



Test Report

Retink (R&D) Ltd

FCC ID: OTJRT9002012

Air Purifier

Model: RT-900

Consumer ISM device

Report No.: 121226010SZN-001

We hereby certify that the sample of the above item is considered to comply with the requirements of FCC Part 18 [10-1-12]

Prepared and Checked by:

Sign on file

Chris Chen
Engineer

Approved by:

Billy Li
Supervisor
Date: 16 January 2013

- The test results reported in this test report shall refer only to the sample actually tested and shall not refer or be deemed to refer to bulk from which such a sample may be said to have been obtained.
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TRF No.: FCC part 18_a

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MEASUREMENT/TECHNICAL REPORT

Retink (R&D) Ltd - Model: RT-900
FCC ID: OTJRT9002012

Grantee:	Retink (R&D) Ltd
Grantee Address:	Unit 8, 15/F., Block E, Wah Lok Industrial Centre, 31-35 Shan Mei Street, Fo Tan, Shatin, N.T., Hong Kong
Contact Person:	Tom Chan
Tel:	+852-36210960
Manufacturer:	RALTECH(SHENZHEN) LTD.
Manufacturer Address:	33, Hua Le Road, Heng Gang Town, Long Gang District, Shenzhen City, China
Model:	RT-900
Type of EUT:	Consumer ISM device
Description of EUT:	Air Purifier
Serial Number:	N/A
FCC ID :	OTJRT9002012
Date of Sample Submitted:	2 November 2012
Date of Test:	13 November 2012
Report No.:	121226010SZN-001
Report Date:	16 January 2013
Environmental Coniditions:	Temperature: +10 to 40°C Humidity: 10 to 90%

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List of attached file

Exhibit type	File Description	filename
Test Report	Test Report	report.pdf
Operation Description	Technical Description	descri.pdf
Test Setup Photo	Radiated Emission	radiated photos.pdf
Test Setup Photo	Conducted Emission	conducted photos.pdf
External Photo	External Photo	external photos.pdf
Internal Photo	Internal Photo	internal photos.pdf
Block Diagram	Block Diagram	block.pdf
Schematics	Circuit Diagram	circuit.pdf
ID Label/Location	Label Artwork and Location	label.pdf
User Manual	User Manual	manual.pdf
Cover Letter	Letter of Agency	agency.pdf
Cover Letter	Certification Agreement	agreement.pdf

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EXHIBIT 1

GENERAL DESCRIPTION

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1.0 General Description

1.1 Product Description

The equipment under test (EUT) is an air purifier operating at 38.46 KHz. It is powered by 120VAC through an AC/DC adaptor which model is GQ07-150050-AG; input voltage is 100-240VAC 50/60Hz; output voltage is 15VDC 500mA.

For electronic filing, the brief circuit description is saved with filename: descri.pdf.

1.2 Related Submittal(s) Grants

This is a single application for certification of an air purifier.

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1.3 Test Methodology

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in MP-5(1986). All radiated measurements were performed in an Open Area Test Site. Preliminary scans were performed in the Open Area Test Site only to determine worst case modes. All radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the **"Justification Section"** of this Application.

1.4 Test Facility

Conducted Emission test and Radiated Emission test were subcontracted to Intertek Testing Services Hong Kong Limited located at Garment Centre, 576 Castle Peak Road, Kowloon, Hong Kong. This test facility and site measurement data have been placed on file with the FCC (Registration Number: 90707).

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EXHIBIT 2

SYSTEM TEST CONFIGURATION

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2.0 **System Test Configuration**

2.1 Justification

The system was configured for testing in a typical fashion (as a customer would normally use it), and in the confines as outlined in MP-5(1986).

The device is power by AC 120V/60Hz during the testing.

For maximizing emissions, the EUT was rotated through 360°, the antenna height was varied from 1 meter to 4 meters above the ground plane, and the antenna polarization was changed. The step by step procedure for maximizing emissions led to the data reported in Exhibit 3.0.

The rear of unit shall be flushed with the rear of the table.

The equipment under test (EUT) was configured for testing in a typical fashion (as a customer would normally use it). The EUT was mounted to a plastic stand if necessary and placed on the wooden turntable, which enabled the engineer to maximize emissions through its placement in the three orthogonal axes.

2.2 EUT Exercising Software

There was no special software to exercise the device. Once the unit is powered up, it received continuously.

2.3 Special Accessories

There are no special accessories necessary for compliance of this product.

