

EMC TEST REPORT

No. SH12060514-001

Applicant : SHANGHAI YILIQI CHILDREN'S BICYCLE CO., LTD.
ALLEY 95, LANGHUA ROAD, LANGXIA INDUSTRIAL
PARK JINSHAN DISTRICT, SHANGHAI, CHINA

Manufacturer : SHANGHAI YILIQI CHILDREN'S BICYCLE CO., LTD.
ALLEY 95, LANGHUA ROAD, LANGXIA INDUSTRIAL
PARK JINSHAN DISTRICT, SHANGHAI, CHINA

Equipment : Remote Controller

Type/Model : 9017238

SUMMARY

The equipment complies with the requirements according to the following standard(s):

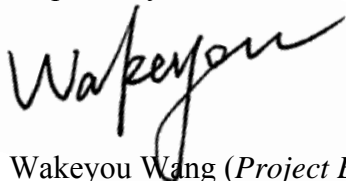
47CFR Part 15 (2010): Radio Frequency Devices

ANSI C63.4 (2009): American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

ANSI C63.10 (2009): American National Standard for Testing Unlicensed Wireless Devices

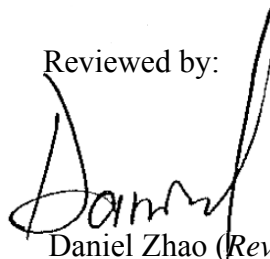
Date of issue: July 12, 2012

Prepared by:



Wakeyou Wang (*Project Engineer*)

Reviewed by:



Daniel Zhao (*Reviewer*)



Description of Test Facility

Name: Intertek Testing Services Limited Shanghai
Address: Building No.86, 1198 Qinzhou Road(North), Shanghai 200233, P.R. China

FCC Registration Number: 236597
IC Assigned Code: 2042B-1

Name of contact: Steve Li
Tel: +86 21 64956565 ext. 214
Fax: +86 21 54262335 ext. 214

Content

| | |
|---|-----------|
| SUMMARY..... | 1 |
| DESCRIPTION OF TEST FACILITY..... | 2 |
| 1. GENERAL INFORMATION | 4 |
| 1.1 Applicant Information..... | 4 |
| 1.2 Identification of the EUT | 4 |
| 1.3 Technical specification | 5 |
| 1.4 Mode of operation during the test / Test peripherals used..... | 5 |
| 2. TEST SPECIFICATION | 6 |
| 2.1 Instrument list | 6 |
| 2.2 Test Standard | 6 |
| 3. FUNDAMENTAL & SPURIOUS EMISSION & RESTRICT BAND RADIATED EMISSION | 8 |
| 3.1 Test limit | 8 |
| 3.2 Test Configuration | 9 |
| 3.3 Test procedure and test setup..... | 9 |
| 3.4 Test protocol | 10 |
| 4. POWER LINE CONDUCTED EMISSION | 11 |
| 4.1 Limit..... | 11 |
| 4.2 Test configuration | 11 |
| 4.3 Test procedure and test set up | 12 |
| 4.4 Test protocol | 13 |
| 5. EMISSION BANDWIDTH | 14 |
| 5.1 Test limit | 14 |
| 5.2 Test Configuration | 14 |
| 5.3 Test procedure and test setup | 14 |
| 5.4 Test protocol | 15 |



1. General Information

1.1 Applicant Information

| | |
|---------------------------|---|
| Applicant: | SHANGHAI YILIQI CHILDREN'S BICYCLE CO., LTD. ALLEY 95, LANGHUA ROAD, LANGXIA INDUSTRIAL PARK JINSHAN DISTRICT, SHANGHAI, CHINA |
| Name of contact: | Mr. Sam Guo |
| Tel: | 86-21-57390285 |
| Fax: | 86-21-57391639 |
| Manufacturer: | SHANGHAI YILIQI CHILDREN'S BICYCLE CO., LTD. ALLEY 95, LANGHUA ROAD, LANGXIA INDUSTRIAL PARK JINSHAN DISTRICT, SHANGHAI, CHINA |
| Sample received date: | June 7, 2012 |
| Sample Identification No: | *0120607-11-001* |
| Date of test: | June 7, 2012 ~ July 8, 2012 |

1.2 Identification of the EUT

| | |
|-------------|-------------------|
| Equipment: | Remote Controller |
| Type/model: | 9017238 |
| FCC ID: | OIU-3388YLQ |
| IC: | Not applied |

