

EMC TEST REPORT

On Behalf of

Product Name: Car diagnostic scanner

Trademark: KONNWEI

Model Number: KW870, KW851, KW880, KW850, KW890, KW480, KW470, KW460, KW450, KW420

Prepared For: Shenzhen Jiawei Hengxin Technology Co., Ltd.

Address: Company Address: Floor 4 & Floor 5, Building 6, No.49 Education North Road, Gaoqiao Community, Pingdi Street, Longgang District, Shenzhen

Prepared By: Shenzhen Huaxiang Testing Co., Ltd

Address: 1st Floor, Building A1, No. 2082 Jincheng Road, Shajing Street, Bao'an District, Shenzhen City, Guangdong Province

Report No.: HUAX250314303KR

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TEST REPORT DECLARATION

Applicant	:	Shenzhen Jiawei Hengxin Technology Co., Ltd.
Address :	:	Company Address: Floor 4 & Floor 5, Building 6, No.49 Education North Road, Gaoqiao Community, Pingdi Street, Longgang District, Shenzhen
Manufacturer:	:	Shenzhen Jiawei Hengxin Technology Co., Ltd.
Address :	:	Company Address: Floor 4 & Floor 5, Building 6, No.49 Education North Road, Gaoqiao Community, Pingdi Street, Longgang District, Shenzhen
EUT Description :	:	Car diagnostic scanner
Model Number	:	KW870
Test Date		Mar. 10, 2025 - Mar. 14, 2025
Date of Report		Mar. 14, 2025

Test Standards:

EN IEC 61326-1:2021**EN 55011:2016+A2:2021****EN IEC 61000-3-2: 2019+A2:2024****EN 61000-3-3: 2013+A2:2021**

The EUT described above is tested by Huaxiang Testing Co., Ltd. EMC Laboratory to determine the maximum emissions from the EUT and ensure the EUT to be compliance with the immunity requirements of the EUT. Shenzhen Huaxiang Testing Co., Ltd. is assumed full responsibility for the accuracy of the test results. Also, this report shows that the EUT technically complies with the 2014/30/EU directive and its amendment requirements.

The test report is valid for above tested sample only and shall not be reproduced in part without written approval of the laboratory.

Prepared by(Test Engineer):

Kevin Su

Kevin Su

Amy Jiang

Amy Jiang

Approved(Manager)

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

EUT	: Car diagnostic scanner
Model	: KW870
Test Voltage	: DC 12V
Rating	: DC 12V, 74mA
Applicant	: Shenzhen Jiawei Hengxin Technology Co., Ltd.
Address	: Company Address: Floor 4 & Floor 5, Building 6, No.49 Education North Road, Gaoqiao Community, Pingdi Street, Longgang District, Shenzhen
Manufacturer	: Shenzhen Jiawei Hengxin Technology Co., Ltd.
Address	: Company Address: Floor 4 & Floor 5, Building 6, No.49 Education North Road, Gaoqiao Community, Pingdi Street, Longgang District, Shenzhen

1.2. Test Standards

Test Standards	
EN IEC 61326-1:2021	Electrical equipment for measurement, control and laboratory use — EMC requirements Part 1: General requirements
EN 55011:2016+A2:2021	Industrial, scientific and medical (ISM) radio-frequency equipment - Electromagnetic disturbance characteristics - Limits and methods of measurement
EN IEC 61000-3-2: 2019+A2:2024	Electromagnetic compatibility(EMC)-Part 3-2:Limits-Limits for harmonic current emissions(equipment input current $\leq 16A$ per phase)
EN 61000-3-3: 2013+A2:2021	Electromagnetic compatibility (EMC) - Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current $\leq 16 A$ per phase and not subject to conditional connection

1.3. Test Summary

For the EUT described above.

Table 1: Tests Carried Out Under EN 55011:2016+A2:2021(GROUP 1, CLASS B)

Standard	Test Items	Status
EN 55011:2016+A2:2021 (GROUP 1, CLASS B)	Disturbance Voltage at The Mains Terminals	√
	Radiated Disturbances	√

√ Indicates that the test is applicable

× Indicates that the test is not applicable

Table 2: Tests Carried Out Under EN IEC 61326-1:2021(industrial)

Standard	Test Items	Status
EN61000-4-2:2012	Electrostatic discharge Immunity	√
EN61000-4-3:2010	Radiated Susceptibility	√
EN61000-4-4:2012	Electrostatic Fast Transient/Burst Immunity	√
EN61000-4-5:2005	Surge Immunity	√
EN61000-4-6:2008	Conducted Susceptibility	√
EN61000-4-8:2009	Power Frequency Magnetic Field Immunity	√
EN61000-4-11:2004	Voltage Dips Short Interruptions Immunity Tests	√

√ Indicates that the test is applicable

× Indicates that the test is not applicable

Table 3: Tests Carried Out Under EN 61000-3-2:2006+A1:2009+A2:2009& EN 61000-3-3:2013

Standard	Test Items	Status
EN IEC 61000-3-2: 2019+A2:2024	Harmonic Current	√
EN 61000-3-3: 2013+A2:2021	Voltage Fluctuations	√

√ Indicates that the test is applicable

× Indicates that the test is not applicable

1.4. Test Methodology

All measurements contained in this report were conducted with CISPR 16-1, radio disturbance and immunity measuring apparatus, and CISPR16-2, Method of measurement of disturbances and immunity.

