



# TEST REPORT

Reference No. .... : WTS18S09124213E

Applicant..... : [Redacted]

Address..... : [Redacted]

Manufacturer..... : [Redacted]

Address..... : [Redacted]

Product..... : Power Bank

Model(s)..... : T14

Standards..... : EN 55032:2015  
EN 55024:2010+A1:2015

Date of Receipt sample... : 2018-09-17

Date of Test..... : 2018-09-17 to 2018-09-19

Date of Issue..... : 2018-09-21

Test Result..... : Pass

Remarks:

The results shown in this test report refer only to the sample(s) tested; this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

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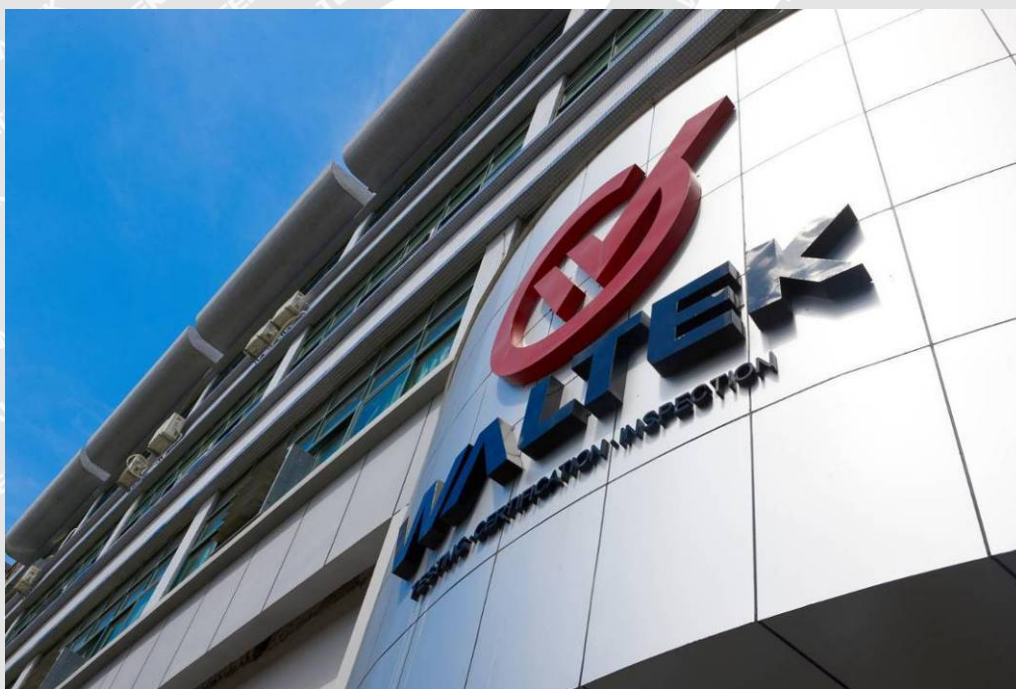
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## 1 Laboratories Introduction

**Waltek Services (Shenzhen) Co., Ltd** is a professional third-party testing and certification laboratory with multi-year product testing and certification experience, established strictly in accordance with ISO/IEC 17025 requirements, and accredited by ILAC (International Laboratory Accreditation Cooperation) member. A2LA (American Association for Laboratory Accreditation, the certification number is 4243.01) of USA, CNAS (China National Accreditation Service for Conformity Assessment, the registration number is L3110) of China. Meanwhile, Waltek has got recognition as registration and accreditation laboratory from EMSD (Electrical and Mechanical Services Department), and American Energy star, FCC (The Federal Communications Commission), CEC (California energy efficiency), ISED (Innovation, Science and Economic Development Canada). It's the strategic partner and data recognition laboratory of international authoritative organizations, such as Intertek (ETL-SEMKO), TÜV Rheinland, TÜV SÜD, etc.



Waltek Services (Shenzhen) Co., Ltd is one of the largest and the most comprehensive third party testing laboratory in China. Our test capability covered four large fields: safety test. Electro Magnetic Compatibility (EMC), and energy performance, wireless radio. As a professional, comprehensive, justice international test organization, we still keep the scientific and rigorous work attitude to help each client satisfy the international standards and assist their product enter into globe market smoothly.





