



Test Report

TR.216.8.25.PAR.A

MICROGATE SRL

VIA WALTRAUD GEBERT DEEG 3 E
BOLZANO 39100 ITALY

PCB TRACE ANTENNA

measured at MVG Industries

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Date 2025/08/04

	<i>Name</i>	<i>Function</i>	<i>Date</i>	<i>Signature</i>
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	<i>Customer Name</i>
<i>Distribution :</i>	MICROGATE SRL

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1 INTRODUCTION

This document presents the measurement system and its associated equipment and the test procedure and gives information about the standard gain horn used to perform the measurements of the test antenna. Then, the description of the measurement set-up is provided with the summary array of the Antennas Under Test (AUT). Attached to this document, MVG delivers the measurement data in electronic form.

2 ANTENNA UNDER TEST

Antenna Under Test	
Antenna Type	PCB trace antenna
Manufacturer	MICROGATE SRL
Model	MG-ANT-433MHz
Serial Number	xx
Customer Name:	MICROGATE SRL

3 MEASUREMENT SYSTEM INFORMATION

3.1 GENERAL INFORMATION

The antenna calibration is performed in a MVG SG-64 system with 63 0.4-6 GHz probes and 62 probes with 6-18 GHz Probes mounted with equal spacing on a circular arch. Electronic switching of the probe antennas provides outstanding measurement speed. The geometry of the setup, with only a Styrofoam column within 1.6 meters of the AUT, ensures minimum interference and low ripple on the measured radiation patterns.

