Extract from Test report 28112188 015 rev.01
"Determination of electrical properties"

Extract No: 1 _ **Annex F.3** (VDE-AR-N 4105)

Type of System:	PV - Photovoltaic grid tied inverter
System Manufacturer: **Manufacturer data:**	**Power-One Italy S.p.A. (a member of the ABB group)** Via S. Giorgio 642, 52028 Terranuova Bracciolini (AR) - Italy
Reference test report:	**28112188 015 rev.01**
Measuring period:	**From** 20th August, 2018 **to** 13th November, 2018
Active Power [P_{Emax}]: *(nominal power at reference conditions)*	**Models** / **P_{Emax}** **PVS-175-TL** / **185 KW**
Rated Voltage:	800 V (Phase-Phase). Neutral not provided

Note :

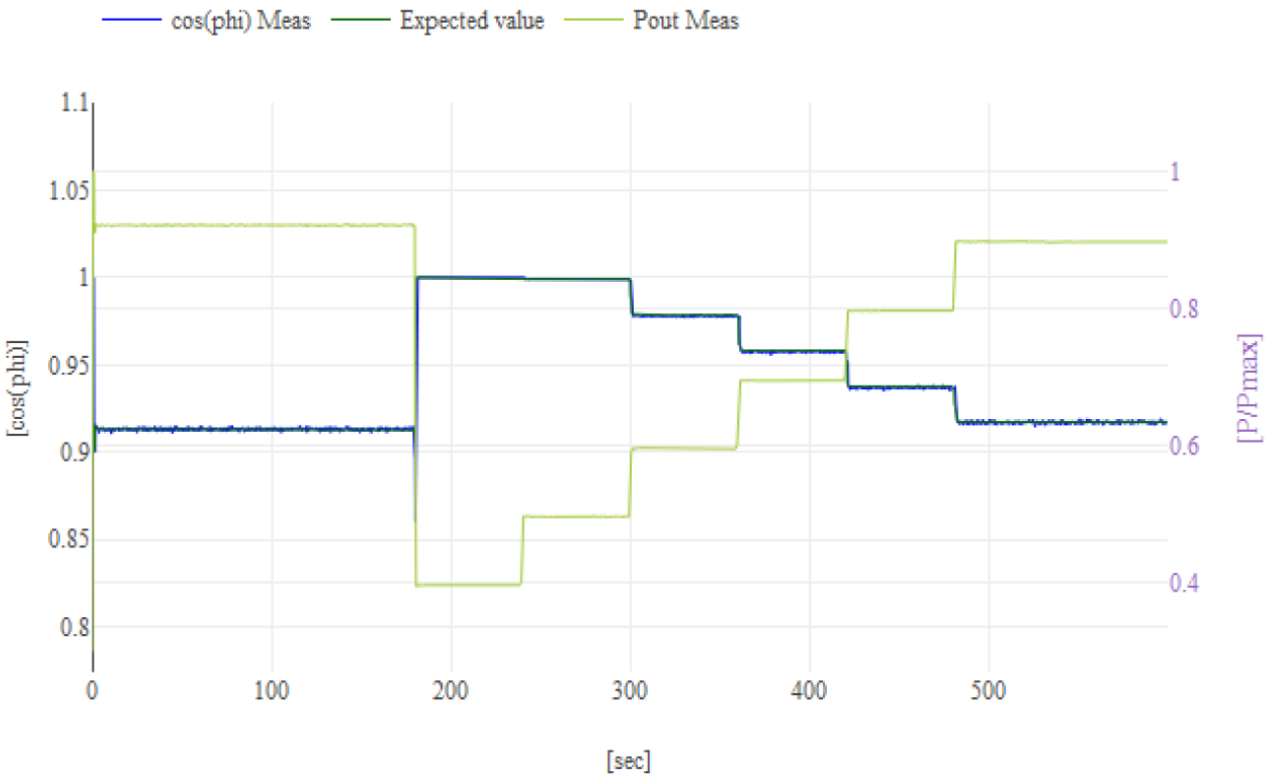
The tested object does is not provided with the neutral connection (it is not intended to be connected directly on the public low voltage network) and thus some measurements were not possible to be performed.

Product is not intended to be connected directly to the low voltage public grid and thus it is out of the scope of this standard.

Reactive power reference										
Active Power P/P_n [%]	10	20	30	40	50	60	70	80	90	100
Max. cos $\varphi_{underexcited}$	0.905	0.903	0.902	0.902	0.901	0.901	0.901	0.901	0.901	0.901
Max. cos $\varphi_{overexcited}$	0.898	0.899	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900

Compliance of required displacement factor cos φ											
Default in system control	$0{,}900_{OV}$	$0{,}920_{OV}$	$0{,}940_{OV}$	$0{,}960_{OV}$	$0{,}980_{OV}$	1	$0{,}980_{UN}$	$0{,}960_{UN}$	$0{,}940_{UN}$	$0{,}920_{UN}$	0,900
Measured value at PGU terminals	0,9020	0,9217	0,9407	0,9600	0,9792	1,0000	0,9800	0,9600	0,9400	0,9199	0,9002

Reactive power transfer function – Standard cos φ (P) – characteristic:										
Active Power P/Pn [%]	10	20	30	40	50	60	70	80	90	100
cos φ	-	1.000	1.000	1.000	0.998	0.977	0.957	0.936	0.916	-



