

Pigeon Antenna Under Test Report

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1 Technical description

1.1 Product Description

The Elster/Honeywell “Pigeon” antenna is a dipole antenna with integrated balun transformer constructed on a flexible polyamide substrate and is adhesive backed for attaching to the inner housing of an Elster/Honeywell electricity meter. It is designed for operation in the 900MHz Industrial, Scientific, and Medical (ISM) band. When mounted on an electricity meter the antenna will be covered by a clear polycarbonate radome, preventing the user or customer from contacting the antenna. The antenna assembly contains a short coaxial cable for attaching to a 900MHz ISM band radio module within the electricity meter. The Balun transformer is integrated with the coaxial cable.

Table 1: Pigeon antenna specifications

Type	Flexible dipole with integrated balun
Operating Frequency Band	902 – 928MHz
Peak gain	4.35dBi (mounted in A4 Pro electricity meter)
Antenna element dimensions	105.76mm length x 34.39mm width x 1.67mm thick
Coaxial cable length	157.5mm
Connector type	Right angle MMCX jack
Elster/Honeywell part number	3008-3070-002
Manufacturer	Genesis
Manufacturer part number	650-10089-XX

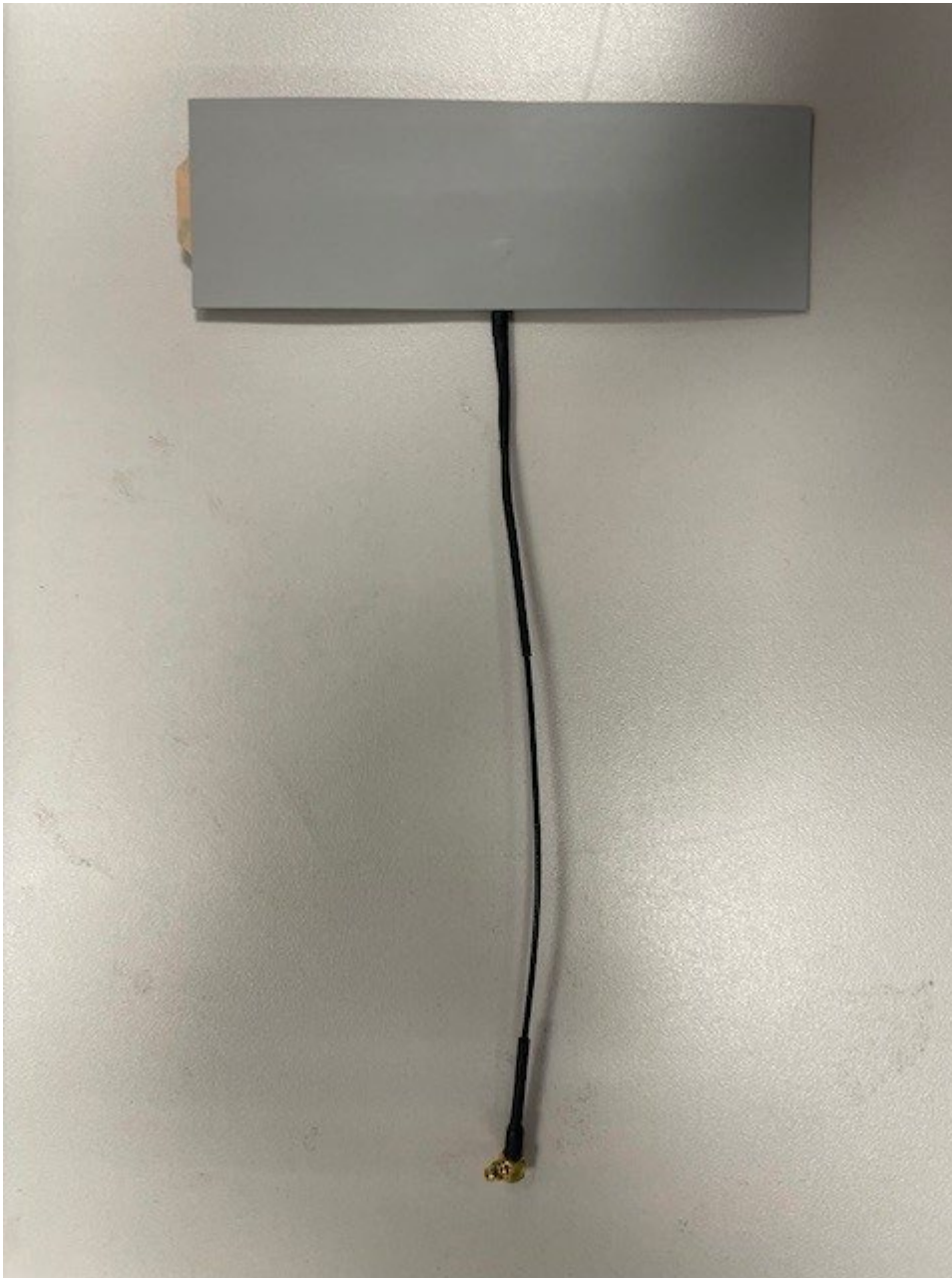


