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No.: HM150945

Applicant: Toy Century Ind. Co., Ltd.

Description of Samples: Model name: Walkie Talkie Base Station

Model no.: TC49MHZWTBS

Brand name: N/A

FCC ID: QXATC49MHZWTBS

Date Samples Received: 2004-02-16

Date Tested: 2004-03-19

Investigation Requested: FCC Part 15 Subpart C

Conclusions: See the attached sheets for details

Remarks: ----

K C Lee, EMC for Chief Executive

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CONCLUSIONS

The submitted product was deemed to have <u>COMPLIED</u> with the requirements of Federal Communications Commission [FCC] Rules and Regulations Part 15. The tests were performed in accordance with the standards described above and on Section 2.2 in this Test Report.



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1.0 General Details

1.1 Test Laboratory

The Hong Kong Standards and Testing Centre Ltd. EMC Laboratory
10 Dai Wang Street, Taipo Industrial Estate
New Territories, Hong Kong

Telephone: 852 2666 1888 Fax: 852 2664 4353

1.2 Applicant Details Applicant

TOY CENTURY IND. CO., LTD. Unit 1010-1015, 10/F., Tower B, New Mandarin Plaza, No. 14 Science Museum Road, Tsim Sha Tsui East, Kowloon, Hong Kong

HKSTC Code Number for Applicant

TOC009

Manufacturer

TOY CENTURY IND. CO., LTD. Unit 1010-1015, 10/F., Tower B, New Mandarin Plaza, No. 14 Science Museum Road, Tsim Sha Tsui East, Kowloon, Hong Kong



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1.3 Equipment Under Test [EUT] Description of Sample

Model Name: Walkie Talkie Base Station
Manufacturer: Toy Century Industrial Co, Ltd.

Brand Name: N/A

Model Number: TC49MHZWTBS

Input Voltage: 9Vd.c ("6F22" size battery x 1)

1.3.1 Description of EUT Operation

The Equipment Under Test(EUT) is an Toy Century Industrial Co, Ltd.., Walkie Talkie Base Station. The transmitter is a 2 button transmitter. The EUT continues to transmit while button is being pressed. It is voice transmission, Modulation by Mic and type is frequency modulation.

1.4 Date of Order

2004-02-16

1.5 Submitted Sample(s):

1 Sample per model

1.6 Test Duration

2004-03-19

1.7 Country of Origin

China



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1.8 Additional Information of EUT

| | Submitted | Not Available |
|------------------------------------|------------------------|---------------|
| User Manual | \boxtimes | |
| Part List | \boxtimes | |
| Circuit Diagram | \boxtimes | |
| Printed Circuit Board [PCB] Layout | \boxtimes | |
| Block diagram | \boxtimes | |
| FCC ID Label | $\overline{\boxtimes}$ | |



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2.0 Technical Details

2.1 Investigations Requested

Perform ElectroMagnetic Interference measurement in accordance with FCC 47CFR [Codes of Federal Regulations] Part 15 and ANSI C63.4:2003 for FCC Certification.

2.2 Test Standards and Results Summary Tables

| EMISSION | | | | | | | | | | | |
|--|------------------|-----------------|----------|-------------|-----------|-------------|--|--|--|--|--|
| | Results Summary | | | | | | | | | | |
| Test Condition | Test Requirement | Test Method | Class / | Te | est Resul | t | | | | | |
| | | | Severity | Pass | Failed | N/A | | | | | |
| Field Strength of Fundamental Emissions & Spurious Emissions | FCC 47CFR 15.235 | ANSI C63.4:2003 | N/A | \boxtimes | | | | | | | |
| Radiated Emissions, 30MHz to 1GHz | FCC 47CFR 15.209 | ANSI C63.4:2003 | Class B | | | | | | | | |
| Conducted Emissions on AC, 0.15MHz to 30MHz | FCC 47CFR 15.207 | ANSI C63.4:2003 | Class B | | | \boxtimes | | | | | |

Note: N/A - Not Applicable



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3.0 Test Results

3.1 Emission

3.1.1 Radiated Emissions (30 – 1000MHz)

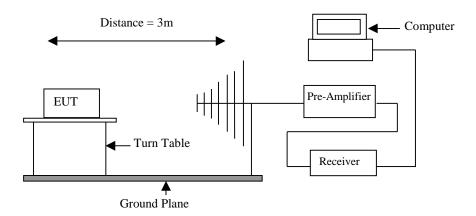
Test Requirement: FCC 47CFR 15.109
Test Method: ANSI C63.4:2003
Test Date: 2004-03-19
Mode of Operation: On mode

Test Method:

The sample was placed 0.8m above the ground plane on the OATS *. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.

