



AUBURN

UNIVERSITY

TAGGED CATEGORY PERFORMANCE SPECIFICATION

CATEGORY B

VERSION 1.3

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1. TEST SPECIFICATION

1.1 Test Overview

Equipment	ARC Benchmarking Equipment Document
Test process	ARC Benchmarking Methodology
Frequency	902 Mhz to 928 MHz in steps of 1 MHz
Distance between antennas and inlay	Antenna 1: 1.5 meter Antenna 2: 1.5 meter Antenna 3: 1.5 meter Antenna 4: 1.5 meter
Sensitivity at Receiver	-70 dB
Standard test configurations	Single Inlay on Styrofoam Single Inlay on Cardstock Multi Inlay Proximity Test with 2.54cm Spacing (Please refer ARC Benchmarking Methodology)
Custom test configurations	Single Inlay on Polybag Single Inlay between Two Polybags

1.2 Description of Custom Test Configurations

1.2.1 Single Inlay on Polybag

The inlay is measured when applied on a polybag containing ten cotton articles. The bag is placed on the testing platform with the tagged side on the top as shown in Figure 1. The face of the tag is parallel to the face of antenna 4.



Figure 1: Single Inlay on Polybag

1.2.2 Single Inlay between Two Polybags

The inlay is measured when applied on a polybag containing ten cotton articles with another untagged bag placed on top of the tagged bag. Both the bags are placed on the testing platform as shown in Figure 2. The tagged bag is placed on the platform so that the inlay is on the top. The face of the inlay is parallel to the face of antenna 4.



Figure 2: Single Inlay between Two Polybags



1.3 Inlay Performance Specification

The inlay should meet the following read sensitivity requirements in the following test configurations through the frequency range. All of 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 during transmission. For all the measurements, the sensitivity at the receiver was -80 dBm.



1.3.1 Standard Test - Single Inlay on Styrofoam

Position 0 Ant 1	Position 0: Ant 2	Position 0: Ant 3	Position 0: Ant 4
-7.5	-7.5	-7	-7
Position 30: Ant 1	Position 30: Ant 2	Position 30: Ant 3	Position 30: Ant 4
-6	-6	-5.5	-5.5
Position 60: Ant 1	Position 60: Ant 2	Position 60: Ant 3	Position 60: Ant 4
-1	-1	-1	2
Position 120: Ant 1	Position 120: Ant 2	Position 120: Ant 3	Position 120: Ant 4
-1	-1	-1	2
Position 150: Ant 1	Position 150: Ant 2	Position 150: Ant 3	Position 150: Ant 4
-6	-6	-5.5	-5.5
Position 180: Ant 1	Position 180: Ant 2	Position 180: Ant 3	Position 180: Ant 4
-7.5	-7.5	-7	-7
Position 210: Ant 1	Position 210: Ant 2	Position 210: Ant 3	Position 210: Ant 4
-6	-6	-5.5	-5.5
Position 240: Ant 1	Position 240: Ant 2	Position 240: Ant 3	Position 240: Ant 4
-1	-1	-1	2
Position 300: Ant 1	Position 300: Ant 2	Position 300: Ant 3	Position 300: Ant 4
-1	-1	-1	2
Position 330 Ant 1	Position 330: Ant 2	Position 330: Ant 3	Position 330: Ant 4
-6	-6	-5.5	-5.5

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1.3.2 Standard Test - Single Inlay on Cardstock

Position 0 Ant 1	Position 0: Ant 2	Position 0: Ant 3	Position 0: Ant 4
-11	-11	-11	-11
Position 30: Ant 1	Position 30: Ant 2	Position 30: Ant 3	Position 30: Ant 4
-9	-9	-8.5	-8
Position 60: Ant 1	Position 60: Ant 2	Position 60: Ant 3	Position 60: Ant 4
-2.5	-2.5	-1	3.5
Position 120: Ant 1	Position 120: Ant 2	Position 120: Ant 3	Position 120: Ant 4
-2.5	-2.5	-1	3.5
Position 150: Ant 1	Position 150: Ant 2	Position 150: Ant 3	Position 150: Ant 4
-9	-9	-8.5	-8
Position 180: Ant 1	Position 180: Ant 2	Position 180: Ant 3	Position 180: Ant 4
-11	-11	-11	-11
Position 210: Ant 1	Position 210: Ant 2	Position 210: Ant 3	Position 210: Ant 4
-9	-9	-8.5	-8
Position 240: Ant 1	Position 240: Ant 2	Position 240: Ant 3	Position 240: Ant 4
-2.5	-2.5	-1	3.5
Position 300: Ant 1	Position 300: Ant 2	Position 300: Ant 3	Position 300: Ant 4
-2.5	-2.5	-1	3.5
Position 330 Ant 1	Position 330: Ant 2	Position 330: Ant 3	Position 330: Ant 4
-9	-9	-8.5	-8

