



SGS-CSTC Standards Technical Services Co., Ltd. Guangzhou Branch

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Report No.: GZEM180800487803
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FCC ID: 2ABM5-HFX-50

TEST REPORT

Application No.: GZEM1808004878CR
Applicant: Zhong Shan City LI TAI Electronic Industrial Co., Ltd
Address of Applicant: 3rd Industrial District, Wuguishan, ZhongShan City, Guangdong, China
Manufacturer: Zhong Shan City LI TAI Electronic Industrial Co., Ltd
Address of Manufacturer: 3rd Industrial District, Wuguishan, ZhongShan City, Guangdong, China
Factory: Zhong Shan City LI TAI Electronic Industrial Co., Ltd
Address of Factory: 3rd Industrial District, Wuguishan, ZhongShan City, Guangdong, China
Equipment Under Test (EUT):
EUT Name: CD HiFi SYSTEM
FCC ID: 2ABM5-HFX-50
Model No.: HFX-50, HFX-50FM □
□ Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical.
Standard(s) : 47 CFR Part 1.1307, Part 2.1093, KDB 447498
Date of Receipt: 2018-08-21
Date of Test: 2018-08-30 to 2018-09-07
Date of Issue: 2018-09-14

| | |
|---------------------|--------------|
| Test Result: | Pass* |
|---------------------|--------------|

* In the configuration tested, the EUT complied with the standards specified above.



Kobe Jian
Lab Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.

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Guangzhou Branch

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| Revision Record | | | | |
|-----------------|---------|------------|----------|----------|
| Version | Chapter | Date | Modifier | Remark |
| 01 | | 2018-09-14 | | Original |
| | | | | |
| | | | | |
| | | | | |

| | | | |
|--------------------------|---|----------------------------------|--|
| Authorized for issue by: | | | |
| Tested By |  Jackson_Yuan /Project Engineer | 2018-08-30 to 2018-09-07 Date | |
| Checked By |  Ricky_Liu /Reviewer | 2018-09-14 Date | |



2 Test Summary

| Radio Spectrum Technical Requirement | | | | |
|--------------------------------------|---|--------------------|--------------------|--------|
| Item | Standard | Method | Requirement | Result |
| RF Exposure | 47 CFR Part 1.1307, Part 2.1093, KDB 447498 | CFR 47 Part 2.1093 | CFR 47 Part 2.1093 | Pass |



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4 General Information

4.1 Details of E.U.T.

| | |
|----------------------------|---|
| Power Supply: | DC 16V powered by AC/DC adapter as below Model: S060A1603000U Input: AC 100-240V, 50/60Hz, 1500mA Max Output: DC 16V, 3000mA |
| Test Voltage: | AC 120V, 60Hz |
| Cable: | For main unit: DC input ports (unshielded, <3m); FM ANT cables (unshielded, <3m); OPTICAL ports (unshielded, <3m); AUX IN ports (unshielded, <3m); USB ports (unshielded, <3m); earphone ports (unshielded, <3m). For AC/DC adapter: AC mains plug; DC output cable (unshielded, <3m). |
| Bluetooth Version | V4.1 Classic only |
| Antenna Type | Integral Antenna |
| Channel Spacing | 1MHz |
| Modulation Type | GFSK, $\pi/4$ DQPSK |
| Number of Channels | 79 |
| Operation Frequency | 2402MHz to 2480MHz |
| Spectrum Spread Technology | Frequency Hopping Spread Spectrum(FHSS) |
| Antenna Gain | 1 dBi |

4.2 Description of Support Units

| Description | Manufacturer | Model No. | Serial No. |
|---------------|--------------|-------------|-----------------|
| Laptop | Lenovo | T430u | REF. No.SEA1800 |
| BT test board | SGS EMC | RF 07 | RF 07 |
| DVD | PHILIPS | DVP3986K193 | None |
| Earphone | PHILIPS | SHE6000 | REF. No.SEA1000 |
| iPod nano | Apple | A1446 | None |
| Laptop | Lenovo | T430u | REF. No.SEA1800 |
| U-disk | Sandisk | SDCZ60-016G | REF. No.SEA0100 |

4.3 Measurement Uncertainty

| No. | Item | Measurement Uncertainty |
|-----|--|---------------------------------|
| 1 | Radio Frequency | $\pm 5.5 \times 10^{-8}$ |
| 2 | Duty cycle | $\pm 0.57\%$ |
| 3 | Occupied Bandwidth | $\pm 3\%$ |
| 4 | RF Conducted power | $\pm 0.68\text{dB}$ |
| 5 | RF Power Density | $\pm 1.50\text{dB}$ |
| 6 | Conducted Spurious Emissions | $\pm 1.04\text{dB}$ |
| 7 | RF Radiated Power | $\pm 4.5\text{dB}$ (below 1GHz) |
| 8 | RF Radiated Power Radiated Spurious Emission Test | $\pm 4.8\text{dB}$ (above 1GHz) |
| | | $\pm 4.5\text{dB}$ (30MHz-1GHz) |
| 9 | Radiated Spurious Emission Test Temperature | $\pm 4.8\text{dB}$ (1GHz-18GHz) |
| | | $\pm 0.4^\circ\text{C}$ |
| 10 | Humidity | $\pm 1.3\%$ |
| 11 | Supply Voltages | $\pm 1.5\%$ |
| 12 | Time | $\pm 3\%$ |

4.4 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou Branch EMC Laboratory,
198 Kezhu Road, Sciencetech Park, Guangzhou Economic & Technology Development District,
Guangzhou, China 510663

Tel: +86 20 82155555 Fax: +86 20 82075059

No tests were sub-contracted.



