

Test Report No.: PV180416E09

Client

Name : Ablerex Electronics Co., Ltd.
Address : 1F, No. 3, Lane 7, Paokao Rd., Hsintien, New Taipei City, Taiwan

Test Item : Grid-tied photovoltaic inverter

Identification : ES 7200HC

Testing laboratory


Name : Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Address : No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan

Test specification

Standard : IEEE 519:2014

Test Result : The test item passed.

Prepared By :


Signature
Issac Chen
Senior Engineer

2018-05-22
Date

Approved By:



Signature
Edward Chiueh
Technical Manager

2018-05-22
Date

Other Aspects:

The completed test report includes the following documents:
IEEE 519:2014 report (24 pages)

This report is for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence, provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents. Unless specific mention, the uncertainty of measurement has been explicitly taken into account to declare the compliance or non-compliance to the specification

TEST REPORT	
IEEE 519:2014	
IEEE Recommended Practice and Requirements for Harmonic Control in Electric Power Systems	
Report reference No.	PV180416E09
Tested by (printed name and signature)	See cover sheet
Approved by (printed name and signature)	See cover sheet
Date of issue	2018-05-22
Testing Laboratory Name	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Address.....	No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan
Testing location.....	Bureau Veritas Consumer Product Services Limited, Taoyuan Branch
Address.....	No. 19, Hwa Ya 2nd Rd., Wen Hwa Tsuen, Kwei Shan Hsiang, Taoyuan Hsien 333, Taiwan
Applicant's Name	Ablerex Electronics Co., Ltd.
Address	1F, No. 3, Lane 7, Paokao Rd., Hsintien, New Taipei City, Taiwan
Test specification	
Standard	IEEE 519:2014
Non-standard test method	None
Test Report Form No.	IEEE 519:2014_A
Master TRF	Bureau Veritas Consumer Product Services GmbH
Copyright © Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch	
Test item description	Solar Inverter
Trademark	
Model / Type	ES 7200HC
Ratings.....	
PV Array Input DC voltage range [V]:	150-1000 Vdc
PV Array Input DC current [A]	12 A
Output AC voltage [V]	220 Vac
Output AC current [A]	32,7 A
Output power [kVA]	7,2 kVA

Copy of marking plate

型號: ES 7200HC

直流輸入

電壓範圍: 150~1,000 Vdc

最大連續電流: 12 Amp

額定交流輸出

功率: 7.2kVA / 7.2kW

功率因數: 0.9~1.0

電壓: 220 Vac

最大連續電流: 34.36 Amp

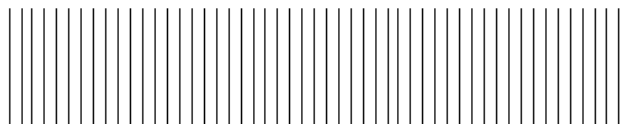
頻率: 60 Hz

配線方式: 單相三線式

侵入保護: IP65

盈正豫順電子股份有限公司

ABLEREX ELECTRONICS CO., LTD.



MA3C013000001

History Sheet:

Name	Date	Comment	Revision
Issac Chen	2018-05-22	Initial report was written	Rev. 0

Address of the manufacturer sites:

1) Ablerex Electronics (SUZHOU) Co., Ltd.

No. 36 Wang Wu Road, Wu Zhong District Suzhou, 215128, P.R. China

2) Ablerex Electronics Co., Ltd.

No. 1-1, Gongye Rd., Pingtung City, Pingtung Country 90049, Taiwan

Particulars:	
Equipment mobility	Permanent connection
Operating condition	Continuous
Class of equipment	Class I
Test case verdicts:	
Test case does not apply to the test object	N/A
Test item does meet the requirement	P(ass)
Test item does not meet the requirement	F(ail)
Testing:	
Date of receipt of test item	2018-04-16
Date(s) of performance of test	2018-04-16 to 2018-04-23
<p>General remarks:</p> <p>The test result presented in this report relate only to the object(s) tested. This report shall not be reproduced, except in full, without the written approval of the applicant. Throughout this report a comma is used as the decimal separator.</p> <p>Model Differences:</p> <p>N/A</p> <p>This Test Report consists of the following documents:</p> <ol style="list-style-type: none"> 1. Test Results 2. Annex 1: Pictures of the unit 3. Annex 2: Test equipment list 	

4.5 (B1) Harmonic Current Limit Test				P
Test Sample: ES 7200HC				
Watts [kW]		7,257		
VA [kVA]		7,262		
Vrms [V]		220,58		
Arms [A]		32,905		
Power Factor		0,9993		
THD [%]		3,235		
Harmonics	Current Magnitude (A)	% of Fundamental	Phase	Harmonic Current Limits (%)
1st	32,887	—	Single Phase	--
2nd	0,075	0,23	Single Phase	1%
3rd	0,896	2,73	Single Phase	4%
4th	0,187	0,57	Single Phase	1%
5th	0,296	0,90	Single Phase	4%
6th	0,045	0,14	Single Phase	1%
7th	0,180	0,55	Single Phase	4%
8th	0,043	0,13	Single Phase	1%
9th	0,230	0,70	Single Phase	4%
10th	0,044	0,13	Single Phase	1%
11th	0,184	0,56	Single Phase	2%
12th	0,045	0,14	Single Phase	0,5%
13th	0,166	0,50	Single Phase	2%
14th	0,041	0,12	Single Phase	0,5%
15th	0,114	0,35	Single Phase	2%
16th	0,034	0,10	Single Phase	0,5%
17th	0,087	0,26	Single Phase	1,5%
18th	0,033	0,10	Single Phase	0,375%
19th	0,067	0,20	Single Phase	1,5%
20th	0,031	0,09	Single Phase	0,375%
21th	0,068	0,21	Single Phase	1,5%
22th	0,027	0,08	Single Phase	0,375%
23th	0,047	0,14	Single Phase	0,6%
24th	0,024	0,07	Single Phase	0,15%
25th	0,045	0,14	Single Phase	0,6%
26th	0,022	0,07	Single Phase	0,15%
27th	0,033	0,10	Single Phase	0,6%
28th	0,019	0,06	Single Phase	0,15%
29th	0,036	0,11	Single Phase	0,6%
30th	0,018	0,05	Single Phase	0,15%
31th	0,027	0,08	Single Phase	0,6%
32th	0,015	0,04	Single Phase	0,15%
33th	0,023	0,07	Single Phase	0,6%
34th	0,014	0,04	Single Phase	0,15%
35th	0,020	0,06	Single Phase	0,3%
36th	0,012	0,04	Single Phase	N/A
37th	0,019	0,06	Single Phase	N/A
38th	0,012	0,04	Single Phase	N/A
39th	0,017	0,05	Single Phase	N/A
40th	0,010	0,03	Single Phase	N/A

Note:

$I_{SC}/I_L = 1$

Ref. to Table 2 of the IEEE 519:2014

4.5 (B1) Harmonic Voltage Limit Test				P
Test conditions:				
THD50			0,072	
Harmonics	Voltage Magnitude (V)	% of Fundamental	Phase	Harmonic Limits of Test Voltage (%)
1st	220,50	--	Single Phase	--
2nd	0,006	0,003%	Single Phase	3%
3rd	0,090	0,041%	Single Phase	3%
4th	0,009	0,004%	Single Phase	3%
5th	0,071	0,032%	Single Phase	3%
6th	0,006	0,003%	Single Phase	3%
7th	0,015	0,007%	Single Phase	3%
8th	0,006	0,003%	Single Phase	3%
9th	0,030	0,014%	Single Phase	3%
10th	0,009	0,004%	Single Phase	3%
11th	0,043	0,020%	Single Phase	3%
12th	0,006	0,003%	Single Phase	3%
13th	0,042	0,019%	Single Phase	3%
14th	0,010	0,005%	Single Phase	3%
15th	0,036	0,016%	Single Phase	3%
16th	0,006	0,003%	Single Phase	3%
17th	0,024	0,011%	Single Phase	3%
18th	0,007	0,003%	Single Phase	3%
19th	0,024	0,011%	Single Phase	3%
20th	0,008	0,003%	Single Phase	3%
21th	0,033	0,015%	Single Phase	3%
22th	0,005	0,002%	Single Phase	3%
23th	0,021	0,009%	Single Phase	3%
24th	0,005	0,002%	Single Phase	3%
25th	0,020	0,009%	Single Phase	3%
26th	0,006	0,003%	Single Phase	3%
27th	0,019	0,009%	Single Phase	3%
28th	0,005	0,002%	Single Phase	3%
29th	0,022	0,010%	Single Phase	3%
30th	0,006	0,003%	Single Phase	3%
31th	0,016	0,007%	Single Phase	3%
32th	0,004	0,002%	Single Phase	3%
33th	0,012	0,005%	Single Phase	3%
34th	0,005	0,002%	Single Phase	3%
35th	0,012	0,005%	Single Phase	3%
36th	0,005	0,002%	Single Phase	3%
37th	0,014	0,006%	Single Phase	3%
38th	0,005	0,002%	Single Phase	3%
39th	0,013	0,006%	Single Phase	3%
40th	0,004	0,002%	Single Phase	3%
41th	0,011	0,005%	Single Phase	3%
42th	0,003	0,001%	Single Phase	3%
43th	0,009	0,004%	Single Phase	3%
44th	0,004	0,002%	Single Phase	3%
45th	0,009	0,004%	Single Phase	3%
46th	0,003	0,001%	Single Phase	3%

