



China

EMC EMISSION - TEST REPORT

Report Number : **64.711.17.01352.02 – (E)** Date of Issue: 2017-12-20

Model : AHUKZ-01A, AHUKZ-02A, AHUKZ-03A, AHUKZ-01B, AHUKZ-02B,
: AHUKZ-03B

Product Type : Control box

Applicant/ Manufacturer/
License holder : GD Midea Heating & Ventilating Equipment CO.,LTD.

Trade Name : Midea, MDV

Address : Penglai Industry Road, Beijiao, Shunde, Foshan, Guangdong, P. R.
: China

Test Result : **Not Performed**



Total pages including
Appendices : 4

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DIRECTORY - EMISSIONS

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China

EMISSIONS TEST REGULATIONS :

The emissions tests were performed according to the following regulations:

■ - EMC - Directive 2014/30/EU and its amendments

■ - EN 60730-1:2016

■ - Type 1 action

- Type 2 action

■ - EN 61000-6-3:2007+A1:2011

■ - CISPR 14-1:2005+A1:2008

■ - Household appliances and similar

■ - CISPR 22:2008

- Class A

■ - Class B

- IEC 61000-3-2:2014

- IEC 61000-3-3:2013

■ -Refer to report:64.711.17.01352.01 for complete details.



China

GENERAL REMARKS:

All models had complied with emission requirements in report:64.711.17.01352.01.
Standards EN 60730-1:2011 update to EN 60730-1:2016 would not affect the emission performance.

SUMMARY:

All tests according to the regulations cited on page 3 were

- Performed
- **Not** Performed

The Equipment Under Test

- **Fulfills** the general approval requirements cited on page 3.
- **Does not** fulfill the general approval requirements cited on page 3.

Testing Start Date:	Not Performed
Testing End Date:	Not Performed

- TÜV SÜD CERTIFICATION AND TESTING (CHINA) CO., LTD. GUANGZHOU BRANCH -

Reviewed by: Reviewer

Prepared by:

Tony Liu




Samuel Zhang



China

EMC IMMUNITY - TEST REPORT

Report Number : **64.711.17.01352.02- (I)** Date of Issue: 2017-12-20

Model : AHUKZ-01A, AHUKZ-02A, AHUKZ-03A, AHUKZ-01B, AHUKZ-02B,
: AHUKZ-03B

Product Type : Control box

Applicant/ Manufacturer/
License holder : GD Midea Heating & Ventilating Equipment CO.,LTD.

Trade Name : Midea, MDV

Address : Penglai Industry Road, Beijiao, Shunde, Foshan, Guangdong, P. R.
: China

Test Result : Positive Negative



Total pages including
Appendices : 19

TÜV SÜD Certification and Testing (China) Co., Ltd. Guangzhou Branch is a subcontractor to TÜV SÜD Product Service, GmbH according to the principles outlined in ISO/IEC Guide 25 and EN 45001.

TÜV SÜD Certification and Testing (China) Co., Ltd. Guangzhou Branch reports apply only to the specific samples tested under stated test conditions. Construction of the actual test samples has been documented. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. The manufacturer/importer is responsible to the Competent Authorities in Europe for any modifications made to the production units which result in non-compliance to the relevant regulations. TÜV SÜD Certification and Testing (China) Co., Ltd. Guangzhou Branch shall have no liability for any deductions, inferences or generalizations drawn by the client or others from TÜV SÜD Certification and Testing (China) Co., Ltd. Guangzhou Branch issued reports.

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DIRECTORY - IMMUNITY

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Remark: Constructional Data Form and Product Information Form(s) and Constructional Photographs of EUT refer to emission test report



China

IMMUNITY TEST REGULATIONS :

The immunity tests were performed according to the following regulations :

■ - EMC - Directive 2014/30/EU and its amendments

■ - EN 60730-1:2016
■ - EN 61000-6-1:2017

■ - Type 1 action

□ - Type 2 action

■ - IEC 61000-4-2:2008
■ - IEC 61000-4-3:2006+A1:2007+A2:2010
■ - IEC 61000-4-4:2012
■ - IEC 61000-4-5:2014
■ - IEC 61000-4-6:2013
□ - IEC 61000-4-8:1993+A1:2000
■ - IEC 61000-4-11:2004
□ - IEC 61000-4-13:2002+A1:2009
□ - IEC 61000-4-28:1999+A1:2001+A2:2009
■ -Refer to report:64.711.17.01352.01 for complete details.

