

APPLICATION FOR VERIFICATION
On Behalf of
SHENZHEN QIAOHUA INDUSTRIES LIMITED

Receiver

Model No.: QT-14R,QT-10R,QT-11R,QT-13R,QT-12R,QT-15R,QT-16R

FCC ID: 2AAV8QT14R

Prepared for : SHENZHEN QIAOHUA INDUSTRIES LIMITED
Address : Qiaohua Industrial Zone, Luo Tian Forestry Center,Song Gang
Town, Bao An District,Shenzhen, Guangdong, China

Prepared by : Accurate Technology Co., Ltd.
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Report No. : ATE20150136
Date of Test : Jan 16-21,2015
Date of Report : Jan 21,2015

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Test Report Declaration

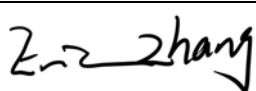
Applicant : SHENZHEN QIAOHUA INDUSTRIES LIMITED
Manufacturer : SHENZHEN QIAOHUA INDUSTRIES LIMITED
EUT Description : Receiver
(A) MODEL NO.:
QT-14R,QT-10R,QT-11R,QT-13R,QT-12R,QT-15R,QT-16R
(B) SERIAL NO.: N/A
(C) POWER SUPPLY: AC 120V

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 :	Jan 16-21,2015
Date of Report :	Jan 21,2015
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	: Receiver
Model Number	: QT-14R,QT-10R,QT-11R,QT-13R,QT-12R,QT-15R,QT-16R Note: These samples are same except for the model number and colors are difference. So we prepare the QT-14R for test
Power Supply	: AC 120V
Modulation:	: ASK
Operation Frequency	: 433.92MHz Receiver
Applicant	: SHENZHEN QIAOHUA INDUSTRIES LIMITED
Address	: Qiaohua Industrial Zone, Luo Tian Forestry Center,Song Gang Town, Bao An District,Shenzhen, Guangdong, China
Manufacturer	: SHENZHEN QIAOHUA INDUSTRIES LIMITED
Address	: Qiaohua Industrial Zone, Luo Tian Forestry Center,Song Gang Town, Bao An District,Shenzhen, Guangdong, China
Date of sample received	: Jan 16, 2015
Date of Test	: Jan 16-21,2015

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 Receiver	Rohde&Schwarz	ESCS30	100307	Jan. 10, 2015	Jan. 09, 2016
EMI Test Receiver	Rohde&Schwarz	ESPI3	101526/003	Jan. 10, 2015	Jan. 09, 2016
Spectrum Analyzer	Agilent	E7405A	MY45115511	Jan. 10, 2015	Jan. 09, 2016
Pre-Amplifier	Rohde&Schwarz	CBLU118354 0-01	3791	Jan. 10, 2015	Jan. 09, 2016
Loop Antenna	Schwarzbeck	FMZB1516	1516131	Jan. 15, 2015	Jan. 14, 2016
Bilog Antenna	Schwarzbeck	VULB9163	9163-323	Jan. 15, 2015	Jan. 14, 2016
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-655	Jan. 15, 2015	Jan. 14, 2016
Horn Antenna	Schwarzbeck	BBHA9170	9170-359	Jan. 15, 2015	Jan. 14, 2016
LISN	Rohde&Schwarz	ESH3-Z5	100305	Jan. 10, 2015	Jan. 09, 2016
LISN	Schwarzbeck	NSLK8126	8126431	Jan. 10, 2015	Jan. 09, 2016