47th	0,009	0,004%	Single Phase	3%
48th	0,003	0,001%	Single Phase	3%
49th	0,008	0,004%	Single Phase	3%
Note:				

Annex 1

Pictures of the unit

**Inverter
Enclosure front**



Enclosure top/right side



Enclosure back side



Enclosure top



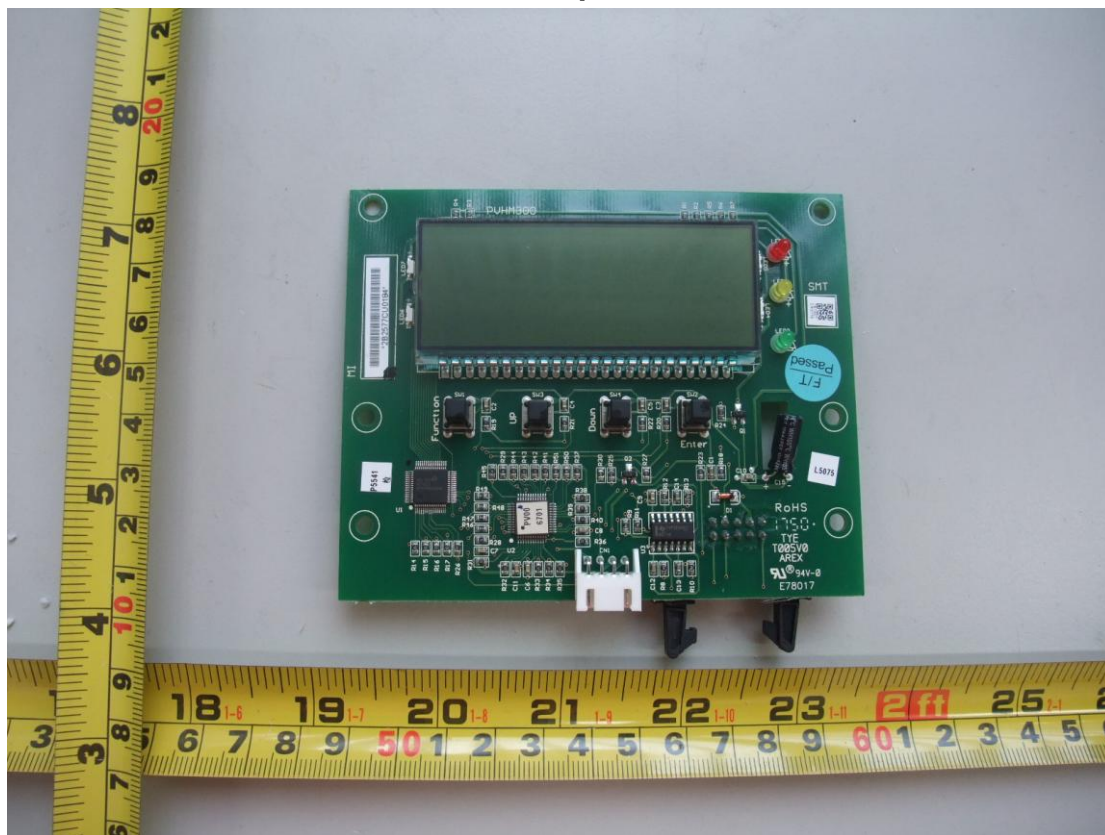
Enclosure left side



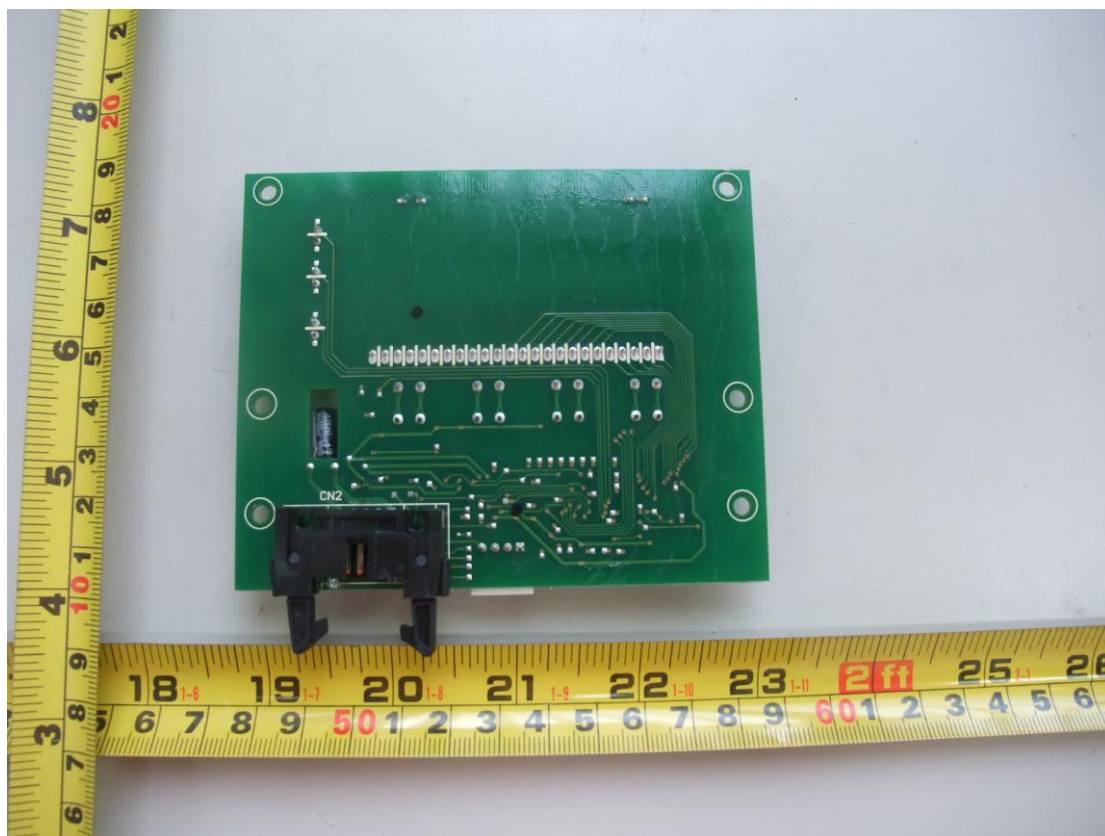
Inverter Interior view