Note: For undated references, the latest edition of the publication at the time of testing (including amendments) was applied.



China

Environmental Conditions In The Laboratory:

	<u>Actual</u>
Temperature:	: 20.0-25.0 °C
Relative Humidity:	: 46.0-50.0 %
Atmospheric Pressure:	: 100.6-1012 mBar

Rated of EUT

Rated Voltage:	220-240V ~
Rated Frequency:	50Hz

STATEMENT OF MEASUREMENT UNCERTAINTY

The tolerances for each tests are reduced by the uncertainty reported on the calibration certificate for the measurement, all the parameters are within the tolerances required by the relevant standard, reduced by the uncertainty reported on the calibration certificate, so the laboratory has confidence that all the tests compliant with the relevant standards with a 95% confidence level.

Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Symbol Definitions:

- - Applicable
- - Not Applicable

Test laboratory:

- - Inspection and Quarantine Technology Centre of Guangdong Entry-Exit Inspection and Quarantine Bureau
Add: No.3, Desheng East Road, Shunde, Daliang, Foshan, Guangdong, China



China

Immunity Test Conditions: ELECTROSTATIC DISCHARGE (ESD)

The immunity against *ELECTROSTATIC DISCHARGE (ESD)* events was performed in the following location:

- Test not applicable

- Test Area (TÜV SÜD) – Laboratory open area

Test Equipment Used :

Model Number	Manufacturer	Description	Serial Number	Cal. due date
<input type="checkbox"/> - NSG435	Teseq	ESD tester	6155	2017-11-14
<input type="checkbox"/> - ---	TÜV PS	H/V Coupling Plane	TÜV PS	/

Test Specification:

Discharge Voltage (Air): - 2 kV - 8 kV - 6 kV
 - 4 kV - 15 kV - _ kV

Discharge Voltage (Contact): - 2 kV - 6 kV - _ kV
 - 4 kV - 8 kV

Discharge Impedance: - 330 Ω / 150 pF - 150 Ω / 150 pF

Discharge Repetition Rate: - ≥ 1 sec.

Number of Discharges: - ≥ 10 at all locations

Kind of Discharges: - Air discharge - Conducted discharge (relay)
 - Direct - Indirect

Polarity: - Positive - Negative

Location of Discharge: - HCVP & VCP
 - Each location on the surface touchable by hand
 - _____

Result :

For EN 61000-6-1:2017

- No degradation of function - Met Criterion A
- Distortion of function - Met Criterion B
- Error of function - Met Criterion C
- Loss of function - Unrecoverable Failure

For EN 60730-1:2016

- normal performance with no loss of protective functions and control is within specification or declared limits.
- loss of protective function within declared limits
- loss of protective function with safety shut down
- loss of protective function within unsafe operation

Remarks: _____



China

Immunity Test Conditions: RADIATED ELECTROMAGNETIC FIELDS

The immunity against *RADIATED ELECTROMAGNETIC FIELDS* exposure was performed in the following location:

- Test not applicable

- Test Area (IQTC) – Full Anechonic Chamber

Test Equipment Used :

Model Number	Manufacturer	Description	Serial Number	Cal. Due
<input checked="" type="checkbox"/> - SAC10	Frankonia GmbH	10m anechoic chamber	F069042	2018-08-14
<input checked="" type="checkbox"/> - SMF100A	RS	Signal Generator	1167.0000k02-101828-xu	2018-08-15
<input checked="" type="checkbox"/> - PM2002	AR	Power Meter	324169	2018-08-15
<input checked="" type="checkbox"/> - EP601	PMM	Field Probe	511WX21270	2018-09-12
<input type="checkbox"/> - AT1080	AR	Log-Periodic Antenna(80MHz-1000MHz)	0325160	2018-09-12
<input checked="" type="checkbox"/> - BBHA 9120E	Schwarzbeck	Double Ridge Broadband Horn Antenna(0.5GHz-6GHz)	701	2018-09-12
<input type="checkbox"/> - NTWPAS-00810500E	Rflight	Power Amplifier(80MHz-1000MHz 500W)	16113272	2018-09-12
<input type="checkbox"/> - NTWPAS-1025100	Rflight	Power Amplifier(1000-2500MHz 100W)	16043079	2018-01-12
<input checked="" type="checkbox"/> - NTWPAS-2560100	Rflight	Power Amplifier(2000-6000MHz 100W)	17039022	2018-01-12

Remarks: All test equipment used are calibrated on a regular basis.