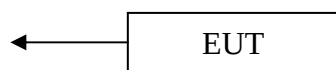
4. POWER LINE CONDUCTED MEASUREMENT

4.1. Block Diagram of Test Setup

4.1.1. Block diagram of connection between the EUT and simulators

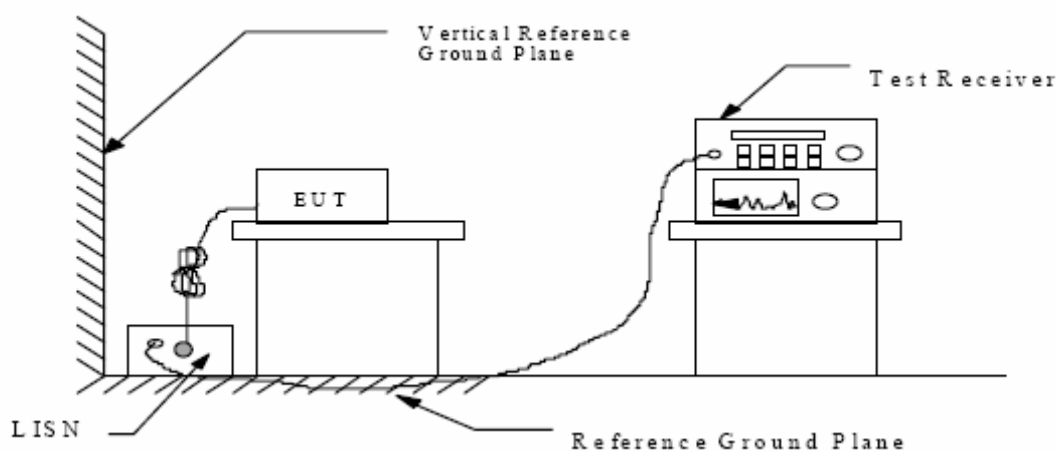
4.1.1.1. For Transfer data

AC 120V/60Hz



(EUT: Receiver)

4.1.2. Shielding Room Test Setup Diagram



(EUT: Receiver)

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.

Remark: Receiver is tested with 400W Metal Fog Machine model:FM400-E

4.3.1.Receiver (EUT)

Model Number: QT-14R

Serial Number: N/A

Manufacturer: SHENZHEN QIAOHUA INDUSTRIES LIMITED

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 receiver (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: "RY0116-2_fin"								
1/16/2015 10:29AM								
Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE	
0.150000	12.10	10.5	66	53.9	QP	L1	GND	
0.675000	10.50	10.8	56	45.5	QP	L1	GND	
1.350000	10.00	10.9	56	46.0	QP	L1	GND	
MEASUREMENT RESULT: "RY0116-2_fin2"								
1/16/2015 10:29AM								
Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE	
0.675000	6.60	10.8	46	39.4	AV	L1	GND	
1.345000	-2.80	10.9	46	48.8	AV	L1	GND	
23.575000	2.80	11.5	50	47.2	AV	L1	GND	
MEASUREMENT RESULT: "RY0116-1_fin"								
1/16/2015 10:25AM								
Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE	
0.150000	16.40	10.5	66	49.6	QP	N	GND	
0.670000	4.90	10.8	56	51.1	QP	N	GND	
23.625000	14.30	11.5	60	45.7	QP	N	GND	
MEASUREMENT RESULT: "RY0116-1_fin2"								
1/16/2015 10:25AM								
Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE	
0.150000	-1.70	10.5	56	57.7	AV	N	GND	
0.665000	-4.20	10.8	46	50.2	AV	N	GND	
22.725000	5.60	11.4	50	44.4	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.

