

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
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Report No. : ATE20150048
Date of Test : Jan 06-08,2015
Date of Report : Jan 08,2015

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Test Report Declaration

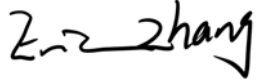
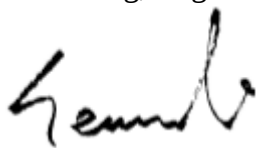
Applicant : Carewell Electric Technology (Zhongshan) Co., Ltd.
Manufacturer : Carewell Electric Technology(Zhongshan)Co.,Ltd.
EUT Description : REMOTE CONTROL
(A) MODEL NO.: FAN42R-T190W
(B) SERIAL NO.: N/A
(C) POWER SUPPLY: AC 120V

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 :	 (Eric Zhang, Engineer)
Approved & Authorized Signer :	 (Sean Liu, Manager)

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

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	: Jan 06, 2015
Date of Test	: Jan 06-08,2015

2.2.Accessory and Auxiliary Equipment

NA

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)

3. MEASURING DEVICE AND TEST EQUIPMENT

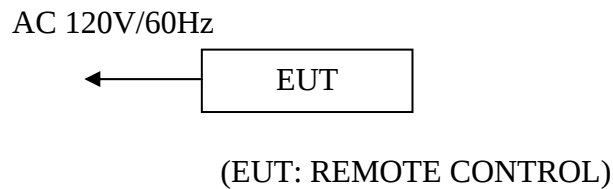
Table 1: List of Test and Measurement Equipment

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

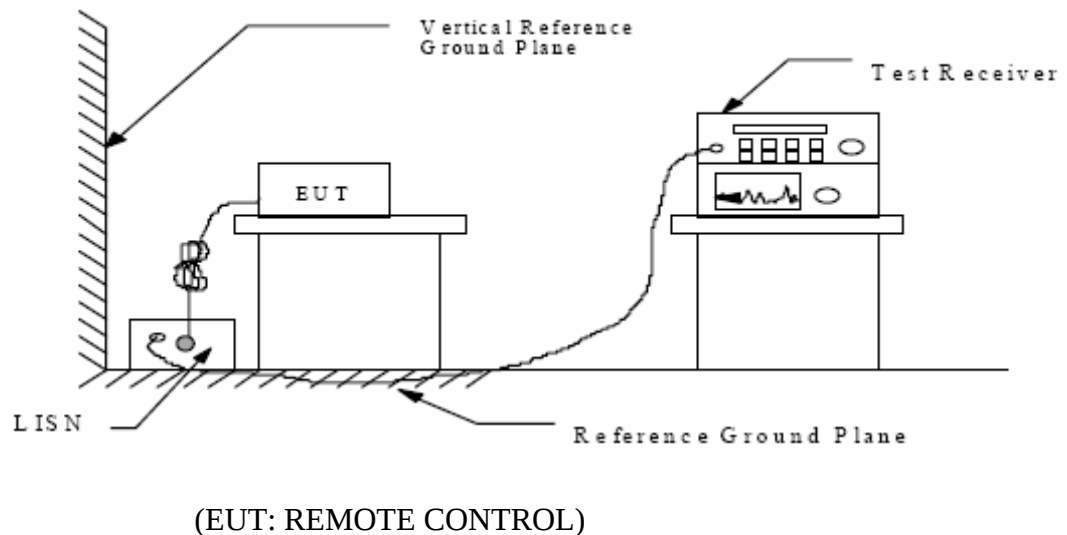
4. POWER LINE CONDUCTED MEASUREMENT

4.1. Block Diagram of Test Setup

4.1.1. Block diagram of connection between the EUT and simulators



4.1.2. Shielding Room Test Setup Diagram



4.2. The Emission Limit

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

Frequency (MHz)	Limit dB(μV)	
	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.

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.

