EMC TEST REPORT

Product Name	:	Split-type Room Air Conditioner
Product Model	:	Indoor unit: GWH(24)RC-K3DNA1A/I Outdoor unit: GWHD(36)NK3AO; GWHD(42)NK3AO
Serial No.	:	Pre-production model
Date of Receipt	:	2012.3.20
Test Period	:	2012.3.21~23
Applicant	:	Gree Electric Appliances, Inc. of Zhuhai
Testing Location	:	Gree EMC Testing Lab.

Applicable The Following Selected Harmonized Standards:

EN55014-1: 2006+A1:2009
EN55014-2: 1997+A1: 2001+A2:2008
EN61000-3-12: 2005
EN61000-3-11: 2000

Tested by	:	Ouyang Jianjun		2012-3-23
		Printed Name	*Signature*	*Date((YY-MM-DD)*
Reviewed by	:	Li zhikun		2012-3-23
		Printed Name	*Signature*	*Date((YY-MM-DD)*

EMC LABORATORY OF GREE ELETRIC APPLIANCES INC. OF ZHUHAI

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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	15
4.3	Disturbance Power	17
4.4	Harmonics on AC Mains	24
4.5	Voltage Fluctuation on AC Mains	29
5.	**IMMUNITY TESTS**	**30**
5.1	Electrostatic Discharge (ESD)	30
5.2	Electrical Fast Transient/Burst (EFT)	32
5.3	Surge	33
5.4	Immunity to conducted Disturbances, induced by RF fields	34
5.5	Voltage Dips and Short interruptions	35

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	:	1P, 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	:	

The Rated Input Current ＞16A.

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

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3. List of Test and Measurement Instruments

Equipment	Manufacturer	Model No.	Serial No.	Calibrated until
EMI Test Receiver	R&S	ESCS30	100353	07/15/2012
L.I.S.N	R&S	ENV4200	100031	07/15/2012
Pulse limiter	R&S	ESH3-Z2	100066	07/15/2012
Absorbing Clamp	R&S	MDS-21	100194	07/15/2012
Voltage Probe	Schwarbeck	TK9420	9426-235	07/15/2012
Clicks Analyzer	Schaffner	DIA1512D	21534	07/15/2012
Harmonic/Flicker Testing system	CI	PACS-3	72823	03/25/2012
ESD Simulator System	3CTest	ESD-30	EC0210605	08/24/2012
EFT/B Generator	Schaffner	NSG2025-4	1237	07/15/2012
Capacitive Coupling Clamp	Schaffner	CDN126	532	07/15/2012
RF-Generator	Schaffner	NSG2070	1022	07/15/2012
Coupling/Decoupling Network	Schaffner	CDN M316	15072	07/15/2012
EM clamp	Schaffner	KEMZ801	15792	07/15/2012
Voltage Swell/DIP/Interrupt Source	KeyTek ECAT	EP62	0512181	11/28/2012
Surge Generator-Combination Wave	KeyTek ECAT	510A	0512182	11/28/2012
Coupling/Decoupling Network	KeyTek ECAT	E4554A	0512183	11/28/2012

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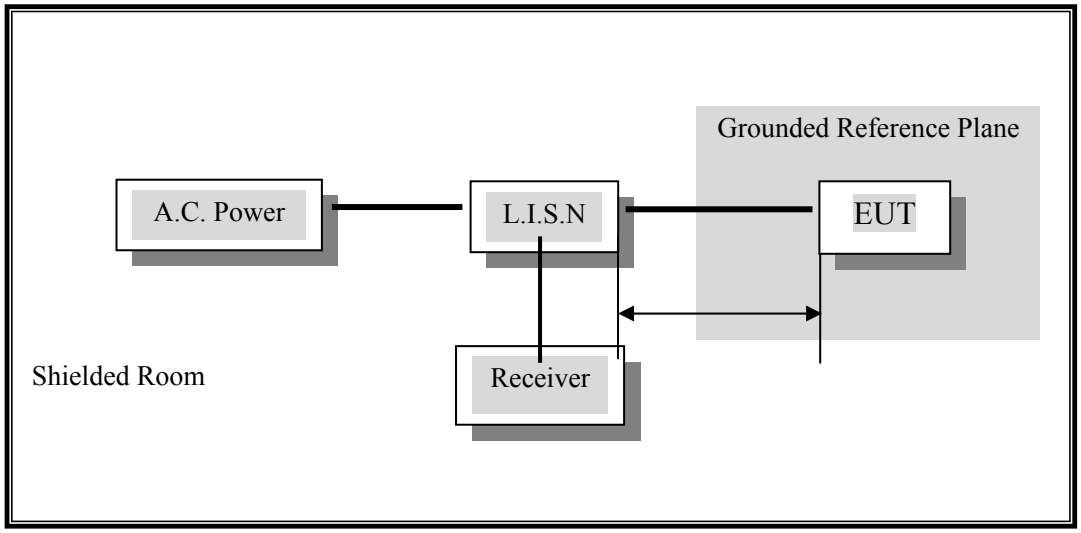
4. Emission Test

4.1 Main and Additional Terminal Continuous Disturbance Voltage

Date of testing	:	2012.3.21
Temperature	:	26°C/18°C
Operational mode	:	Cool /Heat, High speed
Humidity	:	65%RH~67%RH
Test voltage/Frequency	:	264V/50Hz
Test procedure	:	EN55014-1: 2006+A1:2009
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:

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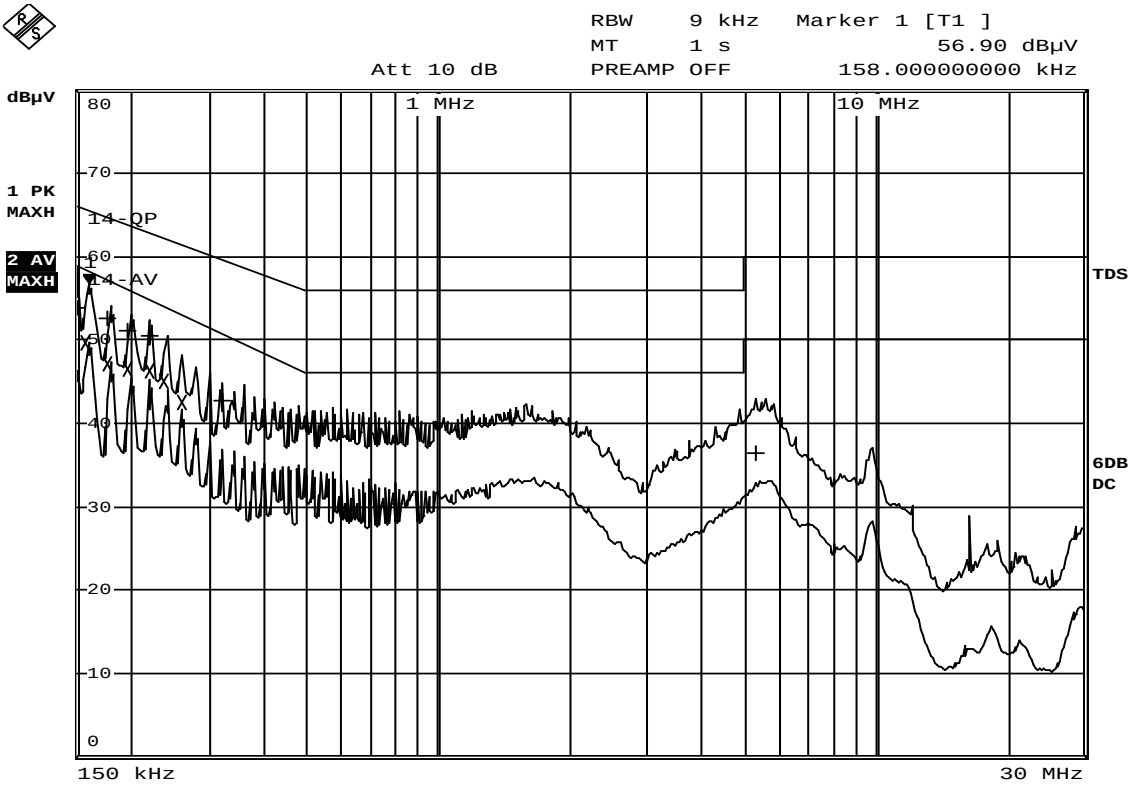
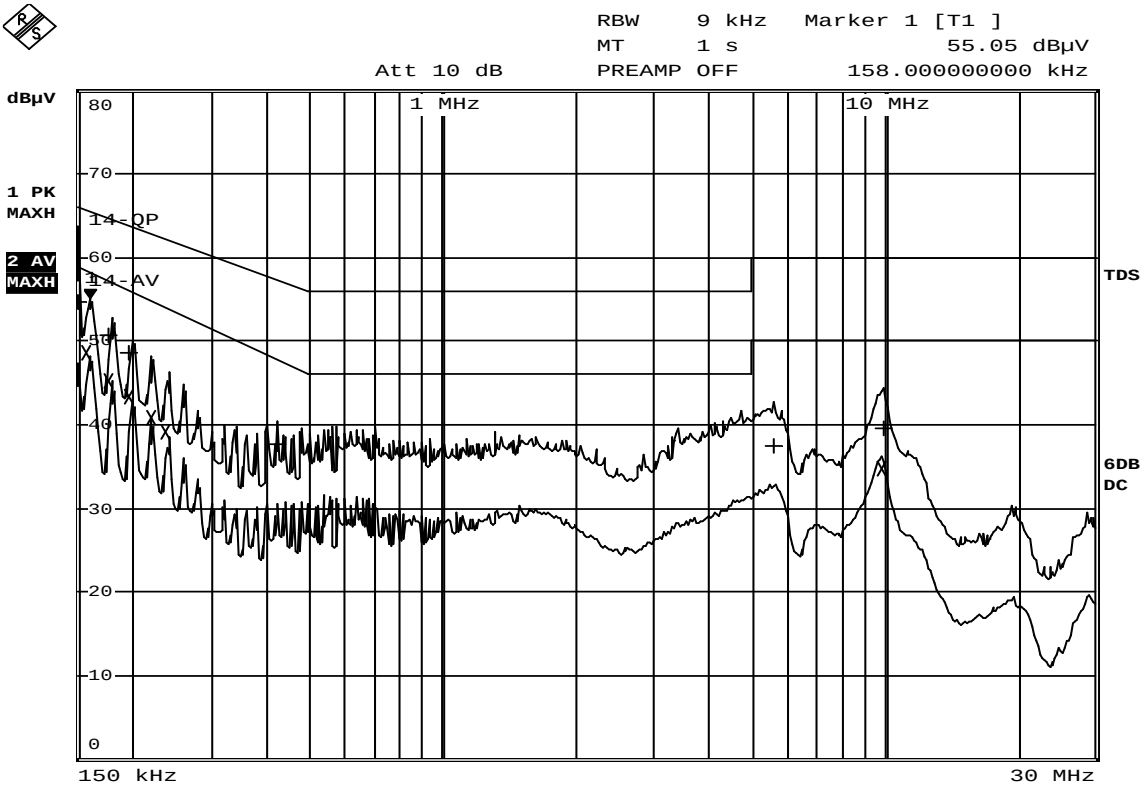
At main terminal: Pass

Model: GWHD(36)NK3AO IU:GWH(24)RC-K3DNA1A/I

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



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



Remark: The all margin values>10dB

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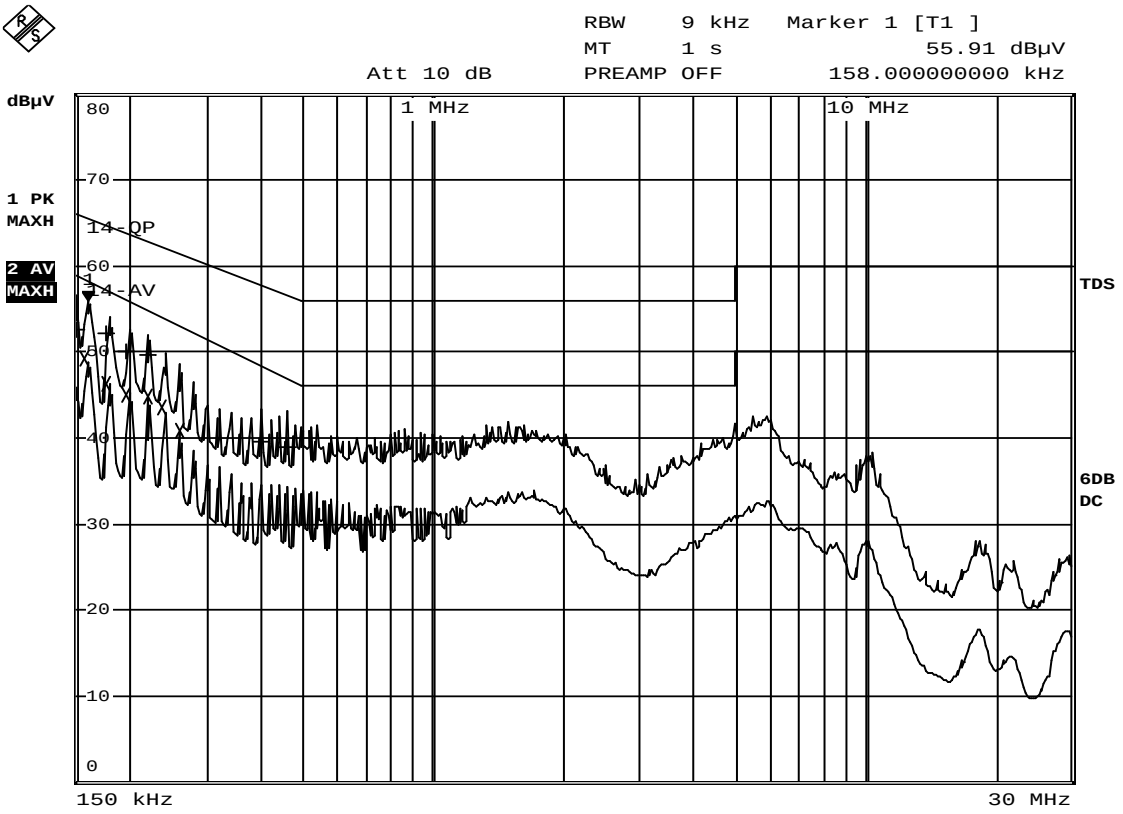
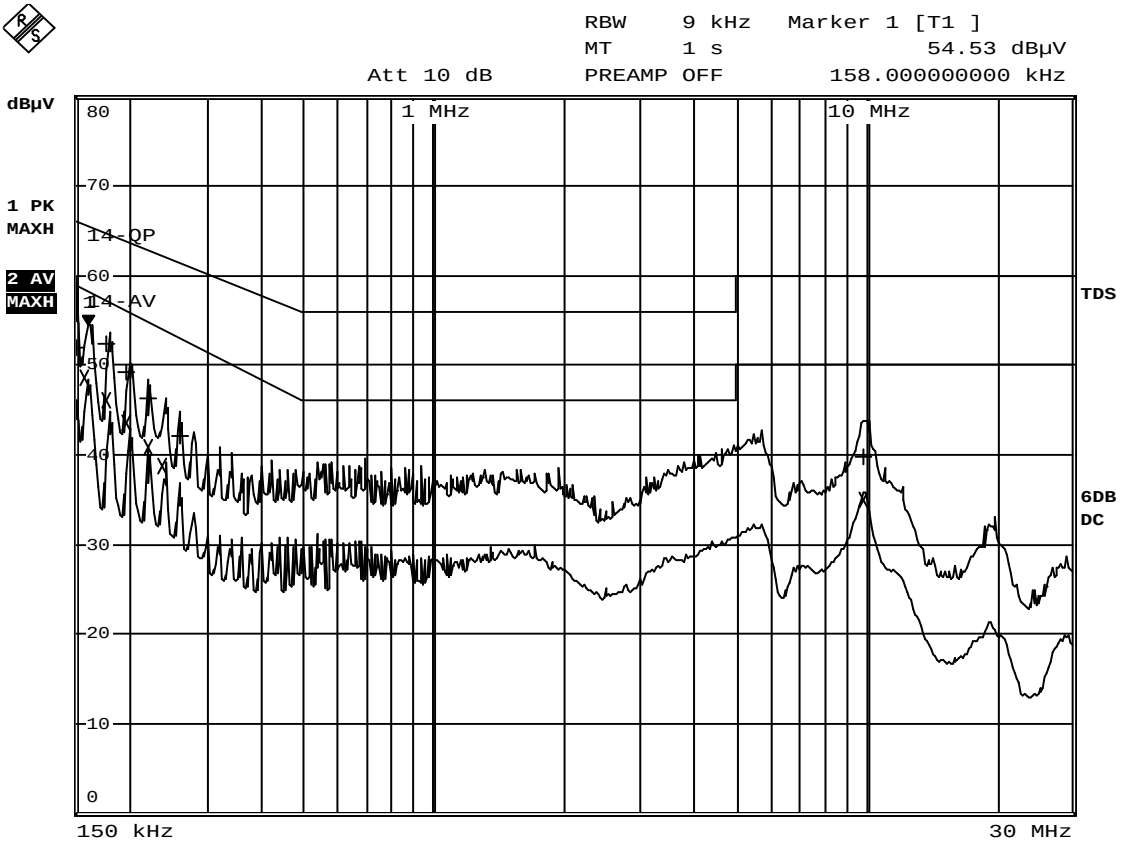
Model: GWHD(36)NK3AO IU:GWH(24)RC-K3DNA1A/I