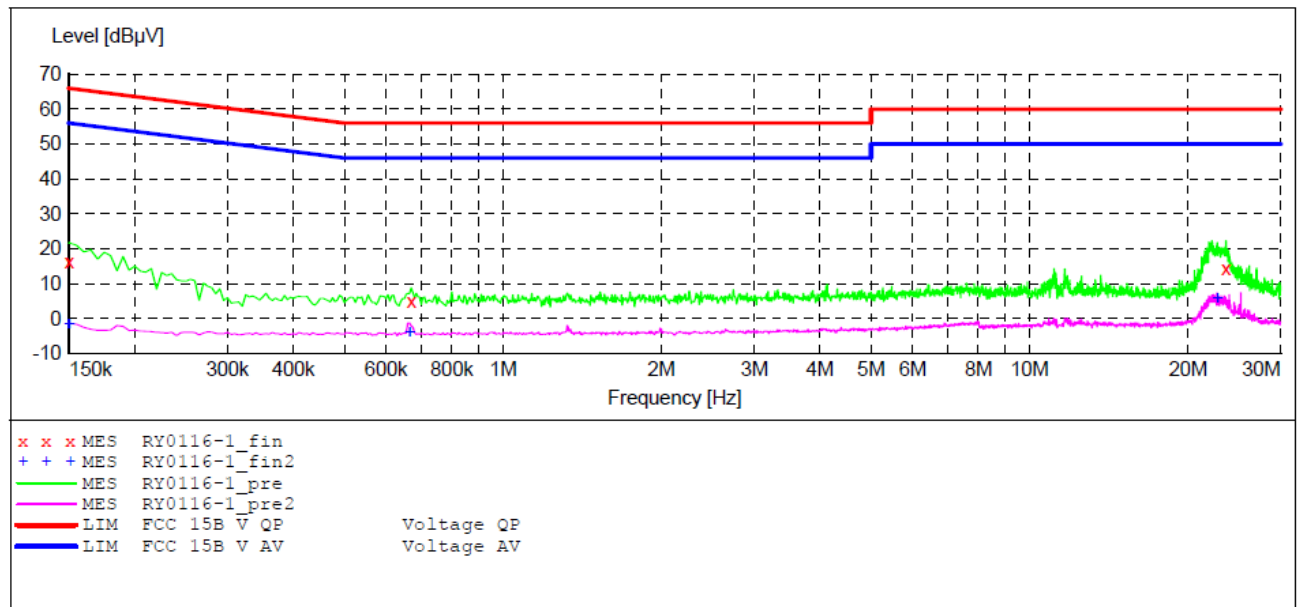
CONDUCTED EMISSION STANDARD FCC PART15 B

EUT: Receiver M/N:QT-14R
 Manufacturer: QIAOHUA
 Operating Condition: RX
 Test Site: 1#Shielding Room
 Operator: Ricky
 Test Specification: N 230V/50Hz
 Comment: Report No.:ATE20150136
 Start of Test: 1/16/2015 / 10:19:13AM

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

Short Description: _SUB_STD_VTERM2 1.70

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	30.0 MHz	4.5 kHz	QuasiPeak	1.0 s	9 kHz	NSLK8126 2008
Average						



MEASUREMENT RESULT: "RY0116-1_fin"

1/16/2015 10:25AM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.150000	16.40	10.5	66	49.6	QP	N	GND
0.670000	4.90	10.8	56	51.1	QP	N	GND
23.625000	14.30	11.5	60	45.7	QP	N	GND

MEASUREMENT RESULT: "RY0116-1_fin2"

1/16/2015 10:25AM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.150000	-1.70	10.5	56	57.7	AV	N	GND
0.665000	-4.20	10.8	46	50.2	AV	N	GND
22.725000	5.60	11.4	50	44.4	AV	N	GND

