Czech Technical University in Prague

Faculty of Electrical Engineering, Department of Electromagnetic Field

Technická 2, 166 27 Prague 6

Antenna
TEST REPORT

Customer:	JSE s. r. o., Průmyslová 190, 537 01 Chrudim, Czech Republic
Tested by:	Ing. Václav Kabourek, Ph. D. CTU in Prague, FEE Department of Electromagnetic Field Technická 2, 166 27 Prague, Czech Republic
Tested Item:	PCB patch antenna array, HW-108-066-REV03
Frequency Range:	61 GHz – 64 GHz
Measured quantities:	Antenna gain, radiation patterns in H, E planes
Measurement type:	Antenna gain and radiation pattern verification
Date:	January 29, 2024

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Antenna Description

Manufacturer:	JSE s. r. o., Průmyslová 190, 537 01 Chrudim, Czech Republic
Antenna Type:	PCB patch antenna array with linear polarization
Model Name:	HW-108-066-REV03
Operating Freq.:	61 - 64 GHz
Impedance:	50 Ohms

Tested sample antenna under test (AUT) is equipped with 1.85 mm end-launch connector. PCB is without components.

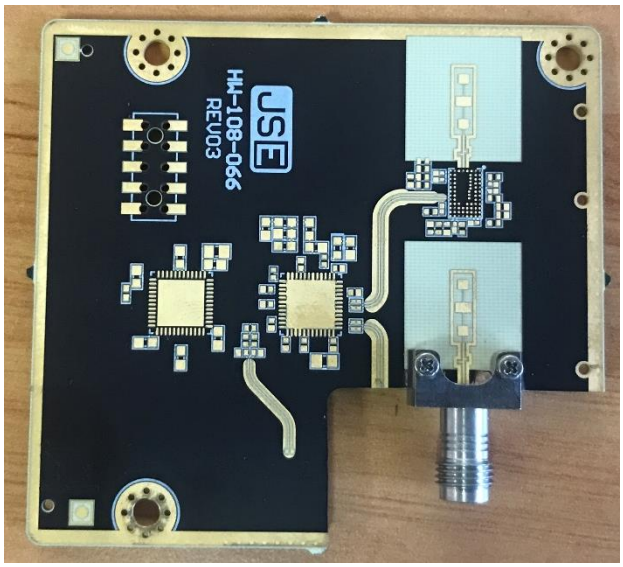

Fig. 1 Measured antenna array sample.

Measurement Description

Instruments:	R&S Vector Network Analyzer ZVA67 NSI Far-Field measurement system
Accessories:	Precision coaxial cable assembly, 1.85 mm connectors Low-Noise amplifier SAGE (Eravant) SBL-5037033550-VFVF-S1 Broadband horn antenna DRH1067 – test antenna, (www.rfspin.com) Double Ridged Horn Antenna DRH67, reference calibrated antenna (www.rfspin.com)
Frequency range:	52 GHz – 68 GHz, frequency step 25 MHz (801 points)
Meas. distance:	3 m
Measurements:	Gain – obtained by "gain transfer" method, DRH67-210514 has been used as reference antenna with known gain Radiation patterns – measured in two Far-Field planes of AUT: E and H; azimuthal span: ±100°, step 1° Measured characteristics are requested primarily at three frequency points: 61.1 GHz, 62.475 GHz, 63.850 GHz

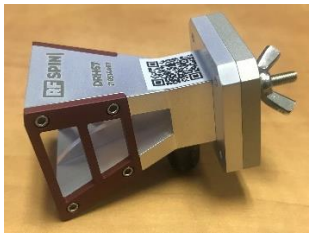

Fig. 2 Reference antenna, DRH67-210514.

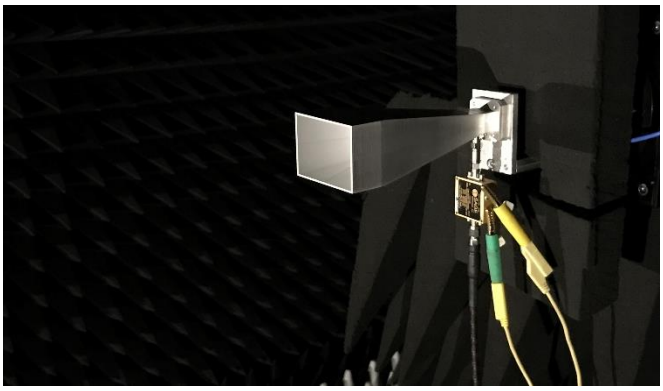

Fig. 3 Test horn antenna DRH1067 with connected amplifier.