1.3 Technical specification

| | |
|---------------------------|---|
| Operation Frequency Band: | 27.145MHz - 27.145MHz |
| Modulation: | FSK |
| Antenna Designation: | Rod antenna, non-standardized connector |
| Gain of Antenna: | 1.2dBi |
| Rating: | Battery: DC 3V Working frequency: 27.145MHz |
| Description of EUT: | There is one model only. The EUT transmits RF signal to control the working condition of the corresponding receiver. |
| Channel Description: | There is one channel only, namely 27.145MHz. |

1.4 Mode of operation during the test / Test peripherals used

Within this test report, EUT was tested with modulation and tested under its rating voltage and frequency.

For the EUT is handheld device, it was set up and tested in three axes (X, Y and Z). The three axes were tested one by one while the test receiver worked as “max hold” continuously and the highest reading among the whole test procedure was recorded.

2. Test Specification

2.1 Instrument list

| Equipment | Type | Manu. | Internal no. | Cal. Date | Due date |
|-----------------------|--|-------------------|--------------|------------|------------|
| Test Receiver | ESIB 26 | R&S | EC 3045 | 2011-10-21 | 2012-10-20 |
| Semi-anechoic chamber | - | Albatross project | EC 3048 | 2012-5-21 | 2013-5-20 |
| Bilog Antenna | CBL 6112D | TESEQ | EC 4206 | 2011-5-16 | 2013-5-15 |
| Horn antenna | HF 906 | R&S | EC 3049 | 2011-5-13 | 2013-5-12 |
| Pre-amplifier | Pre-amp 18 | R&S | EC 3222 | 2012-4-12 | 2013-4-11 |
| Test Receiver | ESCS 30 | R&S | EC 2107 | 2011-10-21 | 2012-10-20 |
| A.M.N. | ESH2-Z5 | R&S | EC 3119 | 2012-1-9 | 2013-1-8 |
| A.M.N. | ESH3-Z5 | R&S | EC 2109 | 2012-1-10 | 2013-1-9 |
| High Pass Filter | WHKX 1.0/15G-10SS | Wainwright | EC4297-1 | 2012-2-8 | 2013-2-7 |
| High Pass Filter | WHKX 2.8/18G-12SS | Wainwright | EC4297-2 | 2012-2-8 | 2013-2-7 |
| High Pass Filter | WHKX 7.0/1.8G-8SS | Wainwright | EC4297-3 | 2012-2-8 | 2013-2-7 |
| Band Reject Filter | WRCGV 2400/2483- 2390/2493- 35/10SS | Wainwright | EC4297-4 | 2012-2-8 | 2013-2-7 |
| Loop Antenna | FMZB 1516 | SCHWARZB ECK | / | 2011-11-29 | 2012-11-28 |

2.2 Test Standard

47CFR Part 15 (2010): Radio Frequency Devices

ANSI C63.4 (2009): American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

ANSI C63.10 (2009): American National Standard for Testing Unlicensed Wireless Devices

2.3 Test Summary

This report applies to tested sample only. This report shall not be reproduced in part without written approval of Intertek Testing Service Shanghai Limited.

| TEST ITEM | FCC REFERENCE | RESULT |
|---------------------------------|---------------|--------|
| Fundamental & spurious emission | 15.227 | Pass |
| Power line conducted emission | 15.207 | NA |
| Emission bandwidth | 15.215(c) | Pass |

3. Fundamental & Spurious Emission & Restrict band radiated emission

Test result: **PASS**

3.1 Test limit

The emission shall test through the 10th harmonic or to 40GHz, whichever is lower.

