

Prüfbericht-Nr.: <i>Test Report No.:</i>	21227827.001	Auftrags-Nr.: <i>Order No.:</i>	21227827	Seite 1 von 5 Page 1 of 5	
Kunden-Referenz-Nr.: <i>Client Reference No.:</i>	548195	Auftragsdatum: <i>Order date:</i>	14 January 2015		
Auftraggeber: <i>Client:</i>	Enphase Energy 1420 N. McDowell Blvd, Petaluma, CA 94954, USA				
Prüfgegenstand: <i>Test item:</i>	Micro Inverter Units				
Bezeichnung / Typ-Nr.: <i>Identification / Type No.:</i>	M300-60-2LL				
Auftrags-Inhalt: <i>Order content:</i>	Ammonia corrosion testing of micro inverter				
Prüfgrundlage: <i>Test specification:</i>	IEC 62716:2013 Photovoltaic (PV) modules - Ammonia corrosion testing				
Wareneingangsdatum: <i>Date of receipt:</i>	15 January 2015	Detaillierte Fotodokumentation siehe Anlage zu diesem Bericht Detailed photo documentation see appendix to this report			
Prüfmuster-Nr.: <i>Test sample No.:</i>	HV2015000146 - HV2015000149				
Prüfzeitraum: <i>Testing period:</i>	16 January 2015 – 12 February 2015				
Ort der Prüfung: <i>Place of testing:</i>	Cologne				
Prüflaboratorium: <i>Testing laboratory:</i>	Solar Energy Assessment Center				
Prüfergebnis*: <i>Test result*:</i>	Pass				
geprüft von / tested by:		kontrolliert von / reviewed by:			
24.02.2015	S. Menzler, project engineer	24.02.2015	L. Jakisch, business field manager		
Datum <i>Date</i>	Name / Stellung <i>Name / Position</i>	Unterschrift <i>Signature</i>	Datum <i>Date</i>	Name / Stellung <i>Name / Position</i>	Unterschrift <i>Signature</i>
Sonstiges / Other:					
Zustand des Prüfgegenstandes bei Anlieferung: <i>Condition of the test item at delivery:</i>		Prüfmuster vollständig und unbeschädigt <i>Test item complete and undamaged</i>			
* Legende:	1 = sehr gut P(ass) = entspricht o.g. Prüfgrundlage(n)	2 = gut F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	3 = befriedigend N/A = nicht anwendbar	4 = ausreichend N/T = nicht getestet	5 = mangelhaft
Legend:	1 = very good P(ass) = passed a.m. test specification(s)	2 = good F(ail) = failed a.m. test specification(s)	3 = satisfactory N/A = not applicable	4 = sufficient N/T = not tested	5 = poor
Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. <i>This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.</i>					

Prüfbericht-Nr.: 21227827.001
Test Report No.:

Seite 2 von 5
Page 2 of 5

Liste der verwendeten Prüfmittel
List of used test equipment

Prüfmittel <i>Test equipment</i>	Prüfmittel-Nr. / ID-Nr. <i>Equipment No. / ID-No.</i>	Nächste Kalibrierung <i>Next calibration</i>
Software	Version No.	--
KaliBritt	1.0.0.161	
TUV Rheinland SUSI	1.3.0.0	
PSLoad	2.6.11.3	
SIMPATI.exe, 22623	4	
Weather-DAQ_V_1.2.tst	1.2	
ODTS_7.tst	2.4.2	
ShowSpectrum	2.3	
TUV Rheinland LightSoaking	1.2.0.2	
Temptc_dioden_7	7	
ISO_WL	1.0.2.1	

Prüfbericht-Nr.: 21227827.001
Test Report No.:

Seite 3 von 5
Page 3 of 5

Produktbeschreibung
Product description

1 Produktdetails
Product details
M300-60-2LL

2 Verwendete Materialien
Used materials

-

3 Adresse(n) der Fertigungsstätte(n)
Address(es) of the manufacturing site(s)
Enphase Energy
1420 N. McDowell Blvd, Petaluma, CA 94954, USA

4 Zusammenfassung der Prüfergebnisse
Summary of test results

According to the inquiry the resistance to ammonia of 4 micro inverter units should be assessed in accordance with IEC 62716.

Initial and control visual inspection have be done.

Test failures:-

Remarks:

Prüfbericht-Nr.: 21227827.001
Test Report No.:

Seite 4 von 5
Page 4 of 5

Absatz	IEC 62716:2013	Messergebnisse - Bemerkungen	Bewertung
Clause	Anforderungen - Prüfungen / Requirements - Tests	Measuring results - Remarks	Evaluation

- List of test samples			
Sample No.	Sample S/N	Remarks / constructional characteristics (e.g. cell, backsheet, frame type)	
HV2015000146	121432029664	Ammonia Corrosion Test	—
HV2015000147	121432029844	Ammonia Corrosion Test	
HV2015000148	121432029885	Ammonia Corrosion Test	
HV2015000149	121432029839	Ammonia Corrosion Test	

6.2 c) Visual inspection (Initial)		
Sample No.	Nature and position of initial findings	
HV2015000146	No visual defects	P
HV2015000147	No visual defects	P
HV2015000148	No visual defects	P
HV2015000149	No visual defects	P
Supplementary information: -		

Prüfbericht-Nr.: 21227827.001
Test Report No.:

Seite 5 von 5
Page 5 of 5

Absatz	IEC 62716:2013	Messergebnisse - Bemerkungen	Bewertung
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7	Ammonia corrosion test		
Sample No. 1		HV2015000146	—
Sample No. 2		HV2015000147	
Sample No. 3		HV2015000148	
Sample No. 4		HV2015000149	
NH ₃ - concentration [ppm]	6667		
Temperature [°C]	60		
Relative humidity [%]	approx. 100 (condensation on the samples)		
One cycle (24 h)	- exposure of NH ₃ for 8 h and 60°C with nearly 100 % condensation on the samples - drying for 16 h at normal atmosphere (23 °C and max. 75 % rel. humidity)		
Duration	20 cycles = 480 h (20 days)		
Comment	according to DIN EN ISO 3231/ DIN EN ISO 6988 DIN 50018		
Supplementary information: The samples were loaded with mounting "Lid" facing upwards (sample label and mounting bolt upwards). Also the units were exposed in an approximately 15-degree angle from the horizontal.			

9.2 c)	Visual inspection after ammonia corrosion test		
Sample No.	Nature and position of findings		—
HV2015000146	Some corrosion phenomena on the housing No significant disturbance of the functionality		P
HV2015000147	Some corrosion phenomena on the housing No significant disturbance of the functionality		P
HV2015000148	Some corrosion phenomena on the housing No significant disturbance of the functionality		P
HV2015000149	Some corrosion phenomena on the housing No significant disturbance of the functionality		P
Supplementary information: -			

ZUSATZ-DOKUMENTATION
ADDITIONAL DOCUMENTATION

Photos of micro inverter



Fig. 1: front view of test sample



Fig. 2: rear view of test sample

ZUSATZ-DOKUMENTATION
ADDITIONAL DOCUMENTATION

Photos of micro inverter after ammonia corrosion test



Fig. 3: front view of test sample



Fig. 4: rear view of test sample