Test Specification:

Frequency Range/ Field Strength: - 3 V/m (80 MHz - 1000 MHz)
 - 3 V/m (1.4 GHz – 2.0 GHz)
 - 3 V/m (2.0 GHz – 6.0 GHz)

Distance Antenna - EUT: - 3 m

Test Specification (continued):

Modulation: - AM : 80% 1kHz
 - FM : ___ kHz dev. ___ kHz
 - sine wave:
 - unmodulated
 - Pulse ON/OFF Duty Cycle: ___ %

Step: - ≤1% / sec

Polarization of Antenna: - Horizontal - Vertical



China

Result :

For EN 61000-6-1:2017

- | | |
|--|-------------------------|
| <input checked="" type="checkbox"/> - No degradation of function | - Met Criterion A |
| <input type="checkbox"/> - Distortion of function | - Met Criterion B |
| <input type="checkbox"/> - Error of function | - Met Criterion C |
| <input type="checkbox"/> - Loss of function | - Unrecoverable Failure |

For EN 60730-1:2016

- normal performance with no loss of protective functions and control is within specification or declared limits.
- loss of protective function within declared limits
- loss of protective function with safety shut down
- loss of protective function within unsafe operation

Remarks: _____



China

Immunity Test Conditions: FAST TRANSIENTS (BURST)

The immunity against *FAST TRANSIENTS (BURST)* events was performed in the following test location:

- Test not applicable

- Test Area (TÜV SÜD) – Laboratory open area

Test Equipment Used :

Model Number	Manufacturer	Description	Serial Number	Cal. due date
MODULA6150	Teseq	Immunity test system	34595	2017-11-14

Test Specification:

Pulse Amplitude - AC Power Port: - 1,0 kV - 2,0 kV
 - 4,0 kV - ___ kV

Pulse Amplitude - DC Power Port: - 1,0 kV - 2,0 kV
 - 4,0 kV - ___ kV

Pulse Amplitude - Signal/Data Non control Port: - 0,5 kV - 1,0 kV
 - 2,0 kV - ___ kV

Pulse Amplitude - Process: Measurement & Control Port - 0,5 kV - 1,0 kV
 - 2,0 kV - ___ kV

Burst Frequency: - 2,5 kHz - 5,0 kHz - ___ kHz

Time of Coupling: - 60 seconds - 120 seconds - ___ seconds

Coupling Method: - Coupling/decoupling network - Coupling clamp

Polarity: - Positive - Negative



China

Immunity Test Conditions: FAST TRANSIENTS (BURST), continued

Location of Coupling:

name of lines: AC POWER CORD

type of lines: - shielded - unshielded

status of lines: - Passive - active

kind of transmission: - analog - digital

length of lines: _____

name of lines: Control & Signal CORD

type of lines: - shielded - unshielded

status of lines: - Passive - active

kind of transmission: - analog - digital

length of lines: _____

Result :

For EN 61000-6-1:2017

- No degradation of function - Met Criterion A
- Distortion of function - Met Criterion B
- Error of function - Met Criterion C
- Loss of function - Unrecoverable Failure

For EN 60730-1:2016

- normal performance with no loss of protective functions and control is within specification or declared limits.
- loss of protective function within declared limits
- loss of protective function with safety shut down
- loss of protective function within unsafe operation

Remarks: _____



China

Immunity Test Conditions: SURGE TRANSIENTS

The immunity against *SURGE TRANSIENTS* events was performed in the following test location:

- Test not applicable

- Test Area (TÜV SÜD) – Laboratory open area

Test Equipment Used :

Model Number	Manufacturer	Description	Serial Number	Cal. due date
<input type="checkbox"/> - MODULA6150	Teseq	Immunity test system	34595	2017-11-14

Test Specification:

Pulse Amplitude - AC Power Port: - 1,0 kV - 2,0 kV
 - 4,0 kV - 0.5 kV

Pulse Amplitude - DC Power Port: - 1,0 kV - 2,0 kV
 - 4,0 kV - ___ kV

Pulse Amplitude - Signal/Data Non control Port: - 0,5 kV - 1,0 kV
 - 2,0 kV - ___ kV

Pulse Amplitude - Process: Measurement & Control Port - 0,5 kV - 1,0 kV
 - 2,0 kV - ___ kV

Source Impedance: - 2 Ω + 18 μF - 12 Ω + 9 μF
 - 42 Ω + 0,1 μF - 42 Ω + 0,5 μF

Number of Surges: - 5 surges/angle - ___ surges /angle

Angle: - 0 ° - 90 °
 - 180 ° - 270 °

Repetition Rate: - 60 sec. - ___ sec.