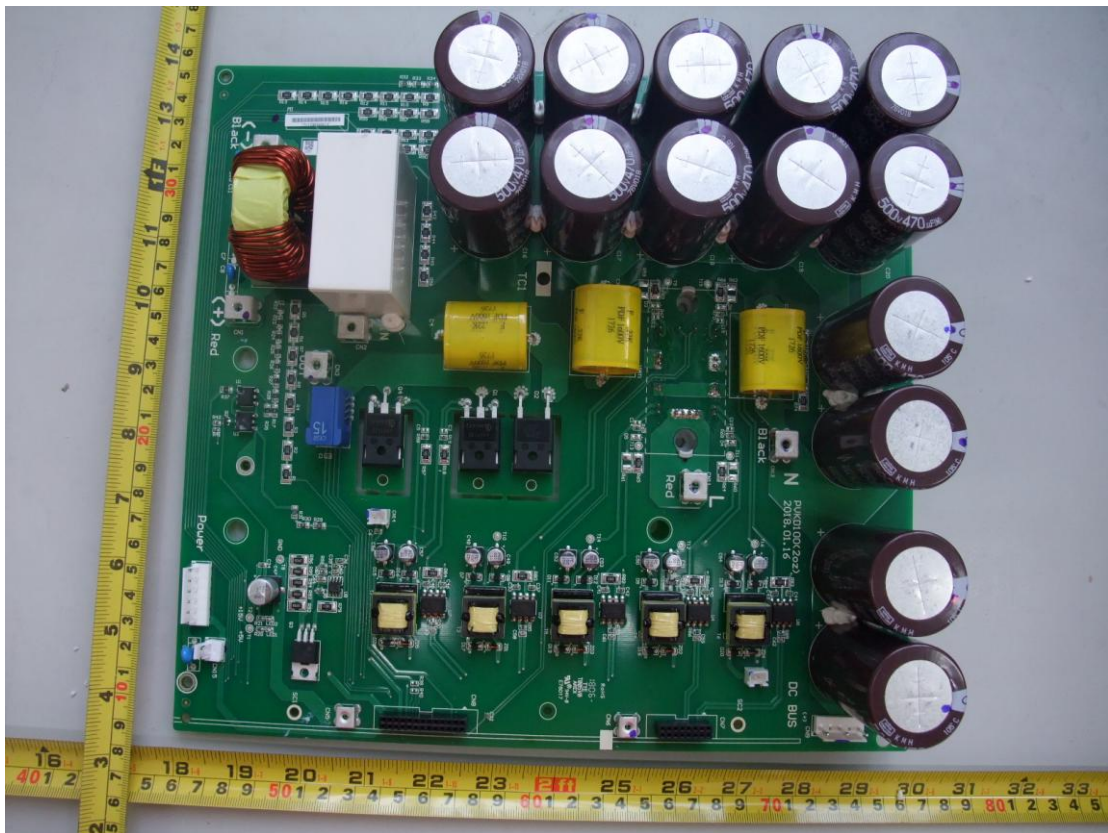
PVHM3 board_component side view



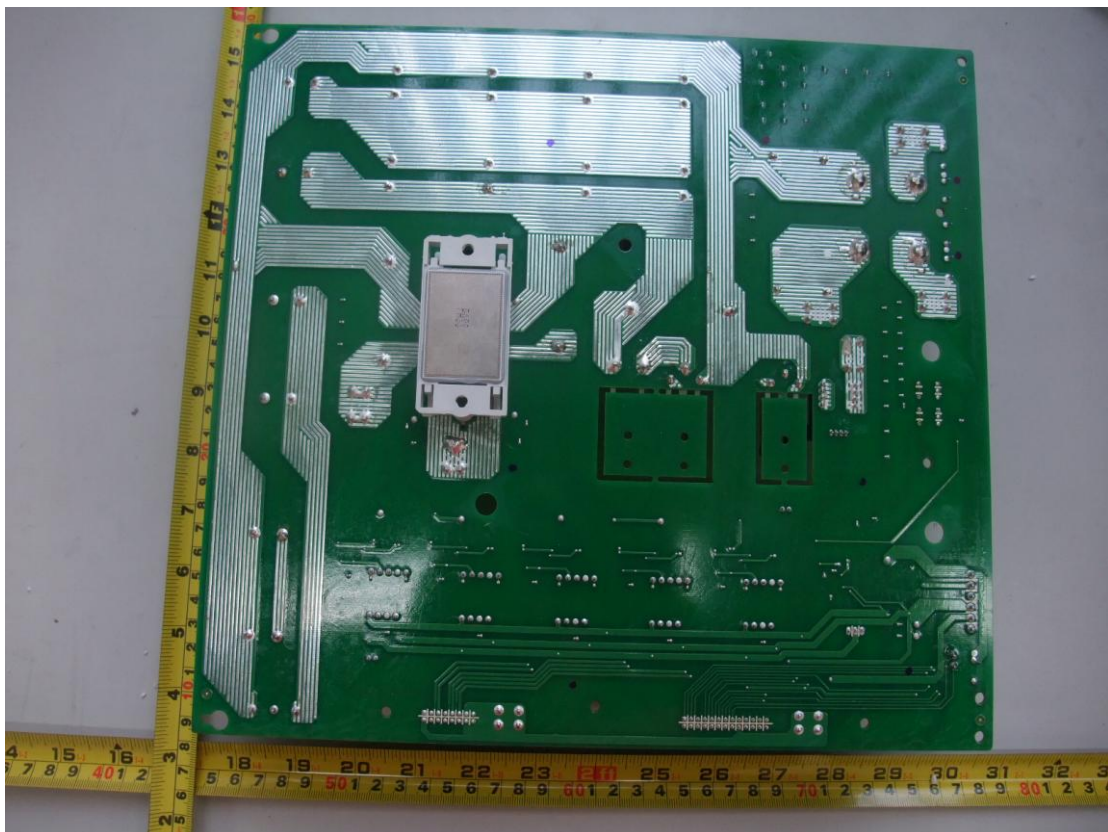
PVHM3 board_Solder side view



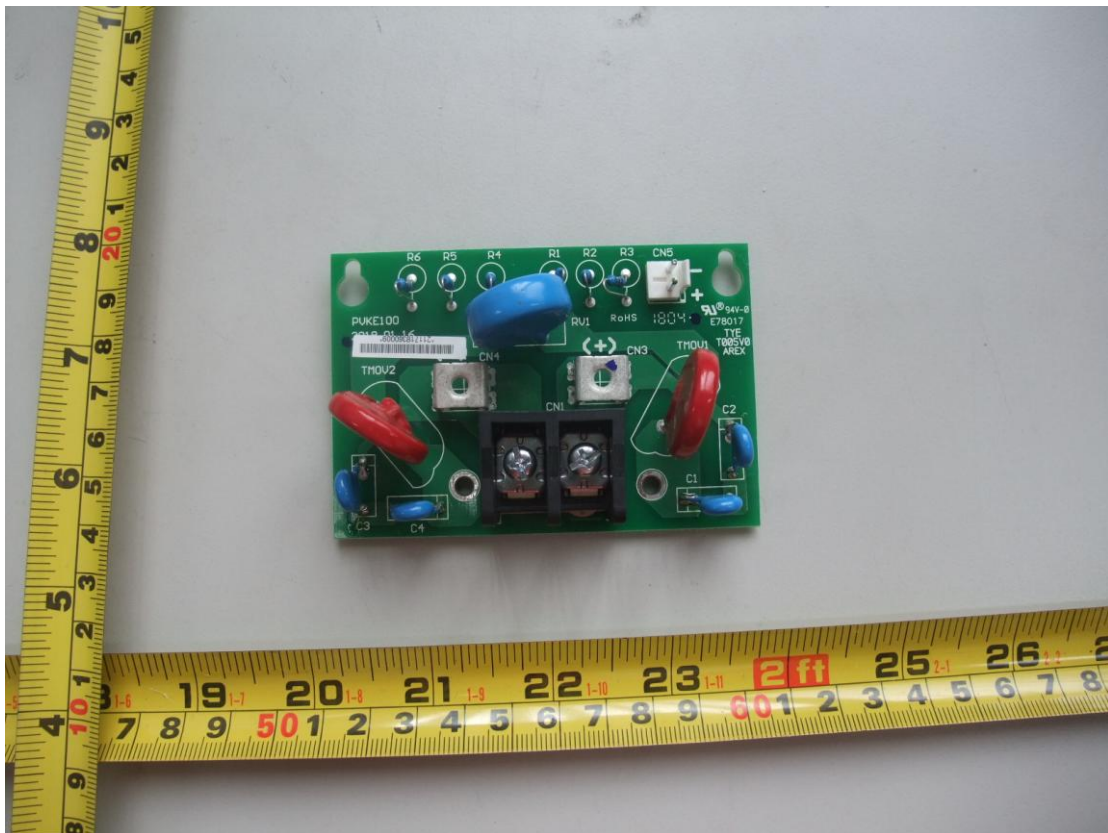
PVKD1 board_component side view



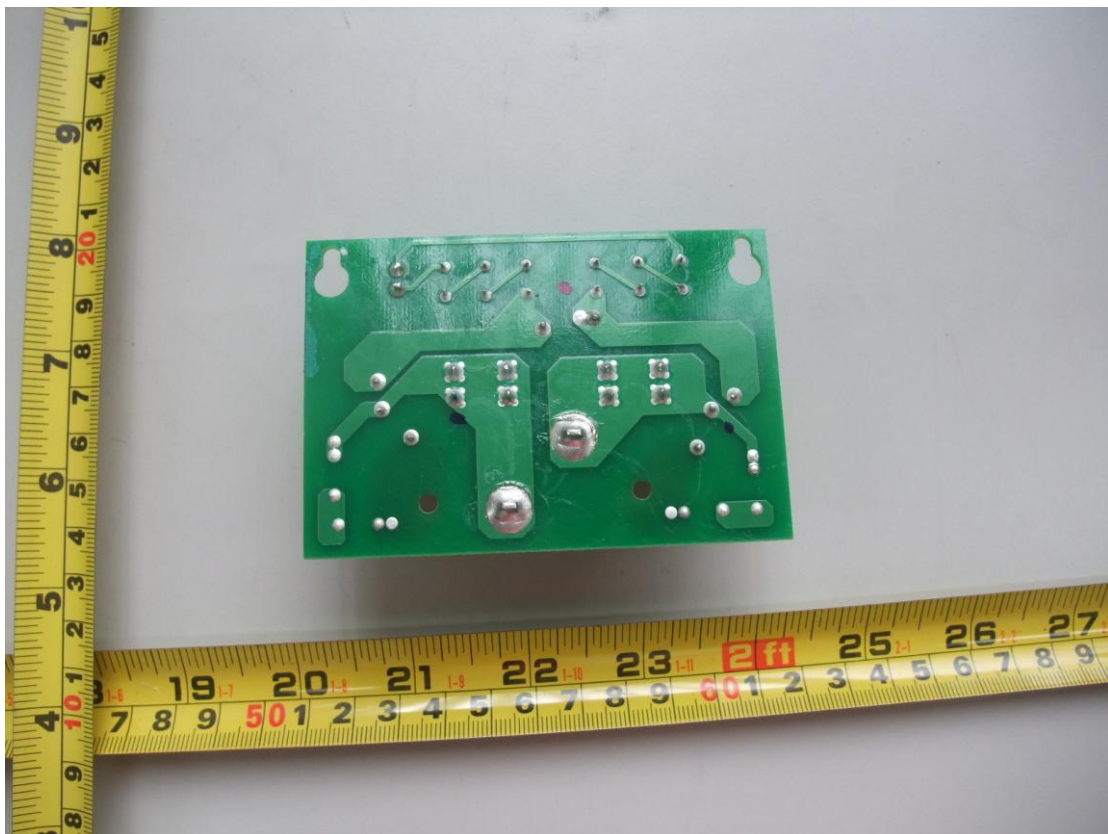
PVKD1 board_Solder side view



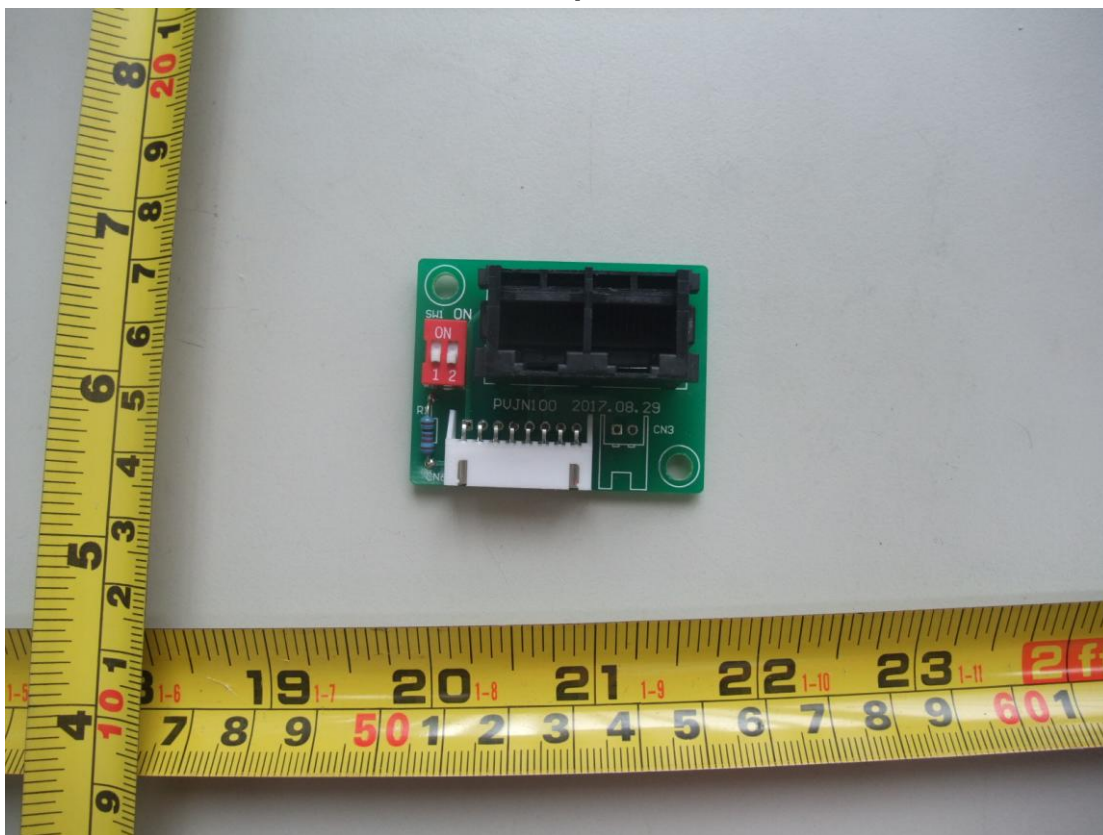
PVKE1 Board_component side view



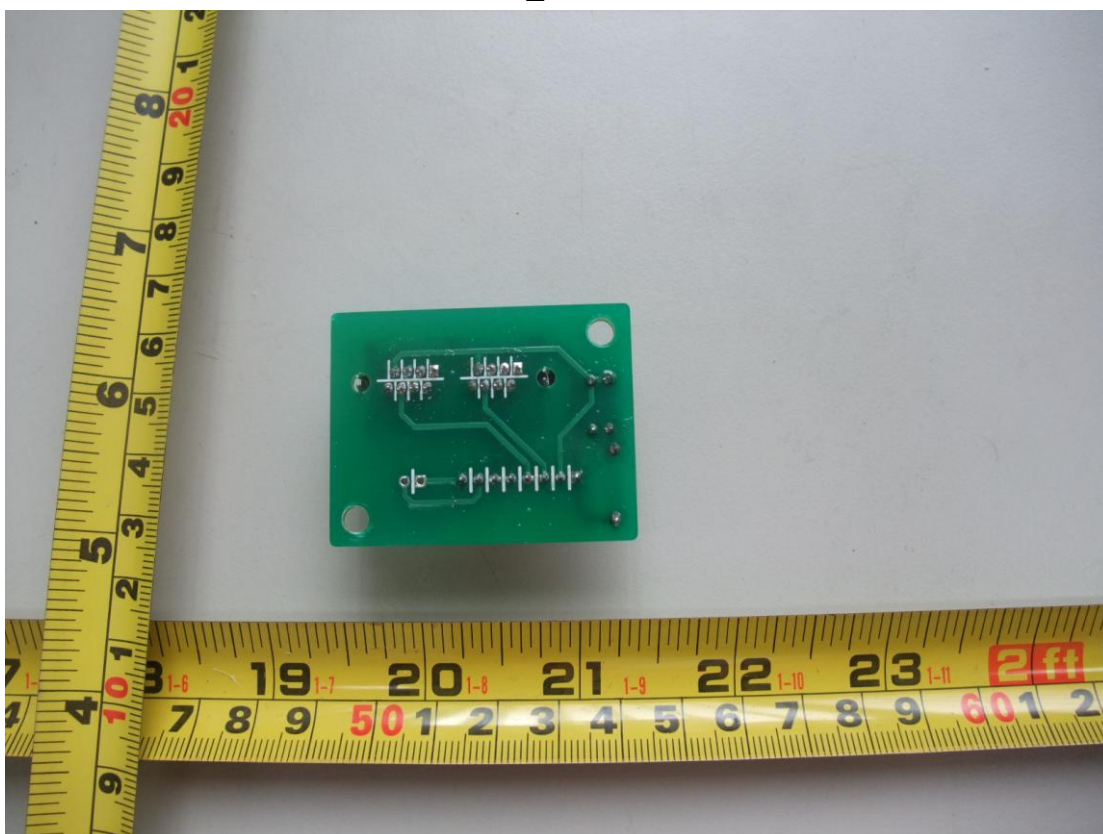
