
Operating temperature	-40 °C to 75 °C

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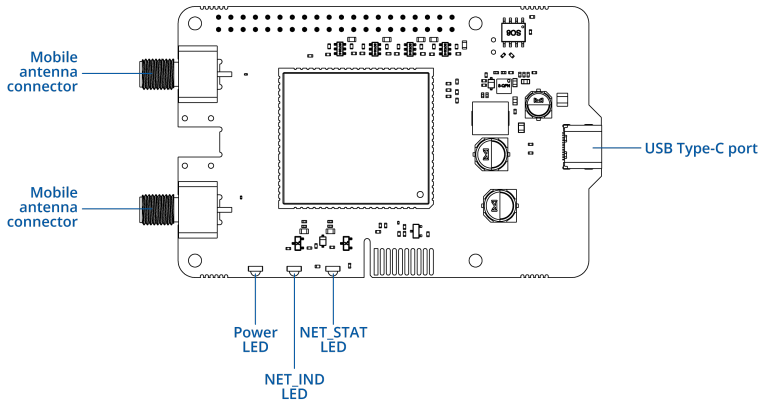
Certification

EMEA	Calyx 5G Red Cap / EBD070 CE Calyx 5G / EBD050 CE Calyx 4G / EBD021 CE Calyx 5G Red Cap / EBD070 UKCA Calyx 5G / EBD050 UKCA Calyx 4G / EBD021 UKCA Calyx 5G Red Cap / EBD070 RoHS Calyx 5G / EBD050 RoHS Calyx 4G / EBD021 RoHS Calyx 5G / EBD050 REACH Calyx 5G Red Cap / EBD070 REACH Calyx 4G / EBD021 REACH
APAC	Calyx 5G Red Cap / EBD070 RCM Calyx 5G / EBD050 RCM Calyx 4G / EBD021 RCM
AMERICAS	Calyx 5G / EBD050 FCC Calyx 5G Red Cap / EBD070 FCC Calyx 5G Red Cap / EBD070 IC(ISED) Calyx 5G / EBD050 IC(ISED)
MISCELLANEOUS	Calyx 5G / EBD050 CB Scheme Calyx 4G / EBD021 CB Scheme Calyx 5G Red Cap / EBD070 CB Scheme
SAFETY & ENVIROINMENTAL	Calyx 5G / EBD050 WEEE Calyx 5G Red Cap / EBD070 WEEE Calyx 4G / EBD021 WEEE

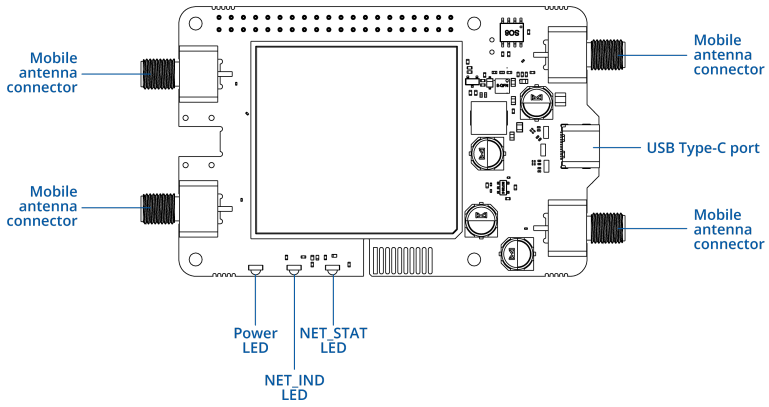
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Hardware

