



TEST REPORT

Reference No. : WTU23D04082764R1E
Applicant : Tianjin Tsai fan HVAC Technology Co., Ltd
Address : No.2 Street, Chagugang Town, Wuqing district, Tianjin, China
Manufacturer : Tianjin Tsai fan HVAC Technology Co., Ltd
Address : No.2 Street, Chagugang Town, Wuqing district, Tianjin, China
Product : Motorized Valve
Model(s) : TFA20-TF*_**_***-CR****-DC*****
Refer to Section 4.2
Brand Name : 
Standards : EN 55032:2015+A1:2020
EN 55035:2017+A11:2020
Date of Receipt sample... : 2023-04-19
Date of Test : 2023-04-19 to 2023-05-24
Date of Issue : 2026-06-26
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.

Prepared By:

Waltek Testing Group Co., Ltd.

Address: No. 77, Houjie Section, Guantai Road, Houjie Town, Dongguan City, Guangdong, China

Tel.: +86-769-2267 6998

Fax.: +86-769-2267 6828

Compiled by:

Approved by:

Billy Li / Project Engineer

Deval Qin / Designated Reviewer



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3 Revision History

Test Report No.	Date of Receipt Sample	Date of Test	Date of Issue	Purpose	Comment	Approved
WTU23D04082764R1E	2023-04-19	2023-04-19 to 2023-05-24	2026-06-26	Version 1	Updated	Valid

Note:

This report is issued for updating applicant information, manufacturer information, product model, product photo and trademark of client based on test report WTU23D04082764E. This update does not affect EMC testing, so no longer performing EUT testing can be deemed to be in comply with the test specifications listed in cover page.

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4 General Information

4.1 Client Information

Factory name: Tianjin Tsaifan HVAC Technology Co., Ltd
Factory address: No.2 Street, Chagugang Town, Wuqing district, Tianjin, China

4.2 General Description of E.U.T.

Product: Motorized Valve
Model(s): TFA20-TF*-**-***-CR****-DC*****
Mode different:
1. “**” means valve size, can be code 8(DN8), 10(DN10), 15(DN15), 20(DN20), 25(DN25), 32(DN32);
2. “***” means valve material and type, can be code S2(stainless steel two way valve), B2(brass two way valve), P2(PVC two way valve), N2(nickel plate brass two way valve), N3(nickel plate brass 3 way valve), S3(stainless steel 3 way valve), B3(brass 3 way valve);
3. “****” refers A(neither with position indicator nor manual override), B(both with position indicator and manual override), C(position indicator only)
4. “*****” means wiring diagram, can be code 201(two wires control), 501(five wires control);
5. “*****” refers to 5V, 12V, 24V
Remark: The model no. ‘A20-T15-B2-B-CR201-DC24V’ in the test results represented the final model ‘TFA20-TF15-B2-B-CR201-DC24V’ actually.

4.3 Details of E.U.T.

Technical data: Refer to Section 4.2
Highest Internal Frequency: $f \leq 108\text{MHz}$
Classification of Equipment: Class B

4.4 Test Location

Laboratory: Waltek Testing Group Co., Ltd.
Address: No. 77, Houjie Section, Guantai Road, Houjie Town, Dongguan City, Guangdong, China

4.5 Abnormalities from Standard Conditions

None

4.6 EUT Setup and Operation Mode

No	Title	Description
TM1	Working mode	DC 24V
Pre-test in voltage input range & all operation modes, and find out the worst case for compliance test. And record it in the report.		



5 SUMMARY OF TEST RESULTS

Item	Standard	Method	Requirement	Result
Radiated emissions (30MHz-1GHz)	EN 55032:2015+A1:2020	EN 55032: 2015+A1:2020	Class B	Pass
Electrostatic discharges	EN 55035:2017+A11:2020	EN 61000-4-2: 2009	Contact Discharge: +/- 4kV Air Discharge: +/- 8kV	Pass
RF electromagnetic field disturbances	EN 55035:2017+A11:2020	EN IEC 61000-4-3: 2020	3V/m, 80%, 1kHz Amp. Mod.	Pass

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6 Equipment Used during Test

6.1 Equipment List

Radiated emissions (30MHz-1GHz)					
Description	Manufacturer	Model	Serial No.	Cal. Date	Due. Date
Cable	HUBER+SUHNER	CBL2	525178	2023-04-24	2024-04-23
Amplifier	ANRITSU	MH648A	M43381	2023-04-24	2024-04-23
Trilog Broadband Antenna	SCHWARZBECK	VULB9160	9160-3325	2022-10-31	2023-10-30
Test Receiver	R&S	ESCI	101296	2023-04-24	2024-04-23