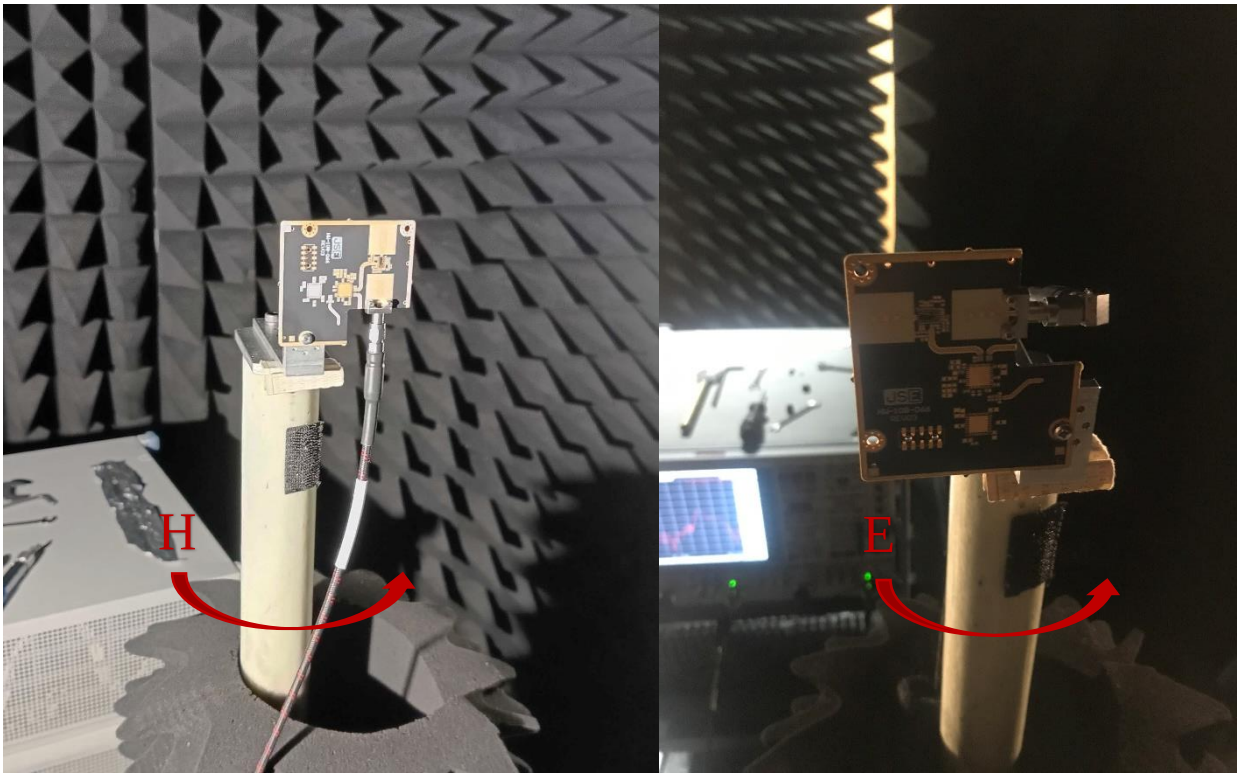

Fig. 4 H and E cuts of AUT.

