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# SAR Evaluation Report

**Applicant:** Lief Therapeutics

**Address of Applicant:** 479 Jessie St. San Francisco, CA, 94103, United States

**Manufacturer:** Lief Therapeutics

**Address of Manufacturer:** 479 Jessie St. San Francisco, CA, 94103, United States

**Factory:** Lief Therapeutics

**Address of Factory:** 479 Jessie St. San Francisco, CA, 94103, United States

**Equipment Under Test (EUT):**

**Product:** Lief Smart Patch

**Model No.:** Lief-01

**Brand Name:** Lief Therapeutics

**FCC ID:** 2ANNN-01

**Standards:** 47 CFR Part 1.1307  
47 CFR Part 2.1093  
KDB447498D01 General RF Exposure Guidance v06

**Date of Test:** 2017-11-03 to 2017-11-08

**Date of Issue:** 2017-11-08

**Report No. :** CQASZ170901466EW-02

**Test Result :** **PASS\***

**Tested By:**

(Aaron Ma)

**Reviewed By:**

(Owen Zhou)

**Approved By:**

(Jack Ai)



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

The test report is effective only with both signature and specialized stamp, The result(s) shown in this report refer only to the sample(s) tested. Without written approval of CQA, this report can't be reproduced except in full.

## 2 Version

### Revision History Of Report

Report No.	Version	Description	Issue Date
CQASZ170901466EW-02	Rev.01	Initial report	2017-11-08

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## 4 General Information

### 4.1 Client Information

Applicant:	Lief Therapeutics
Address of Applicant:	479 Jessie St. San Francisco, CA, 94103, United States
Manufacturer:	Lief Therapeutics
Address of Manufacturer:	479 Jessie St. San Francisco, CA, 94103, United States
Factory:	Lief Therapeutics
Address of Factory:	479 Jessie St. San Francisco, CA, 94103, United States

### 4.2 General Description of EUT

Product Name:	Lief Smart Patch
Model No.:	Lief-01
Trade Mark:	Lief Therapeutics
Hardware Version:	V1.0
Software Version:	V1.0
Operation Frequency:	2402MHz~2480MHz
Bluetooth Version:	V4.1 BLE
Modulation Type:	GFSK
Number of Channel:	40
Sample Type:	Portable production
Test Software of EUT:	Nordic Semiconductor Radio Test Software (Manufacturer provide )
Antenna Type:	Ceramic Antenna
Antenna Gain:	-0.5dBi
Power Supply:	For Wireless Charging Pad: Input: 5V DC, 2A ; Output: 5V DC, 1A For Lief Smart Patch: 5V DC, 0.2A; Battery: DC 3.7V 150mA

## 5 SAR Evaluation

### 5.1 RF Exposure Compliance Requirement

#### 5.1.1 Standard Requirement

According to KDB447498D01 General RF Exposure Guidance v06

##### 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  $\leq 50$  mm are determined by:

$$\left[ \frac{\text{max. power of channel, including tune-up tolerance, mW}}{\text{min. test separation distance, mm}} \right] \cdot \sqrt{f(\text{GHz})} \leq 3.0 \text{ for 1-g SAR and } \leq 7.5 \text{ for 10-g extremity SAR, where}$$

$f(\text{GHz})$  is the RF channel transmit frequency in GHz

Power and distance are rounded to the nearest mW and mm before calculation<sup>17</sup>

The result is rounded to one decimal place for comparison

The test exclusions are applicable only when the minimum test separation distance is  $\leq 50$  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 BLE:

**Measurement Data**

GFSK mode	
Test channel	Peak Output Power (dBm)
Lowest	-3.14
Middle	-2.23
Highest	-2.09

The Max Conducted Peak Output Power is -2.09dBm in highest channel(2.480GHz);

The best case gain of the antenna is -0.5dBi.

EIRP= -2.09dBm -0.5dBi = -2.59dBm

0.85dBm logarithmic terms convert to numeric result is nearly 0.94mW

According to the formula. calculate the EIRP test result:

$[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] \cdot \sqrt{f(\text{GHz})}$

General RF Exposure =  $(0.94\text{mW} / 5 \text{ mm}) \times \sqrt{2.480\text{GHz}} = 0.296$ ①

SAR requirement:

S= 3.0

② ;

① < ②.

So the SAR report is not required.

Remark: The Max Conducted Peak Output Power data refer to report CQASZ170901466EW-01