



USA | UK | SVK

# 2J Antennas



WillowBee SI328100009 - Coil Antenna  
Dual-Band 868/915 Integration

Rick Millanes, MSEE

April 2023

# VERSION HISTORY

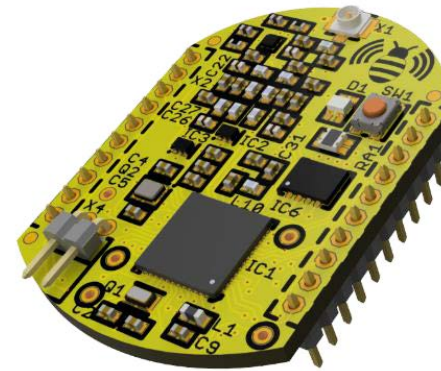
| Version | Release Date | Editor | Changes                                            | Approved by |
|---------|--------------|--------|----------------------------------------------------|-------------|
| 1.0     | 4/27/2023    | RM     | OB24 Initial Integration.                          | RC          |
| 2.0     | 05/03/2023   | RM     | Changed Product ID from SI130039925 to SI328100009 | RM          |

# TABLE OF CONTENT

- ▶ INTRODUCTION
- ▶ DEVICE VIEW
- ▶ MEASUREMENT SETUP
- ▶ PASSIVE PERFORMANCE
- ▶ CONCLUSIONS

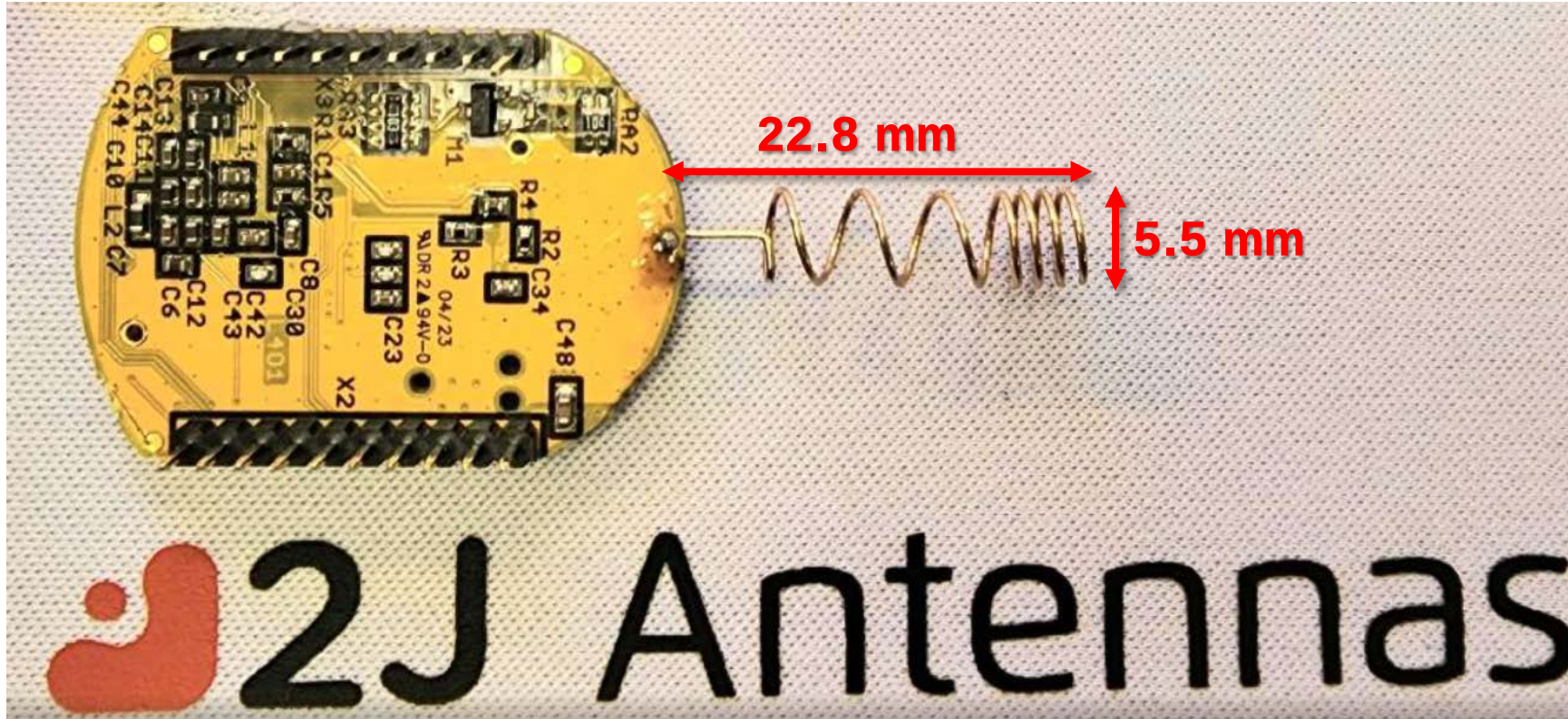
# INTRODUCTION

- ▶ WillowBee Device was submitted for an antenna integration utilizing a SI328100009 -Coil Antenna.
- ▶ Antenna was integrated and matching network is proposed to tune it.
- ▶ Dimensions for the used SI328100009-Coil is expanded.
- ▶ IMP and OTA performance is presented.

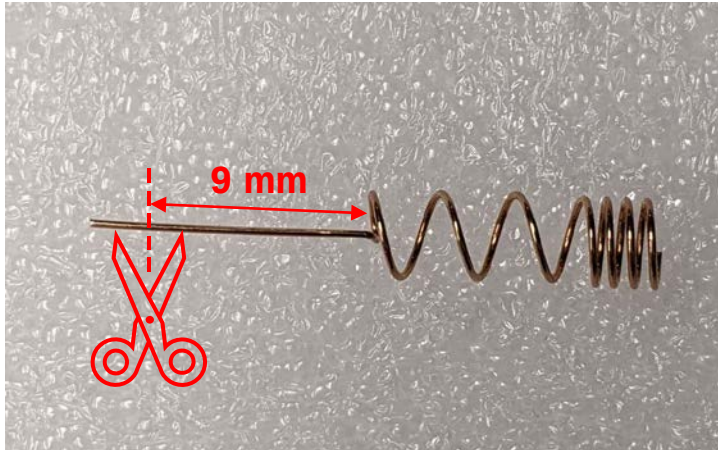


# DEVICE VIEW

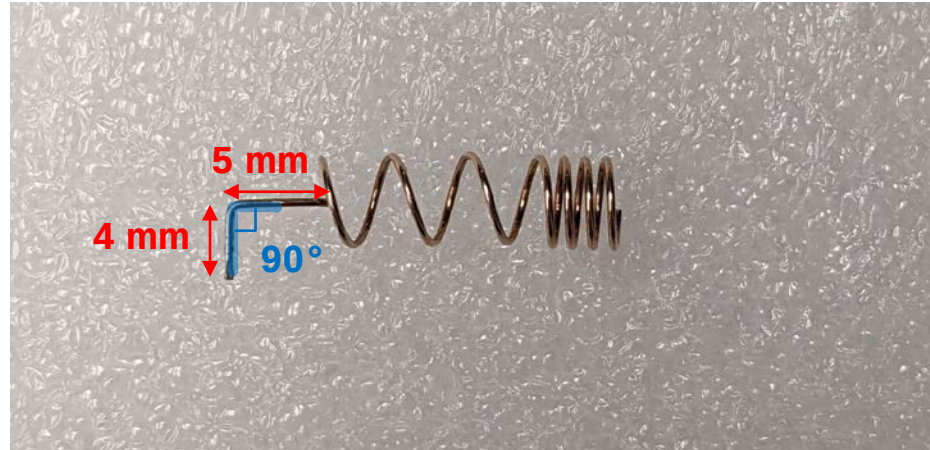
SI328100009-Coil  
Coil Monopole Antenna  
Thru-hole  
22.8 x Ø 5.5 mm



