Matching Network Service Report

Dashine - LBJ 1766

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Outline

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2 Proposed Antenna

3 Set-up

4 Proposed Matching Network

5 Controller: Performance Analysis

6 Dongle: Performance Analysis

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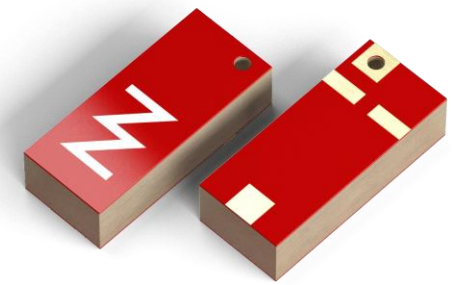
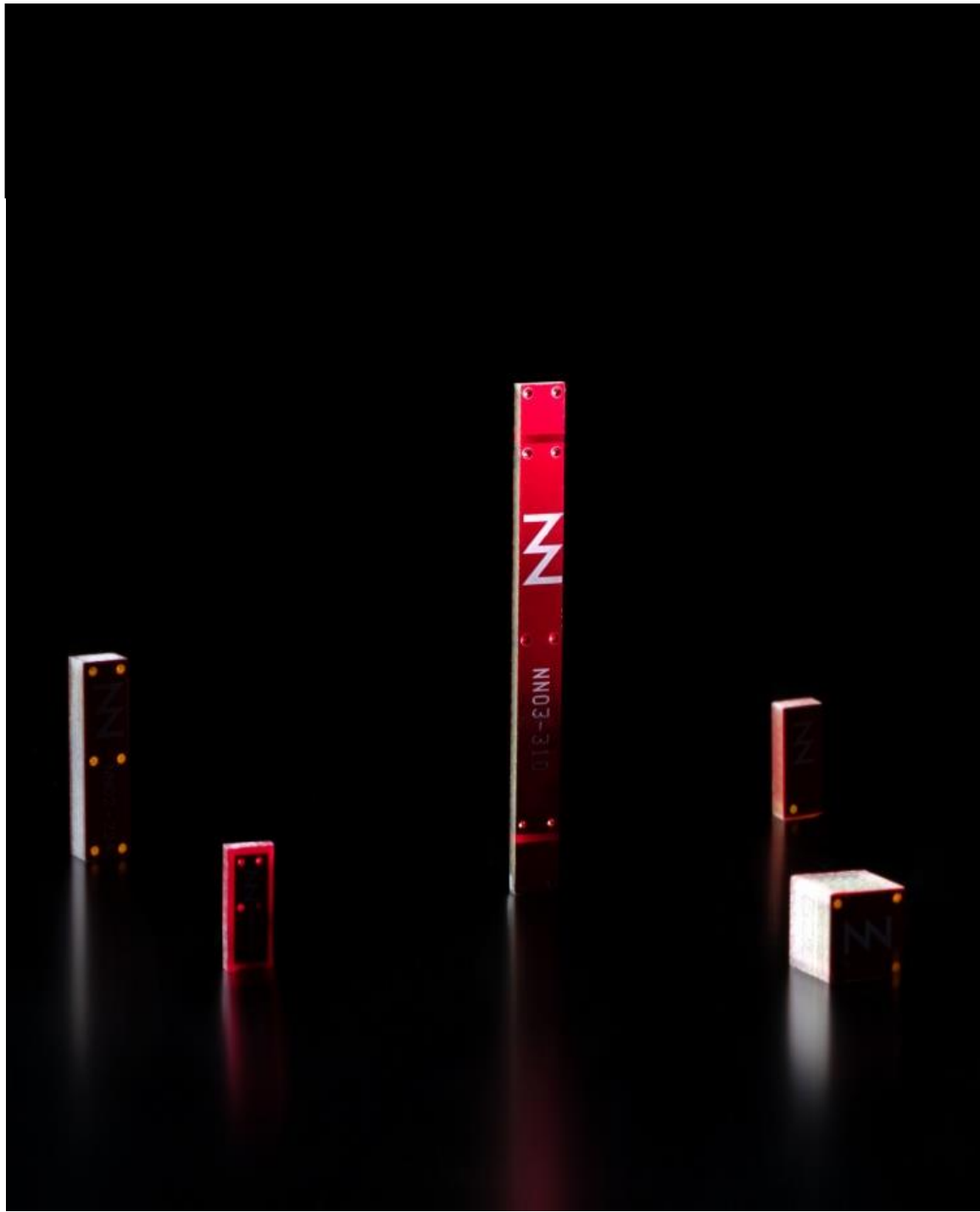
2. Recommended Antenna