Switching actions:		
Making operation without default	k_i:	0.97
Worst case at switch over of generator sections	k_i:	0.97
Making operation at reference conditions	k_i:	0.46
Breaking operation at nominal power	k_i:	0,96
Worst-case value of all switching operations	$k_{i\,max}$:	**0.97**

Flickers:						
Phase 1 33%						
Observation	**PSTmeas**	**PSTreal**	**PSTcub**	**PLT**	**dc**	**dmax**
1	0.130	**0.200**	0.008		**0.10%**	**1.02%**
2	0.133	**0.205**	0.009		**0.10%**	**1.02%**
3	0.129	**0.199**	0.008		**0.10%**	**1.02%**
4	0.136	**0.210**	0.009		**0.10%**	**1.02%**
5	0.146	**0.225**	0.011		**0.10%**	**1.02%**
6	0.150	**0.231**	0.012		**0.10%**	**1.02%**
7	0.146	**0.225**	0.011		**0.10%**	**1.02%**
8	0.154	**0.237**	0.013		**0.10%**	**1.02%**
9	0.156	**0.241**	0.014		**0.10%**	**1.02%**
10	0.147	**0.227**	0.012		**0.10%**	**1.02%**
11	0.150	**0.231**	0.012		**0.10%**	**1.02%**
12	0.159	**0.245**	0.015		**0.10%**	**1.02%**
			0.127	**0.220**		
Phase 2 33%						
Observation	**PSTmeas**	**PSTreal**	**PSTcub**	**PLT**	**dc**	**dmax**
1	0.132	**0.204**	0.008		**0.10%**	**1.02%**
2	0.137	**0.211**	0.009		**0.10%**	**1.02%**
3	0.126	**0.194**	0.007		**0.10%**	**1.02%**
4	0.126	**0.194**	0.007		**0.10%**	**1.02%**
5	0.142	**0.219**	0.010		**0.10%**	**1.02%**
6	0.152	**0.234**	0.013		**0.10%**	**1.02%**
7	0.154	**0.237**	0.013		**0.10%**	**1.02%**
8	0.161	**0.248**	0.015		**0.10%**	**1.02%**
9	0.154	**0.237**	0.013		**0.10%**	**1.02%**
10	0.156	**0.241**	0.014		**0.10%**	**1.02%**
11	0.142	**0.219**	0.010		**0.10%**	**1.02%**
12	0.150	**0.231**	0.012		**0.10%**	**1.02%**
			0.135	**0.224**		
Phase 3 33%						
Observation	**PSTmeas**	**PSTreal**	**PSTcub**	**PLT**	**dc**	**Dmax**
1	0.133	**0.205**	0.009		**0.10%**	**1.02%**
2	0.143	**0.220**	0.011		**0.10%**	**1.02%**
3	0.120	**0.185**	0.006		**0.10%**	**1.02%**
4	0.144	**0.222**	0.011		**0.10%**	**1.02%**
5	0.139	**0.214**	0.010		**0.10%**	**1.02%**
6	0.141	**0.217**	0.010		**0.10%**	**1.02%**
7	0.146	**0.225**	0.011		**0.10%**	**1.02%**
8	0.162	**0.250**	0.016		**0.10%**	**1.02%**
9	0.156	**0.241**	0.014		**0.10%**	**1.02%**
10	0.155	**0.239**	0.014		**0.10%**	**1.02%**
11	0.141	**0.217**	0.010		**0.10%**	**1.02%**
12	0.151	**0.233**	0.013		**0.10%**	**1.02%**
			0.134	**0.224**		

Phase 1 60%						
Observation	**PSTmeas**	**PSTreal**	**PSTcub**	**PLT**	**dc**	**dmax**
1	0.160	**0.247**	0.015		**0.10%**	**1.02%**
2	0.167	**0.257**	0.017		**0.10%**	**1.02%**
3	0.160	**0.247**	0.015		**0.10%**	**1.02%**
4	0.153	**0.236**	0.013		**0.10%**	**1.02%**
5	0.159	**0.245**	0.015		**0.10%**	**1.02%**
6	0.166	**0.256**	0.017		**0.10%**	**1.02%**
7	0.164	**0.253**	0.016		**0.10%**	**1.02%**
8	0.159	**0.245**	0.015		**0.10%**	**1.02%**
9	0.168	**0.259**	0.017		**0.10%**	**1.02%**
10	0.173	**0.267**	0.019		**0.10%**	**1.02%**
11	0.174	**0.268**	0.019		**0.10%**	**1.02%**
12	0.176	**0.271**	0.020		**0.10%**	**1.02%**
			0.183	**0.248**		
Phase 2 60%						
Observation	**PSTmeas**	**PSTreal**	**PSTcub**	**PLT**	**dc**	**dmax**
1	0.151	**0.233**	0.013		**0.10%**	**1.02%**
2	0.169	**0.261**	0.018		**0.10%**	**1.02%**
3	0.152	**0.234**	0.013		**0.10%**	**1.02%**
4	0.155	**0.239**	0.014		**0.10%**	**1.02%**
5	0.154	**0.237**	0.013		**0.10%**	**1.02%**
6	0.160	**0.247**	0.015		**0.10%**	**1.02%**
7	0.170	**0.262**	0.018		**0.10%**	**1.02%**
8	0.156	**0.241**	0.014		**0.10%**	**1.02%**
9	0.176	**0.271**	0.020		**0.10%**	**1.02%**
10	0.179	**0.276**	0.021		**0.10%**	**1.02%**
11	0.165	**0.254**	0.016		**0.10%**	**1.02%**
12	0.168	**0.259**	0.017		**0.10%**	**1.02%**
			0.192	**0.252**		
Phase 3 60%						
Observation	**PSTmeas**	**PSTreal**	**PSTcub**	**PLT**	**dc**	**Dmax**
1	0.164	**0.253**	0.016		**0.10%**	**1.02%**
2	0.166	**0.256**	0.017		**0.10%**	**1.02%**
3	0.163	**0.251**	0.016		**0.10%**	**1.02%**
4	0.154	**0.237**	0.013		**0.10%**	**1.02%**
5	0.165	**0.254**	0.016		**0.10%**	**1.02%**
6	0.156	**0.241**	0.014		**0.10%**	**1.02%**
7	0.156	**0.241**	0.014		**0.10%**	**1.02%**
8	0.160	**0.247**	0.015		**0.10%**	**1.02%**
9	0.163	**0.251**	0.016		**0.10%**	**1.02%**
10	0.177	**0.273**	0.020		**0.10%**	**1.02%**
11	0.168	**0.259**	0.017		**0.10%**	**1.02%**
12	0.172	**0.265**	0.019		**0.10%**	**1.02%**
			0.194	**0.253**		

