

TEST REPORT

for

Product: Swiss Peak eclipse solar backpack

Model No.: P762.12

Test Report Number: EFHZ17020157

Issued Date: 2017-Mar-13

Issued for

Xindao B.V.

P.O. Box 3082, 2280 GB, Rijswijk, The Netherlands

Issued By:

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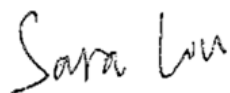
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1 TEST CERTIFICATION

Product:	Swiss Peak eclipse solar backpack
Model No.:	P762.12
Applicant :	Xindao B.V.
Address:	P.O. Box 3082, 2280 GB, Rijswijk, The Netherlands
Manufacture:	N/A
Address:	N/A
Brand Name:	N/A
Country of Origin:	China
Country of Import:	Europe
Sample Received Date	Jan.13, 2017
Test Date:	Feb. 20, 2017-Mar.03, 2017
Test Voltage:	DC 5
Applicable Standards:	EN 55022: 2010+AC: 2011 EN 55024: 2010 EN 61000-3-2:2014 EN 61000-3-3:2013

Signed for and on behalf of
Eurofins Product Testing Service(Shanghai) Co.,Ltd. Hangzhou Branch



Sara Liu
Quality Supervisor

2 TEST RESULT SUMMARY

EMISSION			
Standard	Item	Result	Remarks
EN 55022: 2010+AC: 2010	Conducted Emission at Mains Terminals	N/A	Not Applicable
	Conducted Emission at Telecommunication Ports	N/A	Not Applicable
	Radiated Emission	Pass	Complied with limit
EN 61000-3-2:2014	Harmonic current emissions	N/A	Not Applicable
EN 61000-3-3:2013	Voltage fluctuations & flicker	N/A	Not Applicable

IMMUNITY(EN 55024:2010)			
Standard	Item	Result	Remarks
EN 61000-4-2:2009	ESD	Pass	Complied with limit
EN 61000-4-3:2006 + A1:2008 + A2:2010	RS	Pass	Complied with limit
EN 61000-4-4:2012	EFT	N/A	Not Applicable
EN 61000-4-5:2014	Surge	N/A	Not Applicable
EN 61000-4-6:2014	CS	N/A	Not Applicable
EN 61000-4-8:2010	PFMF	N/A	Not Applicable
EN 61000-4-11:2004	Voltage dips & voltage variations	N/A	Not Applicable

Note: 1) The test result verdict is decided by the limit of test standard

2) The information of measurement uncertainty is available upon the customer's request.

3 EUT DESCRIPTION

Product	Swiss Peak eclipse solar backpack
Model No.	P762.12
Ratings	Output: DC 5V, 1A
AC Line	☐ Shielded ☐ Unshielded, ☐ Detachable ☐ Un-detachable ☒ No applicable ☐ Length:
DC Line	☐ Shielded ☒ Unshielded, ☒ Detachable ☐ Un-detachable ☐ No applicable ☒ Length: 60cm

I/O PORT

I/O PORT TYPES	Q'TY	TESTED WITH
DC Port	1	☒

4 TEST METHODOLOGY

4.1. TEST MODE

The EUT was tested together with the thereafter additional components, and a configuration, which produced the worst emission levels, was selected and recorded in this report.

The following test mode(s) were assessed.

Test Mode		
Emission	Radiated Disturbance	Charging
Immunity	ESD	
	RS	

4.2. EUT SYSTEM OPERATION

1. Set up EUT with the support equipments.
2. Make sure the EUT work normally during the test.

5 SETUP OF EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF SUPPORT UNITS

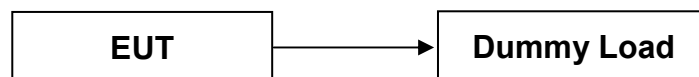
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

No.	Equipment	Model No.	Serial No.	FCC ID	Trade Name	Data Cable	Power Cord
1.	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Note: 1) All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.

2) Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

5.2. CONFIGURATION OF SYSTEM UNDER TEST



(EUT: Swiss Peak eclipse solar backpack)

6 EMISSION TEST

6.1. RADIATED DISTURBANCE

6.1.1. LIMITS

Below 1 GHz

Frequency (MHz)	Limit (dBUV/m) (At 3m)	Limit (dBUV/m) (At 3m)
	Class A	Class B
30 - 230	50	40
230 - 1000	57	47
Note: 1. The lower limit shall apply at the transition frequency. 2. Additional provisions may be required for cases where interference occurs.		

