

Calibration Report



General Information

Object:	BODE 100
Serial Number:	PG247H
Options:	Rev. 2
Manufacturer:	OMICRON electronics GmbH
Calibration Date:	2025-10-20
Test Engineer:	Mr. Testengineer

Overall Result / Conformity

Overall Assessment:	pass
Specified Assessments:	172
Passed:	172
Failed:	0

Procedure

Calibration Procedure:	Adjust & Calibration
Calibration Software:	2.42
Page Count:	11

Ambient Conditions

Temperature: 23.0 °C ± 5.0 °C
 73.4 °F ± 9.0 °F
Relative Humidity: 45.0 % ± 20.0 %

Calibration Reference Equipment

Manufacturer	Model	SerialNo	TraceNo	Calibration due
OMICRON electronics	Bode 500	102377723	23-498	2026-05-15
Rosenberger	53K36R-MSO	06D95	25-102	2026-02-26
Keithley Instr.	7510	04369582	18-136	2026-01-22
OMICRON electronics	FRA-Bode RF	AC001A	22-149	2026-06-24
Rohde & Schwarz	NRP18T	102570	21-409	2026-07-08
Pendulum	CNT-90	650612	24-142	2026-06-30

Test Results – Overview

1	Calibration	4
1.1	Output Frequency Calibration	4
1.2	Output Power Calibration	4
1.3	ReturnLoss Calibration	4
1.4	S21 Calibration	7

Test Results – Detail

1 Calibration

1.1 Output Frequency Calibration

Nominal in kHz	Actual in kHz	Error in Hz	Spec in Hz	Of Spec in %	Verdict
1000.0	999.99963	-0.37	2.00	-18.6	pass

1.2 Output Power Calibration

Frequency in MHz	Nominal in dBm	Actual in dBm	Error in dBm	Spec in dBm	Of Spec in %	Verdict
0.001	11.0	10.994	-0.006	0.300	-1.9	pass
0.010	11.0	10.992	-0.008	0.300	-2.8	pass
0.030	11.0	10.991	-0.009	0.300	-2.9	pass
0.100	11.0	10.996	-0.004	0.300	-1.3	pass
0.300	11.0	10.977	-0.023	0.300	-7.6	pass
1.000	11.0	10.954	-0.046	0.300	-15.3	pass
3.000	11.0	10.917	-0.083	0.600	-13.8	pass
10.000	11.0	10.844	-0.156	0.600	-26.0	pass
30.000	11.0	10.941	-0.059	0.600	-9.8	pass
50.000	11.0	10.866	-0.134	0.600	-22.3	pass

1.3 ReturnLoss Calibration

1.3.1 Output

Return Loss

Frequency in MHz	Actual in dB	Spec in dB	Verdict
0.00001	-53.5	<-30.0	pass
0.00003	-53.8	<-30.0	pass
0.00010	-53.3	<-30.0	pass
0.00030	-54.5	<-30.0	pass
0.00100	-53.5	<-30.0	pass
0.00300	-53.2	<-30.0	pass
0.01000	-52.9	<-30.0	pass
0.03000	-51.7	<-30.0	pass
0.10000	-49.7	<-30.0	pass
0.30000	-47.0	<-30.0	pass
1.00000	-43.9	<-30.0	pass

Frequency in MHz	Actual in dB	Spec in dB	Verdict
3.00000	-41.1	<-30.0	pass
10.00000	-38.0	<-30.0	pass
30.00000	-35.3	<-30.0	pass
50.00000	-34.6	<-30.0	pass

1.3.2 CH1

Return Loss

Frequency in MHz	Actual in dB	Spec in dB	Verdict
0.00001	-56.5	<-28.0	pass
0.00003	-56.2	<-28.0	pass
0.00010	-56.2	<-28.0	pass
0.00030	-56.9	<-28.0	pass
0.00100	-55.7	<-28.0	pass
0.00300	-55.7	<-28.0	pass
0.01000	-54.9	<-28.0	pass
0.03000	-53.4	<-28.0	pass
0.10000	-50.9	<-28.0	pass
0.30000	-47.8	<-28.0	pass
1.00000	-44.7	<-28.0	pass
3.00000	-42.6	<-28.0	pass
10.00000	-43.9	<-28.0	pass
30.00000	-44.4	<-28.0	pass
50.00000	-34.6	<-28.0	pass