Phase 1 100%						
Observation	**PSTmeas**	**PSTreal**	**PSTcub**	**PLT**	**dc**	**dmax**
1	0.220	**0.339**	0.039		**0.10%**	**1.02%**
2	0.229	**0.353**	0.044		**0.10%**	**1.02%**
3	0.228	**0.352**	0.043		**0.10%**	**1.02%**
4	0.218	**0.336**	0.038		**0.10%**	**1.02%**
5	0.217	**0.335**	0.037		**0.10%**	**1.02%**
6	0.221	**0.341**	0.040		**0.10%**	**1.02%**
7	0.223	**0.344**	0.041		**0.10%**	**1.02%**
8	0.228	**0.352**	0.043		**0.10%**	**1.02%**
9	0.222	**0.342**	0.040		**0.10%**	**1.02%**
10	0.212	**0.327**	0.035		**0.10%**	**1.02%**
11	0.202	**0.311**	0.030		**0.10%**	**1.02%**
12	0.211	**0.325**	0.034		**0.10%**	**1.02%**
			0.426	**0.329**		
Phase 2 100%						
Observation	**PSTmeas**	**PSTreal**	**PSTcub**	**PLT**	**dc**	**dmax**
1	0.232	**0.358**	0.046		**0.10%**	**1.02%**
2	0.226	**0.348**	0.042		**0.10%**	**1.02%**
3	0.228	**0.352**	0.043		**0.10%**	**1.02%**
4	0.223	**0.344**	0.041		**0.10%**	**1.02%**
5	0.218	**0.336**	0.038		**0.10%**	**1.02%**
6	0.215	**0.331**	0.036		**0.10%**	**1.02%**
7	0.238	**0.367**	0.049		**0.10%**	**1.02%**
8	0.213	**0.328**	0.035		**0.10%**	**1.02%**
9	0.217	**0.335**	0.037		**0.10%**	**1.02%**
10	0.205	**0.316**	0.032		**0.10%**	**1.02%**
11	0.217	**0.335**	0.037		**0.10%**	**1.02%**
12	0.215	**0.331**	0.036		**0.10%**	**1.02%**
			0.474	**0.341**		
Phase 3 100%						
Observation	**PSTmeas**	**PSTreal**	**PSTcub**	**PLT**	**dc**	**Dmax**
1	0.220	**0.339**	0.039		**0.10%**	**1.02%**
2	0.239	**0.368**	0.050		**0.10%**	**1.02%**
3	0.229	**0.353**	0.044		**0.10%**	**1.02%**
4	0.210	**0.324**	0.034		**0.10%**	**1.02%**
5	0.208	**0.321**	0.033		**0.10%**	**1.02%**
6	0.214	**0.330**	0.036		**0.10%**	**1.02%**
7	0.217	**0.335**	0.037		**0.10%**	**1.02%**
8	0.221	**0.341**	0.040		**0.10%**	**1.02%**
9	0.229	**0.353**	0.044		**0.10%**	**1.02%**
10	0.214	**0.330**	0.036		**0.10%**	**1.02%**
11	0.207	**0.319**	0.033		**0.10%**	**1.02%**
12	0.201	**0.310**	0.030		**0.10%**	**1.02%**
			0.455	**0.336**		

HARMONICS:

