CERTIFICATE OF COMPLIANCE

No. C13A006

Holder of Certificate: GREE Electric Appliances Inc. of zhuhai
Jinji West Road, Qianshan, Zhuhai, Guangdong 519070, P. R. China
Product: Air Conditioner
Model/Type: GTH18K3FI
GFH18K3FI
GUHD18NK3FO

Is complied with:

EMC Directive: 2004/108/EC

Test acc. To: EN55014-1: 2006+A1:2009+A2:2011
EN55014-2: 1997+A1: 2001+A2:2008
EN61000-3-2: 2006+A1:2009+A2:2009
EN61000-3-3: 2008

Report Number: GER13A006E

This certificate of conformity is based on the adequate technical documentation and the tests in Testing Laboratory of Gree Electric Appliances Inc. of Zhuhai. This declaration becomes invalid if technical or operational modifications are introduced without the manufacturer's consent.
Note: Testing Laboratory of Gree Electric Appliances Inc. of Zhuhai is accredited by TUV Rheinland, CNAS, VDE, etc.

(Authorized signature)
Name: Li zhikun
Date: 2013-01-05

Jinji West Road, Qianshan, Zhuhai, Guangdong 519070 P.R.China
Tel:+86 756 8614883; Fax:+86 756 8614998

EMC TEST REPORT

Product Name	:	Split-type Room Air Conditioner
Product Model	:	GTH18K3FI(indoor unit) GFH18K3FI(indoor unit) GUHD18NK3FO（outdoor unit）
Serial No.	:	Pre-production model
Date of Receipt	:	2013.01.05
Test Period	:	2013.01.05
Applicant	:	Gree Electric Appliances, Inc. of Zhuhai
Testing Location	:	Gree EMC Testing Lab.

Applicable The Following Selected Harmonized Standards:

EN55014-1: 2006+A1:2009+A2:2011
EN55014-2: 1997+A1: 2001+A2:2008
EN61000-3-2: 2006+A1:2009+A2:2009
EN61000-3-3: 2008

Tested by	:	**Liujie**		2013-01-05
		Printed Name	*Signature*	*Date((YY-MM-DD)*
Reviewed by	:	Li zhikun		2013-01-05
		Printed Name	*Signature*	*Date((YY-MM-DD)*

EMC LABORATORY OF GREE ELETRIC APPLIANCES INC. OF ZHUHAI

Address: Jinji West Road. Qianshan Zhuhai China Postcode: 519070
Tel：（0756）8668624 Fax：（0756）8614998

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Contents

CONTENTS **2**

1. TEST SUMMARY **3**

2. PRODUCTS DESCRIPTION **4**

3. LIST OF TEST AND MEASUREMENT INSTRUMENTS **5**

4. EMISSION TEST **6**

4.1 Main and Additional Terminal Continuous Disturbance Voltage 6

4.2 Discontinuous Interference on AC Mains 21

4.3 Disturbance Power 23

4.4 Harmonics on AC Mains 31

4.5 Voltage Fluctuation on AC Mains 36

5. IMMUNITY TESTS **37**

5.1 Electrostatic Discharge (ESD) 37

5.2 Electrical Fast Transient/Burst (EFT) 39

5.3 Surge 40

5.4 Immunity to conducted Disturbances, induced by RF fields 41

5.5 Voltage Dips and Short interruptions 42

Remark:

Principle of Configuration Selection of test set-up and operation mode

Emission: The Equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the instructions for use.

Immunity: The Equipment under test (EUT) was configured to have its highest possible susceptibility against the tested phenomena. The test modes were adapted accordingly in reference to the instructions for use.

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1. Test Summary

4. EMISSION TESTS:

4.1 Mains and additional Terminal Continuous Disturbance Voltage

Test Result: Pass

4.2 Discontinuous Interference on AC Mains

Test Result: Pass

4.3 Disturbance Power

Test Result: Pass

4.4 Harmonics on AC Mains

Test Result: Pass

4.5 Voltage Fluctuation on AC Mains

Test Result: Pass

5. IMMUNITY TESTS:

5.1 Electrostatic Discharge (ESD)

Test Result: Pass

5.2 Electrical Fast Transient/Burst (EFT)

Test Result: Pass

5.3 Surge

Test Result: Pass

5.4 Immunity to conducted Disturbances, induced by RF fields

Test Result: Pass

5.5 Voltage Dips and Short interruptions

Test Result: Pass

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2. Products Description

Power Supply : AC 220-240V , 50Hz

Power Cord : Unshielded

Interconnection Line : Unshielded

Additional Equipment : IR Remote Controller

Protection : Class Ⅰ

Operation Mode : Standby
Fan
Cool
Heat
Dry
Auto

General Description :

For these current models, they are split-type models consisting of two parts, one indoor unit and one common outdoor unit, For the common outdoor unit (GUHD18NK3FO), it can match two different model indoor units (GTH18K3FI and GFH18K3FI) to work, and the power are supplied from the indoor and outdoor units respectively, all EMS test (Immunity item) are applied to the three different combination for indoor and outdoor units.

About the particular information of the modes, please refer to Technical Construction Document, user manual, etc.

Electric wiring between indoor and outdoor units

3. List of Test and Measurement Instruments

Equipment	Manufacturer	Model No.	Serial No.	Calibrated until
EMI Test Receiver	R&S	ESCS30	100353	07/07/2013
L.I.S.N	R&S	ENV4200	100031	07/07/2013
Pulse limiter	R&S	ESH3-Z2	100066	07/07/2013
Absorbing Clamp	R&S	MDS-21	100194	07/07/2013
Voltage Probe	Schwarbeck	TK9420	9426-235	07/07/2013
Clicks Analyzer	Schaffner	DIA1512D	21534	07/07/2013
Harmonic/Flicker Testing system	CI	PACS-3	72823	03/23/2013
ESD Simulator System	TESTQ	NSG438	1198	08/13/2013
EFT/B Generator	Schaffner	NSG2025-4	1237	07/07/2013
Capacitive Coupling Clamp	Schaffner	CDN126	532	07/07/2013
RF-Generator	Schaffner	NSG2070	1022	07/07/2013
Coupling/Decoupling Network	Schaffner	CDN M316	15072	07/07/2013
EM clamp	Schaffner	KEMZ801	15792	07/07/2013
Voltage Swell/DIP/Interrupt Source	KeyTek ECAT	EP62	0512181	11/30/2013
Surge Generator-Combination Wave	KeyTek ECAT	510A	0512182	11/30/2013
Coupling/Decoupling Network	KeyTek ECAT	E4554A	0512183	11/30/2013