1.3.3 CH1 with >=30dB Attenuator

Return Loss

Frequency in MHz	Actual in dB	Spec in dB	Verdict
0.00001	-56.6	<-28.0	pass
0.00003	-56.3	<-28.0	pass
0.00010	-55.9	<-28.0	pass
0.00030	-55.5	<-28.0	pass
0.00100	-56.0	<-28.0	pass
0.00300	-55.6	<-28.0	pass
0.01000	-55.0	<-28.0	pass
0.03000	-53.4	<-28.0	pass
0.10000	-50.9	<-28.0	pass
0.30000	-47.9	<-28.0	pass

Frequency in MHz	Actual in dB	Spec in dB	Verdict
1.00000	-44.6	<-28.0	pass
3.00000	-41.3	<-28.0	pass
10.00000	-37.6	<-28.0	pass
30.00000	-37.3	<-28.0	pass
50.00000	-47.9	<-28.0	pass

1.3.4 CH2

Return Loss

Frequency in MHz	Actual in dB	Spec in dB	Verdict
0.00001	-56.1	<-28.0	pass
0.00003	-55.7	<-28.0	pass
0.00010	-55.1	<-28.0	pass
0.00030	-54.1	<-28.0	pass
0.00100	-54.8	<-28.0	pass
0.00300	-54.8	<-28.0	pass
0.01000	-54.2	<-28.0	pass
0.03000	-52.9	<-28.0	pass
0.10000	-50.8	<-28.0	pass
0.30000	-47.7	<-28.0	pass
1.00000	-44.6	<-28.0	pass
3.00000	-42.2	<-28.0	pass
10.00000	-42.8	<-28.0	pass
30.00000	-40.8	<-28.0	pass
50.00000	-35.1	<-28.0	pass

1.3.5 CH2 with ≥ 30 dB Attenuator

Return Loss

Frequency in MHz	Actual in dB	Spec in dB	Verdict
0.00001	-56.2	<-28.0	pass
0.00003	-55.7	<-28.0	pass
0.00010	-54.7	<-28.0	pass
0.00030	-54.7	<-28.0	pass
0.00100	-54.7	<-28.0	pass
0.00300	-54.7	<-28.0	pass
0.01000	-54.3	<-28.0	pass
0.03000	-53.0	<-28.0	pass
0.10000	-50.6	<-28.0	pass

Frequency in MHz	Actual in dB	Spec in dB	Verdict
0.30000	-47.8	<-28.0	pass
1.00000	-44.5	<-28.0	pass
3.00000	-40.9	<-28.0	pass
10.00000	-36.8	<-28.0	pass
30.00000	-35.6	<-28.0	pass
50.00000	-47.1	<-28.0	pass

1.4 S21 Calibration

1.4.1 External OdB Reference Attenuator

S21 magnitude

Frequency in MHz	Actual in dB	Measured in dB	Error in dB	Spec in dB	Of Spec in %	Verdict
0.00001	-0.025	-0.030	-0.005	0.100	-5.3	pass
0.00003	-0.025	-0.030	-0.005	0.100	-5.0	pass
0.00010	-0.025	-0.031	-0.007	0.100	-6.7	pass
0.00030	-0.025	-0.032	-0.007	0.100	-7.0	pass
0.00100	-0.024	-0.032	-0.007	0.100	-7.4	pass
0.00300	-0.024	-0.031	-0.007	0.100	-7.0	pass
0.01000	-0.025	-0.031	-0.007	0.100	-6.5	pass
0.03000	-0.025	-0.031	-0.006	0.100	-6.4	pass
0.10000	-0.026	-0.026	0.000	0.100	0.5	pass
0.30000	-0.029	-0.027	0.002	0.100	1.9	pass
1.00000	-0.031	-0.038	-0.006	0.100	-6.3	pass
3.00000	-0.038	-0.026	0.012	0.100	12.1	pass
10.00000	-0.037	-0.047	-0.009	0.100	-9.1	pass
30.00000	-0.054	-0.066	-0.012	0.100	-12.2	pass
50.00000	-0.068	-0.079	-0.011	0.100	-11.2	pass