Electrostatic discharges					
Description	Manufacturer	Model	Serial No.	Cal. Date	Due. Date
Electrostatic Discharge Simulator	SCHLODER	SESD 216	606144	2023-04-25	2024-04-24

RF electromagnetic field disturbances					
Description	Manufacturer	Model	Serial No.	Cal. Date	Due. Date
Amplifier	NJNT	NTWPAS-2560025	2560025	2022-08-01	2023-07-31
Power Meter	R&S	NRP2	102031	2022-08-01	2023-07-31
Gestockte Breitband (S tacked) Log.-per.Antenna	SCHWARZBECK	STLP9128D	43	2022-08-01	2023-07-31
RF Power Amplifier	BONN Elektronik	BLWA0830-160/100/40D	128740	2022-08-01	2023-07-31
Signal Generater	R&S	SMB100A	105942	2022-08-01	2023-07-31
Broad-band Horn Antenna	SCHWARZBECK	BBHA 9120 D	667	2023-02-02	2024-02-01

6.2 Measurement Uncertainty

Parameter	Measurement Uncertainty
Radiated Emissions (30M - 1000MHz)	±5.56dB
Confidence interval: 95%. Confidence factor: k=2	

7 Emission Test Results (EMI)

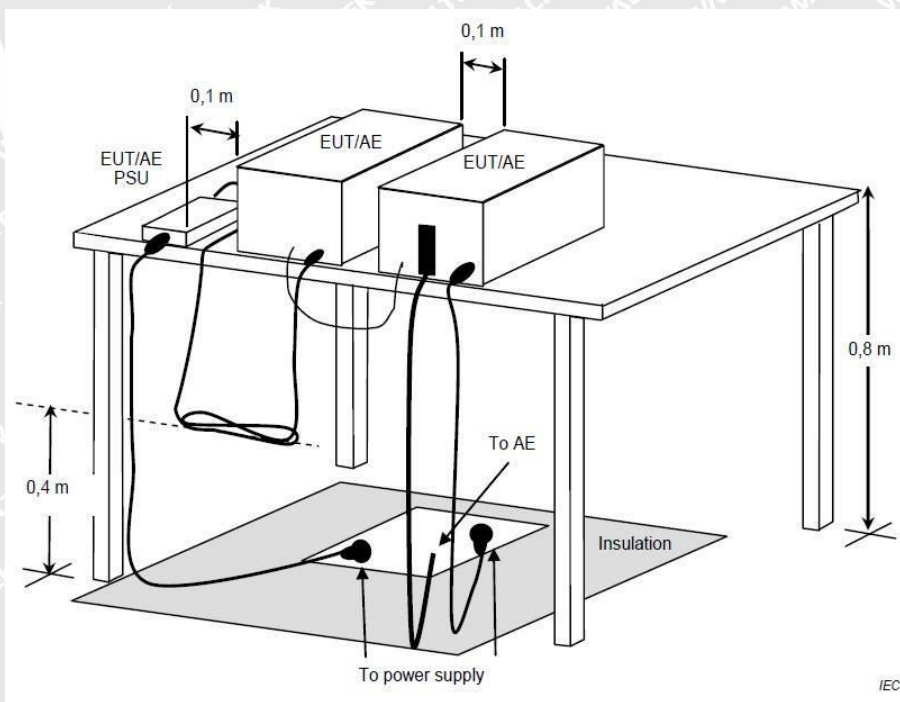
7.1 Radiated emissions (30MHz-1GHz)

Test Requirement:	Class B		
Test Limit:	Frequency (MHz)	Limit [dB(uV/m) at 10m]	Limit [dB(uV/m) at 3m]
	30 to 230	30	40
	230 to 1000	37	47
	Detector:	Peak for pre-scan (120kHz resolution bandwidth) 30M to 1000MHz	
Test Method:	EN 55032: 2015+A1:2020		
Procedure:	An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by BiConiLog antenna with 2 orthogonal polarities. Remark: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor		

7.1.1 E.U.T. Operation

Environmental Conditions					
Temperature:	26.6 °C	Humidity:	66.4 %	Atmospheric Pressure:	101.2 kPa
Test mode:	TM1				