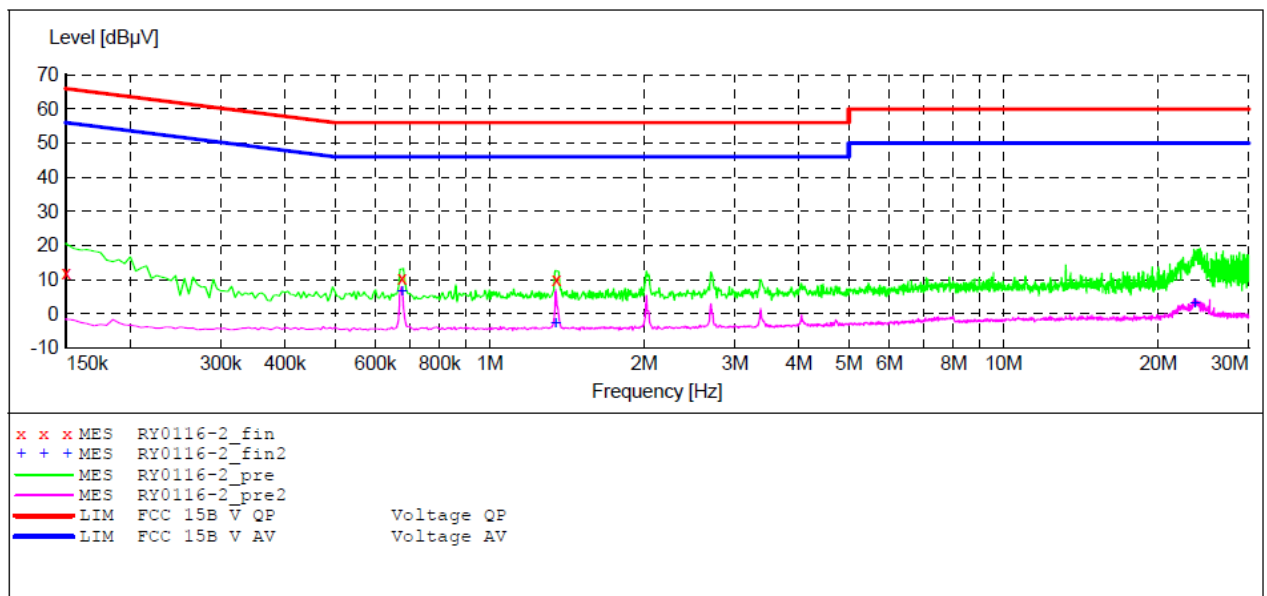
CONDUCTED EMISSION STANDARD FCC PART15 B

EUT: Receiver M/N:QT-14R
 Manufacturer: QIAOHUA
 Operating Condition: RX
 Test Site: 1#Shielding Room
 Operator: Ricky
 Test Specification: L 230V/50Hz
 Comment: Report No.:ATE20150136
 Start of Test: 1/16/2015 / 10:26:00AM

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

Short Description: _SUB_STD_VTERM2 1.70

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	30.0 MHz	4.5 kHz	QuasiPeak	1.0 s	9 kHz	NSLK8126 2008
Average						



MEASUREMENT RESULT: "RY0116-2_fin"

1/16/2015 10:29AM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.150000	12.10	10.5	66	53.9	QP	L1	GND
0.675000	10.50	10.8	56	45.5	QP	L1	GND
1.350000	10.00	10.9	56	46.0	QP	L1	GND

MEASUREMENT RESULT: "RY0116-2_fin2"

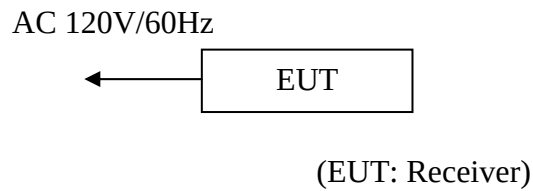
1/16/2015 10:29AM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.675000	6.60	10.8	46	39.4	AV	L1	GND
1.345000	-2.80	10.9	46	48.8	AV	L1	GND
23.575000	2.80	11.5	50	47.2	AV	L1	GND