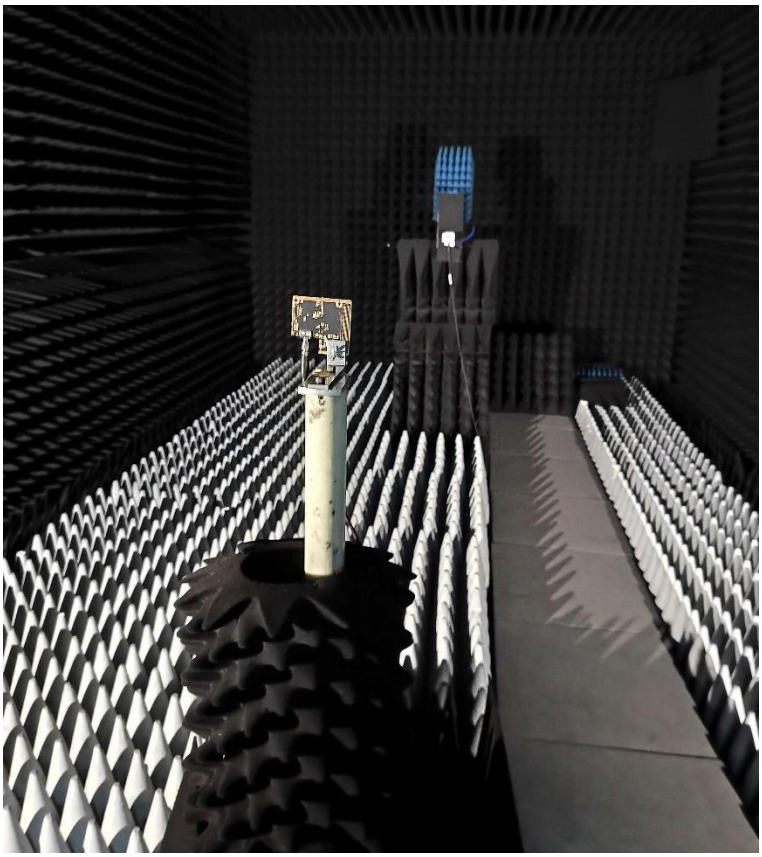

Fig. 5 FF AUT measurement. AUT is attached to fiberglass composite stand.

Results

Antenna Gain

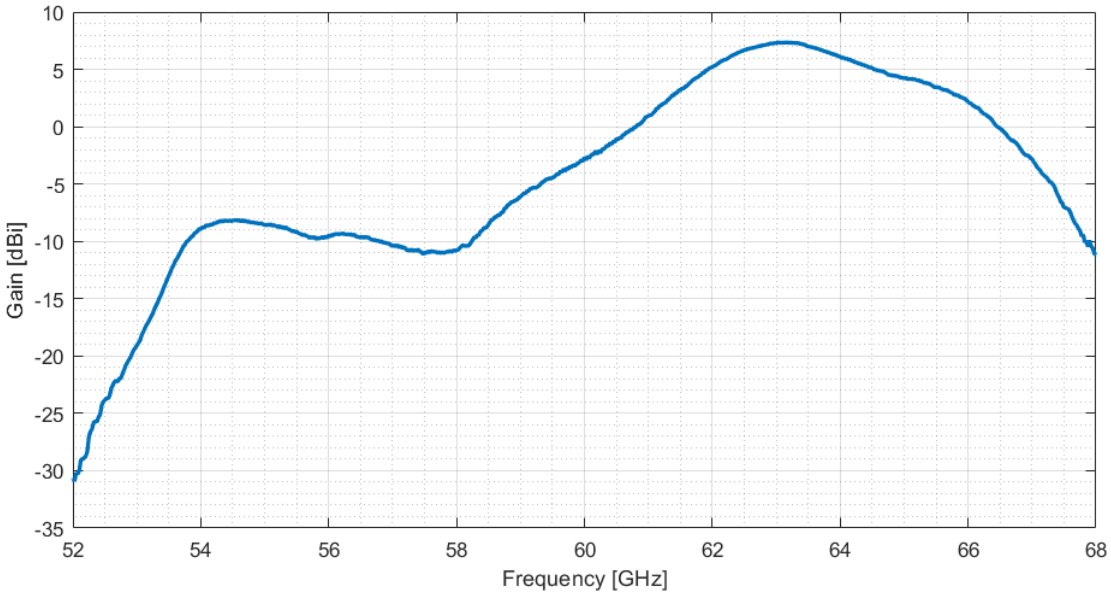

Fig. 6 Gain of AUT at 0° azimuth and elevation.

Frequency (GHz)	**61.000**	**61.100**	**62.000**	**62.475**	**63.000**	**63.850**	**64.000**	**65.000**
Gain (dBi)	0.94	1.32	5.21	6.61	7.29	6.37	6.11	4.23