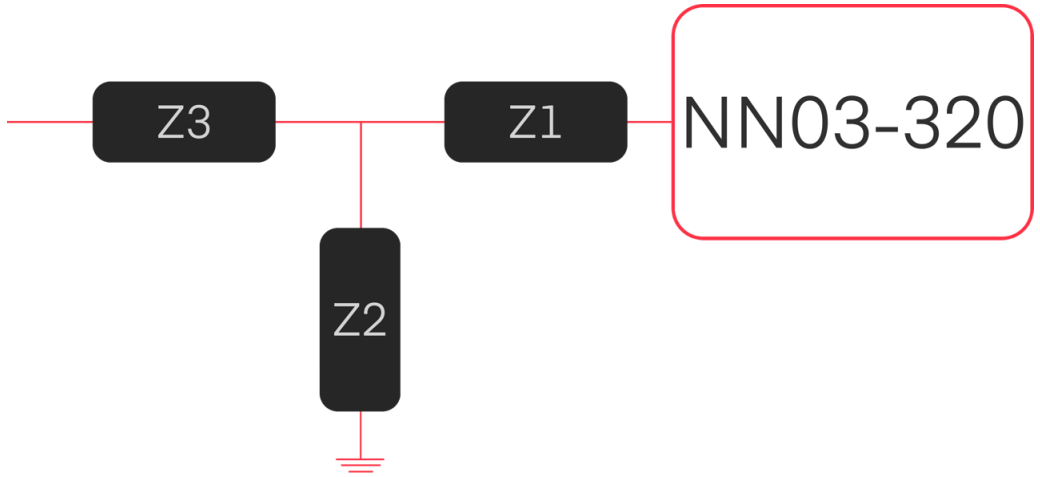
PN: NN03-320

DUO mXTEND™ ANTENNA BOOSTER (NN03-320)

This product and/or its use is protected by at least the following patents and other domestic and international patents pending. Any update on new patents linked to this product will appear in https://ignion.io/files/Patent-list-NN.pdf