Figure 1: Pigeon antenna front view



Figure 2: Pigeon antenna back view

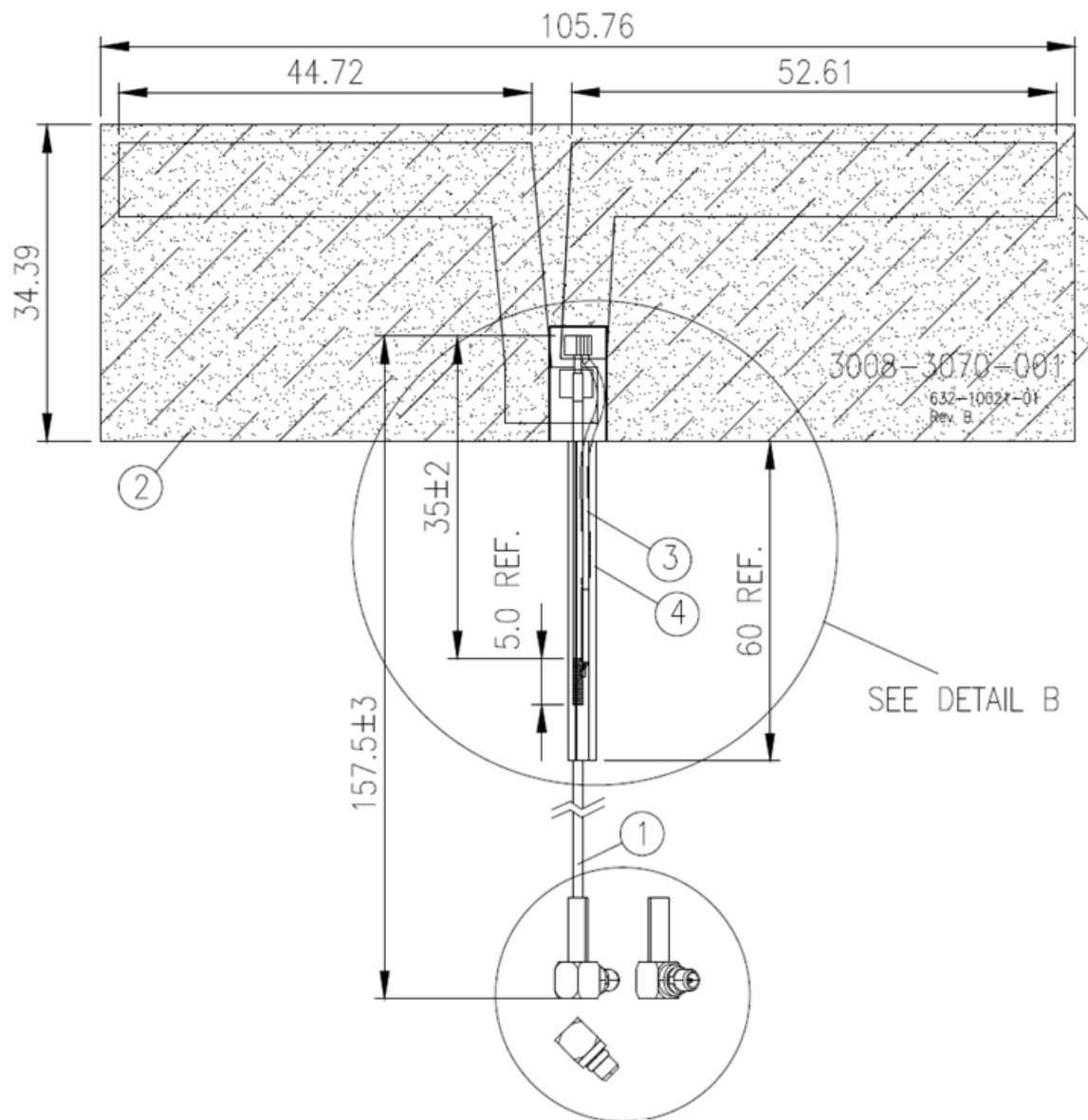


Figure 3: Pigeon antenna mechanical drawing

1.2 Antenna Measurement

An Elster/Honeywell model GNIC radio module was modified with a coaxial cable in place of the transceiver to allow measurement of the Pigeon antenna when mounted in an A4 Pro electricity meter environment. An Agilent Vector Network Analyzer (VNA) was used to measure return loss.

A Microwave Vision Group (MVG) Starlab SG15 automated antenna system, including a Rhode & Schwarz VNA, was used to measure antenna gain. The Starlab system consists of an arch component inside a shield chamber, and an equipment rack and VNA outside the shield room. The arch contains 15 probes, and each probe has both a vertically and horizontally polarized element.

Table 2: Test equipment used to perform antenna measurements

Manufacturer	Model	Calibration date
Microwave Vision Group	Starlab SG15 automated antenna measurement system	2025-07-21
Rhode & Schwarz	ZVB 8 Vector Network Analyzer	2024-11-12
Agilent	E5062A Vector Network Analyzer	2025-02-28

Table 3: Software used to perform antenna measurements

Manufacturer	Name	Version
Microwave Vision Group	Satimo Passive Measurement	1.9
Microwave Vision Group	SatEnv	3.0.3.0