Test Mode: RX								
MEASUREMENT RESULT: "TB0106-6_fin"								
2015-1-6 15:28								
Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE	
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	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE	
0.150000	42.10	10.3	56	13.9	AV	L1	GND	
2.193500	16.70	11.7	46	29.3	AV	L1	GND	
19.158500	35.60	11.9	50	14.4	AV	L1	GND	
MEASUREMENT RESULT: "TB0106-7_fin"								
2015-1-6 15:31								
Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE	
0.150000	61.70	10.3	66	4.3	QP	N	GND	
0.166000	62.40	10.4	65	2.8	QP	N	GND	
18.884000	46.30	11.9	60	13.7	QP	N	GND	
MEASUREMENT RESULT: "TB0106-7_fin2"								
2015-1-6 15:31								
Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE	
0.166000	39.60	10.4	55	15.6	AV	N	GND	
2.225000	17.00	11.7	46	29.0	AV	N	GND	
19.239500	40.00	11.9	50	10.0	AV	N	GND	

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

The spectral diagrams are shown in the following pages.

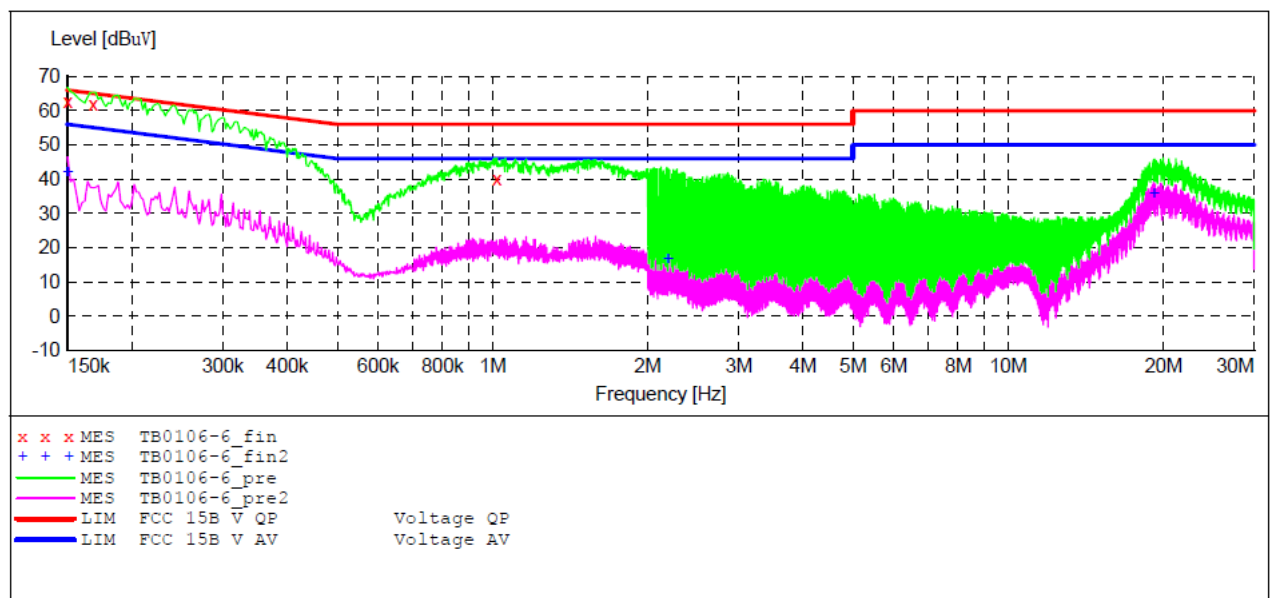
CONDUCTED EMISSION STANDARD FCC PART 15B

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"

Short Description: _SUB_STD_VTERM2 1.70
 Start Stop Step Detector Meas. IF Transducer
 Frequency Frequency Width Time Bandw.
 150.0 kHz 30.0 MHz 4.5 kHz QuasiPeak 1.0 s 9 kHz LISN (ESH3-Z5)
 Average



MEASUREMENT RESULT: "TB0106-6_fin"

2015-1-6 15:28

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
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	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.150000	42.10	10.3	56	13.9	AV	L1	GND
2.193500	16.70	11.7	46	29.3	AV	L1	GND
19.158500	35.60	11.9	50	14.4	AV	L1	GND