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4. Emission Test

4.1 Main and Additional Terminal Continuous Disturbance Voltage

Date of testing	:	2013.01.05
Temperature	:	26°C/18°C
Operational mode	:	Cool /Heat, High speed
Humidity	:	65%RH~67%RH
Test procedure	:	EN55014-1: 2006+A1:2009+A2:2011
Frequency range	:	0.15M - 30MHz
Kind of test site	:	Shielded room
Test result	:	Pass

1.Test Setup:

The EUT is on an insulating plane (height=80cm)
The distance between EUT and L.I.S.N is 80cm.
The distance between EUT and other metal conductors grounded is at least 80cm.

2.If the result of the measurement with the Quasi Peak detector is below the Average limit, the measurement with Average Detector has been omitted.
Disturbances other than those mentioned are small or not detectable.

Receiver setup:
Detector:Peak+Average; IF-BW: 9kHz; Step: 4.5kHz; M-Time: 20ms
The test data are as follows:

At main terminal: Pass

Model: GUHD18NK3FO（outdoor unit）

Cooling mode **Port: Power Cord- L line**

Final measurement results

EDIT PEAK LIST (Final Measurement Results)				
Trace1:	14-QP			
Trace2:	14-AV			
Trace3:	---			
TRACE	FREQUENCY	LEVEL dBµV		DELTA LIMIT dB
1 Quasi Peak	162 kHz	52.87	L1 gnd	-12.49
2 Average	182 kHz	47.68	L1 gnd	-9.22
2 Average	422 kHz	29.55	L1 gnd	-18.27
1 Quasi Peak	562 kHz	31.48	L1 gnd	-24.51
2 Average	1.362 MHz	31.24	L1 gnd	-14.75
1 Quasi Peak	1.386 MHz	38.41	L1 gnd	-17.58
1 Quasi Peak	3.49 MHz	43.19	L1 gnd	-12.80
2 Average	4.314 MHz	39.12	L1 gnd	-6.88
1 Quasi Peak	11.358 MHz	43.99	L1 gnd	-16.00
2 Average	12.402 MHz	38.32	L1 gnd	-11.67
2 Average	12.646 MHz	40.14	L1 gnd	-9.85
1 Quasi Peak	12.678 MHz	44.56	L1 gnd	-15.43

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Model: GUHD18NK3FO（outdoor unit）

Cooling mode **Port: Power Cord- N line**

Final measurement results

EDIT PEAK LIST (Final Measurement Results)				
Trace1:	14-QP			
Trace2:	14-AV			
Trace3:	---			
TRACE	FREQUENCY	LEVEL dBµV		DELTA LIMIT dB
1 Quasi Peak	162 kHz	48.81	L1 gnd	-16.54
2 Average	342 kHz	34.80	L1 gnd	-15.29
1 Quasi Peak	502 kHz	36.45	L1 gnd	-19.54
2 Average	502 kHz	31.36	L1 gnd	-14.63
1 Quasi Peak	1.426 MHz	41.92	L1 gnd	-14.07
2 Average	1.826 MHz	36.69	L1 gnd	-9.30
1 Quasi Peak	4.37 MHz	46.96	L1 gnd	-9.03
2 Average	4.454 MHz	41.88	L1 gnd	-4.12
2 Average	5.246 MHz	40.88	L1 gnd	-9.12
1 Quasi Peak	11.27 MHz	42.79	L1 gnd	-17.20
1 Quasi Peak	12.974 MHz	46.01	L1 gnd	-13.99
2 Average	13.482 MHz	38.06	L1 gnd	-11.93

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Model: GUHD18NK3FO（outdoor unit）

Heating mode **Port: Power Cord- L line**

Final measurement results

EDIT PEAK LIST (Final Measurement Results)					
Trace1:	14-QP				
Trace2:	14-AV				
Trace3:	---				
TRACE		FREQUENCY	LEVEL dBµV		DELTA LIMIT dB
1	Quasi Peak	162 kHz	53.53	L1 gnd	-11.82
2	Average	182 kHz	48.47	L1 gnd	-8.43
2	Average	402 kHz	30.85	L1 gnd	-17.49
1	Quasi Peak	506 kHz	30.34	L1 gnd	-25.65
1	Quasi Peak	1.386 MHz	38.33	L1 gnd	-17.66
2	Average	1.806 MHz	32.35	L1 gnd	-13.64
1	Quasi Peak	3.514 MHz	43.11	L1 gnd	-12.88
2	Average	4.314 MHz	38.66	L1 gnd	-7.33
2	Average	7.578 MHz	39.08	L1 gnd	-10.91
1	Quasi Peak	11.214 MHz	45.20	L1 gnd	-14.79
1	Quasi Peak	13.282 MHz	47.71	L1 gnd	-12.28
2	Average	13.358 MHz	42.77	L1 gnd	-7.22

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Model: GUHD18NK3FO（outdoor unit）

Heating mode **Port: Power Cord- N line**

Final measurement results

EDIT PEAK LIST (Final Measurement Results)				
Trace1:	14-QP			
Trace2:	14-AV			
Trace3:	---			
TRACE	FREQUENCY	LEVEL dBµV		DELTA LIMIT dB
1 Quasi Peak	182 kHz	45.22	L1 gnd	-19.16
2 Average	342 kHz	34.92	L1 gnd	-15.17
2 Average	482 kHz	32.05	L1 gnd	-14.34
1 Quasi Peak	622 kHz	36.13	L1 gnd	-19.86
1 Quasi Peak	1.806 MHz	41.91	L1 gnd	-14.08
2 Average	1.986 MHz	36.19	L1 gnd	-9.80
1 Quasi Peak	4.214 MHz	46.10	L1 gnd	-9.89
2 Average	4.414 MHz	40.97	L1 gnd	-5.02
2 Average	5.174 MHz	40.55	L1 gnd	-9.44
1 Quasi Peak	11.542 MHz	43.26	L1 gnd	-16.73
1 Quasi Peak	13.086 MHz	46.99	L1 gnd	-13.00
2 Average	13.246 MHz	41.65	L1 gnd	-8.34