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1.3.3 Standard Test - Multi Inlay Proximity Test with 2.54 cm Spacing

Position 0 Ant 1	Position 0: Ant 2	Position 0: Ant 3	Position 0: Ant 4
1	-4	-6	-1
Position 30: Ant 1	Position 30: Ant 2	Position 30: Ant 3	Position 30: Ant 4
5	-2	-4	2
Position 150: Ant 1	Position 150: Ant 2	Position 150: Ant 3	Position 150: Ant 4
5	-2	-4	2
Position 180: Ant 1	Position 180: Ant 2	Position 180: Ant 3	Position 180: Ant 4
1	-4	-6	-1
Position 210: Ant 1	Position 210: Ant 2	Position 210: Ant 3	Position 210: Ant 4
5	-2	-4	2
Position 330 Ant 1	Position 330: Ant 2	Position 330: Ant 3	Position 330: Ant 4
5	-2	-4	2

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1.3.3 Custom Test - Single Inlay on Polybag

Position 0 Ant 1	Position 0: Ant 2	Position 0: Ant 3	Position 0: Ant 4
-9	-9	-9	-8
Position 30: Ant 1	Position 30: Ant 2	Position 30: Ant 3	Position 30: Ant 4
-7	-7.5	-7.5	-7
Position 60: Ant 1	Position 60: Ant 2	Position 60: Ant 3	Position 60: Ant 4
-2	-2	-2.5	-3
Position 120: Ant 1	Position 120: Ant 2	Position 120: Ant 3	Position 120: Ant 4
-2	-2	-2.5	-3
Position 150: Ant 1	Position 150: Ant 2	Position 150: Ant 3	Position 150: Ant 4
-7	-7.5	-7.5	-7
Position 180: Ant 1	Position 180: Ant 2	Position 180: Ant 3	Position 180: Ant 4
-9	-9	-9	-8
Position 210: Ant 1	Position 210: Ant 2	Position 210: Ant 3	Position 210: Ant 4
-7	-7.5	-7.5	-7
Position 240: Ant 1	Position 240: Ant 2	Position 240: Ant 3	Position 240: Ant 4
-2	-2	-2.5	-3
Position 300: Ant 1	Position 300: Ant 2	Position 300: Ant 3	Position 300: Ant 4
-2	-2	-2.5	-3
Position 330 Ant 1	Position 330: Ant 2	Position 330: Ant 3	Position 330: Ant 4
-7	-7.5	-7.5	-7



1.3.4 Custom Test - Single Inlay between Two Polybags

Position 0 Ant 1	Position 0: Ant 2	Position 0: Ant 3	Position 0: Ant 4
-11	-11	-12	-12
Position 30: Ant 1	Position 30: Ant 2	Position 30: Ant 3	Position 30: Ant 4
-9	-9	-10	-10
Position 60: Ant 1	Position 60: Ant 2	Position 60: Ant 3	Position 60: Ant 4
-3	-3	-4	-3
Position 120: Ant 1	Position 120: Ant 2	Position 120: Ant 3	Position 120: Ant 4
-3	-3	-4	-3
Position 150: Ant 1	Position 150: Ant 2	Position 150: Ant 3	Position 150: Ant 4
-9	-9	-10	-10
Position 180: Ant 1	Position 180: Ant 2	Position 180: Ant 3	Position 180: Ant 4
-11	-11	-12	-12
Position 210: Ant 1	Position 210: Ant 2	Position 210: Ant 3	Position 210: Ant 4
-9	-9	-10	-10
Position 240: Ant 1	Position 240: Ant 2	Position 240: Ant 3	Position 240: Ant 4
-3	-3	-4	-3
Position 300: Ant 1	Position 300: Ant 2	Position 300: Ant 3	Position 300: Ant 4
-3	-3	-4	-3
Position 330 Ant 1	Position 330: Ant 2	Position 330: Ant 3	Position 330: Ant 4
-9	-9	-10	-10



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