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# Tech Talk

Marius van Dyk


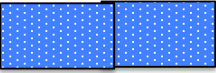
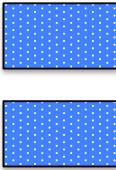
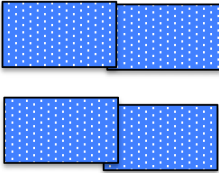
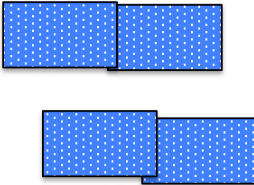


# Overview

- Mat setups – Pros/Cons
- Cycle antenna / Power tag / Bike clip
- Tips to optimize for BiB tags
- Tips on using the Integrated Test Tag
- UHF vs DF demo




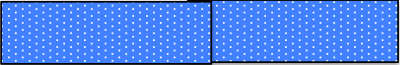

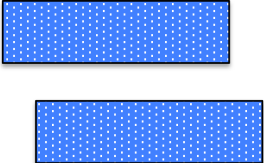
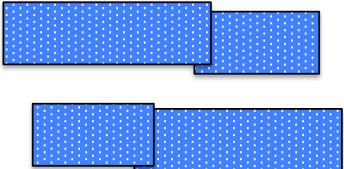
## Summary Table 2.5m mat layout

Item	Mat layout	Detection	
		Shoe	BiB
1	<p>2.5m Single</p> 	Fair	Bad
2	<p>2.5m Singles, 1 Row</p> 	Fair	Bad
3	<p>2.5m Singles, 2 Rows</p> 	Good	Good
4	<p>2.5m Singles, 2x2 Rows</p> 	Good	Good Bad through centerline
5	<p>2.5m Singles, 2x2 Rows Staggered</p> 	Good	Good





## Summary Table 5m mat layout

Item	Mat layout	Detection	
		Shoe	BiB
1	<p>5m Single</p> 	Fair	Bad
2	<p>5m Singles, 1 Row</p> 	Fair	Bad
3	<p>5m Singles, 2 Rows</p> 	Good	Good Bad through centerline
4	<p>5m Singles, 2x2 Rows Staggered (0.5m)</p> 	Good	Good
5	<p>5m +2.5m Singles, 2x2 Rows Staggered (0.5m)</p> 	Good	Good



