

APPLICATION FOR VERIFICATION
On Behalf of
CHIA WEI ELECTRIC CO.,LTD

REMOTE CONTROL
Model No.: FAN-18R

FCC ID: L3HFAN-18R

Prepared for : CHIA WEI ELECTRIC CO.,LTD
Address : No.27,Lane24,Ta-Lian North St.Taichung,TAIWAN

Prepared by : Accurate Technology Co., Ltd.
Address : F1, Bldg. A&D, Changyuan New Material Port, Keyuan
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Report No. : ATE20150049
Date of Test : Jan 06-08,2015
Date of Report : Jan 08,2015

TABLE OF CONTENTS

Description	Page
Test Report Declaration	
1. TEST RESULTS SUMMARY	4
2. GENERAL INFORMATION	5
2.1. Product of Device (EUT)	5
2.2. Accessory and Auxiliary Equipment.....	5
2.3. Description of Test Facility	6
2.4. Measurement Uncertainty.....	6
3. MEASURING DEVICE AND TEST EQUIPMENT	7
4. POWER 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	9
4.4. Operating Condition of EUT	9
4.5. Test Procedure	9
4.6. Power Line Conducted Emission Measurement Results.....	10
5. RADIATED EMISSION MEASUREMENT	13
5.1. Block Diagram of Test Setup.....	13
5.2. The Emission Limit For Section 15.109 (a)	14
5.3. EUT Configuration on Measurement	14
5.4. Operating Condition of EUT	14
5.5. Test Procedure	14
5.6. Radiated Emission Noise Measurement Result.....	15

Test Report Declaration

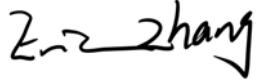
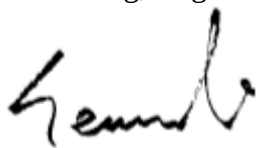
Applicant : CHIA WEI ELECTRIC CO.,LTD
Manufacturer : Carewell Electric Technology(Zhongshan)Co.,Ltd.
EUT Description : REMOTE CONTROL
(A) MODEL NO.: FAN-18R
(B) SERIAL NO.: N/A
(C) POWER SUPPLY: AC 120V

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	: FAN-18R
Power Supply	: AC 120V
Modulation:	: ASK
Receiver Frequency	: 303.9MHz RX
Applicant	: CHIA WEI ELECTRIC CO.,LTD
Address	: No.27,Lane24,Ta-Lian North St.Taichung,TAIWAN
Manufacturer	: Carewell Electric Technology(Zhongshan)Co.,Ltd.
Address	: Torch Development Zone,No.2,Ouya Road,Zhongshan City,Guangdong Porvince,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

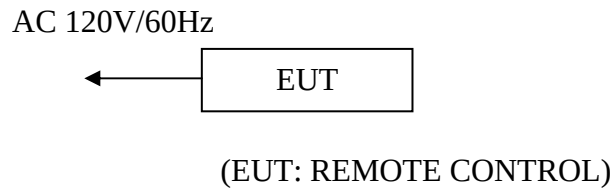
Table 1: List of Test and Measurement Equipment