4. Proposed Matching Network



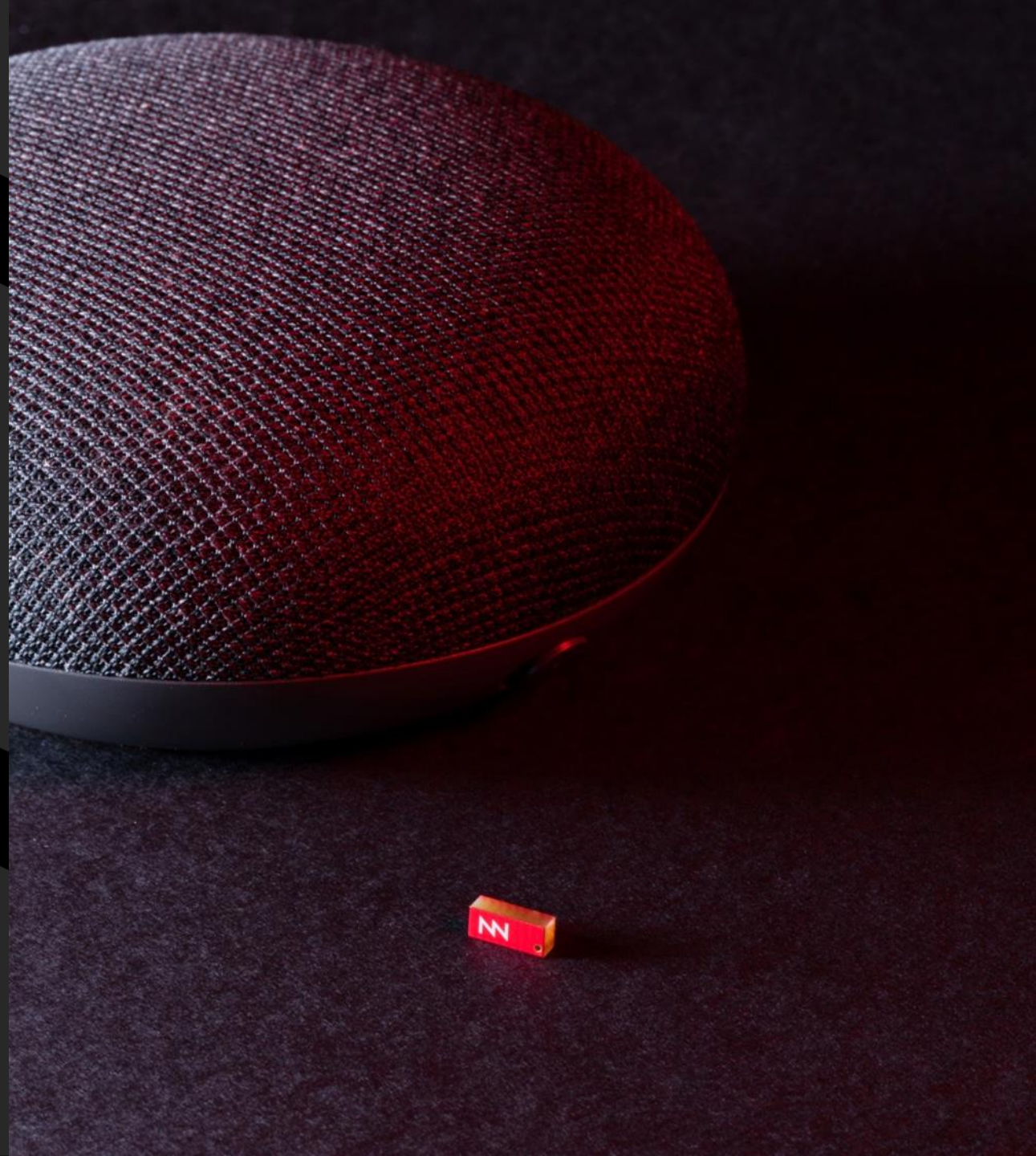
BT Recommended MN 2400-2484 MHz		
Z	**Value**	**Part Number**
Z_1	4.1 nH	LQW18AN4N1G80
Z_2	OPEN	-
Z_3	0Ω	Resistor

