

MatchBox Antenna Datasheet



Overview

Impinj's MatchBox reader antenna is the ideal antenna for demanding item level applications that require reading tags at distances up to 5 cm.

Typical applications include access control, ticketing, document control, high-speed encoding stations, packaging lines, and any situation that requires high reliability with a constrained read zone.

The MatchBox antenna, by virtue of its optimized near-field performance, is virtually immune to the effects of liquids, powders, packaging, etc.

The MatchBox antenna works for applications where standard antennas may fail, such as membership cards, blister packs, pill bottles, liquid-filled containers, and even tags floating in water.

Features

- **Ideal for short-range singulation of individual UHF tags** (Strong near-field performance enables reading item tags 0–5 cm away)
- **Near-field design penetrates liquids and most metals**
- Perfect for use with very small tag inlays featuring near field antennas
- Small size: 73 mm x 33 mm x 12 mm
- Confined read zone to minimize stray reads

Read Zone Characteristics



The MatchBox antenna emits RF energy from both the top and bottom surfaces. Tags are essentially unreadable beyond 5 cm from the antenna surface.

Electrical Specifications

Parameter	Typical	Units	Conditions/Notes
Frequency Range	865 to 956	MHz	Broadband for use in all regions
Near Field Intensity	-4.2	dBA/m	Center of antenna 1 cm from radome, 30 dBm input power
Far-field Gain	-20	dBi	
Polarization	Linear		Parallel to short axis
VSWR	1.25:1		Center of frequency range
Input Impedance	50	Ω	
Input Power	30	dBm	33 dBm absolute max
ESD	2	KV	Human Body Model

Environmental Specifications

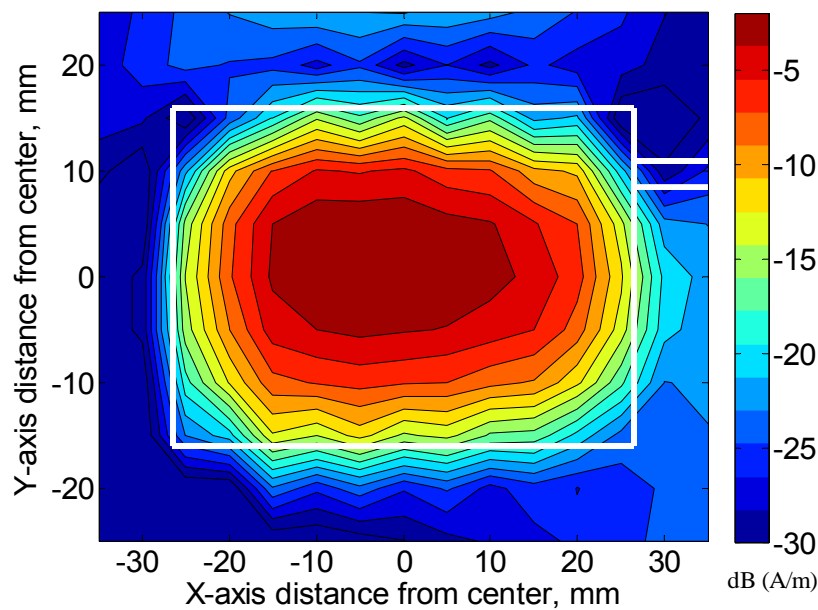
Parameter	Typical	Units	Conditions/Notes
IP Rating	IP54		Indoor use only
Temperature	0–40	$^{\circ}\text{C}$	Indoor and outdoor
Humidity	5–95	%	Relative, non-condensing Performance will be severely degraded if antenna is subjected to any standing water
RoHS	N/A		Designed to meet RoHS, not certified RoHS