## 1.1 Test Facility

### A. Accreditations for Conformity Assessment (International)

Country/Region	Scope Covered By	Scope	Note
USA	ISO/IEC 17025	FCC ID \ DOC \ VOC	1
Canada		IC ID \ VOC	2
Japan		MIC-T \ MIC-R	-
Europe		EMCD \ RED	-
Taiwan		NCC	-
Hong Kong		OFCA	-
Australia		RCM	-
India		WPC	-
Thailand		NTC	-
Singapore		IDA	-
Note:			
1. FCC Designation No.: CN1201. Test Firm Registration No.: 523476.			
2. ISED Canada Registration No.: 7760A			

### B.TCBs and Notify Bodies Recognized Testing Laboratory.

Recognized Testing Laboratory of ...	Notify body number
TUV Rheinland	Optional.
Intertek	
TUV SUD	
SGS	
Phoenix Testlab GmbH	0700
Element Materials Technology Warwick Ltd	0891
Timco Engineering, Inc.	1177
Eurofins Product Service GmbH	0681



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3 Revision History

Test report No.	Date of Receipt sample	Date of Test	Date of Issue	Purpose	Comment	Approved
WTS18S09124213E	2018-09-17	2018-09-17 to 2018-09-19	2018-09-21	original	-	Valid



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## 4 General Information

### 4.1 General Description of E.U.T.

Product..... : Power Bank

Model(s)..... : T14

Model Difference ..... : N/A

Remark..... : N/A

### 4.2 Details of E.U.T.

Ratings..... : Input: DC 5V, 2A;  
Output: DC 5V, 2.1A

### 4.3 Subcontracted

Whether parts of tests for the product have been subcontracted to other labs:

☐ Yes ☒ No

If Yes, list the related test items and lab information:

Test Lab: N/A

Lab address: N/A

Test items: N/A

### 4.4 Abnormalities from Standard Conditions

None.



## 5 Test Summary

EMISSION		
Test Item	Test Standard	Result
Conducted Emissions from the AC mains power ports 150KHz to 30MHz	EN 55032	N/A
Asymmetric Mode Conducted Emissions 150KHz to 30MHz	EN 55032	N/A
Conducted Differential Voltage Emissions 30MHz to 2150MHz	EN 55032	N/A
Radiated Emissions, 30MHz to 1000MHz	EN 55032	Pass
Radiated Emissions, Above 1GHz	EN 55032	N/A
Harmonic Current	EN 61000-3-2	N/A
Voltage Fluctuation and Flicker	EN 61000-3-3	N/A
IMMUNITY		
Test Item	Test Method	Result
Electrostatic Discharge(ESD)	IEC 61000-4-2	Pass
Radiation Immunity (80MHz to 1GHz)	IEC 61000-4-3	Pass
Electrical Fast Transients (EFT)	IEC 61000-4-4	N/A
Surges	IEC 61000-4-5	N/A
Injected Currents, 0.15MHz to 80MHz	IEC 61000-4-6	N/A
Power-frequency magnetic fields	IEC 61000-4-8	N/A
Voltage Dips and Voltage interruptions	IEC 61000-4-11	N/A

Remark:

Pass

Test item meets the requirement

Fail

Test item does not meet the requirement

N/A

Test case does not apply to the test object



## 6 Equipment Used during Test

### 6.1 Equipment List

Radiated emissions (30MHz-1000MHz) (TDK)						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Calibration Date	Calibration Due Date
1	Test Receiver	R&S	ESCI	101296	2018.04.06	2019.04.05
2	Trilog Broadband Antenna	SCHWARZBECK	VULB9160	9160-3325	2018.04.07	2019.04.06
3	Amplifier	ANRITSU	MH648A	M43381	2018.04.07	2019.04.06
4	Cable	HUBER+SUHNER	CBL2	525178	2018.04.07	2019.04.06
Electrostatic Discharge						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Calibration Date	Calibration Due Date
1	Electrostatic Discharge Simulator	SCHLODER	SESD 216	606144	2017.11.21	2018.11.20
Radio-frequency electromagnetic fields						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Calibration Date	Calibration Due Date
1	Signal Generator	R&S	SMB100A	105942	2018.09.11	2019.09.10
2	RF Power Amplifier	BONN Elektronik	BLWA0830-160/100/40D	128740	2018.09.11	2019.09.10
3	Gestockte Breitband (S tacked ) Log.-per.Antenna	SCHWARZBECK	STLP9128D	043	2018.09.11	2019.09.10
4	Power Meter	R&S	NRP2	102031	2018.09.11	2019.09.10