All measurement required was performed at laboratory of Shenzhen Huaxiang Testing Co., Ltd.,

1.5. Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

FCC – Registration No.: 222278

EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 222278.

The facility also complies with the radiated and AC line conducted test site criteria set forth in CISPR 16-1, CISPR16-2.

1.6. Measurement Uncertainty

Radiation Uncertainty : $U_r = \pm 3.84 \text{ dB}$

Conduction Uncertainty : $U_c = \pm 2.72 \text{ dB}$

2. MEASURING DEVICE AND TEST EQUIPMENT

2.1. For Power Line Conducted Emission

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde & Schwarz	ESCS30	828985/018	Jun. 20, 2024	1 Year
2.	L.I.S.N	Rohde & Schwarz	ESH2-Z5	834549/005	Jun. 20, 2024	1 Year
3.	50ΩCoaxial Switch	Anritsu	MP59B	M20531	N/A	N/A
4.	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100006	Jun. 20, 2024	1 Year
5.	Voltage Probe	Rohde & Schwarz	TK9416	N/A	Jun. 20, 2024	1 Year

2.2. For Radiated Emission Measurement

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analyzer	ANRITSU	MS2661C	6200140915	Jun. 20, 2024	1 Year
2.	Test Receiver	Rohde & Schwarz	ESCS30	828985/018	Jun. 20, 2024	1 Year
3.	Bilog Antenna	Schwarzbeck	VULB9163	142	Jun. 20, 2024	1 Year
4.	50 Coaxial Switch	Anritsu Corp	MP59B	6100237248	Jun. 20, 2024	1 Year
5.	EMI Power Line Filter	DUOJI EME	FNF 201 B16	N/A	Jun. 20, 2024	1 Year
6.	EMI Power Line Filter	JIANLI	DL-40C	N/A	Jun. 20, 2024	1 Year
7.	Cable	Schwarzbeck	AK9513	ACRX1	Jun. 20, 2024	1 Year
8.	Cable	Rosenberger	N/A	FP2RX2	Jun. 20, 2024	1 Year
9.	Cable	Schwarzbeck	AK9513	CRPX1	Jun. 20, 2024	1 Year
10.	Cable	Schwarzbeck	AK9513	CRRX2	Jun. 20, 2024	1 Year
11.	Signal Generator	HP	8648A	3625U00573	Jun. 20, 2024	1 Year

2.3. For Harmonic Current / Flicker Measurement

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Power Frequency Test System	HAEFELY	PHF555	080419-03	Jun. 20, 2024	1 Year
2.	PC	N/A	P2L97	N/A	Jun. 20, 2024	N/A

2.4. For Electrostatic Discharge Immunity Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	ESD Tester	HAEFELY	PESD1600	H708159	Jun. 20, 2024	1 Year

2.5. For RF Strength Susceptibility Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Signal Generator	HP	8648A	3625U00573	Jun. 20, 2024	1 Year
2.	Amplifier	AR	500A100	17034	NCR	NCR
3.	Amplifier	AR	100W/1000M1	17028	NCR	NCR
4.	Isotropic Field Monitor	AR	FM2000	16829	NCR	NCR
5.	Isotropic Field Probe	AR	FP2000	16755	Jun. 20, 2024	1 Year
6.	Biconic Antenna	EMCO	3108	9507-2534	NCR	NCR
7.	Log-periodic Antenna	AR	AT1080	16812	NCR	NCR
8.	PC	N/A	486DX2	N/A	N/A	N/A

2.6. For Electrical Fast Transient /Burst Immunity Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Burst Tester	HAEFELY	PEFT4010	080981-16	Jun. 20, 2024	1 Year
2.	Coupling Clamp	HAEFELY	IP-0.07A	147147	Jun. 20, 2024	1 Year

2.7. For Surge Immunity Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Surge Tester	HAEFELY	PSURGE4.1	080107-04	Jun. 20, 2024	1 Year

2.8. For Injected Current Susceptibility Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Simulator	EMTEST	CWS500C	0900-12	Jun. 20, 2024	1 Year
2.	CDN	EMTEST	CDN-M2	5100100100	Jun. 20, 2024	1 Year
3.	CDN	EMTEST	CDN-M3	0900-11	Jun. 20, 2024	1 Year
4.	Injection Clamp	EMTEST	F-2031-23 MM	368	Jun. 20, 2024	1 Year
5.	Attenuator	EMTEST	ATT6	0010222A	Jun. 20, 2024	1 Year

2.9. For Magnetic Field Immunity Test

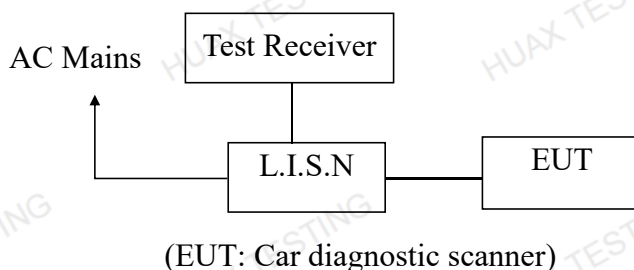
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Magnetic Field Tester	HAEFELY	MAG100	250040.1	Jun. 20, 2024	1 Year

