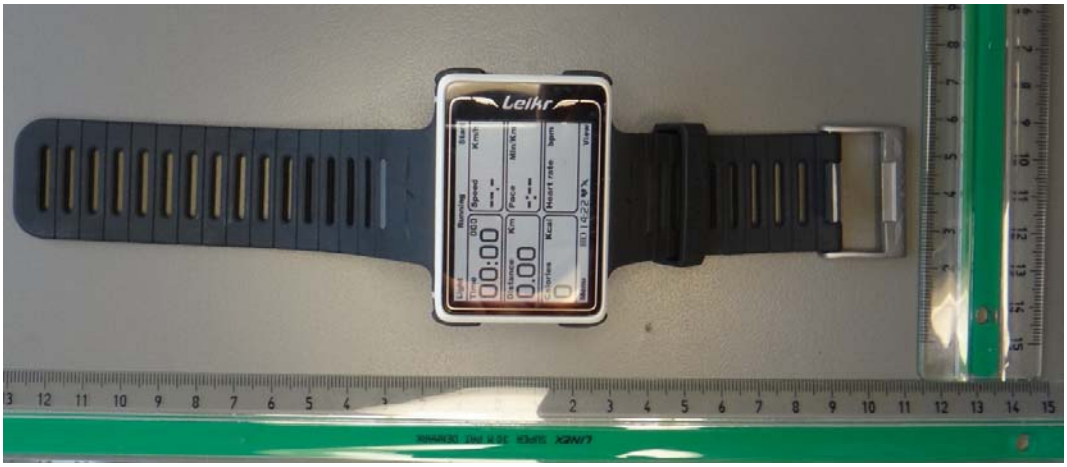
Acorn Projects ApS

Leikr Watch

Main Model: LKR1
Serial Model: LKR2,LKR3,LKR4,LKR5,LKR6,LKR7, LKR8,LKR9,LKR10,LKR11,LKR12

August 15, 2013

Report No.: 13070285- RF Exposure
(This report supersedes none)



Modifications made to the product : None

This Test Report is Issued Under the Authority of:		
Back Huang	Alex Liu	
Back Huang **Compliance Engineer**	**Alex Liu** **Technical Manager**	

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Test result presented in this test report is applicable to the representative sample only.

RF Test Report
FCC Part 15.247: 2012, RSS-102: Issue 4
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Laboratory Introduction

SIEMIC, headquartered in the heart of Silicon Valley, with superior facilities in US and Asia, is one of the leading independent testing and certification facilities providing customers with one-stop shop services for Compliance Testing and Global Certifications.

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Accreditations for Conformity Assessment

Country/Region	Accreditation Body	Scope
USA	FCC, A2LA	EMC , RF/Wireless , Telecom
Canada	IC, A2LA, NIST	EMC, RF/Wireless , Telecom
Taiwan	BSMI , NCC , NIST	EMC, RF, Telecom , Safety
Hong Kong	OFTA , NIST	RF/Wireless ,Telecom
Australia	NATA, NIST	EMC, RF, Telecom , Safety
Korea	KCC/RRA, NIST	EMI, EMS, RF , Telecom, Safety
Japan	VCCI, JATE, TELEC, RFT	EMI, RF/Wireless, Telecom
Mexico	NOM, COFETEL, Caniety	Safety, EMC , RF/Wireless, Telecom
Europe	A2LA, NIST	EMC, RF, Telecom , Safety

Accreditations for Product Certifications

Country/Region	Accreditation Body	Scope
USA	FCC TCB, NIST	EMC , RF , Telecom
Canada	IC FCB , NIST	EMC , RF , Telecom
Singapore	iDA, NIST	EMC , RF , Telecom
EU	NB	EMC & R&TTE Directive
Japan	MIC, (RCB 208)	RF , Telecom
Hong Kong	OFTA (US002)	RF , Telecom

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CONTENTS

1 EXECUTIVE SUMMARY & EUT INFORMATION

The purpose of this test programme was to demonstrate compliance of the Acorn Projects ApS, Leikr Watch and model: LKR1 against the current Stipulated Standards. The Leikr Watch has demonstrated compliance with the FCC Part 15.247: 2012, RSS-102: Issue 4.

EUT Information

EUT Description	:	**Leikr Watch**
Main Model	:	**LKR1**
Serial Model	:	**LKR2,LKR3,LKR4,LKR5,LKR6,LKR7,LKR8,LKR9,LKR10,LKR11, LKR12**
Antenna Gain	:	**WIFI: 3 dBi** **ANT+: 3 dBi**
Input Power	:	**Battery:** **Model: GEB303242** **Li-ion Battery: 3.7V 330mAh**
Classification Per Stipulated Test Standard	:	**FCC Part 15.247: 2012, RSS-102: Issue 4**