### 6.2 Description of Support Units

Equipment	Manufacturer	Model No.	Series No.
/	/	/	/

### 6.3 Measurement Uncertainty

Parameter	Uncertainty (Note 1)
Temperature	±1°C
Humidity	±5%
DC and low frequency voltages	±3%
Radiated Emission (30MHz-1000MHz)	±5.03dB

Note 1: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.





## 6.4 Test Equipment Calibration

All the test equipments used are valid and calibrated by GUANG ZHOU GRG METROLOGY & TEST CO., LTD.  
address is No.163, Pingyun Rd. West of Huangpu Ave, Tianhe District, Guangzhou, Guangdong, China.

## 6.5 Test Mode

Test Item	Test Mode	Test Voltage
<b>EN 55032</b>		
Radiated Emissions (30MHz-1GHz)	Charging mode*	DC 5V
	Discharging mode	DC 5V
<b>EN 55024</b>		
Electrostatic Discharge (ESD) <input checked="" type="checkbox"/> Air Discharge: $\pm 8\text{kV}$ <input checked="" type="checkbox"/> Contact Discharge: $\pm 4\text{kV}$ <input checked="" type="checkbox"/> HCP & VCP: $\pm 4\text{kV}$	Charging mode*	DC 5V
	Discharging mode	DC 5V
Radio-frequency electromagnetic fields (80MHz to 1GHz) 3V/m, 80%	Charging mode	DC 5V
	Discharging mode*	DC 5V
** shows the worst case mode which were recorded in this report.		

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## 7 Emission Test Results

### 7.1 Radiated Emissions,30-1000MHz

Test Requirement ..... : EN 55032  
Test Method..... : EN 55032  
Frequency Range ..... : 30MHz to 1000MHz  
Class/Severity..... : Class B/ Table A.4 of EN 55032  
Test Result ..... : ☒ Pass ☐ Fail ☐ not applicable (Remark)

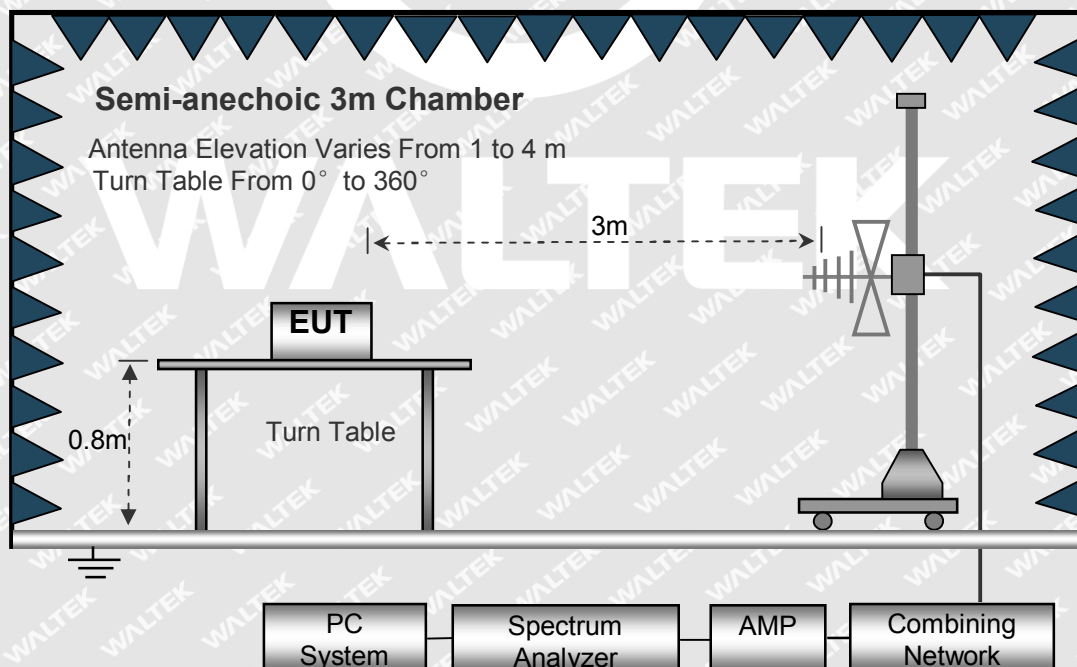
#### 7.1.1E.U.T. Operation

Operating Environment:

Temperature ..... : 23.1°C  
Humidity ..... : 54.8%RH  
Atmospheric Pressure..... : 101.5kPa  
EUT Operation : Refer to section 6.5.

#### 7.1.2Block Diagram of Test Setup

The Radiation Emission test was performed in accordance with EN 55032.



#### 7.1.3Measurement Data

The maximised peak emissions from the EUT was scanned and measured for both the Antenna Vertical Polarization and Antenna Horizontal Polarization. Quasi-peak measurements were performed if peak emissions were within 6dB of the Quasi-peak limit line.



#### 7.1.4 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

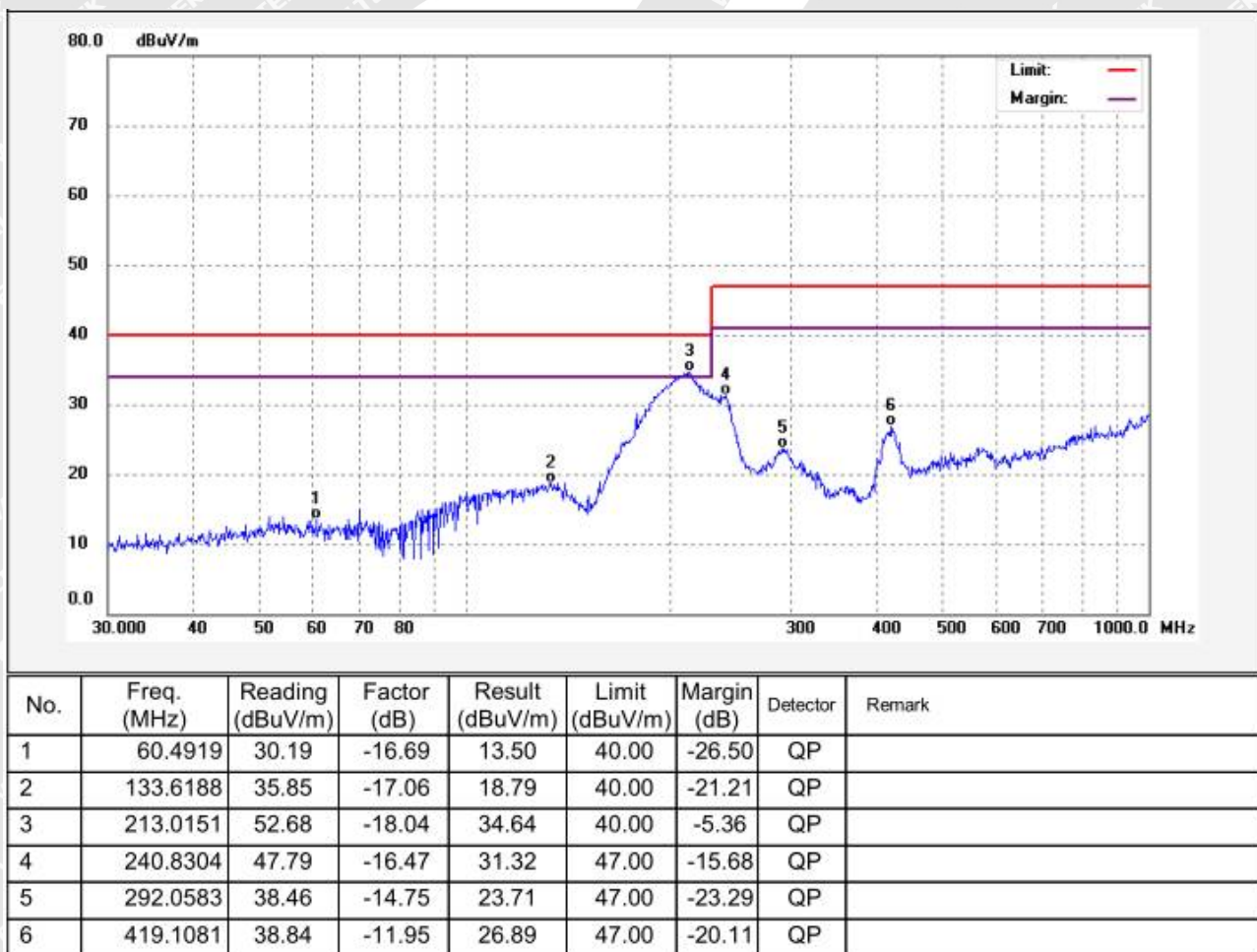
$$\text{Corr. Ampl.} = \text{Indicated Reading} + \text{Antenna Factor} + \text{Cable Factor} - \text{Amplifier Gain}$$