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Model: GTH18K3FI(indoor unit)

Cooling mode **Port: Power Cord- L line**

Cooling mode **Port: Power Cord- N line**

Model: GTH18K3FI(indoor unit)

Heating mode **Port: Power Cord- L line**

Heating mode **Port: Power Cord- N line**

Model: GFH18K3FI(indoor unit)

Cooling mode **Port: Power Cord- L line**

Final measurement results

TRACE		FREQUENCY	LEVEL dBµV		DELTA LIMIT dB
1	Quasi Peak	150 kHz	44.85	L1 gnd	-21.15
2	Average	358 kHz	36.14	L1 gnd	-13.46
1	Quasi Peak	478 kHz	42.16	L1 gnd	-14.21
2	Average	478 kHz	38.70	L1 gnd	-7.78
1	Quasi Peak	1.134 MHz	35.50	L1 gnd	-20.50
2	Average	1.134 MHz	31.90	L1 gnd	-14.09
1	Quasi Peak	4.562 MHz	38.74	L1 gnd	-17.25
2	Average	4.594 MHz	33.71	L1 gnd	-12.28
1	Quasi Peak	12.166 MHz	48.25	L1 gnd	-11.74
2	Average	12.17 MHz	43.59	L1 gnd	-6.40
1	Quasi Peak	13.954 MHz	50.78	L1 gnd	-9.21
2	Average	14.118 MHz	46.08	L1 gnd	-3.91

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Model: GFH18K3FI(indoor unit)

Cooling mode **Port: Power Cord- N line**

Final measurement results

TRACE		FREQUENCY	LEVEL dBµV		DELTA LIMIT dB
1	Quasi Peak	162 kHz	45.56	L1 gnd	-19.79
2	Average	358 kHz	35.10	L1 gnd	-14.49
2	Average	474 kHz	39.18	L1 gnd	-7.38
1	Quasi Peak	478 kHz	41.30	L1 gnd	-15.07
1	Quasi Peak	1.102 MHz	36.57	L1 gnd	-19.42
2	Average	1.102 MHz	32.48	L1 gnd	-13.51
1	Quasi Peak	4.534 MHz	39.71	L1 gnd	-16.28
2	Average	4.534 MHz	34.17	L1 gnd	-11.82
1	Quasi Peak	11.846 MHz	47.23	L1 gnd	-12.76
2	Average	11.846 MHz	41.76	L1 gnd	-8.23
2	Average	13.714 MHz	44.76	L1 gnd	-5.23
1	Quasi Peak	14.03 MHz	50.57	L1 gnd	-9.42

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Model: GFH18K3FI(indoor unit)

Heating mode **Port: Power Cord- L line**

Final measurement results

TRACE		FREQUENCY	LEVEL dBµV		DELTA LIMIT dB
1	Quasi Peak	178 kHz	43.55	L1 gnd	-21.02
2	Average	358 kHz	36.04	L1 gnd	-13.56
1	Quasi Peak	474 kHz	43.32	L1 gnd	-13.11
2	Average	474 kHz	40.09	L1 gnd	-6.48
1	Quasi Peak	1.074 MHz	34.28	L1 gnd	-21.71
2	Average	1.13 MHz	33.16	L1 gnd	-12.83
1	Quasi Peak	4.602 MHz	39.24	L1 gnd	-16.75
2	Average	4.602 MHz	33.99	L1 gnd	-12.00
1	Quasi Peak	11.69 MHz	50.43	L1 gnd	-9.56
2	Average	12.346 MHz	43.68	L1 gnd	-6.31
1	Quasi Peak	13.858 MHz	52.60	L1 gnd	-7.39
2	Average	13.942 MHz	44.55	L1 gnd	-5.44

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Model: GFH18K3FI(indoor unit)

Heating mode **Port: Power Cord- N line**

Final measurement results

TRACE		FREQUENCY	LEVEL dBµV		DELTA LIMIT dB
1	Quasi Peak	150 kHz	44.00	L1 gnd	-21.99
2	Average	358 kHz	35.22	L1 gnd	-14.38
1	Quasi Peak	474 kHz	42.64	L1 gnd	-13.80
2	Average	474 kHz	39.50	L1 gnd	-7.07
1	Quasi Peak	982 kHz	36.73	L1 gnd	-19.27
2	Average	982 kHz	33.08	L1 gnd	-12.91
2	Average	4.726 MHz	34.13	L1 gnd	-11.86
1	Quasi Peak	4.782 MHz	39.73	L1 gnd	-16.26
2	Average	12.302 MHz	42.60	L1 gnd	-7.39
1	Quasi Peak	12.39 MHz	49.37	L1 gnd	-10.62
2	Average	13.91 MHz	42.82	L1 gnd	-7.17
1	Quasi Peak	13.962 MHz	50.20	L1 gnd	-9.79

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According to EN55014.1, for terminal disturbance voltage, the test start frequency shall be obtained per the formula: f start=60/L (MHz), so, here, the f start=60/8.0 =7.5 MHz. Where, the length of interconnection line is 8.0 meters.

Cooling mode **Port:** Interconnection line at indoor unit

Final measurement results

TRACE		FREQUENCY	LEVEL dBµV		DELTA LIMIT dB
1	Quasi Peak	7.564 MHz	61.29	L1 gnd	-12.70
2	Average	7.608 MHz	55.81	L1 gnd	-8.18
1	Quasi Peak	11.268 MHz	53.80	L1 gnd	-20.19
2	Average	11.508 MHz	48.65	L1 gnd	-15.34
2	Average	12.936 MHz	47.07	L1 gnd	-16.92
1	Quasi Peak	13.52 MHz	53.82	L1 gnd	-20.17
2	Average	18.592 MHz	47.10	L1 gnd	-16.89
1	Quasi Peak	18.744 MHz	54.26	L1 gnd	-19.74
1	Quasi Peak	21.796 MHz	60.18	L1 gnd	-13.81
2	Average	22.104 MHz	55.14	L1 gnd	-8.85
2	Average	24.18 MHz	49.77	L1 gnd	-14.22
1	Quasi Peak	25.324 MHz	53.39	L1 gnd	-20.60