PVKE1 Board_Solder side view



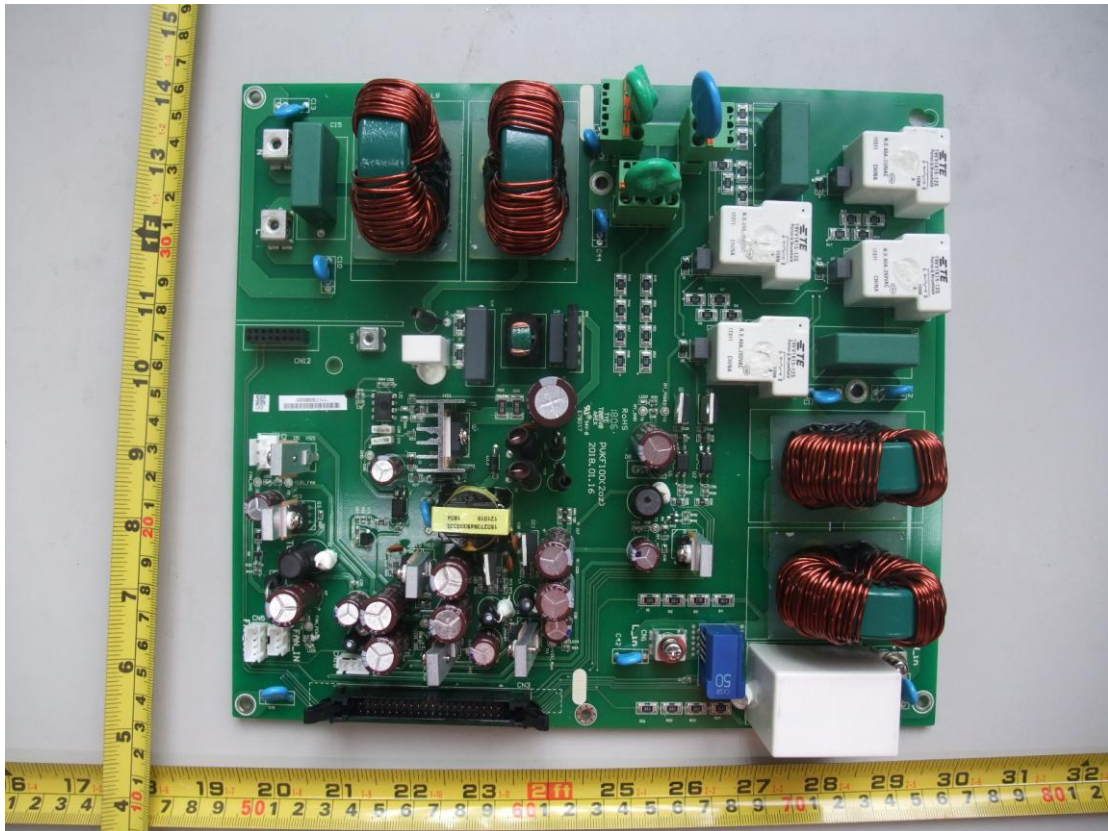
PVNIJ1 Board_component side view



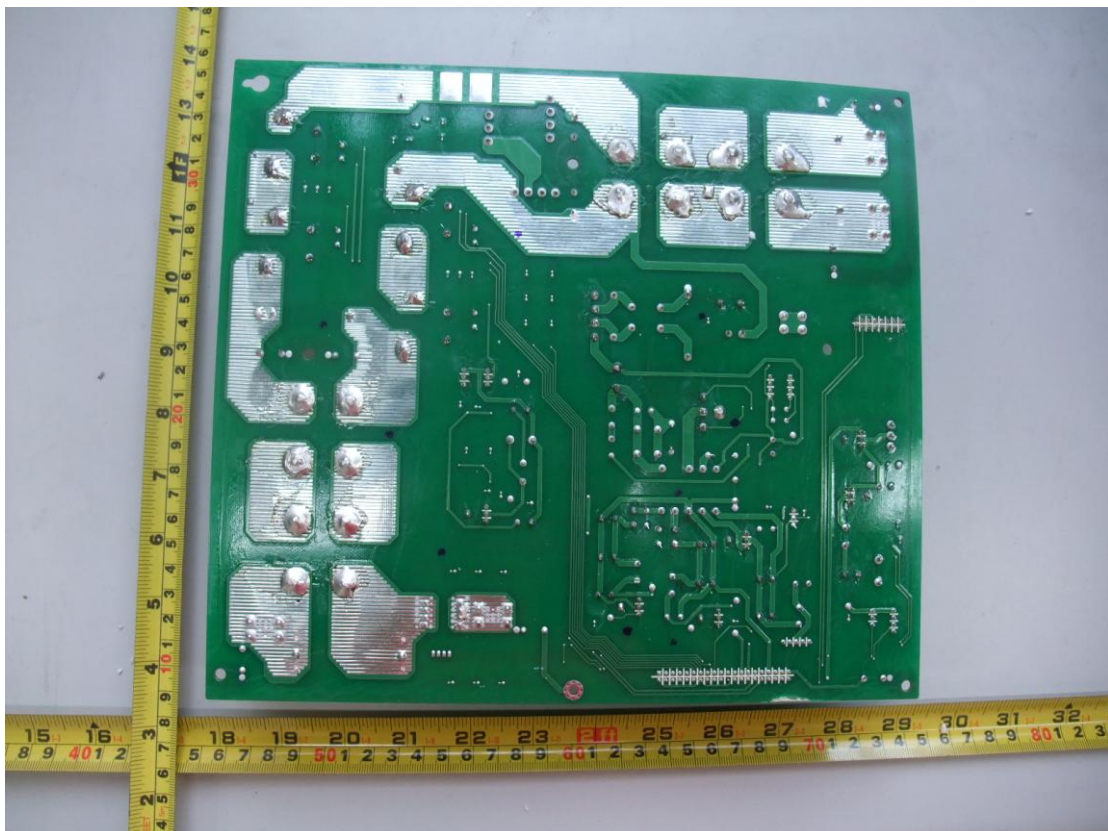
PVNIJ1 Board_Solder side view



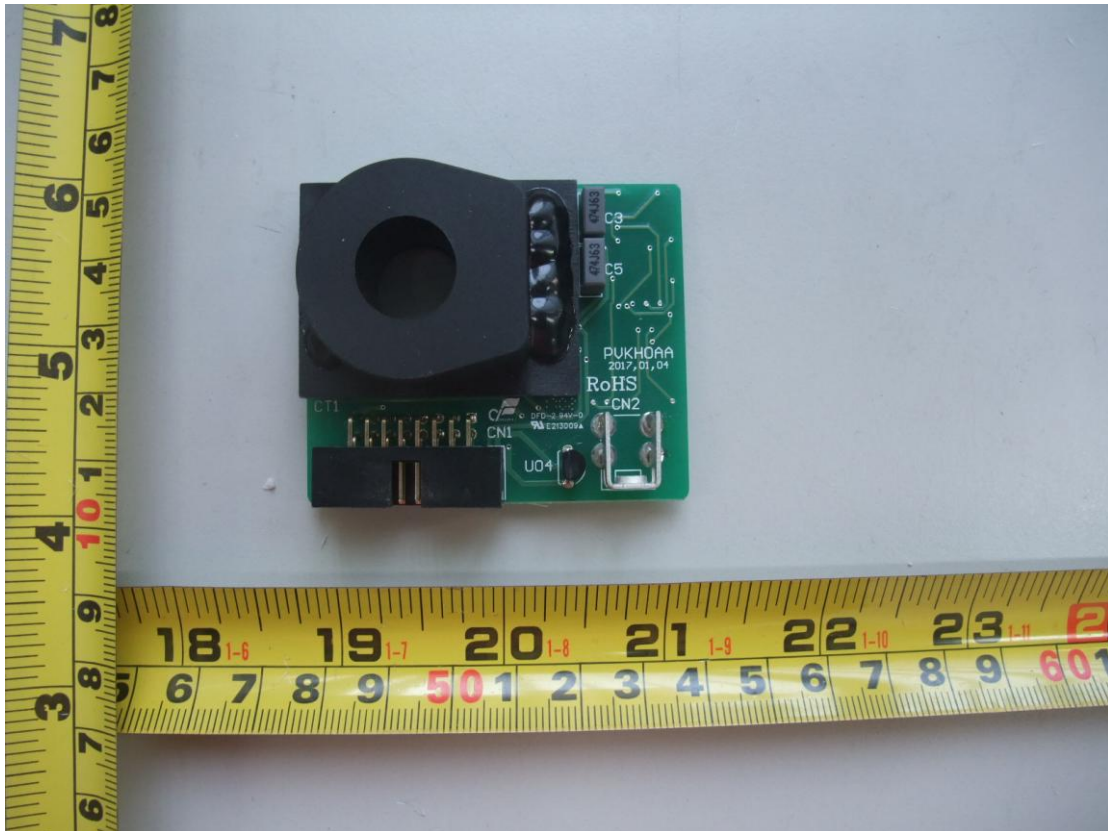
PVKF1 Board_component side view



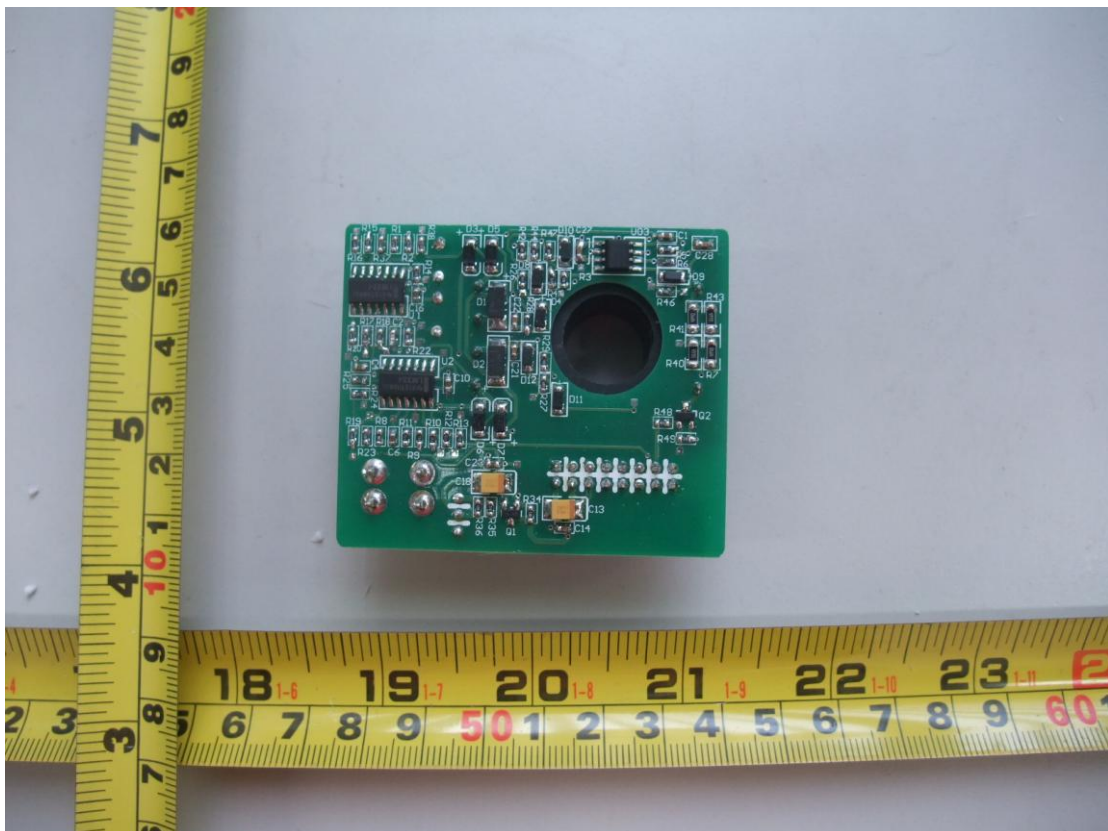
PVKF1 Board_Solder side view



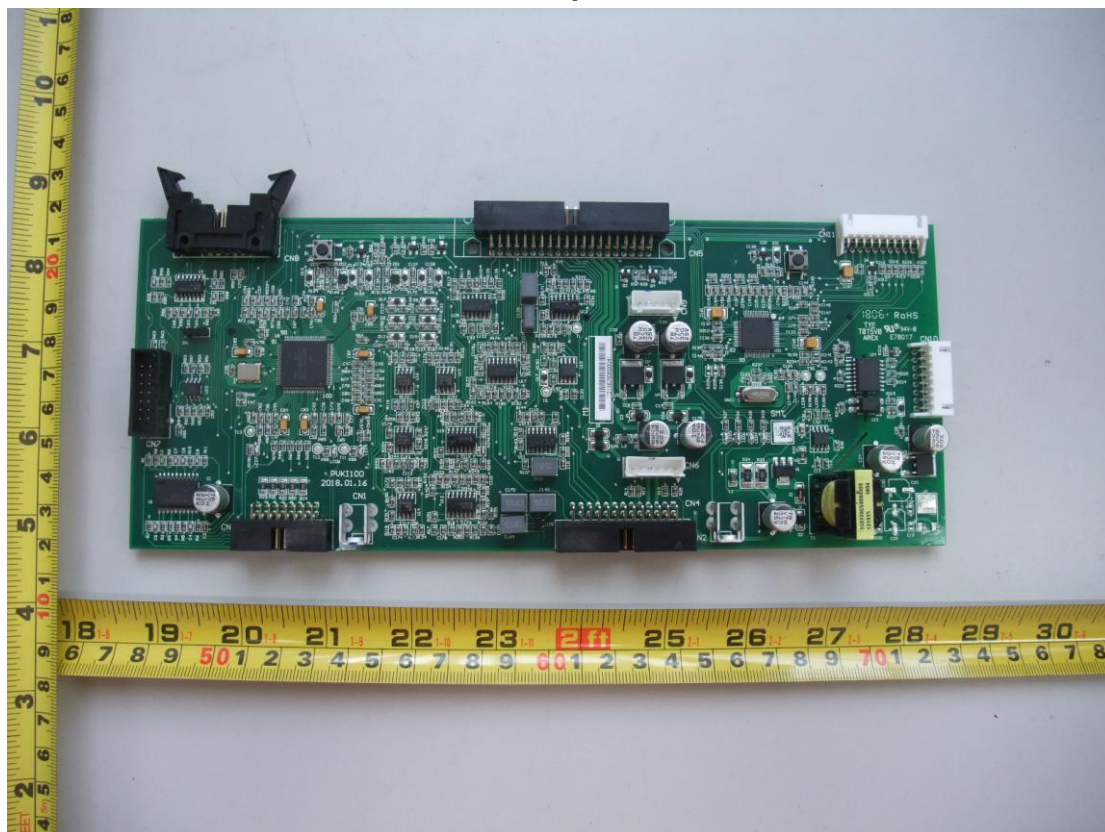
