

XS4 Locker

E1011

LOM

Antennas

Version	Date	Changes	Author
1.0	20/09/2022	First edition	M.U.

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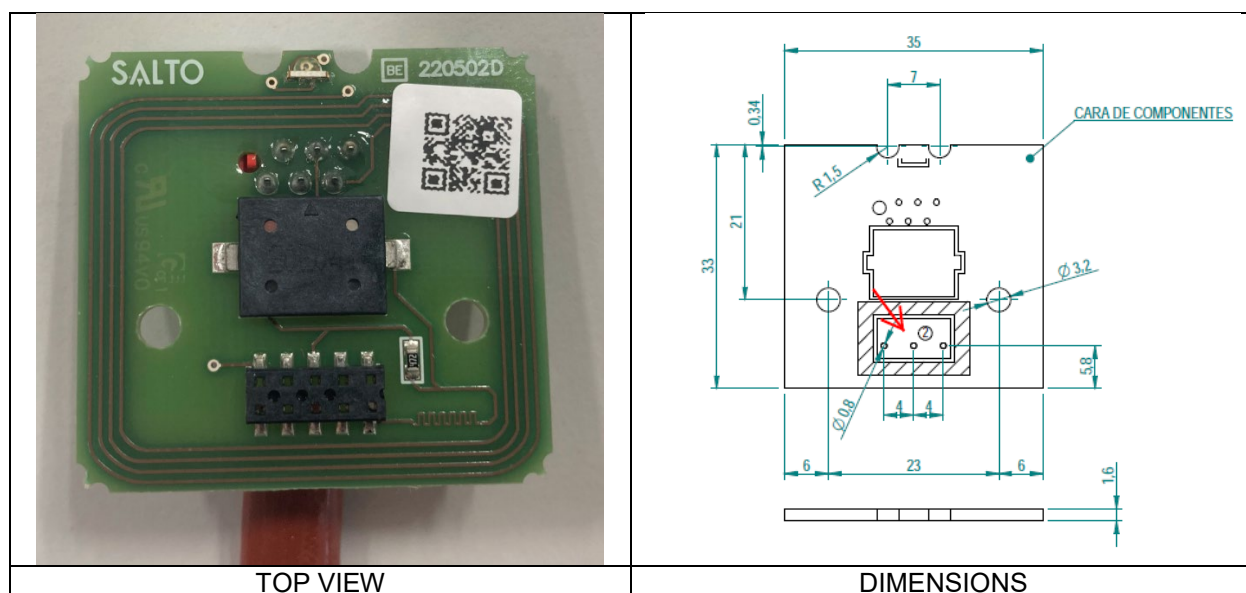
Annex I 5

1 LOM

XS4 Locker E1011		LOM
		MIFARE (1) + Bluetooth LE SoC (2)
Antennas	Number of antennas	2
	Manufacturer	1- SALTO Systems, S.L. 2- N/A
	Model number	1- LOM 2- N/A
	Type	1- Integral, PCB 2- Integral, Chip
	Gain	1- N/A 2- 1.5 dBi
	Frequency of Operation	1- 13.553 - 13.567 MHz 2- 2400 - 2483.5 MHz
Channels	Number of channels	1- N/A 2- 40
	Spacing	1- N/A 2- 2 MHz
	Bandwidth	1- N/A 2- 2 MHz
Type of Modulation		1- ASK 100%, OOK (subcarrier $f_c/16$) & ASK 10% - 30%, OOK (subcarrier $f_c/32$) 2- GFSK
Declared Nominal Output Power (Max.)		1- 20 dBm 2- 6 dBm
ITU Emission Designator		1- K1D 2- F1D
Equipment Configuration for frequency Stability: Data Rate		1- 106 Kbit/s, 26.48 Kbit/s 2- 1 Mbit/s
Equipment Configuration for Field Strenght Measurement: Data Rate		1- 106 Kbit/s, 26.48 Kbit/s 2- 1 Mbit/s