2.10. For Voltage Dips and Interruptions Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Dips Tester	HAEFELY	Pline1610	083732-12	Jun. 20, 2024	1 Year

3. POWER LINE CONDUCTED EMISSION MEASUREMENT

3.1. Block Diagram of Test Setup



3.2. Measuring Standard

EN 55011:2016+A2:2021(GROUP 1, CLASS B)

Power Line Conducted Emission Limits (Group 1, Class B)

Frequency (MHz)	Limit (dB μ V)	
	Quasi-Peak Level	Average Level
0.15 ~ 0.50	66.0 ~ 56.0 *	56.0 ~ 46.0 *
0.50 ~ 5.00	56.0	46.0
5.00 ~ 30.00	60.0	50.0

NOTE1-The lower limit shall apply at the transition frequencies.
NOTE2-The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz.

3.3. EUT Configuration on Measurement

The following equipments are installed on Conducted Emission Measurement to meet EN 55011 requirements and operating in a manner which tends to maximize its emission characteristics in a normal application.

EUT : Car diagnostic scanner
Model Number : KW870
Serial Number : N/A

3.4. Operating Condition of EUT

3.4.1. Setup the EUT as shown on Section 3.1.

3.4.2. Turn on the power of all equipments.

3.4.3. Let the EUT work in measuring mode (On) and measure it.

3.5. Test Procedure

The EUT is put on the plane 0.8m high above the ground by insulating support and connected to the AC mains through Line Impedance Stability Network (L.I.S.N). This provided a 50ohm coupling impedance for the tested equipments. Both sides of AC line are investigated to find out the maximum conducted emission according to the EN55011 regulations during conducted emission measurement.

The bandwidth of the field strength meter (R&S Test Receiver ESCS30) is set at 9KHz in 150KHz~30MHz and 200Hz in 9KHz~150KHz.

The frequency range from 150kHz to 30MHz is investigated

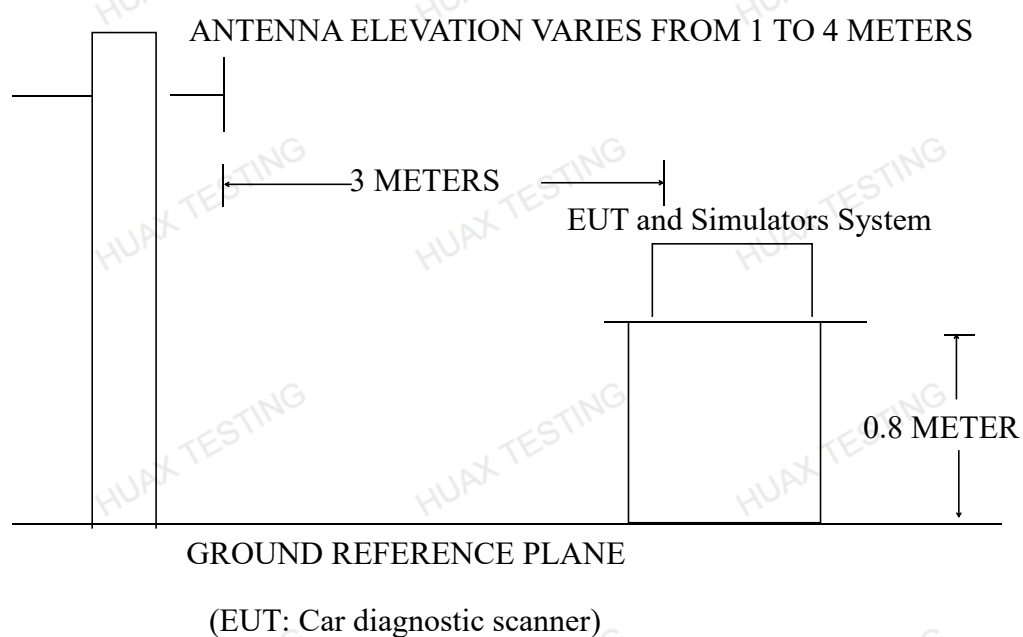
3.6 Measuring Results

N/A

4. RADIATED EMISSION MEASUREMENT

4.1. Block Diagram of Test

4.1.1. Block diagram of test setup (In chamber)



4.2. Measuring Standard

EN 55011:2016+A2:2021(GROUP 1, CLASS B)

4.3. Radiated Emission Limits

All emanations from a **group 1 class B** device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified below:

FREQUENCY (MHz)	DISTANCE (Meters)	FIELD STRENGTHS LIMIT (dB μ V/m)
30 ~ 230	3	40
230 ~ 1000	3	47

Note: (1) The smaller limit shall apply at the combination point between two frequency bands.

(2) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the EUT.

4.4. EUT Configuration on Test

The 55011 regulations test method must be used to find the maximum emission during radiated emission measurement.

4.5. Operating Condition of EUT

4.5.1. Turn on the power.

4.5.2. After that, let the EUT work in test mode (Normal) and measure it.

4.6. Test Procedure

The EUT is placed on a turn table which is 0.8 meter high above the ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna which is mounted on a antenna tower. The antenna can be moved up and down from 1 to 4 meters to find out the maximum emission level. Bilog antenna (calibrated by Dipole Antenna) is used as a receiving antenna. Both horizontal and vertical polarization of the antenna are set on test.