Table 4: Tester information

Name	Title
Charles Greene	Senior Advanced Wireless/RF Engineer

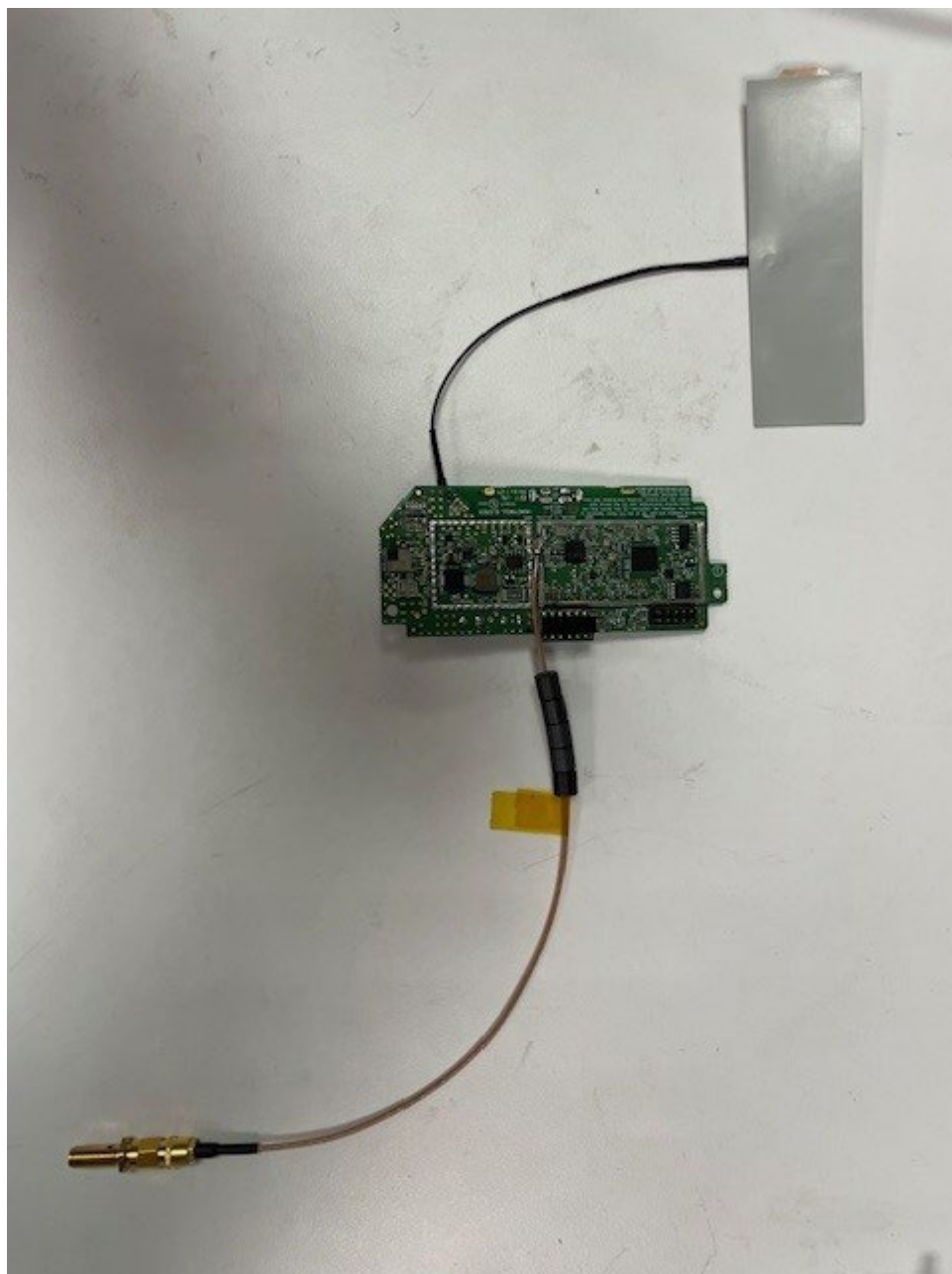