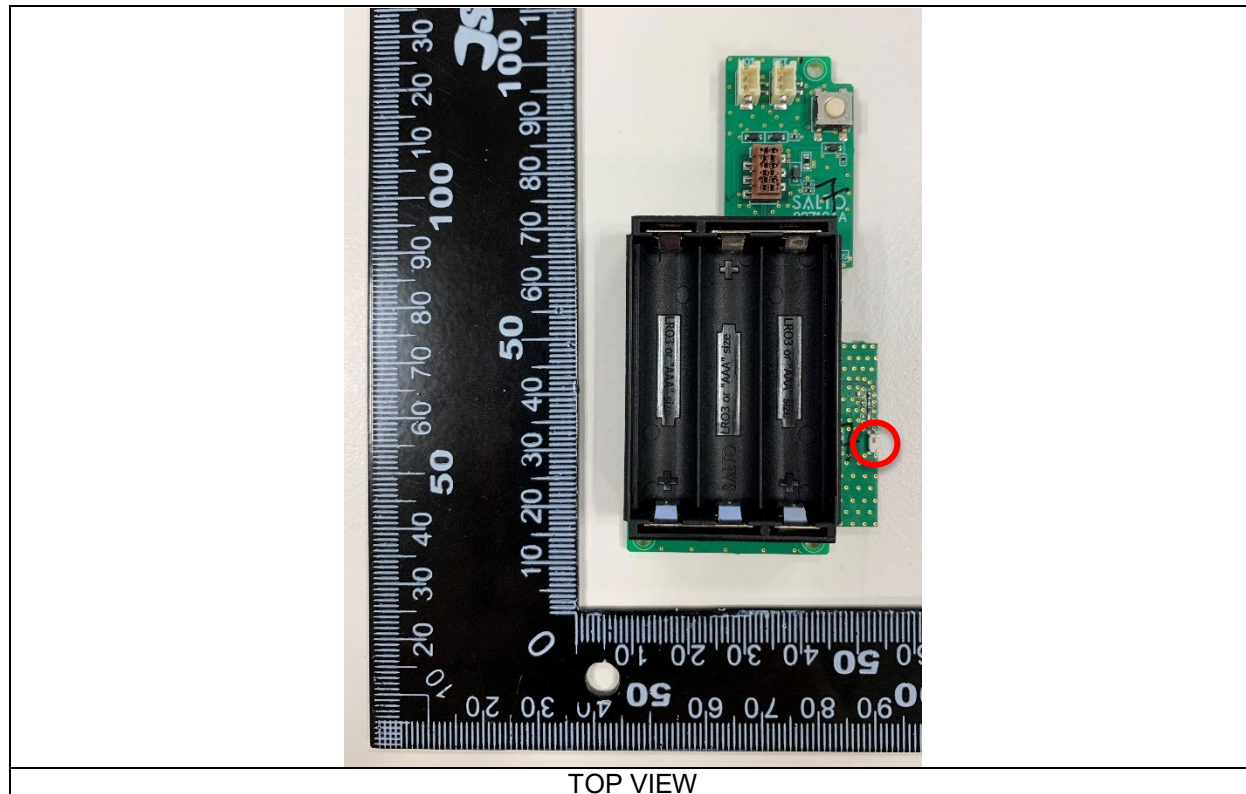
RFID antenna

The RFID antenna was designed by Salto Systems, S.L., Arkotz 9, Pol. Lanbarren 20180, Oiartzun (Gipuzkoa), Spain. The antenna model is LOM and it is located on the antenna circuit, 220502D. The dimensions of the circuit and the antenna are shown in the following images.



Bluetooth LE antenna

The antenna used for Bluetooth LE is the 2450AT18D0100 model from Johanson Technology. The antenna is located on the middle right side of the control circuit, 227194A. The following image shows the location and dimension of the antenna.



The remaining technical information of the antenna is described in the data sheet included in Annex I.