100%								
Order	Phase R	Phase S	Phase T	Phase R	Phase S	Phase T	Limits	Result
	[A]	[A]	[A]	[%]	[%]	[%]	Rsce33	
0	--	--	--	--	--	--	--	--
1	132.717	132.734	132.971	99.405%	99.417%	99.594%	--	--
2	0.286	0.284	0.287	0.214%	0.213%	0.215%	0.60%	PASS
3	0.538	0.711	0.324	0.403%	0.533%	0.243%	21.60%	PASS
4	0.146	0.190	0.198	0.109%	0.142%	0.148%	0.60%	PASS
5	0.739	0.673	0.541	0.554%	0.504%	0.405%	10.70%	PASS
6	0.201	0.157	0.187	0.150%	0.118%	0.140%	0.60%	PASS
7	1.046	0.873	0.634	0.783%	0.654%	0.475%	7.20%	PASS
8	0.263	0.248	0.248	0.197%	0.186%	0.186%	0.60%	PASS
9	0.807	0.596	0.345	0.605%	0.446%	0.258%	3.80%	PASS
10	0.209	0.164	0.181	0.156%	0.123%	0.136%	0.60%	PASS
11	1.481	1.661	1.313	1.109%	1.244%	0.984%	3.10%	PASS
12	0.166	0.151	0.142	0.124%	0.113%	0.106%	0.60%	PASS
13	0.545	0.514	0.227	0.408%	0.385%	0.170%	2.00%	PASS
14	0.041	0.065	0.043	0.031%	0.049%	0.032%	0.57%	PASS
15	0.114	0.096	0.032	0.085%	0.072%	0.024%	0.70%	PASS
16	0.029	0.029	0.027	0.022%	0.021%	0.020%	0.50%	PASS
17	0.123	0.076	0.093	0.092%	0.057%	0.070%	1.20%	PASS
18	0.020	0.019	0.018	0.015%	0.014%	0.014%	0.44%	PASS
19	0.085	0.024	0.016	0.064%	0.018%	0.012%	1.10%	PASS
20	0.018	0.016	0.015	0.013%	0.012%	0.011%	0.40%	PASS
21	0.016	0.014	0.014	0.012%	0.010%	0.010%	0.60%	PASS
22	0.014	0.012	0.012	0.011%	0.009%	0.009%	0.36%	PASS
23	0.014	0.012	0.011	0.010%	0.009%	0.008%	0.90%	PASS
24	0.014	0.011	0.011	0.010%	0.009%	0.008%	0.33%	PASS
25	0.013	0.011	0.010	0.010%	0.008%	0.008%	0.80%	PASS
26	0.012	0.010	0.010	0.009%	0.008%	0.007%	0.31%	PASS
27	0.011	0.010	0.009	0.008%	0.007%	0.007%	0.60%	PASS
28	0.011	0.010	0.009	0.008%	0.007%	0.007%	0.29%	PASS
29	0.011	0.009	0.009	0.008%	0.007%	0.006%	0.70%	PASS
30	0.010	0.009	0.008	0.008%	0.007%	0.006%	0.27%	PASS
31	0.009	0.008	0.008	0.007%	0.006%	0.006%	0.70%	PASS
32	0.009	0.008	0.007	0.007%	0.006%	0.006%	0.25%	PASS
33	0.009	0.008	0.007	0.007%	0.006%	0.005%	0.60%	PASS
34	0.009	0.008	0.007	0.007%	0.006%	0.005%	0.24%	PASS
35	0.008	0.007	0.007	0.006%	0.005%	0.005%	--	--
36	0.008	0.007	0.006	0.006%	0.005%	0.005%	0.22%	PASS
37	0.008	0.007	0.006	0.006%	0.005%	0.005%	--	--

38	0.009	0.007	0.006	0.006%	0.005%	0.005%	0.21%	PASS
39	0.008	0.007	0.006	0.006%	0.005%	0.005%	--	--
40	0.008	0.007	0.006	0.006%	0.005%	0.004%	0.20%	PASS
41	0.008	0.007	0.006	0.006%	0.005%	0.004%	--	--
42	0.008	0.007	0.006	0.006%	0.005%	0.005%	0.19%	PASS
43	0.008	0.007	0.006	0.006%	0.005%	0.004%	--	--
44	0.007	0.006	0.006	0.005%	0.005%	0.004%	0.18%	PASS
45	0.007	0.007	0.006	0.005%	0.005%	0.004%	--	--
46	0.008	0.007	0.006	0.006%	0.005%	0.004%	0.17%	PASS
47	0.008	0.006	0.006	0.006%	0.005%	0.004%	--	--
48	0.007	0.006	0.005	0.005%	0.005%	0.004%	0.17%	PASS
49	0.007	0.006	0.005	0.005%	0.005%	0.004%	--	--
50	0.007	0.006	0.005	0.005%	0.005%	0.004%	0.16%	PASS
THDi	1.74%	1.74%	1.29%					