**Power-up/Detection area with a single 2.5m STK mat under no/low noise conditions.**

<b>Shoe</b>	<b>BiB</b>
Fair	Bad

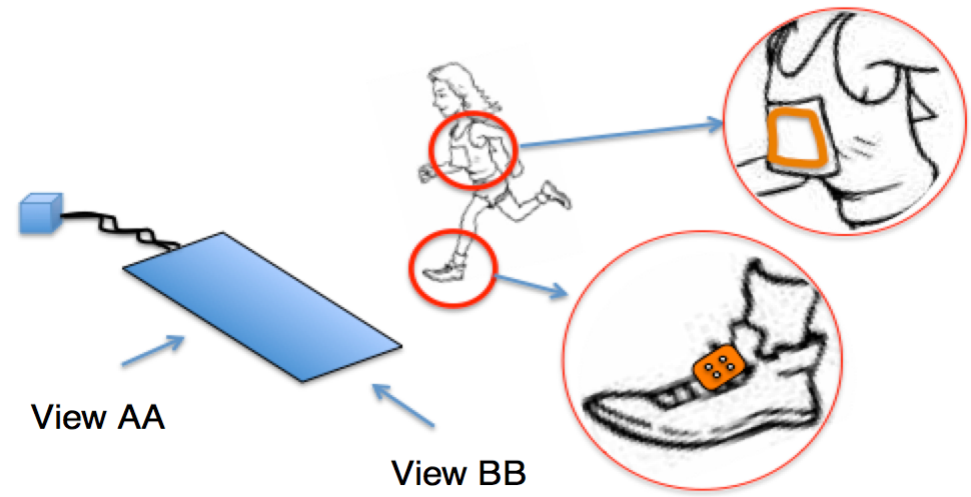


Fig 1. Single 2.5m mat layouts

**Shoe Tag moving over a Single mat field:**  
(Green lobes depict good read areas)

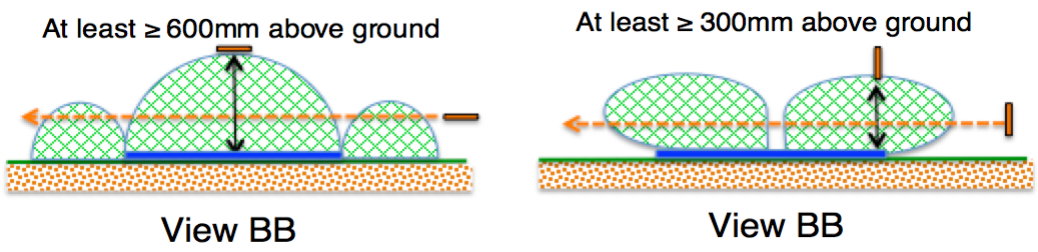


Fig 2. Shoe tag moving horizontally (left) and vertically (right) over a single mat



**Power-up/Detection area with 2x 2.5m STK mats forming 1 row, under no/low noise conditions.** (Note  $\pm 300\text{mm}$  overlap on mats)

<b>Shoe</b>	<b>BiB</b>
Fair	Bad

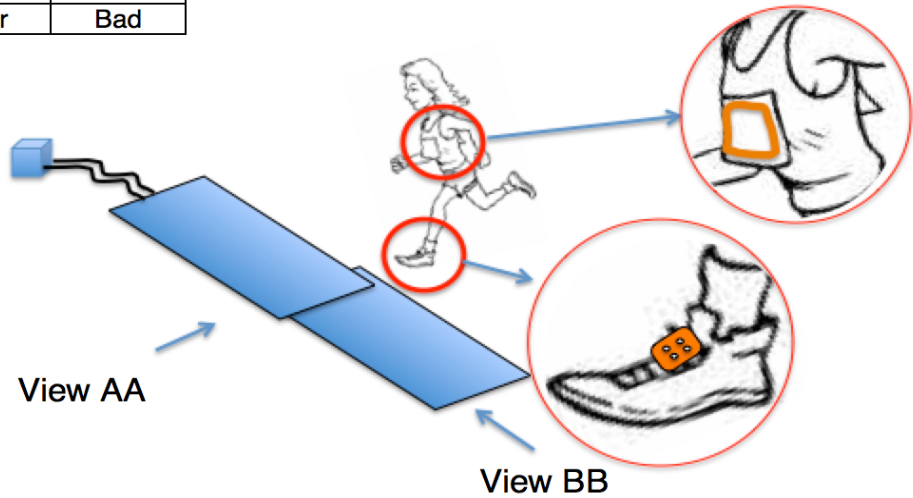


Fig 3. Single row layout of 2x 2.5m mats

**Shoe Tag moving over a Single mat row field:**  
(Green/Blue lobes depict good read areas)

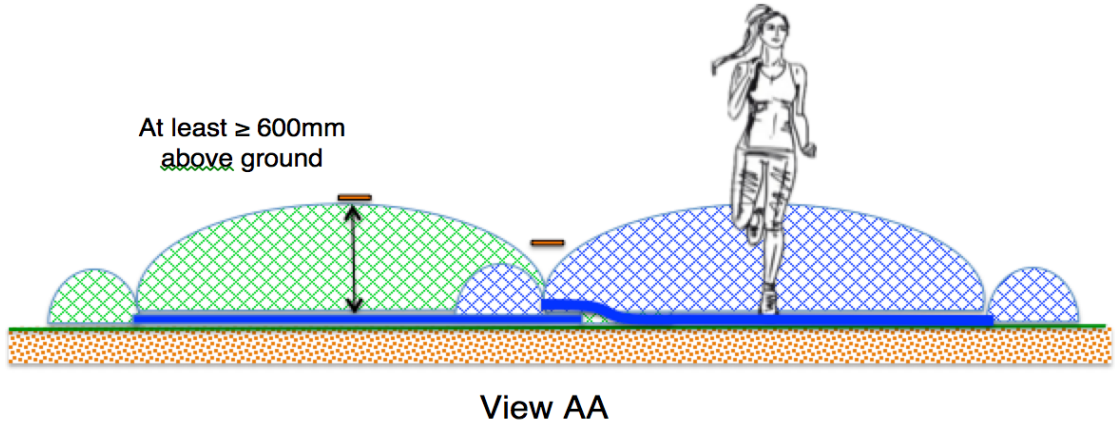


Fig 4. Shoe tag moving horizontally over a single row of 2x 2.5m mats



**Power-up/Detection with 2x2.5m STK mats area under no/low noise conditions. (Note mats are spaced  $d = \pm 600\text{mm}$  apart)**