PVKH0 Board_component side view



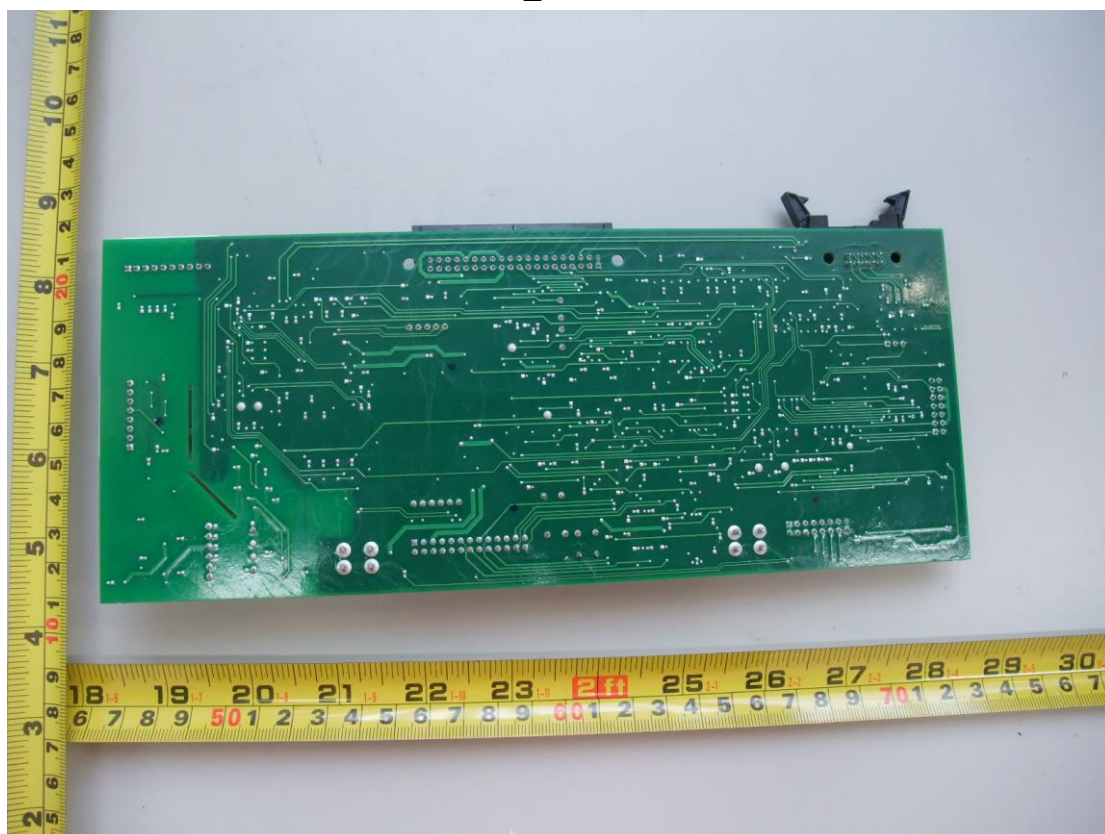
PVKH0 Board_Solder side view



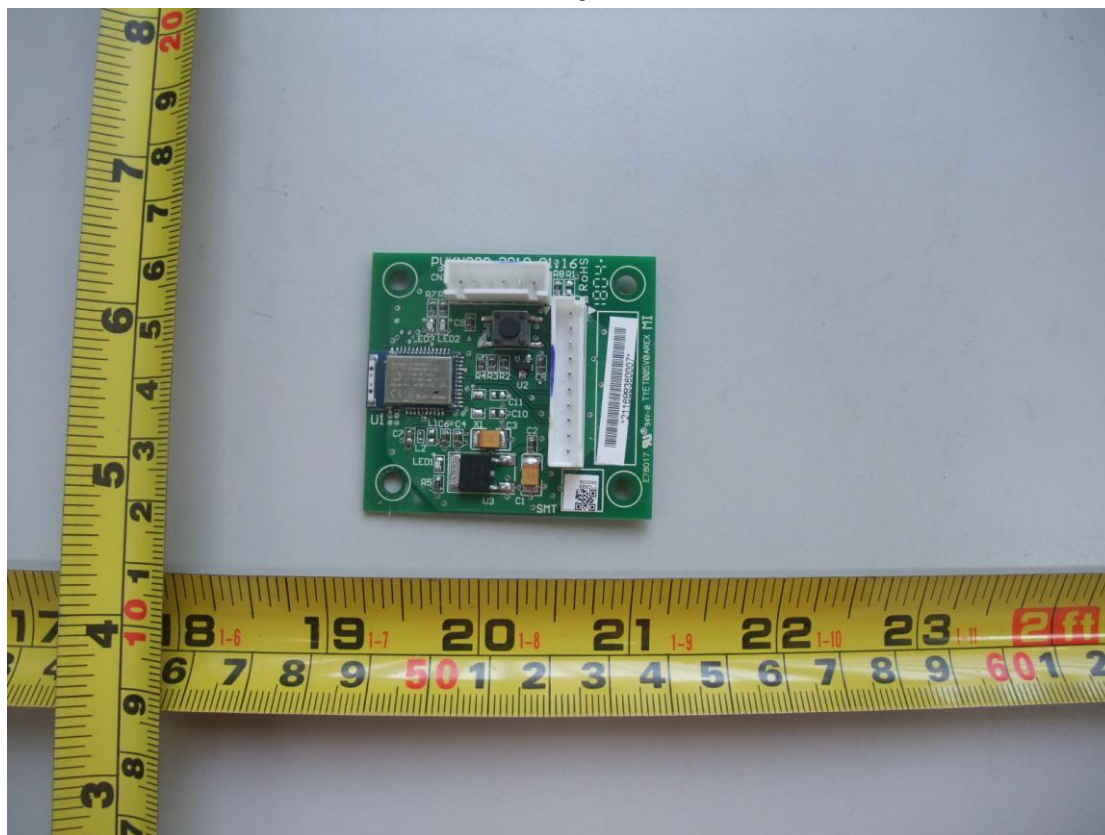
PVKI1 Board_component side view



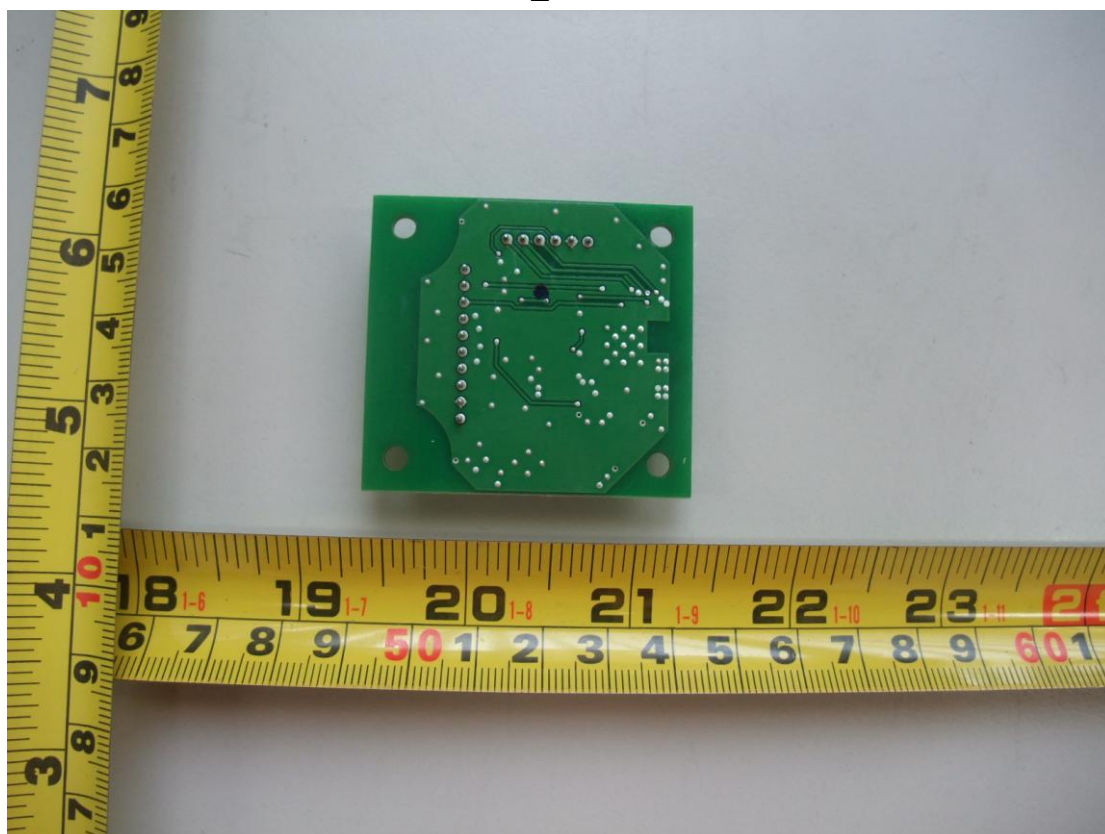
PVKI1 Board_Solder side view



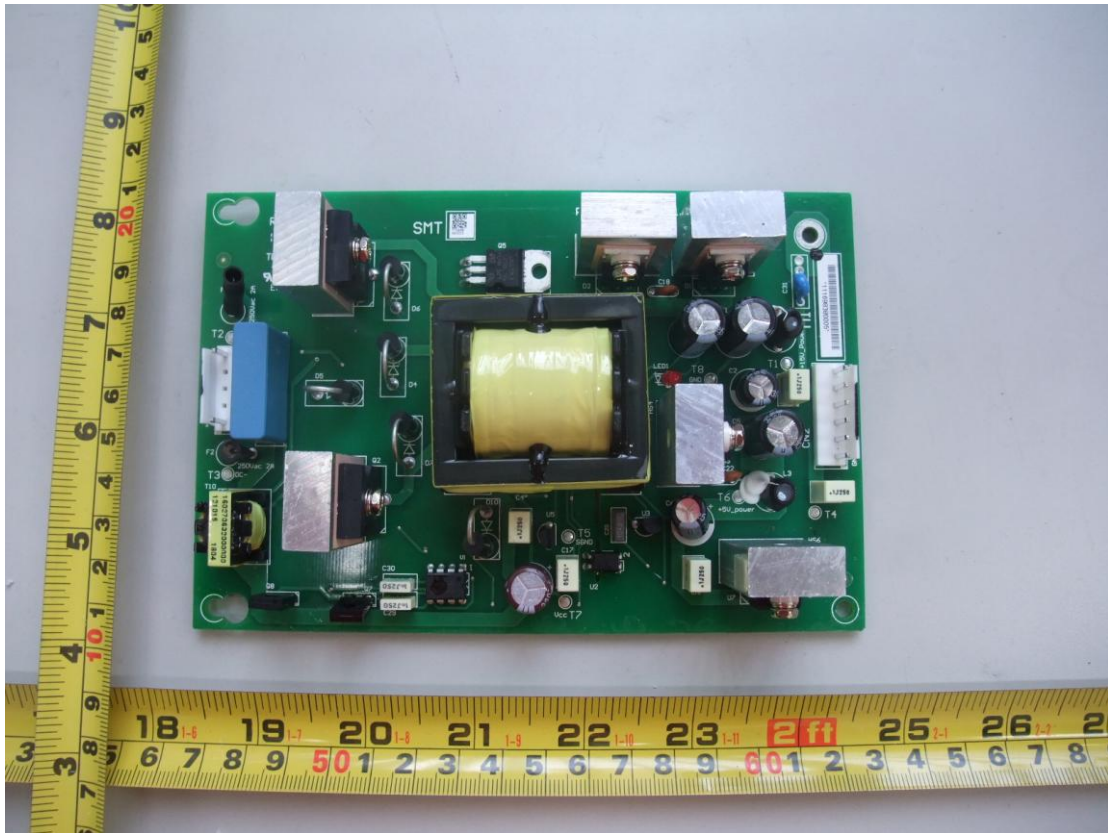
PVKN3 Board_component side view



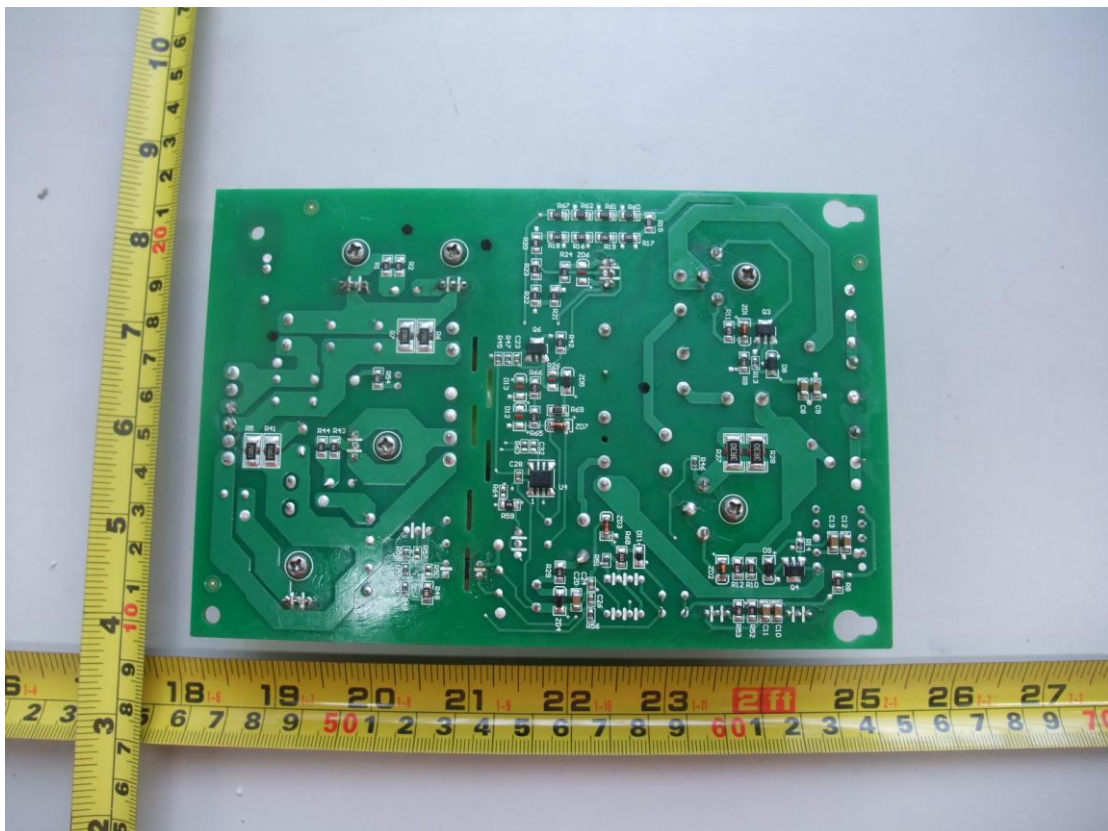
PVKN3 Board_Solder side view