Above 1 GHz

Frequency (MHz)	Class A		Class B	
	Average dB(uV/m)	Peak dB(uV/m)	Average dB(uV/m)	Peak dB(uV/m)
1 - 3	56	76	50	70
3 - 6	60	80	54	74
Note: The lower limit shall apply at the transition frequency.				

6.1.2. TEST INSTRUMENTS

Radiated Emission Test Site (966)				
Name of Equipment	Manufacturer	Model	Serial No.	Calibration Due
EMI Test Receiver	R&S	ESMI	843440/006	2017-12-28
Broadband Antenna	Schwarzbeck	9162	139	2017-11-08

Note: 1) The calibration interval of the above test instruments is 12 months and the calibration can be traced to international system unit (SI).

2) N.C.R = No Calibration Request

6.1.3. TEST PROCEDURE

The equipment was set up as per the test configuration to simulate typical usage per the user's manual. When the EUT is a tabletop system, a wooden turntable with a height of 0.8 meters is used which is placed on the ground plane. When the EUT is a

floor standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.

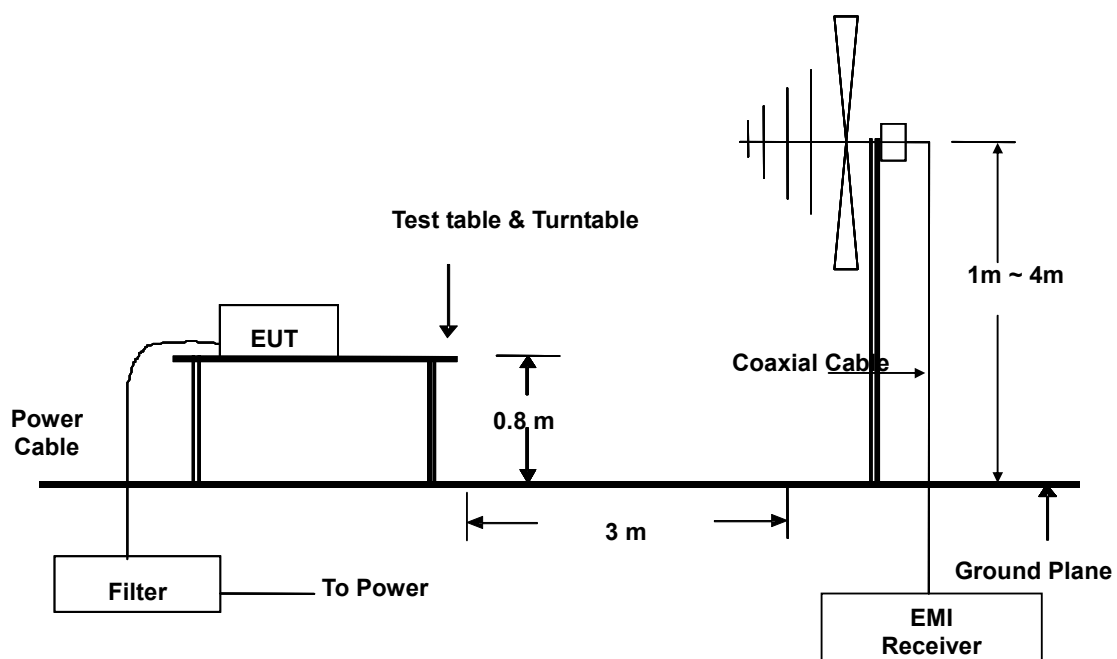
The antenna was placed at 3 meter away from the EUT. The antenna connected to the spectrum analyzer via a cable and at times a pre-amplifier would be used.

The analyzer / receiver quickly scanned from 30 MHz to 1000 MHz. The EUT test program was started. Emissions were scanned and measured rotating the EUT to 360 degrees and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.

During the above scans, the emissions were maximized by cable manipulation. Each modes is measured, recorded at least the six highest emissions. Emission frequency, amplitude, antenna position, polarization and turntable position were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit and only Q.P. reading is presented.

The test data of the worst-case condition(s) was recorded.

