



# RFID TRANSPONDER PLACEMENT / POWER GUIDELINES

## Zebra R4Mplus UHF –R1

Model Number: R4MXX-XXXX-XXXXEU

The purpose of this guideline is to define the optimal transponder placement within the media such that the media can completely printed without use of the programmable encode position command.

### Printer/ Encoder and Firmware

- Note that inlay placement within media may differ for each printer/ encoder model. The guidelines contained within this document are relevant only for the listed printer/ encoder(s).
- Guidelines are established using the latest firmware available for the printer/ encoder. Please ensure that the latest firmware is being utilized to get the optimum encoding performance. Firmware downloads may be found at [www.zebra.com](http://www.zebra.com).

### Transponder Orientation

- Inlay orientation is critical to ensure proper encoding.
- Transponder picture shown in guideline is how it must be inserted in into the media.
- Picture shows the transponder orientation as seen through the facestock and media feed direction down.

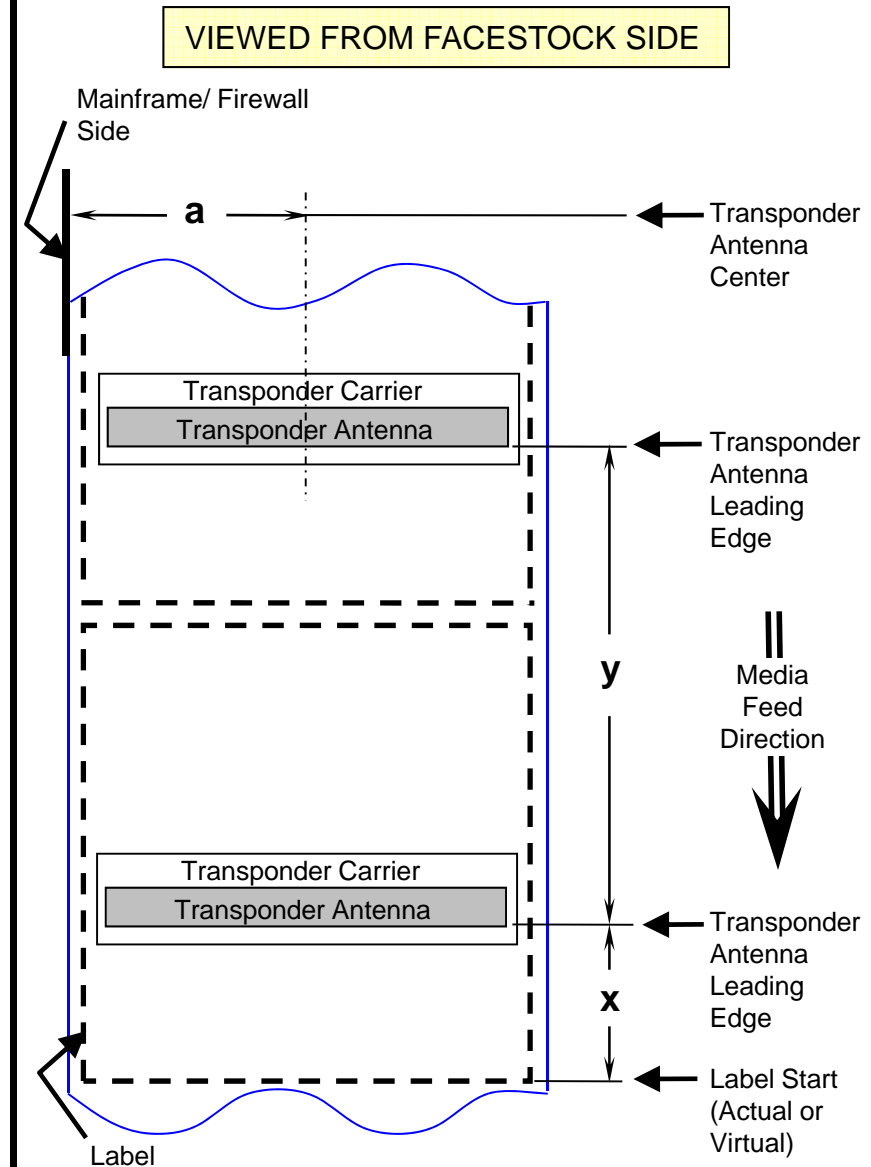
### Label Construction

- Zebra printer encoders are generally ran with a standard 1/8" gap between labels without a black mark
- If transponder placement guidelines to not allow for transponder to properly fit within the wanted label size, then a black mark may need to be introduced to create a "virtual" label to ensure proper encoding. This will usually also shift the label home position and therefore print formats may have to also be adjusted.
- The "Label Start" is defined by one of three different methods: 1) The physical leading edge of a label, 2) The leading edge of a black mark, or 3) The leading edge of a notch (Black mark and notch dimension requirements are outlined printer specifications).