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



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



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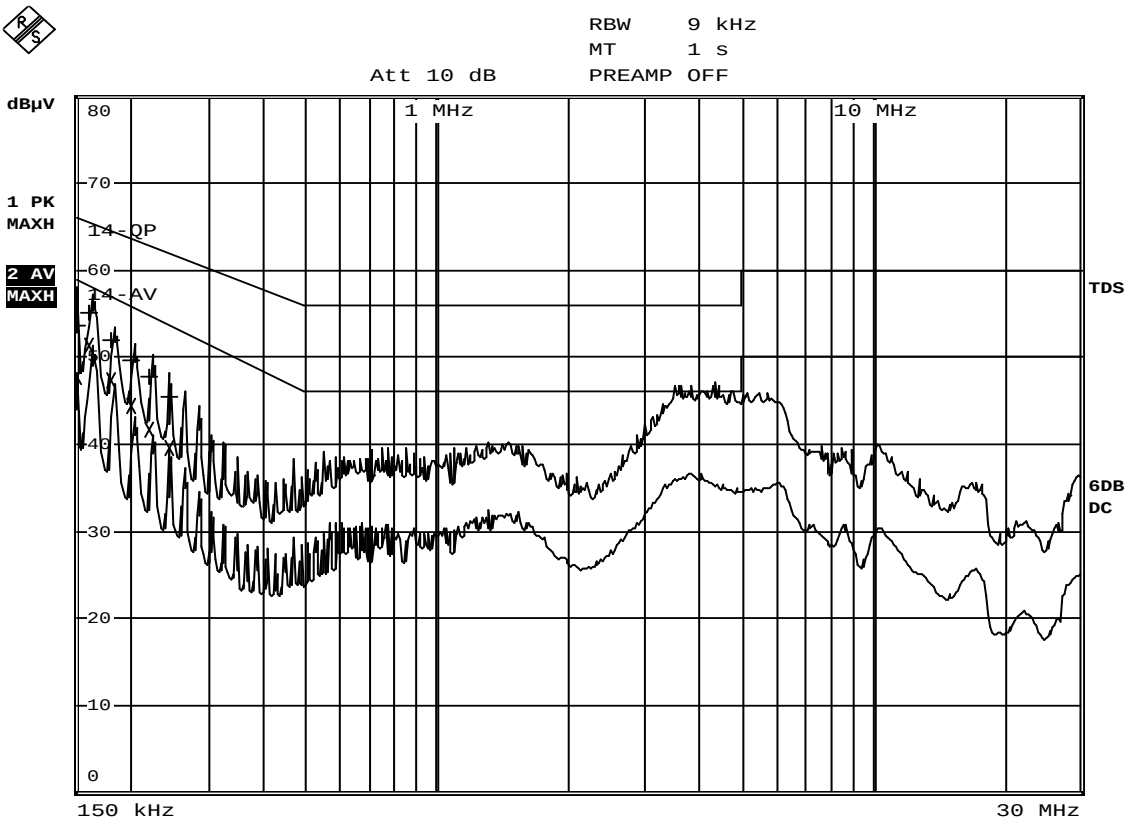
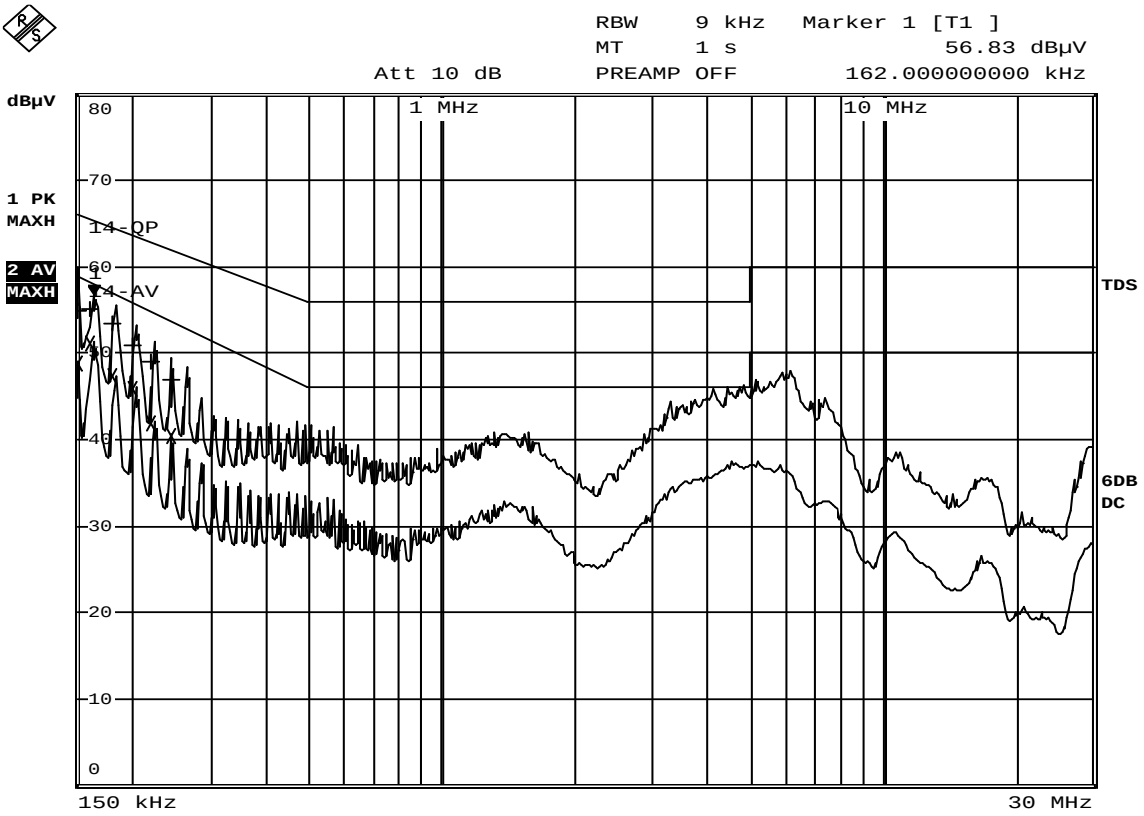
Model: GWHD(42)NK3AO IU:GWH(24)RC-K3DNA1A/I

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



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



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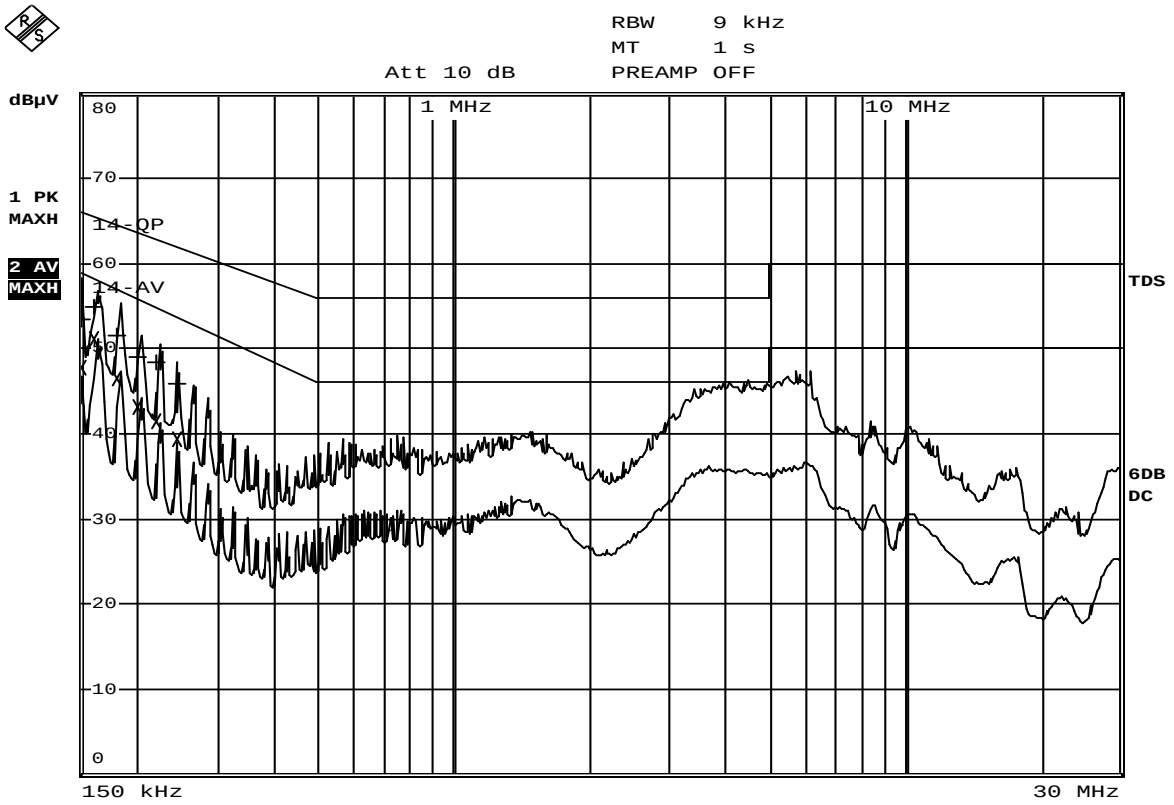
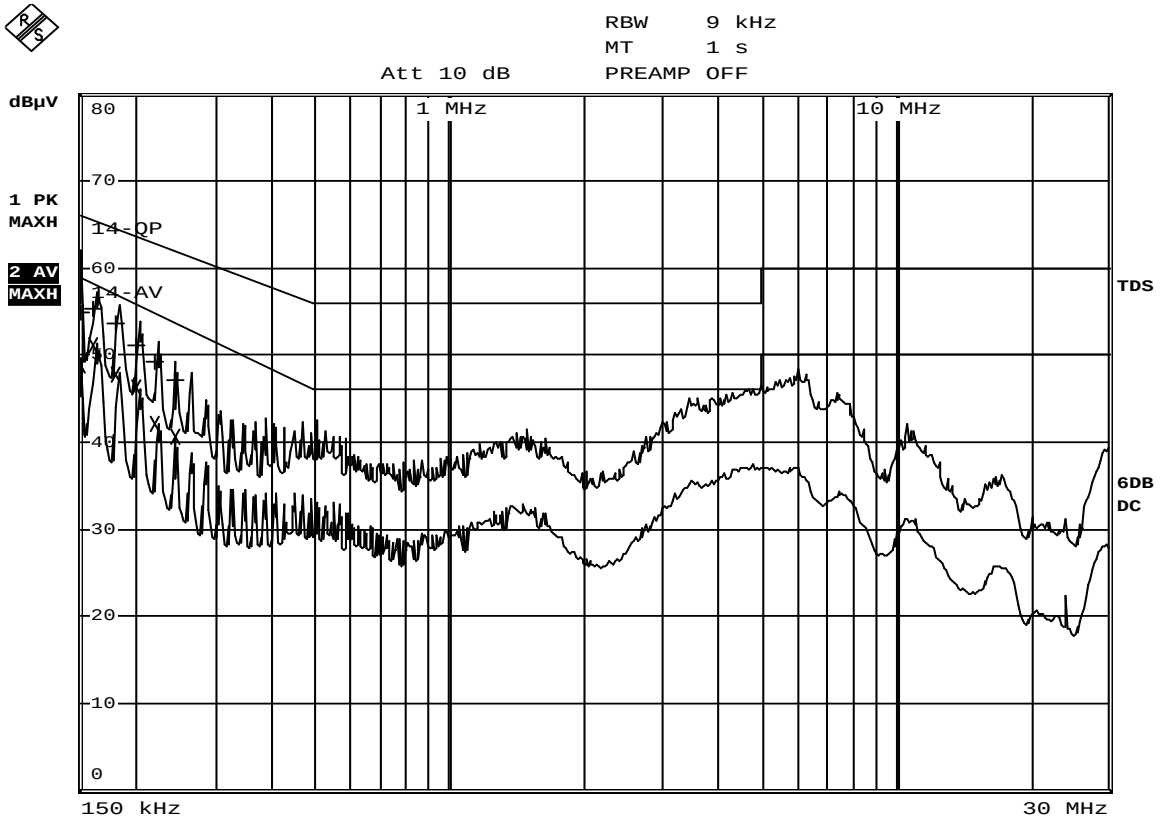
Model: GWHD(42)NK3AO IU:GWH(24)RC-K3DNA1A/I