S21 phase

Frequency in MHz	Actual in °	Measured in °	Error in m°	Spec in m°	Of Spec in %	Verdict
0.00001	0.000	-0.002	-2	500	-0.4	pass
0.00003	0.000	-0.011	-11	500	-2.2	pass
0.00010	0.000	-0.007	-7	500	-1.4	pass
0.00030	0.000	-0.003	-2	500	-0.5	pass
0.00100	-0.001	-0.001	1	500	0.1	pass
0.00300	-0.006	0.000	6	500	1.2	pass
0.01000	-0.021	-0.003	17	500	3.5	pass
0.03000	-0.040	-0.015	25	500	4.9	pass

Frequency in MHz	Actual in °	Measured in °	Error in m°	Spec in m°	Of Spec in %	Verdict
0.10000	-0.099	-0.058	41	500	8.1	pass
0.30000	-0.236	-0.193	42	500	8.5	pass
1.00000	-0.669	-0.664	5	500	1.0	pass
3.00000	-2.022	-1.992	29	500	5.9	pass
10.00000	-6.615	-6.582	34	500	6.8	pass
30.00000	-19.660	-19.621	40	500	7.9	pass
50.00000	-32.698	-32.727	-30	500	-5.9	pass

1.4.2 External 20dB Reference Attenuator

S21 magnitude

Frequency in MHz	Actual in dB	Measured in dB	Error in dB	Spec in dB	Of Spec in %	Verdict
0.00001	-20.013	-20.018	-0.005	0.100	-4.6	pass
0.00003	-20.013	-20.020	-0.007	0.100	-6.8	pass
0.00010	-20.013	-20.024	-0.011	0.100	-11.0	pass
0.00030	-20.013	-20.026	-0.012	0.100	-12.3	pass
0.00100	-20.014	-20.025	-0.012	0.100	-11.7	pass
0.00300	-20.014	-20.025	-0.012	0.100	-11.7	pass
0.01000	-20.014	-20.025	-0.011	0.100	-11.1	pass
0.03000	-20.015	-20.024	-0.009	0.100	-9.2	pass
0.10000	-20.016	-20.024	-0.008	0.100	-7.8	pass
0.30000	-20.018	-20.026	-0.008	0.100	-8.0	pass
1.00000	-20.020	-20.037	-0.017	0.100	-17.1	pass
3.00000	-20.026	-20.026	0.001	0.100	0.6	pass
10.00000	-20.031	-20.044	-0.013	0.100	-12.7	pass
30.00000	-20.046	-20.062	-0.016	0.100	-16.2	pass
50.00000	-20.060	-20.075	-0.015	0.100	-14.5	pass

S21 phase

Frequency in MHz	Actual in °	Measured in °	Error in m°	Spec in m°	Of Spec in %	Verdict
0.00001	0.000	-0.011	-11	500	-2.3	pass
0.00003	0.000	-0.029	-29	500	-5.7	pass
0.00010	0.000	-0.020	-20	500	-4.0	pass
0.00030	-0.001	-0.010	-9	500	-1.8	pass
0.00100	-0.002	-0.002	0	500	0.0	pass
0.00300	-0.007	-0.001	5	500	1.1	pass
0.01000	-0.021	-0.004	17	500	3.4	pass
0.03000	-0.040	-0.015	24	500	4.9	pass

Frequency in MHz	Actual in °	Measured in °	Error in m°	Spec in m°	Of Spec in %	Verdict
0.10000	-0.095	-0.061	33	500	6.7	pass
0.30000	-0.248	-0.199	48	500	9.7	pass
1.00000	-0.687	-0.679	8	500	1.6	pass
3.00000	-2.061	-2.028	33	500	6.6	pass
10.00000	-6.756	-6.703	53	500	10.6	pass
30.00000	-19.985	-20.032	-46	500	-9.3	pass
50.00000	-33.223	-33.478	-255	500	-51.0	pass