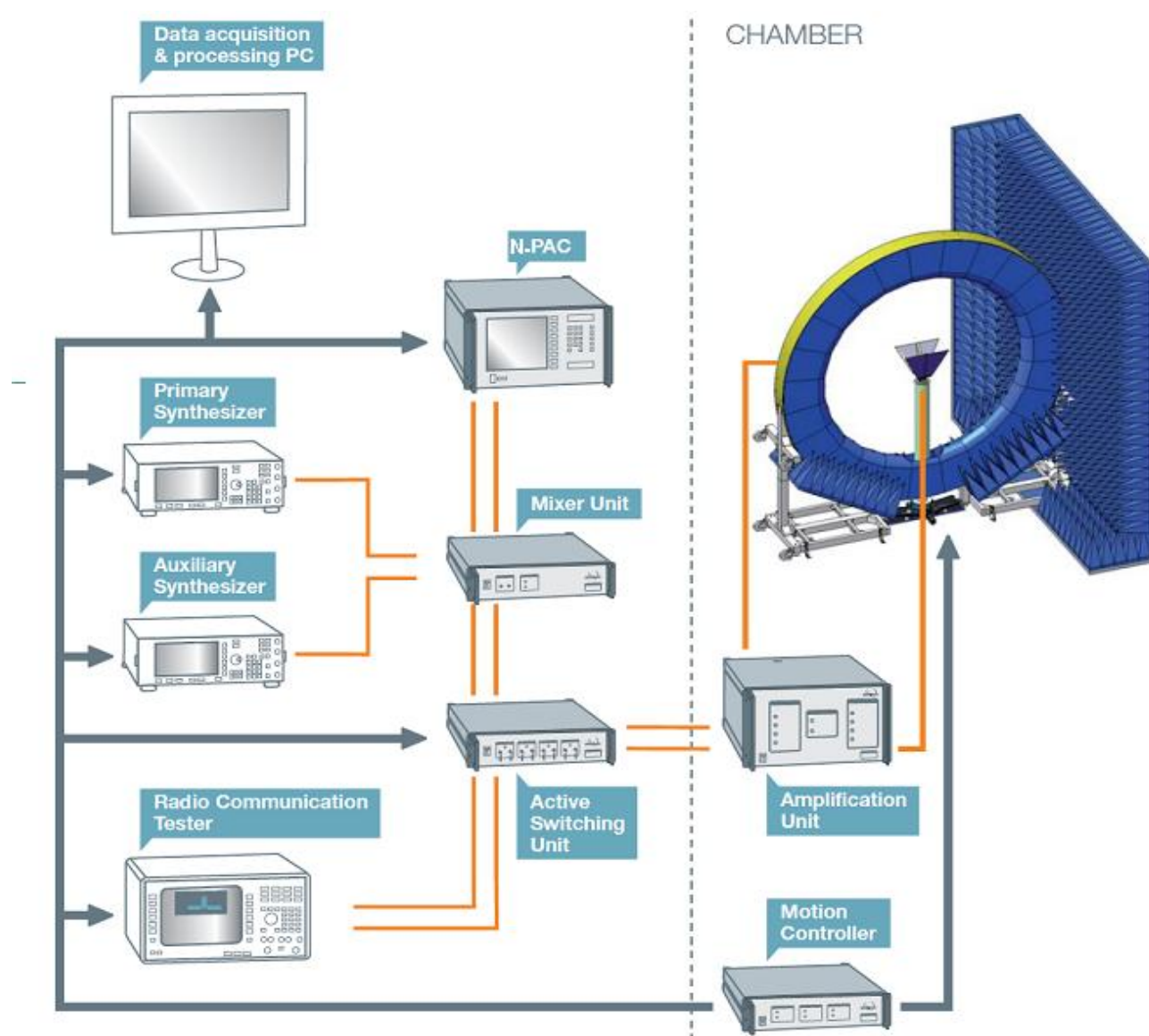


Figure 1 – The block diagram of the antenna measurement system.
The AUT is placed in the centre of the arch.

3.2 LIST OF CRITICAL EQUIPMENT

Equipment Description	Manufacturer	Identification N°	Current calibration date	Next calibration date	Calibration report or certificate references	Reference of calibration
SG 64	MVG	SAT 2000 sn#0013	03/07/2025	03/07/2026	CR.212.8.25.PAR. A SG64 Calibration Report	Calibrated by MVG according Internal Method
Anechoic chamber	MVG	SAT 2000 sn#0013	03/07/2025	03/07/2026	CR.212.8.25.PAR. A SG64 Calibration Report	Calibrated by MVG according Internal Method
Primary Synthesizer 83712B	Agilent	US37101179	2023/10/30	2026/10/30	86SL00150	Calibrated by accredited Lab ABN Métrologie
Auxiliary Synthesizer 83712B	Agilent	US37101195	2023/10/30	2026/10/30	86SL00149	Calibrated by accredited Lab ABN Métrologie
Horn Antenna	MVG	SH400 sn#00020	2018/05/08	(Checked every 3 months)	ACR.128.01.18.SA TU.B	Calibrated by accredited Lab MVG US according 17025
Horn Antenna	MVG	SH2000 sn#00077	2018/05/07	(Checked every 3 months)	ACR.127.02.18.SA TU.B	Calibrated by accredited Lab MVG US according 17025

4 GAIN CALIBRATION

4.1 GAIN DEFINITION

The reported boresight antenna gain is 4π times the ratio of the power radiated per unit solid angle in that direction to the net power delivered to the antenna by a 50Ω generator. This definition is also referred to as realized antenna gain which is less than the IEEE definition [IEEE Standard Test Procedures for Antennas, ANSI/IEEE Std 149-1979] by the value of the return loss.

4.2 CALIBRATION STANDARD

The calibrated substitution antennas are dual ridge horns as shown in **Figure 1** below. These horns have been calibrated by ISO 17025 accredited laboratories at which ensure direct traceability to SI.