The bandwidth of the Receiver (ESCS30) is set at 120kHz.

The frequency range from 30MHz to 1000MHz is investigated.

4.7. Measuring Results

PASS.

Please reference to the following pages

Radiated Emission Test Data

Standard:	EN 55011 Group1 Class B RE	Polarization:	Horizontal
Test item:	Radiation Test	Date:	2025-03-11
EUT:	Car diagnostic scanner	Test By:	Bill
Model:	KW870	Distance:	3m
Note:			



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	cm	degree	Comment
1		66.2660	53.43	-20.15	33.28	40.00	-6.72	peak		
2		80.9274	51.93	-20.34	31.59	40.00	-8.41	peak		
3	*	189.7384	51.67	-16.41	35.26	40.00	-4.74	peak		

Radiated Emission Test Data

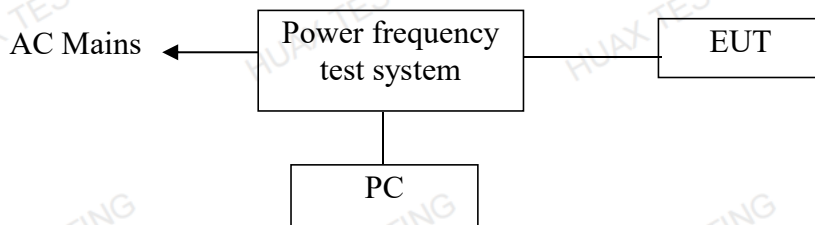
Standard:	EN 55011 Group1 Class B RE	Polarization:	Vertical
Test item:	Radiation Test	Date:	2025-03-11
EUT:	Car diagnostic scanner	Test By:	Bill
Model:	KW870	Distance:	3m
Note:			



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	cm	degree	Comment
1	*	60.2800	55.23	-20.68	34.55	40.00	-5.45	peak		
2	!	99.1795	51.05	-16.90	34.15	40.00	-5.85	peak		
3		150.5378	48.50	-14.71	33.79	40.00	-6.21	peak		

5. HARMONIC CURRENT EMISSION MEASUREMENT

5.1 Block Diagram of Test Setup



5.2 Measuring Standard

EN 61000-3-2: 2006+A1:2009 +A2:2009

5.3 Operation Condition of EUT

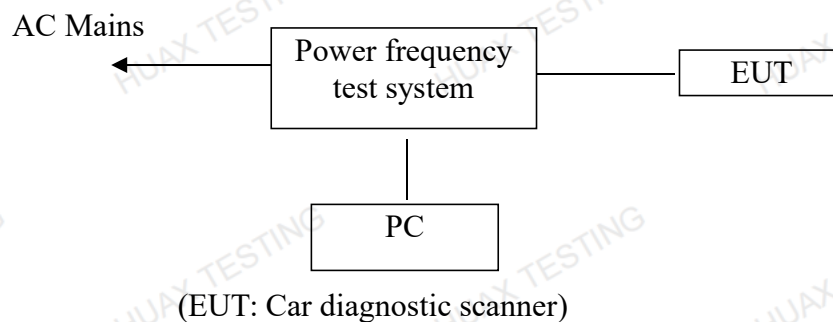
Same as Section 3.4, except the test setup replaced as Section 5.1.

5.4 Measuring Results

N/A

6. VOLTAGE FLUCTUATION AND FLICKER MEASUREMENT

6.1 Block Diagram of Test Setup



6.2 Measuring Standard

EN 61000-3-3: 2013+A2:2021

6.3 Operation Condition of EUT

- 6.3.1 Setup the EUT and simulators as shown in Section 6.1.
- 6.3.2 Turn on the power of all equipments.
- 6.3.3 Let the EUT work in test modes (Normal) and test it.

6.4 Measuring Results

N/A

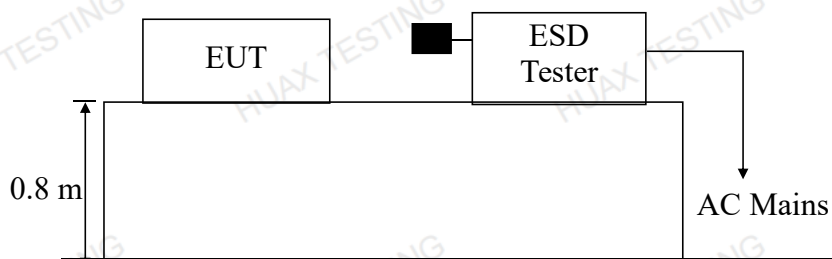
7. ELECTROSTATIC DISCHARGE IMMUNITY TEST

7.1 Block Diagram of Test Setup

7.1.1 Block Diagram of the EUT and the simulators



7.1.2 Block diagram of ESD test setup



7.2 Test Standard

EN IEC 61326-1:2021(industrial)(EN61000-4-2: 2012)

Severity Level: 3 / Air Discharge: $\pm 8\text{KV}$ Level: 3 / Contact Discharge: $\pm 8\text{KV}$

7.3 Severity Levels and Performance Criterion

7.3.1 Severity level

Level	Test Voltage Contact Discharge (KV)	Test Voltage Air Discharge (KV)
1.	± 4	± 4
2.	± 8	± 8
X	Special	Special

7.3.2 Performance criterion: **B**

7.4 EUT Configuration

The configuration of EUT is listed in Section 3.3.

