

Matching Network Service Report

Dashine – LBJ 1766

Outline

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Objectives

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Proposed Antenna

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Proposed Matching Network

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Controller: Performance Analysis

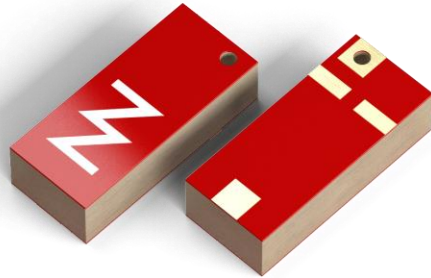
6

Dongle: Performance Analysis

7

Summary

2. Recommended Antenna

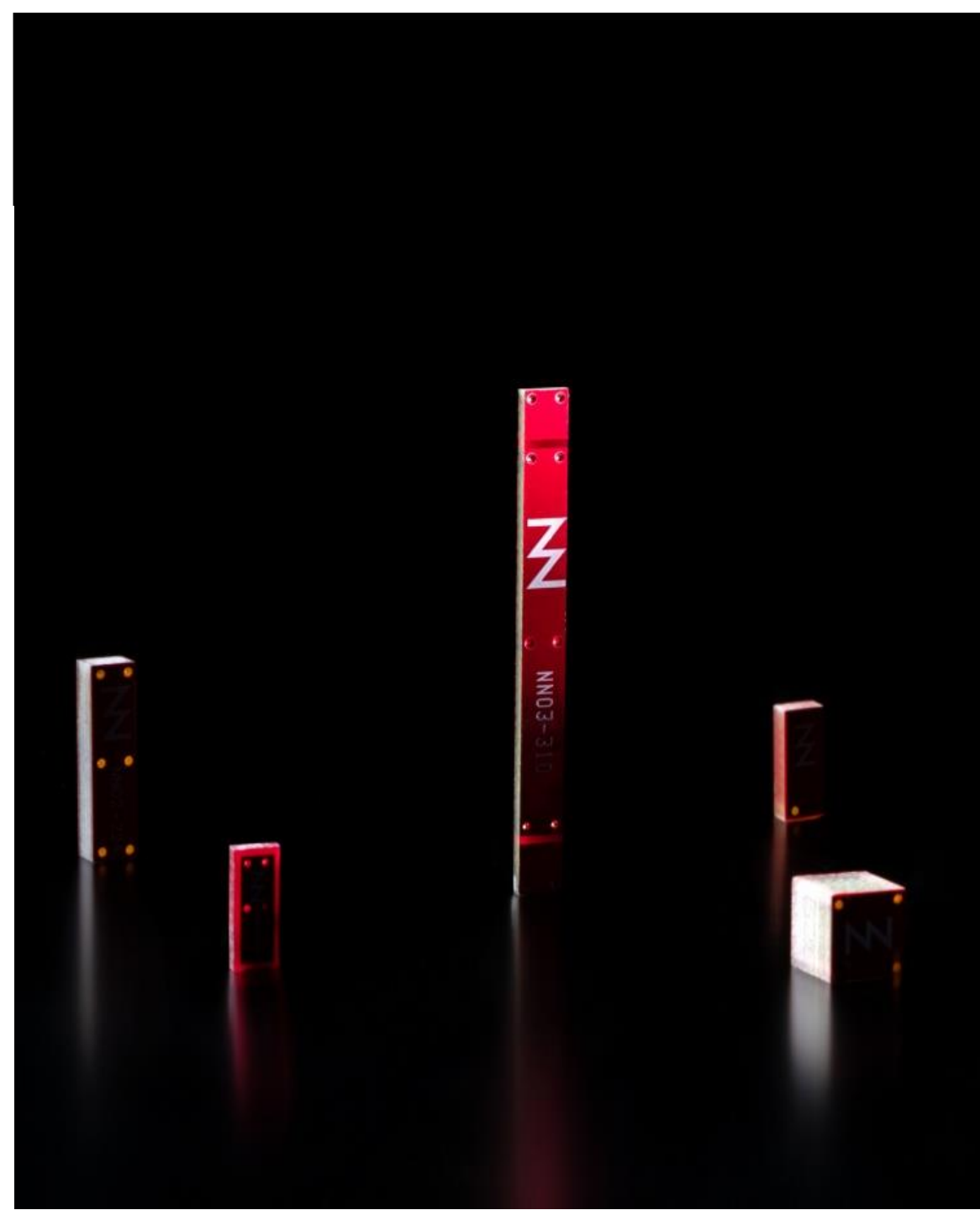


PN: NN03-320

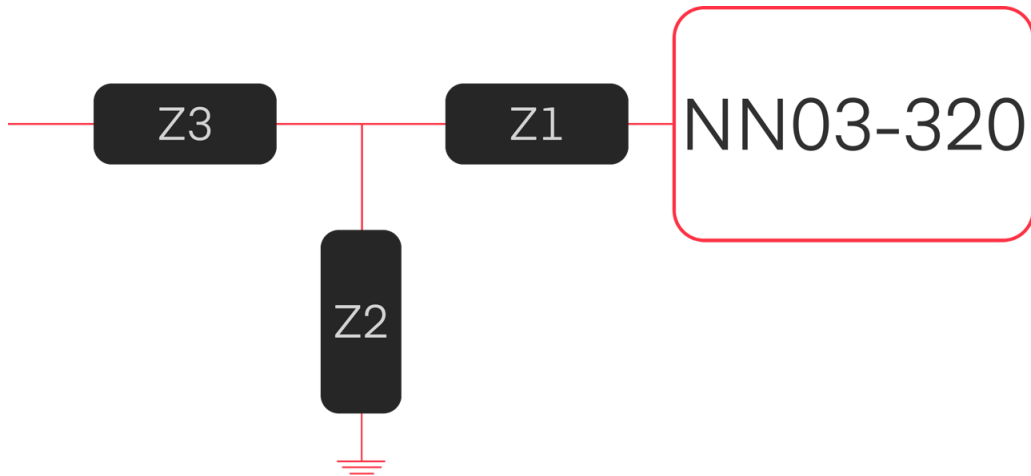
DUO mXTEND™ ANTENNA BOOSTER (NN03-320)

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



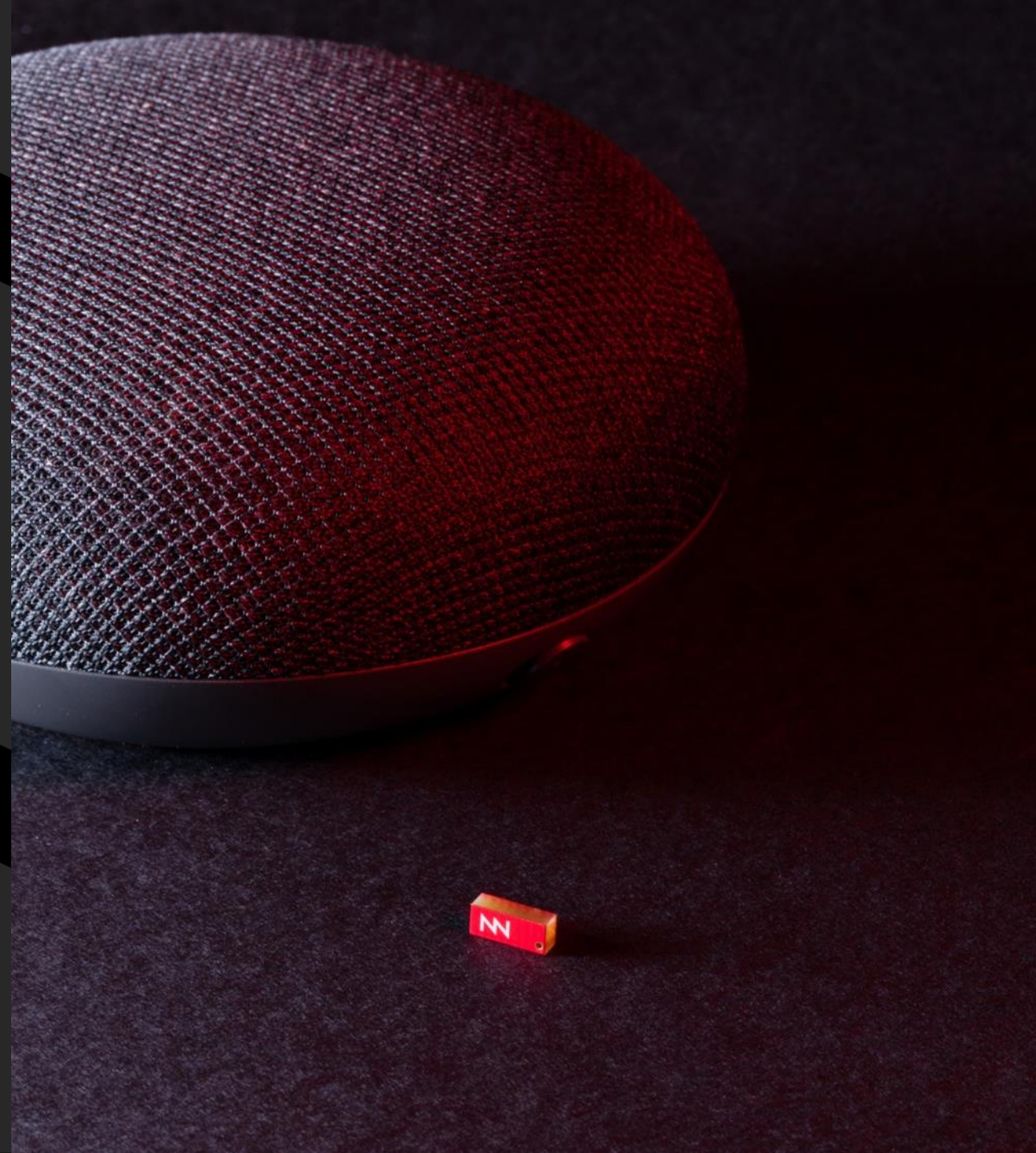
BT Recommended MN 2400-2484 MHz		
Z	Value	Part Number
Z_1	4.1 nH	LQW18AN4N1G80
Z_2	OPEN	-
Z_3	0 Ω	Resistor