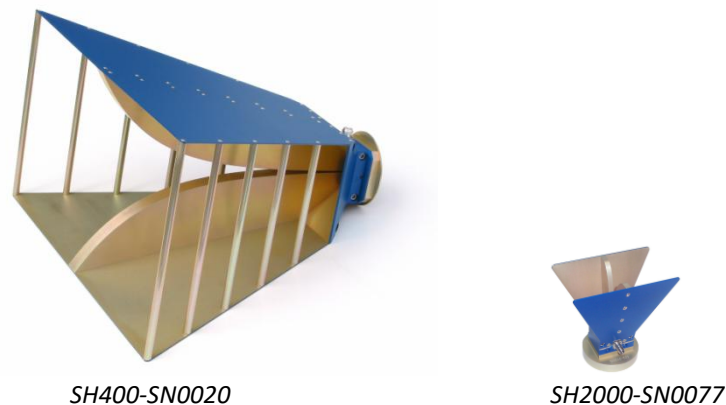
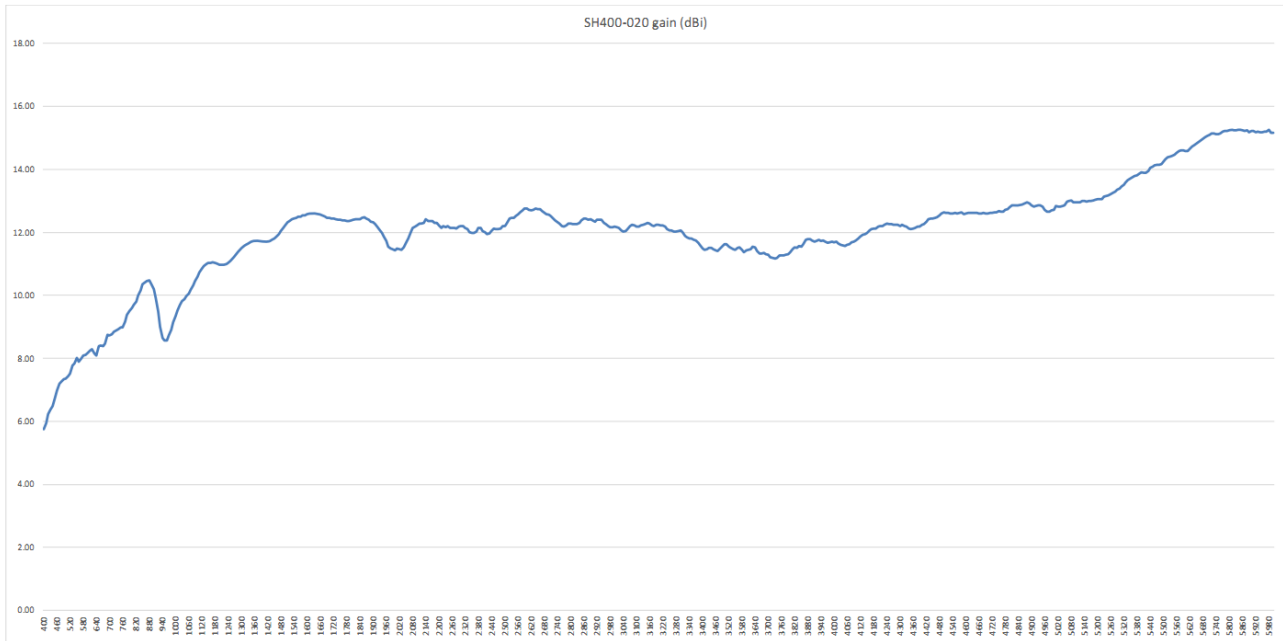
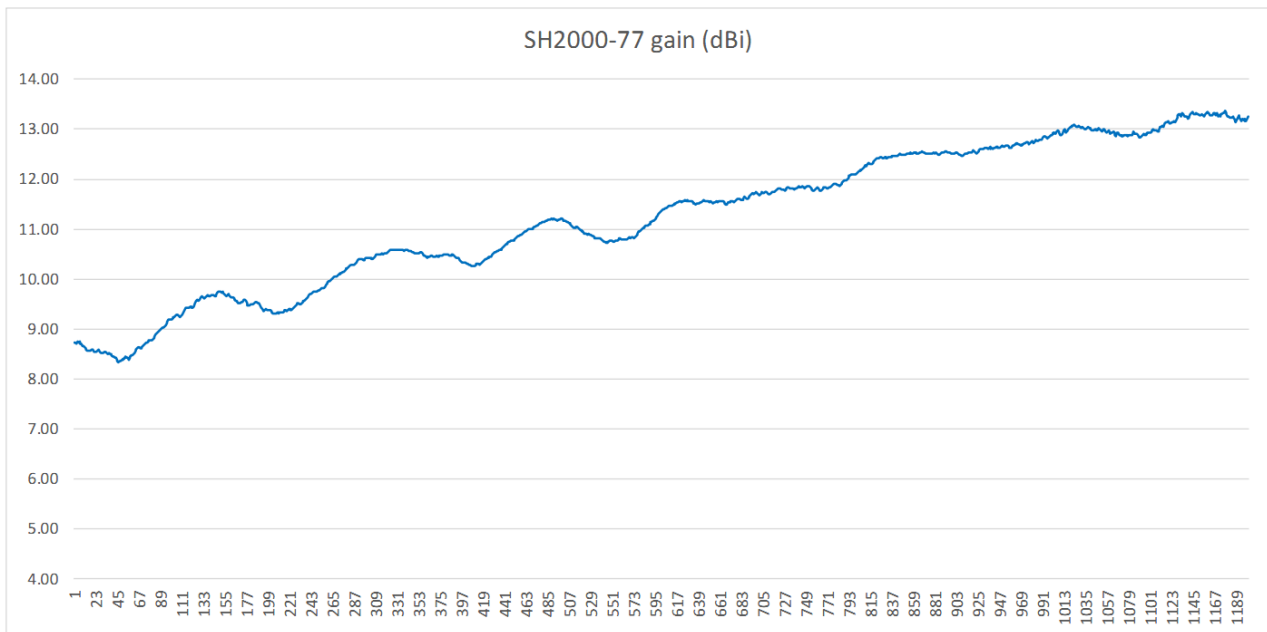