Annex I

High Frequency Ceramic Solutions

AEC-Q200 Qualification Available

 2.45 GHz SMD Antenna, EIA 1206, Detuning resilient,
 Edge Mount Design

 New Global P/N 2450AT18D0100001
 Legacy P/N 2450AT18D0100

Detail Specification: 8/24/2022

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Let us help you with the antenna design, optimization, and tuning!

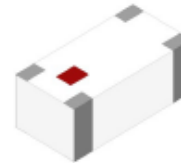
<https://www.johansontechnology.com/ask-a-question>

General Specifications

New Global Part Number	2450AT18D0100001
Frequency (GHz)	2.4 - 2.5
Peak Gain (dBi)	1.5 typ. (XZ-total)
Average Gain (dBi)	-1.0 typ. (XZ-total)
Radiated Efficiency*	72%
Return Loss (dB)	10 min.
Impedance (Ω)	50
Input Power (W)	3 max. (CW)
Operating Temperature	-40 to +125°C
Recommended Storage Conditions and Period for unused Product on T&R	+5 to +35°C Humidity 45 - 75% RH 18 months max.
Reel Quantity (pcs./reel)	3,000

*Efficiency measured on Johanson's evaluation board PN 2450AT18D0100001CE1

Top



Bottom



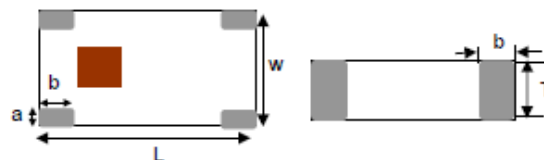
Part Number Explanation

(See last page for more info on new and legacy part numbers)

P/N Suffix	Packing Style	Bulk (loose pcs.)	Suffix = B	e.g. 2450AT18D0100001B
		T & R	Suffix = E	e.g. 2450AT18D0100001E
		100% Tin	Suffix = None	e.g. 2450AT18D0100001(B or S)
	Evaluation Board	2450AT18D0100001CE1		

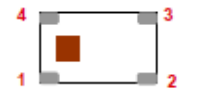
Mechanical Dimensions

	In	mm
L	0.126 $\pm$ 0.008	3.20 $\pm$ 0.2
W	0.063 $\pm$ 0.008	1.60 $\pm$ 0.2
T	0.047 $\pm$ 0.004	1.20 $\pm$ 0.1
a	0.012 +0.004 / -0.008	0.30 +0.1 / -0.2
b	0.020 $\pm$ 0.008	0.50 $\pm$ 0.2