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Additional terminal:

Cooling mode **Port:** Interconnection line at outdoor unit

Final measurement results

TRACE		FREQUENCY	LEVEL dBµV		DELTA LIMIT dB
2	Average	7.5 MHz	53.78	L1 gnd	-10.21
1	Quasi Peak	7.668 MHz	59.63	L1 gnd	-14.36
1	Quasi Peak	9.644 MHz	54.87	L1 gnd	-19.12
2	Average	9.744 MHz	49.44	L1 gnd	-14.55
2	Average	11.984 MHz	47.06	L1 gnd	-16.93
1	Quasi Peak	13.212 MHz	50.37	L1 gnd	-23.62
2	Average	18.464 MHz	47.40	L1 gnd	-16.59
1	Quasi Peak	18.888 MHz	53.13	L1 gnd	-20.86
1	Quasi Peak	20.18 MHz	51.86	L1 gnd	-22.14
2	Average	21.52 MHz	48.97	L1 gnd	-15.02
2	Average	29.952 MHz	43.47	L1 gnd	-20.52
1	Quasi Peak	29.956 MHz	48.67	L1 gnd	-25.32

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Additional terminal:

Heating mode **Port: Interconnection line at indoor unit**

Final measurement results

TRACE		FREQUENCY	LEVEL dBµV		DELTA LIMIT dB
1	Quasi Peak	7.5 MHz	59.60	L1 gnd	-14.39
2	Average	7.5 MHz	54.17	L1 gnd	-9.82
2	Average	9.72 MHz	48.33	L1 gnd	-15.66
1	Quasi Peak	9.748 MHz	53.10	L1 gnd	-20.89
2	Average	12 MHz	46.36	L1 gnd	-17.63
1	Quasi Peak	12.048 MHz	51.32	L1 gnd	-22.67
1	Quasi Peak	18.364 MHz	53.22	L1 gnd	-20.77
2	Average	18.664 MHz	47.41	L1 gnd	-16.58
2	Average	19.024 MHz	46.20	L1 gnd	-17.79
1	Quasi Peak	20.064 MHz	51.52	L1 gnd	-22.47
1	Quasi Peak	29.868 MHz	46.92	L1 gnd	-27.07
2	Average	29.956 MHz	40.92	L1 gnd	-23.07

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Additional terminal:

Heating mode **Port: Interconnection line at outdoor unit**

Final measurement results

	TRACE	FREQUENCY	LEVEL dBµV		DELTA LIMIT dB
1	Quasi Peak	7.54 MHz	57.81	L1 gnd	-16.18
2	Average	7.616 MHz	52.21	L1 gnd	-11.78
2	Average	11.416 MHz	47.72	L1 gnd	-16.28
1	Quasi Peak	11.448 MHz	52.50	L1 gnd	-21.49
2	Average	11.908 MHz	46.81	L1 gnd	-17.18
1	Quasi Peak	11.94 MHz	51.70	L1 gnd	-22.29
1	Quasi Peak	18.392 MHz	53.83	L1 gnd	-20.16
2	Average	18.66 MHz	48.80	L1 gnd	-15.19
1	Quasi Peak	21.924 MHz	59.88	L1 gnd	-14.11
2	Average	21.948 MHz	53.28	L1 gnd	-10.71
1	Quasi Peak	29.256 MHz	52.75	L1 gnd	-21.24
2	Average	29.26 MHz	45.60	L1 gnd	-18.39

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4.2 Discontinuous Interference on AC Mains

Date of testing	:	2013.01.05
Temperature	:	24°C~26°C
Humidity	:	66%RH~67%RH
Test procedure	:	EN55014-1: 2006+A1:2009+A2:2011
Frequency range	:	0.15M – 30MHz
Kind of test site	:	Shielded room
Operational mode	:	Dry
Test result	:	Pass

1.Test Setup

The EUT is on an insulating plane (height=80cm)
The distance between EUT and L.I.S.N is 80cm.
The distance between EUT and other metal conductors grounded is at least 80cm.

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2. Test results.

Model: GUHD18NK3FO（outdoor unit）					
Run A (Observation time=120Mins0Sec)					
Frequency (MHz)		0.15	0.5	1.4	30
Limit value (L)(**dB**μV)		66	56	56	60
Amount of clicks >L	Short (n1)	3	2	1	0
	Long (n2)	0	0	0	0
Total (n=n1+n2)		3	2	1	0
Click Rate (N=n/T)		0. 03	0. 02	0. 01	0.00
Continuous(s)		0	0	0	0
Switching operations		---			
f factor		N/A			
Result		PASS			
Model: GFH18K3FI(indoor unit)					
Run A (Observation time=120Mins0Sec)					
Frequency (MHz)		0.15	0.5	1.4	30
Limit value (L)(**dB**μV)		66	56	56	60
Amount of clicks >L	Short (n1)	32	24	11	0
	Long (n2)	0	0	0	0
Total (n=n1+n2)		32	24	11	0
Click Rate (N=n/T)		0. 27	0. 20	0. 09	0.00
Continuous(s)		0	0	0	0
Switching operations		---			
f factor		N/A			
Result		PASS			
Model: GTH18K3FI(indoor unit)					
Run A (Observation time=120Mins0Sec)					
Frequency (MHz)		0.15	0.5	1.4	30
Limit value (L)(**dB**μV)		66	56	56	60
Amount of clicks >L	Short (n1)	31	23	10	0
	Long (n2)	0	0	0	0
Total (n=n1+n2)		31	23	10	0
Click Rate (N=n/T)		0. 26	0. 19	0. 08	0.00
Continuous(s)		0	0	0	0
Switching operations		---			
f factor		N/A			
Result		PASS			

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4.3 Disturbance Power

Date of testing	:	2013.01.05
Temperature	:	25°C/18°C
Operational mode	:	Cool /Heat, High speed
Humidity	:	65%RH~67%RH
Test procedure	:	EN55014-1: 2006+A1:2009+A2:2011
Frequency range	:	30M - 300MHz
Kind of test site	:	Shielded room
Test ports	:	AC Mains/ Interconnection line
Test result	:	Pass

1.Test Setup:

EUT and absorbing clamp are placed on an insulating plane (height=80cm). The distance between the absorbing clamp and other metal conductors grounded is 40cm above. EUT is connected to A.C power through an extended cord(≧6m). The absorbing clamp clamps the power line and moves along the power line to measure the maximum disturbance power emitted from the line. If EUT has an indoors unit and an outdoors unit, its interconnection lines and signal lines(or controlling lines) should be also measured ,too.