Magnetic Field Intensity Plots

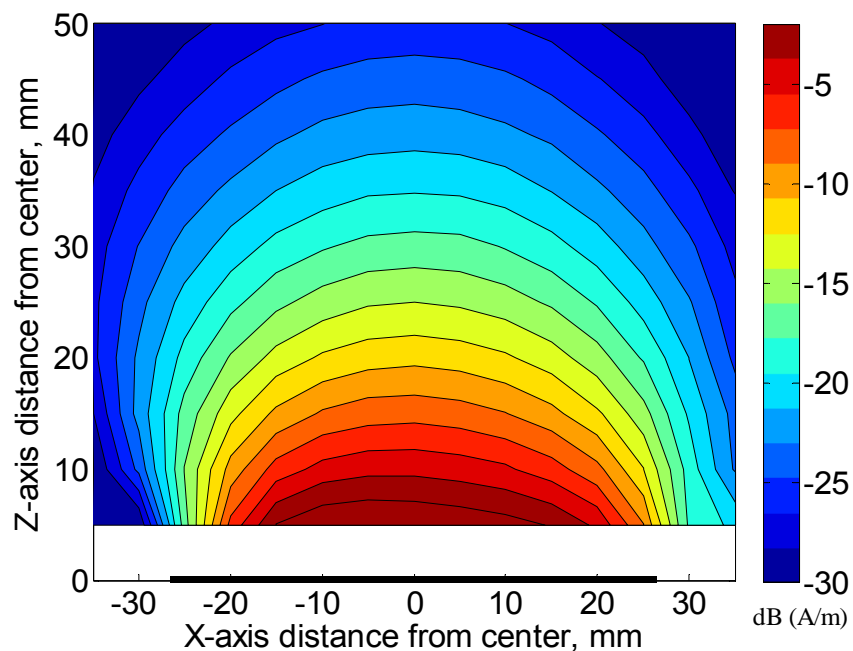
(dB (Amperes/meter) with +30 dBm input power)

Magnetic Field Intensity (H) at 915 MHz (top view)

At z=5 mm from Radome

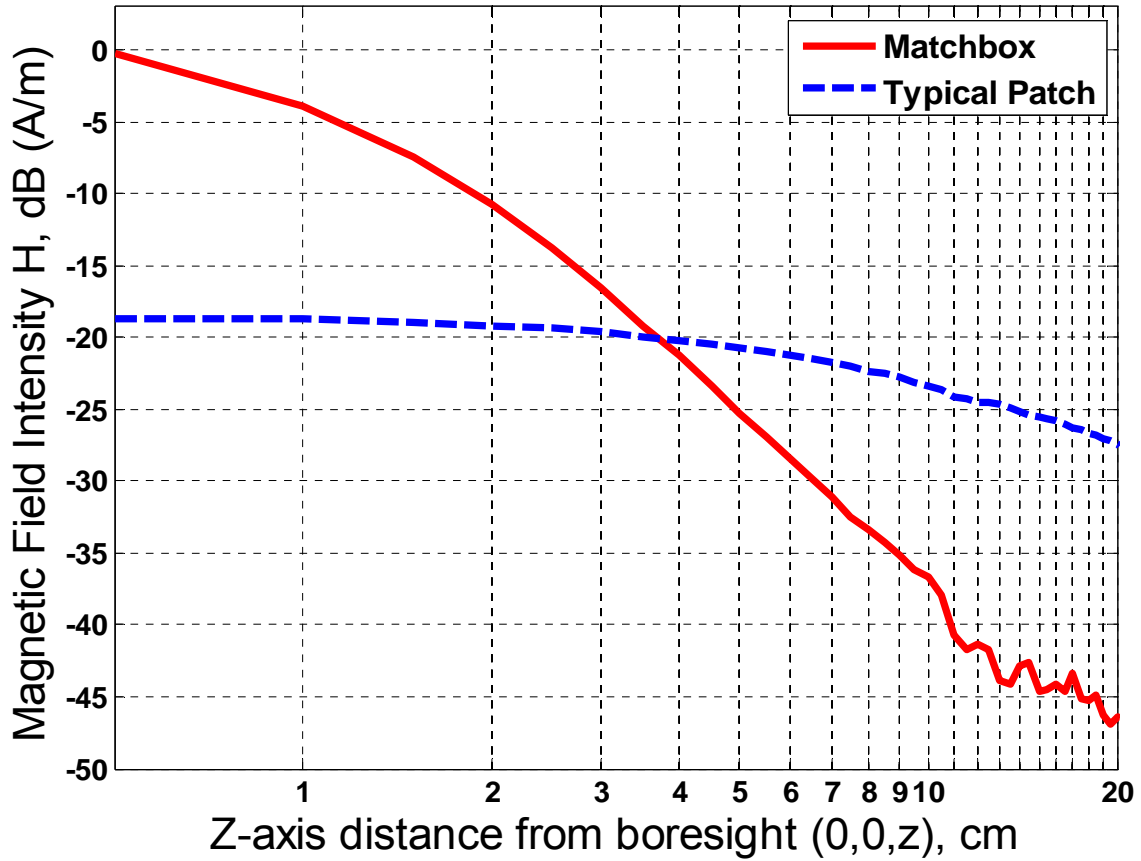


Magnetic Field Intensity (H) at 915 MHz (side view)