*: OATS [Open Area Test Site] located at HKSTC with a metal ground plane filed with the FCC pursuant to section 2.948 of the FCC rules, with Registration Number: 90657.

Test Setup:





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Limits for Field Strength of Fundamental Emissions [FCC 47CFR 15.235]:

| Frequency Range of | Field Strength of | Field Strength of |
|--------------------|----------------------|----------------------|
| Fundamental | Fundamental Emission | Fundamental Emission |
| | [Peak] | [Average] |
| [MHz] | [μV/m] | [μV/m] |
| 49.82-49.90 | 100.000 | 10.000 |

Results: Transmitter

| Field Strength of Fundamental Emissions | | | | | | | | | | |
|---|------------|------------|----------|----------|-----------|------------|--|--|--|--|
| | Peak Value | | | | | | | | | |
| Frequency | Measured | Correction | Field | Field | Limit @3m | E-Field | | | | |
| | Level @3m | Factor | Strength | Strength | | Polarity | | | | |
| MHz | dBμV/m | dBμV/m | dBμV/m | μV/m | μV/m | | | | | |
| 49.86 | 42.8 | 10.2 | 53.0 | 446.7 | 100,000 | Horizontal | | | | |

| Field Strength of Fundamental Emissions Average | | | | | | | | | |
|--|-----------|------------|----------|----------|-----------|------------|--|--|--|
| Frequency | Measured | Correction | Field | Field | Limit @3m | E-Field | | | |
| | Level @3m | Factor | Strength | Strength | | Polarity | | | |
| MHz | dBμV/m | dBμV/m | dBμV/m | μV/m | μV/m | | | | |
| 49.86 | 42.6 | 10.2 | 52.8 | 436.5 | 10,000 | Horizonta; | | | |

Remarks:

According to FCC 47CFR15.35, the limit on the radio frequency emissions as measured using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit for the frequency being investigated unless a different peak emission limit is otherwise specified in the rules.

For effective averaging, the bandwidth of the video filter must be smaller than the resolution bandwidth. The higher the ratio of resolution bandwidth to video bandwidth, the greater the averaging will be recorded. Below setting for HP8572A EMI Receiver.

Resolution Bandwidth =3MHz Video Bandwidth =1Hz

Correction Factor included Antenna Factor and Cable Attenuation.

Calculated measurement uncertainty : 30MHz to 1GHz ±4.1dB



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Limits for Radiated Emissions [FCC 47 CFR 15.209 Class B]:

| Frequency Range [MHz] | Quasi-Peak Limits [μV/m] |
|--------------------------|-----------------------------|
| 30-88 | 100 |
| 88-216 | 150 |
| 216-960 | 200 |
| Above960 | 500 |

The emission limits shown in the above table are based on measurement employing a CISPR quasi-peak detector and above 1000MHz are based on measurements employing an average detector.

Results: Transmitter

| Radiated Emissions Quasi-Peak | | | | | | | | | |
|----------------------------------|----------|--------|------------|----------|---------|---|---------|-----------|------------|
| Frequency | Me | asured | Correction | <u> </u> | Field | Ì | Field | Limit @3m | E-Field |
| ' ' | Lev | el @3m | Factor | S | trength | S | trength | | Polarity |
| MHz | dE | 3μV/m | dBμV/m | d | BμV/m | | μV/m | μV/m | _ |
| 99.72 | | 24.2 | 11.0 | | 35.2 | | 57.5 | 150 | Horizontal |
| 149.58 | ٧ | 1.0 | 9.8 | ٧ | 10.8 | ٧ | 3.5 | 150 | Vertical |
| 199.44 | < | 1.0 | 11.5 | ٧ | 12.5 | ٧ | 4.2 | 150 | Vertical |
| 249.30 | < | 1.0 | 15.9 | ٧ | 16.9 | ٧ | 7.0 | 200 | Vertical |
| 299.16 | | 23.1 | 16.9 | | 40.0 | | 100.0 | 200 | Horizontal |
| 349.02 | ٧ | 1.0 | 17.2 | ٧ | 18.2 | ٧ | 8.1 | 200 | Vertical |
| 398.88 | ' | 1.0 | 18.8 | ٧ | 19.8 | ٧ | 9.8 | 200 | Vertical |
| 448.74 | ٧ | 1.0 | 19.7 | ٧ | 20.7 | ٧ | 10.8 | 200 | Vertical |
| 498.60 | ٧ | 1.0 | 20.6 | ٧ | 21.6 | ٧ | 12.0 | 200 | Vertical |

Remarks:

Correction Factor included Antenna Factor and Cable Attenuation.

