

Page 1 of 19

APPLICATION FOR VERIFICATION On Behalf of Carewell Electric Technology (Zhongshan) Co., Ltd.

REMOTE CONTROL Model No.: FAN42R-T190W

FCC ID: 2AAZPFAN42R

Prepared for : Carewell Electric Technology (Zhongshan) Co., Ltd. Address : Torch Development Zone, No.2, Ouya Road, Zhongshan,

Guangdong, China

Prepared by : Accurate Technology Co., Ltd.

Address : F1, Bldg. A&D, Changyuan New Material Port, Keyuan

Rd., Science & Industry Park, Nanshan District, Shenzhen

518057, P.R. China

Tel: +86-755-26503290 Fax: +86-755-26503396

Report No. : ATE20150048

Date of Test : Jan 06-08,2015

Date of Report : Jan 08,2015

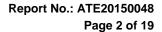




TABLE OF CONTENTS

Descri	ption	Page
Test R	eport Declaration	
1. TE	EST RESULTS SUMMARY	4
2. GI	ENERAL INFORMATION	5
2.1.	Product of Device (EUT)	
2.2.	Accessory and Auxiliary Equipment	
2.3.	Description of Test Facility	6
2.4.	Measurement Uncertainty	
3. MI	EASURING DEVICE AND TEST EQUIPMENT	7
4. PC	OWER LINE CONDUCTED MEASUREMENT	8
4.1.	Block Diagram of Test Setup	8
4.2.	The Emission Limit	8
4.3.	Configuration of EUT on Measurement	
4.4.	Operating Condition of EUT	
4.5.	Test Procedure	
4.6.	Power Line Conducted Emission Measurement Results	
5. RA	ADIATED EMISSION MEASUREMENT	
5.1.	Block Diagram of Test Setup	
5.2.	The Emission Limit For Section 15.109 (a)	
5.3.	EUT Configuration on Measurement	
5.4. 5.5.	Operating Condition of EUT Test Procedure	
5.5. 5.6.	Radiated Emission Noise Measurement Result	
5.0.	Nadiated Emission Noise incasurement Nesult	13



Page 3 of 19

Test Report Declaration

Applicant : Carewell Electric Technology (Zhongshan) Co., Ltd.Manufacturer : Carewell Electric Technology(Zhongshan) Co., Ltd.

EUT Description: **REMOTE CONTROL**

(A) MODEL NO.: FAN42R-T190W

(B) SERIAL NO.: N/A

(C) POWER SUPPLY: AC 120V

Measurement Procedure Used:

FCC Rules and Regulations Part 15 Subpart B ANSI C63.4: 2009

The device described above is tested by Accurate Technology Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart B Class B limits both radiated and conducted emissions. The measurement results are contained in this test report and Accurate Technology Co., Ltd. is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the Equipment Under Test (EUT) is to be technically compliant with the FCC requirements.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of Accurate Technology Co., Ltd.

Date of Test :	Nov 20-Jan 08,2015
Date of Report :	Jan 08,2015
Prepared by :	2-2 zhang
	(Eric Zhang, Engineer)
Approved & Authorized Signer:	Lemily
	(Sean Liu, Manager)



Page 4 of 19

1. TEST RESULTS SUMMARY

Test Items	Test Standard	Test Results
Power Line Conducted Emission	FCC Part 15 Subpart B	Pass
Radiated Emission	FCC Part 15 Subpart B	Pass



Page 5 of 19

2. GENERAL INFORMATION

2.1.Product of Device (EUT)

EUT : REMOTE CONTROL

Model Number : FAN42R-T190W

Power Supply : AC 120V

Modulation: : ASK

Receiver Frequency : 315MHz RX

Applicant : Carewell Electric Technology (Zhongshan) Co., Ltd.
Address : Torch Development Zone, No.2, Ouya Road, Zhongshan,

Guangdong, China

Manufacturer : Carewell Electric Technology(Zhongshan)Co.,Ltd.