60%								
Order	**Phase R**	**Phase S**	**Phase T**	**Phase R**	**Phase S**	**Phase T**	**Limits**	**Result**
	[A]	**[A]**	**[A]**	**[%]**	**[%]**	**[%]**	**Rsce33**	
0	--	--	--	--	--	--	--	--
1	79.514	79.555	79.687	59.556%	59.586%	59.685%	--	--
2	0.153	0.146	0.111	0.115%	0.109%	0.083%	0.60%	PASS
3	0.583	0.629	0.350	0.437%	0.471%	0.262%	21.60%	PASS
4	0.154	0.105	0.132	0.115%	0.079%	0.099%	0.60%	PASS
5	0.761	0.560	0.442	0.570%	0.419%	0.331%	10.70%	PASS
6	0.231	0.104	0.176	0.173%	0.078%	0.132%	0.60%	PASS
7	0.807	0.519	0.591	0.604%	0.389%	0.443%	7.20%	PASS
8	0.226	0.233	0.137	0.169%	0.175%	0.102%	0.60%	PASS
9	0.635	0.413	0.205	0.476%	0.310%	0.154%	3.80%	PASS
10	0.186	0.170	0.064	0.139%	0.127%	0.048%	0.60%	PASS
11	0.988	0.988	0.700	0.740%	0.740%	0.524%	3.10%	PASS
12	0.140	0.102	0.091	0.105%	0.076%	0.068%	0.60%	PASS
13	0.618	0.572	0.557	0.463%	0.428%	0.417%	2.00%	PASS
14	0.063	0.072	0.051	0.047%	0.054%	0.038%	0.57%	PASS
15	0.116	0.097	0.030	0.087%	0.073%	0.022%	0.70%	PASS
16	0.026	0.022	0.021	0.020%	0.017%	0.016%	0.50%	PASS
17	0.108	0.184	0.111	0.081%	0.137%	0.083%	1.20%	PASS
18	0.019	0.015	0.016	0.014%	0.011%	0.012%	0.44%	PASS
19	0.067	0.104	0.014	0.050%	0.078%	0.010%	1.10%	PASS
20	0.015	0.012	0.012	0.011%	0.009%	0.009%	0.40%	PASS
21	0.014	0.011	0.011	0.010%	0.008%	0.008%	0.60%	PASS
22	0.013	0.010	0.010	0.010%	0.008%	0.008%	0.36%	PASS
23	0.012	0.009	0.010	0.009%	0.007%	0.007%	0.90%	PASS
24	0.011	0.009	0.009	0.008%	0.007%	0.007%	0.33%	PASS

25	0.010	0.008	0.008	0.008%	0.006%	0.006%	0.80%	PASS
26	0.010	0.008	0.008	0.007%	0.006%	0.006%	0.31%	PASS
27	0.010	0.007	0.008	0.007%	0.006%	0.006%	0.60%	PASS
28	0.009	0.007	0.008	0.007%	0.005%	0.006%	0.29%	PASS
29	0.009	0.007	0.007	0.007%	0.005%	0.005%	0.70%	PASS
30	0.008	0.007	0.007	0.006%	0.005%	0.005%	0.27%	PASS
31	0.008	0.007	0.007	0.006%	0.005%	0.005%	0.70%	PASS
32	0.008	0.006	0.006	0.006%	0.005%	0.005%	0.25%	PASS
33	0.008	0.006	0.006	0.006%	0.004%	0.005%	0.60%	PASS
34	0.008	0.006	0.006	0.006%	0.004%	0.005%	0.24%	PASS
35	0.007	0.006	0.006	0.005%	0.004%	0.004%	--	--
36	0.007	0.006	0.006	0.006%	0.004%	0.004%	0.22%	PASS
37	0.007	0.006	0.006	0.005%	0.004%	0.004%	--	--
38	0.007	0.005	0.006	0.005%	0.004%	0.004%	0.21%	PASS
39	0.007	0.005	0.005	0.005%	0.004%	0.004%	--	--
40	0.007	0.005	0.005	0.005%	0.004%	0.004%	0.20%	PASS
41	0.007	0.005	0.005	0.005%	0.004%	0.004%	--	--
42	0.007	0.005	0.005	0.005%	0.004%	0.004%	0.19%	PASS
43	0.007	0.005	0.005	0.005%	0.004%	0.004%	--	--
44	0.006	0.005	0.005	0.005%	0.004%	0.004%	0.18%	PASS
45	0.006	0.005	0.005	0.005%	0.004%	0.004%	--	--
46	0.007	0.005	0.005	0.005%	0.004%	0.004%	0.17%	PASS
47	0.007	0.005	0.005	0.005%	0.004%	0.004%	--	--
48	0.006	0.005	0.005	0.005%	0.004%	0.004%	0.17%	PASS
49	0.006	0.005	0.005	0.005%	0.004%	0.003%	--	--
50	0.006	0.005	0.005	0.005%	0.004%	0.004%	0.16%	PASS
THDi	1.42%	1.22%	0.95%					

33%								
Order	**Phase R**	**Phase S**	**Phase T**	**Phase R**	**Phase S**	**Phase T**	**Limits**	**Result**
	[A]	**[A]**	**[A]**	**[%]**	**[%]**	**[%]**	**Rsce33**	
0	--	--	--	--	--	--	--	--
1	39.398	39.439	39.492	29.509%	29.539%	29.579%	--	--
2	0.171	0.181	0.154	0.128%	0.136%	0.115%	0.60%	PASS
3	0.436	0.406	0.308	0.326%	0.304%	0.230%	21.60%	PASS
4	0.190	0.140	0.158	0.142%	0.105%	0.119%	0.60%	PASS
5	0.499	0.420	0.288	0.374%	0.314%	0.215%	10.70%	PASS
6	0.192	0.121	0.145	0.144%	0.090%	0.108%	0.60%	PASS
7	0.710	0.499	0.518	0.532%	0.374%	0.388%	7.20%	PASS
8	0.236	0.208	0.115	0.177%	0.156%	0.086%	0.60%	PASS
9	0.488	0.339	0.160	0.365%	0.254%	0.120%	3.80%	PASS
10	0.085	0.085	0.054	0.064%	0.064%	0.040%	0.60%	PASS
11	0.804	0.863	0.668	0.602%	0.646%	0.501%	3.10%	PASS

