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Shenzhen Branch

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SAR Evaluation Report

Application No.:	SZEM1508004839CR
Applicant:	Grohe AG
Manufacturer:	Grohe AG
Factory:	Arts Electronics Co., Ltd.
Product Name:	Wireless shower speaker
Model No.(EUT):	26270LV0
Add Model No.:	GS26G/37
FCC ID:	WFK26270
Standards:	47 CFR Part 1.1307 (2014)
	47 CFR Part 2.1093 (2014)
	KDB447498D01 General RF Exposure Guidance v05r02
Date of Receipt:	2015-08-05
Date of Test:	2015-08-12 to 2015-08-28
Date of Issue:	2015-10-14
Test Result :	**PASS***

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

Authorized Signature:

Jack Zhang
EMC Laboratory 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.
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.

2 Version

Revision Record				
Version	**Chapter**	**Date**	**Modifier**	**Remark**
00		2015-10-14		Original

Authorized for issue by:				
Tested By		Benson Wang		2015-08-28
		(Benson Wang) /Project Engineer		**Date**
Prepared By		Link Liang		2015-10-14
		(Link Liang) /Clerk		**Date**
Checked By		Eric Fu		2015-10-14
		(Eric Fu) /Reviewer		**Date**

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4 General Information

4.1 Client Information

Applicant:	Grohe AG
Address of Applicant:	Industriepark Edelburg 58675 Hemer Germany
Manufacturer:	Grohe AG
Address of Manufacturer:	Industriepark Edelburg 58675 Hemer Germany
Factory:	Arts Electronics Co., Ltd.
Address of Factory:	NO.1, SHANGXING LU, SHANGJIAO COMMUNITY, CHANGAN TOWN, DONGGUAN CITY, GUANGDONG PROVINCE, CHINA

4.2 General Description of EUT

Product Name:	Wireless shower speaker
Model No.	26326L00
Trade Mark:	Grohe
Operation Frequency:	2402MHz~2480MHz
Bluetooth Version:	V3.0
Test Power Grade:	ClassII (manufacturer declare)
Test Software of EUT:	Blue test 3
Modulation Technique:	Frequency Hopping Spread Spectrum(FHSS)
Modulation Type:	GFSK, π/4DQPSK, 8DPSK
Number of Channel:	79
Hopping Channel Type:	Adaptive Frequency Hopping systems
Antenna Type and Gain:	Type :Integral Gain :2.2dBi
Power Supply:	Internal rechargeable battery: DC3.7V 500mAh (Li-on Rechargeable Battery) Charge by wireless charging base
Model No.: 26326L00, GS32G/37 Only the model 26326L00 was tested, since the electrical circuit design, layout, components used, internal wiring and functions were identical for the above models, with only different on model No.	

4.3 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch E&E Lab

No. 1 Workshop, M-10, Middle section, Science & Technology Park, Shenzhen, Guangdong, China 518057

Telephone: +86 (0) 755 2601 2053 Fax: +86 (0) 755 2671 0594

No tests were sub-contracted.

4.4 Test Facility

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

- **CNAS (No. CNAS L2929)**

  CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab 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.

- **VCCI**

  The 10m Semi-anechoic chamber and Shielded Room (7.5m x 4.0m x 3.0m) of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-823, R-4188, T-1153 and C-2383 respectively.

- **FCC – Registration No.: 556682**

  SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen 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 No.: 556682.

- **Industry Canada (IC)**

  The 3m Semi-anechoic chambers of SGS-CSTC Standards Technical Services Co., Ltd. have been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620C-2.

4.5 Deviation from Standards

None.

4.6 Abnormalities from Standard Conditions

None.

4.7 Other Information Requested by the Customer

None.

5 SAR Evaluation

5.1 RF Exposure Compliance Requirement

5.1.1 Standard Requirement

According to KDB447498D01 General RF Exposure Guidance v05r02

4.3.1. Standalone SAR test exclusion considerations

Unless specifically required by the published RF exposure KDB procedures, standalone 1-g head or body and 10-g extremity SAR evaluation for general population exposure conditions, by measurement or numerical simulation, is not required when the corresponding SAR Exclusion Threshold condition, listed below, is satisfied.

5.1.2 Limits

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:

[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] · [√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where

f(GHz) is the RF channel transmit frequency in GHz
Power and distance are rounded to the nearest mW and mm before calculation[17]
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

5.1.3 EUT RF Exposure

For classic mode:

The Max Conducted Peak Output Power is 1.79dBm in middle channel(2.441GHz);

The best case gain of the antenna is 2.2dBi.

EIRP= 1.79dBm + 2.2dBi = 3.99dBm

3.99dBm logarithmic terms convert to numeric result is nearly 2.51mW

According to the formula. calculate the EIRP test result:

[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] · [√f(GHz)]

General RF Exposure = (2.51mW / 5 mm) x √2.441GHz = 0.784 ①

SAR requirement:

S= 3.0 ② ;

① < ②.

So the SAR report is not required.