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



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



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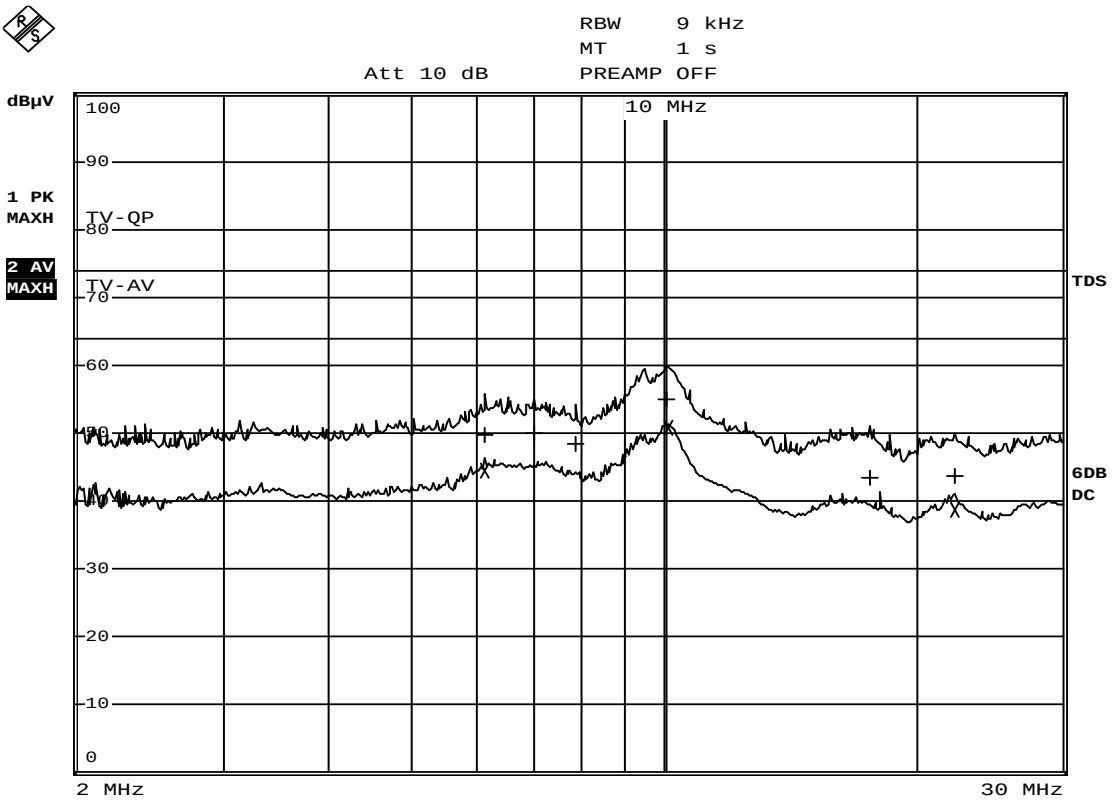
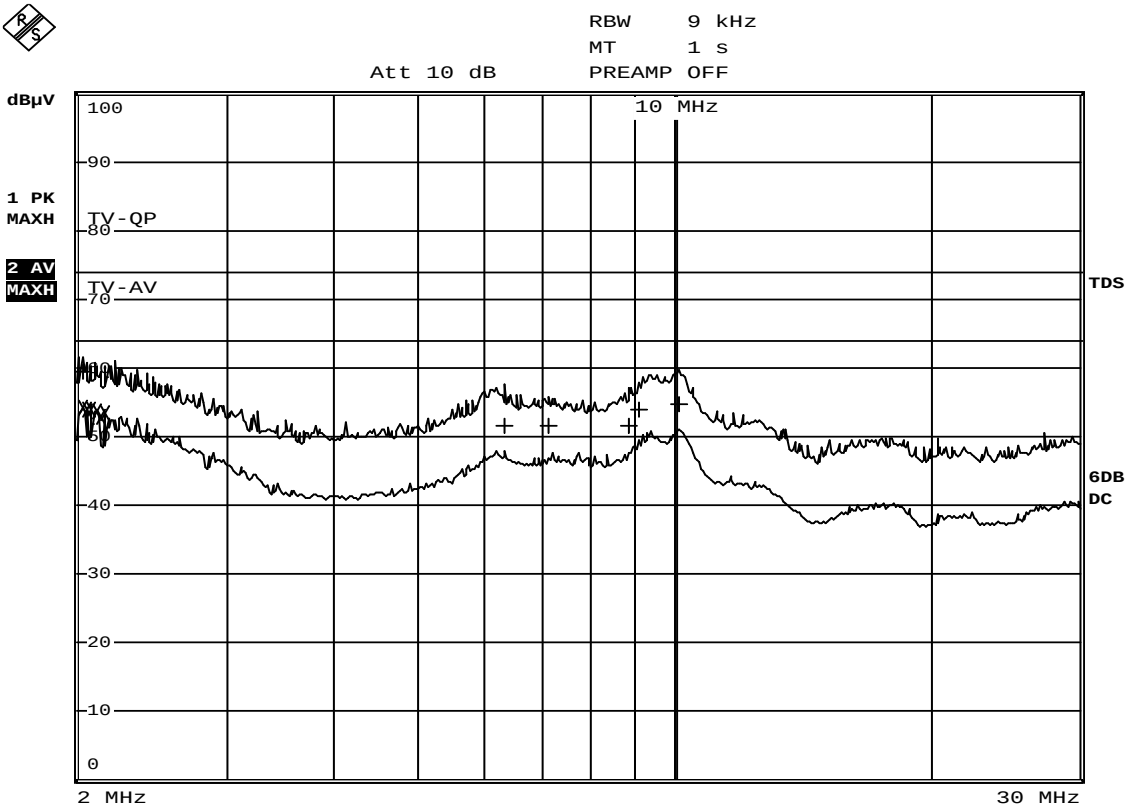
Additional terminal:

Model: GWHD(36)NK3AO IU:GWH(24)RC-K3DNA1A/I

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



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



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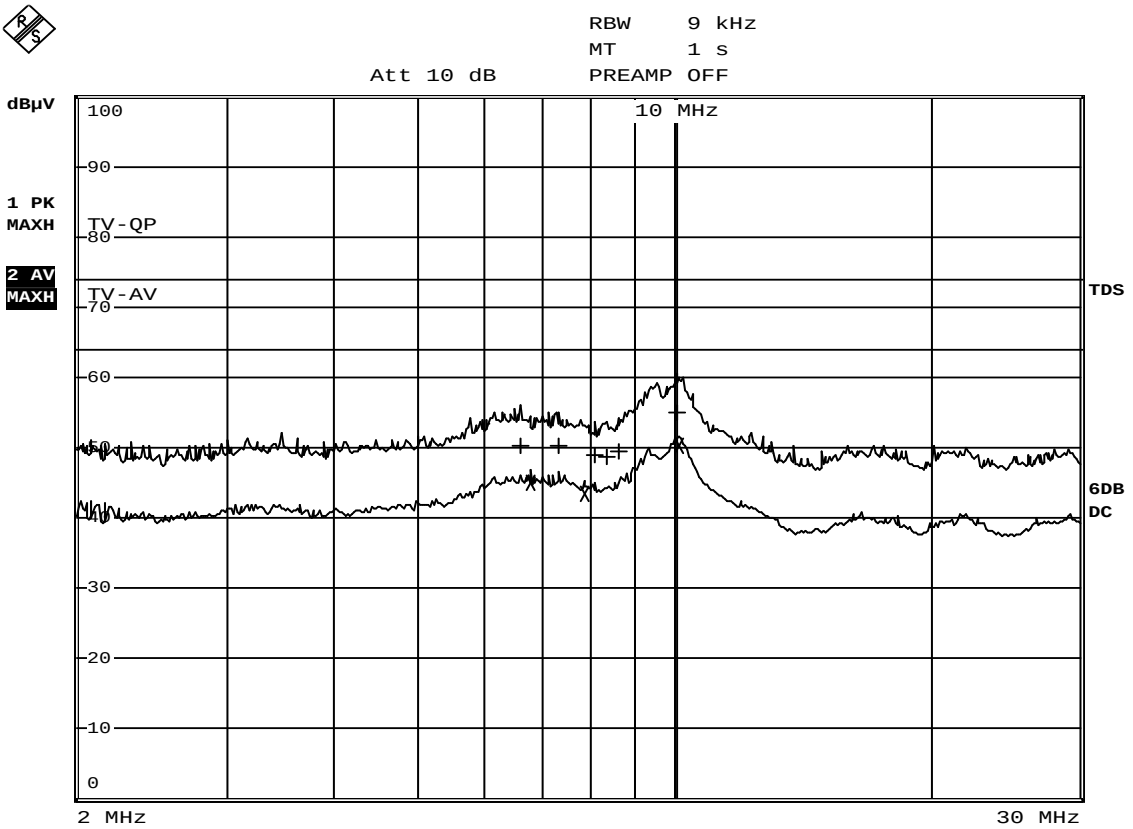
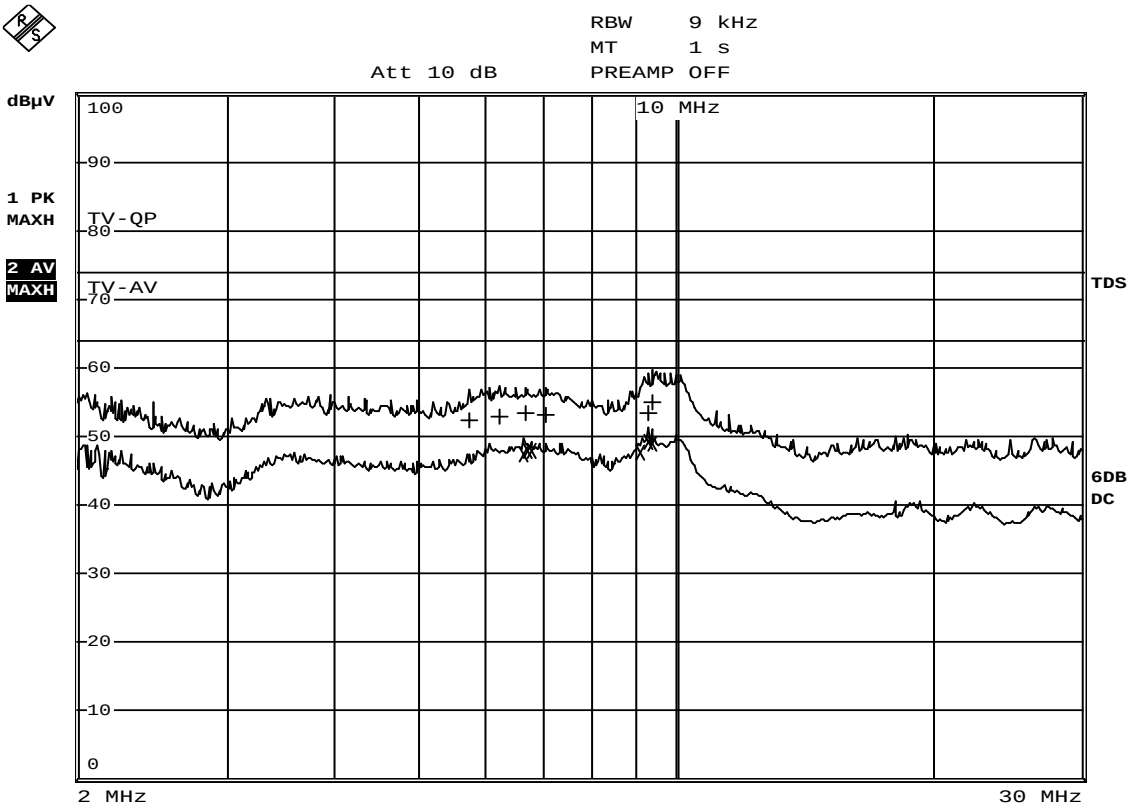
Model: GWHD(36)NK3AO IU:GWH(24)RC-K3DNA1A/I