### Transponder Antenna Placement Dimensions

- There are three dimensions that are critical in determining transponder placement as shown in the schematic to the right and as explained below

Dimension	Definition	Explanation
<b>a</b>	Printer Mainframe/ Firewall (or Liner Edge) to Transponder Antenna Center	Coupling with the transponder changes across the width of the printer and can cause x and y dimensions to vary. Please note that dimension is always to the antenna center, not the chip or transponder carrier. Dimension generally given with a +/- 3mm tolerance.
<b>x</b>	Label Start to Transponder Antenna Leading Edge	This dimension ensures coupling with the transponder in the current label to be printed without use of programmable encode position command. Please note that dimension is always to the antenna leading edge, not the chip or transponder carrier. Dimension generally given with a +/- 3mm tolerance.
<b>y</b>	Transponder Antenna Leading Edge to Transponder Antenna Leading Edge Pitch	This dimension ensures coupling with only the transponder in the current label. Please note that dimension is always to the antenna leading edge, not the chip or transponder carrier. Dimension generally given as a $\geq 3$ mm minimum distance.



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## TRANSPONDER PLACEMENT/ POWER GUIDELINES






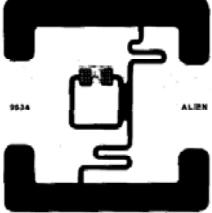
Printer/ Encoder	Page
Zebra R4Mplus UHF –R1	1 of 3



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Guideline #	Revision Date	Protocol	Transponder				Transponder Placement (mm)				Printer/ Encoder Settings		
			Manufacturer	Manufacturer Part Number	Orientation		a		X	y	Tag Type	Read Power	Write Power
					Option	Viewed through facestock/ Machine direction down	Option	(± 3mm)	(± 3mm)	(≥)			
00001	02/08/2008	EPC C1G2/ ISO 18000-6C	Alien	ALN-9540	A		A	52	26	51	Gen2	Low	Low
00002	02/08/2008	EPC C1G2/ ISO 18000-6C	Avery Dennison	AD-222	A		A	52	24	51	Gen2	High	High
00003	02/26/2008	EPC C1G2/ ISO 18000-6C	Alien	ALN-9554	A		A	52	18	54	Gen2	Low	Low
00004	09/22/2009	EPC C1G2/ ISO 18000-6C	Raflatac	3001572	A		A	52	26	51	Gen2	Low	Low
00005	05/27/2009	EPC C1G2/ ISO 18000-6C	Raflatac	3001490	A		A	52	20	51	Gen2	Low	Low
00006	10/27/2009	EPC C1G2/ ISO 18000-6C	Alien	ALN-9634 TIE	A		A	25	4	54	Gen2	Low	Low

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### TRANSPONDER PLACEMENT/ POWER GUIDELINES

Printer/ Encoder

Page

Zebra R4Mplus UHF –R1




2 of 3



# RFID TRANSPONDER PLACEMENT / POWER GUIDELINES

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					Option	Viewed through facestock/ Machine direction down	Option	(± 3mm)	(± 3mm)	(≥)			
00007	01/06/2009	EPC C1G2/ ISO 18000-6C	Alien	ALN-9650	A		A	52	20	51	Gen2	Low	Low
00008	01/15/2010	EPC C1G2/ ISO 18000-6C	Avery	AD-223	A		A	52	24	51	Gen2	Low	Low
00009	06/07/2011	EPC C1G2/ ISO 18000-6C	Rafalac	3001698	A		A	13	20	44	Gen2	Low	Low

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### TRANSPONDER PLACEMENT/ POWER GUIDELINES

Printer/ Encoder

Page

Zebra R4Mplus UHF –R1

3of 3