Figure 1 – Dual ridge horns used as calibrated substitution antennas



Boresight gain vs. frequency plot of the MVG SH400-SN0020 horn.



Boresight gain vs. frequency plot of the MVG SH2000-SN0077 horn.

5 MEASUREMENT SETUP

The AUT measured is mounted on a hard foam mast as shown in the picture below.

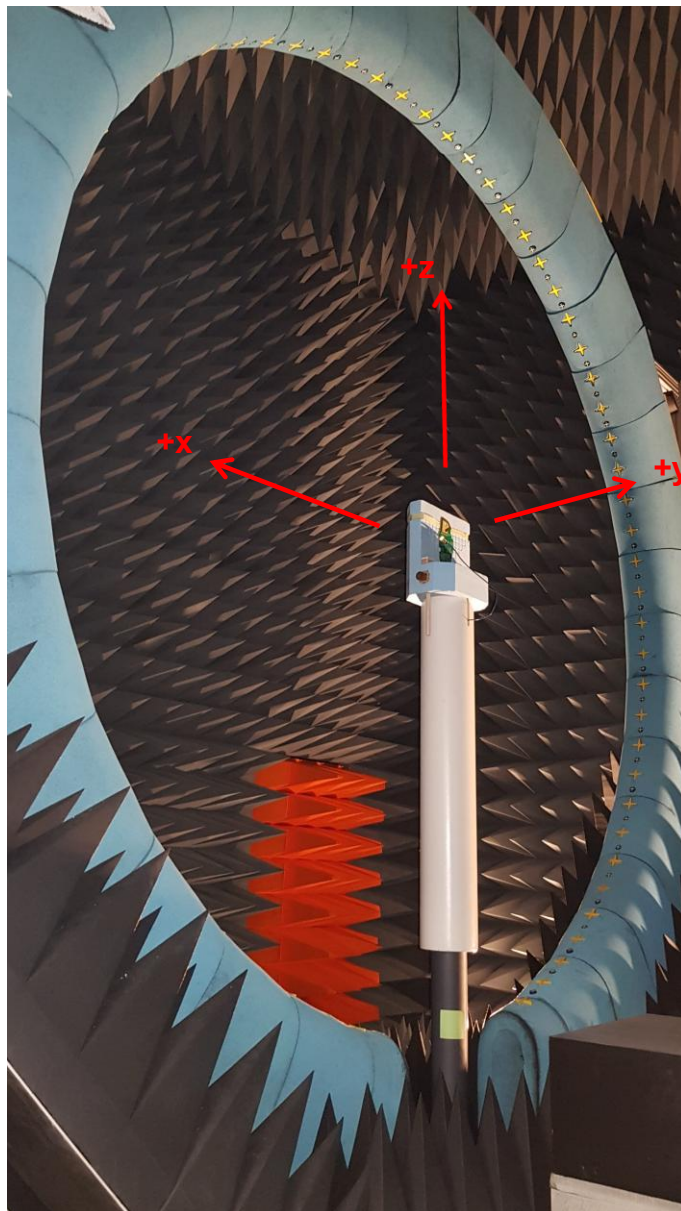
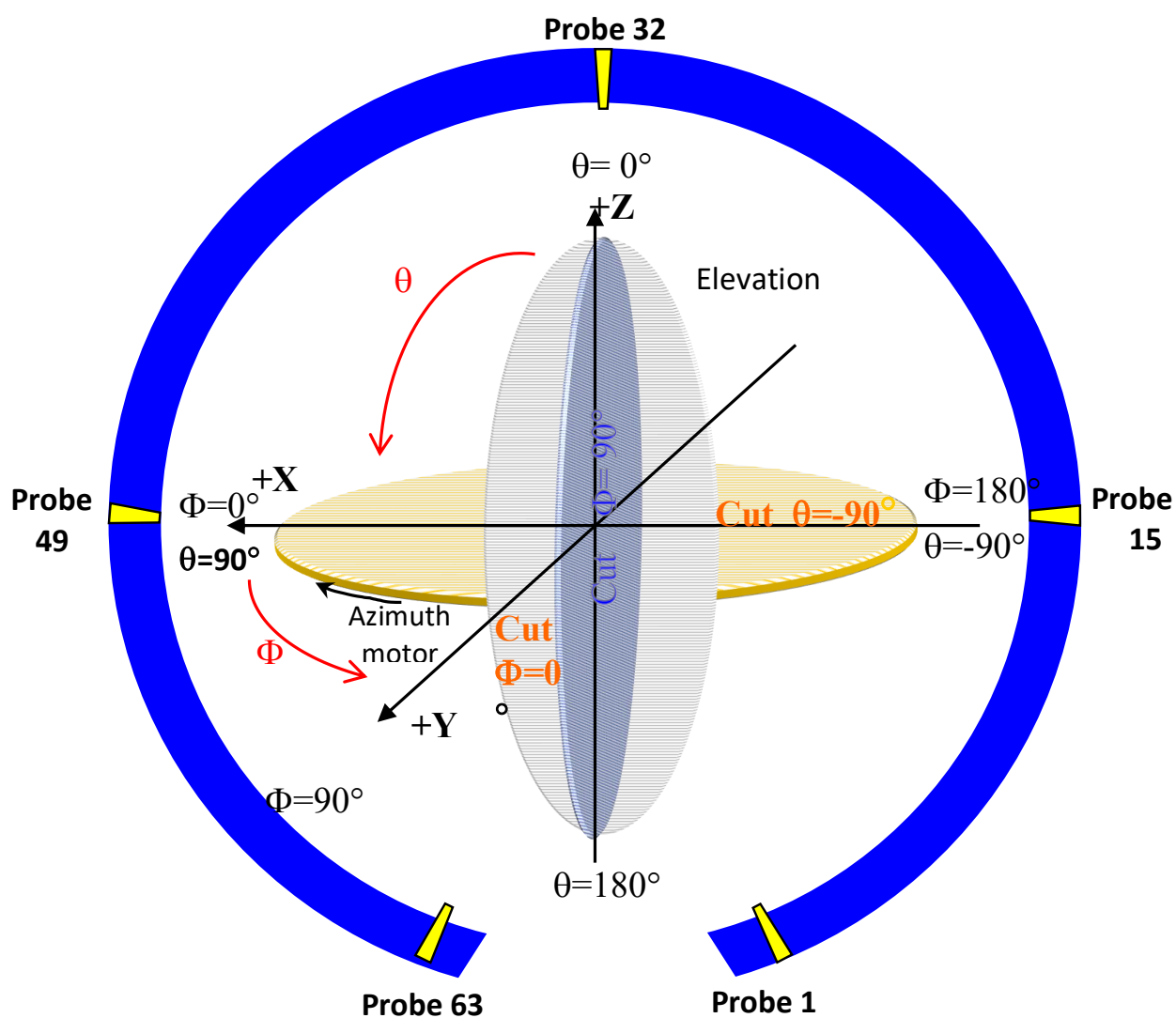


Figure 2 – Photograph showing the AUT Mounted in the test range
For clarity, a coordinate system has been superimposed on the picture.

5.1 COORDINATE SYSTEM OF THE SG-64



5.2 ENVIRONMENTAL CONDITIONS

The temperatures of the laboratory control room and the anechoic chamber are ambient around 24°C.

6 MEASUREMENT DATA

As a supplement to this report, measurement data are delivered in electronic form as follows:

Antenna name	Antenna type (Dipole, patch, phone, etc.)	Measurement type (Passive, Active or Active CW)	Frequency bands	Results
MG-ANT- 433MHz	PCB trace antenna	Passive	433,050 – 434,790 MHz	See Html report “20250804 Microgate”