

198 Kezhu Road, Scientech Park, Guangzhou Economic & Technological

# Development District, Guangzhou, China 510663

#### Telephone: +86 (0) 20 82155555 Fax: +86 (0) 20 82075059

Email: ee.guangzhou@sgs.com Report No.: GZEM181200553903 Page: 1 of 12

# TEST REPORT

Application No.:	GZEM1812005539CR
Applicant:	TCL Entertainment Solutions Limited
Address of Applicant:	7/F, building 22E, 22 science park east avenue, Hong Kong science park, SHATIN, N.T. ,Hong Kong
Manufacturer:	The same as Applicant
Address of Manufacturer:	The same as Applicant
Factory:	Guangzhou Panyu Juda Car Audio Equipment Co., Ltd.
Address of Factory:	Vtrek Industrial Park, Shibei Industrial Road, Dashi Street, Panyu Borough,
	Guangzhou City, Guangdong Province, 511430, P. R. China
Equipment Under Test (EUT	
EUT Name:	Alto 7 2.0CH Sound Bar
	Alto 7+ 2.1CH Sound Bar with Wireless Subwoofer
Model No.:	Alto 7 2.0CH Sound Bar: TS7000, FS7000
	Alto 7+ 2.1CH Sound Bar with Wireless Subwoofer: TS7010 FS7010 ¤
¤	Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical.
Trade Mark:	TCL
Standard(s) :	47 CFR Part 1.1307, Part 2.1093, KDB 447498
Date of Receipt:	2018-12-17
Date of Test:	2018-12-18 to 2018-12-29
Date of Issue:	2019-01-08
Test Result:	Pass*
* In the configuration tested th	
in the conigaration toolog, th	he 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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	Revision Record							
Version Chapter Date Modifier Remark								
01		2019-01-08		Original				

Authorized for issue by:		
Tested By	Jackson Wan Jackson_Yuan /Project Engineer	2018-12-18 to 2018-12-29
Checked By	Ricky_Liu /Reviewer	2019-01-08 Date



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#### **Test Summary** 2

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			

### **¤** Declaration of EUT Family Grouping:

Model No.: TS7010, TS7000, FS7010, FS7000

According to the declaration from the applicant, the electrical circuit design, layout, components used and internal wiring were identical for Alto 7 2.0CH Sound Bar models TS7000 & FS7000 but different in the model name.

Alto 7+ 2.1CH Sound Bar with Wireless Subwoofer model TS7010 & FS7010 are consist of a sound bar as above and a subwoofer referred to test report GZEM181200554102 but different in the model name. Therefore only one model TS7000 was tested in this report.



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#### **General Information** 4

# 4.1 Details of E.U.T.

Power Supply:	AC 100-240V, 50/60Hz
Rated Power:	25W
Test Voltage:	AC 120 V, 60 Hz
Cable:	AC mains (unshielded, 1.5m)
	LINE IN ports (unshielded, <3m)
	IR pass-through ports (with unshielded cables, 2m)
	USB ports (unshielded, <3m)
	OPTICAL (unshielded, <3m)
	HDMI-ARC/CEC (unshielded, <3m)
Antenna Gain	0 dBi
Antenna Type	PCB Antenna
Channel Spacing	1MHz
Modulation Type	GFSK, 8DPSK
Number of Channels	79
Operation Frequency	2402MHz to 2480MHz
Spectrum Spread Technology	Frequency Hopping Spread Spectrum(FHSS)
software	RDA

# 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



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# 4.3 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Radio Frequency	±5.5 x 10 <sup>-8</sup>
2	Duty cycle	±0.57%
3	Occupied Bandwidth	±3%
4	RF Conducted power	±0.68dB
5	RF Power Density	±1.50dB
6	Conducted Spurious Emissions	±1.04dB
7	RF Radiated Power	±4.5dB (below 1GHz)
/	RF Radiated Power	±4.8dB (above 1GHz)
8	Dedicted Spurious Emission Test	±4.5dB (30MHz-1GHz)
0	Radiated Spurious Emission Test	±4.8dB (1GHz-18GHz)
9	Temperature	±0.4 °C
10	Humidity	±1.3%
11	Supply Voltages	±1.5%
12	Time	±3%

### 4.4 Test Location

All tests were performed at:

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

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

No tests were sub-contracted.



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# 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.



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4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions None



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#### **Equipment List** 5

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	

Conducted Peak Output Power							
Equipment Manufacturer Model No Inventory Cal D					Cal Due Date		
EXA Signal Analzer	AgilentTechnologies	N9010A	EMC2138	2018-11-19	2019-11-18		
6dB Attenuator	HP	8491A	EMC2062	2018-04-04	2020-04-03		
Test Software JS1120-3	HangTianXing	V2.6	GZE100-69	N/A	N/A		



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#### 6 **Radio Spectrum Technical Requirement**

# 6.1 RF Exposure

# 6.1.1 Test Requirement:

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess limit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as a mobile device whereby a distance of 0.2m normally can be maintained between the user and the device.

#### (a) Limits for Occupational / Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S)(mW/cm <sup>2</sup> )	Averaging Times  E  <sup>2</sup> , H  <sup>2</sup> or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f)*	6
30-300	61.4	0.163	1.0	6
300-1500			F/300	6
1500-100000			5	6

#### (b) Limits for General Population / Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S)(mW/cm <sup>2</sup> )	Averaging Times  E  <sup>2</sup> , H  <sup>2</sup> or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500			F/1500	30
1500-100000			1.0	30

Note: f=frequency in MHz; \*Plane-wave equivalent power density



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# 6.1.2 MPE Calculation Method

E (V/m)=(30\*P\*G)<sup>0.5</sup>/d Power Density: Pd(W/m<sup>2</sup>)=E<sup>2</sup>/377 E=Electric Field (V/m) P=Peak RF output Power (W) G=EUT Antenna numeric gain (numeric) d= Separation distance between radiator and human body (m) The formula can be changed to

 $Pd = (30^{*}P^{*}G)/(377^{*}d^{2})$ 

From the peak EUT RF output power, the minimum mobile separation distance, d=0.2m, as well as the gain of the used antenna, the RF power density can be obtained.

### 6.1.3 Calculated Result and Limit

Frequency (MHz)	Antenna Gain (Numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm²)	Limit of Power Density (S) (mW/cm <sup>2</sup> )	Test Result
2402	1.000	2.271	1.687	0.00034	1	Complies
2441	1.000	3.22	2.099	0.00042	1	Complies
2480	1.000	3.587	2.284	0.00045	1	Complies

So the SAR report is not required.



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#### **Photographs** 7

# 7.1 EUT Constructional Details

Refer to Appendix B - Photographs of EUT Constructional Details for GZEM1812005539CR-ID.

--End of Report-



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