Radiation Patterns, E plane

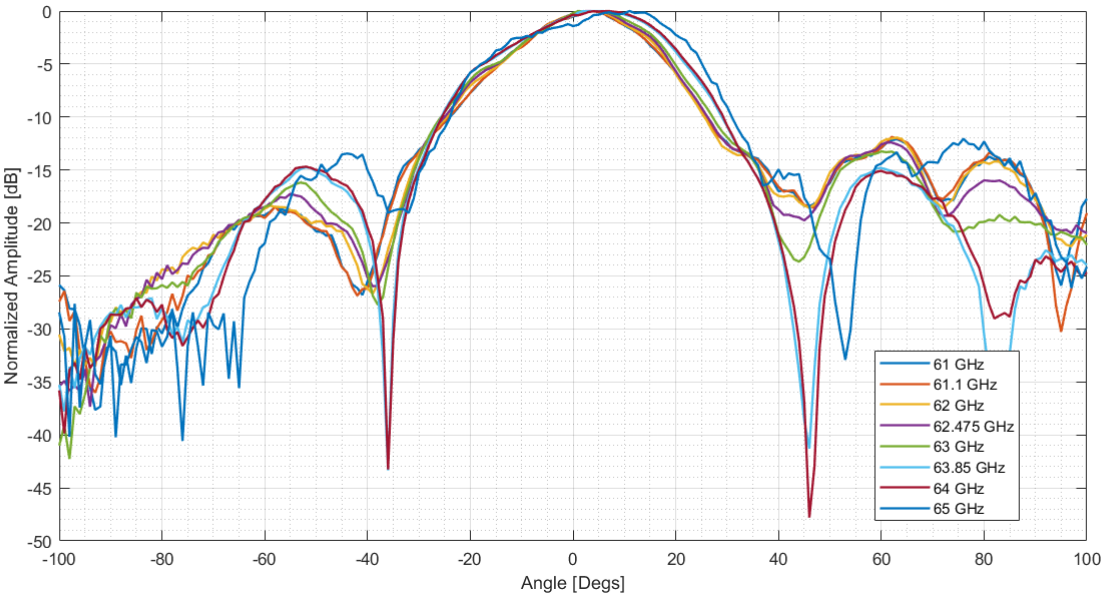

Fig. 7 Radiation patterns, E plane.

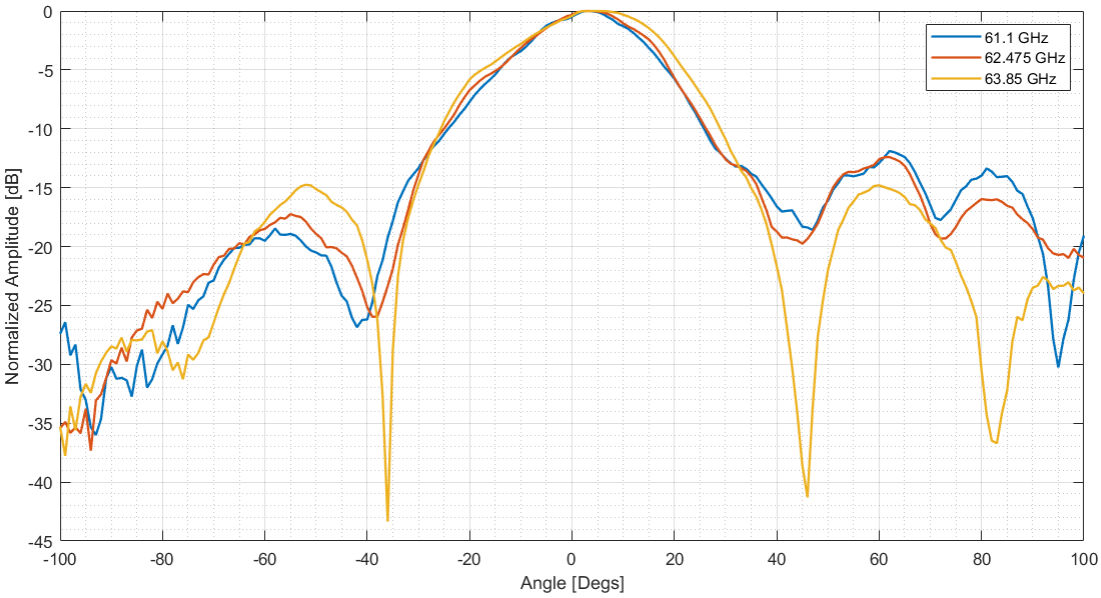

Fig. 8 Radiation patterns, E plane, selected frequencies.