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

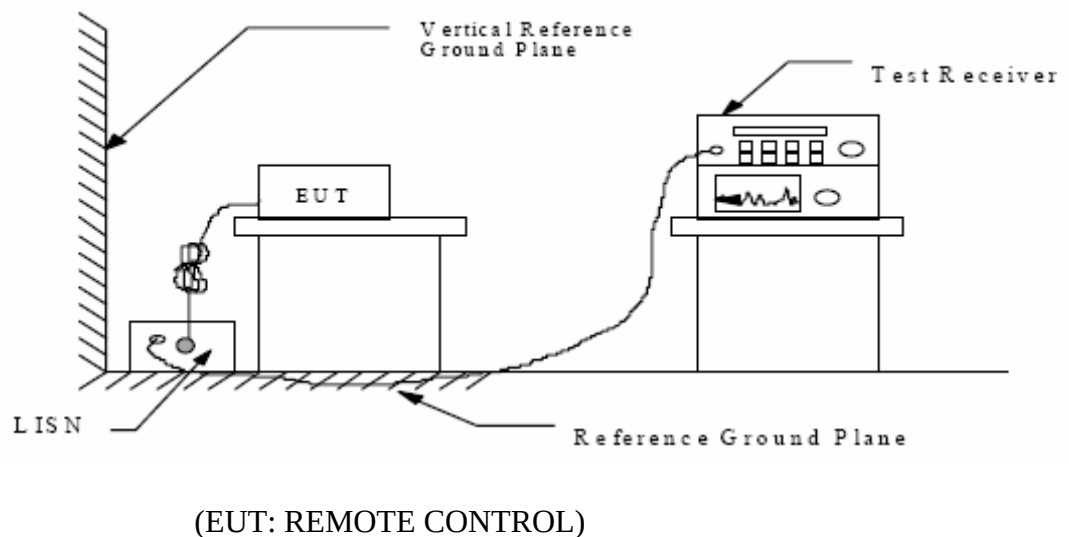
4. POWER LINE CONDUCTED MEASUREMENT

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: FAN-18R

Serial Number: N/A

Manufacturer: CHIA WEI ELECTRIC 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: "TB0106-14_fin"								
2015-1-6 15:56								
Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE	
0.150000	57.20	10.3	66	8.8	QP	L1	GND	
0.326000	43.10	11.1	60	16.5	QP	L1	GND	
0.886000	29.70	11.6	56	26.3	QP	L1	GND	
MEASUREMENT RESULT: "TB0106-14_fin2"								
2015-1-6 15:56								
Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE	
0.150000	52.40	10.3	56	3.6	AV	L1	GND	
0.288000	17.90	11.0	51	32.7	AV	L1	GND	
0.778000	15.50	11.5	46	30.5	AV	L1	GND	
MEASUREMENT RESULT: "TB0106-15_fin"								
2015-1-6 15:59								
Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE	
0.150000	57.50	10.3	66	8.5	QP	N	GND	
0.946000	29.40	11.6	56	26.6	QP	N	GND	
21.998000	6.10	12.0	60	53.9	QP	N	GND	
MEASUREMENT RESULT: "TB0106-15_fin2"								
2015-1-6 15:59								
Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE	
0.150000	52.50	10.3	56	3.5	AV	N	GND	
0.220000	17.40	10.7	53	35.4	AV	N	GND	
0.386000	15.60	11.2	48	32.5	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.

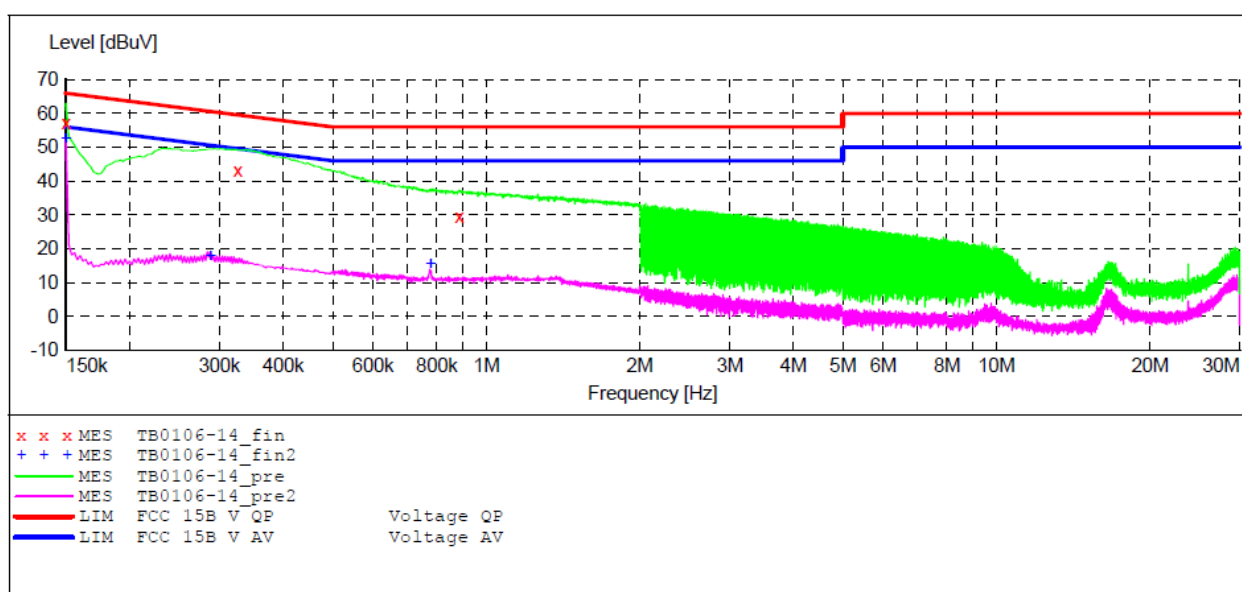
CONDUCTED EMISSION STANDARD FCC PART 15B