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



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



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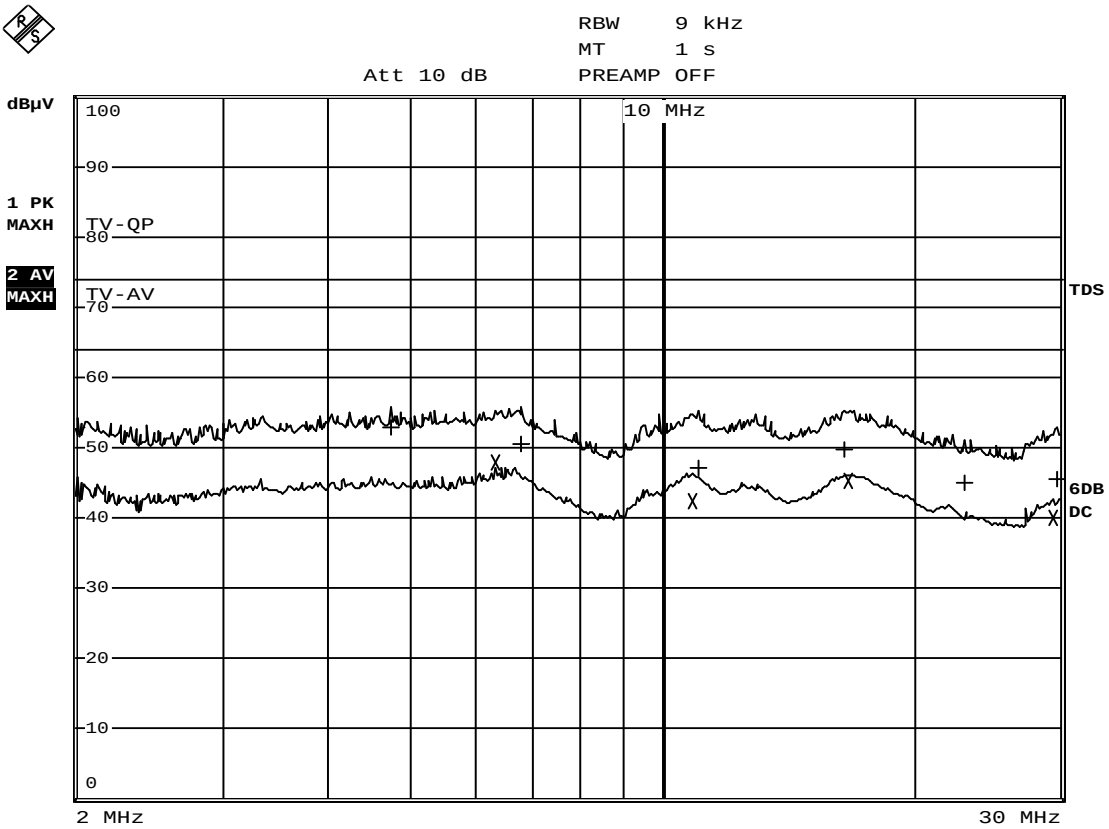
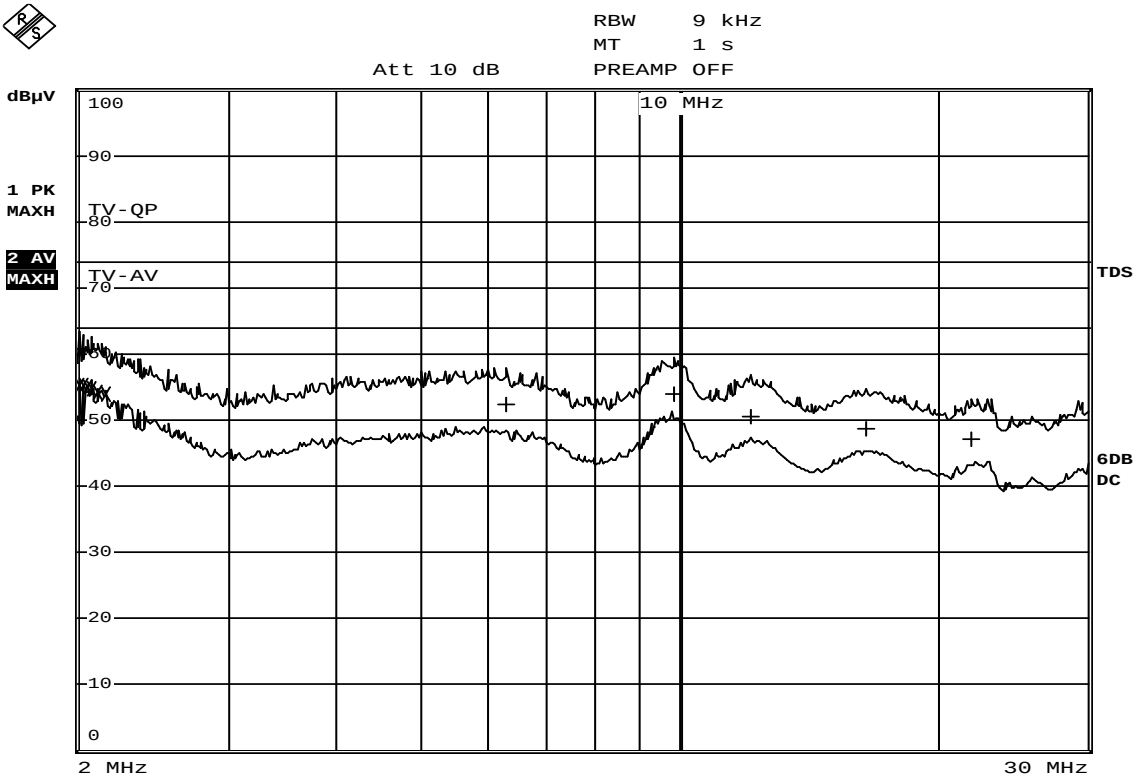
Model: GWHD(42)NK3AO IU:GWH(24)RC-K3DNA1A/I

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



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



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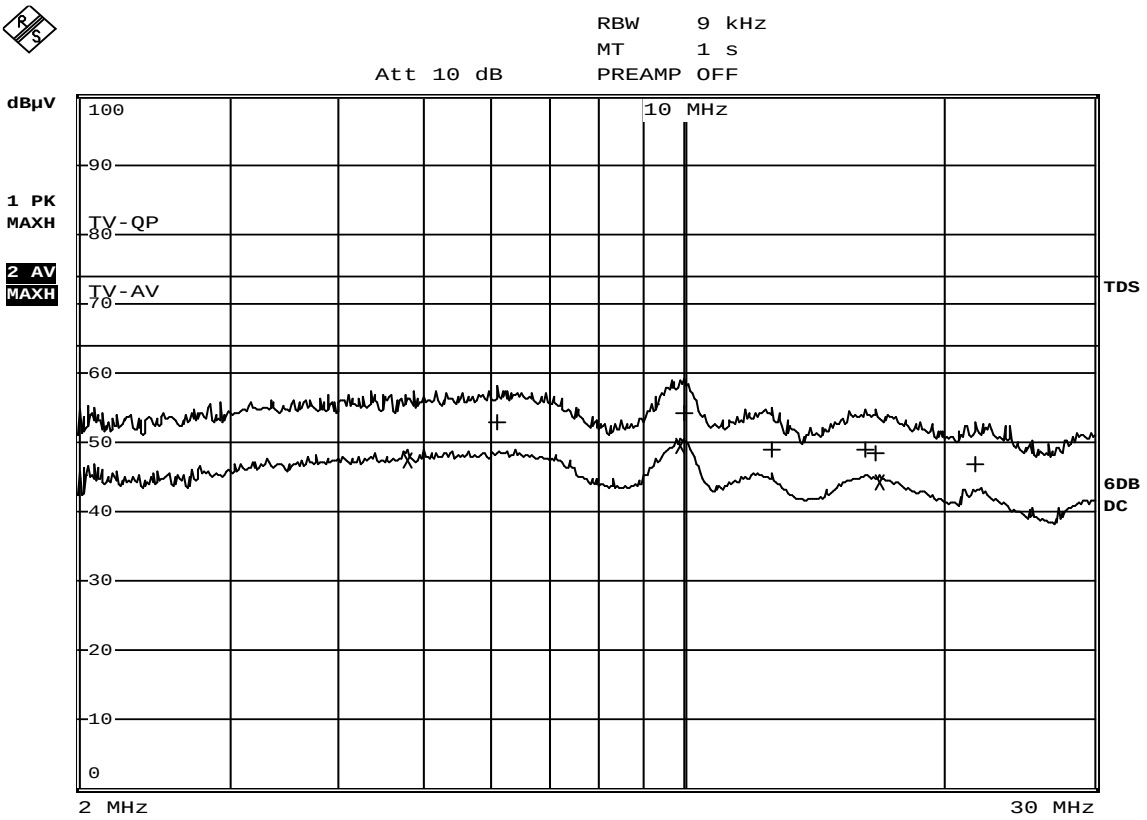
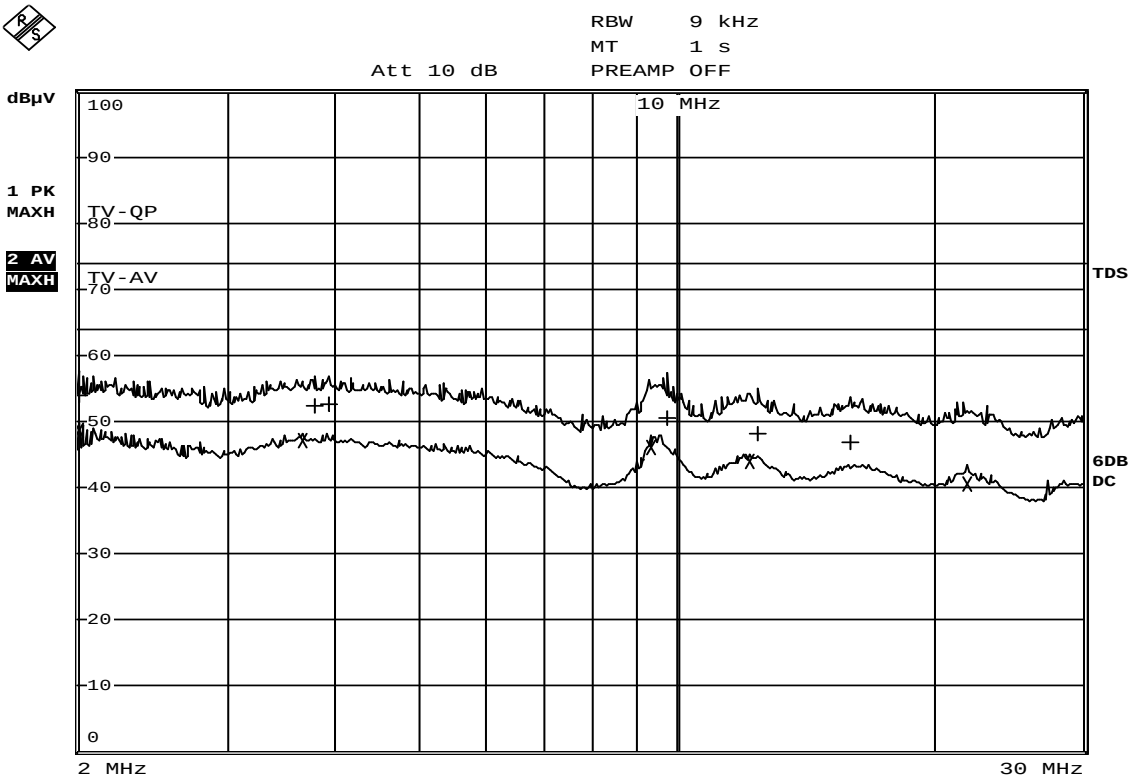
Model: GWHD(42)NK3AO IU:GWH(24)RC-K3DNA1A/I

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



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



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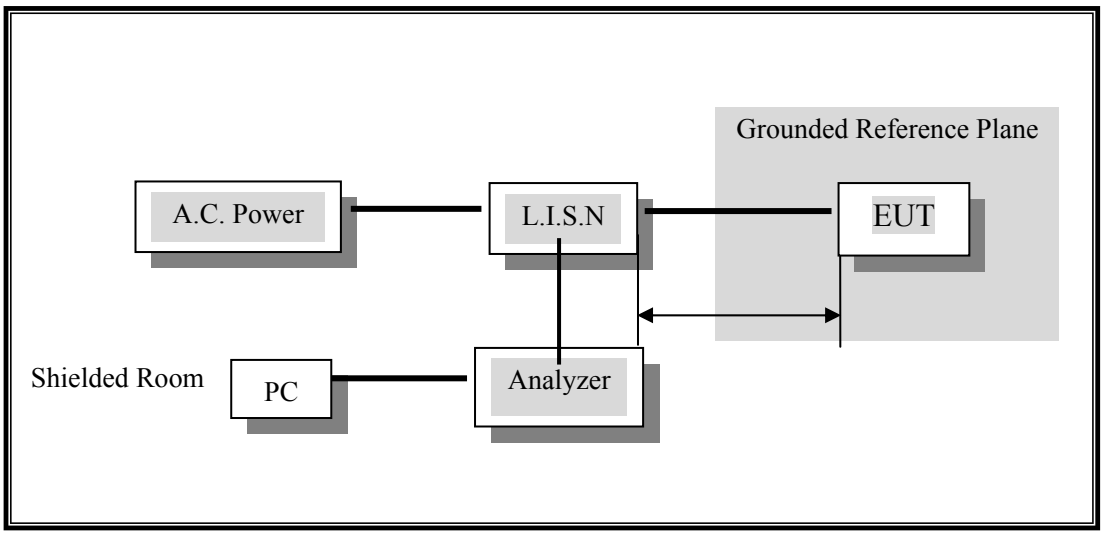
4.2 Discontinuous Interference on AC Mains

Date of testing	:	2012.3.21
Temperature	:	24°C~28°C
Humidity	:	66%RH~67%RH
Test voltage/Frequency	:	264V/50Hz
Test procedure	:	EN55014-1: 2006+A1:2009
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: GWHD(36)NK3AO IU:GWH(24)RC-K3DNA1A/I					
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)	4	4	4	0
	Long (n2)	0	0	0	0
Total (n=n1+n2)		4	4	4	0
Click Rate (N=n/T)		0.03	0.03	0.03	0.00
Continuous(s)		0	0	0	0
Switching operations		---			
f factor		N/A			
Result		PASS			

Model: GWHD(42)NK3AO IU:GWH(24)RC-K3DNA1A/I					
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)	4	4	4	0
	Long (n2)	0	0	0	0
Total (n=n1+n2)		4	4	4	0
Click Rate (N=n/T)		0.03	0.03	0.03	0.00
Continuous(s)		0	0	0	0
Switching operations		---			
f factor		N/A			
Result		PASS			

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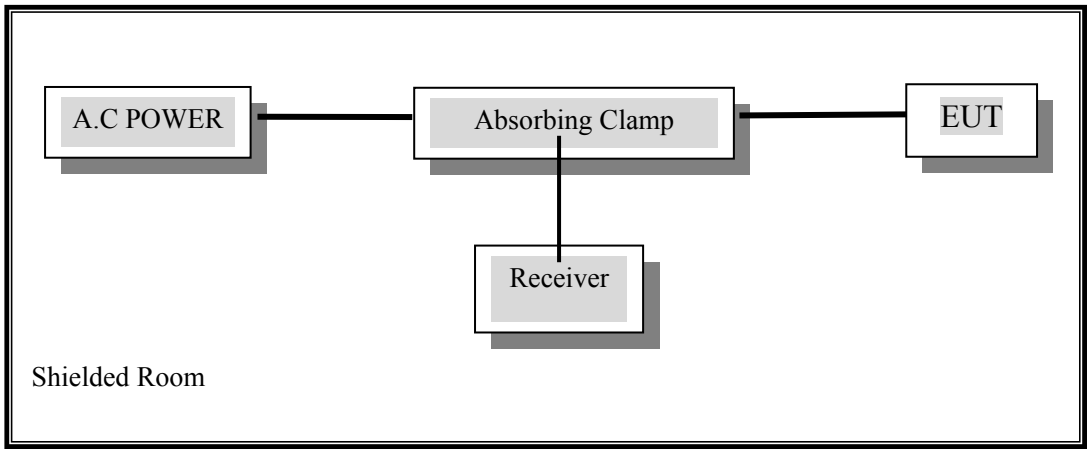
4.3 Disturbance Power

Date of testing	:	2012.3.21
Temperature	:	25°C/19°C
Operational mode	:	Cool /Heat, High speed
Humidity	:	65%RH~67%RH
Test voltage/Frequency	:	264V/50Hz
Test procedure	:	EN55014-1: 2006+A1:2009
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.