Dongle:Performance Analysis

6.1 Reflection coefficient (dB)

6.2 Antenna Efficiency (%)

6.3 Radiation Patterns



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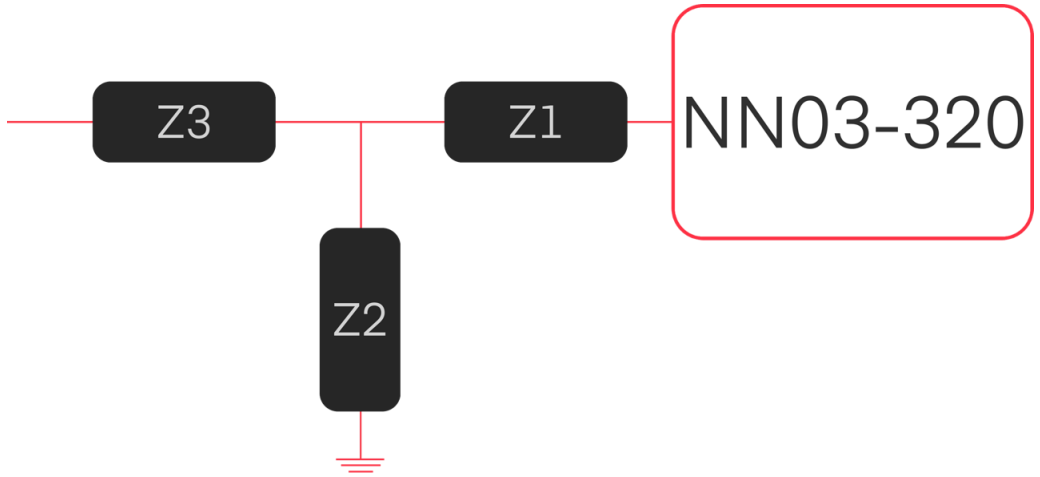
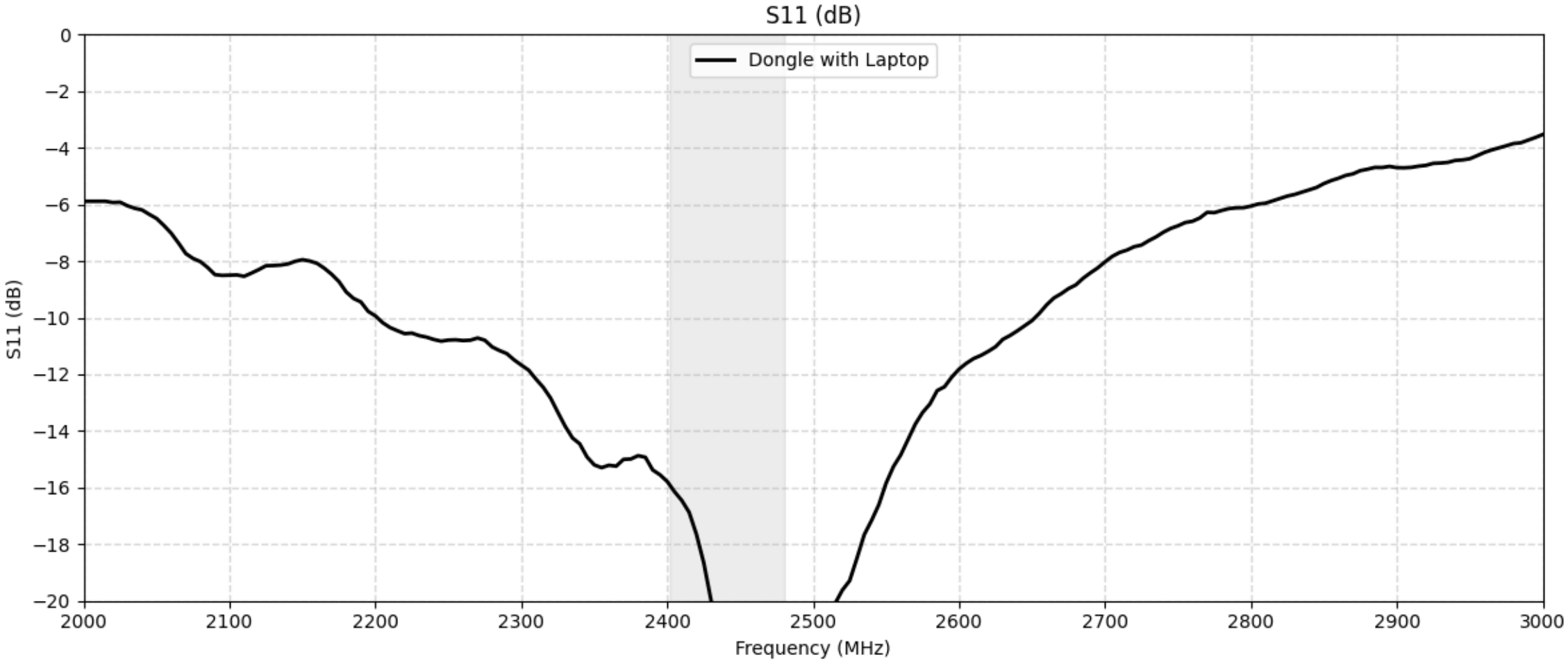
Proposed Matching Network