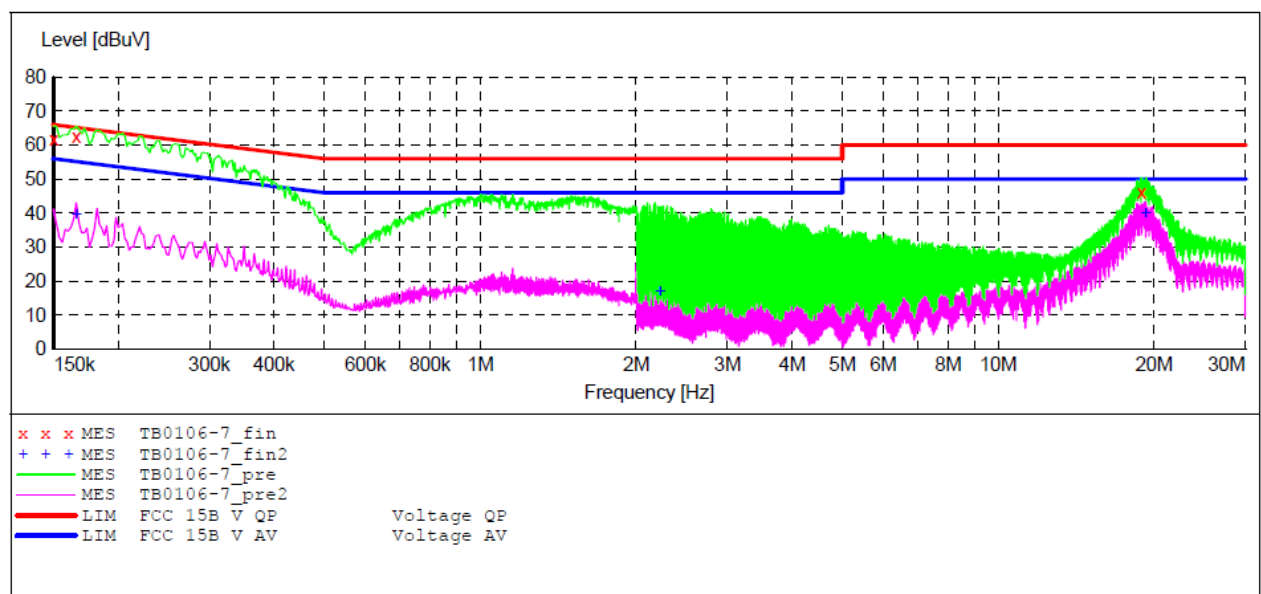
CONDUCTED EMISSION STANDARD FCC PART 15B

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"

Short Description: _SUB_STD_VTERM2 1.70
 Start Stop Step Detector Meas. IF Transducer
 Frequency Frequency Width Time Bandw.
 150.0 kHz 30.0 MHz 4.5 kHz QuasiPeak 1.0 s 9 kHz LISN (ESH3-Z5)
 Average



MEASUREMENT RESULT: "TB0106-7_fin"

2015-1-6 15:31

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.150000	61.70	10.3	66	4.3	QP	N	GND
0.166000	62.40	10.4	65	2.8	QP	N	GND
18.884000	46.30	11.9	60	13.7	QP	N	GND

MEASUREMENT RESULT: "TB0106-7_fin2"

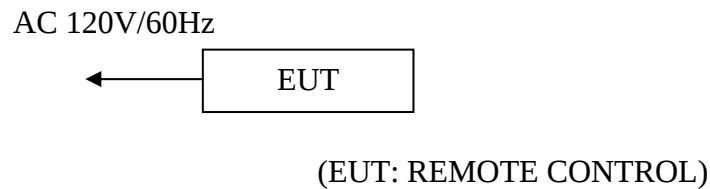
2015-1-6 15:31

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.166000	39.60	10.4	55	15.6	AV	N	GND
2.225000	17.00	11.7	46	29.0	AV	N	GND
19.239500	40.00	11.9	50	10.0	AV	N	GND