The “Margin” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dB means the emission is 6dB below the maximum limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{Limit}$$

#### 7.1.5 Test Data

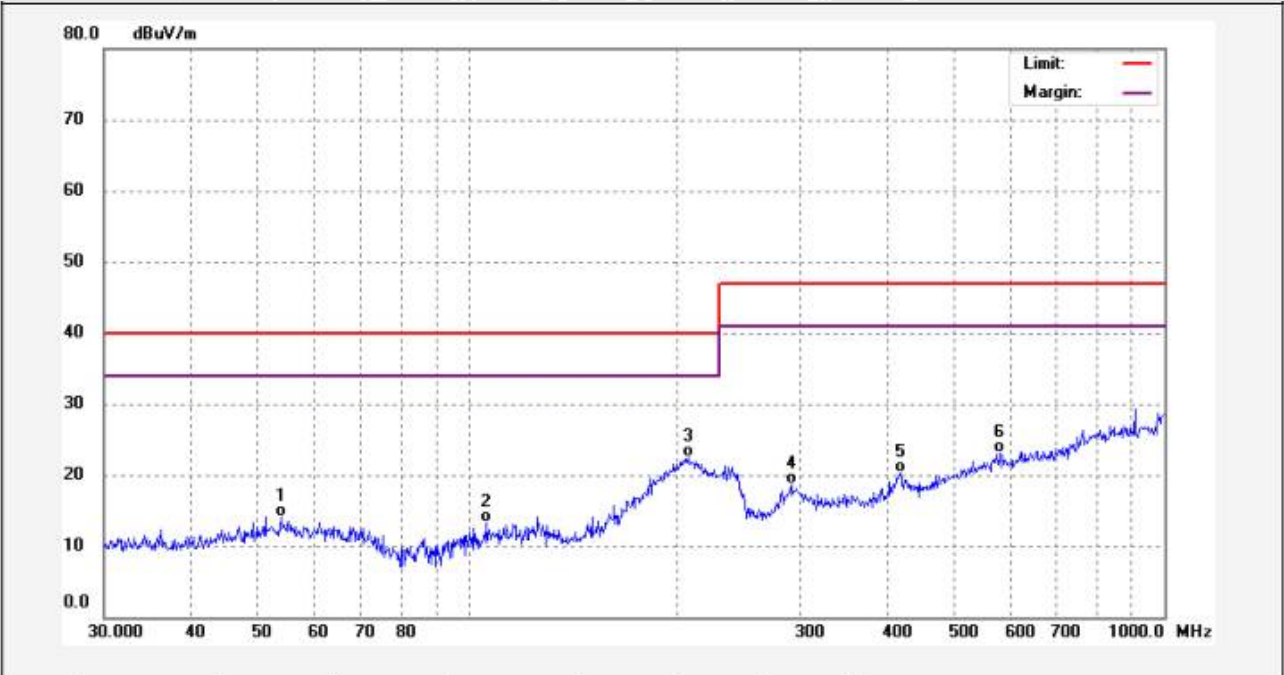
Antenna Polarization: Vertical







Antenna Polarization: Horizontal



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	53.8818	30.45	-16.42	14.03	40.00	-25.97	QP	
2	106.3850	31.91	-18.60	13.31	40.00	-26.69	QP	
3	207.1226	40.53	-18.11	22.42	40.00	-17.58	QP	
4	291.0360	33.46	-14.78	18.68	47.00	-28.32	QP	
5	417.6411	32.31	-11.99	20.32	47.00	-26.68	QP	
6	580.7026	31.27	-8.11	23.16	47.00	-23.84	QP	