Shoe	BiB
Good	Good

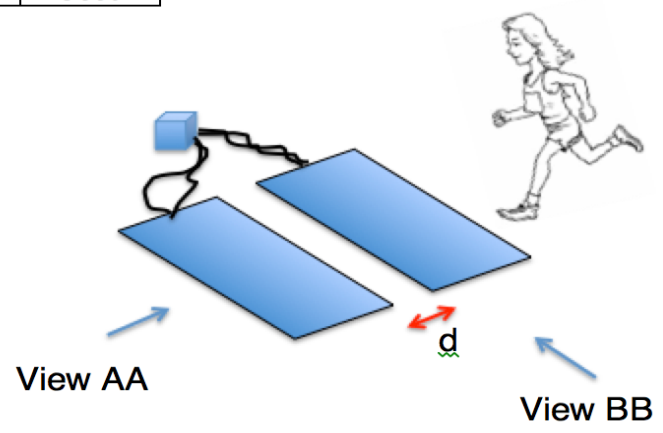


Fig 5. Double row layout of 2.5m mats

**BIB Tag moving over 2 single mats placed parallel to each other field:**  
(Green lobes depict good read areas)

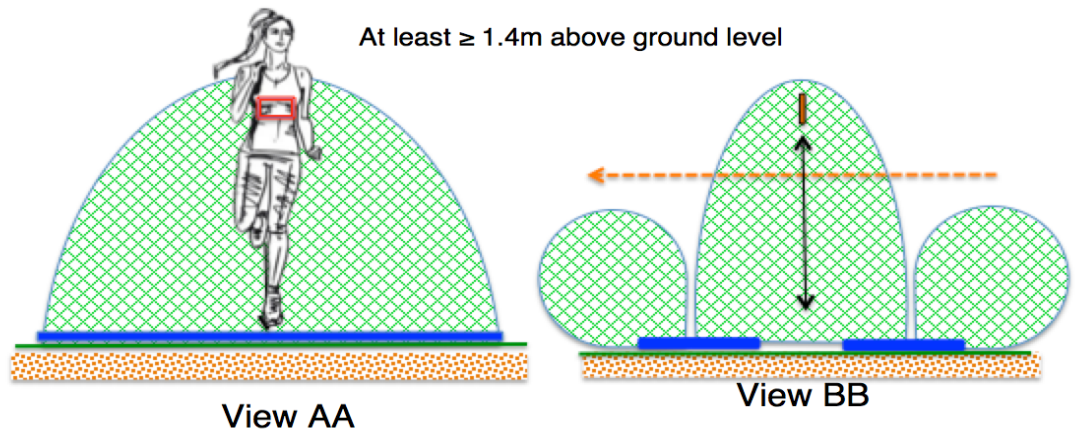


Fig 6. Shoe tag moving horizontally (left) and vertically (right) over a single mat





