

| Application | | Rev | Description | Date | Originator | Approval |
|---------------|------------|-----|---------------------------------------|----------|------------|----------|
| First Used On | Next Assy. | | | | | |
| | | A | Initial Release – EN0009921 | 11/03/11 | B. Ts | AAP |
| | | B | Add missing specification - EN0014364 | 09/04/13 | B. Ts /DD | LP |

Project #2119 RFID ZD500R Series (Goldfinger)

D10008153: ANTENNA - COUPLER 860-960 MHZ

SPECIFICATION AND TESTING INSTRUCTIONS

Antenna- Coupler

Antenna-Coupler (Zebra part: P1046176-01) is a Coplanar Waveguide Loop with 50 Ohm characteristic impedance and BW from 860-960 MHz (Fig. 1a and 1b). The antenna is embedded in **ZD500R** Printer-Encoders. Similar antenna are embedded in **ZT4x0**, **ZT6x0**, **ZE5x1**, **ZQ520**, **ZQ630**, and **ZD62x** Printer-Encoders. Network Analyzer (NA) HP-4396B or other measurement instrument with equal or better performance characteristics should be used to measure the antenna electrical parameters. (Note, P1046176-01 and P1092482-01 are the same except for mechanical dimensions for different fit into small mobile or desktop printers. And P1113980-01 has the coupler element in P1046176-01 and P1092482-01 repeated 14 times; however, only one element is selected in the large tabletop printer.)


Calibration Instructions

Before taking any measurements using the NA, it must be properly configured and calibrated. Set first its parameters for S11 port measurement in accordance with Fig. 2.

| Analyzer set up parameters: | |
|---------------------------------|--------------------------------|
| Start frequency: 860 MHz | Stop frequency: 960 GHz |
| Reference level: 0 dB | Reference position: 10 |
| Sensitivity: 5 dB/Div | Power level: 0 dBm |

Fig. 2 NA parameters settings for S11 RF port measurement.

After setting the NA parameters the standard calibration procedure (see manual) should be performed for S11 port measurement including a fitting adapter.

| | | |
|---|---------------------------|---------------|
|  | Title | Rev. |
| | Drawing #: | Page |
| | RFID ZD500R Series | B |
| | D10008153 | 1 of 2 |

Test Instructions

1. NA Markers Setting.

Set four markers of the NA: **#1-860MHz**; **#2-902MHz**; **#3-928MHz**, **#4-960MHz**.

2. Verify reflection loss values for EU, US, and Japan RFID bands by measuring S11 at selected frequencies (Fig. 3):

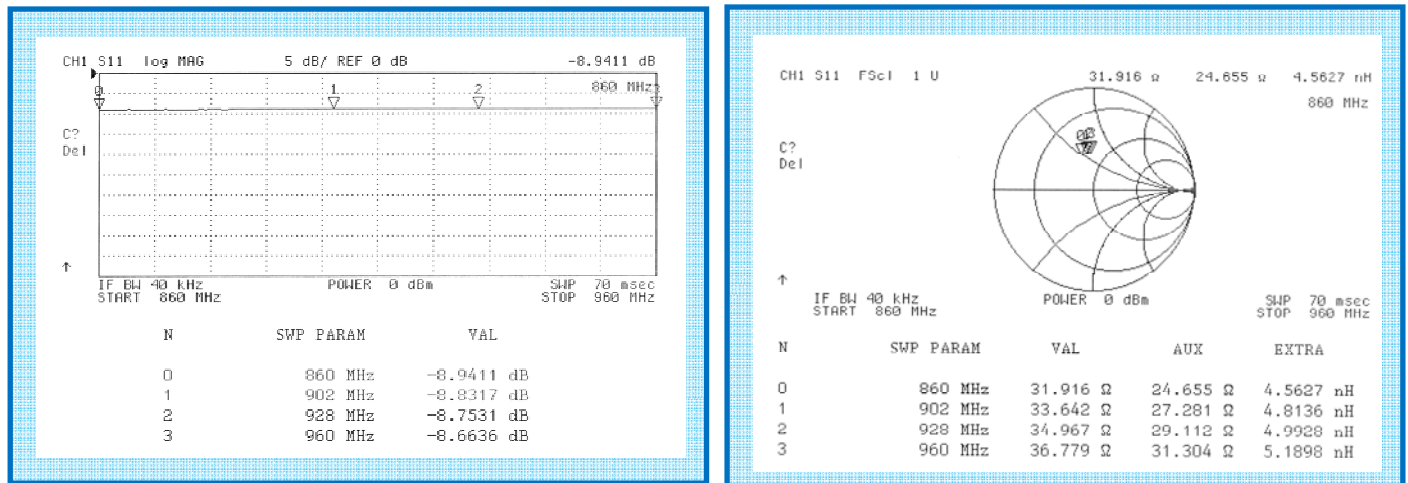


Fig. 3 Antenna Reflection Loss S11 (dB) and Smith Chart

3. Verify "Pass" criteria defined in 'Antenna Spec Requirements' section.

Antenna Spec Requirements

An antenna passes the test if S11 measurement results satisfy specification requirements at any frequency in the 860 – 960 MHz band.

Spec for $S_{11_{MAX}} \leq -7.5$ dB

Typical antenna gain: -30dBi

Max antenna gain: -28dBi

Corporate Address: 3 Overlook Point Lincolnshire, IL
60069



Title
RFID ZD500R Series
Drawing #:
D10008153

Rev.
B
Page
2 of 2