12	0.108	0.079	0.072	0.081%	0.060%	0.054%	0.60%	PASS
13	0.587	0.582	0.497	0.440%	0.436%	0.372%	2.00%	PASS
14	0.044	0.050	0.040	0.033%	0.038%	0.030%	0.57%	PASS
15	0.038	0.033	0.023	0.029%	0.025%	0.017%	0.70%	PASS
16	0.016	0.021	0.017	0.012%	0.015%	0.012%	0.50%	PASS
17	0.016	0.022	0.015	0.012%	0.017%	0.011%	1.20%	PASS
18	0.012	0.015	0.012	0.009%	0.011%	0.009%	0.44%	PASS
19	0.010	0.013	0.011	0.008%	0.010%	0.008%	1.10%	PASS
20	0.010	0.012	0.010	0.007%	0.009%	0.008%	0.40%	PASS
21	0.009	0.011	0.009	0.007%	0.008%	0.007%	0.60%	PASS
22	0.008	0.010	0.008	0.006%	0.007%	0.006%	0.36%	PASS
23	0.008	0.009	0.008	0.006%	0.007%	0.006%	0.90%	PASS
24	0.007	0.008	0.007	0.005%	0.006%	0.005%	0.33%	PASS
25	0.007	0.008	0.007	0.005%	0.006%	0.005%	0.80%	PASS
26	0.007	0.008	0.007	0.005%	0.006%	0.005%	0.31%	PASS
27	0.006	0.007	0.006	0.005%	0.005%	0.005%	0.60%	PASS
28	0.006	0.007	0.006	0.004%	0.005%	0.005%	0.29%	PASS
29	0.006	0.007	0.006	0.004%	0.005%	0.004%	0.70%	PASS
30	0.005	0.006	0.006	0.004%	0.005%	0.004%	0.27%	PASS
31	0.005	0.006	0.006	0.004%	0.005%	0.004%	0.70%	PASS
32	0.005	0.006	0.005	0.004%	0.005%	0.004%	0.25%	PASS
33	0.005	0.006	0.005	0.004%	0.004%	0.004%	0.60%	PASS
34	0.005	0.006	0.005	0.004%	0.004%	0.004%	0.24%	PASS
35	0.005	0.006	0.005	0.004%	0.004%	0.004%	--	--
36	0.005	0.006	0.005	0.003%	0.004%	0.004%	0.22%	PASS
37	0.005	0.006	0.005	0.003%	0.004%	0.004%	--	--
38	0.005	0.005	0.004	0.003%	0.004%	0.003%	0.21%	PASS
39	0.004	0.005	0.004	0.003%	0.004%	0.003%	--	--
40	0.004	0.005	0.005	0.003%	0.004%	0.003%	0.20%	PASS
41	0.004	0.005	0.004	0.003%	0.004%	0.003%	--	--
42	0.004	0.005	0.004	0.003%	0.004%	0.003%	0.19%	PASS
43	0.004	0.005	0.004	0.003%	0.004%	0.003%	--	--
44	0.004	0.005	0.004	0.003%	0.004%	0.003%	0.18%	PASS
45	0.004	0.005	0.004	0.003%	0.004%	0.003%	--	--
46	0.004	0.005	0.004	0.003%	0.004%	0.003%	0.17%	PASS
47	0.004	0.005	0.004	0.003%	0.003%	0.003%	--	--
48	0.004	0.005	0.004	0.003%	0.004%	0.003%	0.17%	PASS
49	0.004	0.005	0.004	0.003%	0.004%	0.003%	--	--
50	0.004	0.005	0.004	0.003%	0.003%	0.003%	0.16%	PASS
THDi	1.15%	1.04%	0.84%					

INTER-HARMONICS:

Inter-Harmonics [%]											
Order	0% P/Pn	10% P/Pn	20% P/Pn	30% P/Pn	40% P/Pn	50% P/Pn	60% P/Pn	70% P/Pn	80% P/Pn	90% P/Pn	100% P/Pn
1.5	0.021%	0.030%	0.038%	0.051%	0.061%	0.078%	0.074%	0.078%	0.084%	0.082%	0.099%
2.5	0.028%	0.051%	0.066%	0.080%	0.091%	0.111%	0.097%	0.088%	0.087%	0.085%	0.100%
3.5	0.036%	0.081%	0.100%	0.117%	0.115%	0.118%	0.125%	0.128%	0.130%	0.126%	0.121%
4.5	0.051%	0.088%	0.111%	0.127%	0.133%	0.138%	0.135%	0.126%	0.131%	0.127%	0.134%
5.5	0.063%	0.093%	0.112%	0.134%	0.134%	0.128%	0.133%	0.136%	0.144%	0.138%	0.131%
6.5	0.070%	0.079%	0.111%	0.132%	0.143%	0.145%	0.142%	0.136%	0.157%	0.150%	0.152%
7.5	0.090%	0.113%	0.162%	0.212%	0.239%	0.233%	0.234%	0.236%	0.250%	0.257%	0.269%
8.5	0.086%	0.088%	0.109%	0.151%	0.150%	0.160%	0.173%	0.181%	0.172%	0.178%	0.198%
9.5	0.087%	0.085%	0.101%	0.105%	0.118%	0.126%	0.140%	0.145%	0.160%	0.175%	0.164%
10.5	0.128%	0.149%	0.144%	0.132%	0.140%	0.142%	0.151%	0.161%	0.192%	0.201%	0.196%
11.5	0.185%	0.264%	0.194%	0.192%	0.222%	0.227%	0.216%	0.238%	0.317%	0.322%	0.328%
12.5	0.095%	0.047%	0.102%	0.093%	0.092%	0.094%	0.110%	0.122%	0.136%	0.118%	0.106%
13.5	0.127%	0.036%	0.105%	0.136%	0.156%	0.162%	0.167%	0.176%	0.112%	0.088%	0.095%
14.5	0.042%	0.022%	0.028%	0.035%	0.054%	0.054%	0.049%	0.043%	0.033%	0.030%	0.038%
15.5	0.036%	0.021%	0.018%	0.024%	0.039%	0.039%	0.034%	0.029%	0.026%	0.025%	0.032%
16.5	0.028%	0.014%	0.014%	0.018%	0.031%	0.029%	0.026%	0.021%	0.019%	0.019%	0.026%
17.5	0.025%	0.015%	0.012%	0.015%	0.026%	0.025%	0.022%	0.017%	0.017%	0.017%	0.022%
18.5	0.020%	0.011%	0.010%	0.013%	0.023%	0.023%	0.019%	0.015%	0.014%	0.013%	0.017%
19.5	0.018%	0.011%	0.009%	0.011%	0.021%	0.020%	0.017%	0.013%	0.012%	0.012%	0.016%
20.5	0.016%	0.010%	0.008%	0.010%	0.020%	0.017%	0.015%	0.012%	0.011%	0.011%	0.016%
21.5	0.013%	0.009%	0.008%	0.010%	0.017%	0.017%	0.014%	0.011%	0.010%	0.010%	0.014%
22.5	0.010%	0.008%	0.007%	0.009%	0.016%	0.016%	0.014%	0.010%	0.010%	0.009%	0.012%
23.5	0.009%	0.008%	0.007%	0.008%	0.016%	0.014%	0.012%	0.009%	0.009%	0.009%	0.012%
24.5	0.008%	0.008%	0.006%	0.008%	0.015%	0.013%	0.011%	0.008%	0.009%	0.008%	0.012%
25.5	0.007%	0.006%	0.006%	0.007%	0.014%	0.013%	0.011%	0.008%	0.008%	0.008%	0.012%
26.5	0.007%	0.007%	0.005%	0.007%	0.013%	0.013%	0.011%	0.007%	0.008%	0.008%	0.011%
27.5	0.005%	0.006%	0.005%	0.007%	0.013%	0.011%	0.010%	0.007%	0.008%	0.008%	0.010%
28.5	0.006%	0.007%	0.005%	0.006%	0.013%	0.011%	0.010%	0.007%	0.008%	0.007%	0.010%
29.5	0.005%	0.005%	0.005%	0.006%	0.012%	0.011%	0.009%	0.007%	0.007%	0.007%	0.010%
30.5	0.005%	0.006%	0.005%	0.006%	0.011%	0.011%	0.009%	0.006%	0.007%	0.007%	0.010%
31.5	0.005%	0.005%	0.005%	0.006%	0.011%	0.010%	0.009%	0.006%	0.007%	0.007%	0.009%
32.5	0.005%	0.006%	0.004%	0.006%	0.011%	0.010%	0.009%	0.006%	0.007%	0.007%	0.009%
33.5	0.004%	0.005%	0.004%	0.005%	0.011%	0.010%	0.008%	0.006%	0.006%	0.007%	0.009%
34.5	0.005%	0.006%	0.004%	0.005%	0.010%	0.010%	0.008%	0.006%	0.006%	0.006%	0.008%
35.5	0.004%	0.005%	0.004%	0.005%	0.010%	0.009%	0.008%	0.005%	0.006%	0.006%	0.008%
36.5	0.005%	0.005%	0.004%	0.005%	0.010%	0.009%	0.008%	0.005%	0.006%	0.006%	0.007%
37.5	0.004%	0.005%	0.004%	0.005%	0.010%	0.009%	0.008%	0.005%	0.006%	0.006%	0.008%
38.5	0.004%	0.005%	0.004%	0.005%	0.009%	0.009%	0.007%	0.005%	0.006%	0.006%	0.008%
39.5	0.004%	0.005%	0.004%	0.005%	0.009%	0.008%	0.007%	0.005%	0.006%	0.005%	0.008%
40.5	0.004%	0.005%	0.004%	0.005%	0.010%	0.008%	0.007%	0.005%	0.005%	0.005%	0.007%

HIGHER FREQUENCY HARMONICS:

Order	Frequency		High frequency harmonics [%]									
		0% P/Pn	10% P/Pn	20% P/Pn	30% P/Pn	40% P/Pn	50% P/Pn	60% P/Pn	70% P/Pn	80% P/Pn	90% P/Pn	100% P/Pn
42	2100	0.003%	0.004%	0.003%	0.003%	0.007%	0.007%	0.005%	0.004%	0.004%	0.005%	0.006%
46	2300	0.004%	0.004%	0.003%	0.003%	0.006%	0.007%	0.005%	0.004%	0.004%	0.005%	0.006%
50	2500	0.003%	0.004%	0.003%	0.004%	0.007%	0.005%	0.005%	0.004%	0.005%	0.004%	0.006%
54	2700	0.003%	0.004%	0.003%	0.003%	0.006%	0.006%	0.005%	0.003%	0.004%	0.004%	0.006%
58	2900	0.003%	0.004%	0.003%	0.003%	0.007%	0.006%	0.006%	0.004%	0.005%	0.004%	0.006%
62	3100	0.003%	0.004%	0.002%	0.004%	0.006%	0.006%	0.005%	0.004%	0.004%	0.005%	0.006%
66	3300	0.002%	0.004%	0.003%	0.003%	0.006%	0.005%	0.005%	0.004%	0.004%	0.004%	0.006%
70	3500	0.003%	0.004%	0.003%	0.003%	0.007%	0.006%	0.005%	0.003%	0.005%	0.005%	0.006%
74	3700	0.003%	0.003%	0.003%	0.004%	0.007%	0.007%	0.005%	0.004%	0.004%	0.005%	0.005%
78	3900	0.000%	0.000%	0.000%	0.000%	0.000%	0.001%	0.000%	0.001%	0.001%	0.001%	0.000%
82	4100	0.001%	0.000%	0.001%	0.000%	0.001%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
86	4300	0.001%	0.000%	0.000%	0.000%	0.000%	0.000%	0.001%	0.001%	0.000%	0.001%	0.000%
90	4500	0.000%	0.001%	0.001%	0.000%	0.001%	0.001%	0.001%	0.000%	0.001%	0.000%	0.001%
94	4700	0.000%	0.001%	0.001%	0.000%	0.000%	0.001%	0.001%	0.000%	0.000%	0.001%	0.001%
98	4900	0.000%	0.000%	0.000%	0.001%	0.000%	0.000%	0.001%	0.000%	0.001%	0.001%	0.000%
102	5100	0.000%	0.001%	0.001%	0.000%	0.001%	0.001%	0.000%	0.001%	0.000%	0.000%	0.000%
106	5300	0.000%	0.001%	0.000%	0.000%	0.000%	0.000%	0.000%	0.001%	0.001%	0.000%	0.000%
110	5500	0.001%	0.000%	0.000%	0.000%	0.001%	0.001%	0.001%	0.000%	0.000%	0.000%	0.001%
114	5700	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.001%	0.001%	0.000%	0.001%
118	5900	0.001%	0.001%	0.000%	0.000%	0.000%	0.000%	0.001%	0.001%	0.000%	0.001%	0.000%
122	6100	0.000%	0.000%	0.000%	0.001%	0.001%	0.000%	0.000%	0.000%	0.001%	0.001%	0.000%
126	6300	0.000%	0.001%	0.001%	0.001%	0.000%	0.000%	0.000%	0.001%	0.001%	0.000%	0.000%
130	6500	0.000%	0.001%	0.000%	0.001%	0.000%	0.000%	0.001%	0.000%	0.000%	0.000%	0.000%
134	6700	0.000%	0.000%	0.001%	0.001%	0.001%	0.001%	0.000%	0.000%	0.001%	0.001%	0.000%
138	6900	0.000%	0.000%	0.000%	0.000%	0.000%	0.001%	0.000%	0.000%	0.001%	0.001%	0.000%
142	7100	0.000%	0.000%	0.000%	0.000%	0.001%	0.000%	0.001%	0.000%	0.001%	0.001%	0.001%
146	7300	0.000%	0.000%	0.001%	0.001%	0.000%	0.000%	0.000%	0.001%	0.001%	0.000%	0.001%
150	7500	0.000%	0.001%	0.000%	0.000%	0.001%	0.000%	0.001%	0.001%	0.001%	0.000%	0.000%
154	7700	0.001%	0.001%	0.001%	0.000%	0.001%	0.000%	0.000%	0.000%	0.000%	0.001%	0.001%
158	7900	0.001%	0.000%	0.000%	0.000%	0.000%	0.001%	0.001%	0.000%	0.000%	0.001%	0.000%
162	8100	0.001%	0.000%	0.000%	0.000%	0.000%	0.001%	0.000%	0.000%	0.000%	0.000%	0.000%
166	8300	0.001%	0.000%	0.000%	0.000%	0.001%	0.000%	0.001%	0.000%	0.001%	0.001%	0.000%
170	8500	0.001%	0.000%	0.000%	0.001%	0.000%	0.000%	0.000%	0.001%	0.001%	0.001%	0.001%
174	8700	0.000%	0.001%	0.000%	0.000%	0.000%	0.000%	0.000%	0.001%	0.000%	0.000%	0.000%
178	8900	0.000%	0.000%	0.000%	0.000%	0.000%	0.001%	0.000%	0.001%	0.000%	0.000%	0.000%

This extract from the test report is only valid in conjunction with the test report no.: 28112188 015 rev.01

Reviewed by:

05/03/2019	Marco Piva / BFM	
Datum *Date*	**Name/Stellung** *Name/Position*	**Unterschrift** *Signature*