6.1.4. TEST SETUP



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

Product	Swiss Peak eclipse solar backpack	Model No.	P762.12
Environmental Conditions	24°C, 59 % RH	6 dB Bandwidth	120 kHz
Antenna Pole	Vertical / Horizontal	Antenna Distance	3 m
Test Mode	Charging	Tested Result	Pass
Detector Function	Peak / Quasi-peak		

6.1.5 TEST RESULTS

Note:

Freq. = Emission frequency in MHz

Reading level (dBuV/m) = Receiver reading

Corr. Factor (dB) = Antenna factor + Cable loss

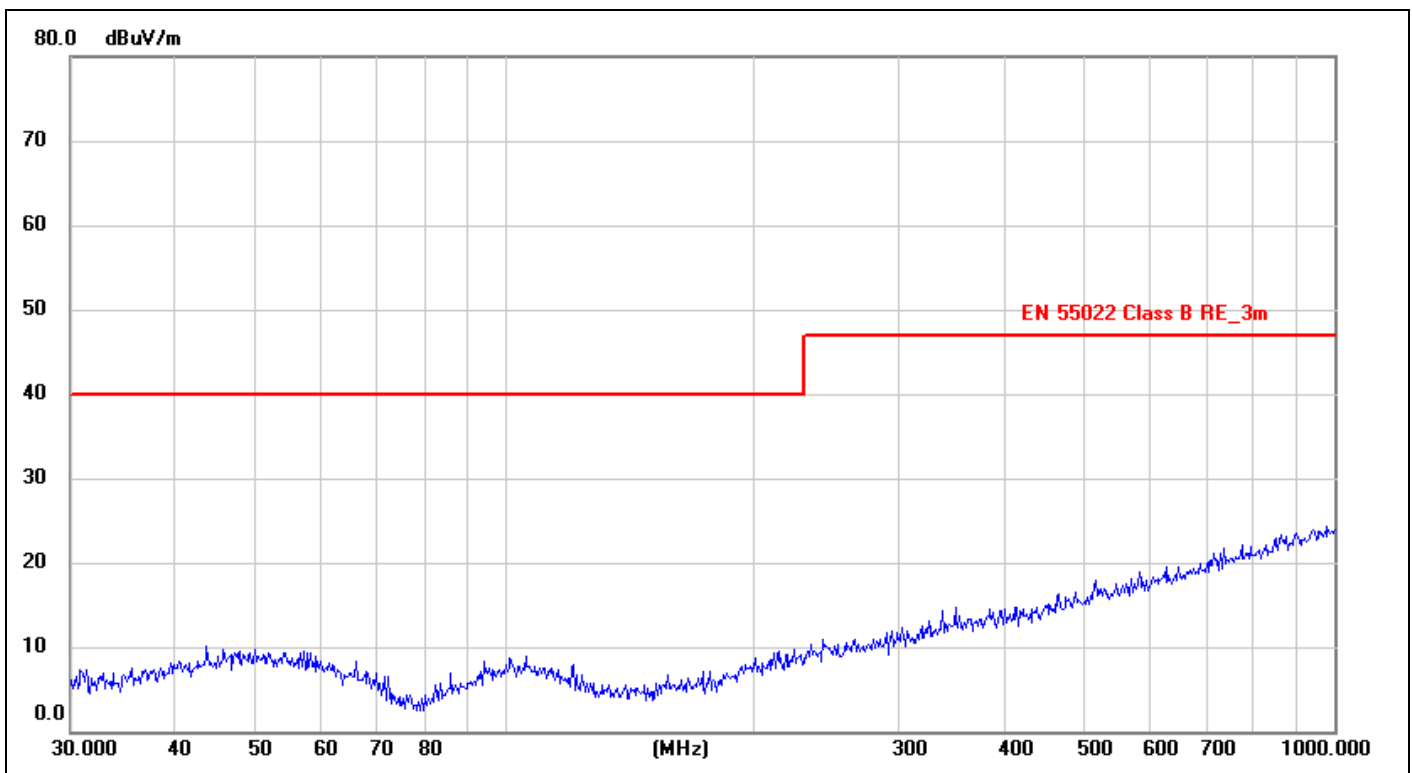
Measurement (dBuV/m) = Reading level (dBuV/m) + Corr. Factor (dB)

Limit (dBuV/m) = Limit stated in standard

Margin (dB) = Measurement (dBuV/m) – Limits (dBuV/m)