7.5 Operating Condition of EUT

Same as conducted emission measurement, which is listed in Section 3.4. Except the test set up replaced by Section 7.1.

7.6 Test Procedure

7.6.1 Air Discharge:

This test is done on a non-conductive surface. The round discharge tip of the discharge electrode shall be approached as fast as possible to touch the EUT. After each discharge, the discharge electrode shall be removed from the EUT. The generator is then re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed.

7.6.2 Contact Discharge:

All the procedure shall be same as Section 7.6.1. except that the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.

7.6.3 Indirect discharge for horizontal coupling plane

At least 10 single discharges (in the most sensitive polarity) shall be applied at the front edge of each HCP opposite the center point of each unit (if applicable) of the EUT and 0.1m from the front of the EUT. The long axis of the discharge electrode shall be in the plane of the HCP and perpendicular to its front edge during the discharge.

7.6.4 Indirect discharge for vertical coupling plane

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

7.7 Test Results

PASS

Please refer to the following page

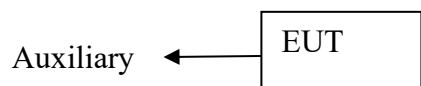
Electrostatic Discharge Test Result

Applicant	: Shenzhen Jiawei Hengxin Technology Co., Ltd.	Test Date	: 2025-03-11
EUT	: Car diagnostic scanner	Temperature	: 22℃
M/N	: KW870	Humidity	: 50%
Power Supply	: DC 12V/500A	Test Mode	: Normal
Air discharge	: ±2.0KV, ±4.0KV, ±8.0KV	Criterion	: B
Contact discharge:	±4.0KV, ±4.0KV	Test Engineer :	Bill
Location		Kind A-Air Discharge C-Contact Discharge	Result
Gap 10 points		A	PASS
Screw 10 points		C	PASS
Metal 10 points		C	PASS
HCP 4 points		C	PASS
VCP 4 points		C	PASS
Test Equipment: ESD Simulator (HAEFELY, PESD1600)			

8. RF FIELD STRENGTH SUSCEPTIBILITY TEST

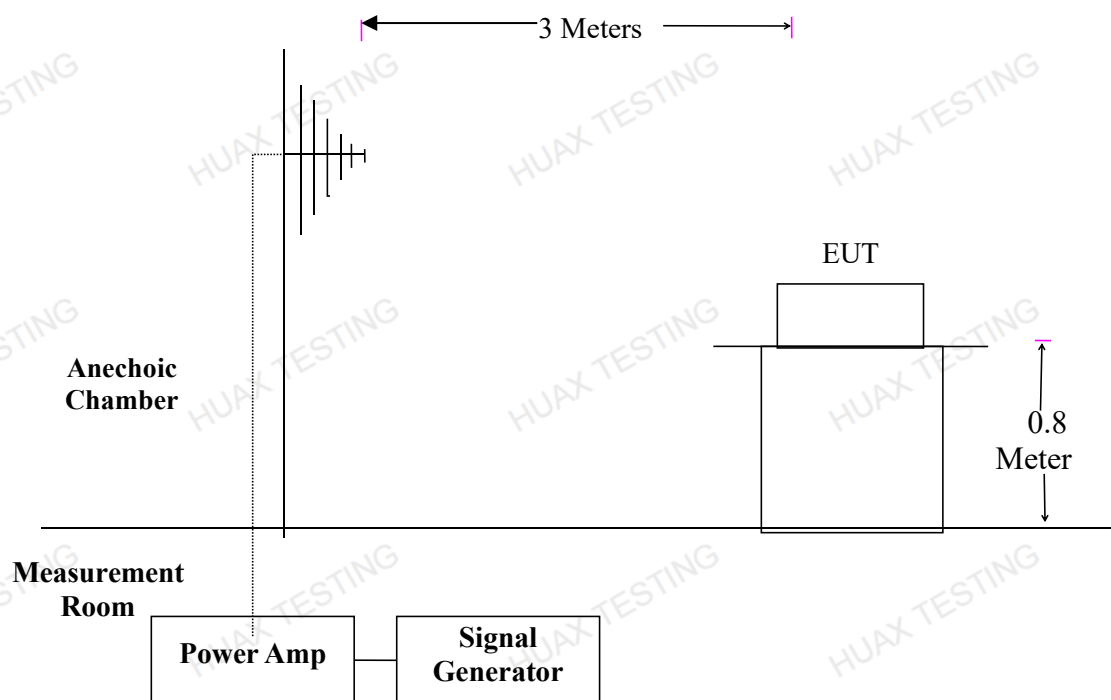
8.1 Block Diagram of Test

8.1.1 Block diagram of connection between the EUT and Load



(EUT: Car diagnostic scanner)

8.1.2 Block diagram of RS test setup



(EUT: Car diagnostic scanner)

8.2 Test Standard

EN IEC 61326-1:2021(industrial)(EN61000-4-3: 2010 (Severity Level: 2, 3V / m))

8.3 Severity Levels and Performance Criterion

8.3.1 Severity Levels

Level	Field Strength V/m
1.	1
2.	3
3.	10
X	Special

8.3.2 Performance Criterion: A

8.4 EUT Configuration on Test

The configuration of the EUT is same as Section 3.3.