Figure 4: Modified GNIC and Pigeon antenna

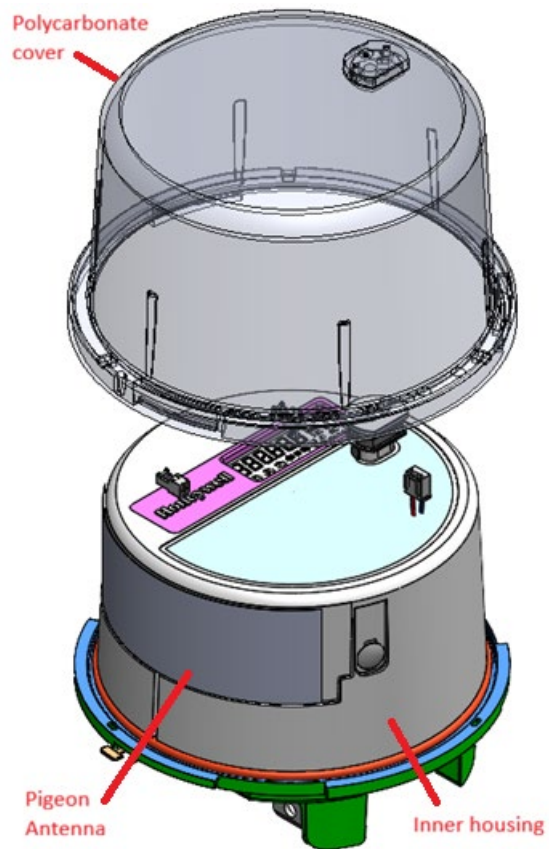


Figure 5: Pigeon antenna installed on A4 Pro electricity meter