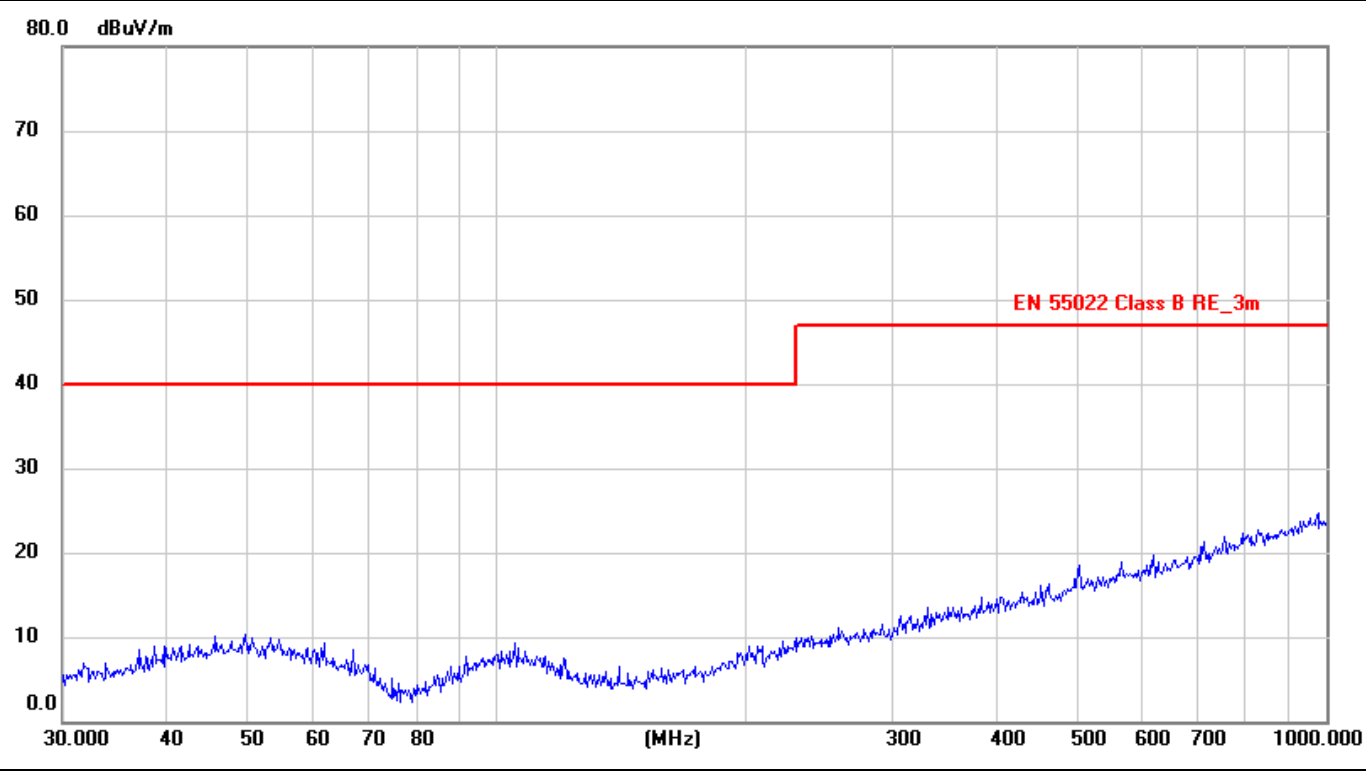
Please refer to following diagram for individual

EUT:	Swiss Peak eclipse solar backpack	Polarization:	Horizontal
Model:	P762.12	Power Source:	DC 5 V
Mode:	Charging	Date:	2017/3/6
Temp./Hum.(%RH):	24/59%RH	Time:	14:52:57
Standard:	EN 55022 Class B RE_3m	Distance:	3m
Test item:	Radiation Test		
Note:			



Note: Any value more than 10 dB below limit has not been specifically reported.

EUT:	Swiss Peak eclipse solar backpack	Polarization:	Vertical
Model:	P762.12	Power Source:	DC 5V
Mode:	Charging	Date:	2017/3/6
Temp./Hum.(%RH):	24/59%RH	Time:	14:55:19
Standard:	EN 55022 Class B RE_3m	Distance:	3m
Test item:	Radiation Test		
Note:			



Note: Any value more than 10 dB below limit has not been specifically reported.

7 IMMUNITY TEST

7.1. GENERAL PERFORMANCE CRITERIA DESCRIPTION

Criteria A:	During the test no change of the luminous intensity shall be observed and the regulating control, if any, shall operate during the test as intended.
Criteria B:	During the test the luminous intensity may change to any value. After the test the luminous intensity shall be restored to its initial value within 1 min. Regulating controls need not function during the test, but after the test the mode of the control shall be the same as before the test provided that during the test no mode changing commands were given.
Criteria C:	During and after the test any change of the luminous intensity is allowed and the lamp(s) may be extinguished. After the test, within 30 min, all functions shall return to normal. if necessary by temporary interruption of the mains supply and/or operating the regulating control. Additional requirement for full load equipment incorporating a starting device: After the test the full load equipment is switched off. After half an hour it is switched on again. The full load equipment shall start and operate as intended.