2.If the result of the measurement with the Quasi Peak detector is below the Average limit, the measurement with Average Detector has been omitted.

The power cord and interconnection line had been extended to a length of 6m and routed through an absorbing clamp. The clamp was moved along the cable to find the maximal emission.

Disturbances other than those mentioned are small or not detectable.

Receiver setup:

Detector:Peak+Average, IF-BW: 120kHz, Step: 60kHz, M-Time: 10ms.

The frequency spectra are as follows:

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Model: GUHD18NK3FO（outdoor unit）

Cooling mode **Port: Power Cord**

Heating mode **Port: Power Cord**

Remark: The all margin values>10dB

THIS TEST REPORT IS RESPONSIBLE FOR THE SAMPLE TESTED ONLY AND SHOULD NOT BE DUPLICATED IN PART WITHOUT PERMISSION OF THE TEST LAB

Model: GUHD18NK3FO（outdoor unit）

Cooling mode **Port: Interconnection line, at indoor unit.**

Heating mode **Port: Interconnection line, at indoor unit.**

Remark: The all margin values>10dB

THIS TEST REPORT IS RESPONSIBLE FOR THE SAMPLE TESTED ONLY AND SHOULD NOT BE DUPLICATED IN PART WITHOUT PERMISSION OF THE TEST LAB

Model: GUHD18NK3FO（outdoor unit）

Cooling mode **Port: Interconnection line, at outdoor unit.**

Heating mode **Port: Interconnection line, at outdoor unit.**

Remark: The all margin values>10dB

THIS TEST REPORT IS RESPONSIBLE FOR THE SAMPLE TESTED ONLY AND SHOULD NOT BE DUPLICATED IN PART WITHOUT PERMISSION OF THE TEST LAB

Model: GTH18K3FI(indoor unit)

Cooling mode **Port: Power Cord**

Final measurement results

	TRACE	FREQUENCY	LEVEL dBpW	DELTA LIMIT dB
1	Quasi Peak	40.68 MHz	37.41	-7.97
2	Average	42.48 MHz	24.84	-10.61
1	Quasi Peak	48.16 MHz	28.96	-16.70
1	Quasi Peak	68.44 MHz	28.44	-17.97

Heating mode **Port: Power Cord**

Final measurement results

	TRACE	FREQUENCY	LEVEL dBpW	DELTA LIMIT dB
1	Quasi Peak	41.04 MHz	37.47	-7.93
2	Average	42.48 MHz	25.04	-10.41
1	Quasi Peak	49.16 MHz	27.87	-17.83
1	Quasi Peak	68.08 MHz	27.23	-19.17

THIS TEST REPORT IS RESPONSIBLE FOR THE SAMPLE TESTED ONLY AND SHOULD NOT BE DUPLICATED IN PART WITHOUT PERMISSION OF THE TEST LAB

Model: GFH18K3FI(indoor unit)

Cooling mode **Port: Power Cord**

Heating mode **Port: Power Cord**

Model: wired controller

Cooling mode **Port: Interconnection line, Near wired controller**

Heating mode **Port: Interconnection line, Near wired controller**

Model: Control panel

Cooling mode **Port: Interconnection line, Away from wired controller**

Heating mode **Port: Interconnection line, Away from wired controller**

4.4 Harmonics on AC Mains

Date of testing	:	2013.01.05
Temperature	:	25°C/18°C
Humidity	:	66%RH~67%RH
Test procedure	:	EN61000-3-2: 2006+A1:2009+A2:2009
Harmonics order	:	2 – 40
Equipment Class	:	A
Operational mode	:	Cool /Heat, High speed
Test result	:	Pass

1.Test Setup:

2. Test result.

The test results are shown as follows:

.

Model: GUHD18NK3FO（outdoor unit）

Cooling mode

THC(A): 0.80 I-THD(%): 7.89 POHC(A): 0.136 POHC Limit(A): 0.251

Highest parameter values during test:

V_RMS (Volts):	230.04	Frequency(Hz):	50.00
I_Peak (Amps):	17.792	I_RMS (Amps):	10.350
I_Fund (Amps):	10.310	Crest Factor:	1.733
Power (Watts):	2366.1	Power Factor:	0.995

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.028	1.080	2.6	0.036	1.620	2.24	Pass
3	0.402	2.300	17.5	0.417	3.450	12.10	Pass
4	0.030	0.430	6.9	0.038	0.645	5.83	Pass
5	0.298	1.140	26.1	0.313	1.710	18.28	Pass
6	0.047	0.300	15.6	0.104	0.450	23.04	Pass
7	0.373	0.770	48.5	0.387	1.155	33.55	Pass
8	0.076	0.230	33.0	0.235	0.345	68.04	Pass
9	0.383	0.400	95.8	0.399	0.600	66.53	Pass
10	0.076	0.184	41.2	0.224	0.276	81.25	Pass
11	0.202	0.330	61.3	0.211	0.495	42.66	Pass
12	0.041	0.153	27.0	0.115	0.230	50.17	Pass
13	0.121	0.210	57.8	0.130	0.315	41.18	Pass
14	0.018	0.131	13.5	0.023	0.197	11.47	Pass
15	0.078	0.150	51.9	0.083	0.225	36.83	Pass
16	0.013	0.115	11.5	0.017	0.173	10.04	Pass
17	0.071	0.132	53.7	0.075	0.199	37.92	Pass
18	0.012	0.102	11.9	0.016	0.153	10.68	Pass
19	0.073	0.118	61.3	0.076	0.178	42.84	Pass
20	0.011	0.092	12.1	0.014	0.138	9.83	Pass
21	0.045	0.107	41.7	0.046	0.161	28.85	Pass
22	0.009	0.084	10.7	0.012	0.125	9.71	Pass
23	0.058	0.098	59.8	0.061	0.147	41.43	Pass
24	0.007	0.077	9.6	0.009	0.115	8.13	Pass
25	0.016	0.090	18.2	0.017	0.135	12.86	Pass
26	0.005	0.071	7.5	0.007	0.106	6.57	Pass
27	0.050	0.083	59.8	0.051	0.125	40.93	Pass
28	0.005	0.066	7.8	0.007	0.099	7.21	Pass
29	0.050	0.078	64.5	0.052	0.116	44.65	Pass
30	0.005	0.061	7.6	0.006	0.092	6.76	Pass
31	0.047	0.073	65.2	0.049	0.109	44.68	Pass
32	0.006	0.058	10.6	0.008	0.086	9.27	Pass
33	0.050	0.068	73.1	0.052	0.102	50.65	Pass
34	0.006	0.054	11.3	0.007	0.081	9.08	Pass
35	0.020	0.064	31.8	0.021	0.096	22.35	Pass
36	0.006	0.051	11.6	0.008	0.077	10.19	Pass
37	0.040	0.061	66.5	0.043	0.091	47.38	Pass
38	0.006	0.048	12.2	0.007	0.073	10.01	Pass
39	0.032	0.058	56.0	0.035	0.087	40.15	Pass
40	0.005	0.046	12.3	0.007	0.069	9.56	Pass