PVKP1 Board_component side view



PVKP1 Board_Solder side view



Annex 2

Test equipment list

Testing Location: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch

Date(s) of performance test: 2017-11-08 to 2018-04-23

Equipment	Internal No.	Manufacturer	Type	Serial No.	Last Calibration
Digital Multimeter	39	Fluke	87-III	70360742	2017-06-30
Thermo-Hygro Grapg	50	Isuzs	3-3122	70860282	2017-12-04
LCR Meter	137	Motech	MT4090/I-S1	40905090004	2018-01-17
Precision Power Analyzer	157	YOKOGAWA	WT-1600	91JA10617	2017-11-02
Digital Oscilloscope	158	LECROY	WS-44XS	LCRY0310M22703	2017-06-01
Programable DC Source	183	CHROMA	62150H-1000S	62150EF00169	Monitor by Power Analyzer
Programable DC Source	184	CHROMA	62150H-1000S	62150EF00143	
Programable AC Source	185	CHROMA	61512	615120000263	
Digital Oscilloscope	186	LeCroy	WS44XS-A	LCRY0317N53962	2018-03-19
Precision Power Analyzer	215	YOKOGAWA	WT-3000	91M534527	2017-06-02
SCOPE CORDER	216	YOKOGAWA	DL850	91M534532	2018-01-22
Programable AC Source	217	CHROMA	61512	615120000372	Monitor by Power Analyzer
Programable DC Source	218	CHROMA	62150H-1000S	62150EF00455	
Atmospheric pressure gauge	226	TESTO	TESTO 511	39108378	2017-06-09