2 TECHNICAL DETAILS

Purpose	**Compliance testing of Leikr Watch with stipulated standard**
Applicant / Client	**Acorn Projects ApS Smedeland 2, DK-2600 Glostrup, Denmark**
Manufacturer	**Acorn Projects ApS Smedeland 2, DK-2600 Glostrup, Denmark**
Laboratory performing the tests	**SIEMIC (Shenzhen-China) Laboratories Zone A, Floor 1, Building 2, Wan Ye Long Technology Park, South Side of Zhoushi Road, Bao'an District, Shenzhen, Guangdong, China Tel: +86-0755-2601 4629 / 2601 4953 Fax: +86-0755-2601 4953-810 Email: China@siemic.com.cn**
Test report reference number	**13070285- RF Exposure**
Date EUT received	**July 25, 2013**
Standard applied	**FCC Part 15.247: 2012, RSS-102: Issue 4**
No of Units :	**#1**
Equipment Category :	**Spread Spectrum System/Device**
Trade Name :	**Leikr**
RF Operating Frequency (ies)	**WIFI: 802.11b/g/n(20) : 2412-2462 MHz ANT+: 2403-2480 MHz GPS: 1575.42 MHz**
Number of Channels	**WIFI: 11CH ANT+: 78CH GPS: 1CH**
Modulation	**WIFI: DSSS/OFDM ANT+: GFSK GPS: BPSK**
FCC ID	**2AAPI-LKR**
IC ID	**11342A-LKR**

3 MODIFICATION

NONE

4 TEST SUMMARY

The product was tested in accordance with the following specifications.
All testing has been performed according to below product classification:

Test Results Summary

FCC Rules	IC Rules	Description of Test	Result
§15.247 (i), §2.1093	RSS-102 [2.5.1]	RF Exposure	Compliance

5 MEASUREMENTS, EXAMINATION AND DERIVED RESULTS

5.1 §15.247 (i) and §2.1093/ RSS-102[2.5.2] – RF Exposure

Standard Requirement:

According to §15.247 (i) and §1.1307(b)(1), 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 of the Commission's guidelines.

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*)] · [$\sqrt{f_{(GHz)}}$] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR,[16] 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.

Routine SAR evaluation refers to that specifically required by § 2.1093, using measurements or computer simulation. When routine SAR evaluation is not required, portable transmitters with output power greater than the applicable low threshold require SAR evaluation to qualify for TCB approval.

Two antennas are available for the EUT (WIFI antenna, GPS antenna).The minimum eparation distances is 5 mm.
The maximum average output power(turn-up power) in low channel of WIFI is 9.43 dBm=8.77 mW
The calculation results= $8.77/5*\sqrt{2412}$ =2.72<3
The maximum average output power(turn-up power) in middle channel of WIFI is 9.29 dBm=8.49 mW
The calculation results= $8.49/5*\sqrt{2437}$ =2.65<3
The maximum average output power(turn-up power) in high channel of WIFI is 8.93 dBm=7.82 mW
The calculation results= $7.82/5*\sqrt{2462}$ =2.45<3
According to KDB 447498, no stand-alone required for WIFI antenna, and no simultaneous SAR measurement is required .

According to RSS-102 [2.5] Exemption from Routine Evaluation Limits.

All transmitters are exempt from routine SAR and RF exposure evaluations provided that output power complies with the power levels of sections 2.5.1 or 2.5.2. If the equipment under test (EUT) meets the requirements of sections 2.5.1 or 2.5.2, applicants are only required to submit a properly signed declaration of compliance (see Annex C). The information contained in the RF exposure technical brief may be limited to information that demonstrates how the output power of the transmitter was derived.

If the EUT does not meet the appropriate exemption limit, a complete SAR or RF exposure evaluation shall be performed.

It must be emphasized that the above exemption from routine evaluation is not an exemption from compliance.

2.5.1 Exemption from Routine Evaluation Limits – SAR Evaluation

SAR evaluation is required if the separation distance between the user and the radiating element of the device is less than or equal to 20 cm, except when the device operates as follows:

- from 3 kHz up to 1 GHz inclusively, and with output power (i.e. the higher of the conducted or equivalent isotropically radiated power (e.i.r.p.) source-based, time-averaged output power) that is less than or equal to 200 mW for general public use and 1000 mW for controlled use;

- above 1 GHz and up to 2.2 GHz inclusively, and with output power (i.e. the higher of the conducted or radiated (e.i.r.p.) source-based, time-averaged output power) that is less than or equal to 100 mW for general public use and 500 mW for controlled use;

- above 2.2 GHz and up to 3 GHz inclusively, and with output power (i.e. the higher of the conducted or radiated (e.i.r.p.) source-based, time-averaged output power) that is less than or equal to 20 mW for general public use and 100 mW for controlled use;

- above 3 GHz and up to 6 GHz inclusively, and with output power (i.e. the higher of the conducted or radiated (e.i.r.p.) source-based, time-averaged output power) that is less than or equal to 10 mW for general public use and 50 mW for controlled use.

In these cases, the information contained in the RF exposure technical brief may be limited to information that demonstrates how the output power of the device was derived.

The maximum e.i.r.p. of WIFI is 12.43 dBm=17.50 mW＜20 mW.

Note:The maximun e.i.r.p.= the maximum average output power(turn-up power)+the antenna gain.

Test Result: Pass