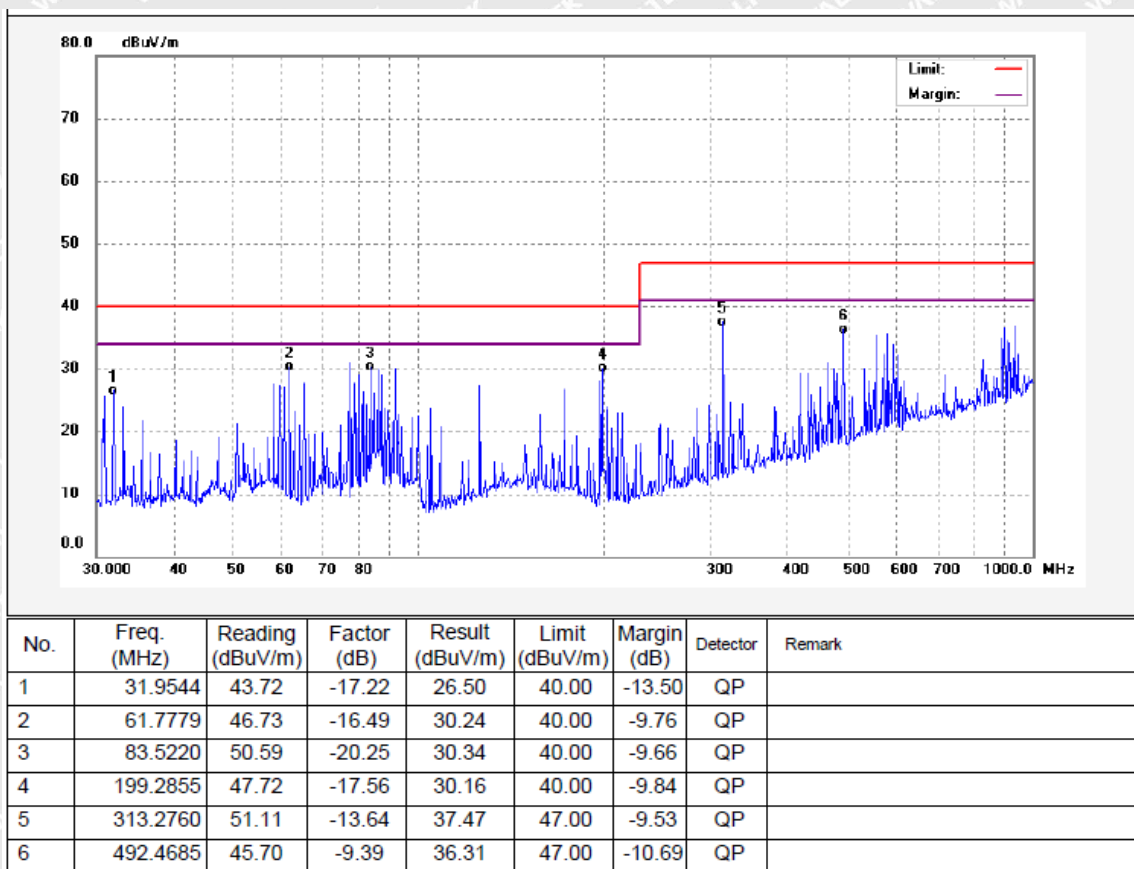
7.1.2 Basic Test Setup Block Diagram





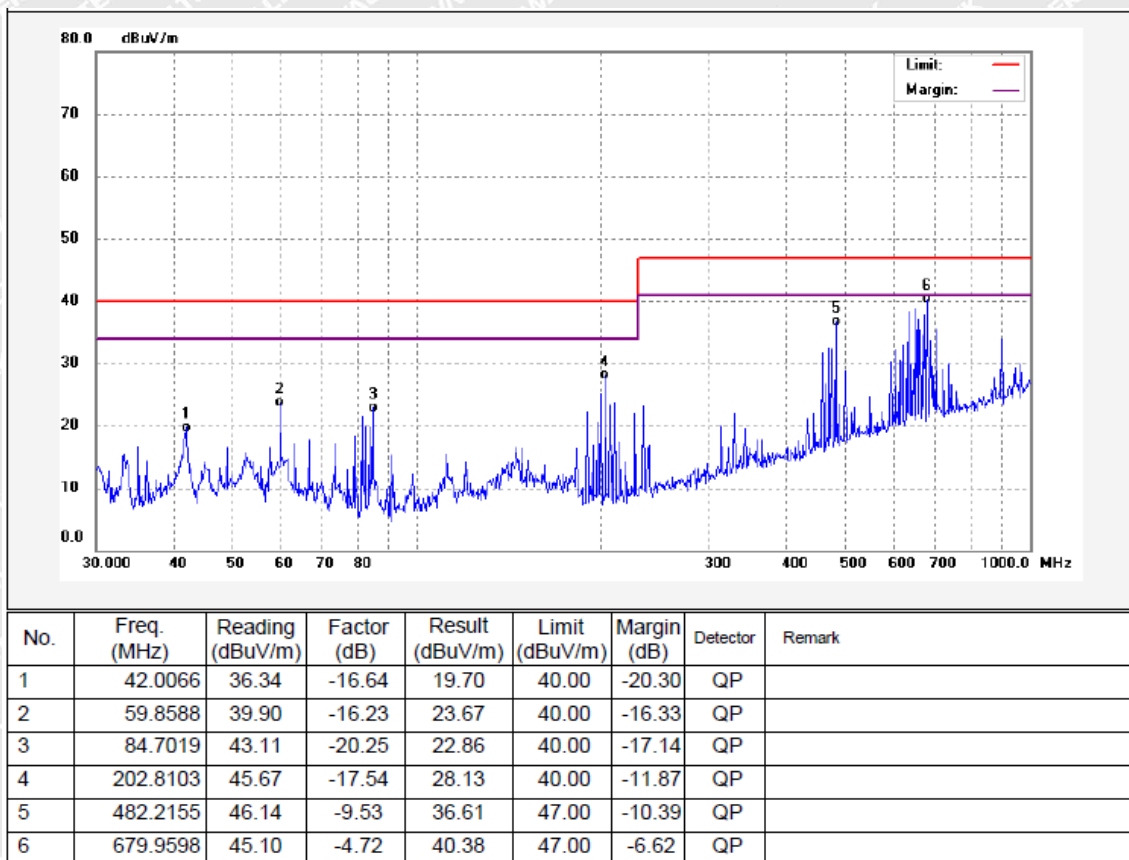
7.1.3 Summary of Test Results

TM1 / Polarization: Horizontal





TM1 / Polarization: Vertical





8 Immunity Test Results (EMS)

General Performance Criteria

Performance Criteria A

The equipment shall continue to operate as intended without operator intervention. No degradation of performance, loss of function or change of operating state is allowed below a performance level specified by the manufacturer when the equipment is used as intended.

The performance level may be replaced by a permissible loss of performance. 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 by what the user may reasonably expect from the equipment if used as intended.

Performance Criteria B

During the application of the disturbance, degradation of performance is allowed. However, no unintended change of actual operating state or stored data is allowed to persist after the test.

After the test, the equipment shall continue to operate as intended without operator intervention; no degradation of performance or loss of function is allowed, below a performance level specified by the manufacturer, when the equipment is used as intended.

The performance level may be replaced by a permissible loss of performance.

If the minimum performance level (or the permissible performance loss), or recovery time, is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.

Performance Criteria C

Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the controls by the user in accordance with the manufacturer's instructions. A reboot or re-start operation is allowed.

Information stored in non-volatile memory, or protected by a battery backup, shall not be lost.