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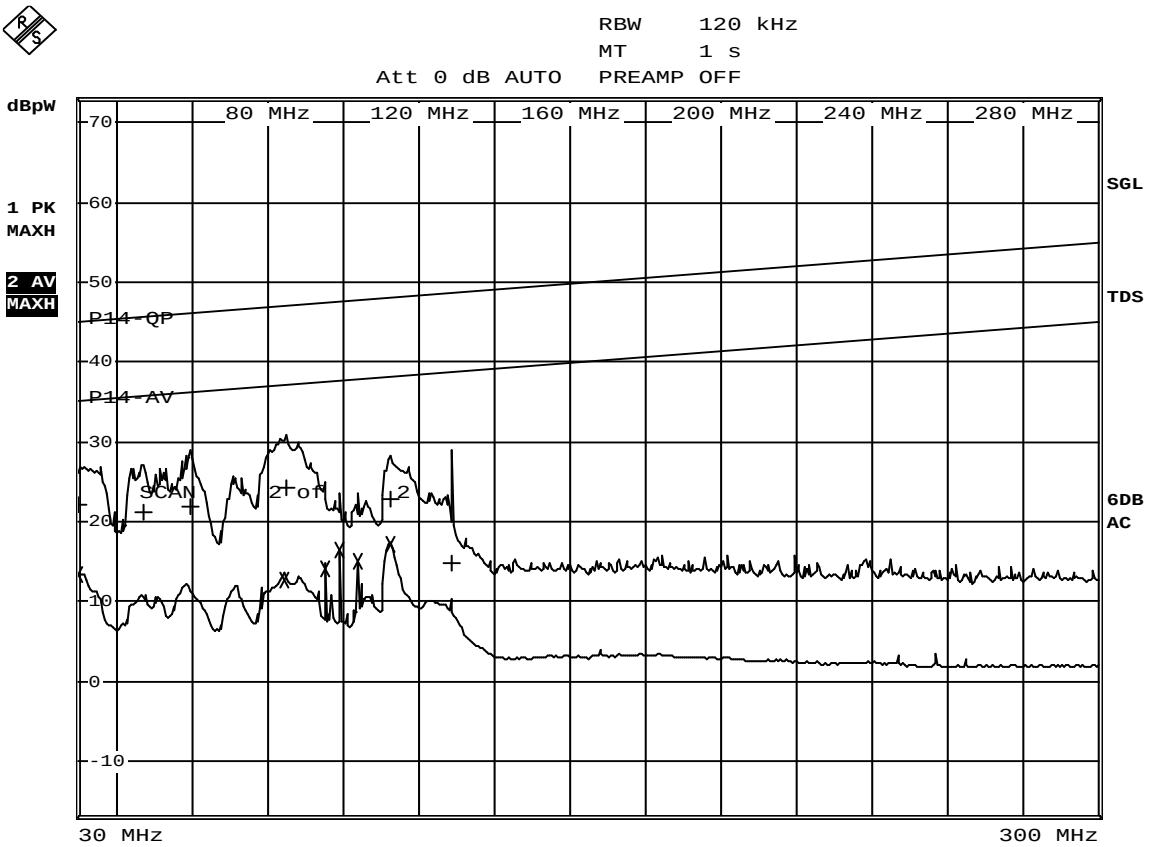
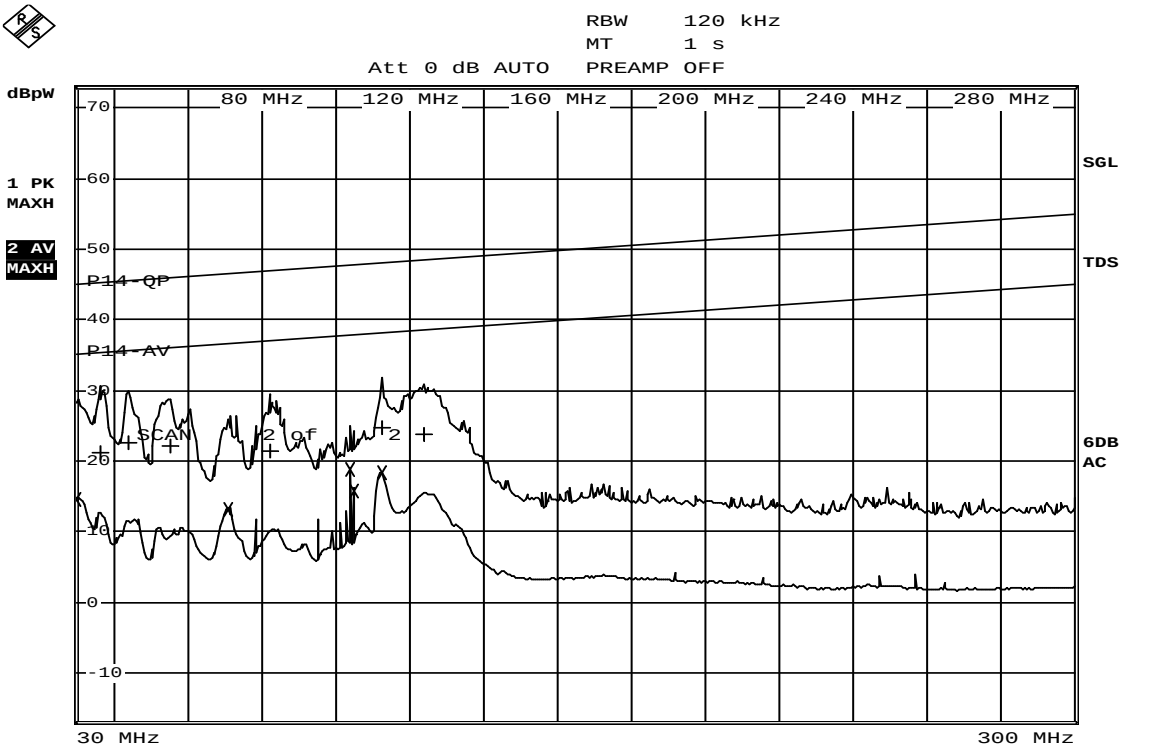
The frequency spectra are as follows:

Model: GWHD(36)NK3AO IU:GWH(24)RC-K3DNA1A/I

Cooling mode **Port: Power Cord**



Heating mode **Port: Power Cord**



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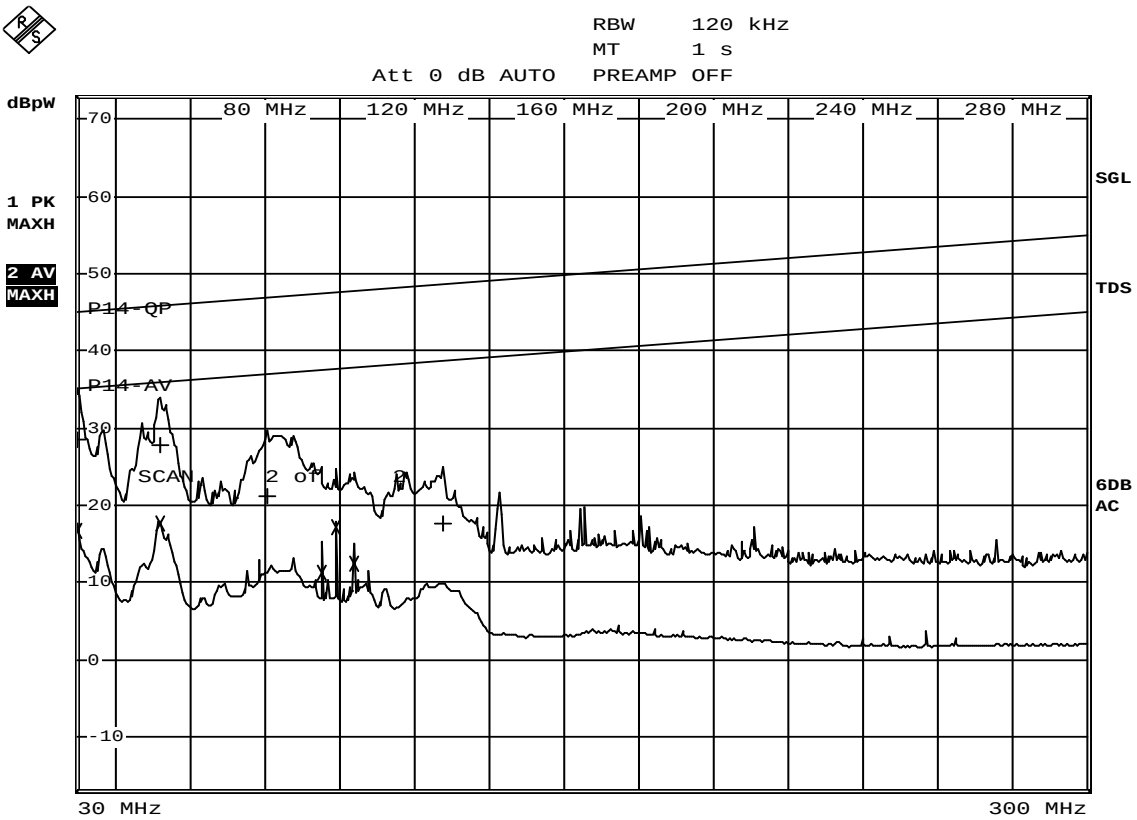
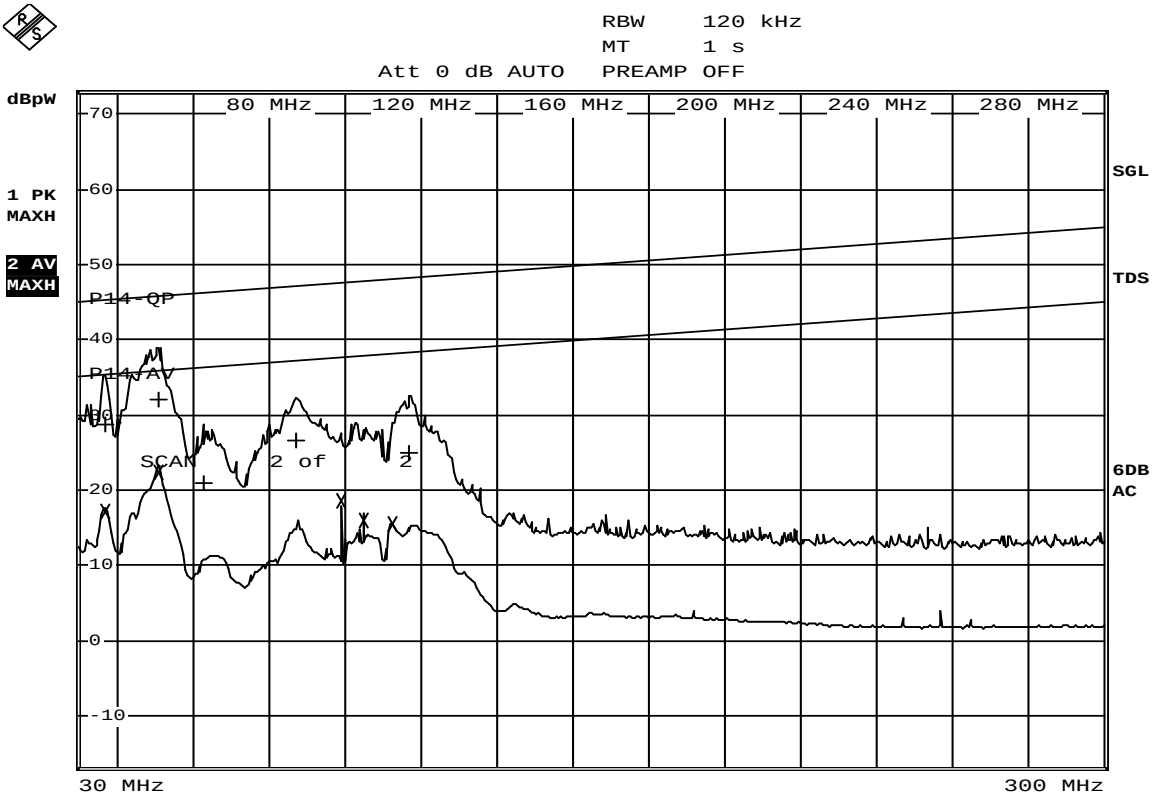
Model: GWHD(36)NK3AO IU:GWH(24)RC-K3DNA1A/I

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



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



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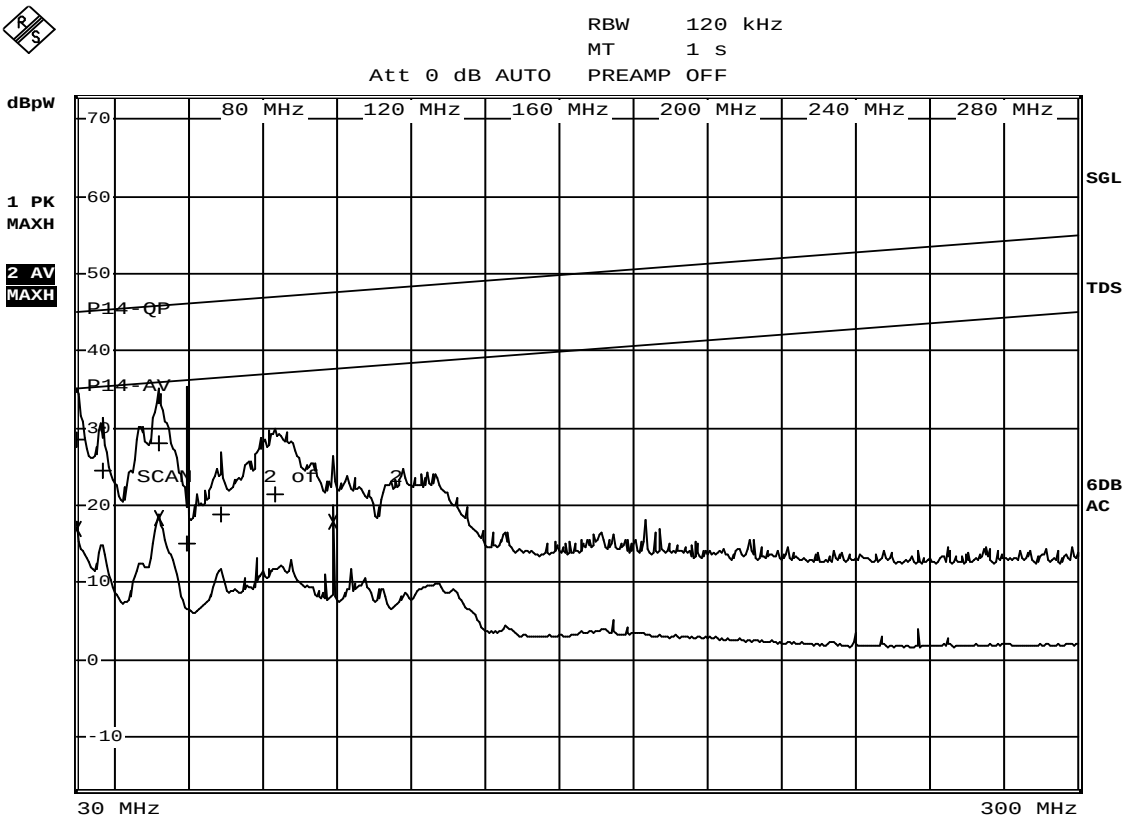
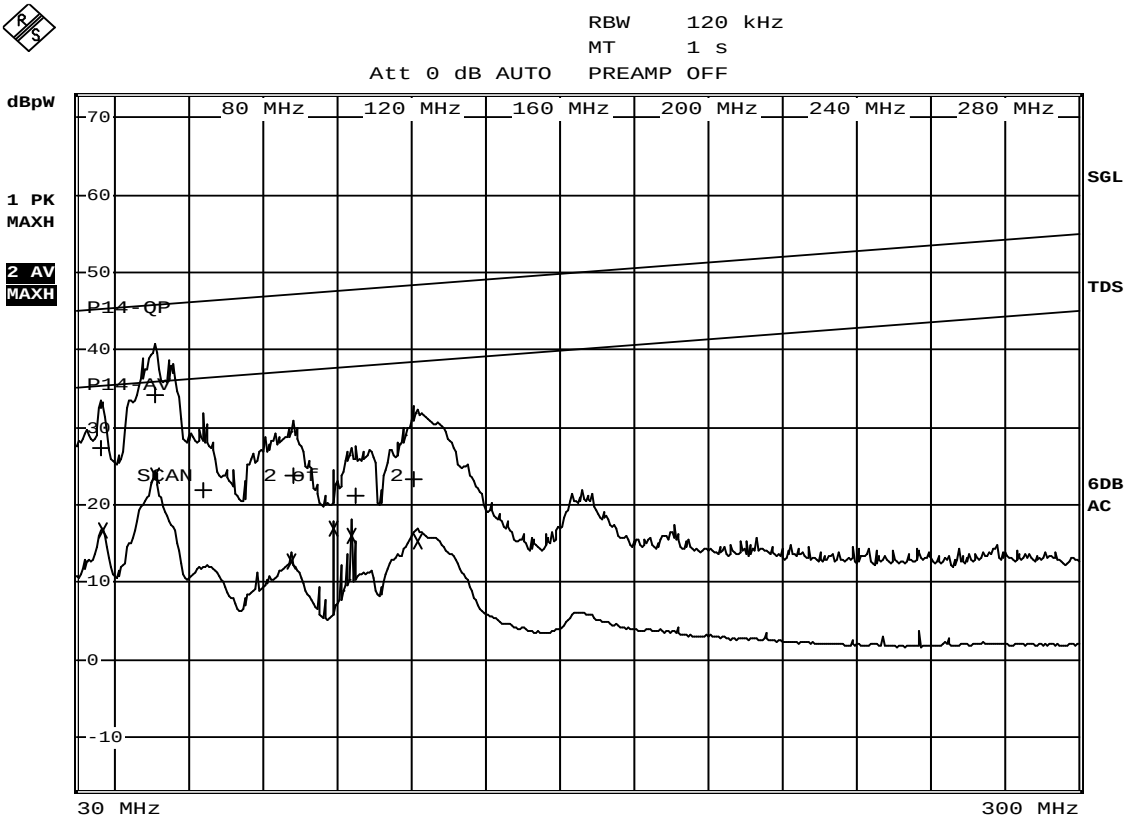
Model: GWHD(36)NK3AO IU:GWH(24)RC-K3DNA1A/I