EUT: REMOTE CONTROL M/N:FAN-18R
 Manufacturer: CAREWELL
 Operating Condition: RX
 Test Site: 1#Shielding Room
 Operator: Ricky
 Test Specification: L 120V/60Hz
 Comment:

Report NO.:ATE20150049

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: "TB0106-14_fin"

2015-1-6 15:56

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.150000	57.20	10.3	66	8.8	QP	L1	GND
0.326000	43.10	11.1	60	16.5	QP	L1	GND
0.886000	29.70	11.6	56	26.3	QP	L1	GND

MEASUREMENT RESULT: "TB0106-14_fin2"

2015-1-6 15:56

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.150000	52.40	10.3	56	3.6	AV	L1	GND
0.288000	17.90	11.0	51	32.7	AV	L1	GND
0.778000	15.50	11.5	46	30.5	AV	L1	GND

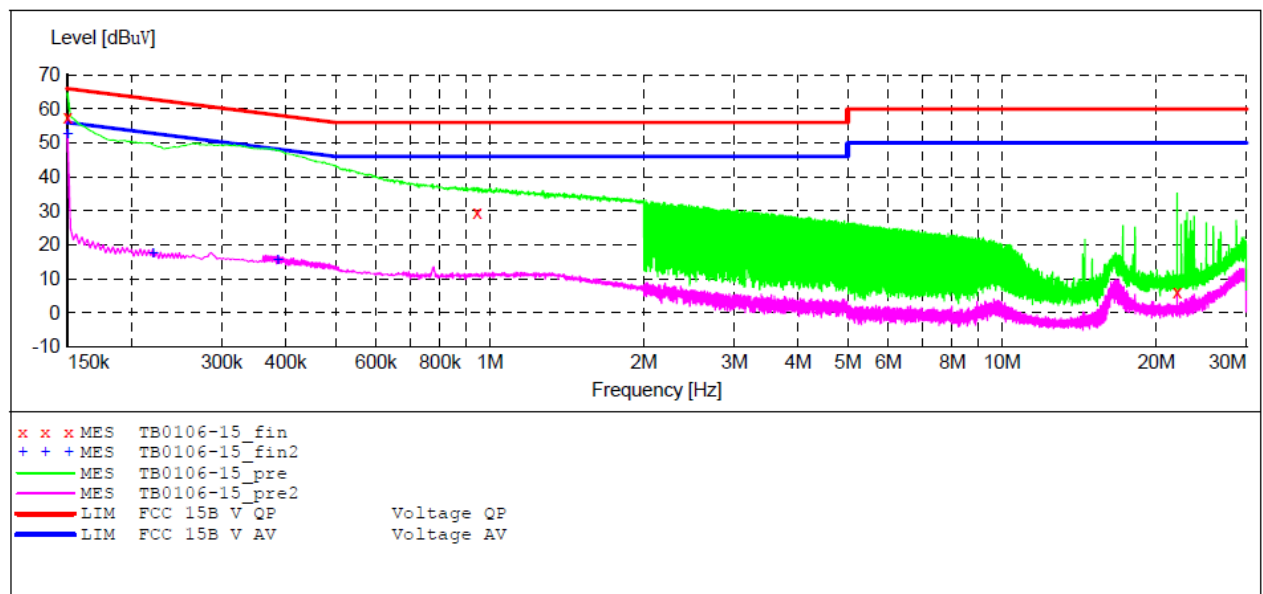
CONDUCTED EMISSION STANDARD FCC PART 15B