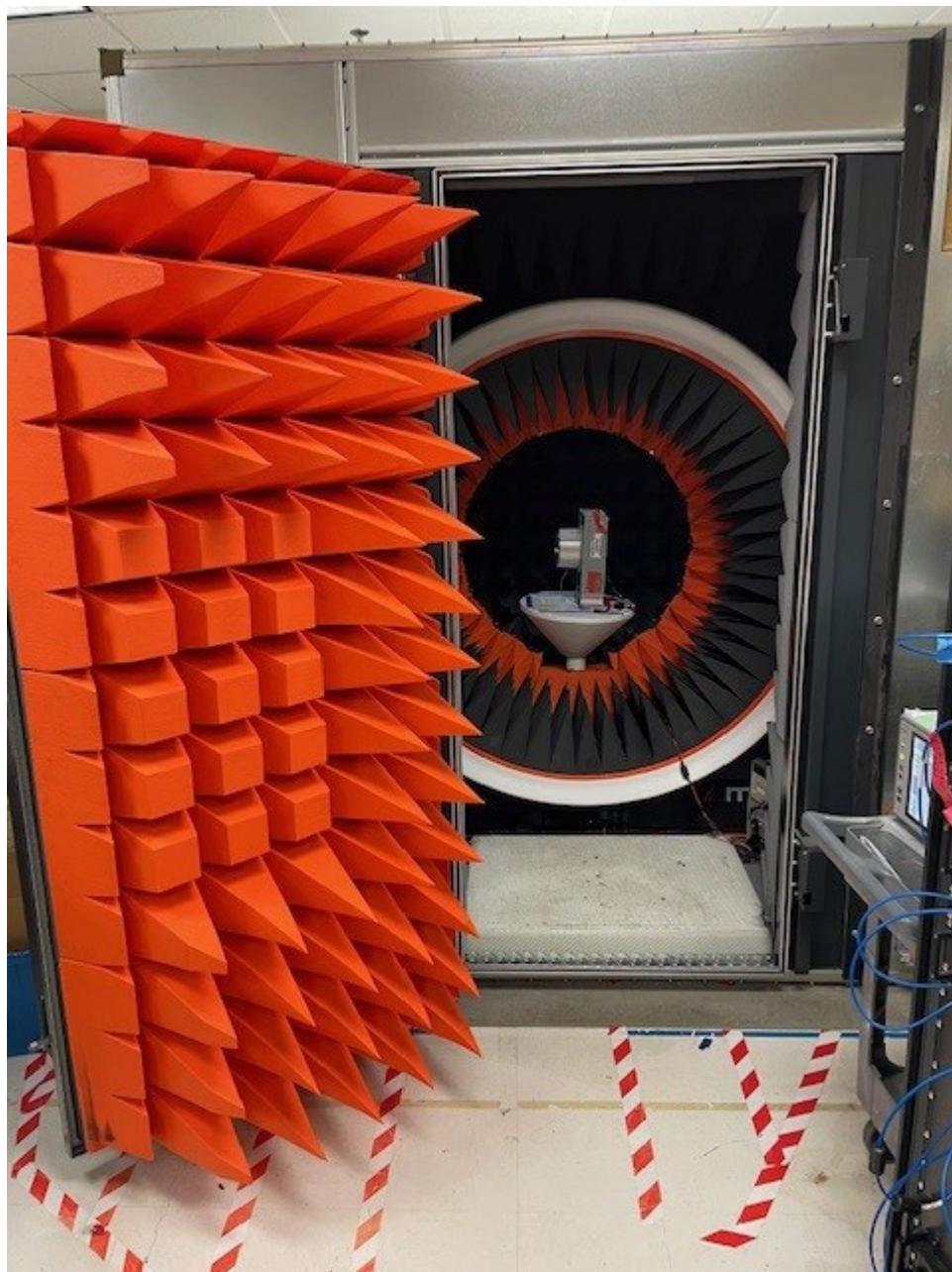


Figure 6: Starlab arch and chamber

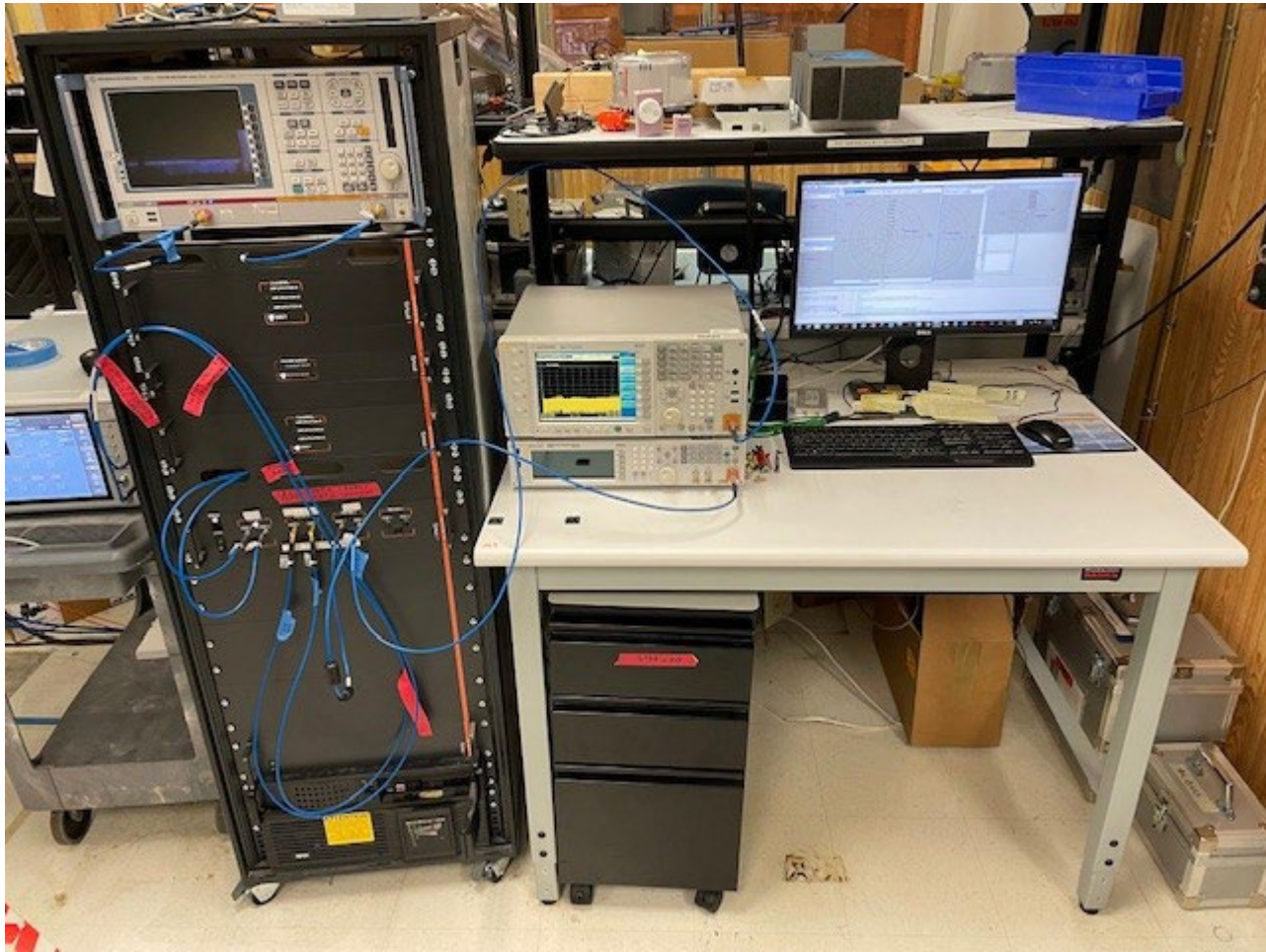


Figure 7: Starlab equipment rack