8.5 Operating Condition of EUT

Same as radiated emission measurement which is listed in Section 3.4, except the test setup replaced as Section 8.1.

8.6 Test Procedure

The EUT are placed on a table which is 0.8 meter high above the ground. The EUT is set 3 meters away from the transmitting antenna which is mounted on an antenna tower. Both horizontal and vertical polarization of the antenna are set on test. Each of the four sides of the EUT must be faced this transmitting antenna and measured individually. In order to judge the EUT performance, a CCD camera is used to monitor its screen. All the scanning conditions are as following:

Condition of Test	Remark
1. Fielded Strength	1V/m&3V/m&10V/m
2. Radiated Signal	Modulated
3. Scanning Frequency	80MHz-2700MHz
4. Sweep time of radiated	0.0015 Decade/s
5. Dwell Time	3Sec.

8.7 Test Results

PASS.

Please refer to the following page.

RF Field Strength Susceptibility Test Results

Applicant : Shenzhen Jiawei Hengxin Technology Co., Ltd.		Test Date : 2025-03-11	
EUT : Car diagnostic scanner		Temperature : 22℃	
M/N : KW870		Humidity : 50 %	
Test Engineer : Bill		Criterion : A	
Power Supply : DC 12V/500A		Test Mode : Normal	
Frequency Range: 80MHz-2700MHz		Field Strength : 10 V/m	

Modulation:		☐ None ☐ Pulse ☒ AM 1KHz 80%	
-------------	--	--	--

Antenna Faces ↓	Frequency Rang 1: 80-1000MHz		Frequency Rang 2: 1400-2000MHz	
	Horizontal	Vertical	Horizontal	Vertical
Front	PASS	PASS	PASS	PASS
Right	PASS	PASS	PASS	PASS
Rear	PASS	PASS	PASS	PASS
Left	PASS	PASS	PASS	PASS

Antenna Faces ↓	Frequency Rang 3: 2000-2700MHz			
	Horizontal	Vertical		
Front	PASS	PASS		
Right	PASS	PASS		
Rear	PASS	PASS		
Left	PASS	PASS		

Test Equipment :

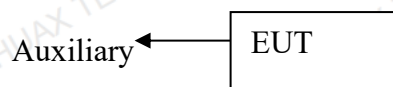
- Signal Generator : 2031 (MARCONI)
- Power Amplifier : 500A100 & 100W/1000M1 (A&R)
- Power Antenna : 3108 (EMCO) & AT1080 (A&R)
- Field Monitor : FM2000 (A&R)

Note:

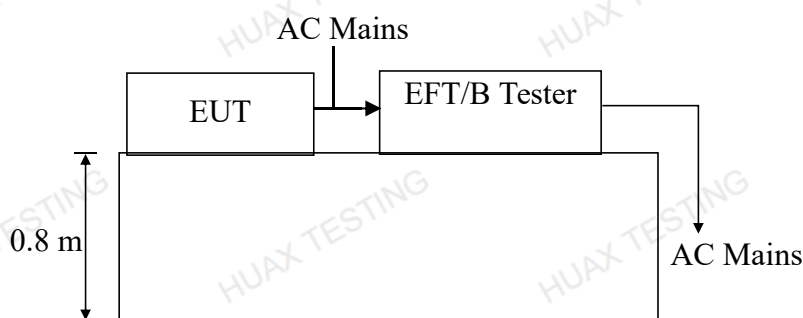
9. ELECTRICAL FAST TRANSIENT/BURST IMMUNITY TEST

9.1 Block Diagram of Test Setup

9.1.1. Block Diagram of the EUT



9.1.2. EFT Test Setup



9.2 Test Standard

EN IEC 61326-1:2021(industrial)(EN61000-4-4:2012, Severity Level, Level 3: 2KV for AC/DC power supply lines, Level 2:1KV for I/O signal and interconnecting cables.)

9.3 Severity Levels and Performance Criterion

9.3.1 Severity level

Open Circuit Output Test Voltage $\pm 10\%$		
Level	On Power Supply Lines	On I/O (Input/Output) Signal data and control lines
1.	0.5 KV	0.25 KV
2.	1 KV	0.5 KV
3.	2 KV	1 KV
4.	4 KV	2 KV
X	Special	Special

9.3.2 Performance criterion : B

9.4 EUT Configuration

The configuration of EUT is listed in Section 3.3.

9.5 Operating Condition of EUT

9.5.1 Setup the EUT as shown in Section 9.1.

9.5.2 Turn on the power of all equipments.

9.5.3 Let the EUT work in test mode (Normal) and measure it.

9.6 Test Procedure

The EUT is put on the table which is 0.8 meter high above the ground. This reference ground plane shall project beyond the EUT by at least 0.1m on all sides and the minimum distance between EUT and all other conductive structure, except the ground plane beneath the EUT, shall be more than 0.5m.

9.6.1 For input and output AC power ports:

The EUT is connected to the power mains by using a coupling device which couples the EFT interference signal to AC power lines. Both polarities of the test voltage should be applied during compliance test and the duration of the test is 2 mins.