7.2 Electrostatic Discharge (ESD)

7.2.1 Test Specification

Test Requirement:	EN 55024
Test Method:	EN 61000-4-2
Storage capacitor:	150 pF
Discharge resistor:	330 ohm
Discharge Voltage:	Contact Discharge: ± 4 kV Air Discharge: ± 8 kV Indirect application: ± 4 kV
Polarity:	Positive & Negative
Number of Discharge:	Air Discharge: Minimum 20 times at each test point Contact Discharge: Minimum 50 times at each test point
Discharge Mode:	1 time/s
Performance Criterion:	B

7.2.2 Test Instruments

Name of Equipment	Manufacturer	Model	Serial No.	Calibration Due
ESD Simulator	TESTQ	NSG437	1097	2017-12-26

Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

7.2.3 Test Method

1. Air Discharge:

The test was applied on non-conductive surfaces of EUT. The round discharge tip of the discharge electrode was approached as fast as possible to touch the EUT. After each discharge, the discharge electrode was removed from the EUT. The generator was re-triggered for a new single discharge and repeated 20 times for each pre-selected test point. This procedure was repeated until all the air discharge completed.

2. Contact Discharge:

The test was applied on accessible metallic parts of the EUT. The generator was re-triggered for a new single discharge and repeated 50 times for each pre-selected test point. The tip of the discharge electrode was touching the EUT before the discharge switch was operated.

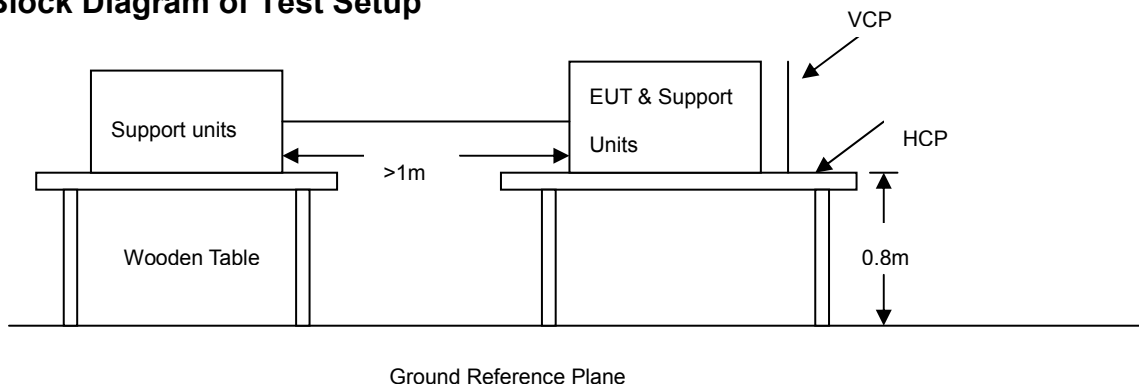
3. Indirect discharge for horizontal coupling plane:

At least 10 single discharges (in the most sensitive polarity) were applied to the horizontal coupling plane, at points on each side of the EUT. The discharge electrode positions vertically at a distance of 0.1 m from the EUT and with the discharge electrode touching the coupling plane.

4. Indirect discharge for vertical coupling plane:

At least 10 single discharges (in the most sensitive polarity) were applied to the center of one vertical edge of the coupling plane. The coupling plane, of dimensions 0.5 m X 0.5 m, was placed parallel to, and positioned at a distance of 0.1 m from the EUT. Discharges were applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are completely illuminated.

7.2.4 Block Diagram of Test Setup



Note:

1. Table-top Equipment

The configuration consisted of a wooden table 0.8 meters high standing on the **Ground Reference Plane**. The **GRP** consisted of a sheet of aluminum at least 0.25 mm thick, and 2.5 meters square connected to the protective grounding system. A **Horizontal Coupling Plane** (1.6 m x 0.8 m) was placed on the table and attached to the **GRP** by means of a cable with 940 k total impedance.

The equipment under test was installed in a representative system as described in section 7 of EN 61000-4-2, and its cables were placed on the **HCP** and isolated by an insulating support of 0.5 mm thickness. A distance of 1-meter minimum was provided between the EUT and the walls of the laboratory and any other metallic structure.