4.5 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

● **NVLAP (Lab Code: 200611-0)**

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou EMC Laboratory is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP/NIST). NVLAP Code: 200611-0.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

● **ACMA**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our NVLAP accreditation.

● **SGS UK(Certificate No.: 32), SGS-TUV SAARLAND and SGS-FIMKO**

Have approved SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory as a supplier of EMC TESTING SERVICES and SAFETY TESTING SERVICES.

● **CNAS (Lab Code: L0167)**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been assessed and in compliance with CNAS-CL01:2006 accreditation criteria for testing laboratories (identical to

ISO/IEC 17025:2005 General Requirements) for the Competence of Testing Laboratories.

● **FCC Recognized 2.948 Listed Test Firm(Registration No.: 282399)**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 282399, May 31, 2002.

● **FCC Recognized Accredited Test Firm(Registration No.: 486818)**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been accredited and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Designation Number: CN5016, Test Firm Registration Number: 486818, Jul 13, 2017.

● **Industry Canada (Registration No.: 4620B-1)**

The 3m/10m Alternate Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd., has been registered by Certification and Engineering of Industry Canada for radio equipment testing with Registration No. 4620B-1.

● **VCCI (Registration No.: R-2460, C-2584, G-449 and T-1179)**

The 10m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-2460, C-2584, G-449 and T-1179 respectively.

● **CBTL (Lab Code: TL129)**

SGS-CSTC Standards Technical Services Co., Ltd., E&E Laboratory has been assessed and fully comply with the requirements of ISO/IEC 17025:2005, the Basic Rules, IECEE 01 and Rules of procedure IECEE 02, and the relevant IECEE CB-Scheme Operational documents.



4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None



5 Equipment List

| Conducted Peak Output Power | | | | | |
|-----------------------------|----------------------|----------|--------------|------------|--------------|
| Equipment | Manufacturer | Model No | Inventory No | Cal Date | Cal Due Date |
| EXA Signal Analyzer | Agilent Technologies | N9010A | EMC2138 | 2017-11-15 | 2018-11-14 |
| 6dB Attenuator | HP | 8491A | EMC2062 | 2018-04-04 | 2020-04-03 |
| Test Software JS1120-3 | HangTianXing | V2.6 | GZE100-69 | N/A | N/A |

| General used equipment | | | | | |
|------------------------|--------------|----------|--------------|------------|--------------|
| Equipment | Manufacturer | Model No | Inventory No | Cal Date | Cal Due Date |
| DMM | Fluke | 73 | EMC0006 | 2018-07-20 | 2019-07-19 |
| DMM | Fluke | 73 | EMC0007 | 2018-07-19 | 2019-07-18 |

6 Radio Spectrum Technical Requirement

6.1 RF Exposure

6.1.1 Test Requirement:

CFR 47 Part 2.1093

Limit:

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

$$\left[\frac{\text{(max. power of channel, including tune-up tolerance, mW)}}{\text{(min. test separation distance, mm)}} \right] \cdot \sqrt{f(\text{GHz})} \leq 3.0 \text{ for 1-g SAR and } \leq 7.5 \text{ for 10-g extremity SAR, where}$$

$f(\text{GHz})$ is the RF channel transmit frequency in GHz

Power and distance are rounded to the nearest mW and mm before calculation¹⁷

The result is rounded to one decimal place for comparison

The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion

6.1.2 Conclusion

The Max conducted output power is -2.902 dBm in Lowest channel (2.480 GHz);

The best case gain of the antenna is 1 dBi.

$\text{EIRP} = -2.902 \text{ dBm} + (1 \text{ dBi}) = -1.902 \text{ dBm}$

-1.902 dBm logarithmic terms convert to numeric result is nearly 0.65 mW

According to the formula. calculate the test result:

$$\left[\frac{\text{(max. power of channel, including tune-up tolerance, mW)}}{\text{(min. test separation distance, mm)}} \right] \cdot \sqrt{f(\text{GHz})}$$

General RF Exposure = $(0.65 \text{ mW} / 5 \text{ mm}) \times \sqrt{2.480 \text{ GHz}} = 0.203$ ①

SAR requirement:

$S = 3.0$ ② ;

① < ②.

So the SAR report is not required.



7 Photographs

7.1 EUT Constructional Details

Refer to Appendix A - Photographs of EUT Constructional Details for GZEM1808004878CR

--End of Report--