9.6.2 For signal lines and control lines ports:

No I/O ports. It's unnecessary to test.

9.6.3 For DC output line ports:

It's unnecessary to test.

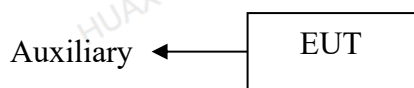
9.7 Test Result

N/A

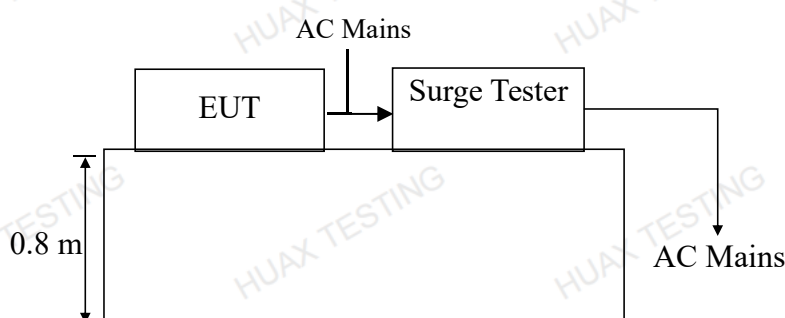
10. SURGE IMMUNITY TEST

10.1 Block Diagram of Test Setup

10.1.1 Block Diagram of the EUT



10.1.2. Surge Test Setup



10.2 Test Standard

EN IEC 61326-1:2021(industrial)(EN61000-4-5: 2005) Severity Level: Line to earth: Level 3, 2.0KV, Line to Line: Level 2, 1.0KV)

10.3 Severity Levels and Performance Criterion

10.3.1. Severity level

Severity Level	Open-Circuit Test Voltage KV
1	0.5
2	1.0
3	2.0
4	4.0
*	Special

10.3.2 Performance criterion: **B**

10.4 EUT Configuration

The configuration of EUT is listed in Section 3.3.

10.5 Operating Condition of EUT

10.5.1 Setup the EUT as shown in Section 10.1.

10.5.2. Turn on the power of all equipments.

10.5.3. Let the EUT work in test mode (Normal) and measure it.

10.6 Test Procedure

- 1) Set up the EUT and test generator as shown on Section 10.1.2.
- 2) For line to line coupling mode, provide a 1.0 KV 1.2/50us voltage surge (at open-circuit condition) and 8/20us current surge to EUT selected points.
- 3) At least 5 positive and 5 negative (polarity) tests with a maximum 1/min repetition rate are conducted during test.
- 4) Different phase angles are done individually.
- 5) Record the EUT operating situation during compliance test and decide the EUT immunity criterion for above each test.

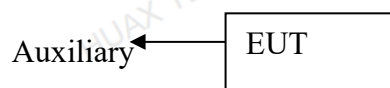
10.7 Test Result

N/A

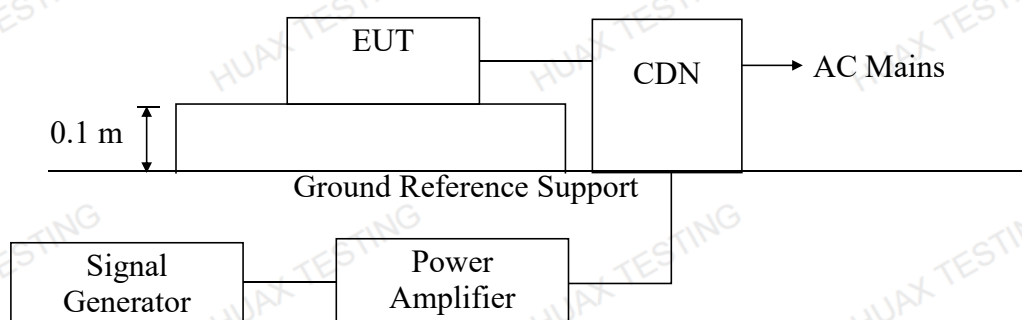
11. INJECTED CURRENTS SUSCEPTIBILITY TEST

11.1 Block Diagram of Test Setup

11.1.1 Block Diagram of the EUT



11.1.2 Block Diagram of Test Setup



11.2 Test Standard

EN IEC 61326-1:2021(industrial) (EN61000-4-6: 2008, Severity Level: Level 2, 3V (rms), (0.15MHz ~ 80MHz)

11.3 Severity Levels and Performance Criterion

11.3.1 Severity level

Level	Field Strength V
1	1
2	3
3	10
X	Special

11.3.2 Performance criterion: A

11.4 EUT Configuration

The configuration of EUT is listed in Section 3.3.

11.5 Operating Condition of EUT

11.5.1 Setup the EUT as shown in Section 11.1.

11.5.2 Turn on the power of all equipments.

11.5.3 Let the EUT work in test mode (Normal) and measure it.

11.6 Test Procedure

- 1) Set up the EUT, CDN and test generators as shown on Section 11.1.2.
- 2) Let the EUT work in test mode and measure it.
- 3) The EUT are placed on an insulating support 0.1m high above a ground reference plane. CDN (coupling and decoupling device) is placed on the ground plane about 0.3m from EUT. Cables between CDN and EUT are as short as possible, and their height above the ground reference plane shall be between 30 and 50 mm (where possible).
- 4) The disturbance signal described below is injected to EUT through CDN.
- 5) The EUT operates within its operational mode(s) under intended climatic conditions after power on.
- 6) The frequency range is swept from 150KHz to 80MHz using 3V signal level, and with the disturbance signal 80% amplitude modulated with a 1KHz sine wave.
- 7) The rate of sweep shall not exceed 1.5×10^{-3} decades/s. Where the frequency is swept incrementally, the step size shall not exceed 1% of the start and thereafter 1% of the preceding frequency value.
- 8) Recording the EUT operating situation during compliance testing and decide the EUT immunity criterion.