Address : Torch Development Zone, No.2, Ouya Road, Zhongshan,

Guangdong, China

Date of sample

received

Date of Test

: Jan 06-08,2015

: Jan 06, 2015

2.2. Accessory and Auxiliary Equipment

NA



Page 6 of 19

2.3. Description of Test Facility

EMC Lab : Accredited by TUV Rheinland Shenzhen, May 10, 2004

Listed by FCC

The Registration Number is 253065

Listed by FCC

The Registration Number is 752051

Listed by Industry Canada

The Registration Number is 5077A-1

Listed by Industry Canada

The Registration Number is 5077A-2

Accredited by China National Accreditation Committee for

Laboratories

The Certificate Registration Number is L3193

Name of Firm : Accurate Technology Co., Ltd.

Site Location : F1, Bldg. A&D, Changyuan New Material Port, Keyuan

Rd., Science & Industry Park, Nanshan District, Shenzhen

518057, P.R. China

2.4. Measurement Uncertainty

Conducted emission expanded uncertainty : U=2.23dB, k=2 Power disturbance expanded uncertainty : U=2.92dB, k=2

Radiated emission expanded uncertainty : U=3.08dB, k=2

(9kHz-30MHz)

Radiated emission expanded uncertainty : U=4.42dB, k=2

(30MHz-1000MHz)

Radiated emission expanded uncertainty : U=4.06dB, k=2

(Above 1GHz)



Report No.: ATE20150048 Page 7 of 19

3. MEASURING DEVICE AND TEST EQUIPMENT

Table 1: List of Test and Measurement Equipment

Kind of equipment	Manufacturer	Type	S/N	Calibrated date	Calibrated until
EMI Test REMOTE CONTROL	Rohde&Schwarz	ESCS30	100307	Jan. 11, 2014	Jan. 10, 2015
EMI Test REMOTE CONTROL	Rohde&Schwarz	ESPI3	101526/003	Jan. 11, 2014	Jan. 10, 2015
Spectrum Analyzer	Agilent	E7405A	MY45115511	Jan. 11, 2014	Jan. 10, 2015
Pre-Amplifier	Rohde&Schwarz	CBLU118354 0-01	3791	Jan. 11, 2014	Jan. 10, 2015
Loop Antenna	Schwarzbeck	FMZB1516	1516131	Jan. 15, 2014	Jan. 14, 2015
Bilog Antenna	Schwarzbeck	VULB9163	9163-323	Jan. 15, 2014	Jan. 14, 2015
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-655	Jan. 15, 2014	Jan. 14, 2015
Horn Antenna	Schwarzbeck	BBHA9170	9170-359	Jan. 15, 2014	Jan. 14, 2015
LISN	Rohde&Schwarz	ESH3-Z5	100305	Jan. 11, 2014	Jan. 10, 2015
LISN	Schwarzbeck	NSLK8126	8126431	Jan. 11, 2014	Jan. 10, 2015

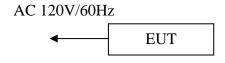
Report No.: ATE20150048 Page 8 of 19



4. POWER LINE CONDUCTED MEASUREMENT

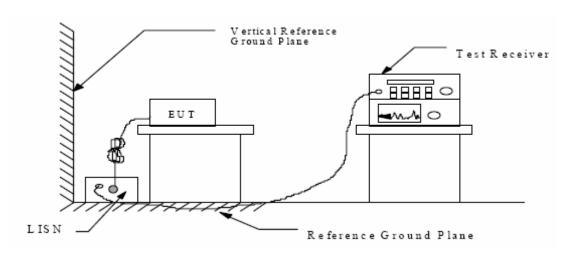
4.1.Block Diagram of Test Setup

4.1.1.Block diagram of connection between the EUT and simulators



(EUT: REMOTE CONTROL)

4.1.2. Shielding Room Test Setup Diagram



(EUT: REMOTE CONTROL)

4.2. The Emission Limit

4.2.1.Conducted Emission Measurement Limits According to Section 15.107(a)

Frequency	Limit dB(μV)				
(MHz)	Quasi-peak Level	Average Level			
0.15 - 0.50	66.0 - 56.0 *	56.0 – 46.0 *			
0.50 - 5.00	56.0	46.0			
5.00 - 30.00	60.0	50.0			

^{*} Decreases with the logarithm of the frequency.



Page 9 of 19

4.3. Configuration of EUT on Measurement

The following equipments are installed on Power Line Conducted Emission Measurement to meet the commission requirement and operating regulations in a manner, which tends to maximize its emission characteristics in a normal application.

4.3.1.REMOTE CONTROL (EUT)

Model Number: FAN42R-T190W

Serial Number: N/A

Manufacturer: Carewell Electric Technology (Zhongshan) Co., Ltd.