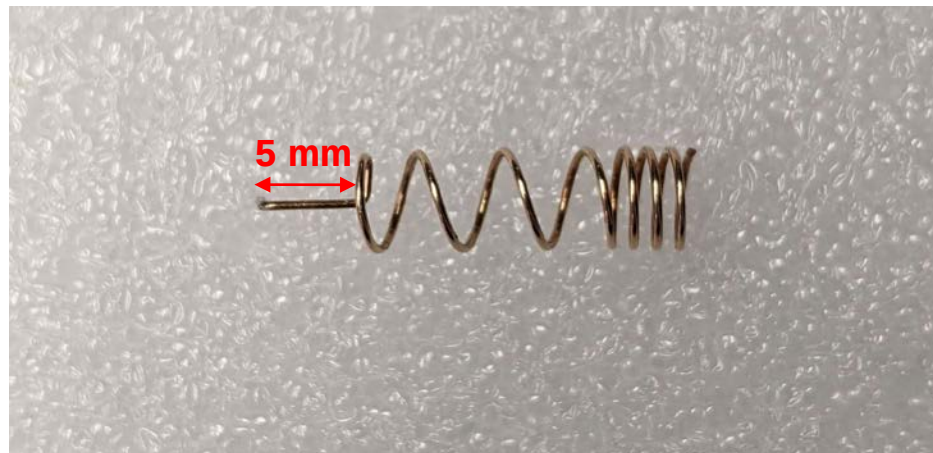
# COIL VIEW



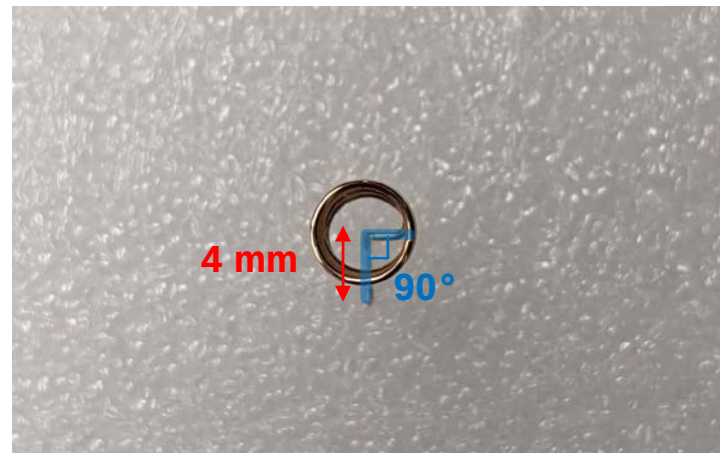
Cut the coil at 9 mm from the spiral base.



Bend the filament at 90° accordingly the image.