2. Floor-standing Equipment

The equipment under test was installed in a representative system as described in section 7 of IEC 61000-4-2, and its cables were isolated from the Ground Reference Plane by an insulating support of 0.1-meter thickness. The GRP consisted of a sheet of aluminum that is at least 0.25 mm thick, and 2.5 meters square connected to the protective grounding system and extended at least 0.5 meters from the EUT on all sides.

7.2.5 Test Results

Product	Swiss Peak eclipse solar backpack	Model No.	P762.12
Temperature:	20°C	Humidity	56 % RH
Pressure	98 kPa	Test Result	Pass
Test mode	Discharging		

Air Discharge						
Test Points		Test Levels	Results			
		± 8 kV	Pass	Fail	Performance Criterion	Observation
Slot	5 Points	☒	☒	☐	B	Note ☐ 1 ☒ 2 ☐ 3
Contact Discharge						
Test Points		Test Levels	Results			
		± 4 kV	Pass	Fail	Performance Criterion	Observation
HCP	2 Points	☒	☒	☐	B	Note ☐ 1 ☒ 2 ☐ 3
VCP	2 Points	☒	☒	☐	B	Note ☐ 1 ☒ 2 ☐ 3
Metal	2 Points	☒	☒	☐	B	Note ☐ 1 ☒ 2 ☐ 3

Note: 1) There was no change compared with initial operation during and after the test. No unintentional response was found during the test.

2) The function stopped during the test, but can be recoverable by itself operation after the test.

3)The function stopped during the test, but can be recoverable manually after the test.

7.3 Radio-frequency Electromagnetic Field Amplitude Modulated (RS)

7.3.1 Test Specification

Test Requirement:	EN 55024
Test Method	EN 61000-4-3
Frequency Range:	80 MHz -1000 MHz
Test level:	3 V/m (unmodulated, r.m.s)
Modulation:	1 kHz, 80 % AM, sine wave
Frequency Step:	1 % of preceding frequency value
Polarity of Antenna:	Horizontal & Vertical
Antenna Height:	1.5 m
Performance Criterion:	A

7.3.2 Test Instruments

Name of Equipment	Manufacturer	Model No.	Serial No.	Calibration Due
Signal Generator	R&S	SMHU	849667/027	2017-03-25
Amplifier	A&R	60S1G3	306697	2017-03-25
Amplifier	Milmega	80RF1000-300	1074126	2018-01-12
Periodic Antenna	Schwarzbeck	STLP 9129	00017	2017-11-08
Field probe	PMM(Narda)	EP 601	511wx51163	2017-12-27
Power Meter	R&S	NRVD	833235/008	2017-03-25
Power Sensor	R&S	NRV-Z51	833490/008	2017-03-25
Directional coupler	MAC	CA3333-30B	695002	2017-12-28