EUT: REMOTE CONTROL M/N:FAN-18R
 Manufacturer: CAREWELL
 Operating Condition: RX
 Test Site: 1#Shielding Room
 Operator: Ricky
 Test Specification: N 120V/60Hz
 Comment:

Report NO.:ATE20150049

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: "TB0106-15_fin"

2015-1-6 15:59

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.150000	57.50	10.3	66	8.5	QP	N	GND
0.946000	29.40	11.6	56	26.6	QP	N	GND
21.998000	6.10	12.0	60	53.9	QP	N	GND

MEASUREMENT RESULT: "TB0106-15_fin2"

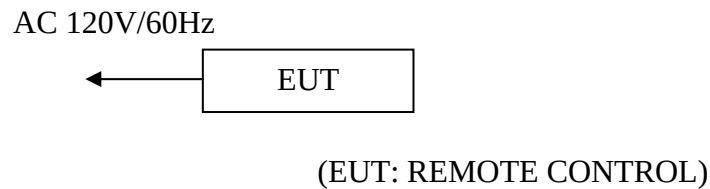
2015-1-6 15:59

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.150000	52.50	10.3	56	3.5	AV	N	GND
0.220000	17.40	10.7	53	35.4	AV	N	GND
0.386000	15.60	11.2	48	32.5	AV	N	GND