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Model: GUHD18NK3FO（outdoor unit）

Heating mode

Test Result: Pass **Source qualification: Normal**
THC(A): 0.81 **I-THD(%): 8.11** **POHC(A): 0.134** **POHC Limit(A): 0.251**
Highest parameter values during test:

V_RMS (Volts):	230.03	Frequency(Hz):	50.00
I_Peak (Amps):	18.130	I_RMS (Amps):	10.677
I_Fund (Amps):	10.617	Crest Factor:	1.764
Power (Watts):	2437.2	Power Factor:	0.995

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.024	1.080	2.3	0.034	1.620	2.09	Pass
3	0.399	2.300	17.3	0.419	3.450	12.15	Pass
4	0.024	0.430	5.6	0.032	0.645	4.95	Pass
5	0.298	1.140	26.1	0.310	1.710	18.13	Pass
6	0.047	0.300	15.8	0.067	0.450	15.00	Pass
7	0.385	0.770	50.1	0.397	1.155	34.39	Pass
8	0.037	0.230	16.1	0.065	0.345	18.76	Pass
9	0.394	0.400	98.4	0.408	0.600	67.93	Pass
10	0.059	0.184	31.8	0.086	0.276	31.29	Pass
11	0.207	0.330	62.6	0.213	0.495	43.09	Pass
12	0.021	0.153	13.9	0.039	0.230	17.10	Pass
13	0.120	0.210	57.2	0.129	0.315	40.84	Pass
14	0.016	0.131	11.9	0.020	0.197	10.18	Pass
15	0.077	0.150	51.2	0.082	0.225	36.46	Pass
16	0.012	0.115	10.4	0.016	0.173	9.04	Pass
17	0.070	0.132	53.1	0.075	0.199	37.84	Pass
18	0.010	0.102	9.7	0.013	0.153	8.33	Pass
19	0.073	0.118	61.4	0.076	0.178	42.73	Pass
20	0.010	0.092	10.6	0.012	0.138	9.03	Pass
21	0.044	0.107	41.5	0.047	0.161	29.44	Pass
22	0.007	0.084	8.7	0.010	0.125	7.75	Pass
23	0.059	0.098	60.2	0.061	0.147	41.21	Pass
24	0.008	0.077	10.0	0.010	0.115	8.67	Pass
25	0.016	0.090	17.4	0.018	0.135	13.50	Pass
26	0.005	0.071	7.5	0.007	0.106	6.38	Pass
27	0.050	0.083	59.7	0.052	0.125	41.64	Pass
28	0.005	0.066	9.2	0.008	0.099	7.63	Pass
29	0.050	0.078	63.8	0.051	0.116	44.07	Pass
30	0.005	0.061	8.7	0.007	0.092	7.58	Pass
31	0.047	0.073	64.6	0.050	0.109	45.78	Pass
32	0.006	0.058	10.8	0.008	0.086	9.22	Pass
33	0.049	0.068	71.3	0.052	0.102	51.33	Pass
34	0.006	0.054	11.7	0.009	0.081	10.73	Pass
35	0.019	0.064	30.2	0.021	0.096	22.24	Pass
36	0.006	0.051	11.4	0.007	0.077	9.40	Pass
37	0.038	0.061	62.0	0.047	0.091	52.03	Pass
38	0.005	0.048	10.5	0.007	0.073	9.80	Pass
39	0.030	0.058	52.5	0.038	0.087	43.15	Pass
40	0.005	0.046	11.4	0.008	0.069	11.69	Pass

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Model: GTH18K3FI(indoor unit)

fan mode

Test Result: Pass **Source qualification: Normal**
THC(A): 0.29 **I-THD(%): 179.43** **POHC(A): 0.034** **POHC Limit(A): 0.269**
Highest parameter values during test:

V_RMS (Volts):	230.02	Frequency(Hz):	50.00
I_Peak (Amps):	1.460	I_RMS (Amps):	0.347
I_Fund (Amps):	10.594	Crest Factor:	4.373
Power (Watts):	32.7	Power Factor:	0.424