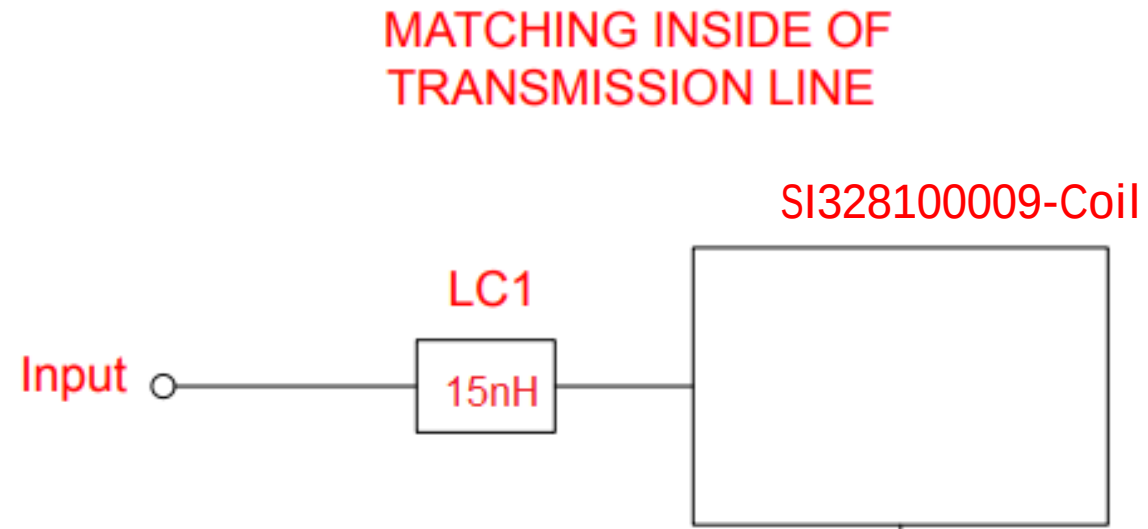


Top view of the bended filament.

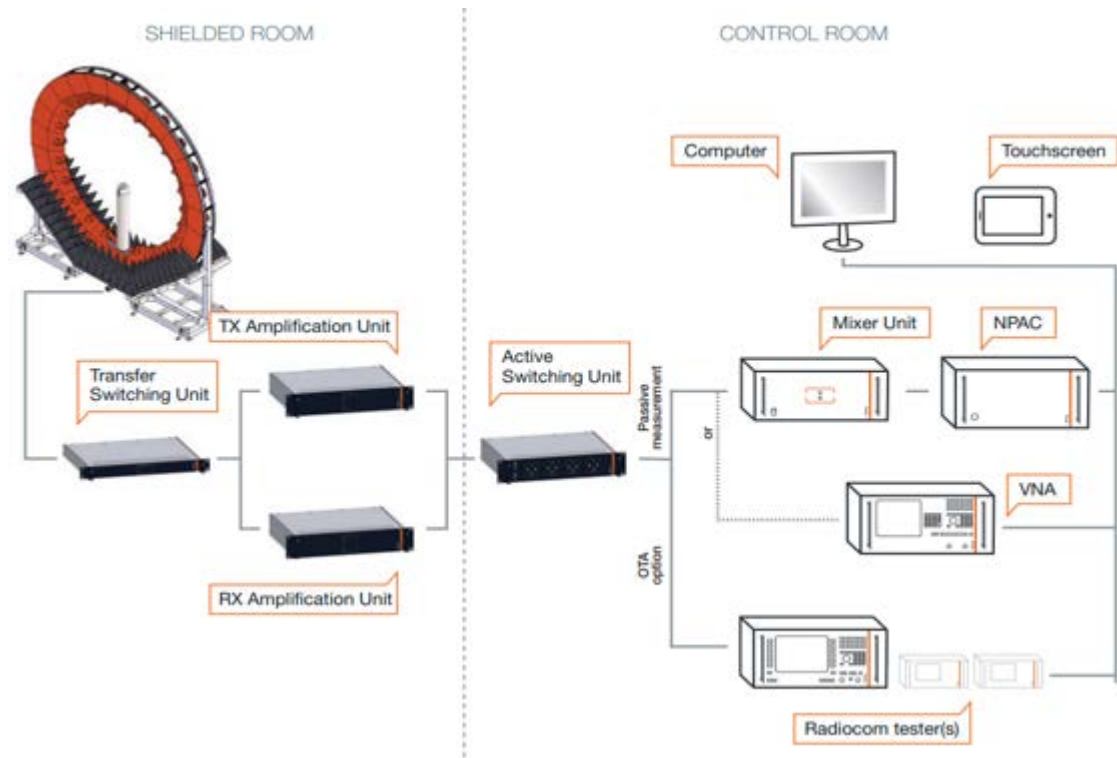


Front view of the coil.