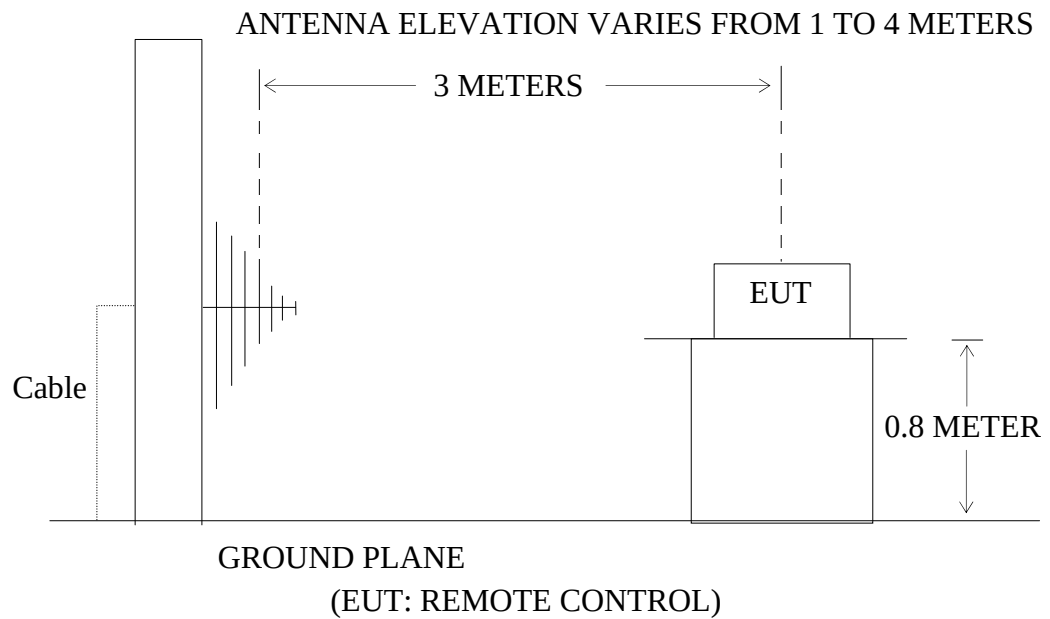
5. RADIATED EMISSION MEASUREMENT

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: FAN-18R

Serial Number: N/A

Manufacturer: CHIA WEI ELECTRIC 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: FAN-18R								
Test mode: RX								
Horizontal	No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
	1	117.3602	38.02	-13.16	24.86	43.50	-18.64	QP
	2	141.3298	42.68	-15.24	27.44	43.50	-16.06	QP
	3	311.0867	45.46	-8.99	36.47	46.00	-9.53	QP
Vertical	No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
	1	202.8103	31.59	-12.35	19.24	43.50	-24.26	QP
	2	279.0436	37.57	-9.88	27.69	46.00	-18.31	QP
	3	308.9126	36.85	-9.05	27.80	46.00	-18.20	QP
ABOVE 1G								
Horizontal	No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
	1	1300.222	41.67	-12.24	29.43	74.00	-44.57	peak
	2	1398.585	41.49	-11.83	29.66	74.00	-44.34	peak
	3	1541.408	42.05	-11.06	30.99	74.00	-43.01	peak
Vertical	No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
	1	1270.760	41.72	-12.34	29.38	74.00	-44.62	peak
	2	1442.987	42.24	-11.68	30.56	74.00	-43.44	peak
	3	1774.799	42.39	-10.14	32.25	74.00	-41.75	peak



ACCURATE TECHNOLOGY CO., LTD.