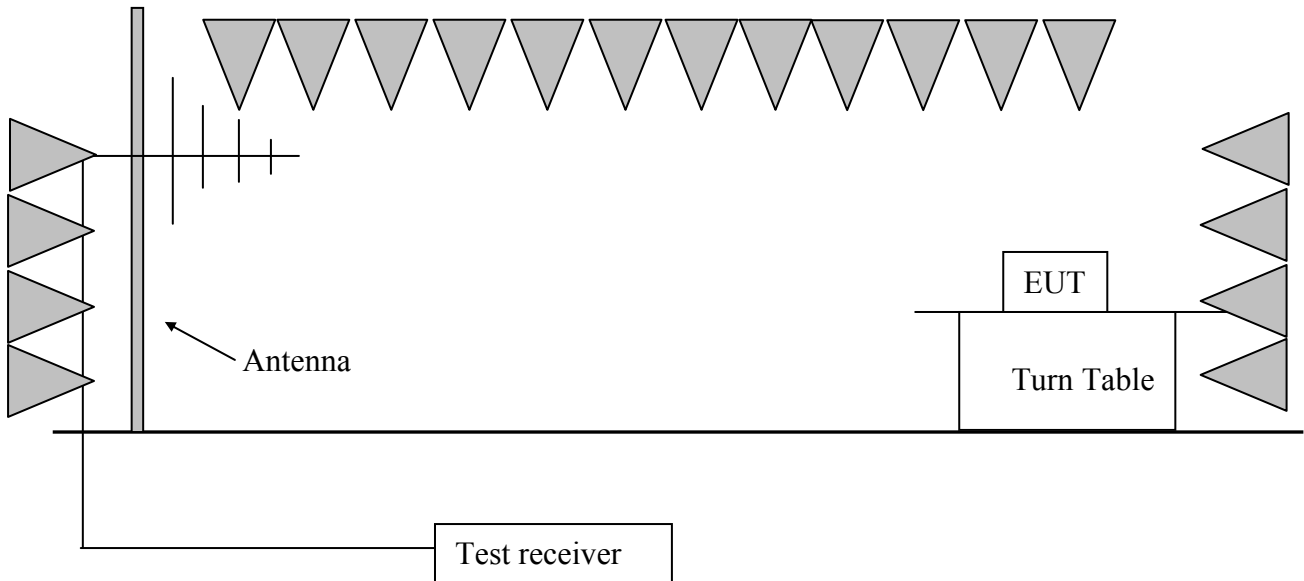
The fundamental emission should comply with the limits below:

| Fundamental Frequency (MHz) | AV limit (dBuV/m) | PK limit (dBuV/m) |
|--------------------------------|----------------------|----------------------|
| ☒26.96 – 27.28 | 80 | 100 |

For emission outside the band 26.96 – 27.28MHz, it should comply with the radiated emission limits specified in §15.209(a) showed as below:

| Frequency (MHz) | Field Strength (dBuV/m) | Measurement Distance (m) |
|--------------------|--------------------------------|-----------------------------|
| 0.009 – 0.490 | 147.6-20lg (F _{kHz}) | 3 |
| 0.490 – 1.705 | 127.6-20lg (F _{kHz}) | 3 |
| 1.705 – 30.0 | 69.5 | 3 |
| 30 - 88 | 40.0 | 3 |
| 88 - 216 | 43.5 | 3 |
| 216 - 960 | 46.0 | 3 |
| Above 960 | 54.0 | 3 |

3.2 Test Configuration



3.3 Test procedure and test setup

The measurement was applied in a semi-anechoic chamber.

For emission test lower than 30MHz, The center of the loop antenna shall be 1 m above the horizontal metal ground plane. The turn table rotated 360 degrees to determine the position of the maximum emission level.

Both X, Y and Z polarities of the loop antenna were assessed and the highest reading was listed in this report.

For emission test higher than 30MHz, the EUT and simulators were placed on a 0.8m high wooden turntable above the horizontal metal ground plane. The turn table rotated 360 degrees to determine the position of the maximum emission level. The EUT was set 3 meters away from the receiving antenna which was mounted on an antenna mast. The antenna moved up and down between from 1meter to 4 meters to find out the maximum emission level.

Both horizontal and vertical polarities of the receiving antenna were assessed and the higher reading was listed in this report.

The radiated emission was measured using the test receiver with the resolutions bandwidth set as:

RBW = 200Hz, VBW = 1kHz (9kHz~0.15MHz)

RBW = 10kHz, VBW = 30kHz (0.15MHz~30MHz)

