



Radio Frequency Exposure Evaluation Report

FOR:

Telit

Model:

BL871E2-HI

Product Description:

Bluetooth Module

FCC ID: RFR-BL871

IC ID: 23249-BL871

Applied Rules and Standards:

CFR 47 Part 2 (2.1093),

FCC KDB 447498 D01 General RF Exposure Guidance v06

ISED RSS-102 Issue 5

Report number: SAR_TELIT-005-17001_FCC_SAR-EX

DATE: 2017-10-04



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1. Assessment

The following device was evaluated against the limits for general population uncontrolled exposure specified in CFR 47 Part 2.1093 according to SAR evaluation exclusion requirements specified in FCC regulation as listed in KDB 447498, and ISED RSS-102 Issue 5.

The device meets the requirements for SAR exclusion as stipulated by the above given FCC/ISED rules.

Company	Description	Model #
Telit	Bluetooth Module	BL871E2-HI

Responsible for Testing Laboratory:

Dr. Peter Nevermann

2017-10-04 Compliance (Director Radio Communications and EMC)

Date	Section	Name	Signature
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Responsible for the Report:

Cindy Li

2017-10-04 Compliance (EMC Engineer)

Date	Section	Name	Signature
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The test results of this test report relate exclusively to the test item specified in Section 3.

CETECOM Inc. USA does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of CETECOM Inc. USA.

2. Administrative Data

2.1. Identification of the Testing Laboratory Issuing the Test Report

Company Name:	CETECOM Inc.
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Director Radio Com. and EMC:	Peter Nevermann
Responsible Project Leader:	Josephine Mena

2.2. Identification of the Client / Manufacturer

Applicant's Name:	Telit
Street Address:	27422 Portola Parkway, Suite 320
City/Zip Code	Foothill Ranch, CA 92610
Country	USA
Contact Person:	Terry Dawson
Phone No.	949 540 1274
e-mail:	Terry.Dawson@telit.com

3. Equipment under Assessment

Model No	BL871E2-HI
HW Version	R1
SW Version	CC2564C_07
FCC-ID	RFR-BL871
IC ID	23249-BL871
HVIN	BL871E2-HI
Product Description	BT/BTLE Module
Device Category	☐ Fixed Installation ☐ Mobile ☒ Portable ☐ Mixed Mobile and Portable
Frequency Range / number of channels	2400 MHz – 2483.5 MHz; 79 channels
Type(s) of Modulation	Bluetooth LE: GFSK Bluetooth BR/EDR: GFSK, $\pi/4$ -DQPSK, 8DPSK
Modes of Operation / Declared Output power	Conducted power: Bluetooth LE= 8.93dBm Bluetooth BR/EDR= 10.03dBm
Max. declared antenna gain	-1.53dBi
Minimum distance of antenna or radiating parts to user	15mm
Power Supply/ Rated Operating Voltage Range	Vmin: 3.0V DC / Vmax: 4.2V DC
Operating Temperature Range	-20 °C to 60 °C
Other Radios included in the device	N/A
Co-located Transmitters / Antennas	☒ Yes ☐ No
Sample Revision	☐ Prototype ☒ Production ☐ Pre-Production
Exposure Category	☐ Occupational/ Controlled ☒ General Population/ Uncontrolled

4. FCC and ISED SAR Exemption Limits for Routine Evaluation

4.1. FCC SAR test exclusions per KDB 447498

KDB 447498 D01 General RF Exposure Guidance v06 Section: 4.3.1.

Standalone SAR test exclusion considerations states

- 4) For 100 MHz to 6 GHz and test separation distances ≤ 50 mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following:

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

$$\leq 3.0 \text{ for 1-g SAR, and } \leq 7.5 \text{ for 10-g extremity SAR, 30 where}$$

- $f(\text{GHz})$ is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison
- The values 3.0 and 7.5 are referred to as *numeric thresholds*.

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.

4.2. ISED SAR test exclusions per IC RSS-102 Issue 5

ISED RSS-102 Section: 2.5.1 Exemption Limits for Routine Evaluation — SAR Evaluation

SAR evaluation is required if the separation distance between the user and/or bystander and the antenna and/or radiating element of the device is less than or equal to 20 cm, except when the device operates at or below the applicable output power level (adjusted for tune-up tolerance) for the specified separation distance defined in Table 1. Output power level shall be the higher of the maximum conducted or equivalent isotropically radiated power (e.i.r.p.) source-based, time-averaged output power.

Table1 with limits for the frequencies off interest

Frequency (MHz)	d[mm]	Exemption Limits [mW]
2450	15	15

5. Stand-alone Transmission SAR Exclusion Evaluation

5.1. SAR Exclusion Calculation Table

Band	d [mm]	f [GHz]	Max Power + Tune Up [mW]	Source Based Duty Cycle	FCC / IC Limit @ 15 mm [mW]	SAR Exclusion applicable (Yes/No)
BTLE	15	2.48	7.82	1	29 / 15	Yes
BT BR/EDR	15	2.48	10.07	1	29 / 15	Yes

6. Revision History

Date	Report Name	Changes to report	Report prepared by
2017-10-04	SAR_TELIT-005-17001_FCC_SAR-EX	Initial version	Cindy Li