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



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



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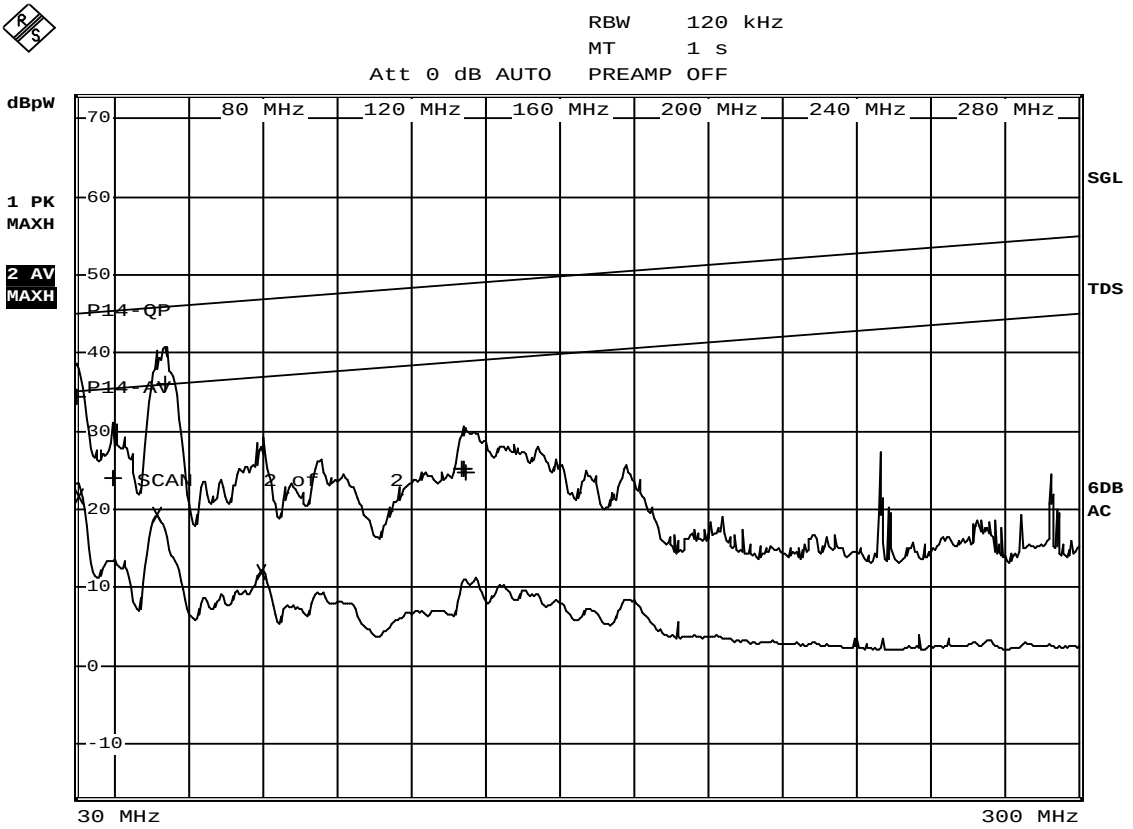
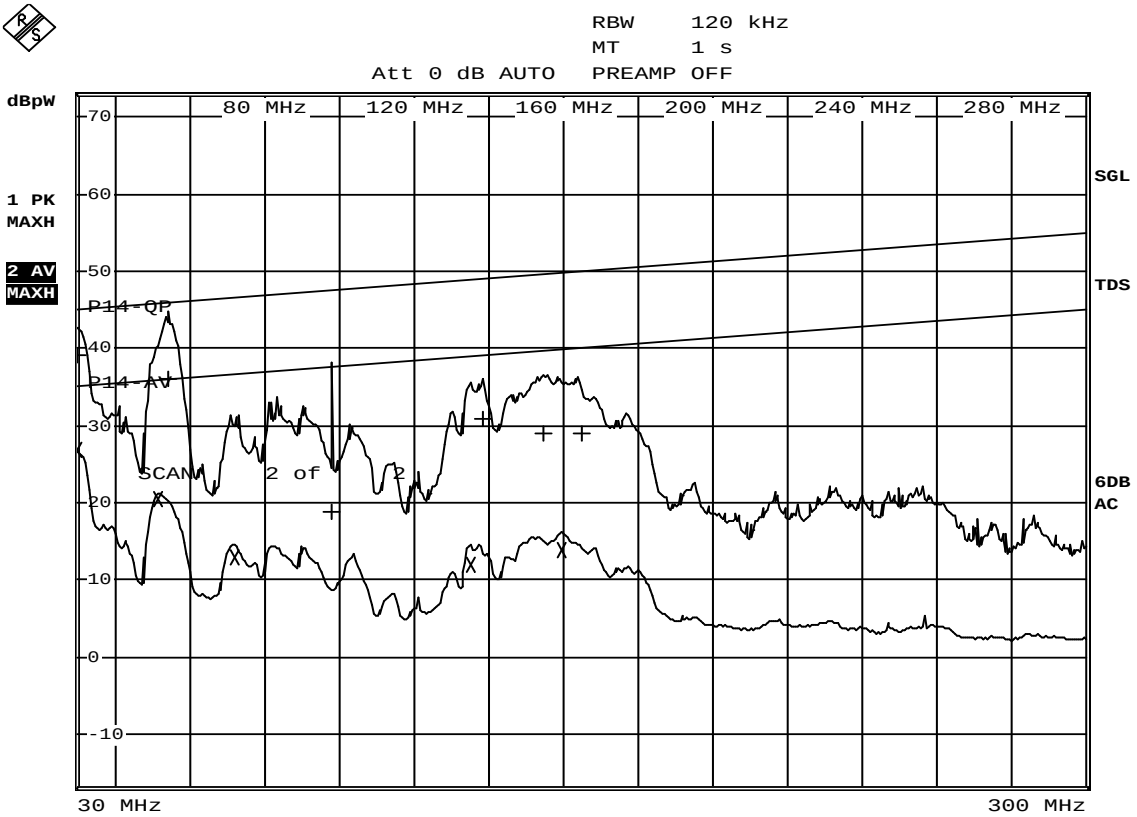
Model: GWHD(42)NK3AO IU:GWH(24)RC-K3DNA1A/I

Cooling mode **Port: Power Cord**



Heating mode **Port: Power Cord**



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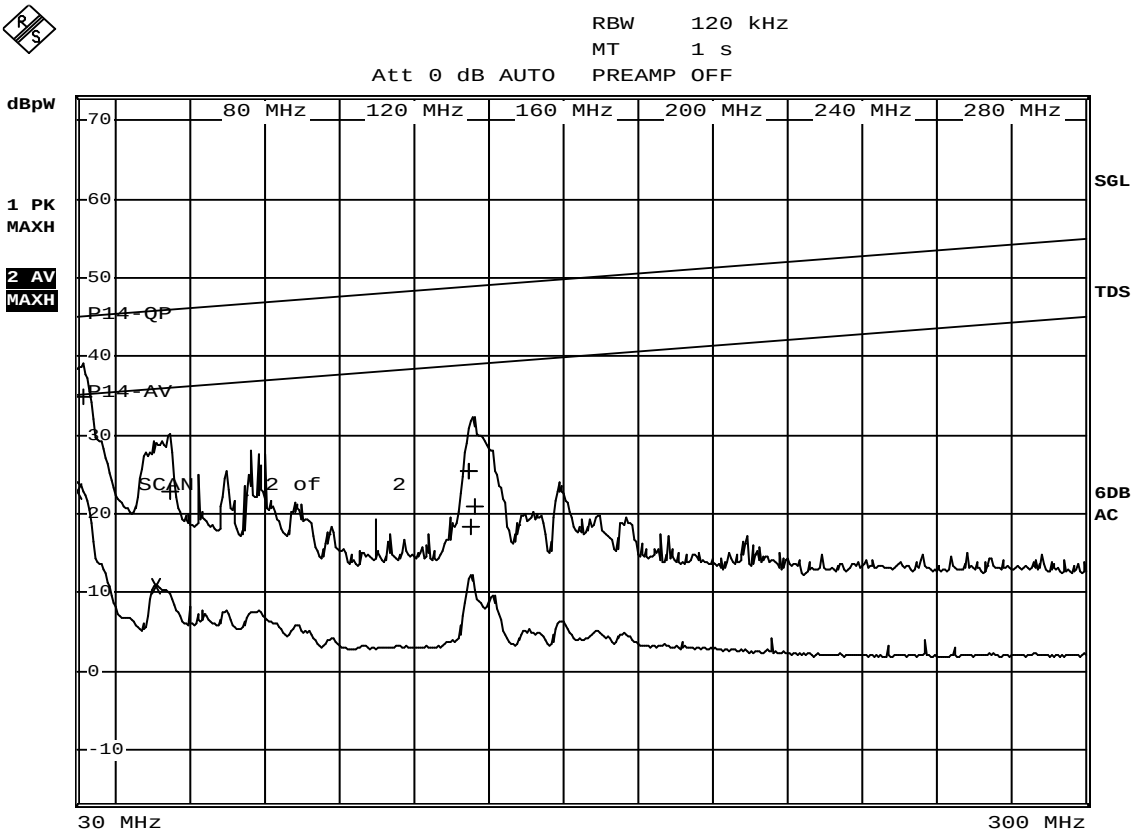
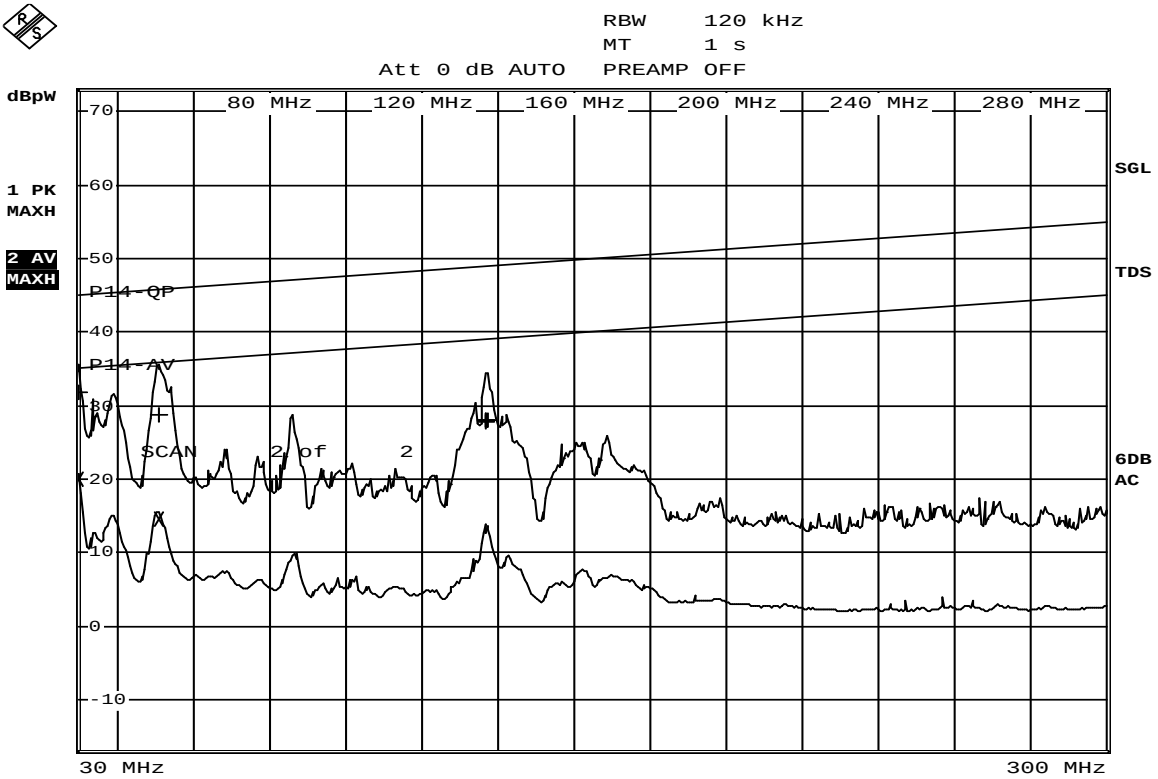
Model: GWHD(42)NK3AO IU:GWH(24)RC-K3DNA1A/I