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## 8 Immunity Test Results

### 8.1 Performance Criteria

**Performance criterion A:** The apparatus shall continue to operate as intended during the test.

No degradation of performance or loss of function is allowed below a performance level (or permissible loss of performance) specified by the manufacturer, when the apparatus is used as intended. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and from what the user may reasonably expect from the apparatus if used as intended.

**Performance criterion B:** The apparatus shall continue to operate as intended after the test.

No degradation of performance or loss of function is allowed below a performance level (or permissible loss of performance) specified by the manufacturer, when the apparatus is used as intended. During the test, degradation of performance is allowed, however, no change of actual operating state or stored data is allowed. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and from what the user may reasonably expect from the apparatus if used as intended.

**Performance criterion C:** Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls, or by any operation specified in the instructions for use.

For further details, please refer to EN 55024.



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## 8.2 Electrostatic Discharge (ESD)

Test Requirement.....	: EN 55024
Test Method .....	: IEC 61000-4-2
Test Result.....	: Pass
Discharge Impedance .....	: 330Ω / 150pF
Discharge Voltage.....	Air Discharge: ±8kV Contact Discharge: ±4kV HCP & VCP: ±4kV
Polarity.....	: Positive & Negative
Number of Discharge .....	: Minimum 50 times at each test point(25 of each polarity)
Discharge Mode .....	: Single Discharge
Discharge Period.....	: 1 second minimum

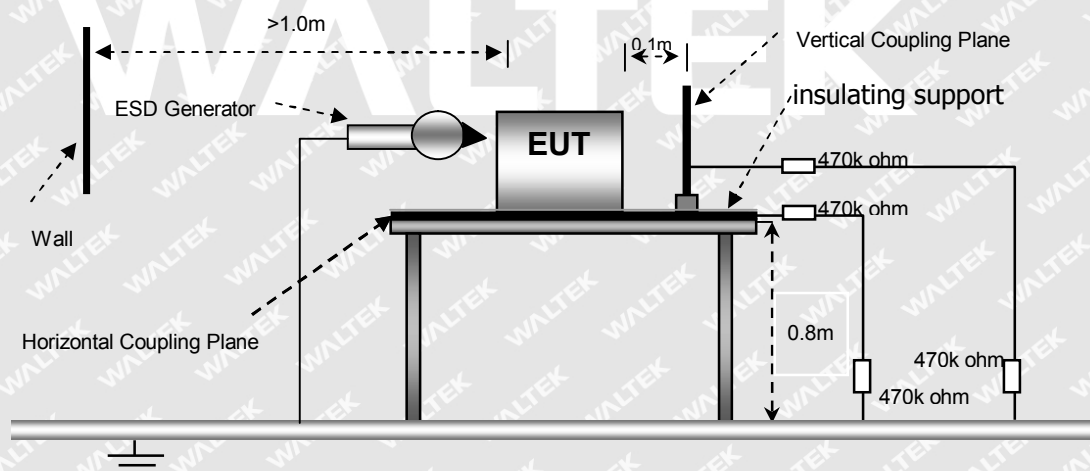
### 8.2.1 E.U.T. Operation

Operating Environment:

Temperature .....	: 22.8°C
Humidity .....	: 54.7%RH
Barometric Pressure .....	: 100.8kPa
EUT Operation.....	: Refer to section 6.5.

### 8.2.2 Block Diagram of Setup

The ESD test was performed in accordance with the IEC 61000-4-2.







### 8.2.3 Direct Discharge Test Results

Observations:

Test points:

1. All Exposed Surface & Seams;
2. All metallic part

Direct Discharge			Test Results	
Applied Voltage (kV)	Performance Criterion	Test Point	Contact Discharge	Air Discharge
±8	B	1	N/A	Pass
±4	B	2	Pass	N/A

### 8.2.4 Indirect Discharge Test Results

Observations:

Test points: 1. All sides.