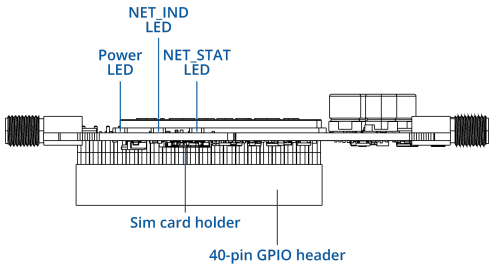
EBD021 & EBD070 TOP VIEW



EBD050 TOP VIEW

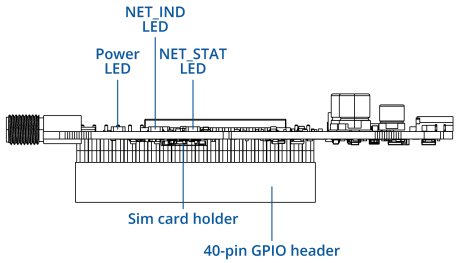


EBD050 LEFT VIEW

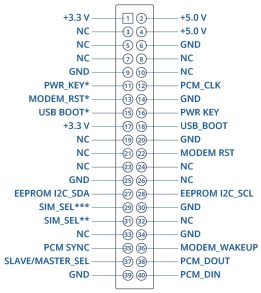


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EBD021 & EBD070 LEFT VIEW

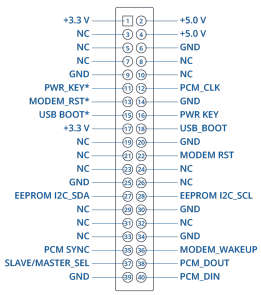


EBD021 & EBD070 GPIO CONNECTOR PINOUT



NC - Not Connected
* Alternative pin (with a different assembly)
** Only in EBD021 with eSIM variant
*** Alternative pin (with a different assembly), only in EBD021 with eSIM variant

EBD050 GPIO CONNECTOR PINOUT

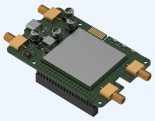


NC - Not Connected
* Alternative pin (with a different assembly)

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Ordering

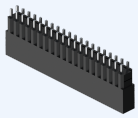
Standard package*



CALYX



QUICK START GUIDE



PCB CONNECTOR



FASTENERS KIT



USB TYPE-C CABLE

*Standard package contents may differ based on standard order codes.

For more information on all available packaging options – please contact us directly.

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Classification codes

HS Code: 851762
HTS: 8517.62.00

For more information on all available packaging options – please contact us directly.

Available versions

Hardware version	Supported frequencies	Standard order code / Package Contains
EBD021 **0***** EMEA[1], Thailand, Australia, New Zealand **Calyx 4G / EBD021**	**4G (LTE-FDD):** B1, B3, B5, B7, B8, B20, B28 **4G (LTE-TDD):** B38, B40, B41 **3G:** B1, B8 **2G:** B3, B8	EBD021000000 / Standard package without PSU
EBD050 **0***** EMEA[1], APAC, Brazil **Calyx 5G / EBD050**	**5G NR(SA/NSA):** n1, n3, n5, n7, n8, n20, n28, n38, n40, n41, n71, n75, n76, n77, n78 **4G (LTE-FDD):** B1, B3, B5, B7, B8, B20, B28, B32, B71 **4G (LTE-TDD):** B38, B40, B41, B42, B43 **3G:** B1, B5, B8	EBD050000000 / Standard package without PSU
EBD050 **1***** North America **Calyx 5G / EBD050**	**5G NR NSA:** n2, n5, n7, n12, n13, n14, n25, n26, n29, n30, n38, n41, n48, n66, n70, n71, n77, n78 **5G NR SA:** n2, n5, n7, n12, n13, n14, n25, n26, n29, n30, n38, n41, n48, n66, n70, n71, n77, n78 **4G (LTE-FDD):** B2, B4, B5, B7, B12, B13, B14, B17, B25, B26, B29, B30, B66, B71 **4G (LTE-TDD):** B38, B41, B42, B43, B48	EBD050100000 / Standard package without PSU
EBD070 **0***** Global[1] **Calyx 5G Red Cap / EBD070**	**5G NR SA:** n1, n2, n3, n5, n7, n8, n12, n13, n14, n18, n20, n25, n26, n28, n30, n38, n40, n41, n48, n66, n70, n71, n77, n78, n79 **4G (LTE-FDD):** B1, B2, B3, B4, B5, B7, B8, B12, B13, B14, B17, B18, B19, B20, B25, B26, B28, B30, B66, B70, B71 **4G (LTE-TDD):** B34, B38, B39, B40, B41, B42, B43, B48	EBD070000000 / Standard package without PSU

1 - Regional availability - excluding Russia, Belarus & Iran

The price and lead-times for region (operator) specific versions may vary. For more information please contact us.