**Power-up/Detection area with 2x2 rows 2.5m STK mats (Staggered), under no/low noise conditions.**

Shoe	BiB
Good	Good

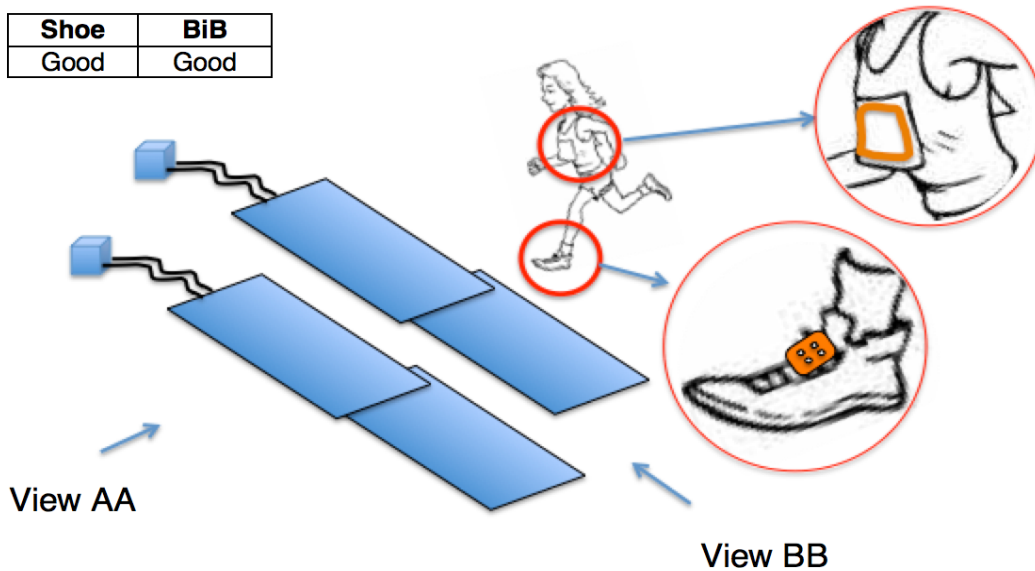
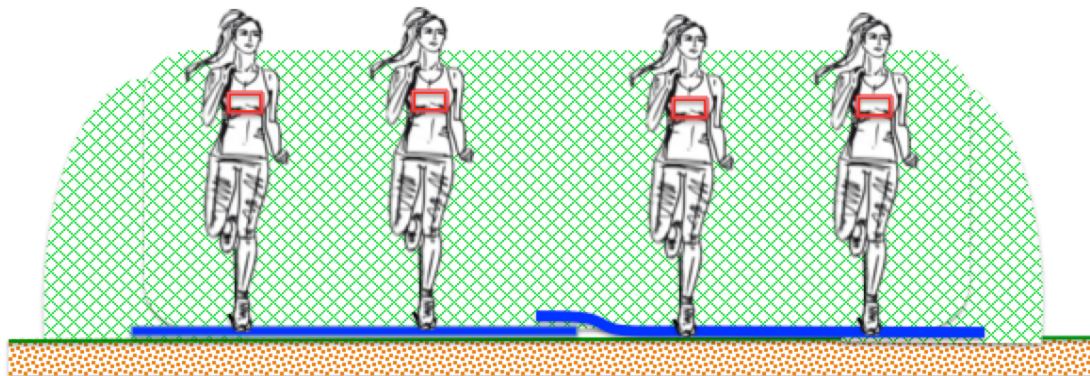


Fig 7. Double row layout of 2x2 2.5m mats

**BiB Tag moving over 2 rows of mats that are staggered:**

(Green/Blue lobes depict good read areas)