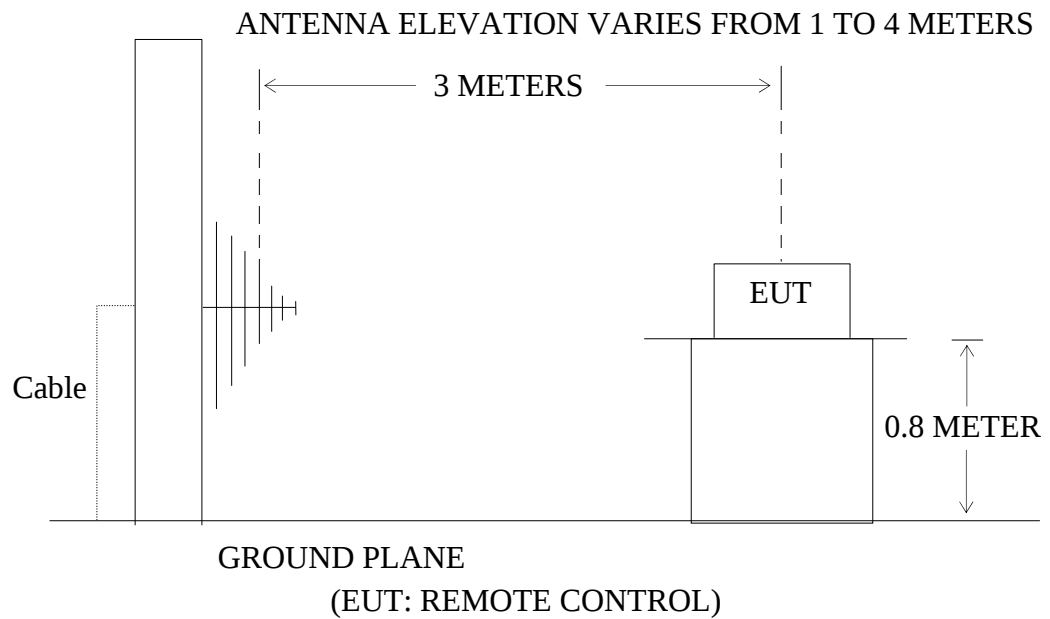
5. RADIATED EMISSION MEASUREMENT

5.1. Block Diagram of Test Setup

5.1.1. Block diagram of connection between the EUT and simulators



5.1.2. Semi-Anechoic Chamber Test Setup Diagram



5.2.The Emission Limit For Section 15.109 (a)

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

Frequency MHz	Distance Meters	Field Strengths Limit	
		$\mu\text{V/m}$	$\text{dB}(\mu\text{V/m})$
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 $\text{dB}(\mu\text{V}) = 20 \log$ Emission level $\mu\text{V/m}$. (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

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								
Horizontal	No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
	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
Vertical	No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
	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
Above 1G								
Horizontal	No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
	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
Vertical	No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
	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



ACCURATE TECHNOLOGY CO., LTD.

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Science & Industry Park,Nanshan Shenzhen,P.R.China

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Site: 2# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