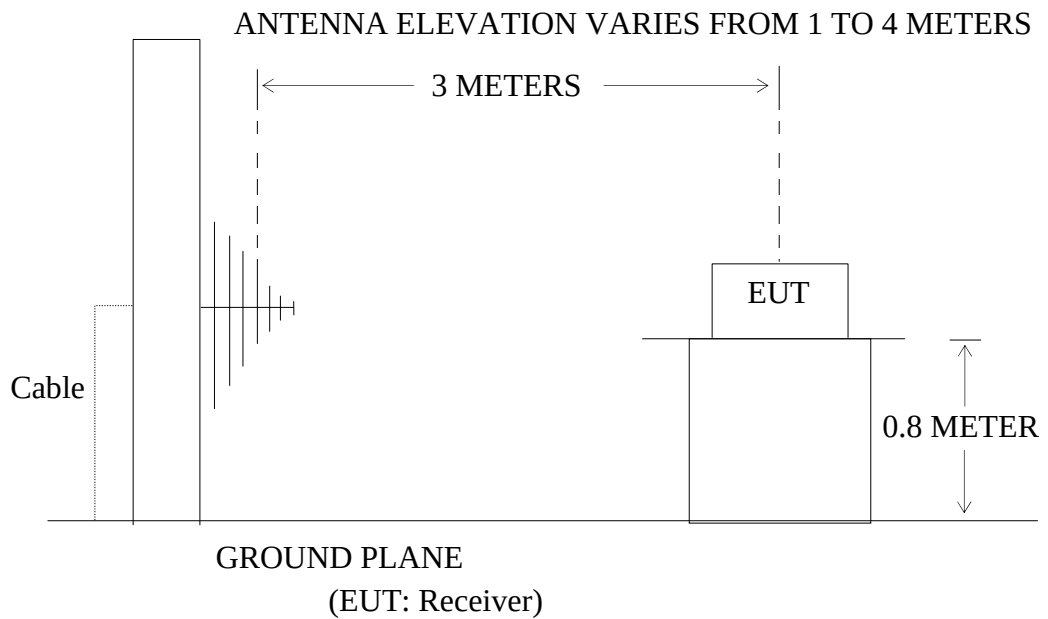
5. RADIATED EMISSION MEASUREMENT

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.

Remark: Receiver is tested with 400W Metal Fog Machine model:FM400-E

5.3.1.Receiver

Model Number: QT-14R

Serial Number: N/A

Manufacturer: SHENZHEN QIAOHUA INDUSTRIES LIMITED

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 receiver (R&S ESCS30) is set at 120kHz from 30MHz to 5000MHz.

The frequency range from 30MHz to 5000MHz is checked.

5.6.Radiated Emission Noise Measurement Result

PASS.

Model Number: QT-14R								
Test mode: RX								
Horizontal	No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
	1	223.0630	35.05	-19.91	15.14	46.00	-30.86	QP
	2	357.1925	33.67	-16.02	17.65	46.00	-28.35	QP
	3	455.1888	41.41	-14.55	26.86	46.00	-19.14	QP
Vertical	No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
	1	223.0630	34.70	-19.91	14.79	46.00	-31.21	QP
	2	299.6441	34.80	-17.87	16.93	46.00	-29.07	QP
	3	476.4624	31.86	-14.20	17.66	46.00	-28.34	QP
ABOVE1G								
Horizontal	No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
	1	2130.048	41.41	-8.43	32.98	54.00	-21.02	peak
	2	2603.663	42.07	-6.76	35.31	54.00	-18.69	peak
	3	3717.803	39.75	-2.19	37.56	54.00	-16.44	peak
Vertical	No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
	1	2140.419	41.98	-8.44	33.54	54.00	-20.46	peak
	2	2949.377	41.55	-5.57	35.98	54.00	-18.02	peak
	3	4077.258	41.77	-1.15	40.62	54.00	-13.38	peak



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Report No.: ATE20150136

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Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: Ricky2015 #95