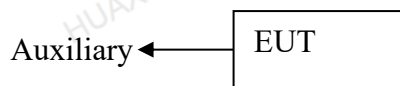
11.7 Test Results

N/A

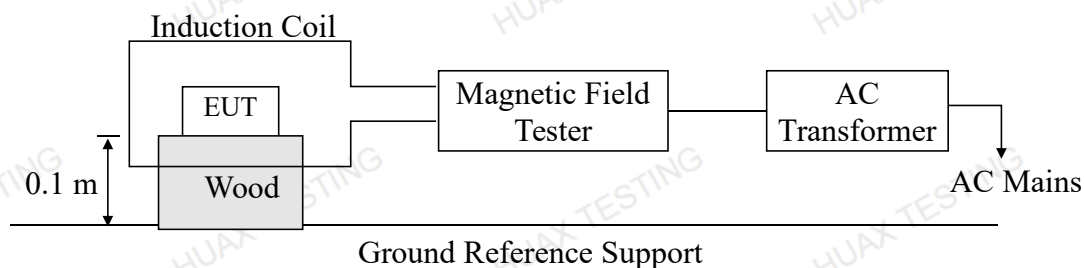
12. MAGNETIC FIELD SUSCEPTIBILITY TEST

12.1 Block Diagram of Test

12.1.1 Block diagram of test setup



12.1.2 Magnetic field test setup



12.2 Test Standard

EN IEC 61326-1:2021(industrial) (EN61000-4-8: 2009, Severity Level: Level 4, 30A / m)

12.3 Severity Levels and Performance Criterion

12.3.1 Severity Levels

Level	Field Strength A/m
1	1
2	3
3	10
4	30
5	100
X	Special

12.3.2 Performance Criterion : A

12.4 EUT Configuration on Test

The configuration of the EUT is same as Section 3.3.

12.5 Test Procedure

The EUT is placed in the middle of a induction coil (1*1m), under which is a 1*1*0.1m (high) table, this small table is also placed on a larger table, 0.8 m above the ground. Both horizontal and vertical polarization of the induction coil are set on test, so that each side of the EUT is affected by the magnetic field. Also can reach the same aim by change the position of the EUT.

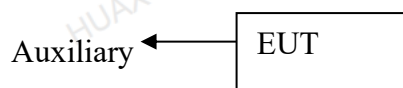
12.6 Test Results

N/A

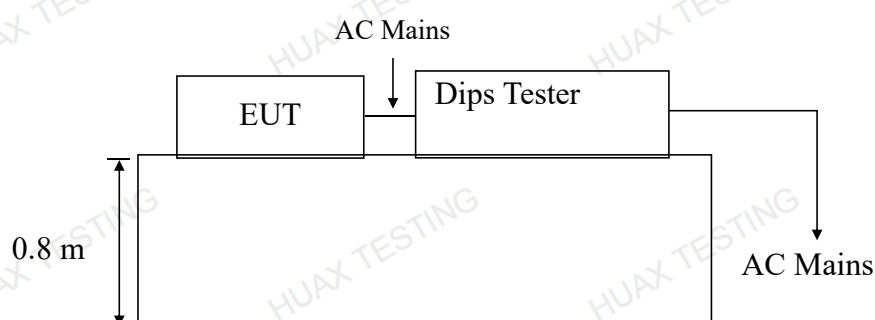
13. VOLTAGE DIPS AND INTERRUPTIONS TEST

13.1 Block Diagram of Test Setup

13.1.1 Block Diagram of the EUT



13.1.2 Dips Test Setup



13.2 Test Standard

EN IEC 61326-1:2021(industrial)(EN61000-4-11: 2004)

13.3 Severity Levels and Performance Criterion

13.3.1 Severity level

Test Level %UT	Voltage dip and short interruptions %UT	Duration (in period)
0	100	0.5
40	60	1
70	30	5
		10
		25
		50
		*

13.3.2 Performance criterion: **B&C**

13.4 EUT Configuration

The configuration of EUT is listed in Section 3.3.

13.5 Operating Condition of EUT

13.5.1 Setup the EUT as shown in Section 13.1.

13.5.2 Turn on the power of all equipments.

13.5.3 Let the EUT work in test mode (Normal) and measure it.

13.6 Test Procedure

- 1) Set up the EUT and test generator as shown on Section 13.1.2.
- 2) The interruptions is introduced at selected phase angles with specified duration.
- 3) Record any degradation of performance.

13.7 Test Result

N/A

APPENDIX I

(Photos of EUT)

FIGURE

GENERAL APPEARANCE OF EUT



Photo 1



Photo 2



Photo 3



Photo 4



Photo 5



Photo 6

*****THE END*****