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Shenzhen Branch

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SAR Evaluation Report

Application No.:	SZEM1505002605CR
Applicant:	Creative Labs Inc.
Manufacturer:	Creative Technology Ltd.
Product Name:	Creative Sound Blaster ROAR PRO
Model No.(EUT):	MF8171
Trade Mark:	Creative
FCC ID:	IBAMF8170
Standards:	47 CFR Part 1.1307 (2014) 47 CFR Part 2.1093 (2014) KDB447498D01 General RF Exposure Guidance v05r02
Date of Receipt:	2015-05-19
Date of Test:	2015-05-20 to 2015-05-25
Date of Issue:	2015-08-11
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		2015-08-11		Original

Authorized for issue by:				
Tested By		Eric Fu **(Eric Fu) /Project Engineer**		2015-05-25 **Date**
Prepared By		Hedy Wen. **(Hedy Wen) /Clerk**		2015-08-11 **Date**
Checked By		Owen Zhou **(Owen Zhou) /Reviewer**		2015-08-11 **Date**

3 Contents

4 General Information

4.1 Client Information

Applicant:	Creative Labs Inc.
Address of Applicant:	1901, McCarthy Boulevard, Milpitas, CA 95035, United States
Manufacturer:	Creative Technology Ltd.
Address of Manufacturer:	31, International Business Park, #03-01 Creative Resource, Singapore 609921

4.2 General Description of EUT

Product Name:	Creative Sound Blaster ROAR PRO
Model No.:	MF8171
Trade Mark:	Creative
Operation Frequency:	2402MHz~2480MHz
Bluetooth Version:	V3.0
Modulation Technique:	Frequency Hopping Spread Spectrum(FHSS)
Modulation Type:	GFSK, π/4DQPSK, 8DPSK
Number of Channel:	79
Hopping Channel Type:	Adaptive Frequency Hopping systems
Test Power Grade:	255, 46 (manufacturer declare)
Test Software of EUT:	Blue Test 3
Sample Type:	Portable production
Antenna Type:	Integral
Antenna Gain:	4.11dBi
AC adapter:	Model:GPE024W-150160-Z INPUT: AC 100-240V 50/60Hz 0.75A OUTPUT: DC 15V 1600mA 24W
Battery:	7.56V Li-ion Battery 2950mAh 22.3Wh MODEL NO.:BJ-ACEXX-3KXKUX-01
Test Voltage:	AC 120V 60Hz
DC Cable:	183.5cm (Unshielded)
USB Cable:	76cm (Shielded)

Remark:

Model No.: MF8171

This test report (Ref. No.: SZEM131200649706) is only valid with the original test report (Ref. No.: SZEM131200649702 and SZEM131200649704).

Review this report and original report, the major change filed under this application is:

1. Add Model No: MF8171, Product Name CREATIVE SOUND BLASTER ROAR PRO.
2. CREATIVE SOUND BLASTER ROAR PRO is a derivative model of CREATIVE SOUND BLASTER ROAR SR20A with changes in product features and antenna gain. No other electrical differences other than those stated below. Mechanical design and construction are identical for both models.

	BEFORE	AFTER
Model No	1. MF8170	1. MF8170 2. MF8171
Product Name	SOUND BLASTER ROAR SR20, SOUND BLASTER ROAR SR20A	SOUND BLASTER ROAR SR20 (Model No: MF8170) SOUND BLASTER ROAR SR20A (Model No: MF8170) SOUND BLASTER ROAR PRO (Model No: MF8171)
Antenna Gain	0.25 dBi	No change for SOUND BLASTER ROAR SR20 and SOUND BLASTER ROAR SR20A. SOUND BLASTER ROAR PRO: 4.11 dBi
Main Board	MS2160B REV A (0514116)	No change for SOUND BLASTER ROAR SR20 and SOUND BLASTER ROAR SR20A. SOUND BLASTER ROAR PRO: MS2160B Rev A (081520) & MS2165B Rev 1P (001521): Add C334 (10PF), C335 (10PF), C336 (10PF), C337 (10PF), C339 (10PF) Change: R162 (12K to 100R), R203 (12K to 100R), R142 (22K to 15K), R143 (22K to 15K), R219 (10K to 12K), R116 (330K to 300K) Remove: R92 (10K), R93 (10K), C72 (820PF), C77 (820PF).

<table>
<tr><td></td><td></td><td>
<table>
<tr><td>Version</td><td>Old Volume IC</td><td>New Volume IC</td></tr>
<tr><td>Main board</td><td>MS2160B
Rev A (081520)</td><td>MS2165B
Rev 1P (001521)</td></tr>
<tr><td>Volume IC</td><td>MP61545 (U17)</td><td>NJU72431 (U4)</td></tr>
<tr><td>R214</td><td>Not Mounted</td><td>4K7</td></tr>
<tr><td>C313</td><td>Not Mounted</td><td>10UF</td></tr>
<tr><td>R324</td><td>Not Mounted</td><td>10K</td></tr>
</table>
</td></tr>
<tr><td>Mp3 Key Board</td><td>SOUND BLASTER ROAR SR20: MS2160E, REV A (031404)

SOUND BLASTER ROAR SR20A: MS2160E, REV A (041422)</td><td>No change for SOUND BLASTER ROAR SR20 and SOUND BLASTER ROAR SR20A.

SOUND BLASTER ROAR PRO: MS2165E, REV A (011520).</td></tr>
<tr><td>Product Feature</td><td>SOUND BLASTER ROAR SR20: Loud Sounds

SOUND BLASTER ROAR SR20A: Remove Loud Sounds. Add Link Security and Tera Bass.</td><td>No change for SOUND BLASTER ROAR SR20 and SOUND BLASTER ROAR SR20A.

SOUND BLASTER ROAR PRO: Remove Link Security. Add EQ – Warm / Neutral / Energetic.</td></tr>
</table>

Additionally, just updated the below standards.

Original report standards	The newest report standards
47 CFR Part 1.1307(2013)	47 CFR Part 1.1307 (2014)
47 CFR Part 2.1093 (2013)	47 CFR Part 2.1093 (2014)
KDB447498D01 General RF Exposure Guidance v05	KDB447498D01 General RF Exposure Guidance v05r02

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)**

  Two 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

The Max Conducted Peak Output Power is 1.75dBm in lowest channel(2.402GHz);

The best case gain of the antenna is 4.11dBi.

EIRP= 1.75dBm + 4.11dBi = 5.86dBm

5.86dBm logarithmic terms convert to numeric result is nearly 3.85mW

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 = (3.85mW / 5 mm) x √2.402GHz = 1.19 ①

SAR requirement:

S= 3.0 ② ;

① < ②.

So the SAR report is not required.