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Receiver

Mode: RX

Model: QT-14R

Manufacturer: QIAOHUA

Polarization: Vertical

Power Source: AC 120V/60Hz

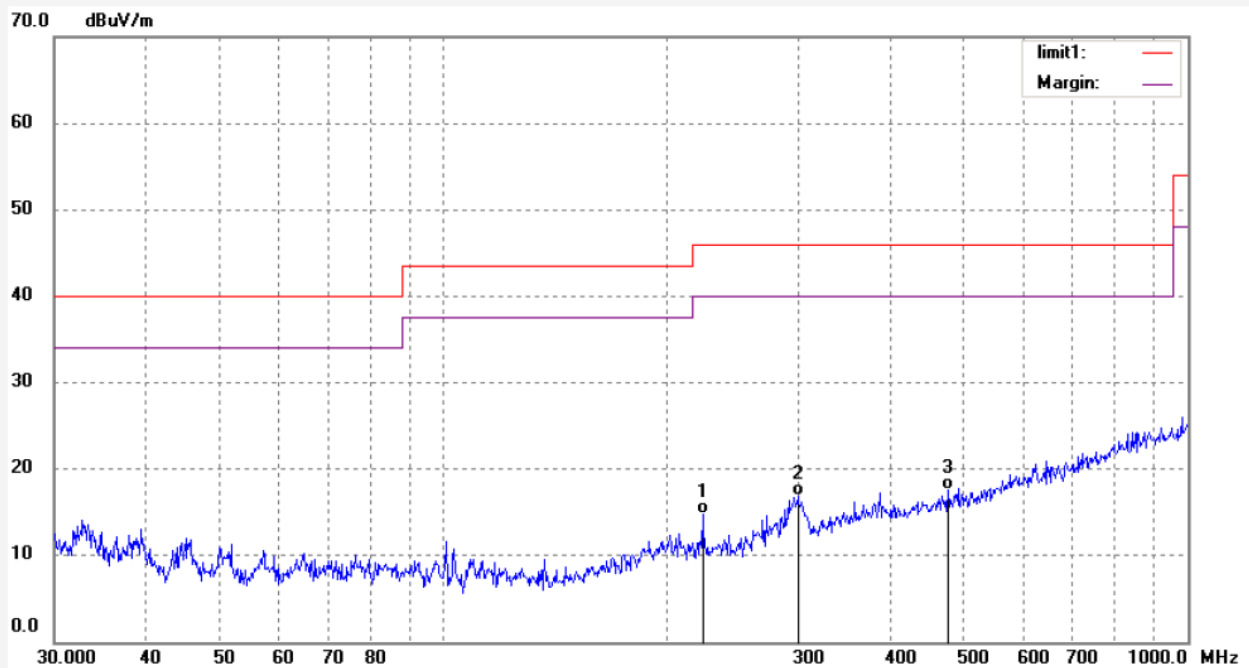
Date: 15/01/21/

Time: 9/03/16

Engineer Signature: STAR

Distance: 3m

Note: Report No.:ATE20150136



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	223.0630	34.70	-19.91	14.79	46.00	-31.21	QP			
2	299.6441	34.80	-17.87	16.93	46.00	-29.07	QP			
3	476.4624	31.86	-14.20	17.66	46.00	-28.34	QP			



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Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: Ricky2015 #94