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

Polarization: Vertical

Power Source: AC 120V/60Hz

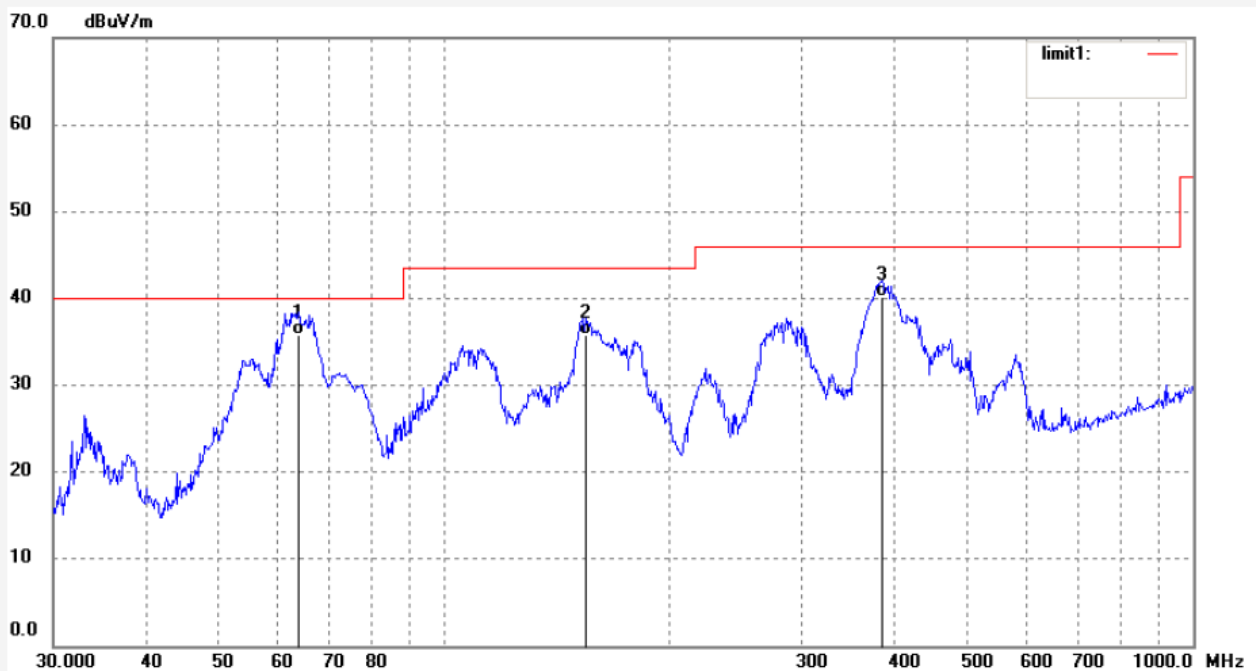
Date: 15/01/06/

Time: 13/46/09

Engineer Signature:Ricky

Distance: 3m

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	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			



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Site: 2# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

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

Polarization: Horizontal

Power Source: AC 120V/60Hz

Date: 15/01/06/

Time: 13/48/27

Engineer Signature:Ricky

Distance: 3m

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	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			



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Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: RICKY2015 #25