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



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



Remark: The all margin values>10dB

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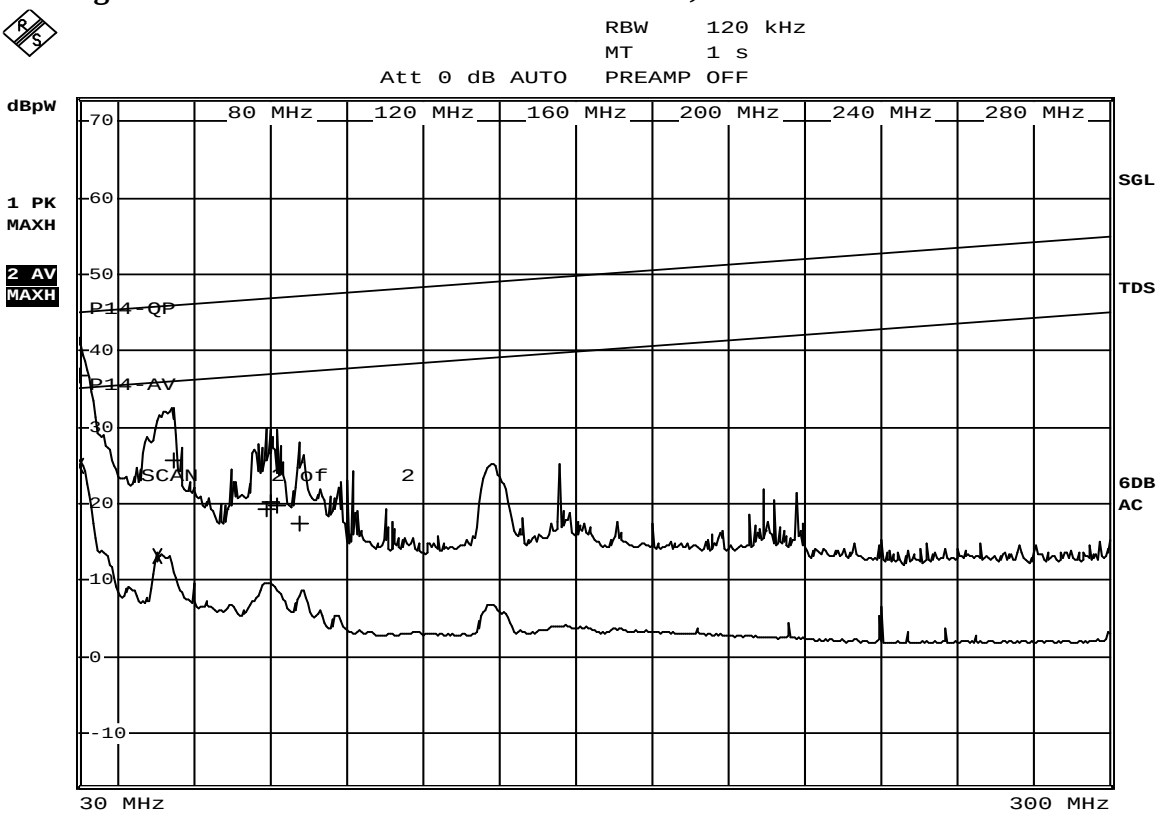
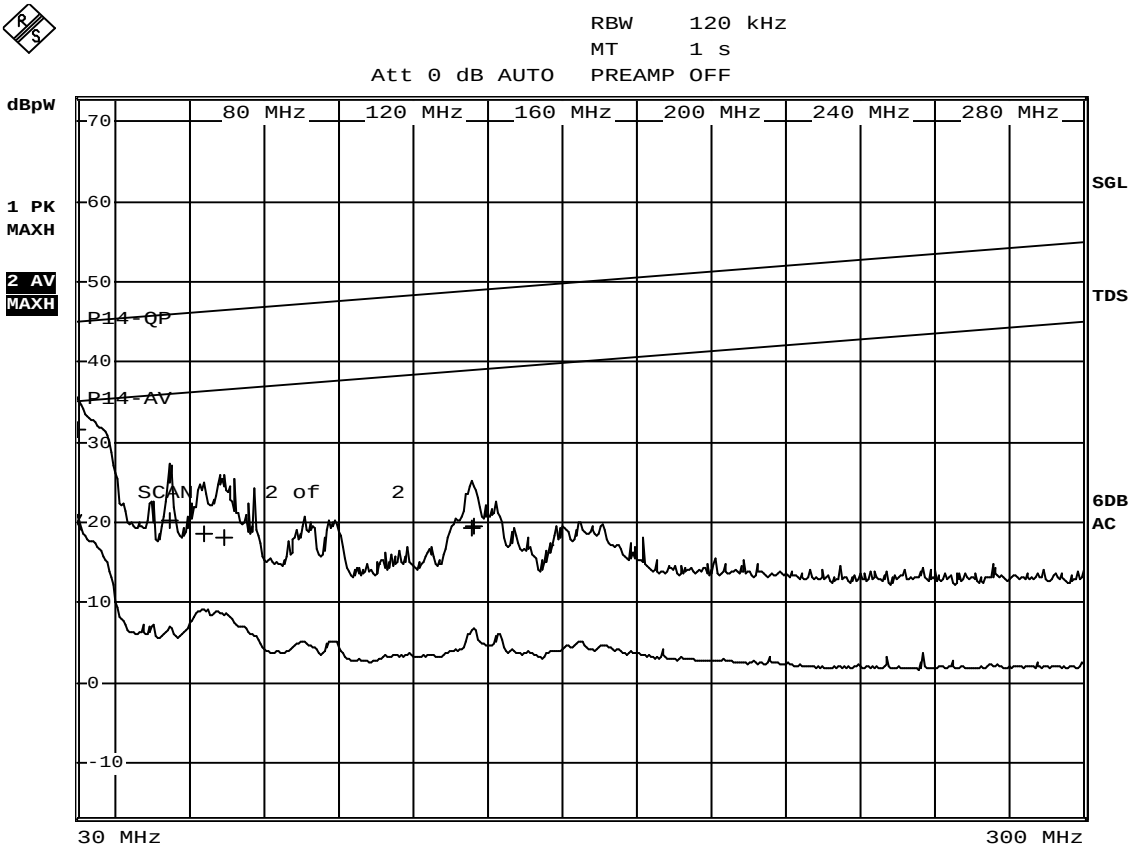
Model: GWHD(42)NK3AO IU:GWH(24)RC-K3DNA1A/I

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



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

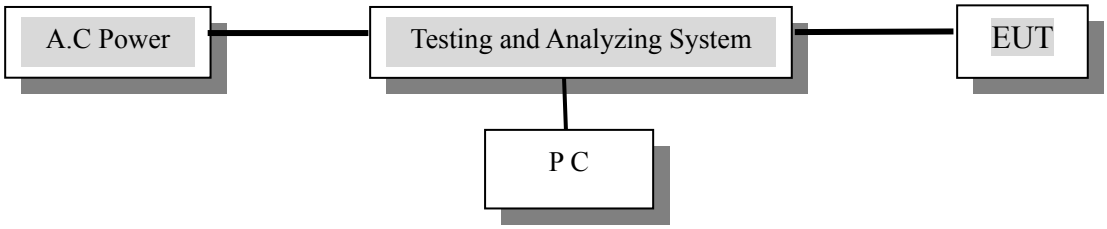


Remark: The all margin values>10dB

4.4 Harmonics on AC Mains

Date of testing	:	2012.3.22
Temperature	:	25°C/18°C
Humidity	:	66%RH~67%RH
Test voltage/Frequency	:	230V/50Hz
Test procedure	:	EN61000-3-12: 2005
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: GWHD(36)NK3AO

Cooling mode

I-THD(%): 6.176 Limit(%): 23.000 PWHD(%): 8.664 PWHD Limit(%): 23.000

Highest parameter values during test:

V_RMS (Volts):	229.64	Frequency(Hz):	49.99
I_Peak (Amps):	27.860	I_RMS (Amps):	18.590
I_1-Ref (Amps):	18.462	Crest Factor:	1.581
Power (Watts):	4253	Power Factor:	0.997

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.115	0.962	11.9	0.140	1.443	9.73	Pass
3	0.328	2.597	12.6	0.583	3.895	14.96	Pass
4	0.045	0.481	9.5	0.076	0.721	10.54	Pass
5	0.376	1.286	29.2	0.401	1.930	20.76	Pass
6	0.050	0.321	15.6	0.094	0.481	19.58	Pass
7	0.368	0.866	42.5	0.417	1.298	32.13	Pass
8	0.046	0.240	19.2	0.084	0.361	23.29	Pass
9	0.239	0.457	52.4	0.271	0.685	39.54	Pass
10	0.031	0.192	15.9	0.042	0.289	14.63	Pass
11	0.133	0.373	35.8	0.146	0.559	26.08	Pass
12	0.025	0.160	15.8	0.033	0.240	13.92	Pass
13	0.117	0.240	48.8	0.140	0.361	38.92	Pass
14	0.021	N/A	N/A	0.031	N/A	N/A	N/A
15	0.118	N/A	N/A	0.134	N/A	N/A	N/A
16	0.021	N/A	N/A	0.032	N/A	N/A	N/A
17	0.107	N/A	N/A	0.122	N/A	N/A	N/A
18	0.021	N/A	N/A	0.027	N/A	N/A	N/A
19	0.092	N/A	N/A	0.104	N/A	N/A	N/A
20	0.018	N/A	N/A	0.023	N/A	N/A	N/A
21	0.081	N/A	N/A	0.091	N/A	N/A	N/A
22	0.017	N/A	N/A	0.019	N/A	N/A	N/A
23	0.067	N/A	N/A	0.077	N/A	N/A	N/A
24	0.015	N/A	N/A	0.018	N/A	N/A	N/A
25	0.049	N/A	N/A	0.055	N/A	N/A	N/A
26	0.014	N/A	N/A	0.017	N/A	N/A	N/A
27	0.047	N/A	N/A	0.060	N/A	N/A	N/A
28	0.015	N/A	N/A	0.019	N/A	N/A	N/A
29	0.035	N/A	N/A	0.049	N/A	N/A	N/A
30	0.014	N/A	N/A	0.017	N/A	N/A	N/A
31	0.032	N/A	N/A	0.043	N/A	N/A	N/A
32	0.014	N/A	N/A	0.016	N/A	N/A	N/A
33	0.029	N/A	N/A	0.040	N/A	N/A	N/A
34	0.013	N/A	N/A	0.017	N/A	N/A	N/A
35	0.020	N/A	N/A	0.026	N/A	N/A	N/A
36	0.013	N/A	N/A	0.016	N/A	N/A	N/A
37	0.020	N/A	N/A	0.030	N/A	N/A	N/A
38	0.013	N/A	N/A	0.016	N/A	N/A	N/A
39	0.020	N/A	N/A	0.028	N/A	N/A	N/A
40	0.009	N/A	N/A	0.012	N/A	N/A	N/A

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Model: GWHD(36)NK3AO

Heating mode

Test Result: Pass **Source qualification: Normal**
I-THD(%): 4.431 **Limit(%): 23.000** **PWHD(%): 5.923** **PWHD Limit(%): 23.000**

Highest parameter values during test:

V_RMS (Volts):	229.60	Frequency(Hz):	50.00
I_Peak (Amps):	31.058	I_RMS (Amps):	20.587
I_1-Ref (Amps):	20.549	Crest Factor:	1.513
Power (Watts):	4714	Power Factor:	0.997

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.170	1.600	10.6	0.194	2.400	8.09	Pass
3	0.607	4.319	14.0	0.631	6.479	9.74	Pass
4	0.234	0.800	29.2	0.268	1.200	22.38	Pass
5	0.211	2.140	9.9	0.226	3.210	7.04	Pass
6	0.240	0.533	44.9	0.286	0.800	35.81	Pass
7	0.257	1.440	17.8	0.272	2.160	12.60	Pass
8	0.118	0.400	29.5	0.137	0.600	22.91	Pass
9	0.204	0.760	26.8	0.213	1.140	18.64	Pass
10	0.065	0.320	20.3	0.076	0.480	15.77	Pass
11	0.134	0.620	21.7	0.141	0.930	15.21	Pass
12	0.054	0.267	20.2	0.059	0.400	14.86	Pass
13	0.130	0.400	32.5	0.138	0.600	22.93	Pass
14	0.066	N/A	N/A	0.076	N/A	N/A	N/A
15	0.068	N/A	N/A	0.074	N/A	N/A	N/A
16	0.043	N/A	N/A	0.049	N/A	N/A	N/A
17	0.118	N/A	N/A	0.124	N/A	N/A	N/A
18	0.020	N/A	N/A	0.025	N/A	N/A	N/A
19	0.098	N/A	N/A	0.103	N/A	N/A	N/A
20	0.018	N/A	N/A	0.021	N/A	N/A	N/A
21	0.083	N/A	N/A	0.088	N/A	N/A	N/A
22	0.020	N/A	N/A	0.024	N/A	N/A	N/A
23	0.088	N/A	N/A	0.093	N/A	N/A	N/A
24	0.015	N/A	N/A	0.017	N/A	N/A	N/A
25	0.047	N/A	N/A	0.050	N/A	N/A	N/A
26	0.017	N/A	N/A	0.020	N/A	N/A	N/A
27	0.064	N/A	N/A	0.068	N/A	N/A	N/A
28	0.016	N/A	N/A	0.018	N/A	N/A	N/A
29	0.051	N/A	N/A	0.054	N/A	N/A	N/A
30	0.015	N/A	N/A	0.016	N/A	N/A	N/A
31	0.044	N/A	N/A	0.047	N/A	N/A	N/A
32	0.015	N/A	N/A	0.018	N/A	N/A	N/A
33	0.048	N/A	N/A	0.050	N/A	N/A	N/A
34	0.013	N/A	N/A	0.015	N/A	N/A	N/A
35	0.027	N/A	N/A	0.030	N/A	N/A	N/A
36	0.014	N/A	N/A	0.016	N/A	N/A	N/A
37	0.033	N/A	N/A	0.036	N/A	N/A	N/A
38	0.014	N/A	N/A	0.015	N/A	N/A	N/A
39	0.033	N/A	N/A	0.036	N/A	N/A	N/A
40	0.009	N/A	N/A	0.011	N/A	N/A	N/A

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Model: GWHD(42)NK3AO

Cooling mode

Test Result: Pass **Source qualification: Normal**
I-THD(%): 4.545 **Limit(%): 23.000** **PWHD(%): 5.882** **PWHD Limit(%): 23.000**

Highest parameter values during test:

V_RMS (Volts):	229.58	Frequency(Hz):	50.00
I_Peak (Amps):	33.874	I_RMS (Amps):	22.215
I_1-Ref (Amps):	22.159	Crest Factor:	1.527
Power (Watts):	5085	Power Factor:	0.997