Calculated measurement uncertainty : 30MHz to 1GHz ±4.1dB



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Limits for Radiated Emissions [FCC 47 CFR 15.109 Class B]:

| Frequency Range | Quasi-Peak Limits |
|-----------------|-------------------|
| [MHz] | [μV/m] |
| 30-88 | 100 |
| 88-216 | 150 |
| 216-960 | 200 |
| Above960 | 500 |

The emission limits shown in the above table are based on measurement employing a CISPR quasi-peak detector and above 1000MHz are based on measurements employing an average detector.

Results: Receiver

| Radiated Emissions Quasi-Peak | | | | | | | | | |
|----------------------------------|---|--------|--------|---|---------|---|---------|--------------|------------|
| Frequency | | | | | | | | | |
| rrequeries | _ | el @3m | Factor | S | trength | | trength | Limit @ Oili | Polarity |
| MHz | _ | 3μV/m | dBμV/m | | BμV/m | | μV/m | μV/m | 1 Glarity |
| 49.86 | | 11.4 | 10.2 | | 21.6 | | 12.0 | 100 | Horizontal |
| 99.72 | < | 1.0 | 12.5 | ٧ | 13.5 | ٧ | 4.7 | 150 | Vertical |
| 149.58 | < | 1.0 | 9.8 | ٧ | 10.8 | ٧ | 3.5 | 150 | Vertical |
| 199.44 | < | 1.0 | 11.5 | ٧ | 12.5 | ٧ | 4.2 | 150 | Vertical |
| 249.30 | < | 1.0 | 15.9 | ٧ | 16.9 | ٧ | 7.0 | 200 | Vertical |
| 299.16 | < | 1.0 | 17.4 | ٧ | 18.4 | ٧ | 8.3 | 200 | Vertical |
| 349.02 | < | 1.0 | 17.2 | ٧ | 18.2 | ٧ | 8.1 | 200 | Vertical |
| 398.88 | < | 1.0 | 18.8 | ٧ | 19.8 | ٧ | 9.8 | 200 | Vertical |
| 448.74 | < | 1.0 | 19.7 | ٧ | 20.7 | ٧ | 10.8 | 200 | Vertical |
| 498.60 | < | 1.0 | 20.6 | ٧ | 21.6 | ٧ | 12.0 | 200 | Vertical |

Calculated measurement uncertainty : 30MHz to 1GHz ±4.1dB



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3.1.1 Conducted Emissions (0.15MHz to 30MHz)

Test Requirement: FCC 47CFR 15.107
Test Method: ANSI C63.4:2003
Test Date: 2004-03-19

Mode of Operation: N/A

Results: N/A

The EUT is operated by a single source of internal battery power [located in the battery compartment], therefore power line conducted emission was deemed unnecessary.



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3.2 20dB Bandwidth of Fundamental Emission

Test Requirement: FCC 47 CFR 15.235

Test Method: ANSI C63.4:2003 (Section 13.1.7)

Test Date: 2004-03-19 Mode of Operation: On mode

Test Method:

The bandwidth is measured at an amplitude level reduced from the reference level by a specified ratio. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency. Once the reference level is established, the equipment is conditioned with typical modulating signal to produce the worst-case (i.e. the widest) bandwidth.

Test Setup:

As Test Setup of clause 3.1.1 in this test report.