# MATCHING NETWORK FOR COIL ANTENNA

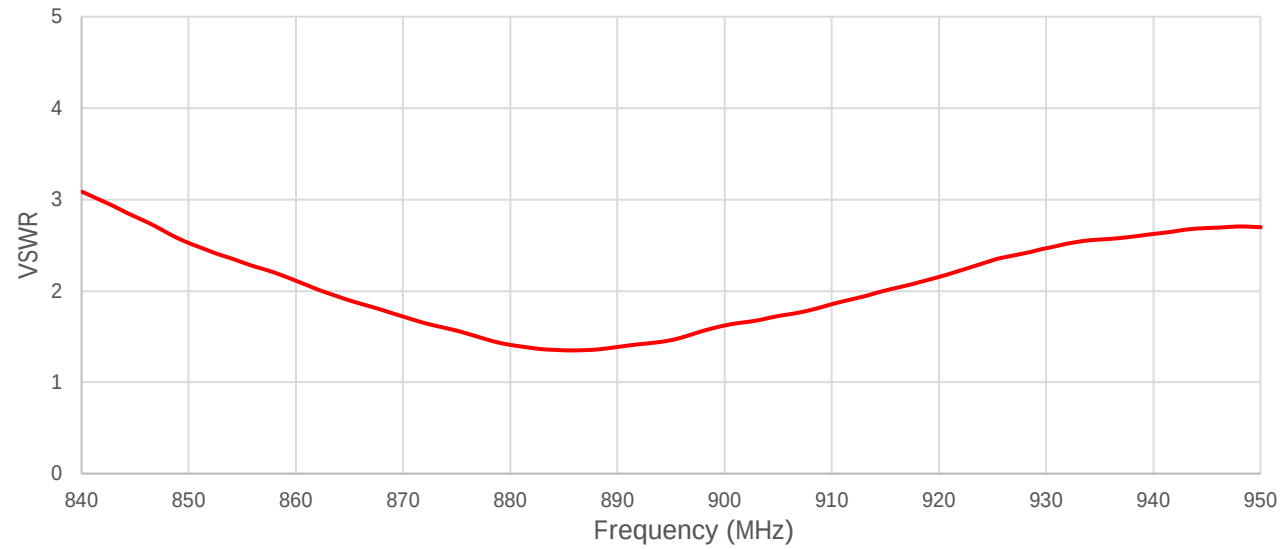
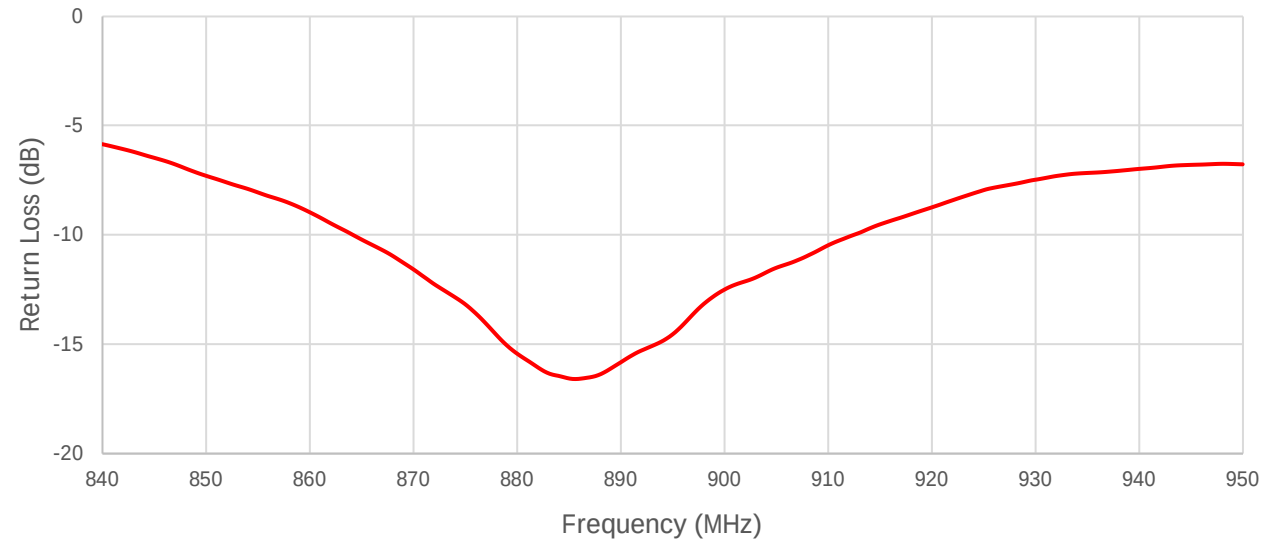