3.4 Test protocol

| Antenna | Frequency (MHz) | Correct Factor (dB/m) | Corrected Reading (dBuV/m) | Emission Type | Limit (dBuV/m) | Margin | Detector |
|---------|-----------------|-----------------------|----------------------------|---------------|-------------------|--------|----------|
| Y | 27.14 | 26.60 | 79.60 | Fundamental | 100.00 (PK limit) | 20.40 | PK |
| Y | 0.0098 | 19.30 | 70.30 | Spurious | 127.80 | 57.50 | PK |
| X | 0.017 | 20.20 | 48.00 | Spurious | 123.00 | 75.00 | PK |
| Y | 0.090 | 19.70 | 44.20 | Spurious | 108.50 | 64.30 | PK |
| Y | 26.96 | 26.60 | 68.10 | Spurious | 69.50 | 1.40 | PK |
| Y | 27.28 | 26.60 | 65.50 | Spurious | 69.50 | 4.00 | PK |
| V | 54.09 | 9.55 | 37.60 | Spurious | 40.00 | 2.40 | QP |
| H | 216.61 | 12.70 | 26.90 | Spurious | 46.00 | 19.10 | PK |
| H | 488.76 | 19.60 | 32.20 | Spurious | 46.00 | 13.80 | PK |

Remark: 1. Correct Factor = Antenna Factor + Cable Loss
2. Corrected Reading = Original Receiver Reading + Correct Factor
3. Margin = limit - Corrected Reading

Example: Assuming Antenna Factor = 20.20dB/m, Cable Loss = 2.00dB,
Original Receiver Reading = 10.00dBuV, limit = 40.00dBuV/m.
Then Correct Factor = 20.20 + 2.00 = 22.20dB/m; Corrected Reading = 10dBuV + 22.20dB/m = 32.20dBuV/m; Margin = 40.00dBuV/m - 32.20dBuV/m = 7.80dB.

Calculating the AV value according to the duty cycle

| Antenna | Frequency (MHz) | PK Reading (dBuV/m) | Correct Factor (dB) | AV Reading (dBuV/m) | AV Limit (dBuV/m) | Margin (dB) |
|---------|-----------------|---------------------|---------------------|---------------------|-------------------|-------------|
| Y | 27.14 | 79.60 | -4.20 | 75.40 | 80.00 | 4.60 |

Remark: 1. Correct Factor = 20lg (duty cycle) = 20lg (0.620) = -4.20
2. AV Reading = PK Reading + Correct Factor
3. Margin = AV limit - AV Reading

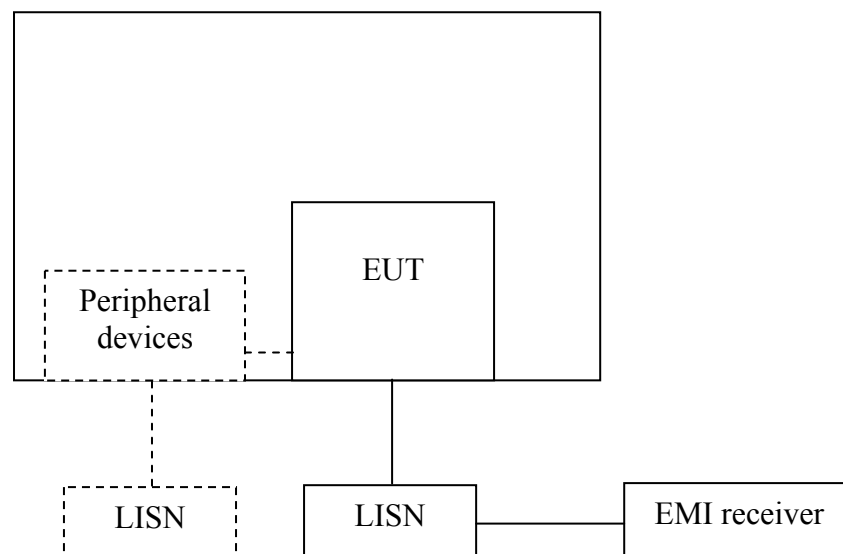
4. Power line conducted emission

Test result: NA

4.1 Limit

| Frequency of Emission (MHz) | Conducted Limit (dBuV) | |
|--|------------------------|------------|
| | QP | AV |
| 0.15-0.5 | 66 to 56* | 56 to 46 * |
| 0.5-5 | 56 | 46 |
| 5-30 | 60 | 50 |
| * Decreases with the logarithm of the frequency. | | |

4.2 Test configuration



☐ For table top equipment, wooden support is 0.8m height table

☐ For floor standing equipment, wooden support is 0.1m height rack.

4.3 Test procedure and test set up

The EUT are connected to the main power through a line impedance stabilization network (LISN). This provides a $50\Omega/50\mu\text{H}$ coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a $50\Omega/50\mu\text{H}$ coupling impedance with 50Ω termination.