At least  $\geq 1.4\text{m}$  above ground level



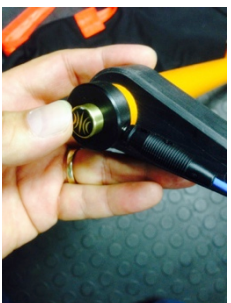
View AA

Fig 8. BiB tag moving horizontally over the 2 staggered rows of mats



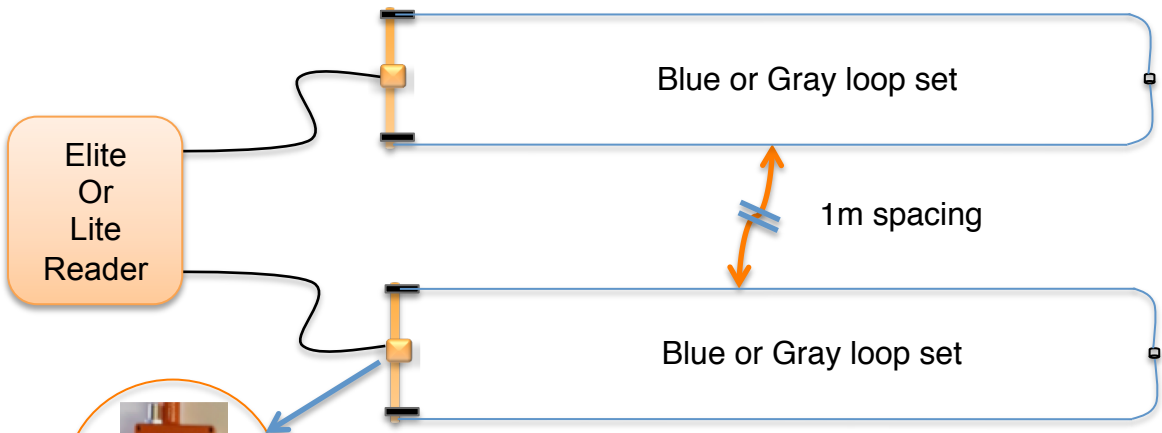
# Cycle antenna / Power tag / Bike clip

Step 1: roll out the Blue or Gray loop set completely on the floor/ground.



Step 3: Connect Black coax cable between the antenna and the reader RX port.

Step 2: Connect the Loop set to the Antenna assembly via the spring loaded connector. Space the loop set the same width as the bar. (70cm)



Step 4: Layout/Secure the wires to the floor/road and connect main antenna assembly to an Elite or Lite reader. (RX) channel. Typically, 2 antennas per reader / read point. (Sets spaced 1m apart). RED LED = Power ON, Static Blue LED = Antenna OK, Flashing Blue LED = Antenna wires are disconnected. Eliminate all external noise sources for max performance .ie Power/Comms cables close to the antenna, Laptop power supplies etc.





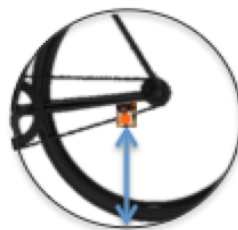
## Power Tag - Model nr: IP3555-1 and Bicycle Bracket/Clip IP3004



### The preferred position

Is on the back chain stay  
(Opposite the chain).

Secure the tag with 2 cable ties.  
This ensures a height of  $\pm 30\text{cm}$   
from the ground level for most  
bikes. This position will ensure the  
best detection on a bicycle.as it will  
be the lowest point.



Range: 0 - 450mm  
Typically: 300mm  
Above ground level



### The alternative position

Is on the front fork.

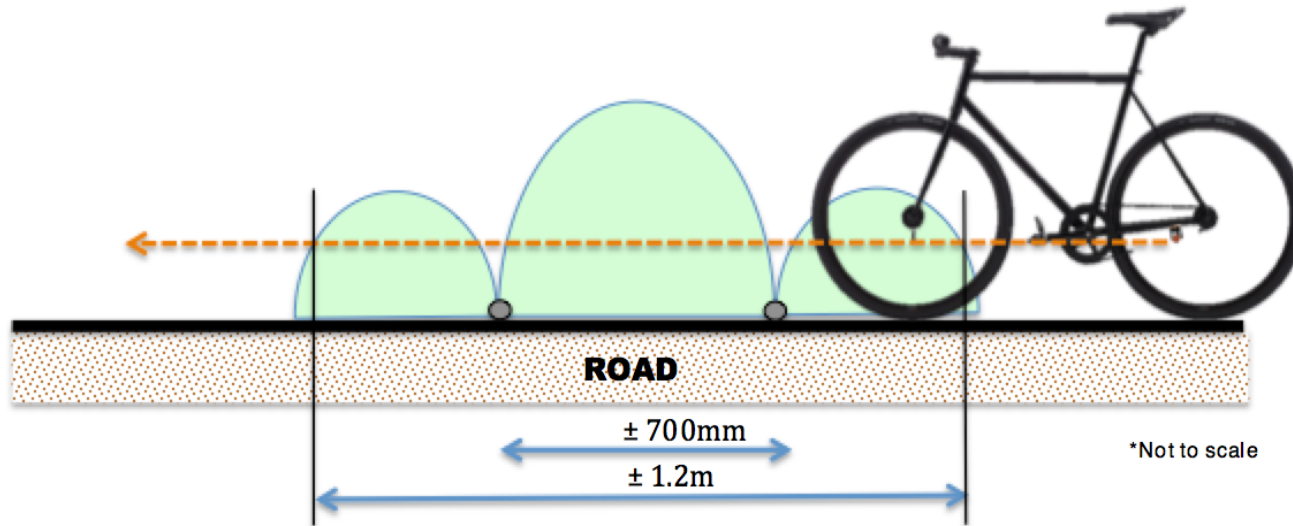


The clip can be adjusted so that  
tag is in optimal orientation to the  
road. This is done by loosening the  
lock nut, rotating the clip and  
securing it again, before inserting  
the tag.