Calyx spatial measurements

Available versions	
EBD021 EBD070 device measurements	56 x 23.11 x 95.48 mm
EBD050 device	56 x 23.11 x 108 mm

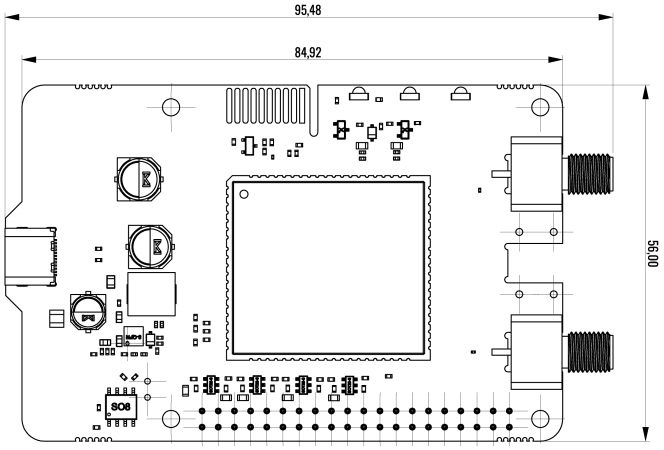
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measurements	
Box (W x H x D):	102 x 31 x 102 mm

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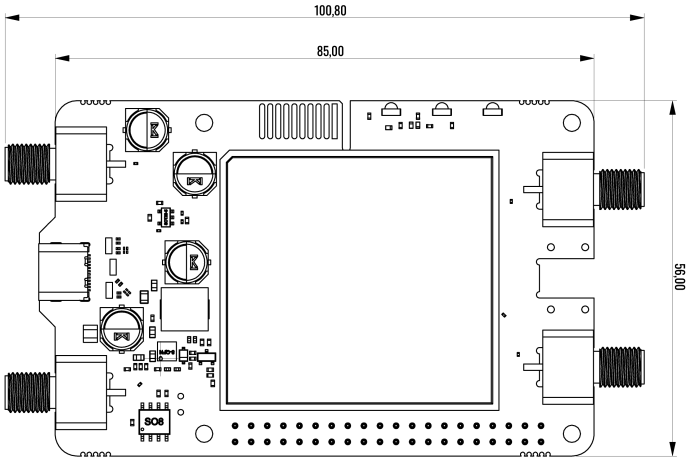
EBD021 & EBD070 TOP VIEW

The figure below depicts the measurements of device and its components as seen from the top:



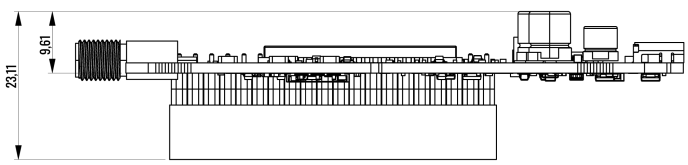
EBD050 TOP VIEW

The figure below depicts the measurements of device and its components as seen from the top:



EBD021 & EBD070 LEFT VIEW

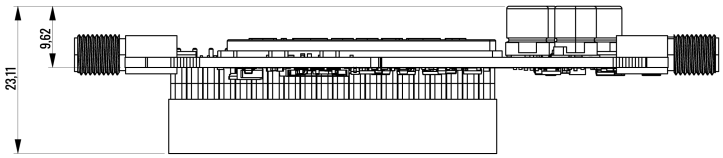
The figure below depicts the measurements of device and its components as seen from the left side:



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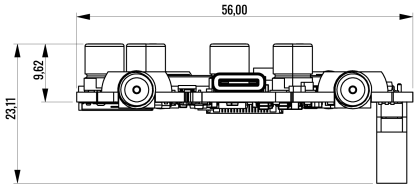
EBD050 LEFT VIEW

The figure below depicts the measurements of device and its components as seen from the left side:



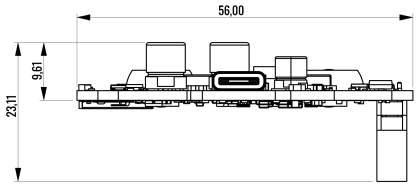
EBD050 FRONT VIEW

The figure below depicts the measurements of device and its components as seen from the front side:



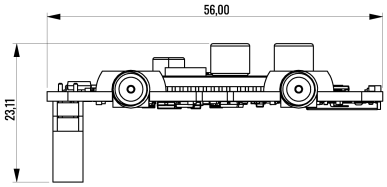
EBD021 & EBD070 FRONT VIEW

The figure below depicts the measurements of device and its components as seen from the front side:



EBD021 & EBD070 REAR VIEW

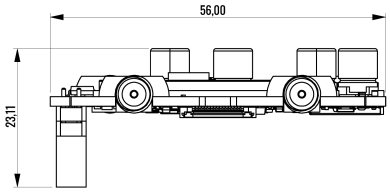
The figure below depicts the measurements of device and its components as seen from the rear side:



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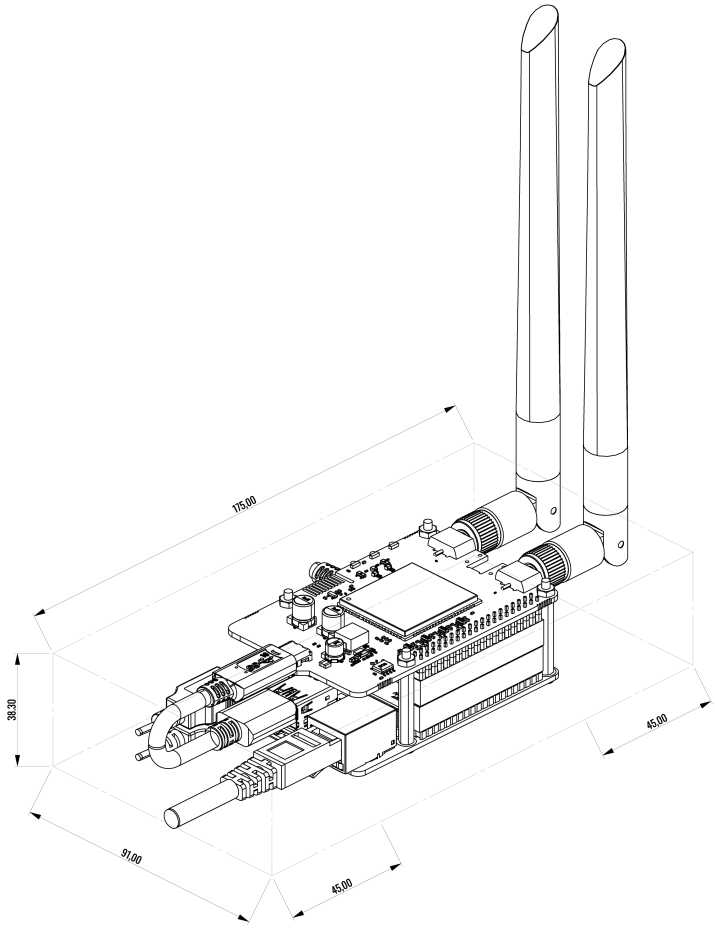
EBD050 REAR VIEW

The figure below depicts the measurements of device and its components as seen from the rear side:

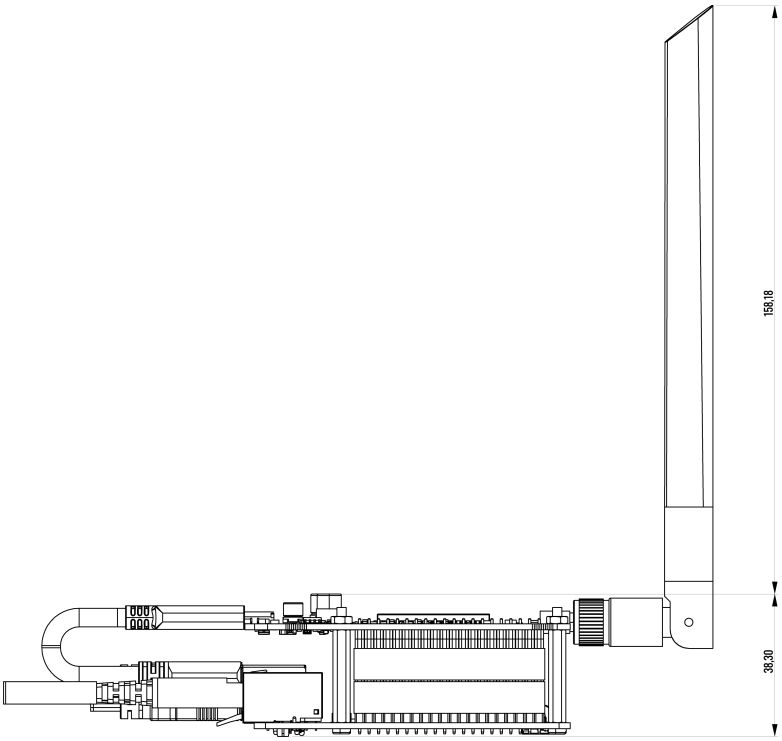


EBD021 MOUNTING SPACE REQUIREMENTS

The figure below depicts an approximation of the device's dimensions when cables and antennas are attached:



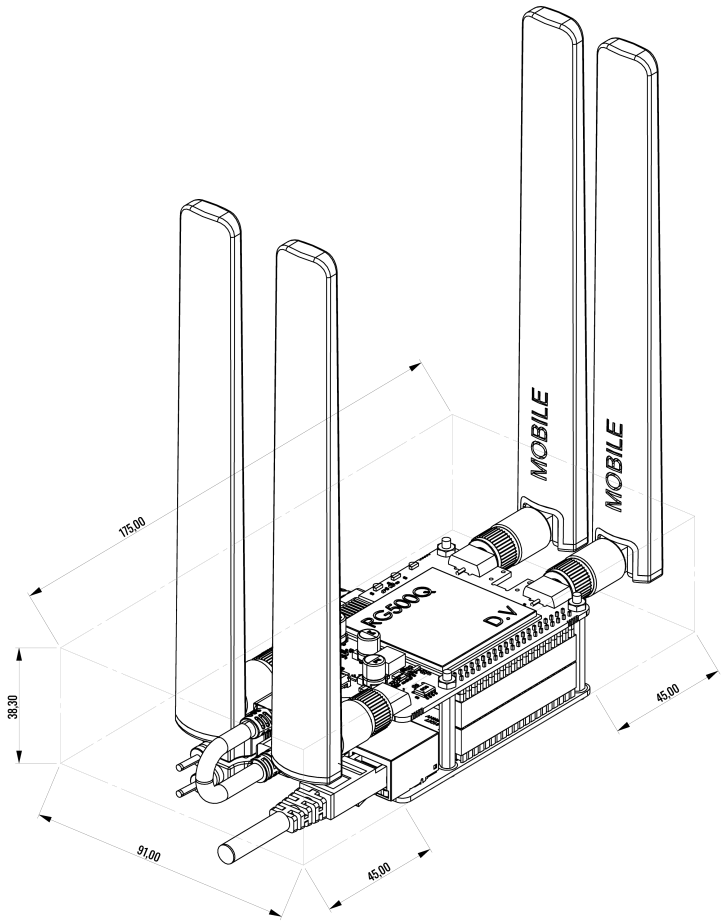
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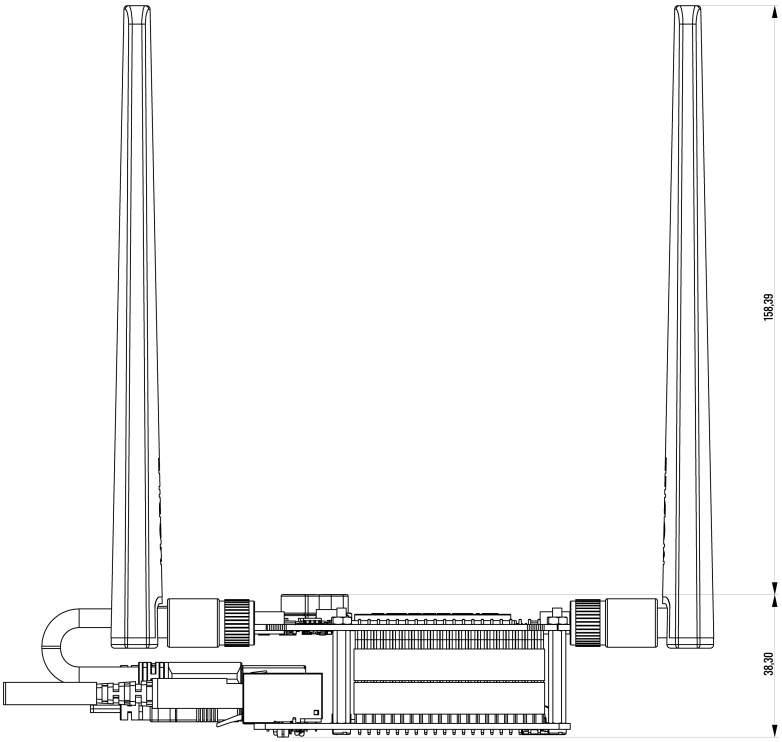
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EBD050 MOUNTING SPACE REQUIREMENTS