4.4. Operating Condition of EUT

- 4.4.1. Setup the EUT and simulator as shown as Section 3.2.
- 4.4.2. Turn on the power of all equipment.
- 4.4.3.Let the EUT work in test mode and measure it.

4.5. Test Procedure

The EUT is put on the plane 0.8m high above the ground by insulating support and is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC lines are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to ANSI C63.4: 2009 on Conducted Emission Measurement.

The bandwidth of test REMOTE CONTROL (R & S ESCS30) is set at 9kHz.

The frequency range from 150kHz to 30MHz is checked.



4.6. Power Line Conducted Emission Measurement Results

PASS.

t Mode: RX							
MEASUREMENT	RESULT:	"TB01	06-6_f	in"			
2015-1-6 15:28 Frequency MHz	B Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.150000 0.168000 1.020000	62.80 61.80 40.20	10.3 10.5 11.6	66 65 56	3.2 3.3 15.8	QP QP QP	L1 L1 L1	GND GND GND
MEASUREMENT	RESULT:	"TB010	06-6_f	in2"			
2015-1-6 15:28 Frequency MHz		Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.150000 2.193500 19.158500	42.10 16.70 35.60	10.3 11.7 11.9	56 46 50	13.9 29.3 14.4	AV AV AV	L1 L1 L1	GND
MEASUREMENT	RESULT	": "TB0	106-7_	fin"			
2015-1-6 15: Frequency MHz		Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.150000 0.166000 18.884000	61.70 62.40 46.30	10.3 10.4 11.9	66 65 60	4.3 2.8 13.7	QP QP QP	N N N	GND GND GND
MEASUREMENT		': "TB0	106-7_	fin2"			
					Detector	Line	PE
0.166000 2.225000 19.239500	39.60 17.00	10.4 11.7	55 46	15.6 29.0 10.0	AV AV	N N	GND GND

Emissions attenuated more than 20 dB below the permissible value are not reported.

The spectral diagrams are shown in the following pages.



Report No.: ATE20150048 Page 11 of 19

CONDUCTED EMISSION STANDARD FCC PART 15B

EUT: REMOTE CONTROL M/N:FAN42R-T190W

Manufacturer: CAREWELL

Operating Condition: RX

Test Site: 1#Shielding Room

Operator: Ricky

Test Specification: L 120V/60Hz

Comment:

Report NO.:ATE20150048

SCAN TABLE: "V 150K-30MHz fin"

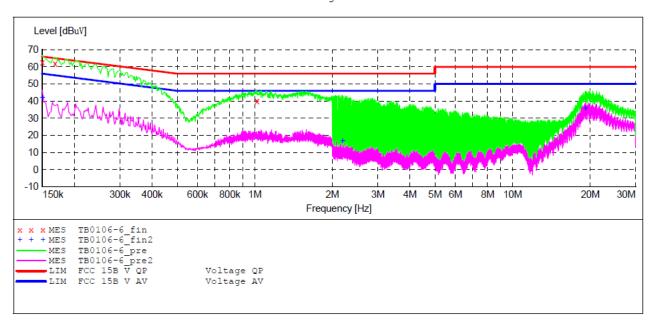
__SUB_STD_VTERM2 1.70 Short Description:

Stop Step Detector Meas. ΙF Transducer Start

Bandw. Frequency Frequency Width Time

150.0 kHz 30.0 MHz 4.5 kHz QuasiPeak 1.0 s 9 kHz LISN (ESH3-Z5)

Average



MEASUREMENT RESULT: "TB0106-6 fin"

20	15-1-6 15:28	В						
	Frequency	Level	Transd	Limit	Margin	Detector	Line	PE
	MHz	dBuV	dB	dBuV	dB			
	0.150000	62.80	10.3	66	3.2	QP	L1	GND
	0.168000	61.80	10.5	65	3.3	QP	L1	GND
	1.020000	40.20	11.6	56	15.8	QP	L1	GND

MEASUREMENT RESULT: "TB0106-6 fin2"

2015-1-6 15:28 Frequency MHz			Limit dBuV	Margin dB	Detector	Line	PE
0.150000 2.193500 19.158500	16.70	11.7	46	29.3	AV	L1 L1 L1	GND GND GND