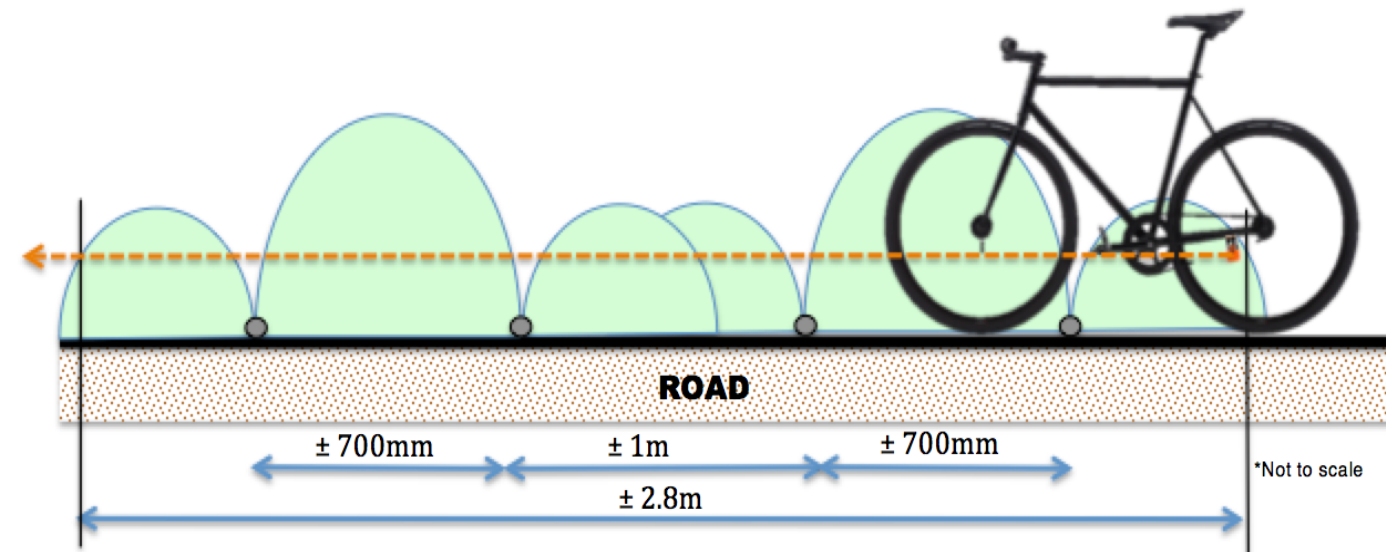
## Typical Detection area with the passive loop antenna under no/low noise conditions – side view of loop on the road.

Using the IP3555 for low speed detections <30km/h: 1 loop set should be sufficient



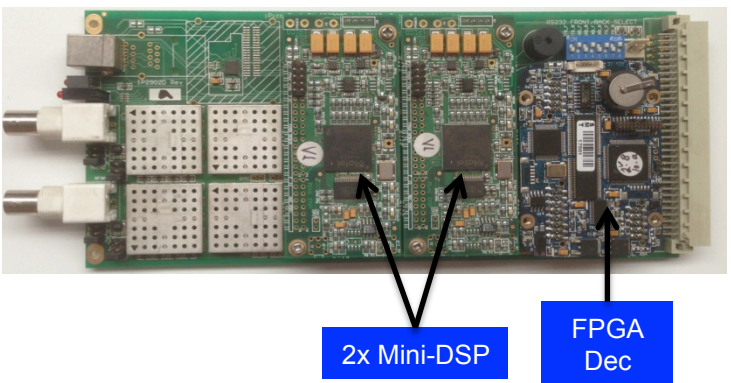


Using the IP3555 for med speed detections <70km/h: at least 2 loop sets (spaced  $\pm 1\text{m}$  apart) should be used to increase the detection area.