Terminal Configuration

No.	Function 1	Function 2
1	FEED	GND
2	GND	GND
3	GND	GND
4	GND	FEED


 Function 1: Antenna fed from left
 Function 2: Antenna fed from right

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Edge Mount Design

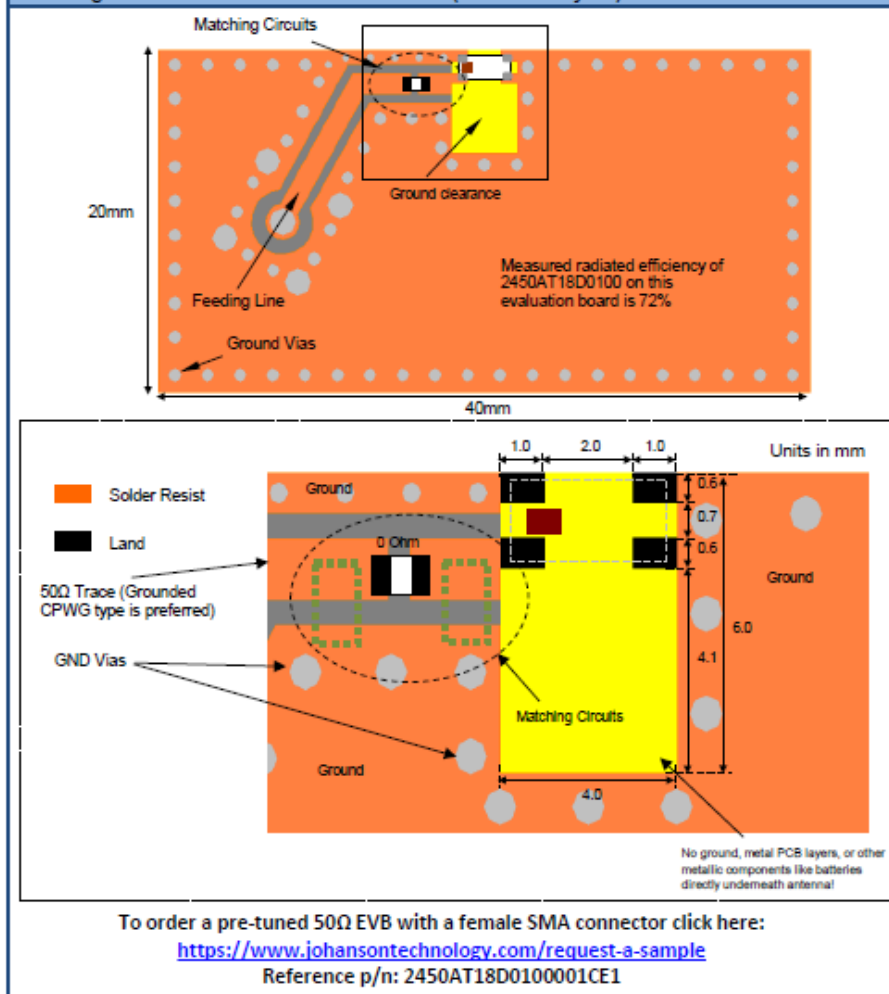
New Global P/N 2450AT18D0100001

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Mounting Considerations 1: Evaluation Board (Standard Layout)



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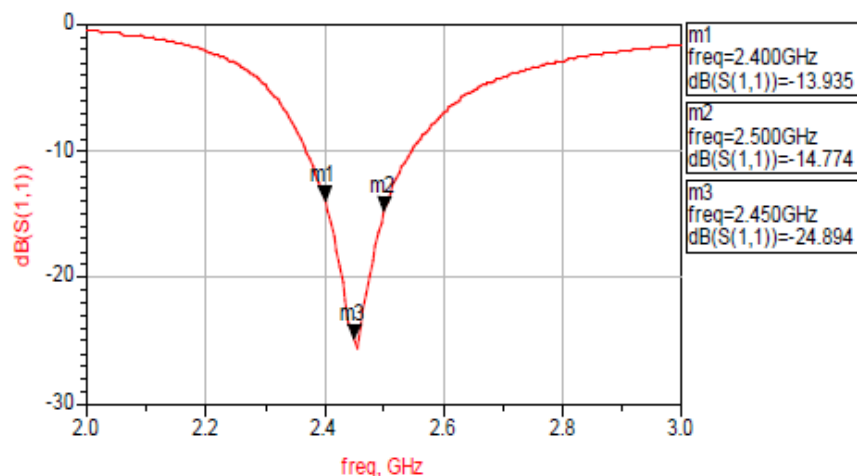
Legacy P/N 2450AT18D0100

Detail Specification: 8/24/2022

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Mounting Considerations 1: Electrical Performance @25°C