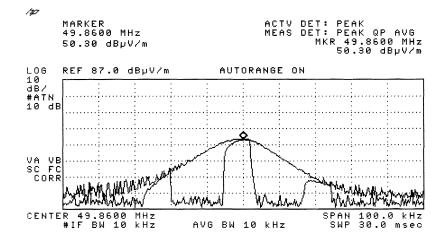
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Limits for 20dB Bandwidth of Fundamental Emission:

| Frequency Range | 20B Bandwidth | FCC Limits |
|-----------------|---------------|--------------------|
| [MHz] | [KHz] | [MHz] |
| 49.86 | 41.2 | within 49.82-49.90 |

20B Bandwidth of Fundamental Emission





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Appendix A

Test Equipment Audit

Radiated Emission

| EQP NO. | DESCRIPTION | MANUFACTURER | MODEL NO. | SERIAL NO. | LAST CAL | | | | | |
|---------|--|---|--------------------------------|--|----------|--|--|--|--|--|
| EM007 | SPECTRUM ANALYZER | HEWLETT PACKARD | HP85660B | 3144A21192 | 14/03/03 | | | | | |
| EM008 | SPECTRUM ANALYZER DISPLAY | HEWLETT PACKARD | HP85662A | 3144A20514 | 14/03/03 | | | | | |
| EM009 | QUASI PEAK ADAPTOR | HEWLETT PACKARD | HP85650A | 3303A01702 | 14/03/03 | | | | | |
| EM010 | RF PRESELECTOR | HEWLETT PACKARD | HP85685A | 3221A01410 | 14/03/03 | | | | | |
| EM011 | ATTENNUATOR/SWITCH | HEWLETT PACKARD | HP11713A | 2508A10595 | 14/03/03 | | | | | |
| EM012 | PRE-AMPLIFIER | HEWLETT PACKARD | HP8449B | 3008A00262 | 14/03/03 | | | | | |
| EM013 | CONTROLLER (COMPUTER), COLOR MONITOR, KEYBOARD & MOUSE FLOPPY DRIVE | HEWLETT PACKARD HEWLETT PACKARD HEWLETT PACKARD | HP9000 HP A1097C HP9133L | 6226A60314 3151J39517 2623A02468 | СМ | | | | | |
| EM020 | HORN ANTENNA | EMCO | 3115 | 4032 | 19/07/00 | | | | | |
| EM022 | LOOP ANTENNA | EMCO | 6502 | 1189-2424 | 04/08/00 | | | | | |
| EM072 | SIGNAL GENERATOR | HEWLETT PACKARD | 8640B | 1948A11892 | N/A | | | | | |
| EM083 | HKSTC OPEN AREA TEST SITE | HKSTC | N/A | N/A | 08/11/02 | | | | | |
| EM131 | PORTABLE SPECTRUM ANALYSER | HEWLETT PACKARD | 8595EM | 3710A00155 | 18/12/01 | | | | | |
| EM145 | EMI TEST RECEIVER | R&S | ESCS 30 | 830245/021 | 02/08/03 | | | | | |
| EM194 | BICONILOG ANTENNA | EMCO | 3142B | 1795 | 14/05/02 | | | | | |
| EM195 | ANTENNA POSITIONING MAST | EMCO | 2075 | 2368 | N/A | | | | | |
| EM196 | MULTI-DEVICE CONTROLLER | EMCO | 2090 | 1662 | N/A | | | | | |

Conducted Emission

| EQP NO. | DESCRIPTION | MANUFACTURER | MODEL NO. | SERIAL NO. | LAST CAL |
|---------|-------------------------------------|----------------------------------|------------|---------------------|----------|
| EM078 | VARIAC | SHANGHAI VOLTAGE | TDGC-3/0.5 | N/A | CM |
| EM081 | SMALL SCREENED ROOM | MIKO INST HK | N/A | N/A | 18/10/02 |
| EM119 | LISN | R&S | ESH3-Z5 | 0831.5518.5 2 | 01/10/02 |
| EM127 | ISOLATION TRANSFORMER 220 TO 300 | WING SUN | N/A | N/A | СМ |
| EM142 | PULES LIMITER | R&S | ESH3Z2 | 357.8810.52 | 03/07/02 |
| EM181 | EMI TEST RECEIVER | R&S | ESIB7 | 100072 | 28/11/01 |
| EM154 | SHIELDING ROOM | SIEMENA MATSUSHITA COMPONENTS | N/A | 803-740-057- 99A | 18/10/02 |
| EM197 | LISN | EMCO | 4825/2 | 1193 | 08/04/03 |

Remarks:

CM Corrective Maintenance N/A Not Applicable or Not Available

TBD To Be Determined



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Appendix B

Photographs of EUT

Front View of the product



Rear View of the product



Inner Circuit Top View



Inner Circuit Bottom View





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Photographs of EUT

Measurement of Radiated Emission Test Set Up



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