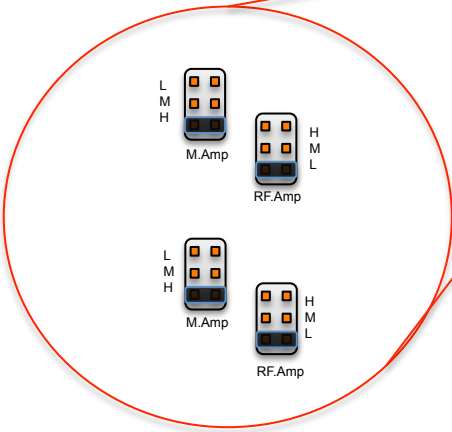
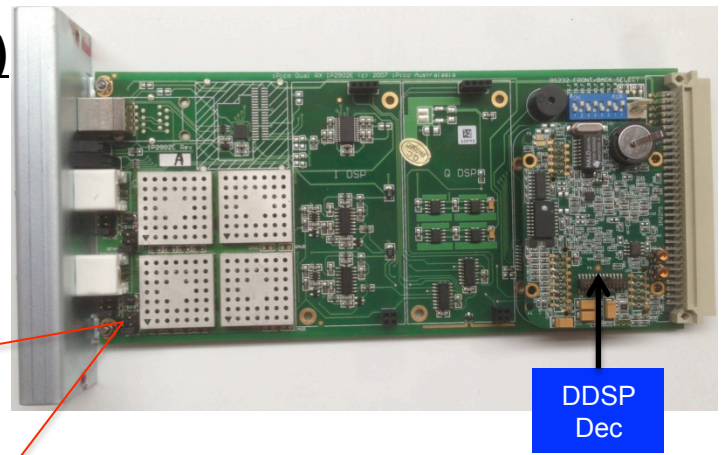
**2<sup>nd</sup> Generation RX board**

1. Elites – prior to Nov 2012 .
2. Lites – prior to AB000251
3. Mini-DSP should have V2 firmware on or it needs to be reprogrammed/upgraded.
4. Set jumpers on both ch's  
M.Amp = H, RFamp = L



**3<sup>rd</sup> Generation RX board (current)**

1. All new readers are fitted with DDSP decoders
2. All new reader will have jumpers on both ch's set to M.Amp = H, RFamp = L