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Receiver

Mode: RX

Model: QT-14R

Manufacturer: QIAOHUA

Polarization: Horizontal

Power Source: AC 120V/60Hz

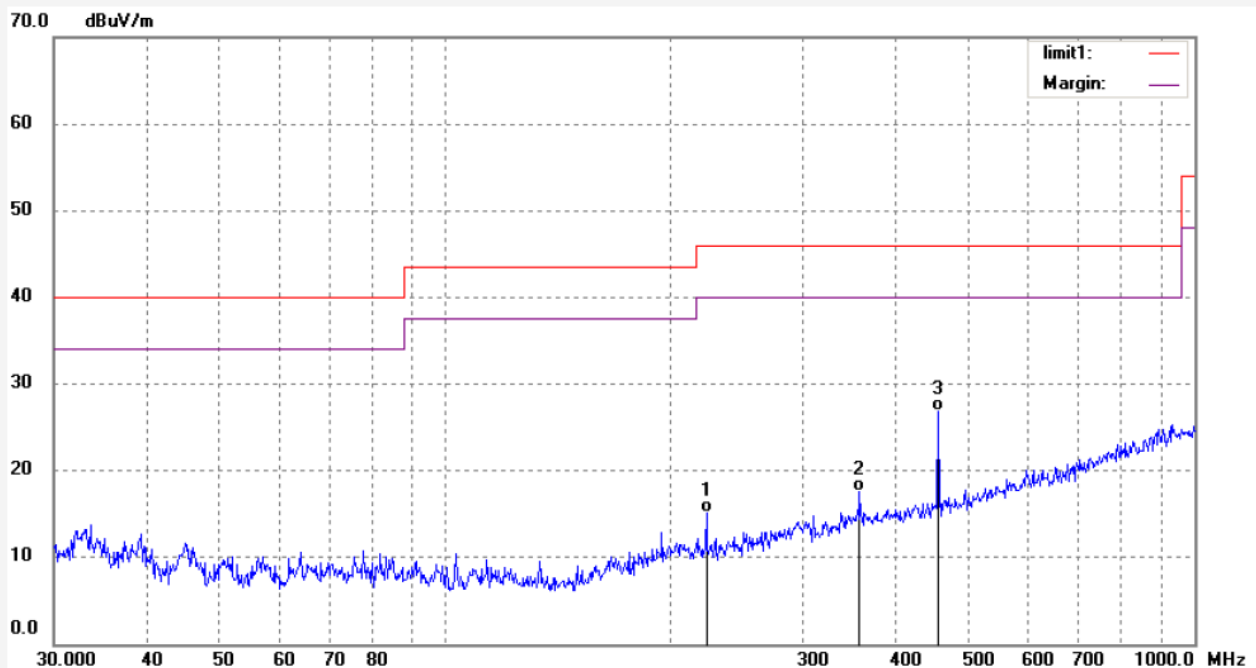
Date: 15/01/21/

Time: 9/01/47

Engineer Signature: STAR

Distance: 3m

Note: Report No.:ATE20150136



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	223.0630	35.05	-19.91	15.14	46.00	-30.86	QP			
2	357.1925	33.67	-16.02	17.65	46.00	-28.35	QP			
3	455.1888	41.41	-14.55	26.86	46.00	-19.14	QP			



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Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: Ricky2015 #99