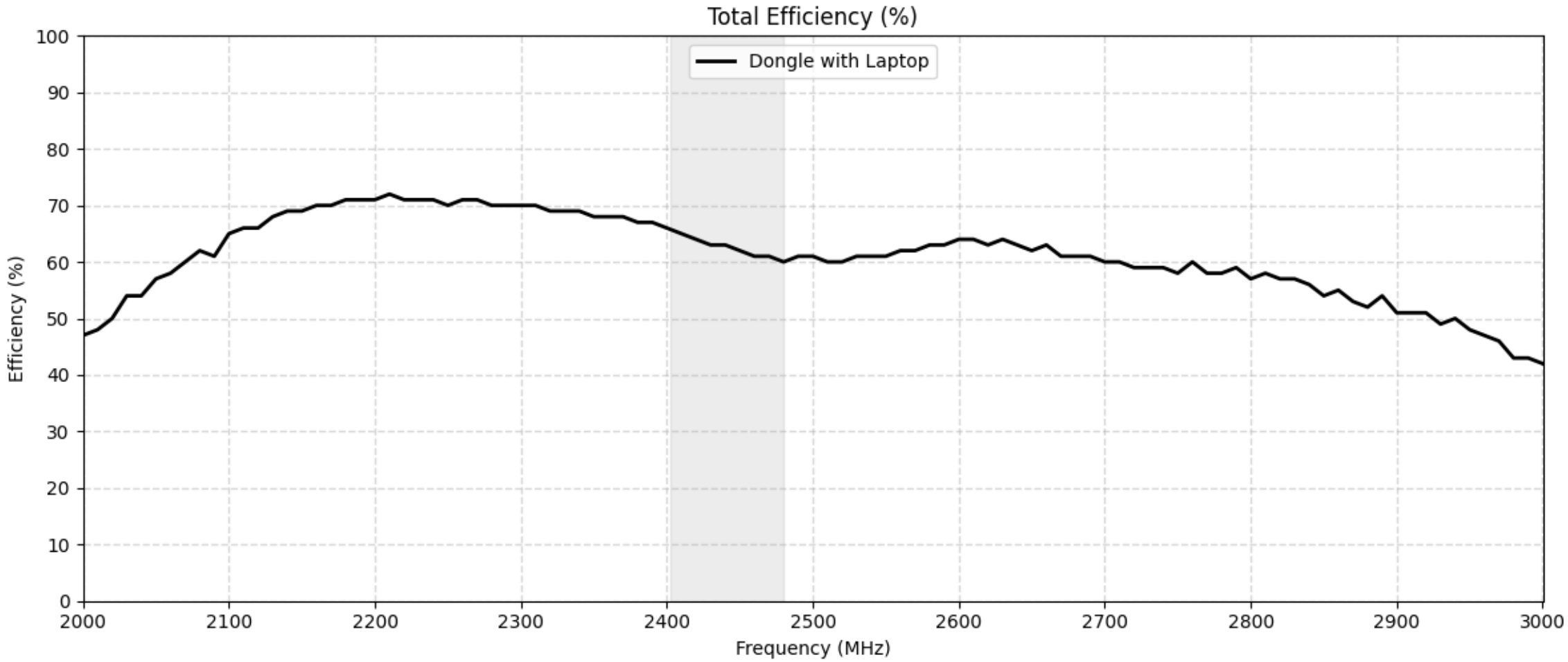


BT Recommended MN 2400-2484 MHz		
Z	**Value**	**Part Number**
Z_1	6.5 nH	LQW18AN6N5G80
Z_2	OPEN	-
Z_3	0Ω	Resistor