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.005	1.080	0.5	0.008	1.620	0.48	Pass
3	0.135	2.300	5.9	0.137	3.450	3.97	Pass
4	0.005	0.430	1.2	0.007	0.645	1.02	Pass
5	0.128	1.140	11.2	0.131	1.710	7.65	Pass
6	0.005	0.300	1.6	0.006	0.450	1.29	Pass
7	0.118	0.770	15.4	0.121	1.155	10.44	Pass
8	0.004	0.230	0.0	0.005	0.345	1.42	Pass
9	0.107	0.400	26.7	0.108	0.600	18.07	Pass
10	0.003	0.184	0.0	0.004	0.276	1.52	Pass
11	0.093	0.330	28.3	0.094	0.495	19.05	Pass
12	0.002	0.153	0.0	0.003	0.230	1.36	Pass
13	0.079	0.210	37.5	0.079	0.315	25.21	Pass
14	0.002	0.131	0.0	0.002	0.197	1.10	Pass
15	0.064	0.150	42.6	0.065	0.225	28.68	Pass
16	0.001	0.115	0.0	0.001	0.173	0.79	Pass
17	0.049	0.132	37.3	0.050	0.199	25.11	Pass
18	0.001	0.102	0.0	0.001	0.153	0.54	Pass
19	0.035	0.118	30.0	0.036	0.178	20.35	Pass
20	0.001	0.092	0.0	0.001	0.138	0.62	Pass
21	0.023	0.107	21.6	0.024	0.161	14.89	Pass
22	0.001	0.084	0.0	0.001	0.125	0.99	Pass
23	0.013	0.098	12.8	0.013	0.147	9.06	Pass
24	0.001	0.077	0.0	0.001	0.115	1.25	Pass
25	0.004	0.090	0.0	0.005	0.135	3.48	Pass
26	0.001	0.071	0.0	0.002	0.106	1.43	Pass
27	0.003	0.083	0.0	0.004	0.125	3.52	Pass
28	0.001	0.066	0.0	0.001	0.099	1.45	Pass
29	0.007	0.078	9.4	0.008	0.116	7.29	Pass
30	0.001	0.061	0.0	0.001	0.092	1.35	Pass
31	0.010	0.073	13.4	0.010	0.109	9.63	Pass
32	0.001	0.058	0.0	0.001	0.086	1.13	Pass
33	0.011	0.068	15.4	0.011	0.102	10.70	Pass
34	0.001	0.054	0.0	0.001	0.081	0.82	Pass
35	0.010	0.064	15.4	0.010	0.096	10.49	Pass
36	0.000	0.051	0.0	0.000	0.077	0.61	Pass
37	0.008	0.061	13.7	0.009	0.091	9.46	Pass
38	0.000	0.048	0.0	0.001	0.073	0.80	Pass
39	0.006	0.058	10.7	0.007	0.087	7.47	Pass
40	0.001	0.046	0.0	0.001	0.069	1.03	Pass

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Model: GTH18K3FI(indoor unit)

fan mode

Test Result: Pass **Source qualification: Normal**
THC(A): 0.29 **I-THD(%): 180.15** **POHC(A): 0.035** **POHC Limit(A): 0.269**
Highest parameter values during test:

V_RMS (Volts):	230.03	Frequency(Hz):	50.00
I_Peak (Amps):	1.567	I_RMS (Amps):	0.437
I_Fund (Amps):	0.263	Crest Factor:	4.409
Power (Watts):	42.2	Power Factor:	0.420

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.005	1.080	0.5	0.008	1.620	0.48	Pass
3	0.134	2.300	5.8	0.136	3.450	3.93	Pass
4	0.005	0.430	1.2	0.007	0.645	1.04	Pass
5	0.127	1.140	11.1	0.129	1.710	7.52	Pass
6	0.005	0.300	1.6	0.006	0.450	1.27	Pass
7	0.118	0.770	15.3	0.119	1.155	10.32	Pass
8	0.004	0.230	0.0	0.005	0.345	1.41	Pass
9	0.107	0.400	26.6	0.108	0.600	17.93	Pass
10	0.003	0.184	0.0	0.004	0.276	1.50	Pass
11	0.093	0.330	28.3	0.094	0.495	19.02	Pass
12	0.003	0.153	0.0	0.003	0.230	1.36	Pass
13	0.079	0.210	37.7	0.080	0.315	25.32	Pass
14	0.002	0.131	0.0	0.002	0.197	1.10	Pass
15	0.065	0.150	43.0	0.065	0.225	28.84	Pass
16	0.001	0.115	0.0	0.001	0.173	0.76	Pass
17	0.050	0.132	38.0	0.050	0.199	25.32	Pass
18	0.001	0.102	0.0	0.001	0.153	0.54	Pass
19	0.037	0.118	30.8	0.037	0.178	20.65	Pass
20	0.001	0.092	0.0	0.001	0.138	0.55	Pass
21	0.024	0.107	22.6	0.025	0.161	15.22	Pass
22	0.001	0.084	0.0	0.001	0.125	0.96	Pass
23	0.014	0.098	13.9	0.014	0.147	9.44	Pass
24	0.001	0.077	0.0	0.001	0.115	1.25	Pass
25	0.005	0.090	5.5	0.005	0.135	3.88	Pass
26	0.001	0.071	0.0	0.002	0.106	1.42	Pass
27	0.002	0.083	0.0	0.003	0.125	2.03	Pass
28	0.001	0.066	0.0	0.001	0.099	1.44	Pass
29	0.007	0.078	8.6	0.007	0.116	6.03	Pass
30	0.001	0.061	0.0	0.001	0.092	1.38	Pass
31	0.009	0.073	12.9	0.010	0.109	8.79	Pass
32	0.001	0.058	0.0	0.001	0.086	1.18	Pass
33	0.010	0.068	15.2	0.011	0.102	10.31	Pass
34	0.001	0.054	0.0	0.001	0.081	0.88	Pass
35	0.010	0.064	15.6	0.010	0.096	10.55	Pass
36	0.000	0.051	0.0	0.000	0.077	0.64	Pass
37	0.009	0.061	14.1	0.009	0.091	9.59	Pass
38	0.000	0.048	0.0	0.001	0.073	0.75	Pass
39	0.007	0.058	11.3	0.007	0.087	7.71	Pass
40	0.001	0.046	0.0	0.001	0.069	1.01	Pass

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4.5 Voltage Fluctuation on AC Mains

Date of testing	:	2013.01.05
Temperature	:	24°C~26°C
Humidity	:	66%RH~67%RH
Test procedure	:	EN61000-3-3: 2008
Frequency Range	:	0-2kHz
Test observation period	:	120min
Operational mode	:	Dry
Test result	:	Pass

1.Test Setup:

2. Test result.

Model	d_c [%]	d_{max} [%]	d (t)[ms]	Pst	Plt
GUHD18NK3FO（outdoor unit）	0.95	0.98	0.0	0.184	0.153
GFH18K3FI(indoor unit)	0.11	1.50	0.0	0.206	0.202
GTH18K3FI(indoor unit)	0.12	1.51	0.0	0.209	0.205
Limit	**3.30**	**6.00**	**500.0**	**1.000**	**0.650**