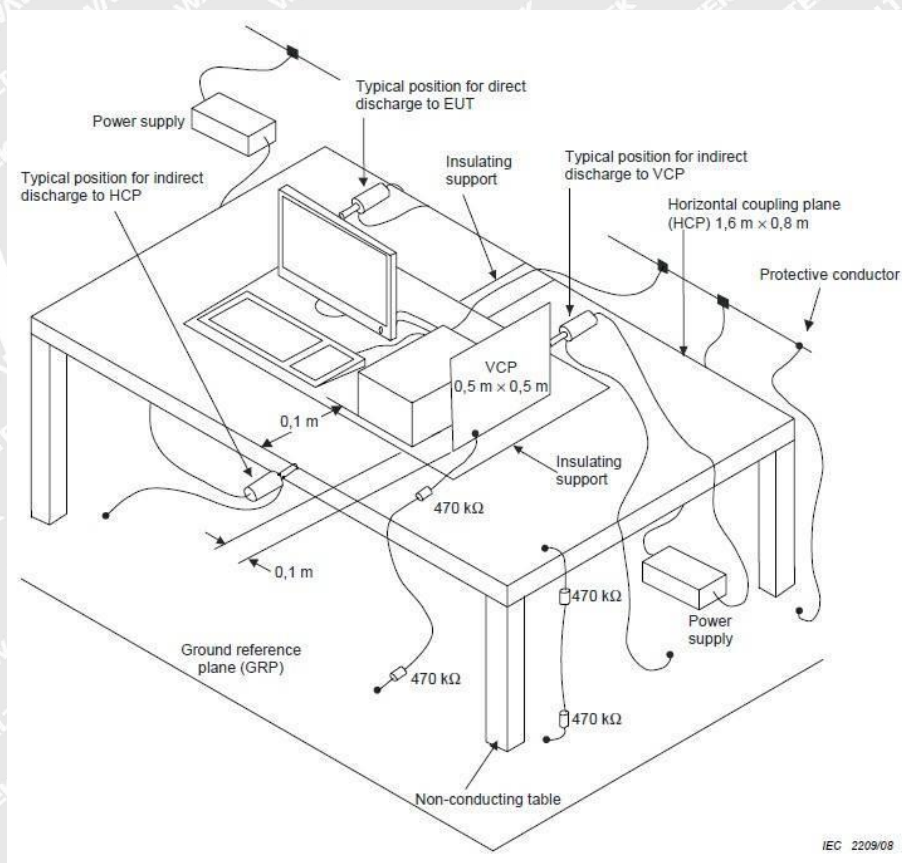
8.1 Electrostatic discharges

Test Requirement:	Contact Discharge: +/- 4kV Air Discharge: +/- 8kV
Test Method:	EN 61000-4-2: 2009
Procedure:	Discharge Impedance: 330Ω/150pF Number of Discharge: Minimum 10 times at each test point Discharge Mode: Single Discharge Discharge Period: 1 second minimum
Performance Criteria:	B

8.1.1 E.U.T. Operation

Environmental Conditions					
Temperature:	25.2 °C	Humidity:	55.2 %	Atmospheric Pressure:	101.1 kPa
Test mode:	TM1				

8.1.2 Basic Test Setup Block Diagram





8.1.3 Summary of Test Results

Discharge type	Volt (kV)	Polarity	Test Point	Result/ Observations
Air discharge	2,4,8	+	1	A
Air discharge	2,4,8	-	1	A
Contact discharge	4	+	2	A
Contact discharge	4	-	2	A
Horizontal Coupling	4	+	3	A
Horizontal Coupling	4	-	3	A
Vertical Coupling	4	+	3	A
Vertical Coupling	4	-	3	A

Test Point: 1. All insulated enclosure and seams.

2. All accessible metal parts of the enclosure.

3. All side.

A: No degradation in the performance of the EUT was observed.

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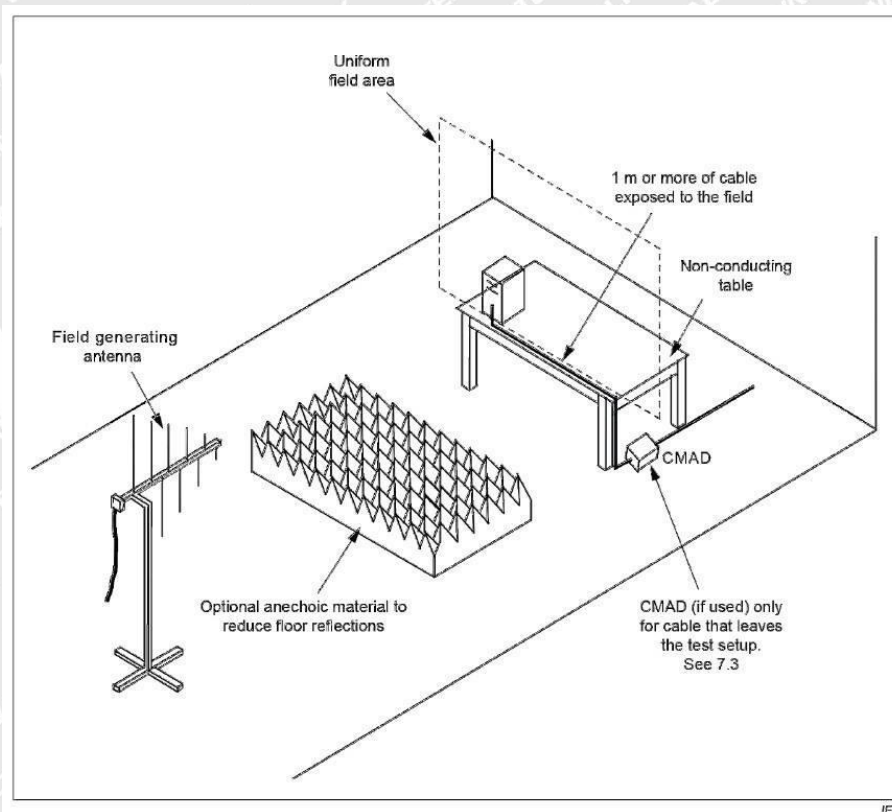
8.2 RF electromagnetic field disturbances