Radiation Patterns, H plane

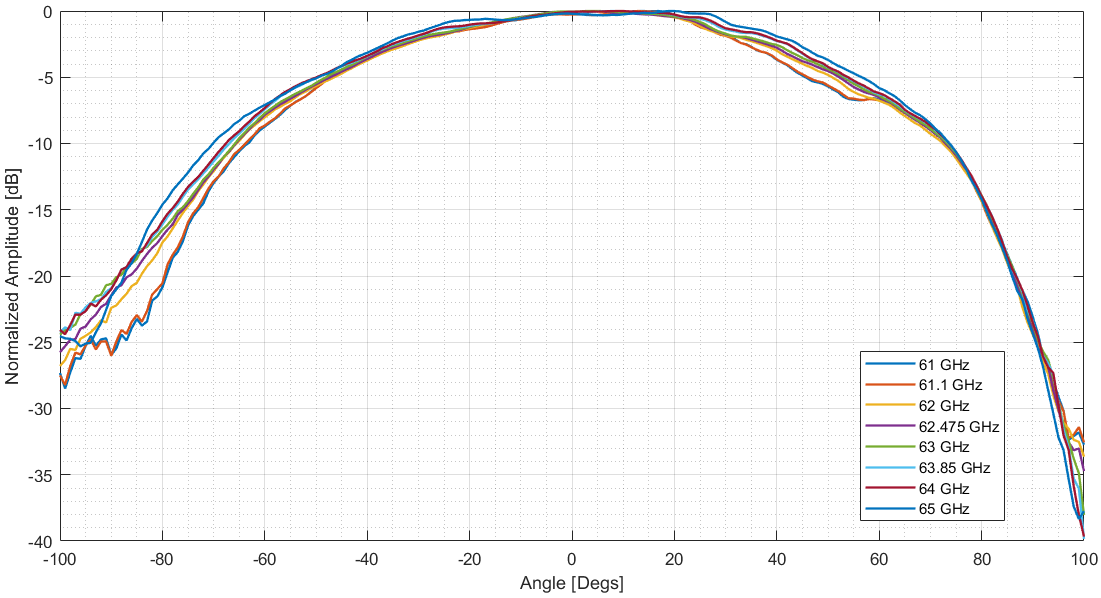

Fig. 9 Radiation patterns, H plane.

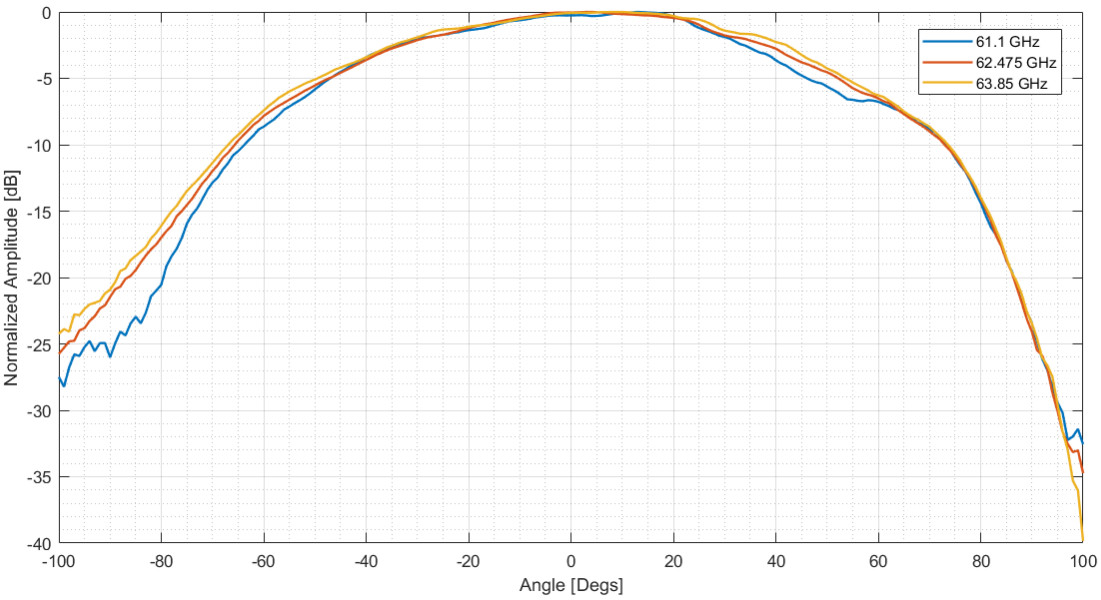

Fig. 10 Radiation patterns, H plane, selected frequencies.