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

Report No.: ATE20150049

Page 16 of 19

Site: 2# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: CAREWELL #13

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: REMOTE CONTROL

Mode: RX

Model: FAN-18R

Manufacturer: CAREWELL

Polarization: Horizontal

Power Source: AC 120V/60Hz

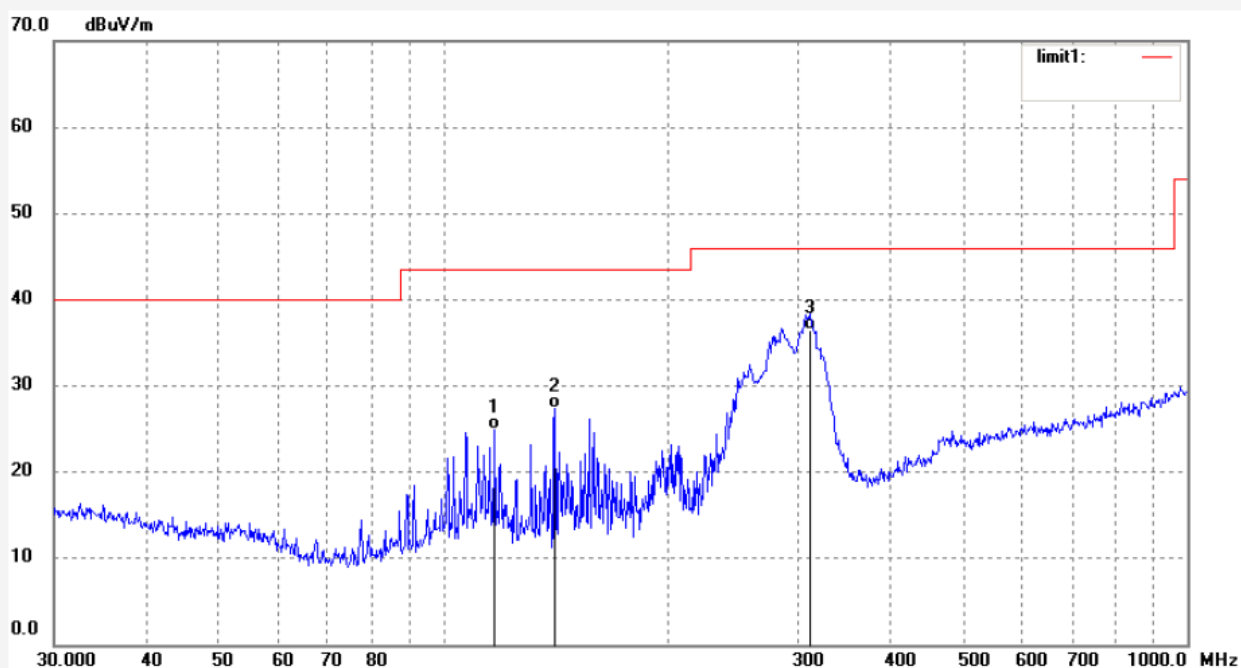
Date: 2015/01/06

Time: 13:57:09

Engineer Signature:

Distance: 3m

Note: Report NO.:ATE20150049



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	117.3602	38.02	-13.16	24.86	43.50	-18.64	QP			
2	141.3298	42.68	-15.24	27.44	43.50	-16.06	QP			
3	311.0867	45.46	-8.99	36.47	46.00	-9.53	QP			



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

Report No.: ATE20150049

Page 17 of 19

Site: 2# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: CAREWELL #14

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: REMOTE CONTROL

Mode: RX

Model: FAN-18R

Manufacturer: CAREWELL

Polarization: Vertical

Power Source: AC 120V/60Hz

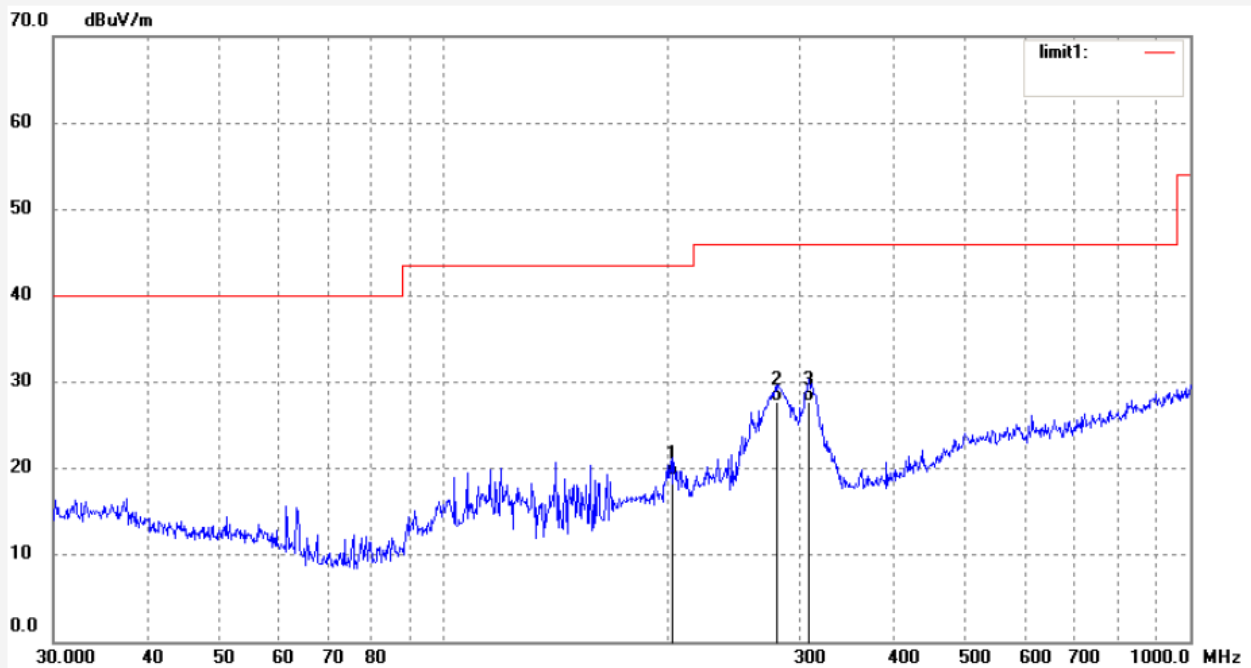
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Time: 13:58:02