Controller: Performance Analysis

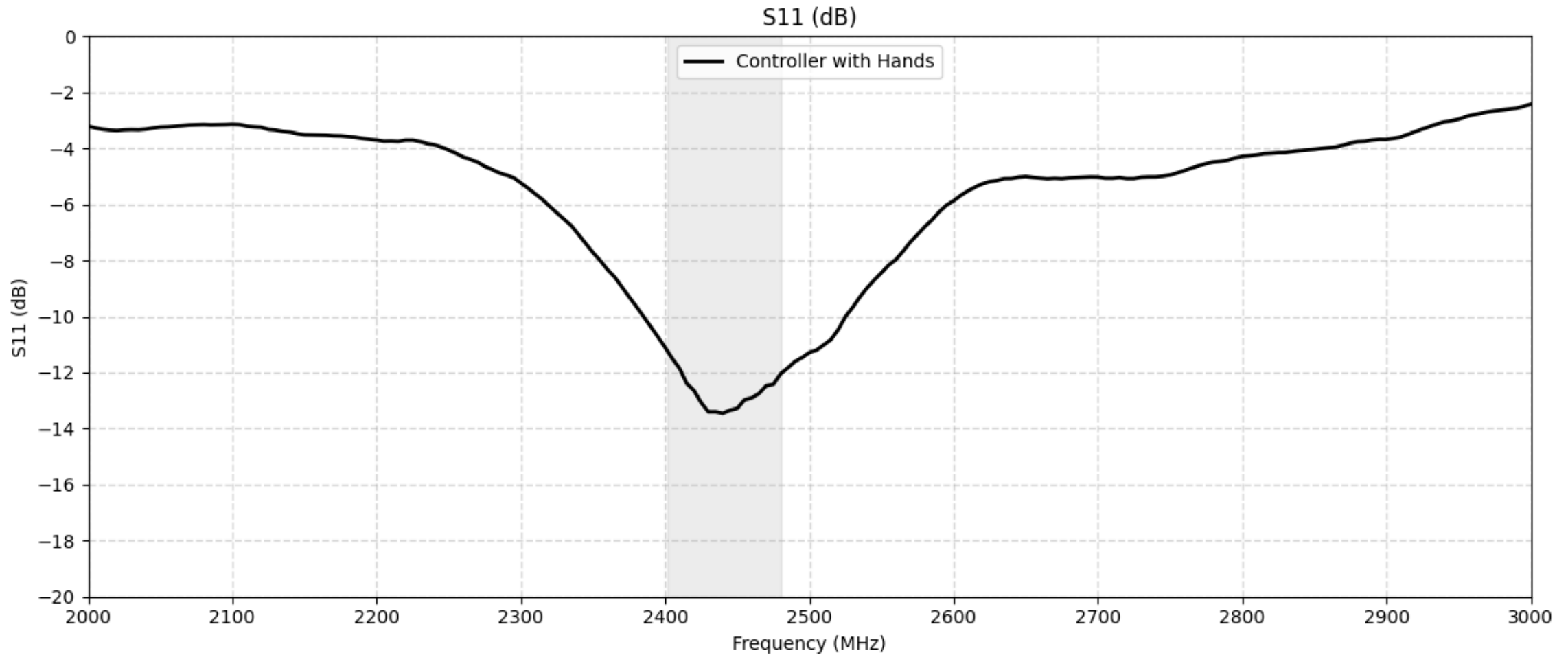
5.1 Reflection coefficient (dB)