Both sides (Line and Neutral) of AC line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4 on conducted measurement. The bandwidth of the test receiver is set at 9 kHz.

4.4 Test protocol

Power line: L

| Frequency | Correct Factor (dB) | Corrected Reading (dBuV) | | Limit (dBuV) | | Margin (dB) | |
|---|---------------------|--------------------------|----|--------------|----|-------------|----|
| | | QP | AV | QP | AV | QP | AV |
| - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - |
| Remark: 1. Correction Factor (dB) = LISN Factor (dB) + Cable Loss (dB). 2. Margin (dB) = Limit - Corrected Reading. 3. If the margin higher than 20dB, it would be marked as *. | | | | | | | |

Power line: N

| Frequency | Correct Factor (dB) | Corrected Reading (dBuV) | | Limit (dBuV) | | Margin (dB) | |
|---|---------------------|--------------------------|----|--------------|----|-------------|----|
| | | QP | AV | QP | AV | QP | AV |
| - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - |
| Remark: 1. Correction Factor (dB) = LISN Factor (dB) + Cable Loss (dB). 2. Margin (dB) = Limit - Corrected Reading. 3. If the margin higher than 20dB, it would be marked as *. | | | | | | | |

5. Emission Bandwidth

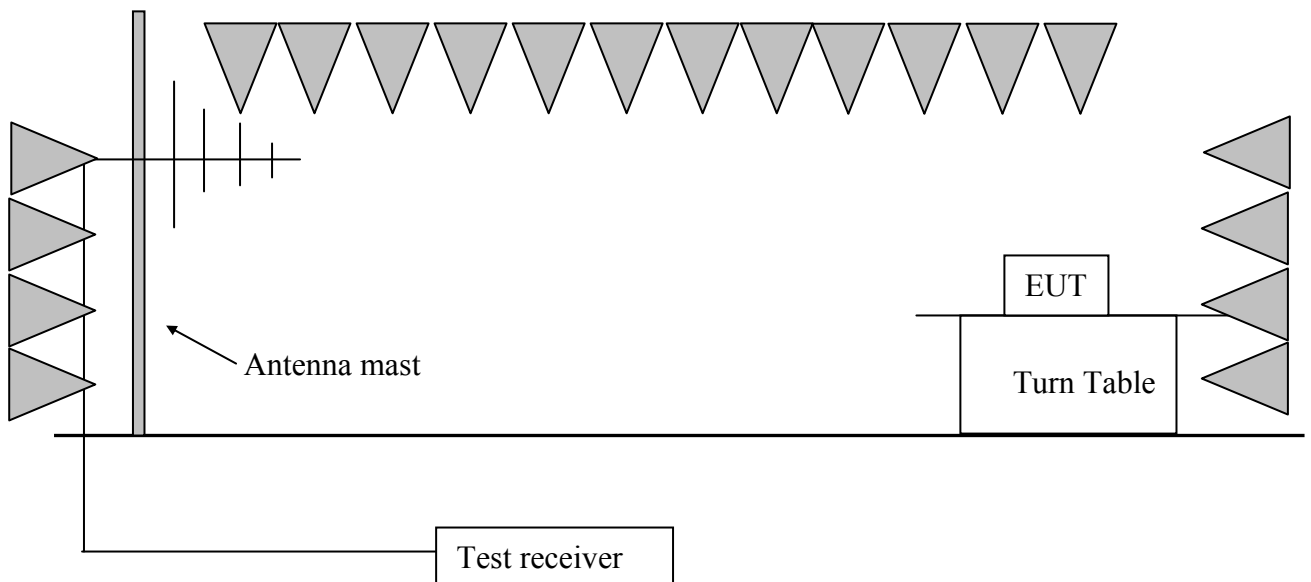
Test Status: Pass

5.1 Test limit

The EUT must be designed to ensure that the 20 dB bandwidth of the emission is contained within the frequency band designated in the rule.

If the frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within at least the central 80% of the permitted band in order to minimize the possibility of out-of band operation.

5.2 Test Configuration



5.3 Test procedure and test setup

Please refer to clause 3.2 of this report.

5.4 Test protocol

Temperature : 25 °C
Relative Humidity : 55 %

| Channel | Emission Bandwidth (MHz) | 80% of Permitted Band (MHz) |
|---------|-----------------------------|--------------------------------|
| 1 | 27.122 – 27.174 | 26.992- 27.248 |