2.4 Equipment Modification

Any modifications installed previous to testing by Retink (R&D) Ltd will be incorporated in each production model sold/leased in the United States.

No modifications were installed by Intertek Testing Services Hong Kong Limited.

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2.5 Measurement Uncertainty

When determining of the test conclusion, the Measurement Uncertainty of test has been considered.

2.6 Support Equipment List and Description

Name	Manufacturer	Model
AC/DC Adaptor	Retink (R&D) Ltd	GQ07-150050-AG (Input: 100-240VAC 50/60Hz, Output: 15VDC 500mA)

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EXHIBIT 3

EMISSION RESULTS

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3.0 Emission Results

Data is included of the worst case configuration (the configuration which resulted in the highest emission levels). A sample calculation, configuration photographs and data tables of the emissions are included.

3.1 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CF - AG$$

where FS = Field Strength in $dB\mu V/m$

RA = Receiver Amplitude (including preamplifier) in $dB\mu V$

CF = Cable Attenuation Factor in dB

AF = Antenna Factor in dB

AG = Amplifier Gain in dB

In the following table(s), the reading shown on the data table reflects the preamplifier gain. An example for the calculations in the following table is as follows:

$$FS = RR + LF$$

where FS = Field Strength in $dB\mu V/m$

RR = $RA - AG$ in $dB\mu V$

LF = $CF + AF$ in dB

Assume a receiver reading of 52.0 $dB\mu V$ is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB are added. The amplifier gain of 29 dB is subtracted, giving a field strength of 32 $dB\mu V/m$. This value in $dB\mu V/m$ was converted to its corresponding level in $\mu V/m$.

$$RA = 52.0 \text{ } dB\mu V/m$$

$$AF = 7.4 \text{ dB}$$

$$CF = 1.6 \text{ dB}$$

$$AG = 29.0 \text{ dB}$$

$$FS = RR + LF$$

$$FS = 23 + 9 = 32 \text{ } dB\mu V/m$$

$$RR = 23.0 \text{ } dB\mu V$$

$$LF = 9.0 \text{ dB}$$

$$\text{Level in } \mu V/m = \text{Common Antilogarithm } [(32 \text{ } dB\mu V/m)/20] = 39.8 \text{ } \mu V/m$$

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3.2 Radiated Emission Configuration Photograph

Worst Case Radiated Emission
at
27.139 MHz

For electronic filing, the worst case radiated emission configuration photographs are saved with filename: radiated photos.doc.

3.3 Radiated Emission Data

The data on the following page lists the significant emission frequencies, the limit and the margin of compliance. Numbers with a minus sign are below the limit.

Judgement: Passed by 26.7 dB

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Applicant: Retink (R&D) Ltd

Date of Test: 13 November 2012

Model: RT-900

Test Mode: On

**Result Table
Radiated Emissions**

Polarization	Frequency (MHz)	Net at 3m (dB μ V/m)	Calculated at 300 m (dB μ V/m)	Limit at 300m (dB μ V/m)	Margin (dB)
Vertical	1.529	36.6	-3.4	23.5	-26.9
Vertical	4.507	36.1	-3.9	23.5	-27.4
Horizontal	9.022	35.7	-4.3	23.5	-27.8
Horizontal	18.129	34.8	-5.2	23.5	-28.7
Vertical	27.139	36.8	-3.2	23.5	-26.7
Vertical	36.450	34.1	-5.9	23.5	-29.4
Vertical	72.129	34.4	-5.6	23.5	-29.1
Horizontal	144.139	33.9	-6.1	23.5	-29.6

NOTES: 1. Average Detector Data unless otherwise stated.

2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.
3. Negative sign in the column shows value below limit.
4. Loop antenna is used for the emissions below 30MHz

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3.4 Conducted Emission Configuration Photograph

Worst Case Conducted Configuration
at
0.375 MHz

For electronic filing, the worst case conducted emission configuration photograph is saved with filename: conducted photos.pdf.