5.2 Antenna Efficiency (%)

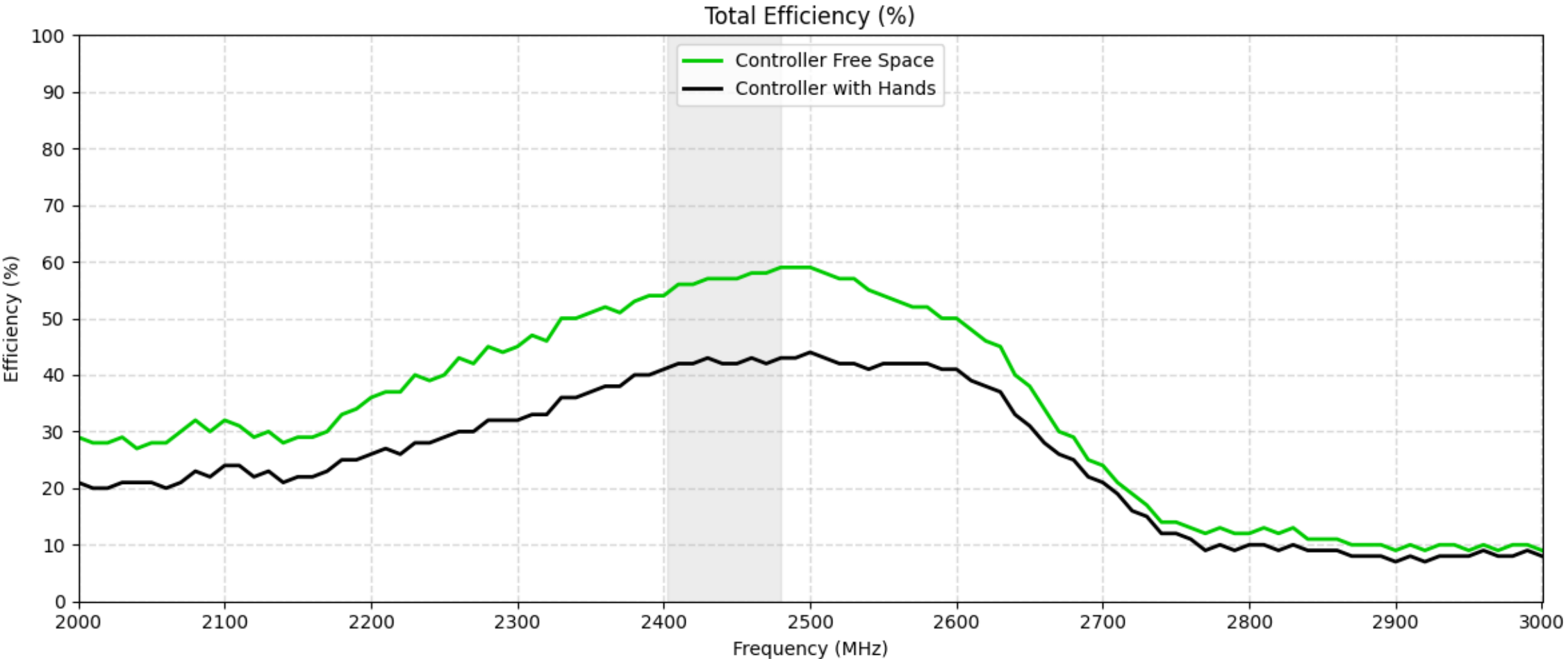
5.3 Radiation Patterns



5.1 Performance Analysis: Reflection Coefficient (dB)

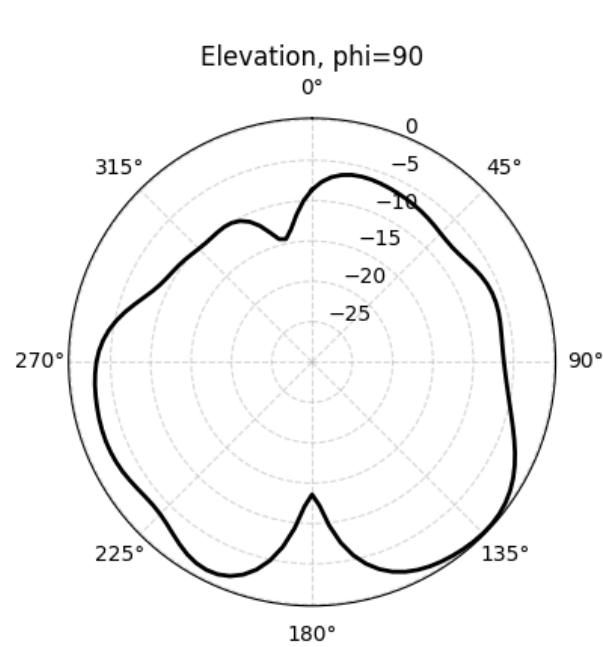


5.2 Performance Analysis: Antenna Efficiency (%)

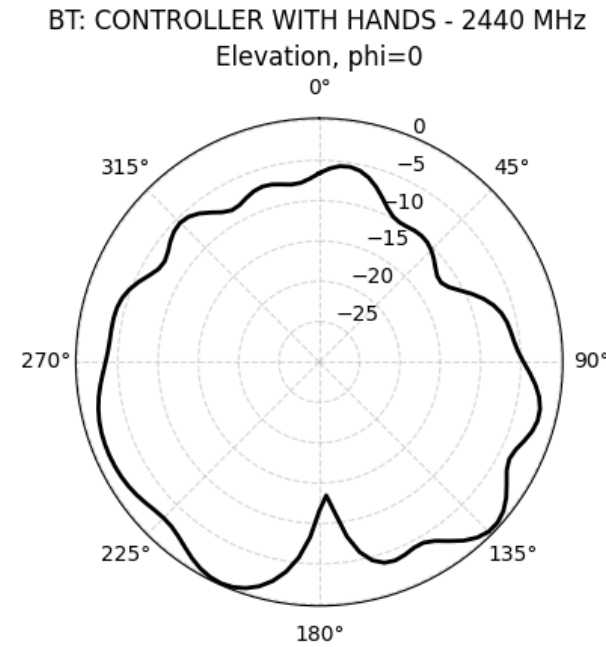


2.4 GHz BT (2400-2484 MHz)				
	Frequency range	Eff. 2400 MHz(%)	Eff. 2484 MHz(%)	Full Eff (%)
Controller Free Space	2400-2484 MHz	54	59	56.9
Controller with Hands		41	43	42.2

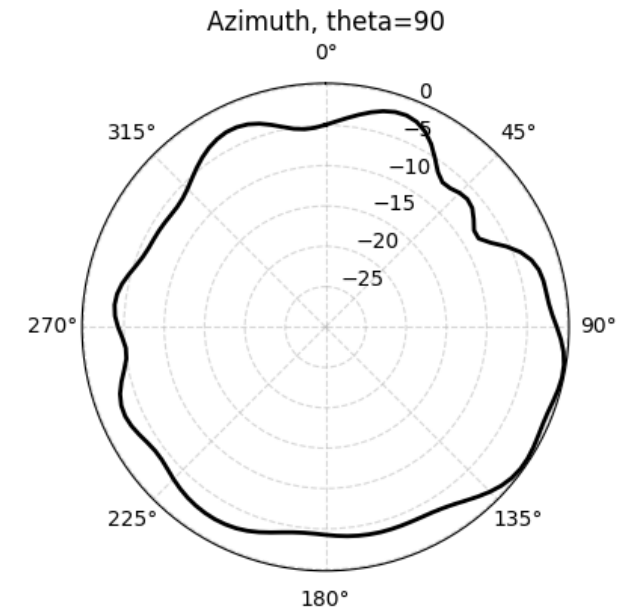
5.3 Performance Analysis: Radiation Patterns



— BT: CONTROLLER WITH HANDS - 2440 MHz



— BT: CONTROLLER WITH HANDS - 2440 MHz



— BT: CONTROLLER WITH HANDS - 2440 MHz

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)			2.4 GHz BT (2400-2484 MHz)		
	<u>Frequency Range</u>	<u>Full Eff (%)</u>		<u>Frequency Range</u>	<u>Full Eff (%)</u>
<u>Controller with Hands</u>	2400-2484 MHz	42.2	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.

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