Indirect Discharge			Test Results	
Applied Voltage (kV)	Performance Criterion	Test Point	Horizontal Coupling	Vertical Coupling
±4	B	1	Pass	Pass



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### 8.3 Radio-frequency electromagnetic fields

Test Requirement.....	: EN 55024
Test Method .....	: IEC 61000-4-3
Test Result .....	: Pass
Frequency Range .....	: 80MHz to 1GHz
Test level .....	: 3V/m
Modulation.....	: 80%, 1kHz Amplitude Modulation.
Face of EUT .....	: Front, Back, Left, Right
Antenna polarisation.....	: Horizontal & Vertical

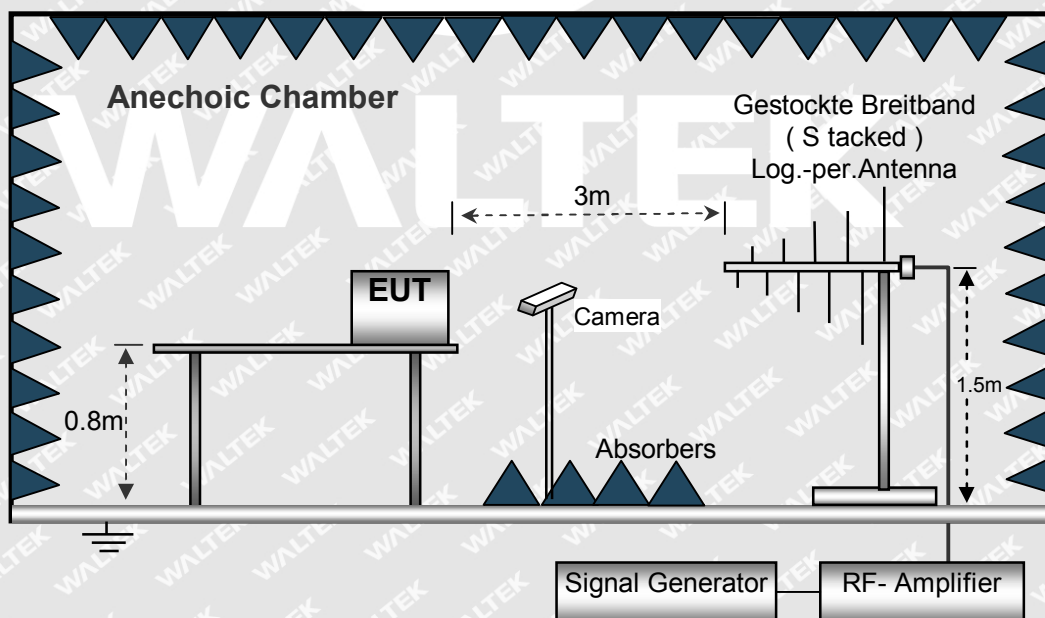
#### 8.3.1 E.U.T. Operation

Operating Environment:

Temperature.....	: 21.7°C
Humidity.....	: 52.4% RH
Barometric Pressure.....	: 102.4kPa
EUT Operation .....	: Refer to section 6.5.

#### 8.3.2 Block Diagram of Setup

The Radio-frequency electromagnetic fields Immunity test was performed in accordance with the IEC 61000-4-3.





8.3.3 Test Results

Frequency	Face of EUT	Antenna polarisation	Test Level	Step Size	Dwell Time	Performance Criterion	Result
80 to 1000MHz	Front, Back, Left, Right	Horizontal	3V/m	1%	1s	A	Pass
80 to 1000MHz	Front, Back, Left, Right	Vertical	3V/m	1%	1s	A	Pass



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## 9 Photographs – Test Setup

### 9.1 Photograph – Radiation Emission Test Setup 30MHz-1000MHz



### 9.2 Photograph – ESD Immunity Test Setup





### 9.3 Photograph – Radio-frequency electromagnetic fields Test Setup







## 10 Photographs – Constructional Details

### 10.1 EUT –External Photos







=====End of Report=====