The figure below depicts an approximation of the device's dimensions when cables and antennas are attached:



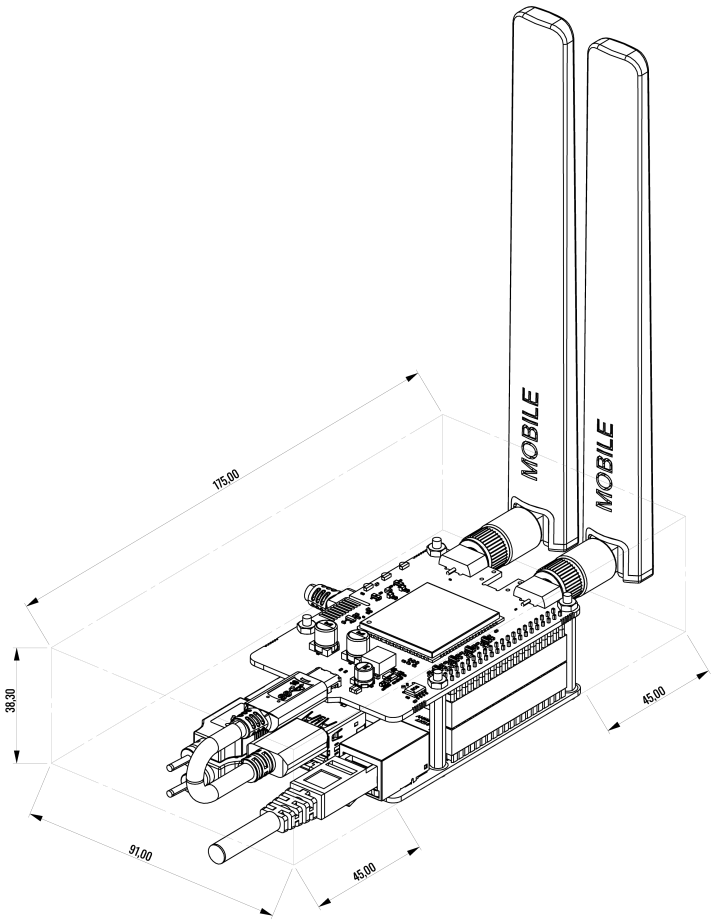
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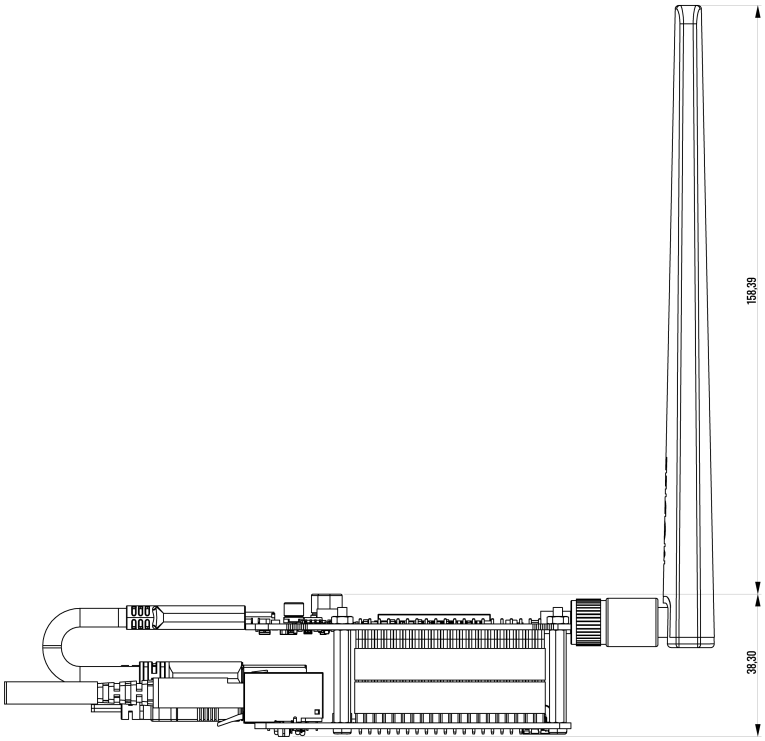
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EBD070 MOUNTING SPACE REQUIREMENTS

The figure below depicts an approximation of the device's dimensions when cables and antennas are attached:



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