# MEASUREMENT SETUP

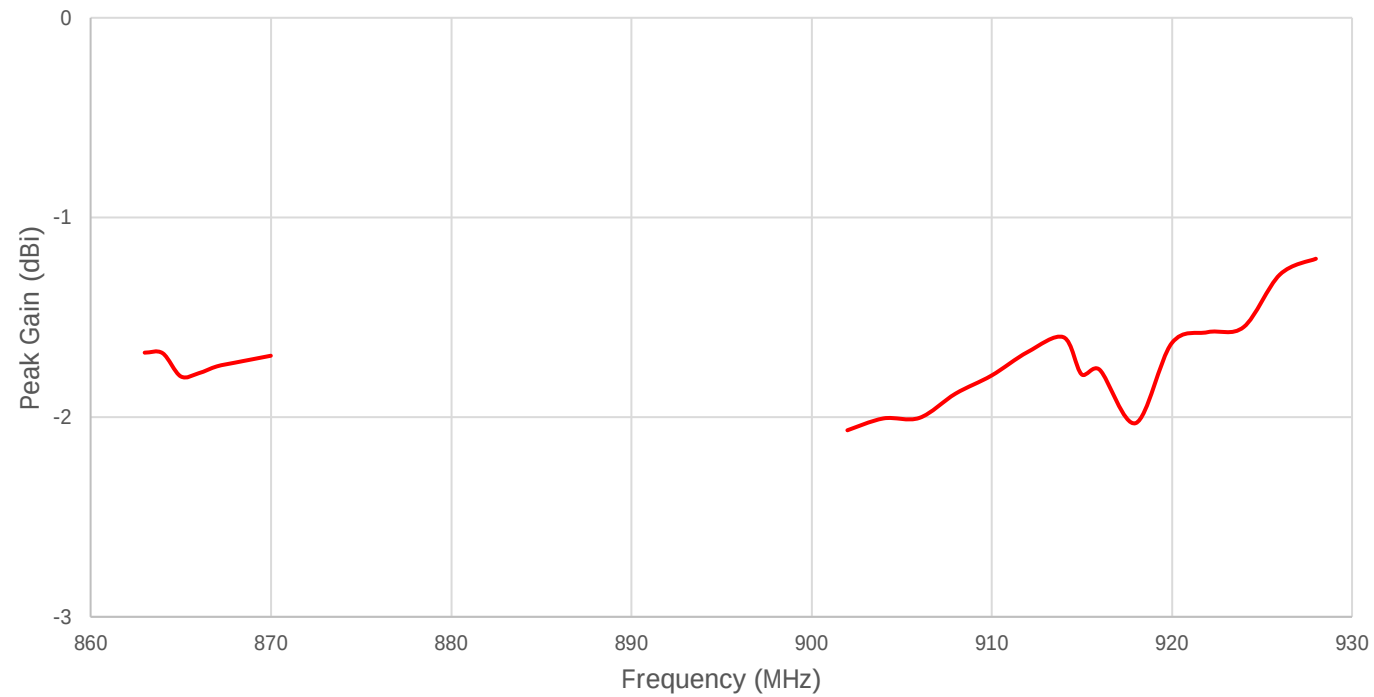


Measurement setup inside of Satimo StarGate 24

# IMPEDANCE PERFORMANCE



# PEAK GAIN PERFORMANCE



# CONCLUSIONS

- Thru-Hole Monopole SI328100009-Coil Antenna from 2J was adapted successfully with minor matching network possible.
- Only one series inductor is enough to achieve tuning and matching on antenna TX Line.
- With current Design, presented solution can be implemented with no additional changes on PCB, you can place the 15nH inductor on the 0Ω link pads that already are placed on tracks
- For the device size this is an outstanding performance, working seamlessly on both 868 and 915 MHz ISM bands.
- As this is an off-the-shelf internal part, only 500pcs MoQ is needed.
- Is just needed to cut the straight part, and make little bend, as explained above.