Measured Return Loss



Would you like the antenna layout? Have antenna tuning issues?
Please contact us if you have any questions regarding the implementation of this antenna in your PCB's layout. We'll be happy to guide you to maximize the antenna's performance.
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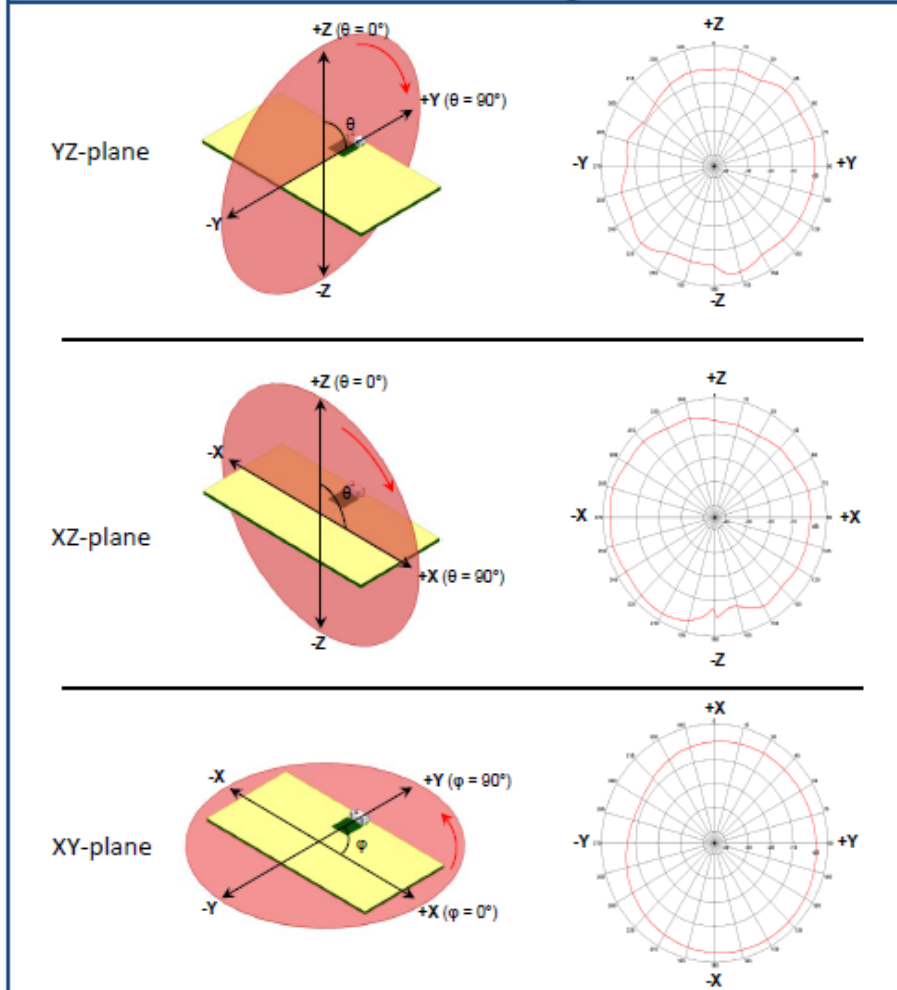
New Global P/N 2450AT18D0100001

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Mounting Considerations 1: Typical 2D radiation patterns @ 2.44GHz



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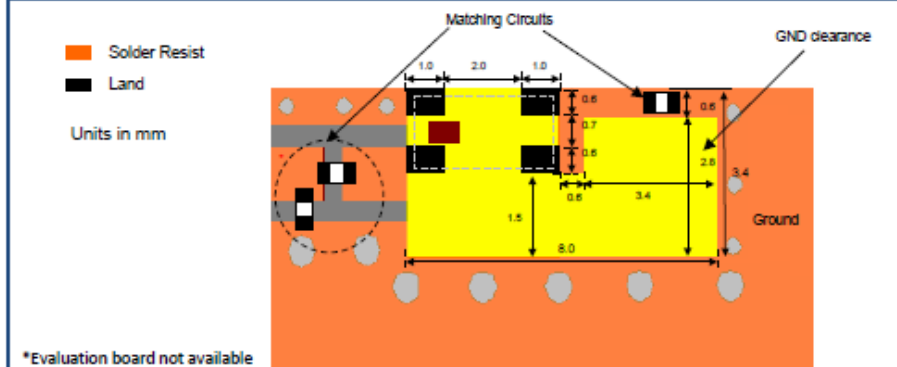
Legacy P/N 2450AT18D0100