Standard: FCC PK

Test item: Radiation Test

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

EUT: Receiver

Mode: RX

Model: QT-14R

Manufacturer: QIAOHUA

Polarization: Horizontal

Power Source: AC 120V/60Hz

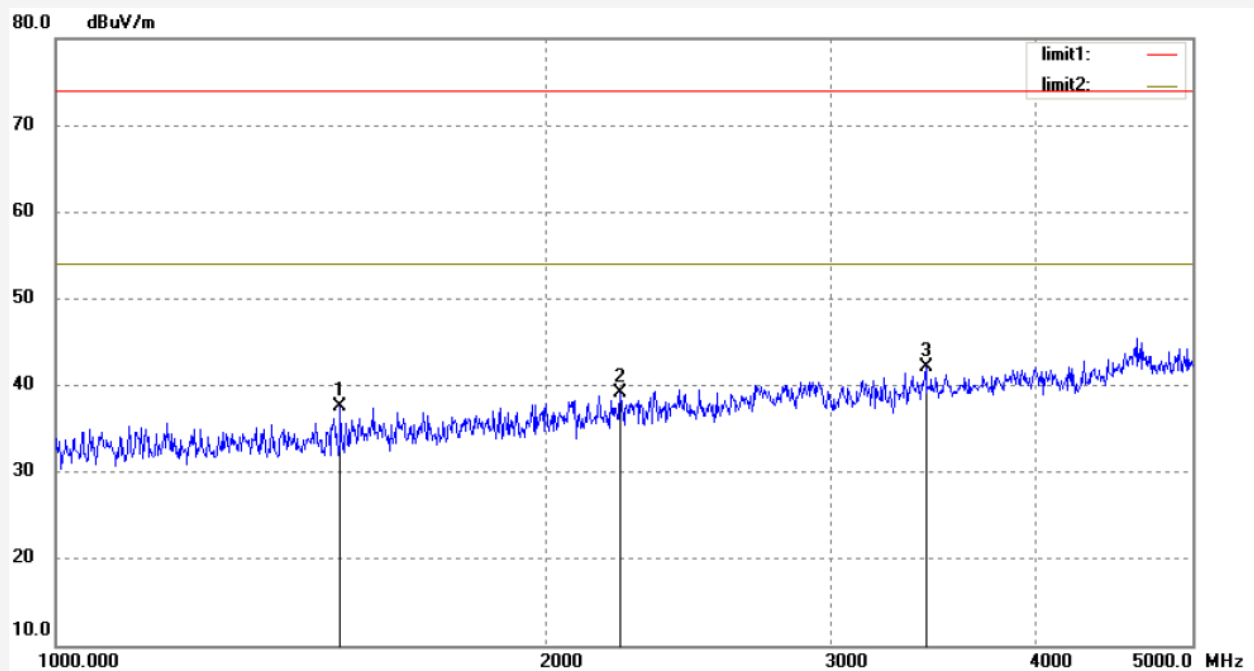
Date: 2015/01/21

Time: 12:12:05

Engineer Signature: STAR

Distance: 3m

Note: Report No.:ATE20150136



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	1496.560	49.05	-11.51	37.54	74.00	-36.46	peak			
2	2225.233	47.27	-8.17	39.10	74.00	-34.90	peak			
3	3428.680	45.51	-3.48	42.03	74.00	-31.97	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 #98

Standard: FCC PK

Test item: Radiation Test

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

EUT: Receiver

Mode: RX

Model: QT-14R

Manufacturer: QIAOHUA

Polarization: Vertical

Power Source: AC 120V/60Hz

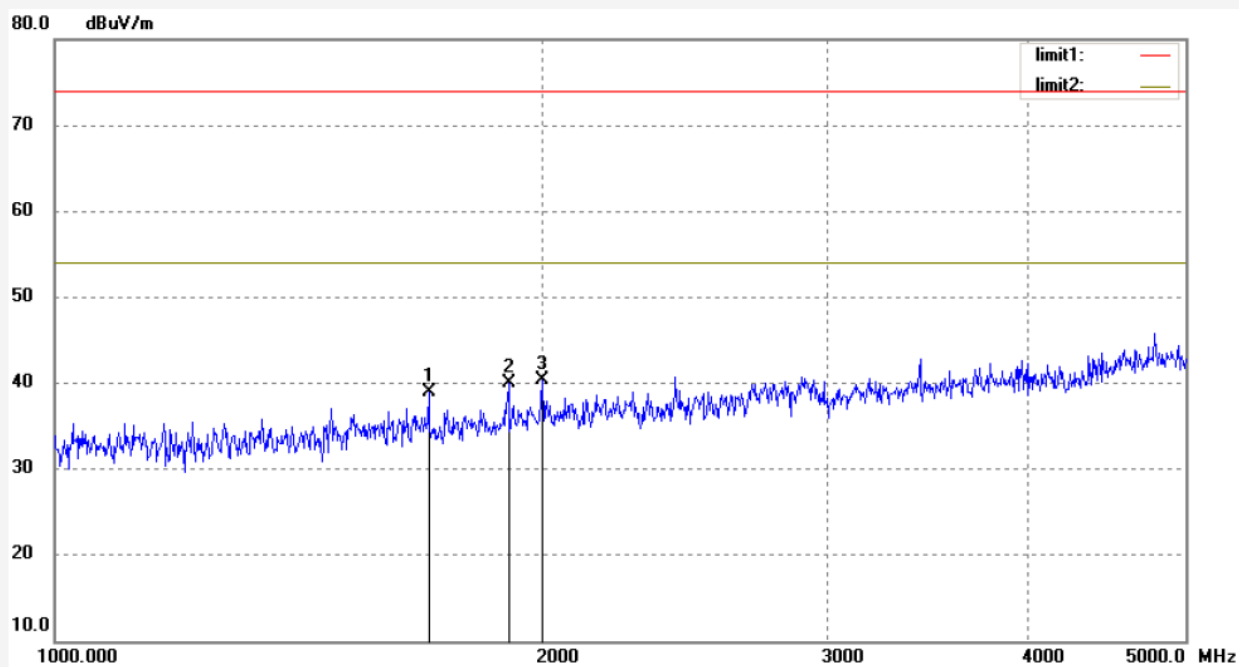
Date: 2015/01/21

Time: 12:11:01

Engineer Signature: STAR

Distance: 3m

Note: Report No.:ATE20150136



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	1703.528	49.25	-10.25	39.00	74.00	-35.00	peak			
2	1907.974	49.62	-9.60	40.02	74.00	-33.98	peak			
3	2002.941	49.25	-8.90	40.35	74.00	-33.65	peak			