Engineer Signature:

Distance: 3m

Note: Report NO.:ATE20150049



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	202.8103	31.59	-12.35	19.24	43.50	-24.26	QP			
2	279.0436	37.57	-9.88	27.69	46.00	-18.31	QP			
3	308.9126	36.85	-9.05	27.80	46.00	-18.20	QP			



ACCURATE TECHNOLOGY CO., LTD.

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Report No.: ATE20150049

Page 18 of 19

Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: RICKY2015 #28

Standard: FCC PK

Test item: Radiation Test

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

EUT: REMOTE CONTROL

Mode: RX

Model: FAN-18R

Manufacturer: CAREWELL

Polarization: Horizontal

Power Source: AC 120V/60Hz

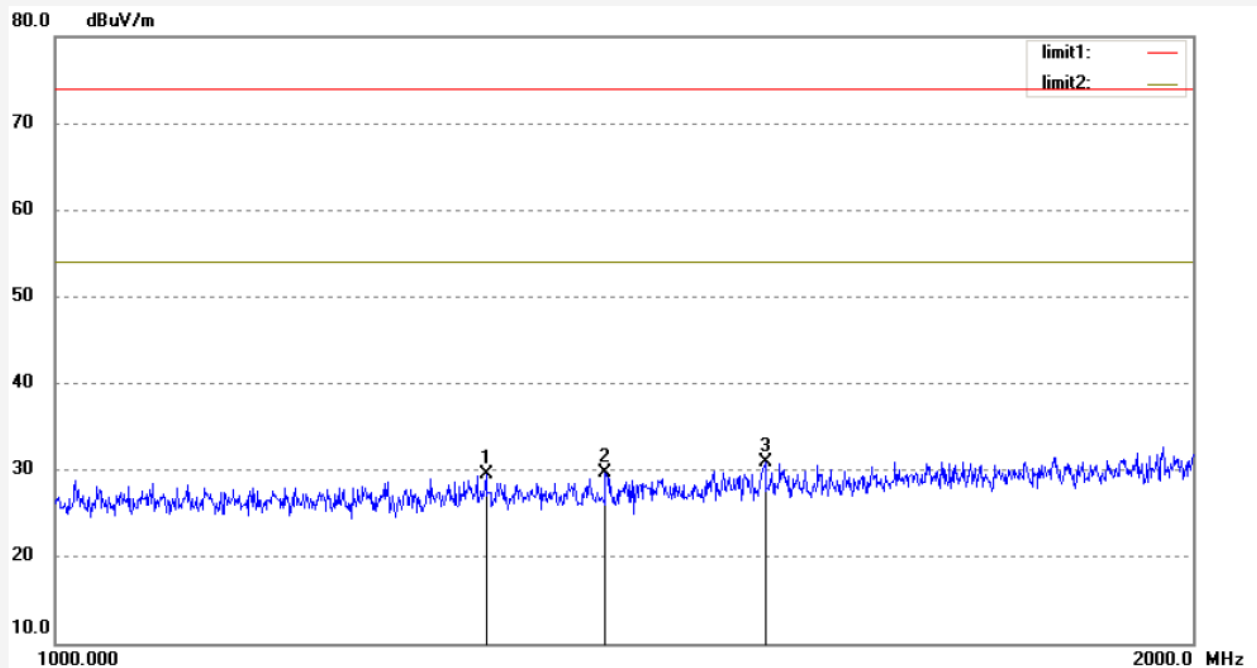
Date: 15/01/07/

Time: 10/02/02

Engineer Signature:

