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Report No.: SHEM151100407602
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1 Cover Page

MPE REPORT

Application No.:	SHEM1511004076CR
Applicant:	Lenbrook Industries Limited
FCC ID:	SVC-PULSEFLEX
IC:	152C-PULSEFLEX
Equipment Under Test (EUT):	
NOTE: The following sample(s) was/were submitted and identified by the client as	
Product Name:	ALL-IN-ONE COMPACT WIRELESS STREAMING MUSIC SYSTEM
Model No.(EUT):	PULSE FLEX
Standards:	FCC Rules 47 CFR §2.1091 KDB447498 D01 General RF Exposure Guidance v06 RSS-102 Issue 5 (March 2015)
Date of Receipt:	2015-10-23
Date of Test:	2015-10-29, to 2015-11-27
Date of Issue:	2016-07-29
Test Result:	Pass*

* In the configuration tested, the EUT detailed in this report complied with the standards specified above.



Parlam Zhan
E&E Section Manager
SGS-CSTC (Shanghai) Co., Ltd.



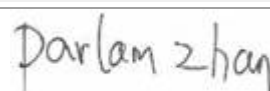
The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

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. All test results in this report can be traceable to National or International Standards.

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2 Version

Revision Record				
Version	Chapter	Date	Modifier	Remark
00	/	2016-07-29	/	Original

Authorized for issue by:			
Engineer	Eddy Zong		
	Print Name		
Clerk	Susie Liu		
	Print Name		
Reviewer	Parlam Zhan		
	Print Name		

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4 General Information

4.1 Client Information

Applicant:	Lenbrook Industries Limited
Address of Applicant:	633 Granite Court, Pickering Ontario, L1W3K1, Canada
Manufacturer:	Lenbrook Industries Limited
Address of Manufacturer:	633 Granite Court, Pickering Ontario, L1W3K1, Canada
Factory:	Hansong (Nanjing) Technology Ltd.
Address of Factory:	8th Kangping Road, Jiangning Economy and Technology Development Zone, Nanjing, 211106, China

4.2 General Description of E.U.T.

Brand Name:	 BLUESOUND
Power Supply:	AC 100-240V 50/60Hz
Battery Box:	DC 12V by 8*AAA size batteries
Rated Max Power:	30W

4.3 Details of E.U.T.

Operation Frequency:	2402MHz~2480MHz
Bluetooth Version:	3.0+HS
Modulation Technique:	FHSS(GFSK, π/4DQPSK, 8DPSK)
Number of Channel:	79
Antenna Type	Integral
Antenna Gain	2 dBi

4.4 Test Location

All tests were performed at SGS E&E EMC lab

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.

No.588 West Jindu Road, Songjiang District, Shanghai, China. 201612.

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4.5 Test Facility

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

- **CNAS (No. CNAS L0599)**

CNAS has accredited SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing. Date of expiry: 2017-07-14.

- **FCC – Registration No.: 402683**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered and fully described in a report filed with the Federal Communications Commission (FCC). The acceptance letter from the FCC is maintained in our files. Registration No.: 402683, Expiry Date: 2017-09-16.

- **Industry Canada (IC) – IC Assigned Code: 8617A**

The 3m Semi-anechoic chamber of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 8617A-1. Expiry Date: 2017-06-18.

- **VCCI (Member No.: 3061)**

The 3m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-3868, C-4336, T-2221, G-830 respectively. Date of Expiry: 2017-11-16.

5 Test Standards and Limits

5.1 FCC Radiofrequency radiation exposure limits:

According to §1.1310, the limit for general population/uncontrolled exposures

Frequency	Power density(mW/cm ²)	Averaging time(minutes)
300MHz~1.5GHz	f/1500	30
1.5GHz~100GHz	1.0	30

5.2 IC Radiofrequency radiation exposure limits:

According to RSS-102 section 2.5.2, RF exposure evaluation is required if the separation distance between the user and/or bystander and the device's radiating element is greater than 20 cm, except when the device operates as follows:

below 20 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 1 W (adjusted for tune-up tolerance);

- at or above 20 MHz and below 48 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $4.49/f^{0.5}$ W (adjusted for tune-up tolerance), where f is in MHz;
- at or above 48 MHz and below 300 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 0.6 W (adjusted for tune-up tolerance);
- at or above 300 MHz and below 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $1.31 \times 10^{-2} f^{0.6834}$ W (adjusted for tune-up tolerance), where f is in MHz;
- at or above 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 5 W (adjusted for tune-up tolerance).

For 2.4G device, the limit of worse case is 2.68 W

6 Measurement and Calculation

6.1 Maximum transmit power

Test mode	Channel	Peak Power (dBm)	Peak Power (mW)
GFSK	Low	0.36	1.09
	Mid	0.09	1.02
	High	0.42	1.10
$\pi/4$ DQPSK	Low	0.60	1.15
	Mid	0.27	1.06
	High	0.63	1.16
8DPSK	Low	-0.35	0.92
	Mid	0.81	1.21
	High	0.05	1.01

The device has BT and WiFi function. The WiFi function realized through a certified WiFi transmitter (FCC ID: NKR-DNUA93F and IC: 4441A-DNUA93F) inserted into speaker. According to the original Grant of FCC ID: NKR-DNUA93F, the Max Conducted Peak Output Power is 299mW in 2.4G band.

6.2 MPE Calculation

According to the formula $S = \frac{PG}{4R^2\pi}$, we can calculate S which is MPE.

Note:

- 1) P (Watts) = Power Input to antenna = $10^{\frac{dBm}{10}} / 1000$
- 2) G (Antenna gain in numeric) = $10^{(Antenna\ gain\ in\ dBi / 10)}$
- 3) R = distance to the center of radiation of antenna (in meter) = 20cm
- 4) MPE limit = 1mW/cm²

For BT:

The Max Conducted Peak Output Power is 1.21mW in middle channel of 8DPSK;

The best case gain of the antenna is 2dBi. 2dB logarithmic terms convert to numeric result is nearly 1.58

$$\text{So, } S = \frac{PG}{4R^2\pi} = \frac{1.21 \times 1.58}{4 \times 400 \times 3.14} = 0.0004 \text{ mW/cm}^2$$

For DTS:

The Max Conducted Peak Output Power is 299mW in 2.4G band.

The best case gain of the antenna is 2.55dBi. 2.55dB logarithmic terms convert to numeric result is nearly 1.80

$$S = \frac{PG}{4R^2\pi} = \frac{299 \times 1.80}{4 \times 400 \times 3.14} = 0.1069 \text{ mW/cm}^2$$

The BT and the DTS modules can simultaneous transmitting at frequency 2.4GHz band. But the maximum rate of MPE is $\frac{0.0004}{1.0} + \frac{0.1069}{1.0} = 0.1073 \leq 1.0$. according to the KDB447498 section 7.2 determine the device is exclusion from SAR test.

7 EUT Constructional Details

Refer to the < PULSE MINI_External Photos > & < PULSE MINI_Internal Photos >.

--End of the Report--