Report No.: ATE20150048 Page 12 of 19

CONDUCTED EMISSION STANDARD FCC PART 15B

EUT: REMOTE CONTROL M/N:FAN42R-T190W

Manufacturer: CAREWELL

Operating Condition: RX

Test Site: 1#Shielding Room

Operator: Ricky

Test Specification: N 120V/60Hz

Comment:

Report NO.:ATE20150048

SCAN TABLE: "V 150K-30MHz fin"

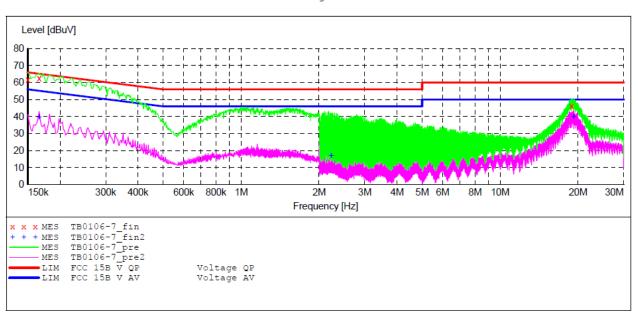
_SUB_STD_VTERM2 1.70 Short Description:

Stop Step Detector Meas. ΙF Transducer

Width Time Bandw.

Frequency Frequency 150.0 kHz 30.0 MHz 4.5 kHz 9 kHz QuasiPeak 1.0 s LISN (ESH3-Z5)

Average



MEASUREMENT RESULT: "TB0106-7 fin"

2015-1-6 15:3	1						
Frequency	Level	Transd	Limit	Margin	Detector	Line	PΕ
MHz	dBuV	dB	dBuV	dB			
0.150000	61.70	10.3	66	4.3	QP	N	GND
0.166000	62.40	10.4	65	2.8	QΡ	N	GND
18.884000	46.30	11.9	60	13.7	ÕР	N	GND

MEASUREMENT RESULT: "TB0106-7 fin2"

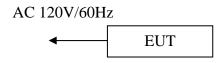
2015-1-6 15:31 Frequency MHz			Limit dBuV	Margin dB	Detector	Line	PE
0.166000 2.225000 19.239500	39.60 17.00 40.00	10.4 11.7 11.9		29.0	AV	N N N	GND GND GND

Page 13 of 19

5. RADIATED EMISSION MEASUREMENT

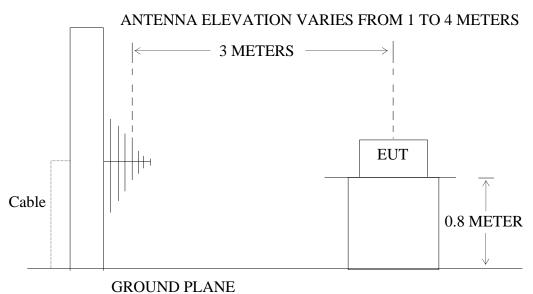
5.1.Block Diagram of Test Setup

5.1.1.Block diagram of connection between the EUT and simulators



(EUT: REMOTE CONTROL)

5.1.2.Semi-Anechoic Chamber Test Setup Diagram



(EUT: REMOTE CONTROL)



Page 14 of 19

5.2. The Emission Limit For Section 15.109 (a)

5.2.1. Radiation Emission Measurement Limits According to Section 15.109 (a).

Frequency	Distance	Field Strengths Limit			
MHz	Meters	μV/m	dB(μV/m)		
30-88	3	100	40.0		
88-216	3	150	43.5		
216-960	3	200	46.0		
960-1000	3	500	54.0		

Remark: (1) Emission level dB (μ V) = 20 log Emission level μ V/m.

- (2)The smaller limit shall apply at the cross point between two frequency bands.
- (3)Distance is the distance in meters between the measuring instrument antenna and the closest point of any part of the device or system.

5.3.EUT Configuration on Measurement

The following equipment is installed on Radiated Emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

5.3.1.REMOTE CONTROL

Model Number: FAN42R-T190W

Serial Number: N/A

Manufacturer: Carewell Electric Technology (Zhongshan) Co., Ltd.

5.4. Operating Condition of EUT

- 5.4.1. Setup the EUT and simulator as shown as Section 4.2.
- 5.4.2. Turn on the power of all equipment.
- 5.4.3.Let the EUT work in test mode (Rx) and measure it.