Standard: FCC PK

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 55 %

EUT: REMOTE CONTROL

Mode: RX

Model: FAN42R-T190W

Manufacturer: CAREWELL

Polarization: Horizontal

Power Source: AC 120V/60Hz

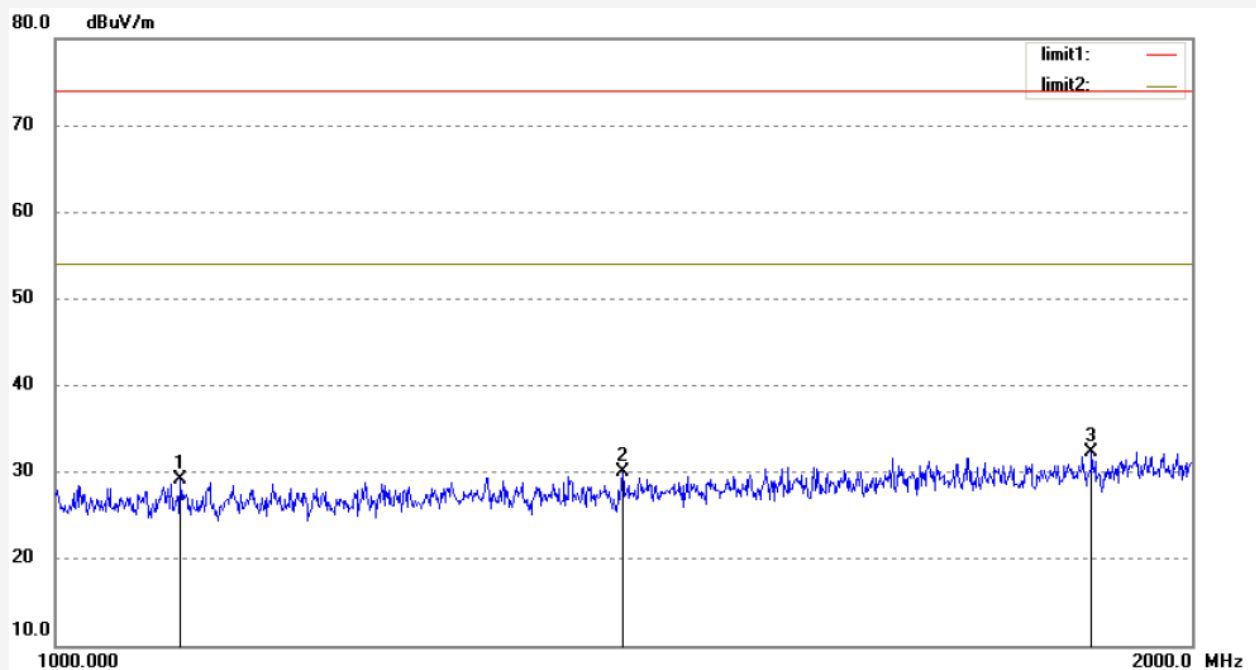
Date: 15/01/07/

Time: 10/00/40

Engineer Signature:

Distance: 3m

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			



ACCURATE TECHNOLOGY CO., LTD.

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Science & Industry Park,Nanshan Shenzhen,P.R.China

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Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: RICKY2015 #26

Standard: FCC PK

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 55 %

EUT: REMOTE CONTROL

Mode: RX

Model: FAN42R-T190W

Manufacturer: CAREWELL

Polarization: Vertical

Power Source: AC 120V/60Hz

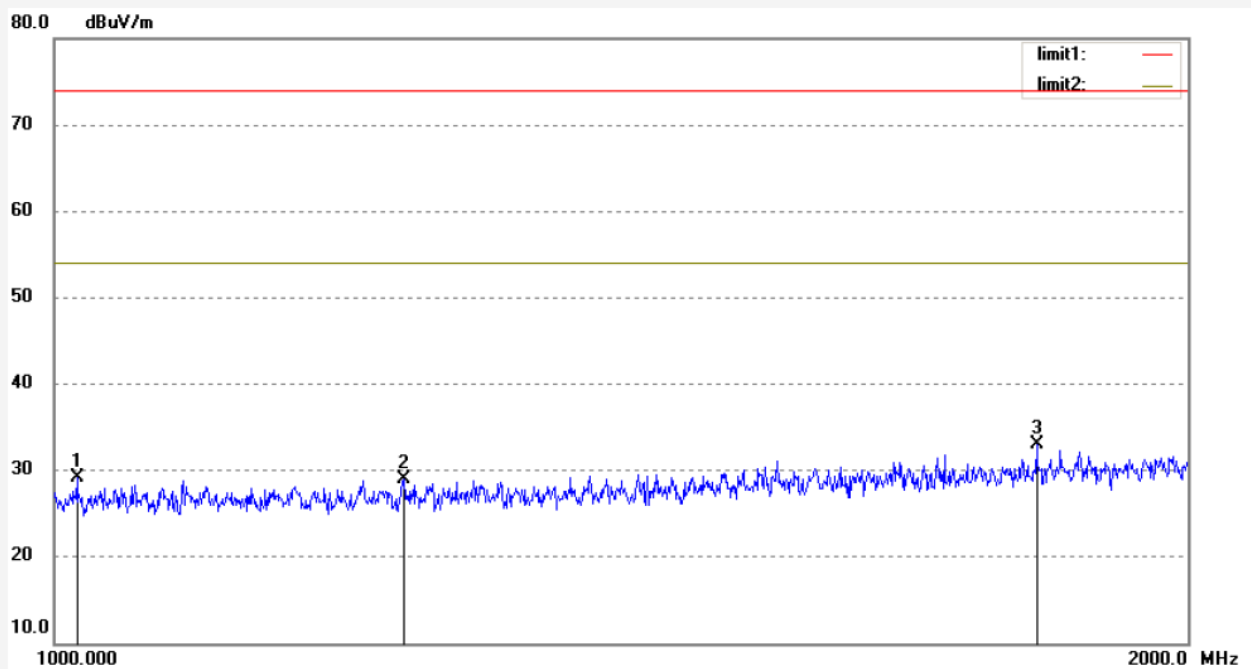
Date: 15/01/07/

Time: 10/01/12

Engineer Signature:

Distance: 3m

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			