6.1 Performance Analysis: Reflection Coefficient (dB)

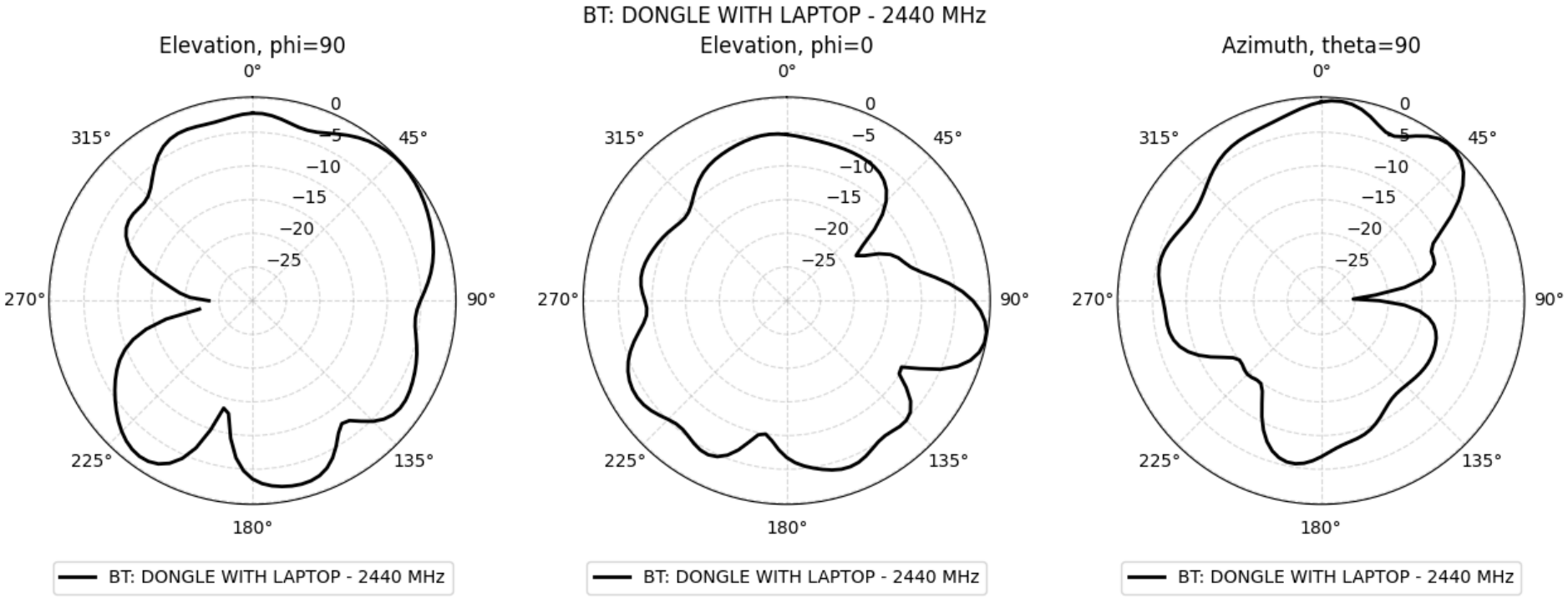


6.2 Performance Analysis: Antenna Efficiency (%)



2.4 GHz BT (2400-2484 MHz)				
	Frequency range	Eff. 2400 MHz(%)	Eff. 2484 MHz(%)	Full Eff (%)
Dongle with Laptop	2400-2484 MHz	66	60	62.8

6.3 Performance Analysis: Coordinates for the Radiation Pattern



8. Summary

- Results obtained for the Controller and the Dongle versions using the evaluated antenna solution and the final matching proposal.

2.4 GHz BT (2400-2484 MHz)		
	Frequency Range	Full Eff (%)
Controller with Hands	2400-2484 MHz	42.2

2.4 GHz BT (2400-2484 MHz)		
	Frequency Range	Full Eff (%)
Dongle with Laptop	2400-2484 MHz	62.8

- Recommended matching network topology and component values.
- **Controller:** The matching network design for the controller was optimized to maximize impedance matching under realistic operating conditions, specifically accounting for the influence of the human body in close proximity to the device. In this scenario, the device is assumed to be held with both hands, and the resulting electromagnetic interaction was considered during the design process.
- **Dongle:** The matching network design for the dongle was optimized to achieve proper impedance matching in its intended use case, namely when connected to a laptop. The design accounts for the presence of a larger ground plane introduced by the host device, and the matching network was developed accordingly within this context.
- For both devices, controller and dongle, measurements were performed at the final pad of the matching network.

If the PCB is modified, the antenna response and matching network may require readjustment.

Get in touch

ignion.io

info@ignion.io

Barcelona

Carrer Jesús Serra Santamans, 2
Building 2, 3rd Floor
08174 Sant Cugat del Vallès,
Barcelona
+34 935 660 710

Tampa

88875 Hidden River Parkway
Suite 300
Tampa, FL 33602
USA
+1 407 902 9278
+1 888 726 8366

Shenzhen

Keyan Road 9, Nanshan District
BAK Science & Technology, Room 1301E
Shenzhen, GD 518057
China
+86 138 2653 8470