Polarity: - Positive - Negative



China

Immunity Test Conditions: SURGE TRANSIENTS, continued

Location of Coupling:

name of lines: AC POWER CORD

type of lines: - shielded - unshielded

status of lines: - Passive - active

kind of transmission: - analog - digital

length of lines: _____

name of lines: _____

type of lines: - shielded - unshielded

status of lines: - Passive - active

kind of transmission: - analog - digital

length of lines: _____

name of lines: _____

type of lines: - shielded - unshielded

status of lines: - Passive e - active

kind of transmission: - analog - digital

length of lines: _____

Result:

For EN 61000-6-1:2017

- No degradation of function - Met Criterion A
- Distortion of function - Met Criterion B
- Error of function - Met Criterion C
- Loss of function - Unrecoverable Failure

For EN 60730-1:2016

- normal performance with no loss of protective functions and control is within specification or declared limits.
- loss of protective function within declared limits
- loss of protective function with safety shut down
- loss of protective function within unsafe operation

Remarks: _____



China

Immunity Test Conditions: CONDUCTED DISTURBANCE

The immunity against *CONDUCTED DISTURBANCE* events, induced by radio frequency fields above 9 kHz, was performed in the following test location:

- Test not applicable

- Test Area(TÜV SÜD) –Laboratory open area

Test Equipment Used :

Model Number	Manufacturer	Description	Serial Number	Cal. due date
<input type="checkbox"/> - CIT-10/75	Frankonia	C/S test generator	102D1319	2017-11-14
<input type="checkbox"/> - 75-A-MFN-06	BIRD	6dB attenuator	0638	2017-11-14
<input type="checkbox"/> - M2+M3-801	Frankonia	CDN	A3011123	2017-11-14

Test Specification:

Frequency Range: - 0,15 MHz - 80 MHz

Voltage Level (EMF): - 1 V - 3 V
 - 10 V - ___ V

Modulation: - AM : 80 % 1 kHz
 - FM : ___ kHz dev. ___ kHz
 - sine wave:
 - unmodulated
 - Pulse ON/OFF Duty Cycle: ___ %

Step: - ≤ 1% / sec



China

Immunity Test Conditions: CONDUCTED DISTURBANCE, continued

Location of Coupling:

name of lines: AC POWER CORD

type of lines: - shielded - unshielded

status of lines: - Passive - active

kind of transmission: - analog - digital

length of lines: _____

name of lines: Control & Signal CORD

type of lines: - shielded - unshielded

status of lines: - Passive - active

kind of transmission: - analog - digital

length of lines: _____

Result :

For EN 61000-6-1:2017

- No degradation of function - Met Criterion A
- Distortion of function - Met Criterion B
- Error of function - Met Criterion C
- Loss of function - Unrecoverable Failure

For EN 60730-1:2016

- normal performance with no loss of protective functions and control is within specification or declared limits.
- loss of protective function within declared limits
- loss of protective function with safety shut down
- loss of protective function within unsafe operation

Remarks: _____



China

Immunity Test Conditions: VOLTAGE DIPS, INTERRUPTIONS & VARIATIONS

The immunity against *VOLTAGE DIPS, INTERRUPTIONS & VARIATIONS* events, was performed in the following test location:

- Test not applicable

- Test Area (TÜV SÜD) –Laboratory open area

Test Equipment Used :

Model Number	Manufacturer	Description	Serial Number	Cal. due date
<input type="checkbox"/> - MODULA6150	Teseq	Immunity test system	34595	2017-11-14
<input type="checkbox"/> - INA6501	Teseq	Step power supply	159	2017-11-14

Test Specification:

For EN 61000-6-1

Nominal Mains Voltage (V_{NOM}): - 230 Vac -100 Vac - ____ Vdc

Level of Reduction (dip):

- 0.5 cycle at 0% of V_{NOM}
- 1 cycle at 0% of V_{NOM}
- 25 cycle at 30% of V_{NOM} (50Hz)
- 30 cycle at 30% of V_{NOM} (60Hz)

Interruptions:

- 250 cycle at 0% of V_{NOM} (50Hz)
- 300 cycle at 0% of V_{NOM} (60Hz)