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.185	1.714	10.8	0.234	2.571	9.09	Pass
3	0.678	4.627	14.7	0.704	6.940	10.15	Pass
4	0.280	0.857	32.7	0.381	1.285	29.67	Pass
5	0.205	2.292	8.9	0.235	3.438	6.84	Pass
6	0.277	0.571	48.4	0.388	0.857	45.26	Pass
7	0.270	1.542	17.5	0.294	2.313	12.69	Pass
8	0.129	0.428	30.1	0.164	0.643	25.55	Pass
9	0.212	0.814	26.1	0.225	1.221	18.44	Pass
10	0.074	0.343	21.5	0.084	0.514	16.36	Pass
11	0.131	0.664	19.8	0.138	0.996	13.85	Pass
12	0.058	0.286	20.4	0.063	0.428	14.65	Pass
13	0.146	0.428	34.0	0.153	0.643	23.82	Pass
14	0.073	N/A	N/A	0.088	N/A	N/A	N/A
15	0.059	N/A	N/A	0.066	N/A	N/A	N/A
16	0.046	N/A	N/A	0.054	N/A	N/A	N/A
17	0.118	N/A	N/A	0.125	N/A	N/A	N/A
18	0.023	N/A	N/A	0.029	N/A	N/A	N/A
19	0.108	N/A	N/A	0.116	N/A	N/A	N/A
20	0.020	N/A	N/A	0.023	N/A	N/A	N/A
21	0.080	N/A	N/A	0.085	N/A	N/A	N/A
22	0.021	N/A	N/A	0.026	N/A	N/A	N/A
23	0.084	N/A	N/A	0.088	N/A	N/A	N/A
24	0.016	N/A	N/A	0.019	N/A	N/A	N/A
25	0.049	N/A	N/A	0.053	N/A	N/A	N/A
26	0.019	N/A	N/A	0.021	N/A	N/A	N/A
27	0.081	N/A	N/A	0.087	N/A	N/A	N/A
28	0.018	N/A	N/A	0.021	N/A	N/A	N/A
29	0.059	N/A	N/A	0.066	N/A	N/A	N/A
30	0.017	N/A	N/A	0.020	N/A	N/A	N/A
31	0.045	N/A	N/A	0.049	N/A	N/A	N/A
32	0.016	N/A	N/A	0.020	N/A	N/A	N/A
33	0.048	N/A	N/A	0.051	N/A	N/A	N/A
34	0.017	N/A	N/A	0.020	N/A	N/A	N/A
35	0.029	N/A	N/A	0.034	N/A	N/A	N/A
36	0.017	N/A	N/A	0.019	N/A	N/A	N/A
37	0.043	N/A	N/A	0.047	N/A	N/A	N/A
38	0.019	N/A	N/A	0.022	N/A	N/A	N/A
39	0.039	N/A	N/A	0.045	N/A	N/A	N/A
40	0.012	N/A	N/A	0.014	N/A	N/A	N/A

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Model: GWHD(42)NK3AO

Heating mode

Test Result: Pass **Source qualification: Normal**
I-THD(%): 4.419 **Limit(%): 23.000** **PWHD(%): 5.884** **PWHD Limit(%): 23.000**

Highest parameter values during test:

V_RMS (Volts):	229.60	Frequency(Hz):	50.00
I_Peak (Amps):	31.902	I_RMS (Amps):	21.073
I_1-Ref (Amps):	21.028	Crest Factor:	1.519
Power (Watts):	4823	Power Factor:	0.997

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.170	1.610	10.5	0.185	2.416	7.66	Pass
3	0.625	4.348	14.4	0.667	6.522	10.22	Pass
4	0.201	0.805	24.9	0.216	1.208	17.87	Pass
5	0.227	2.154	10.6	0.290	3.231	8.99	Pass
6	0.192	0.537	35.7	0.208	0.805	25.83	Pass
7	0.283	1.449	19.5	0.334	2.174	15.38	Pass
8	0.101	0.403	25.0	0.110	0.604	18.22	Pass
9	0.208	0.765	27.2	0.230	1.147	20.02	Pass
10	0.059	0.322	18.3	0.064	0.483	13.31	Pass
11	0.133	0.624	21.4	0.142	0.936	15.16	Pass
12	0.054	0.268	20.0	0.058	0.402	14.40	Pass
13	0.132	0.403	32.9	0.141	0.604	23.33	Pass
14	0.059	N/A	N/A	0.063	N/A	N/A	N/A
15	0.068	N/A	N/A	0.079	N/A	N/A	N/A
16	0.039	N/A	N/A	0.043	N/A	N/A	N/A
17	0.118	N/A	N/A	0.125	N/A	N/A	N/A
18	0.020	N/A	N/A	0.023	N/A	N/A	N/A
19	0.100	N/A	N/A	0.106	N/A	N/A	N/A
20	0.018	N/A	N/A	0.020	N/A	N/A	N/A
21	0.080	N/A	N/A	0.085	N/A	N/A	N/A
22	0.018	N/A	N/A	0.020	N/A	N/A	N/A
23	0.086	N/A	N/A	0.091	N/A	N/A	N/A
24	0.014	N/A	N/A	0.017	N/A	N/A	N/A
25	0.050	N/A	N/A	0.056	N/A	N/A	N/A
26	0.018	N/A	N/A	0.020	N/A	N/A	N/A
27	0.068	N/A	N/A	0.074	N/A	N/A	N/A
28	0.015	N/A	N/A	0.017	N/A	N/A	N/A
29	0.053	N/A	N/A	0.057	N/A	N/A	N/A
30	0.015	N/A	N/A	0.018	N/A	N/A	N/A
31	0.044	N/A	N/A	0.047	N/A	N/A	N/A
32	0.015	N/A	N/A	0.017	N/A	N/A	N/A
33	0.046	N/A	N/A	0.050	N/A	N/A	N/A
34	0.014	N/A	N/A	0.017	N/A	N/A	N/A
35	0.029	N/A	N/A	0.032	N/A	N/A	N/A
36	0.014	N/A	N/A	0.016	N/A	N/A	N/A
37	0.035	N/A	N/A	0.038	N/A	N/A	N/A
38	0.015	N/A	N/A	0.017	N/A	N/A	N/A
39	0.034	N/A	N/A	0.037	N/A	N/A	N/A
40	0.009	N/A	N/A	0.011	N/A	N/A	N/A

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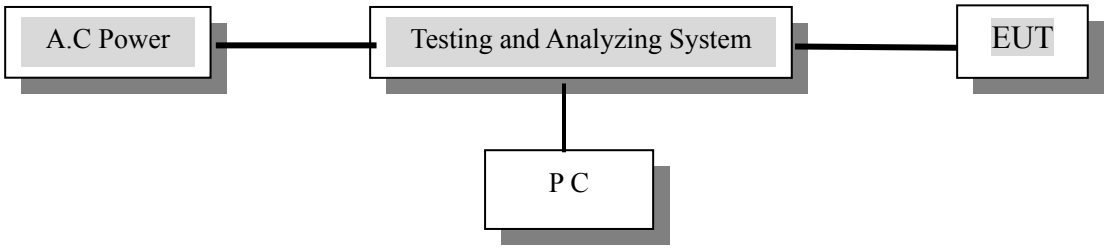
4.5 Voltage Fluctuation on AC Mains

Date of testing	:	2012.3.22
Temperature	:	25°C~28°C
Humidity	:	66%RH~67%RH
Test voltage/Frequency	:	230V/50Hz
Test procedure	:	EN61000-3-11: 2000
Frequency Range	:	0-2kHz
Test observation period	:	120min
Operational mode	:	Dry
Test result	:	Pass

1.Test Setup:



Model	d_c [%]	d_{max} [%]	d (t)[ms]	Pst	Plt
GWHD(36)NK3AO	**1.10**	**1.22**	**0.0**	**0.963**	**0.563**
GWHD(42)NK3AO	**1.23**	**1.44**	**0.0**	**0.938**	**0.453**
Limit	**3.30**	**6.00**	**500.0**	**1.000**	**0.650**

2. Test result.

Remark:

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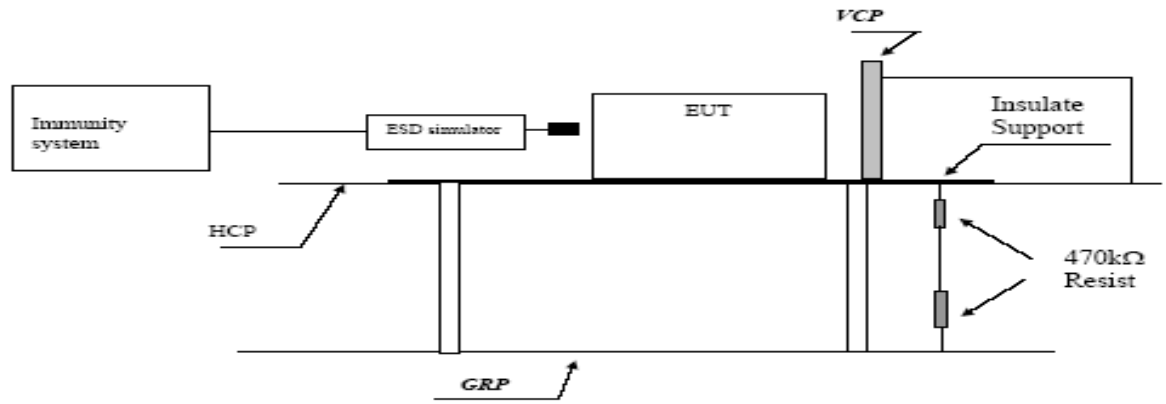
5. Immunity Tests

5.1 Electrostatic Discharge (ESD)

Date of testing	:	2012.3.23
Temperature	:	26°C~28°C
Humidity	:	55%RH
Test voltage/Frequency	:	230V/50Hz
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 & thinkmess 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

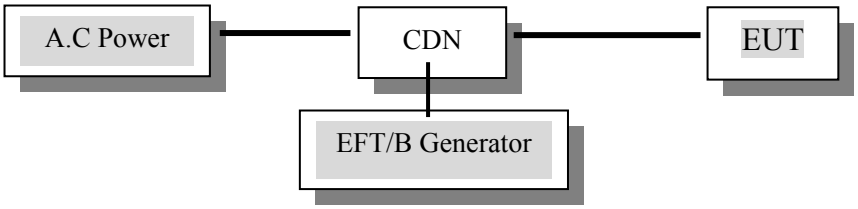
Location of Discharge	Type of Discharge	Level(kV)	Polarity	Number of Discharge	Result
Remote Receiver	Air	8.0	±	10	A
Display window	Air	8.0	±	10	A
Manual key	Air	8.0	±	10	A
Touchable screw	Contact	4.0	±	10	A
Remote Controller	Air	8.0	±	10	A
	HCP	4.0	±	10	A
	VCP	4.0	±	10	A
Remark: The Air discharge could 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	:	2012.3.23
Temperature	:	26°C
Humidity	:	66%RH
Test voltage/Frequency	:	230V/50Hz
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.

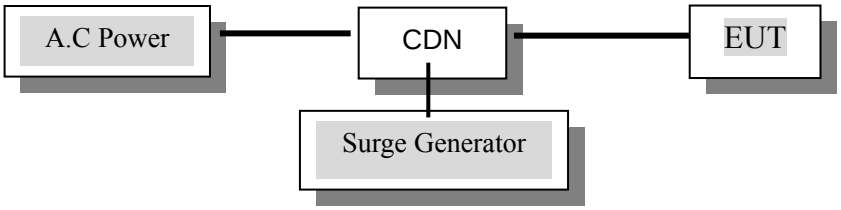
2. Test result:

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	:	2012.3.23
Temperature	:	26°C
Humidity	:	66%RH
Test voltage/Frequency	:	230V/50Hz
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

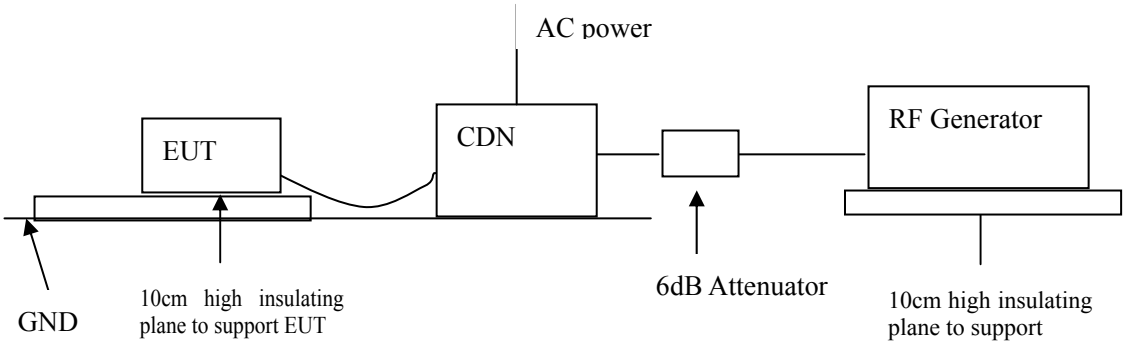
Location	Polarity	Phase Angle	Number of test	Pulse Voltage (kV)	Result
L—N	±	0°	5	1	A
	±	90°	5	1	A
	±	180°	5	1	A
	±	270°	5	1	A
L-PE	±	0°	5	2	A
	±	90°	5	2	A
	±	180°	5	2	A
	±	270°	5	2	A
N-PE	±	0°	5	2	A
	±	90°	5	2	A
	±	180°	5	2	A
	±	270°	5	2	A
Remark: The EUT worked normally during the test, no degradation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

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

5.4 Immunity to conducted Disturbances, induced by RF fields

Date of testing	:	2012.3.23
Temperature	:	26°C
Humidity	:	66%RH
Test voltage/Frequency	:	230V/50Hz
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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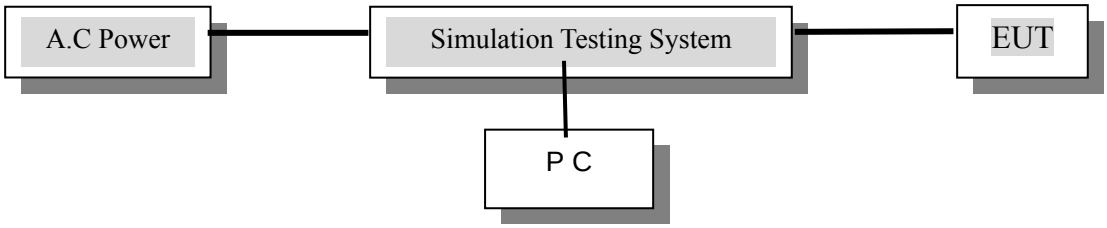
5.5 Voltage Dips and Short interruptions

Date of testing	:	2012.3.23
Temperature	:	26°C
Humidity	:	66%RH
Test voltage/Frequency	:	230V/50Hz
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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