Magnetic Field Intensity versus Typical Patch Antenna

(dB (Amperes/meter) with +30 dBm input power)

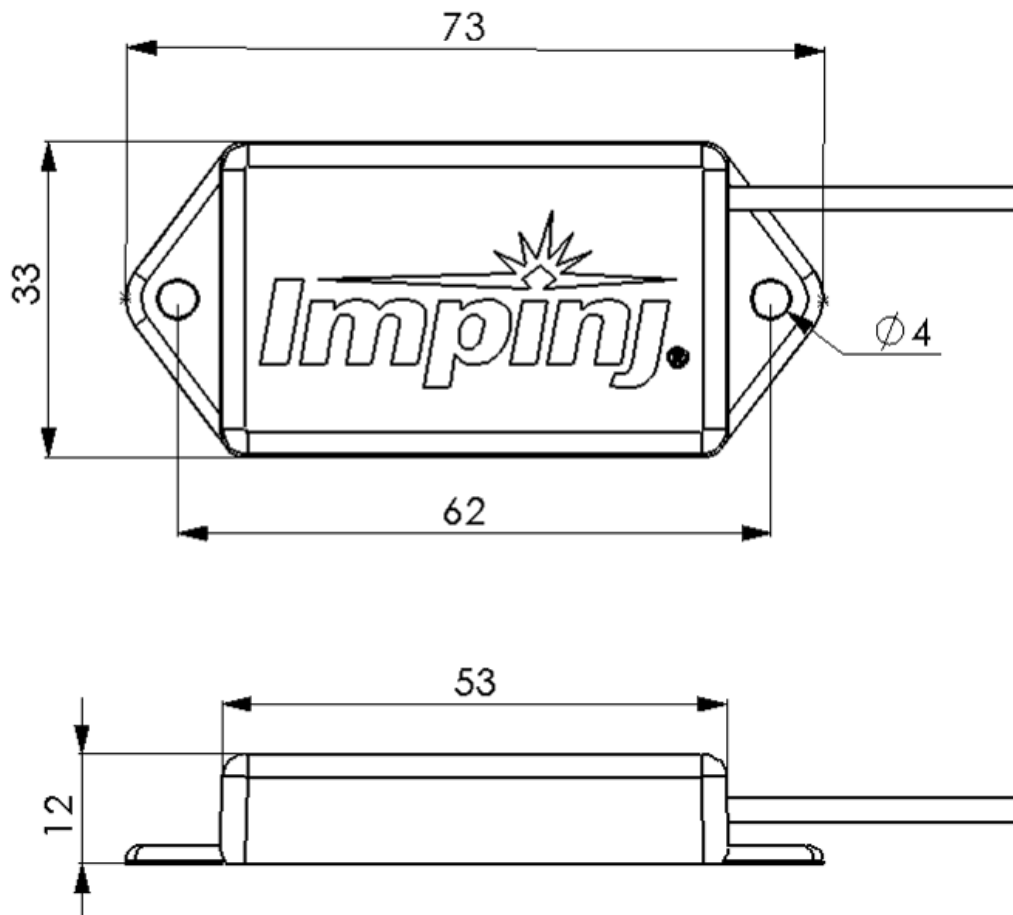


Mechanical Specifications

Parameter	Typical	Units	Conditions/Notes
Weight	18	grams	
Connector	SMA Female		Requires accessory cable to connect to reader's RP-TNC connector
Cable length	20	cm	
Enclosure	Black ABS		
Dimensions	73 x 33 x 12	mm	See drawing for detailed dimensions

Mechanical Enclosure

(Measured in millimeters)



Ordering Information

Part number	Frequency Range
IPJ-A0404-000	865 – 956 MHz

Notices:

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Impinj assumes no responsibility for determining if the antenna and operation of the antenna with a reader product complies with laws, guidelines, and regulations of the region in which the antenna is located and operated.

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These products are not designed for use in life support appliances, devices, or systems where malfunction can reasonably be expected to result in personal injury.

These products are covered by one or more of the following U.S. patents. Other patents pending. 7830322, D570,337, D574,369, D574,370

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