For EN 61730-1

Level of Reduction (dip):

- 0.5s at 100% of V_{NOM}
- 60s at 100% of V_{NOM}
- 0.5s at 40% of V_{NOM}
- 0.5s at 70% of V_{NOM}

Duration of Interruption ($>.95*V_{NOM}$): - 1 cycle at 100% of V_{NOM}

Voltage Variation :

	Voltage tests level	Time for decreasing voltage	Time at reduced voltage	Time for increasing voltage
<input type="checkbox"/> -	60% of V_{NOM}	2s	1s	2s
<input type="checkbox"/> -	100% of V_{NOM}	2s	1s	2s



China

Result :

For EN 61000-6-1:2017

- No degradation of function - Met Criterion A
- Distortion of function - Met Criterion B
- Error of function - Met Criterion C
- Loss of function - Unrecoverable Failure

For EN 60730-1:2016

- normal performance with no loss of protective functions and control is within specification or declared limits.
- loss of protective function within declared limits
- loss of protective function with safety shut down
- loss of protective function within unsafe operation

Remarks: _____



China

Immunity Test Conditions: Power FREQUENCY MAGNETIC FIELD

The immunity against *POWER FREQUENCY MAGNETIC FIELD* exposure, was performed in the following test location:

- Test not applicable

- Test Area (GRGT) - Laboratory open area

Test Equipment Used:

Model Number	Manufacturer	Description	Serial Number	Cal. Due
<input type="checkbox"/> - TRA2000	EMC PARTNER	Main Interference Simulator	851	2017-04-16
<input type="checkbox"/> - MF1000-1	EMC PARTNER	Induction coil	150	2017-07-06

Test Specification:

Frequency Range: - 50 Hz - 60 Hz - 400 Hz

Field level (EMF): - 1 A/m - 3 A/m - 10 A/m
 - 30 A/m - 100 A/m - ___ A/m

Short Field (1-3 sec): - 300 A/m - 1000 A/m - ___ A/m

Duration: - 60 seconds

Axis of Orientation: - X-axis - Y-axis - Z-axis

Result:

- No degradation of function - Met Criterion A
- Distortion of function - Met Criterion B
- Error of function - Met Criterion C
- Loss of function - Unrecoverable Failure

Remarks: _____



China

Equipment Under Test (EUT) Test Operation Mode - Immunity Tests :

The equipment under test was operated under the following conditions during immunity testing :

- Standby
- Test Program (H - Pattern)
- Test Program (Color Bar)
- Test Program (Customer Specified)
- Normal Operation
- _____
- _____

Configuration of the equipment under test:

- See Constructional Data Form in Appendix B - Page B2
- See Product Information Form(s) in Appendix B - Page B2

The following peripheral devices and interface cables were connected during the testing:

- | | |
|----------------------------------|--------------|
| <input type="checkbox"/> - _____ | Type : _____ |
| <input type="checkbox"/> - _____ | Type : _____ |
| <input type="checkbox"/> - _____ | Type : _____ |
| <input type="checkbox"/> - _____ | Type : _____ |
| <input type="checkbox"/> - _____ | Type : _____ |
| <input type="checkbox"/> - _____ | Type : _____ |
| <input type="checkbox"/> - _____ | Type : _____ |
| <input type="checkbox"/> - _____ | Type : _____ |

- unshielded power cable
- unshielded cables
- shielded cables
- customer specific cables
- _____
- _____

TÜVPS. No.: _____



China

GENERAL REMARKS:

All models had complied with immunity requirements with report:64.711.17.01352.01.
Additional radiated immunity tests have applied on AHUKZ-03B in the frequency band 2.0GHz to 6.0GHz as the EN 61000-6-1:2017 required.
Standards EN 60730-1:2011 update to EN 60730-1:2016 would not affect the immunity performance.

SUMMARY:

All tests according to the regulations cited on page 3 were

- Performed
- **Not** Performed

The Equipment Under Test


- **Fulfills** the general approval requirements cited on page 3.
- **Does not** fulfill the general approval requirements cited on page 3.

Testing Start Date:	2017-12-08
Testing End Date:	2017-12-08

- TÜV SÜD Certification and Testing (China) Co., Ltd. Guangzhou Branch -

Reviewed by: Reviewer

Prepared by:



 Tony Liu



 Samuel Zhang



Appendix A

Setup Photo of RS