5.5.Test Procedure

The EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bilog antenna) is used as receiving antenna. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.4: 2009 on radiated emission measurement.

The bandwidth of the EMI test REMOTE CONTROL (R&S ESCS30) is set at

Report No.: ATE20150048 Page 15 of 19

120kHz from 30MHz to 1000MHz. The frequency range from 30MHz to 2000MHz is checked.

5.6. Radiated Emission Noise Measurement Result

PASS.

Model Number: FAN42R-T190W										
Test mode: RX										
	No.	Freq.	Reading	Factor	Result	Limit	Margin	Detector		
		(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)			
Horizontal	1	154.2786	54.63	-15.11	39.52	43.50	-3.98	QP		
	2	291.2906	53.03	-9.53	43.50	46.00	-2.50	QP		
	3	381.2485	50.31	-7.32	42.99	46.00	-3.01	QP		
		Freq.	Reading	Factor	Result	Limit	Margin			
	No.	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	Detector		
Vertical	1	63.4401	50.88	-15.18	35.70	40.00	-4.30	QP		
7 51 11 5 41	2	154.2786	50.90	-15.11	35.79	43.50	-7.71	QP		
	3	383.9318	47.40	-7.30	40.10	46.00	-5.90	QP		
Above 1G										
	No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector		
Horizontal	1	1079.393	42.02	-12.80	29.22	74.00	-44.78	peak		
	2	1413.232	41.82	-11.77	30.05	74.00	-43.95	peak		
	3	1881.422	41.94	-9.62	32.32	74.00	-41.68	peak		
	No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector		
Vertical	1	1013.988	41.80	-12.66	29.14	74.00	-44.86	peak		
	2	1238.520	41.38	-12.45	28.93	74.00	-45.07	peak		
	3	1823.529	42.82	-9.76	33.06	74.00	-40.94	peak		
1										



F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Site: 2# Chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Report No.: ATE20150048

Page 16 of 19

Job No.: CAREWELL #10

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 % EUT: REMOTE CONTROL

Mode: RX

Model: FAN42R-T190W Manufacturer: CAREWELL

Note: Report NO.:ATE20150048

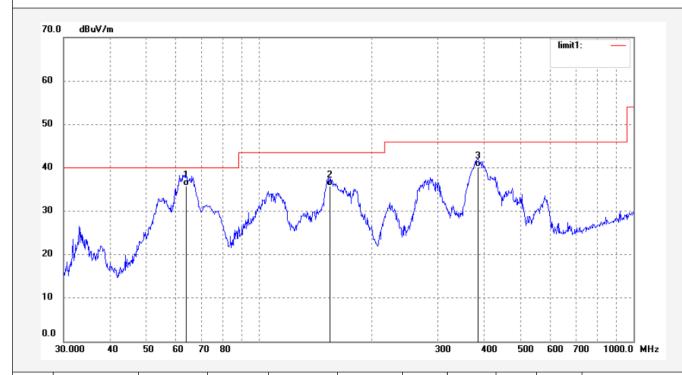
Polarization: Vertical

Power Source: AC 120V/60Hz

Date: 15/01/06/ Time: 13/46/09

Engineer Signature:Ricky

Distance: 3m



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	63.4401	50.88	-15.18	35.70	40.00	-4.30	QP			
2	154.2786	50.90	-15.11	35.79	43.50	-7.71	QP			
3	383.9318	47.40	-7.30	40.10	46.00	-5.90	QP			



Site: 2# Chamber F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park, Nanshan Shenzhen, P.R. China

Tel:+86-0755-26503290 Fax:+86-0755-26503396

Report No.: ATE20150048

Page 17 of 19

Job No.: CAREWELL #11

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 % EUT: REMOTE CONTROL

Mode: RX

Model: FAN42R-T190W Manufacturer: CAREWELL

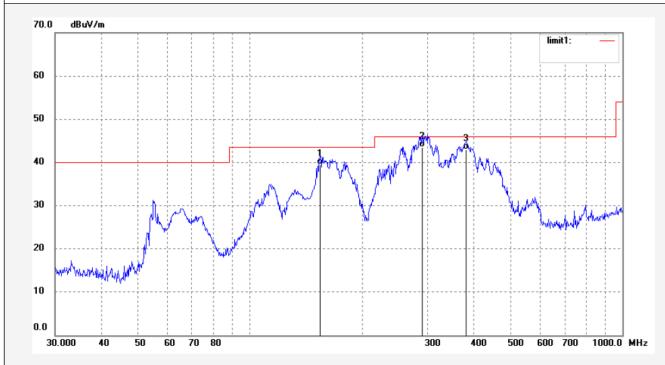
Note: Report NO.:ATE20150048 Polarization: Horizontal