**DDSP Dec** = Dual DSP Decoder, DSP=Digital Signal Processor



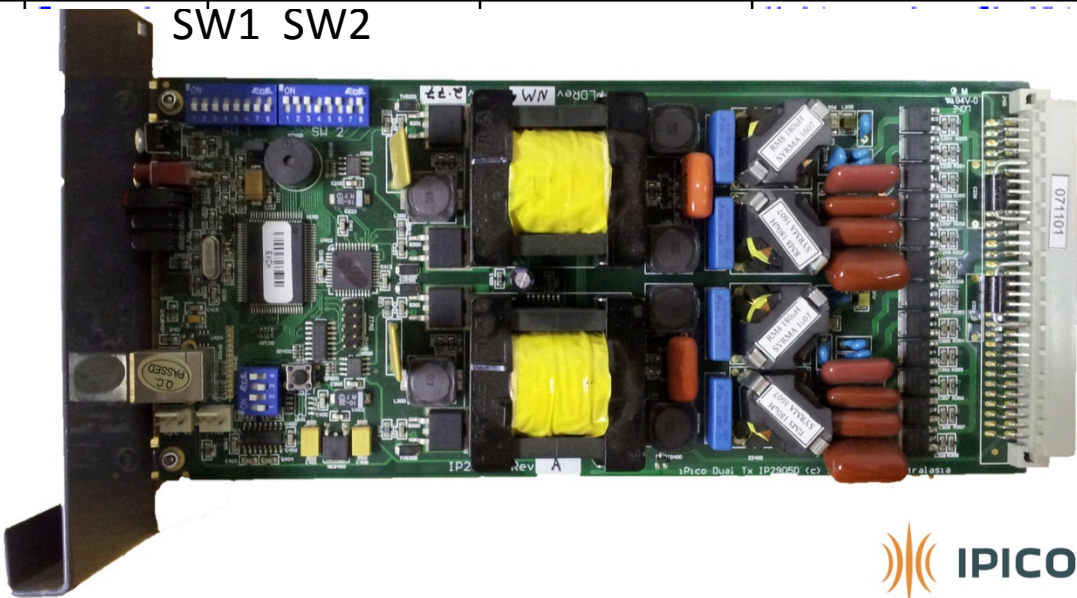
Optimize your TX card for BIB tags

### TX board

1. Set SW1 and SW2 to new positions.
2. All reader after Nov 2012 should be OK

Part/Process /Doc	Description	Old value								New value								Reason
IP2905E	DIP SW1 settings	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	SW1, 6-8 = Set TXA @125kHz and TXB @ 127kHz
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	
IP2905E	DIP SW2 settings	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	SW2, 1-3 = Change Duty Cycle of TX from 100% to 10ms:10ms ON/OFF. Increase read range when TX is OFF.  SW2, 8 = TX Report and Auto Tune Control 0=No Auto Tune, 1 =AT and Report Note – when set to 0 TX send a report each 10 seconds but does not carry out an auto tune
		1	1	1	0	1	1	0	1	1	0	0	0	1	1	0	0	

SW1 SW2





Integrated Test Tag use

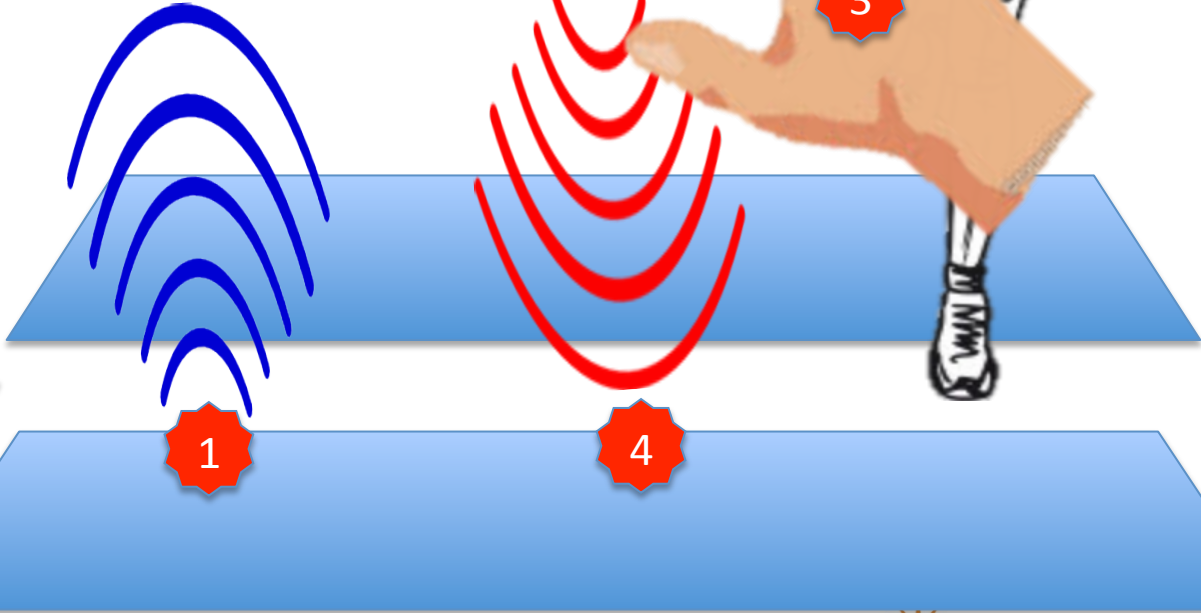
# BiB tag VERTICAL Position

1 LED = Min power to activate the BiB tag

With 1 LED ON Press BiB button to Emulate BiB tag ID



1.4m above ground  
Between 2 mats





9 LEDs = Min power to activate the Shoe tag      With 9 LEDs ON Press 'Shoe' button to Emulate Shoe tag ID

600mm above ground  
On top of mat



Quick  
UHF vs DF  
demo