Test Requirement:	3V/m, 80%, 1kHz Amp. Mod.
Test Method:	EN IEC 61000-4-3: 2020
Procedure:	Frequency Range: 80MHz to 1GHz, 1800MHz, 2600MHz, 3500MHz, 5000MHz Antenna Polarisation: Vertical and Horizontal Modulation: 1kHz, 80% Amp. Mod, 1% increment
Performance Criteria:	A

8.2.1 E.U.T. Operation

Environmental Conditions					
Temperature:	26.2 °C	Humidity:	56.2 %	Atmospheric Pressure:	101.2 kPa
Test mode:	TM1				

8.2.2 Basic Test Setup Block Diagram





8.2.3 Summary of Test Results

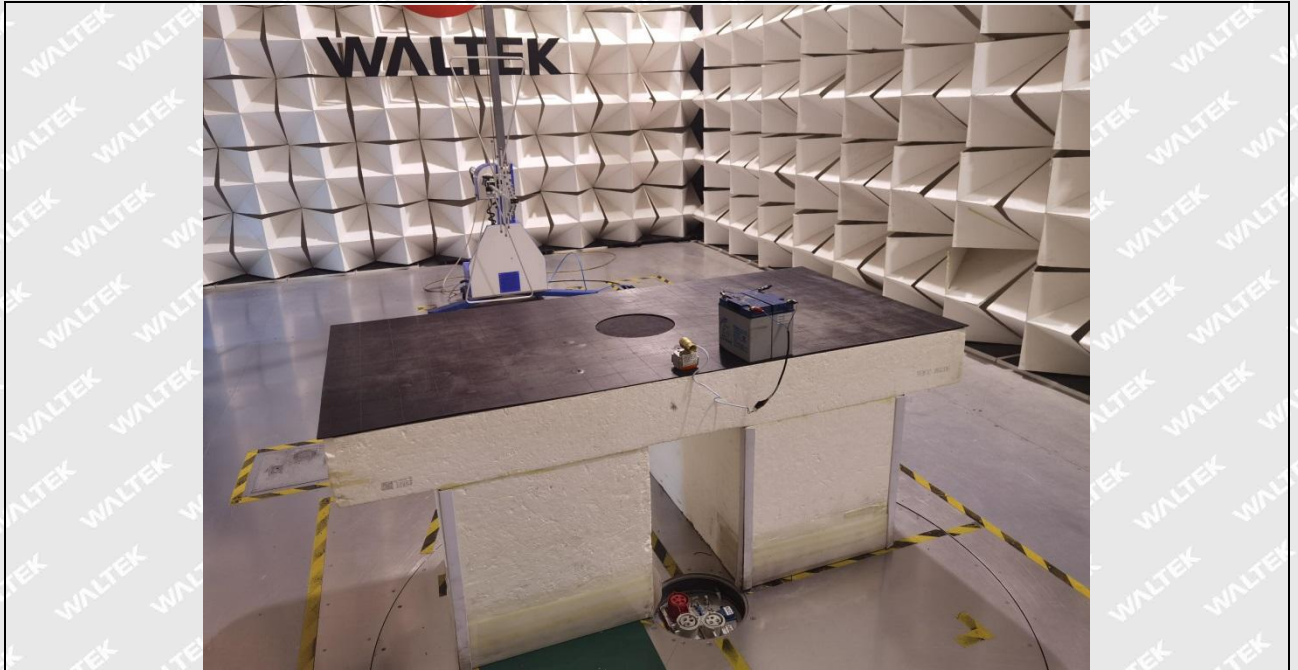
Frequency	Field Strength (V/m)	EUT face	Dwell time	Result/ Observations
80MHz-1GHz	3	Front	1s	
80MHz-1GHz	3	Back	1s	
80MHz-1GHz	3	Left	1s	
80MHz-1GHz	3	Right	1s	
80MHz-1GHz	3	Top	1s	
80MHz-1GHz	3	Bottom	1s	
1800MHz	3	Front	1s	
1800MHz	3	Back	1s	
1800MHz	3	Left	1s	
1800MHz	3	Right	1s	
1800MHz	3	Top	1s	
1800MHz	3	Bottom	1s	
2600MHz	3	Front	1s	
2600MHz	3	Back	1s	
2600MHz	3	Left	1s	
2600MHz	3	Right	1s	
2600MHz	3	Top	1s	
2600MHz	3	Bottom	1s	
3500MHz	3	Front	1s	
3500MHz	3	Back	1s	
3500MHz	3	Left	1s	
3500MHz	3	Right	1s	
3500MHz	3	Top	1s	
3500MHz	3	Bottom	1s	
5000MHz	3	Front	1s	
5000MHz	3	Back	1s	
5000MHz	3	Left	1s	
5000MHz	3	Right	1s	
5000MHz	3	Top	1s	
5000MHz	3	Bottom	1s	

A: No degradation in the performance of the EUT was observed.