Power Source: AC 120V/60Hz

Date: 15/01/06/ Time: 13/48/27

Engineer Signature: Ricky

Distance: 3m



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	154.2786	54.63	-15.11	39.52	43.50	-3.98	QP			
2	291.2906	53.03	-9.53	43.50	46.00	-2.50	QP			
3	381.2485	50.31	-7.32	42.99	46.00	-3.01	QP			



F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China

Page 18 of 19
Site: 1# Chamber
Tel:+86-0755-26503290

Fax:+86-0755-26503396

Report No.: ATE20150048

Job No.: RICKY2015 #25 Polarization: Horizontal

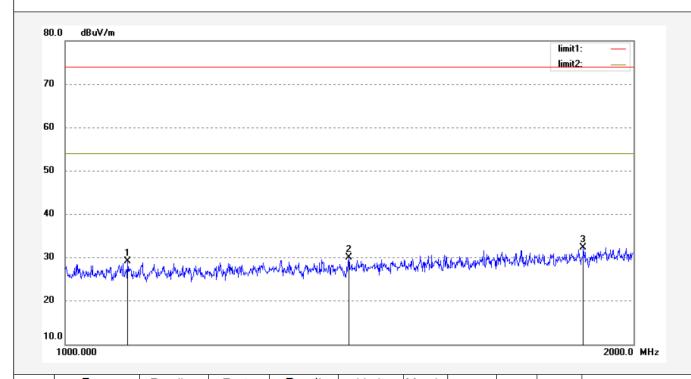
Standard: FCC PK Power Source: AC 120V/60Hz

Test item: Radiation Test Date: 15/01/07/
Temp.(C)/Hum.(%) 25 C / 55 % Time: 10/00/40

EUT: REMOTE CONTROL Engineer Signature:
Mode: RX Distance: 3m

Model: FAN42R-T190W Manufacturer: CAREWELL

Note: Report NO.:ATE20150048



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	1079.393	42.02	-12.80	29.22	74.00	-44.78	peak			
2	1413.232	41.82	-11.77	30.05	74.00	-43.95	peak			
3	1881.422	41.94	-9.62	32.32	74.00	-41.68	peak			



F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Page 19 of 19
Site: 1# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Report No.: ATE20150048

Job No.: RICKY2015 #26 Polarization: Vertical

Standard: FCC PK Power Source: AC 120V/60Hz

 Test item:
 Radiation Test
 Date: 15/01/07/

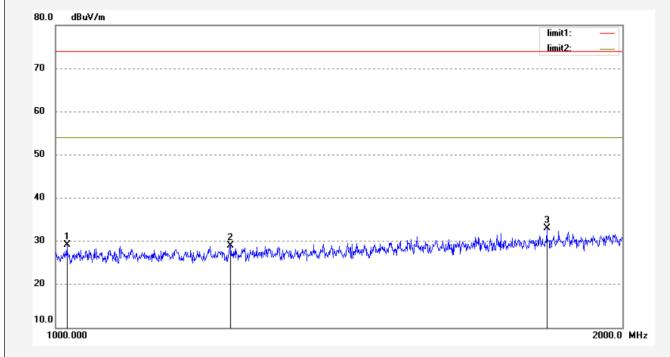
 Temp.(C)/Hum.(%) 25 C / 55 %
 Time: 10/01/12

 EUT:
 REMOTE CONTROL
 Engineer Signature:

 Mode:
 RX
 Distance: 3m

Model: FAN42R-T190W Manufacturer: CAREWELL

Note: Report NO.:ATE20150048



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	1013.988	41.80	-12.66	29.14	74.00	-44.86	peak			
2	1238.520	41.38	-12.45	28.93	74.00	-45.07	peak			
3	1823.529	42.82	-9.76	33.06	74.00	-40.94	peak			