3.5 Conducted Emission Data

Judgement: Passed by 2.64 dB margin

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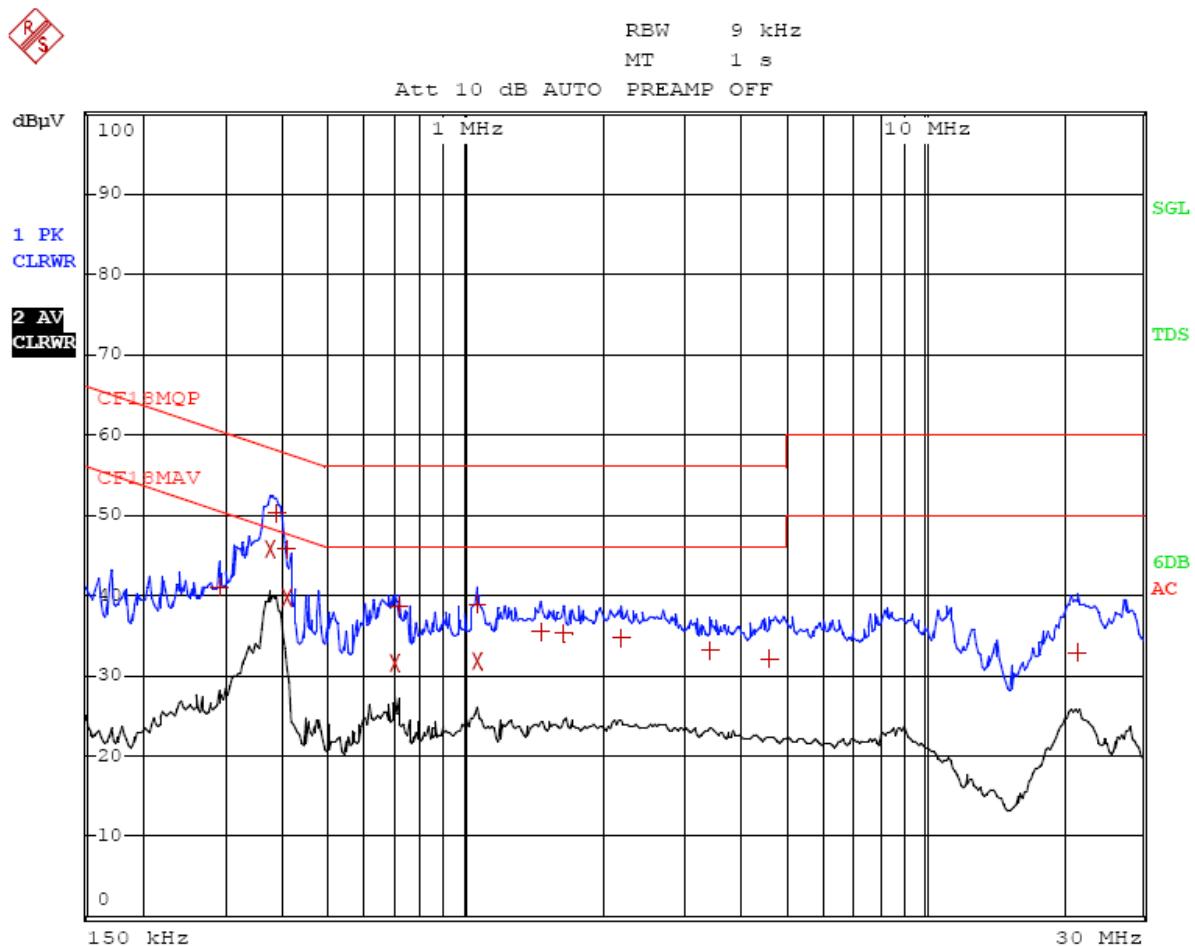
Applicant: Retink (R&D) Ltd

Date of Test: 13 November 2012

Model: RT-900

Test Mode: On

Conducted Emission Test - FCC



TRF no.: FCC part 18_a
FCC ID: OTJRT9002012

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EDIT PEAK LIST (Final Measurement Results)

Trace1: CF18MQP
Trace2: CF18MAV
Trace3: ---

	TRACE	FREQUENCY	LEVEL dB μ V		DELTA LIMIT dB
1	Quasi Peak	289.5 kHz	41.00	N	-19.53
2	CISPR Average	375 kHz	45.74	N	-2.64
1	Quasi Peak	384 kHz	50.17	N	-8.01
1	Quasi Peak	406.5 kHz	45.88	N	-11.83
2	CISPR Average	406.5 kHz	39.82	N	-7.89
2	CISPR Average	703.5 kHz	31.60	N	-14.39
1	Quasi Peak	712.5 kHz	38.63	N	-17.37
1	Quasi Peak	1.059 MHz	39.09	N	-16.90
2	CISPR Average	1.059 MHz	31.94	N	-14.05
1	Quasi Peak	1.4595 MHz	35.61	N	-20.38
1	Quasi Peak	1.635 MHz	35.19	N	-20.80
1	Quasi Peak	2.184 MHz	34.72	N	-21.27
1	Quasi Peak	3.4305 MHz	33.21	N	-22.78
1	Quasi Peak	4.578 MHz	32.02	N	-23.97
1	Quasi Peak	21.6645 MHz	33.01	L1	-26.98