1.4.3 External 50dB Reference Attenuator

S21 magnitude

Frequency in MHz	Actual in dB	Measured in dB	Error in dB	Spec in dB	Of Spec in %	Verdict
0.0001	-50.015	-49.979	0.037	0.400	9.2	pass
0.0003	-50.015	-50.001	0.015	0.400	3.6	pass
0.0010	-50.015	-50.004	0.011	0.400	2.8	pass
0.0030	-50.015	-50.005	0.010	0.400	2.4	pass
0.0100	-50.015	-50.004	0.011	0.200	5.5	pass
0.0300	-50.015	-50.001	0.014	0.200	7.0	pass
0.1000	-50.015	-50.008	0.006	0.200	3.2	pass
0.3000	-50.016	-50.010	0.006	0.200	3.2	pass
1.0000	-50.017	-50.020	-0.003	0.200	-1.5	pass
3.0000	-50.022	-50.008	0.015	0.200	7.3	pass
10.0000	-50.033	-50.027	0.006	0.200	3.1	pass
30.0000	-50.047	-50.049	-0.002	0.200	-1.2	pass
50.0000	-50.059	-50.058	0.002	0.200	0.8	pass

S21 phase

Frequency in MHz	Actual in °	Measured in °	Error in m°	Spec in m°	Of Spec in %	Verdict
0.0001	0.00	-0.44	-443	1000	-44.3	pass
0.0003	0.00	-0.17	-171	1000	-17.1	pass
0.0010	0.00	-0.06	-57	1000	-5.7	pass
0.0030	-0.01	-0.04	-33	1000	-3.3	pass
0.0100	-0.02	-0.01	9	1000	0.9	pass
0.0300	-0.04	-0.01	22	1000	2.2	pass
0.1000	-0.10	-0.06	31	1000	3.1	pass
0.3000	-0.26	-0.20	57	1000	5.7	pass
1.0000	-0.71	-0.69	17	1000	1.7	pass
3.0000	-2.12	-2.07	47	1000	4.7	pass

Frequency in MHz	Actual in °	Measured in °	Error in m°	Spec in m°	Of Spec in %	Verdict
10.0000	-6.92	-6.86	60	1000	6.0	pass
30.0000	-20.46	-20.55	-87	1000	-8.7	pass
50.0000	-34.01	-34.42	-408	1000	-40.8	pass

Appendix

Internally, all values are calculated using full precision. For reporting purposes the values are rounded to a finite number of decimal places. Note that rounding can lead to an inaccurate final decimal digit in the report.

Nomenclature

DUT:	Device Under Test
Actual:	Value measured by reference equipment
Nominal:	Nominal value output by the DUT or source
Measured:	Value measured by the device under test
Error:	Difference between the actual and nominal/measured value
	DUT output: Error = Actual – Nominal
	DUT input: Error = Measured – Actual
Spec:	Specification, i.e. allowed deviation
Of Spec:	Deviation from the specification in percent
	Of Spec = Error / Spec * 100
Amplitude:	Voltage or current amplitude (not assessed)
Frequency:	Nominal output frequency
Hysteresis:	Hysteresis = Upper Threshold – Lower Threshold
Threshold:	Value measured by reference equipment (upper threshold)
Range:	Range setting for DUT measurement
Verdict:	Evaluation of a measurement result
	no spec not specified, for information only
	skip not assessed, because not measured
	pass calibration / measurement within specification
	fail calibration / measurement outside specification

OMICRON is an international company that works passionately on ideas for making electric power systems safe and reliable. Our pioneering solutions are designed to meet our industry's current and future challenges. We always go the extra mile to empower our customers: we react to their needs, provide extraordinary local support, and share our expertise.

Within the **OMICRON** group, we research and develop innovative technologies for all fields in electric power systems. When it comes to electrical testing for medium- and high-voltage equipment, protection testing, digital substation testing solutions, and cybersecurity solutions, customers all over the world trust in the accuracy, speed, and quality of our user-friendly solutions.