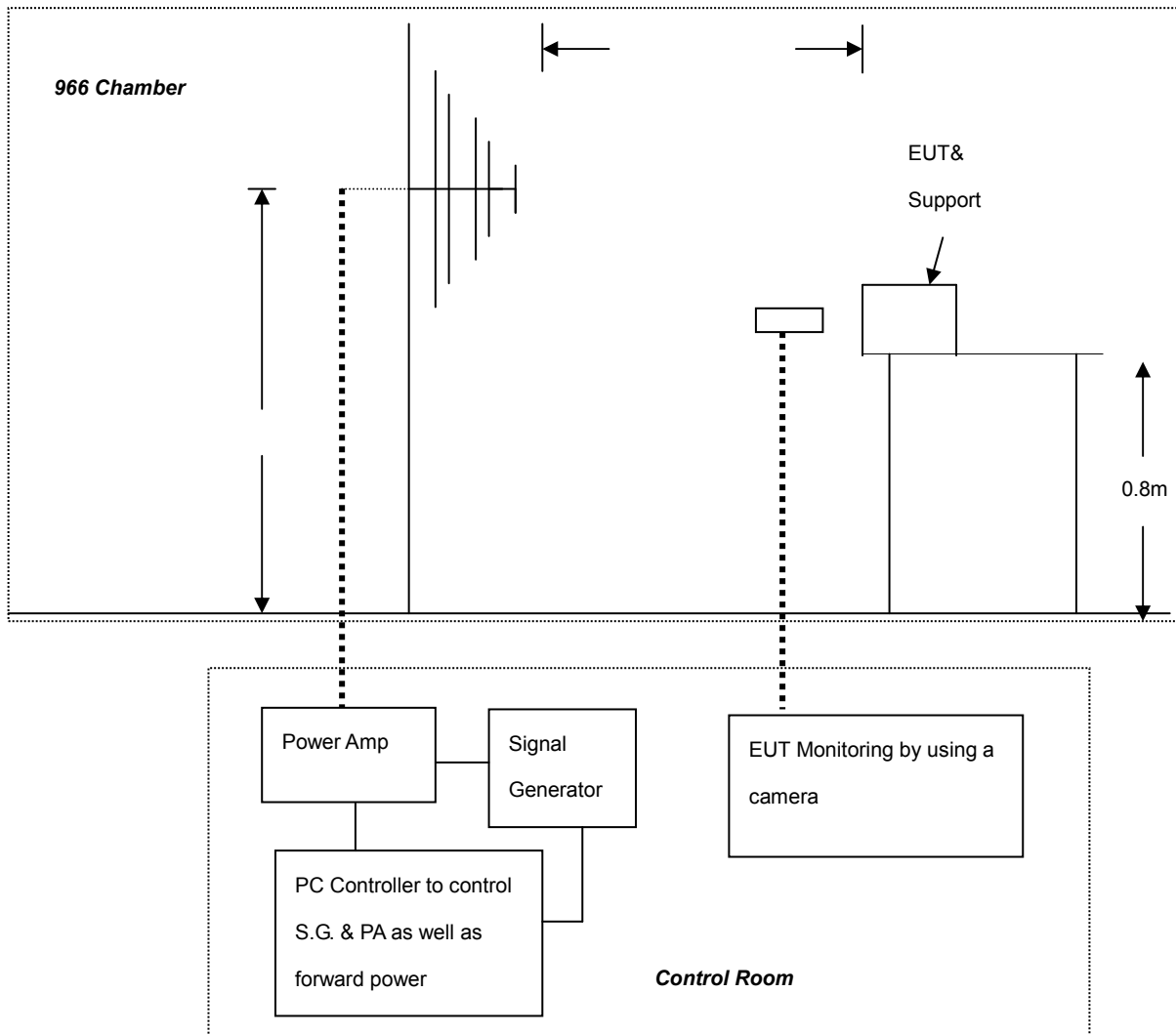
Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

7.3.3 Test Method

1. The testing was performed in a fully anechoic chamber. The transmit antenna was located at a distance of 3 meters from the EUT.
2. The frequency range is swept from 80 MHz to 1000 MHz, with the signal 80% amplitude modulated with a 1 kHz sine-wave. The rate of sweep did not exceed 1.5×10^{-3} decade/s, where the frequency range is swept incrementally; the step size was 1% of preceding frequency value.

3. The dwell time at each frequency shall be not less than the time necessary for the EUT to be able to respond and was not less than 0,5 s.
4. The test was performed with the EUT exposed to both vertically and horizontally polarized fields on each of the four sides.
5. The EUT was performed in a configuration to actual installation conditions, a video camera and/or a audio monitor were used to monitor the performance of the EUT.

7.3.4 Block Diagram of Test Setup



Note:

1. Table-top Equipment

The EUT installed in a representative system as described in section 7 of EN 61000-4-3 was placed on a non-conductive table 0.8 meters in height. The system under test was connected to the power and signal wire according to relevant installation instructions.

2. Floor-standing Equipment

The EUT installed in a representative system as described in section 7 of IEC 61000-4-3 was placed on a non-conductive wood support 0.1 meters in height. The system under test was connected to the power and signal wire according to relevant installation instructions.

7.3.5 Test Results

Product	Swiss Peak eclipse solar backpack	Model No.	P762.12
Temperature:	21°C	Humidity	50 % RH
Pressure	98 kPa	Test Result	Pass
Test mode	Discharging		

Frequency (MHz)	Polarity	Position	Field Strength (V/m)	Observation	Result
80 ~ 1000	V&H	Front	3	Note ☒ 1 ☐ 2 ☐ 3	PASS
80 ~ 1000	V&H	Rear	3	Note ☒ 1 ☐ 2 ☐ 3	PASS
80 ~ 1000	V&H	Left	3	Note ☒ 1 ☐ 2 ☐ 3	PASS
80 ~ 1000	V&H	Right	3	Note ☒ 1 ☐ 2 ☐ 3	PASS

Note: 1) There was no change compared with initial operation during and after the test. No unintentional response was found during the test.

2) The function stopped during the test, but can be recoverable by itself operation after the test.

