



AUBURN

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UNIVERSITY

RFID LAB

TAG PERFORMANCE SPECIFICATION Z

VERSION 1

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## 1 TEST OVERVIEW

Prerequisite	ARC Quality certification of inlay manufacturer
Equipment	ARC Benchmarking Equipment Document
Test process	ARC Benchmarking Methodology Document
Distance between antennas and inlay	Antenna 1: 1 meter Antenna 2: 1 meter Antenna 3: 1 meter Antenna 4: 1 meter
Standard test configurations	Single Inlay on Cardstock Single Inlay on Near Water



## 2 READ SENSITIVITY

The inlay should meet the following read sensitivity (dBm) requirements in the following test configurations through the frequency range. All the inlay samples tested should meet the minimum requirements. It is noted that the sensitivity is calculated at the tag by calibrating the measured power at the transmitter with the loss/gain during transmission.

### 2.1 Standard Test - Single Inlay on Cardstock

Position 0 Ant 1	Position 0: Ant 2	Position 0: Ant 3	Position 0: Ant 4
-13	-13	-13	-13
Position 30: Ant 1	Position 30: Ant 2	Position 30: Ant 3	Position 30: Ant 4
-11.5	-11.5	-12	-12
Position 150: Ant	Position 150: Ant	Position 150: Ant	Position 150: Ant
-11.5	-11.5	-12	-12
Position 180: Ant	Position 180: Ant	Position 180: Ant 3	Position 180: Ant
-13	-13	-13	-13
Position 210: Ant	Position 210: Ant	Position 210: Ant	Position 210: Ant
-11.5	-11.5	-12	-12
Position 330 Ant 1	Position 330: Ant	Position 330: Ant	Position 330: Ant
-11.5	-11.5	-12	-12

### 2.2 Standard Test – Single Inlay Near Water (3 mm between water container and inlay)

Frequency 902 MHz to 928 MHz in steps of 1 MHz

Position 0 Ant 1	Position 0: Ant 2	Position 0: Ant 3	Position 0: Ant 4
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-5	NA	NA	NA
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Frequency 960 MHz to 980 MHz in steps of 1 MHz

Position 0 Ant 1	Position 0: Ant 2	Position 0: Ant 3	Position 0: Ant 4
-11	NA	NA	NA

### **2.3 Standard Test – Single Inlay Near Water (6 mm between water container and inlay)**

Frequency 902 MHz to 928 MHz in steps of 1 MHz

Position 0 Ant 1	Position 0: Ant 2	Position 0: Ant 3	Position 0: Ant 4
-10	NA	NA	NA

Frequency 960 MHz to 980 MHz in steps of 1 MHz

Position 0 Ant 1	Position 0: Ant 2	Position 0: Ant 3	Position 0: Ant 4
-11	NA	NA	NA

### **2.4 Standard Test – Single Inlay Near Water (9 mm between water container and inlay)**

Frequency 902 MHz to 928 MHz in steps of 1 MHz

Position 0 Ant 1	Position 0: Ant 2	Position 0: Ant 3	Position 0: Ant 4
-12	NA	NA	NA

Frequency 960 MHz to 980 MHz in steps of 1 MHz

Position 0 Ant 1	Position 0: Ant 2	Position 0: Ant 3	Position 0: Ant 4
-13	NA	NA	NA



## 2.5 Standard Test – Single Inlay Near Water (12 mm between water container and inlay)

Frequency 902 MHz to 928 MHz in steps of 1 MHz

Position 0 Ant 1	Position 0: Ant 2	Position 0: Ant 3	Position 0: Ant 4
-13	NA	NA	NA

Frequency 960 MHz to 980 MHz in steps of 1 MHz

Position 0 Ant 1	Position 0: Ant 2	Position 0: Ant 3	Position 0: Ant 4
-14	NA	NA	NA



### 3. READ BACKSCATTER

The inlay should meet the following read backscatter (dBm) requirements in the following test configurations through the entire frequency range. The backscatter value in the table below is the minimum backscatter that should be observed at the corresponding minimum read sensitivity value in section 3. All the inlay samples tested should meet the minimum requirements. It is noted that the backscatter is calculated at the tag by calibrating the measured power at the receiver with the loss/gain during transmission

#### 3.1 Standard Test - Single Inlay on Cardstock

Position 0 Ant 1	Position 0: Ant 2	Position 0: Ant 3	Position 0: Ant 4
-28	-29	-29	-28
Position 180: Ant	Position 180: Ant	Position180: Ant 3	Position 180: Ant
-28	-39	-29	-28

#### 3.2 Standard Test – Single Inlay on Near Water (3 mm spacing between water container and inlay)

Frequency 902 MHz to 928 MHz in steps of 1 MHz

Position 0 Ant 1	Position 0: Ant 2	Position 0: Ant 3	Position 0: Ant 4
-31	NA	NA	NA