Starlab Coordinate System

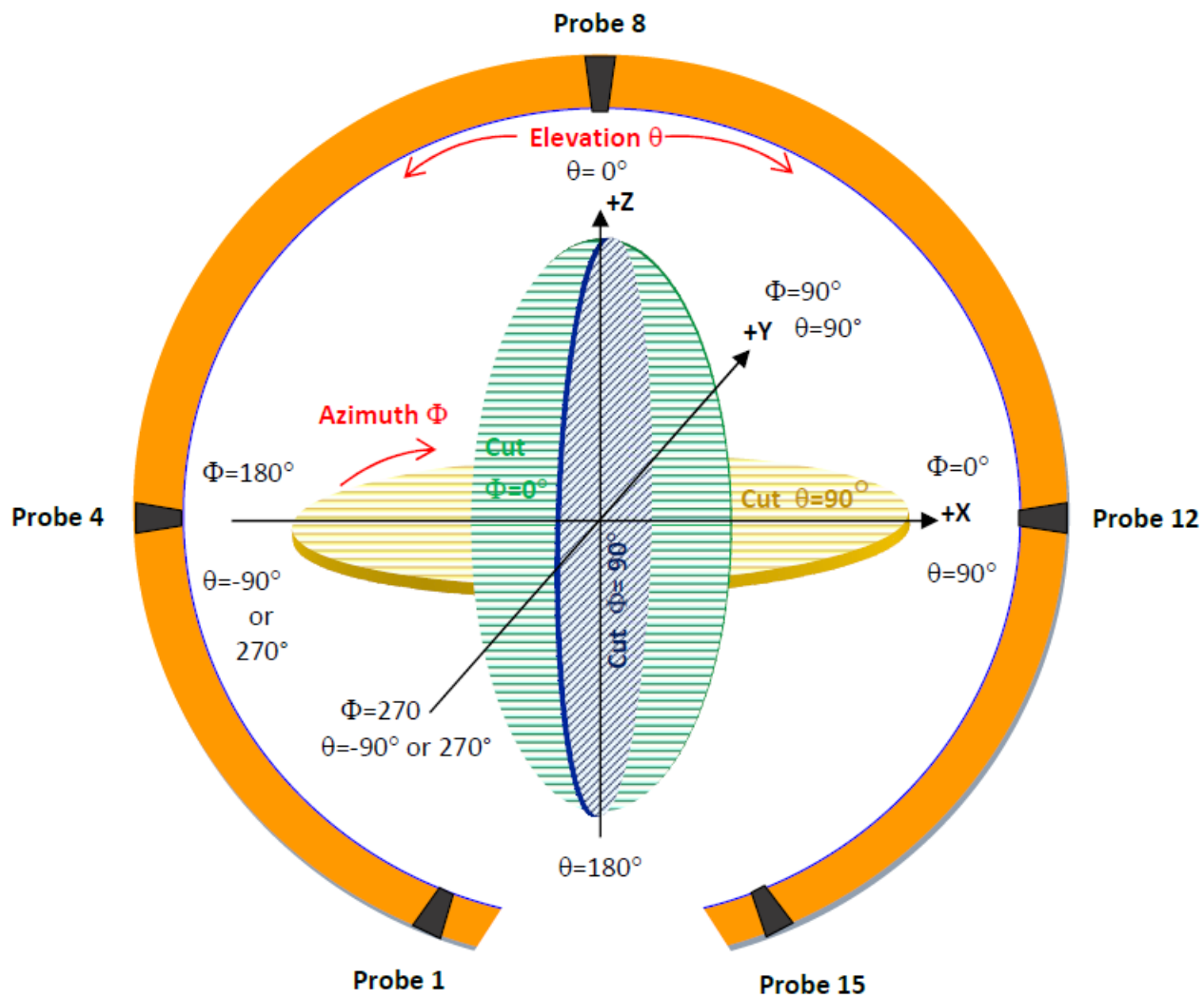


Figure 8: Starlab coordinate system

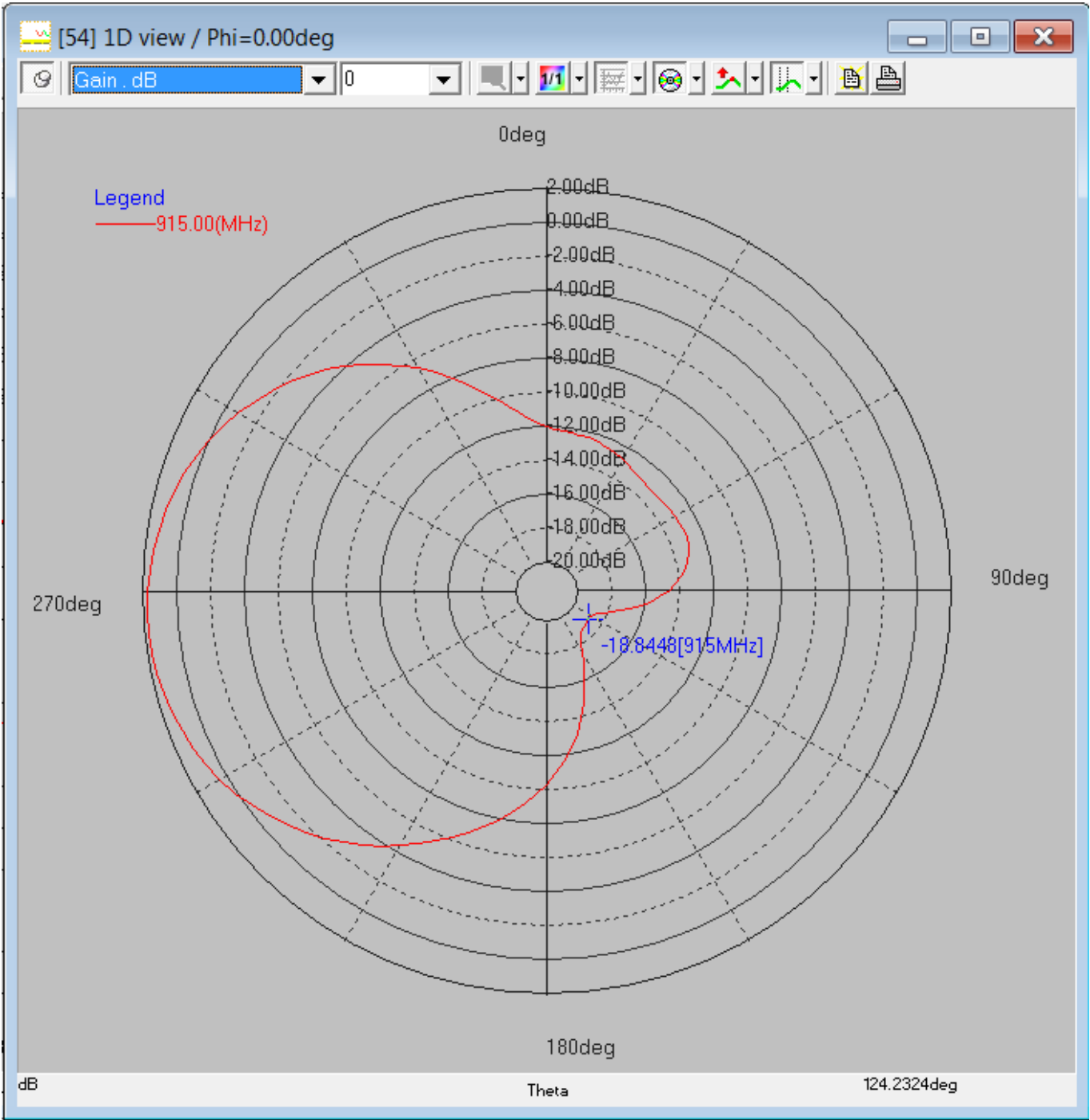