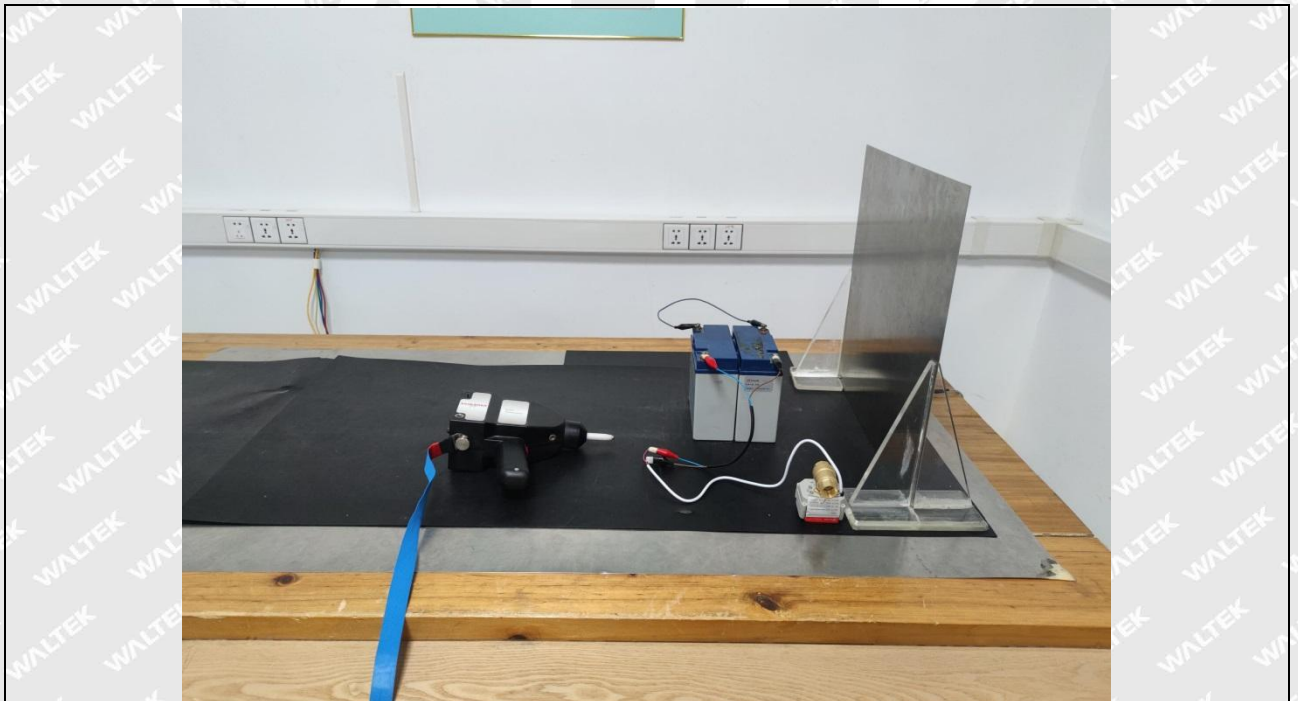


9 Photographs – Test Setup

9.1 Radiated emissions (30MHz-1GHz)

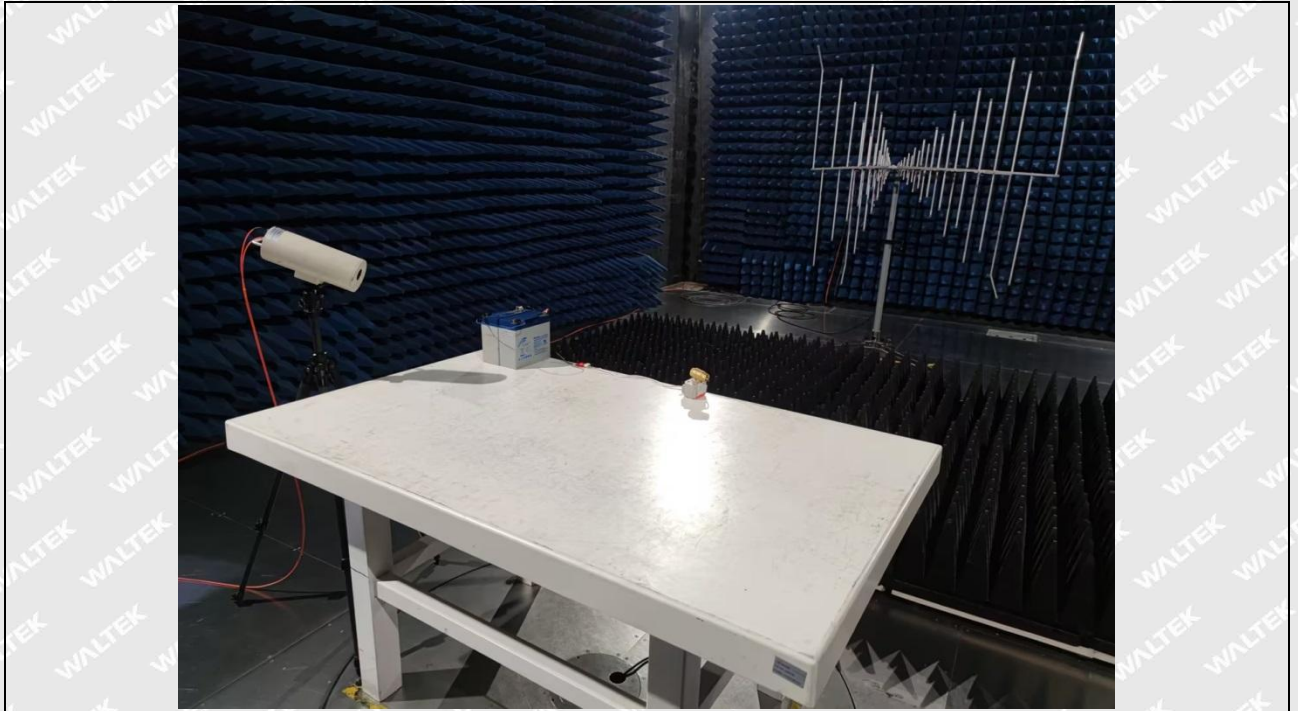


9.2 Electrostatic discharges





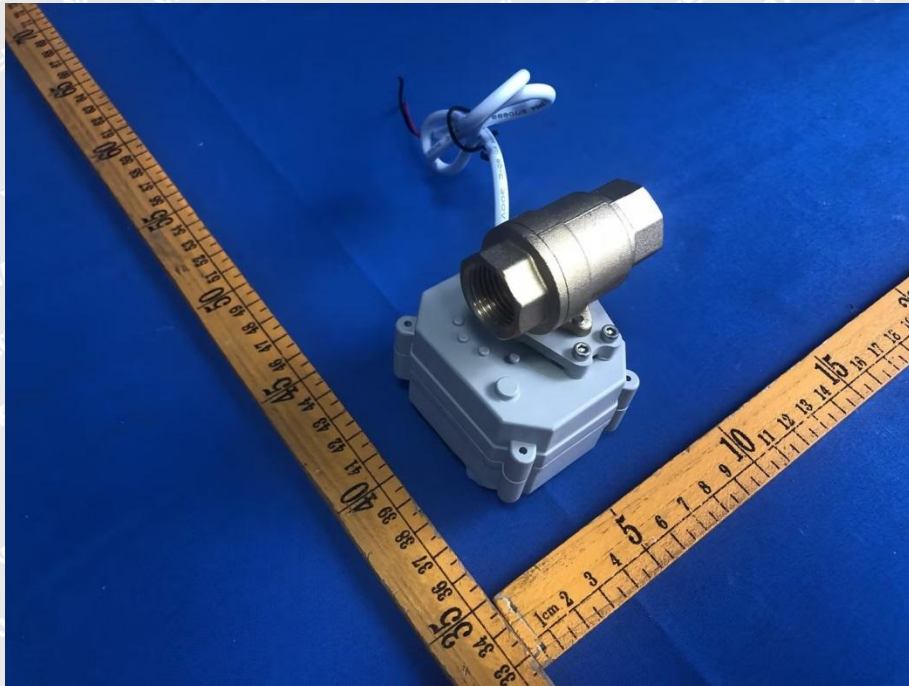
9.3 RF electromagnetic field disturbances



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10 Photographs – Constructional Details





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

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