Remark:

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5. Immunity Tests

5.1 Electrostatic Discharge (ESD)

Date of testing	:	2013.01.05
Temperature	:	24°C~26°C
Humidity	:	56%RH
Test procedure	:	EN55014-2: 1997+A1: 2001+A2:2008
Basic Standard	:	IEC 61000-4-2:2008
Performance Criterion	:	B
Operational mode	:	Cool, High fan
Test result	:	Pass

1. Test setup

Note: HCP means Horizontal Coupling Plane,
VCP means Vertical Coupling Plane
GRP means Ground Reference Plane

The EUT was put on a 0.8m high wooden tabel/0.1m high for floor standing equipment standing on the ground reference plane(GRP) 3m by 2m in size, made by iron 1.0 mm thick.
A horizontal coupling plane(HCP) 1.6m by 0.8m in size was placed on the table, and the EUT with its cables were isolated from the HCP by an insulating support thick than 0.5mm. The VCP 0.5m by 0.5m in size & HCP were constructed from the same material type & thinness as that of the GRP, and connected to the GRP via a 470kΩ resistor at each end.
The distance between EUT and any of the other metallic surface excepted the GRP, HCP & VCP was greater than 1m.
The EUT was arranged and connected according to its functional requirements.

Direct static electricity discharges was applied only to those points and surface which are accessible to personnel during normal usage.

2. Test result

Location of Discharge	Type of Discharge	Level(kV)	Polarity	Number of Discharge	Result
Remote Receiver	Air	8.0	±	10	A
Display window	Air	8.0	±	10	A
Manual key	Air	8.0	±	10	A
Touchable screw	Contact	4.0	±	10	A
Remote Controller	Air	8.0	±	10	A
	HCP	4.0	±	10	A
	VCP	4.0	±	10	A

Remark:
The Air discharge could not occur and the EUT worked normally during the test, no degradation of function occurred.

Air -Air Discharge
Contact -Contact Discharge
HCP—Horizontal Coupling Plate,
VCP—Vertical Coupling Plate

5.2 Electrical Fast Transient/Burst (EFT)

Date of testing	:	2013.01.05
Temperature	:	24°C
Humidity	:	67%RH
Test procedure	:	EN55014-2: 1997+A1: 2001+A2:2008
Basic Standard	:	IEC 61000-4-4:2004
Repetition Frequency	:	5kHz
Performance Criterion	:	B
Operational mode	:	Cool, High fan
Test result	:	Pass

1.Test Setup

The EUT is placed on an insulating plane, it is 0.1m high for table model and 0.1m high for floor type above the grounded reference plane. EUT is at least 0.5m away from the wall of the EMC laboratory and other metal conductors grounded except the grounded reference plane., and its four borders are at least 0.1m away from the borders of the grounded reference plane. The cable between EUT and CDN is not more than 0.5m.

For signal lines and control lines, the burst signal is coupled by a capacitive coupling clamp.

2. Test result:

Location	Voltage (kV)	Duration (s)	Coupled by	Result
L +N+PE	±1	120	CDN	A
Interconnection line	±0.5	120	Capacitive Coupling Clamp	A
Remark: The EUT worked normally during the test, no degradation of function occurred.				

5.3 Surge

Date of testing	:	2013.01.05
Temperature	:	24°C
Humidity	:	67%RH
Test procedure	:	EN55014-2: 1997+A1: 2001+A2:2008
Basic Standard	:	IEC 61000-4-5:2005
Performance Criterion	:	B
Operational mode	:	Cool, High fan
Test result	:	Pass

1.Test Setup

The cable between EUT and CDN is not more than 1m..
No other special specifications.

2.Test result

Location	Polarity	Phase Angle	Number of test	Pulse Voltage（kV）	Result
L—N	±	0°	5	1	A
	±	90°	5	1	A
	±	180°	5	1	A
	±	270°	5	1	A
L-PE	±	0°	5	2	A
	±	90°	5	2	A
	±	180°	5	2	A
	±	270°	5	2	A
N-PE	±	0°	5	2	A
	±	90°	5	2	A
	±	180°	5	2	A
	±	270°	5	2	A
Remark: The EUT worked normally during the test, no degradation of function occurred.					

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5.4 Immunity to conducted Disturbances, induced by RF fields

Date of testing	:	2013.01.05
Temperature	:	24°C
Humidity	:	67%RH
Test procedure	:	EN55014-2: 1997+A1: 2001+A2:2008
Basic Standard	:	IEC 61000-4-6:2008
Frequency range	:	150k~230MHz
Modulation	:	80%AM, 1kHz sine-wave
Dwell time/Step size	:	3000ms / 1%
Performance Criterion	:	A
Operational mode	:	Cool, High fan
Test result	:	Pass

1. Test Setup

Frequency Range	Coupling Port	Strength	Coupling Method	Result
0.15MHz~80MHz	AC Mains	3V	CDN	A
80MHz~230MHz	AC Mains	3V	CDN	A
0.15MHz~80MHz	Interconnection wire	1V	Coupling/Decoupling Network	A
80MHz~230MHz	Interconnection wire	1V	Coupling/Decoupling Network	A
Remark: The EUT worked normally during the test, no degradation of function occurred.				

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5.5 Voltage Dips and Short interruptions

Date of testing	:	2013.01.05
Temperature	:	24°C
Humidity	:	67%RH
Test procedure	:	EN55014-2: 1997+A1: 2001+A2:2008
Basic Standard	:	IEC 61000-4-11:2004
Performance Criterion	:	C
Operational mode	:	Cool, High fan
Test result	:	Pass

1.Test Setup

No other special specifications.

2. Test result.

Severity Level		Test Level	Duration	Intervals	Phase Angle	Number of Test	Result
Short Interruption 100%		0%U_T	0.5P	3min	0°	3	A
					180°	3	A
Voltage Dips	60%	40%U_T	10P	3min	0°	3	B
					180°	3	B
	30%	70%U_T	25P	3min	0°	3	B
					180°	3	B

Remark:

1, U_T: Nominal Voltage of EUT.

2, During the test of 40%U_T, 70%U_T the EUT stopped, but it could recover the primal status. No degradation of function occurred.

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