Figure 9: Antenna gain plot phi = 0

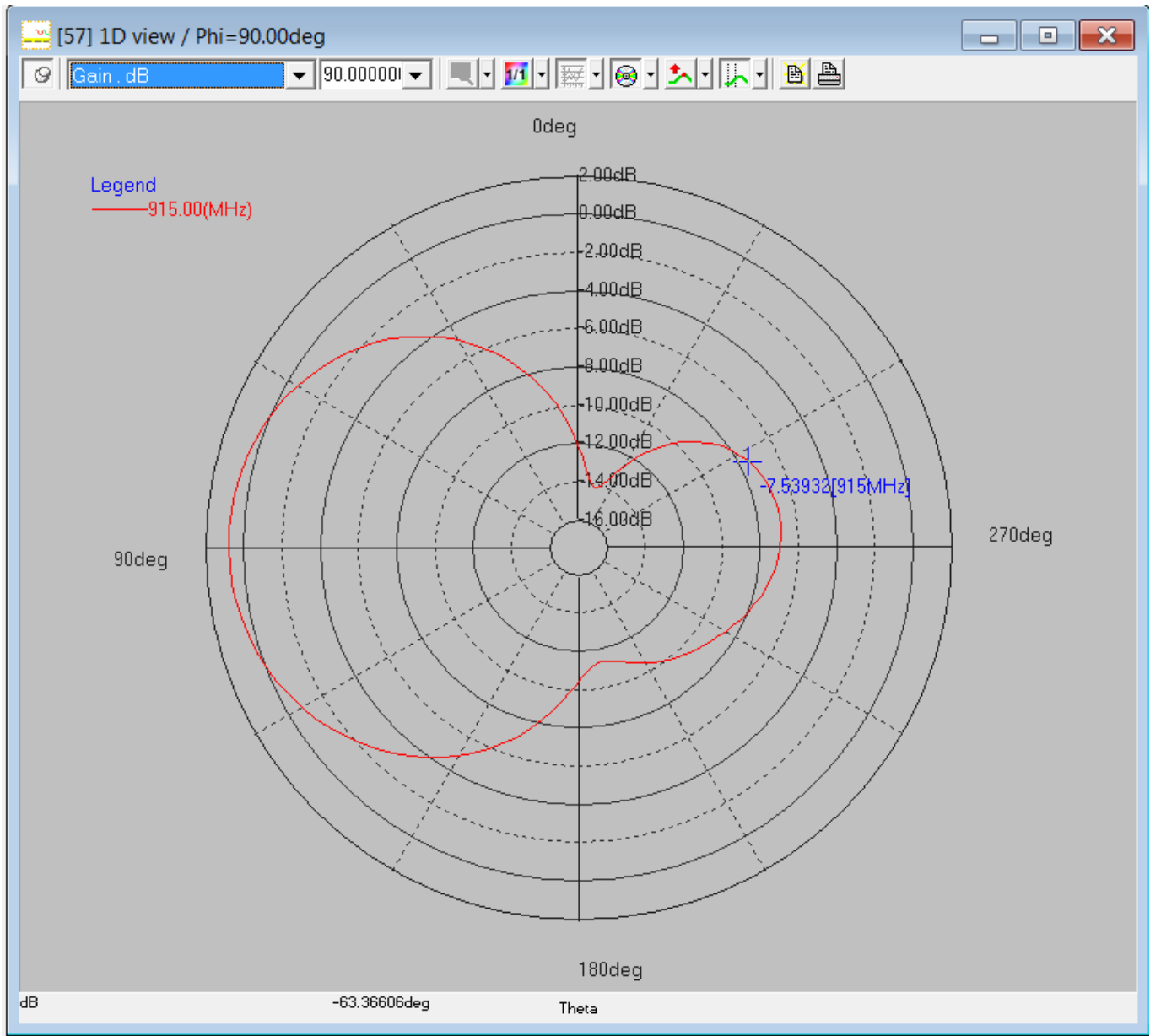


Figure 10: Antenna gain plot phi = 90

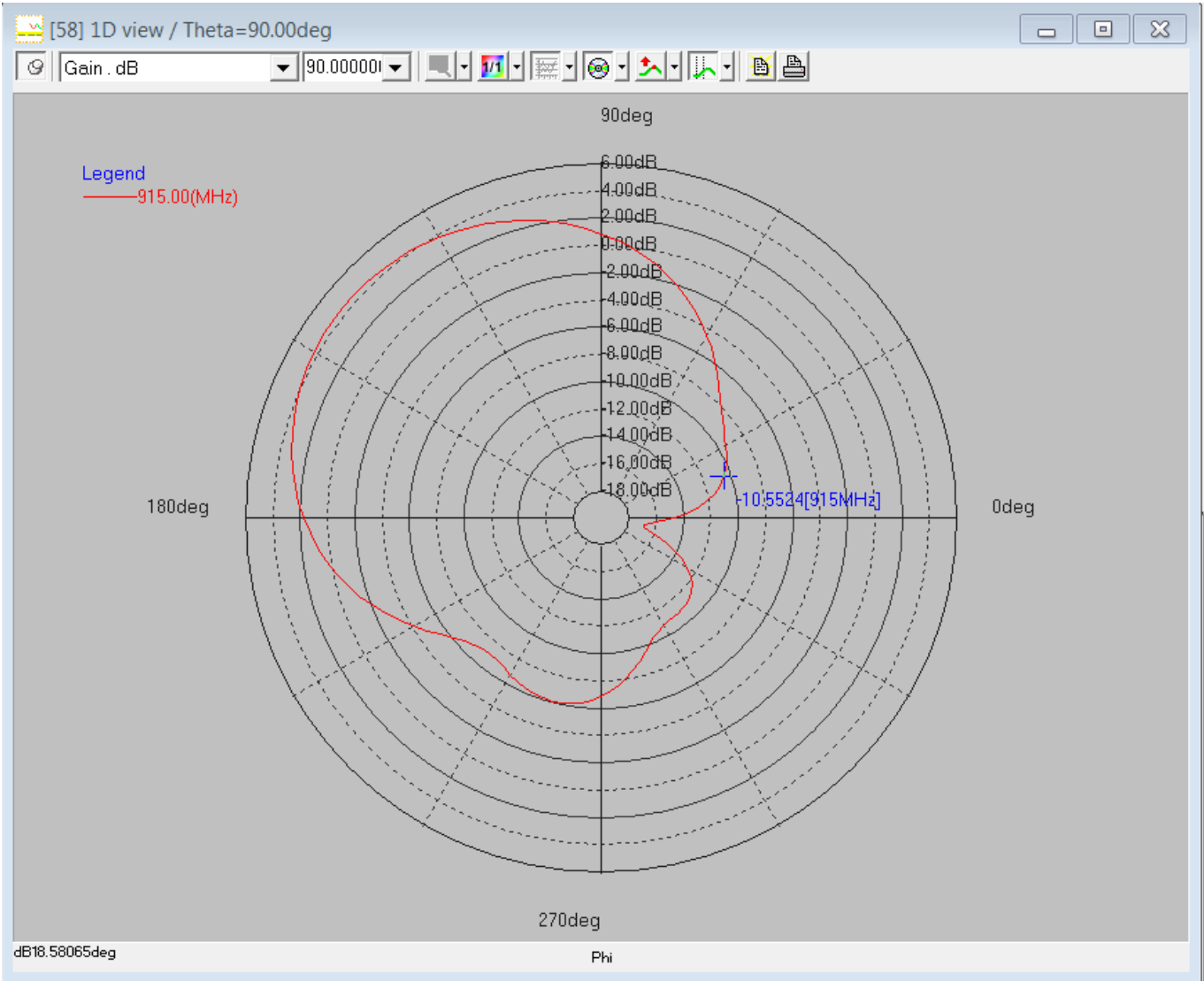