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EXHIBIT 4

EQUIPMENT PHOTOGRAPHS

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4.0 Equipment Photographs

For electronic filing, the photographs are saved with filename: external photos.doc and internal photos.doc.

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EXHIBIT 5

PRODUCT LABELLING

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5.0 Product Labelling

For electronics filing, the FCC ID label artwork and the label location are saved with filename: label.pdf.

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EXHIBIT 6

TECHNICAL SPECIFICATIONS

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6.0 Technical Specifications

For electronic filing, the block diagram and schematic of the tested EUT are saved with filename: block.pdf and circuit.pdf respectively.

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EXHIBIT 7

INSTRUCTION MANUAL

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7.0 Instruction Manual

For electronic filing, a preliminary copy of the Instruction Manual is saved with filename: manual.pdf.

This manual will be provided to the end-user with each unit sold/leased in the United States.

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EXHIBIT 8

MISCELLANEOUS INFORMATION

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8.0 Miscellaneous Information

This miscellaneous information includes emission measuring procedure.

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8.1 Emissions Test Procedures

The following is a description of the test procedure used by Intertek Testing Services Hong Kong Limited in the measurements of consumer ISM device operating under Part 18 rules.

The test set-up and procedures described below are designed to meet the requirements of MP-5(1986)

The equipment under test (EUT) is placed on a wooden turntable which is four feet in diameter and approximately one meter in height above the ground plane. During the radiated emissions test, the turntable is rotated and any cables leaving the EUT are manipulated to find the configuration resulting in maximum emissions. The antenna height and polarization are varied during the testing to search for maximum signal levels. The height of the antenna is varied from one to four meters.

Detector function for radiated emissions is in QP mode from the frequency band 30MHz to 1GHz with RBW setting is 120kHz. Below 30MHz, Detector function for radiated emissions is in Average mode with RBW setting is 9KHz. Detector function for conducted emissions are in QP & AV mode and IFBW setting is 9kHz from the frequency band 150kHz to 30MHz.

For radiated emission, the frequency range scanned is 9KHz to 1GHz. For line-conducted emissions, the range scanned is 150kHz to 30MHz.

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8.1 Emissions Test Procedures (cont'd)

The EUT is warmed up for 15 minutes prior to the test.

AC power to the unit is varied from 85% to 115% nominal and variation in the fundamental emission field strength is recorded. If battery powered, a new, fully charged battery is used.

Conducted measurements were made as described in MP-5(1986).

The IF bandwidth used for measurement of radiated signal strength was 100 kHz or greater when frequency is below 1000 MHz.

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EXHIBIT 9

TEST EQUIPMENT LIST

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9.0 Test Equipment List

1) Radiated Emissions Test

Equipment	EMI Test Receiver	Spectrum Analyzer	Biconical Antenna
Registration No.	EW-2500	EW-2253	EW-2512
Manufacturer	R&S	R&S	EMCO
Model No.	ESCI	FSP40	3104C
Calibration Date	Feb. 24, 2012	Jan. 12, 2012	Nov. 15, 2011
Calibration Due Date	Feb. 24, 2013	Jan. 12, 2013	May 15, 2013

Equipment	Log Periodic Antenna
Registration No.	EW-0446
Manufacturer	EMCO
Model No.	3146
Calibration Date	Oct. 31, 2011
Calibration Due Date	Apr. 30, 2013

Equipment	Active H-field Loop Antenna
Registration No.	EW-0191
Manufacturer	EMCO
Model No.	6502
Calibration Date	Nov.15, 2011
Calibration Due Date	May 15, 2013

2) Conducted Emissions Test

Equipment	EMI Test Receiver	Artificial Mains Network
Registration No.	EW-2500	EW-2874
Manufacturer	R&S	R&S
Model No.	ESCI	ENV-216
Calibration Date	Feb. 24, 2012	Aug. 15, 2012
Calibration Due Date	Feb. 24, 2013	Aug. 15, 2013