3)The function stopped during the test, but can be recoverable manually after the test.

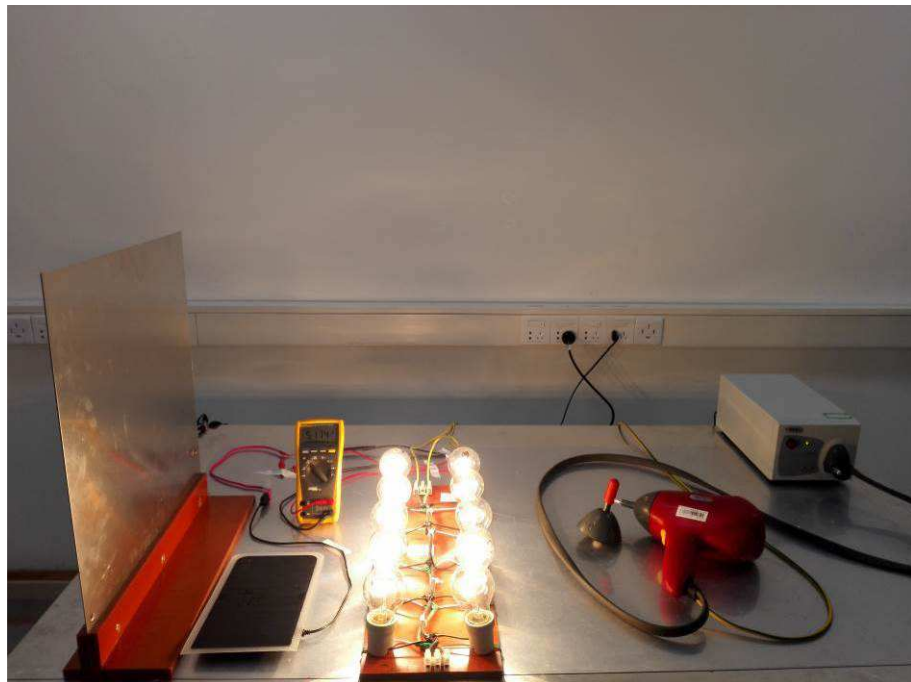
The test items were subcontracted to other lab.

8 PHOTOGRAPHS OF THE TEST CONFIGURATION

RADIATED EMISSION TEST



ESD TEST

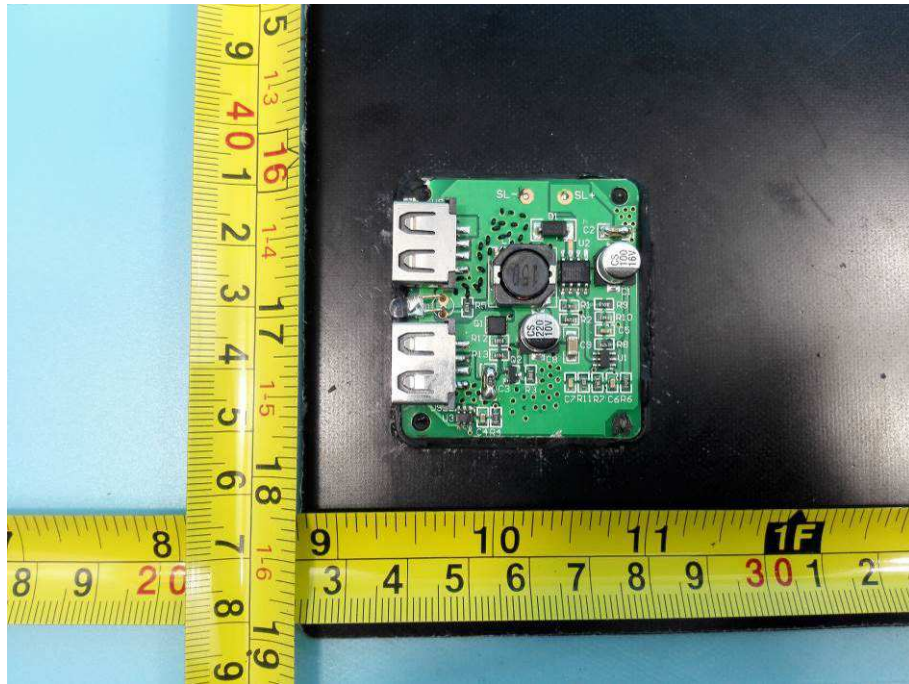


RS TEST



9 PHOTOGRAPHS OF EUT





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