Detail Specification: 8/24/2022

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Mounting Considerations 2: Small Clearance or "Thin edge" Applications*

Frequency (GHz)	Peak Gain (dBi)	Average Gain (dBi)	Radiated Efficiency (%)
2.45	0.3 (XZ-plane)	-3.6 (XZ-plane)	66

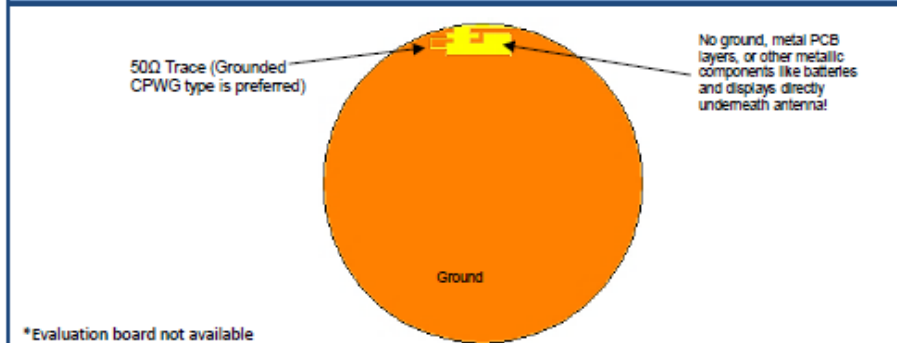


*Evaluation board not available

Want the layout file of this example? Send us a message at:

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Mounting Considerations 3: "Third edge" application on circular PCB



*Evaluation board not available

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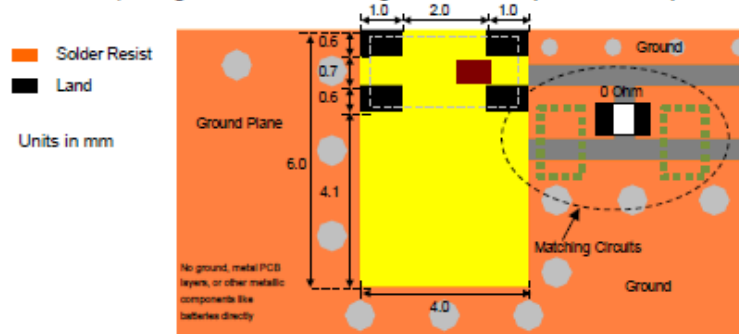
Legacy P/N 2450AT18D0100

Detail Specification: 8/24/2022

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Mounting Considerations 4: Fed from Right Side*

(Feeding the antenna from the right will have no impact on antenna performance)



*Evaluation board not available

Would you like the layout file of the above? Have antenna tuning issues?
Please contact us if you have any questions regarding the implementation of this antenna in your PCB's layout. We'll be happy to guide you to maximize the antenna's performance.

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2.45 GHz SMD Antenna, EIA 1206, Detuning resilient, Edge Mount Design	New Global P/N 2450AT18D0100001 Legacy P/N 2450AT18D0100
Detail Specification: 8/24/2022	Page 7 of 7

Antenna tuning, optimization, and validation services:

<https://www.johansontechnology.com/ipc-antenna-services>

For more antennas and to download measured S-parameters, go to:

<https://www.johansontechnology.com/antennas>

Soldering Information

<https://www.johansontechnology.com/ipcsoldering-profile>

MSL Info

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Packaging Information

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Recommended Storage Condition and Max Shelf Life

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Johanson's New Global Part Number Schema

Johanson has instituted a new Global Part Numbering (GPN) system. Only the part number is changing. The parts are produced with the exact same materials, manufacturing processes, manufacturing controls, dimensions, physical attributes and testing as the parts supplied with the legacy part numbers.

A database for part number crosses can be accessed at:

<https://www.johansontechnology.com/pn-search>

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