Distance: 3m

Note: Report NO.:ATE20150049



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	1300.222	41.67	-12.24	29.43	74.00	-44.57	peak			
2	1398.585	41.49	-11.83	29.66	74.00	-44.34	peak			
3	1541.408	42.05	-11.06	30.99	74.00	-43.01	peak			

**ACCURATE TECHNOLOGY CO., LTD.**

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

Report No.: ATE20150049

Page 19 of 19

Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: RICKY2015 #27

Standard: FCC PK

Test item: Radiation Test

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

EUT: REMOTE CONTROL

Mode: RX

Model: FAN-18R

Manufacturer: CAREWELL

Polarization: Vertical

Power Source: AC 120V/60Hz

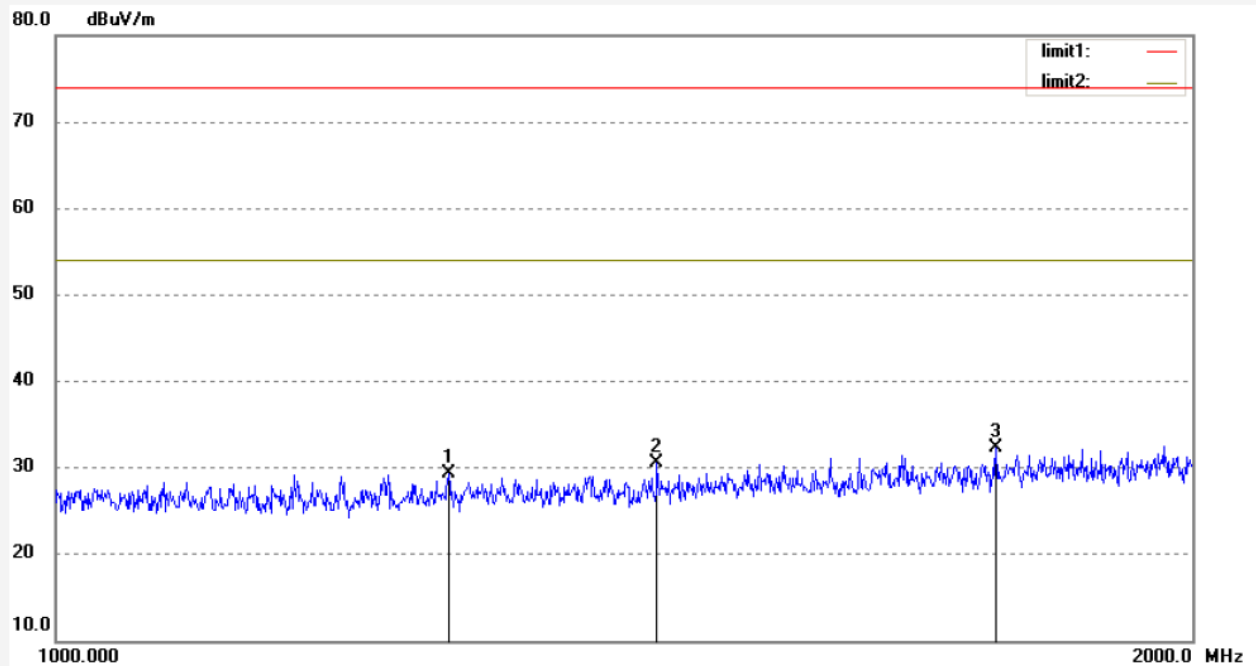
Date: 15/01/07/

Time: 10/01/32

Engineer Signature:

Distance: 3m

Note: Report NO.:ATE20150049



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	1270.760	41.72	-12.34	29.38	74.00	-44.62	peak			
2	1442.987	42.24	-11.68	30.56	74.00	-43.44	peak			
3	1774.799	42.39	-10.14	32.25	74.00	-41.75	peak			