Figure 11: Antenna gain plot theta = 90

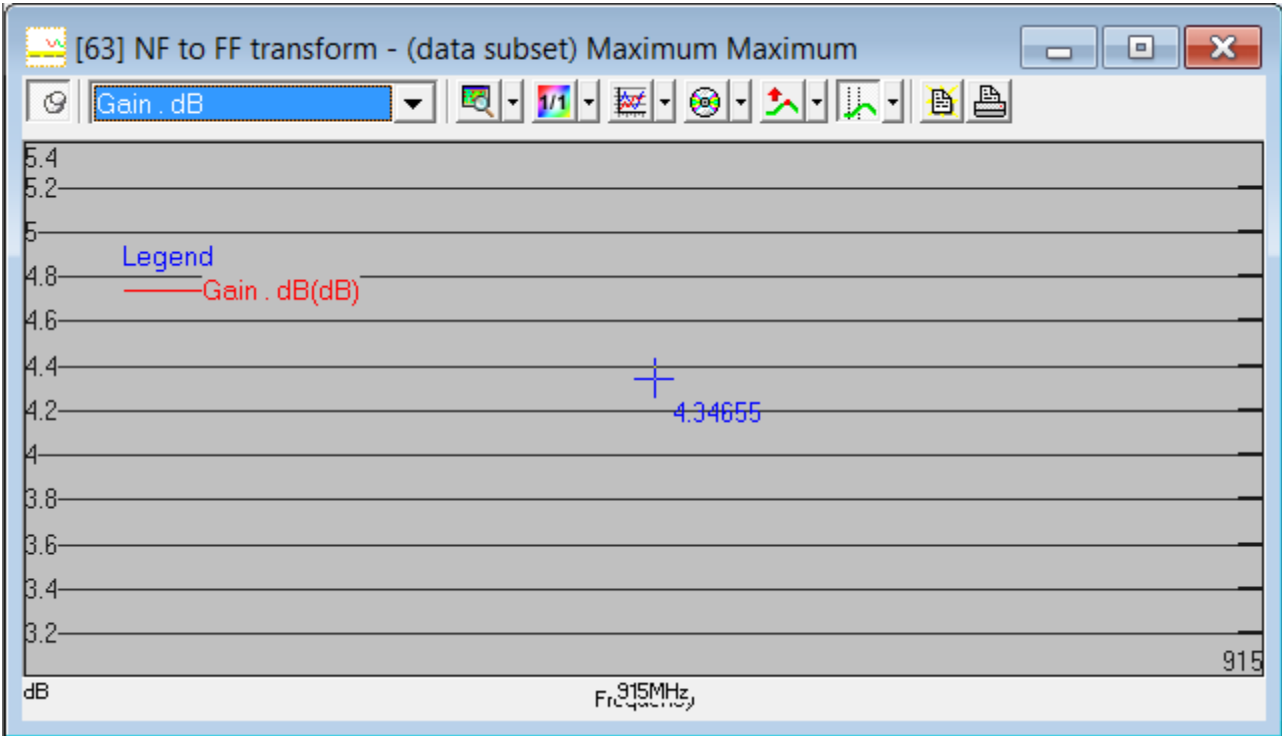


Figure 12: Antenna peak gain



Figure 13: Antenna return loss