



# A Test Lab Techno Corp.

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## SAR Exclusion Evaluation Report



Test Report No.	: 1602FS13
Applicant	: Revolar Inc
Product Type	: Personal safety alert
Trade Name	: REVOLAR
Model Number	: REVOLAR
Dates of Received	: Dec. 17, 2015
Dates of Test	: Dec. 22, 2015
Dates of Issued	: Feb. 17, 2016
Test Specification	: ANSI/IEEE C95.1-1999/ IEEE Std. 1528-2013 47 CFR § 2.1093 KDB 447498 D01 General RF Exposure Guidance v06 KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04 KDB 865664 D02 RF Exposure Reporting v01r02
Location of Test Lab.	: Chang-an Lab.

1. The test operations have to be performed with cautious behavior, the test results are as attached.
2. The test results are under chamber environment of A Test Lab Techno Corp. A Test Lab Techno Corp. does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples.
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Approved By : Bill Hu  
(Bill Hu)

Tested By : Sky Chou  
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## 1. Description of Equipment under Test (EUT)

Applicant	Revolar Inc 800 N. Grant Street, Suite 120, Denver, Colorado 80203, United States
Manufacturer	Celestica (Thailand) Limited 49/18 Laem Chabang Industrial Estate Moo 5, Tungskhla, Sriracha Chonburi 20230 Thailand
Product Type	Personal safety alert
Trade Name	REVOLAR
Model Number	REVOLAR
FCC ID	2AHAI-MD001
Frequency Range	Bluetooth LE: 2402 - 2480 MHz
Transmit Power (conducted)	0.0004 W / -3.58 dBm
Antenna Type	Meandered Inverted-F Antenna
Antenna Max. Gain	5.3dBi

The above equipment was tested by A Test Lab Techno Corp. For compliance with the requirements set forth in 47 CFR § 2.1093. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.



## 2. SAR Test Exclusion

As RF exposure evaluation of portable device, SAR test is not required when the evaluation results. According to KDB 447498 4.3.1, unless excluded by specific FCC test procedures, portable devices shall include SAR data for equipment approval. SAR test necessity will be based on the exclusion result.

The test exclusion refers KDB 447498 as below:

### ≤50mm:

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

### >50mm and <200mm:

- a) [Power allowed at numeric threshold for 50 mm in step 1) + (test separation distance - 50 mm)·( f(MHz)/150)] mW, at 100 MHz to 1500 MHz
- b) [Power allowed at numeric threshold for 50 mm in step 1) + (test separation distance - 50 mm)·10] mW at > 1500 MHz and ≤ 6 GHz

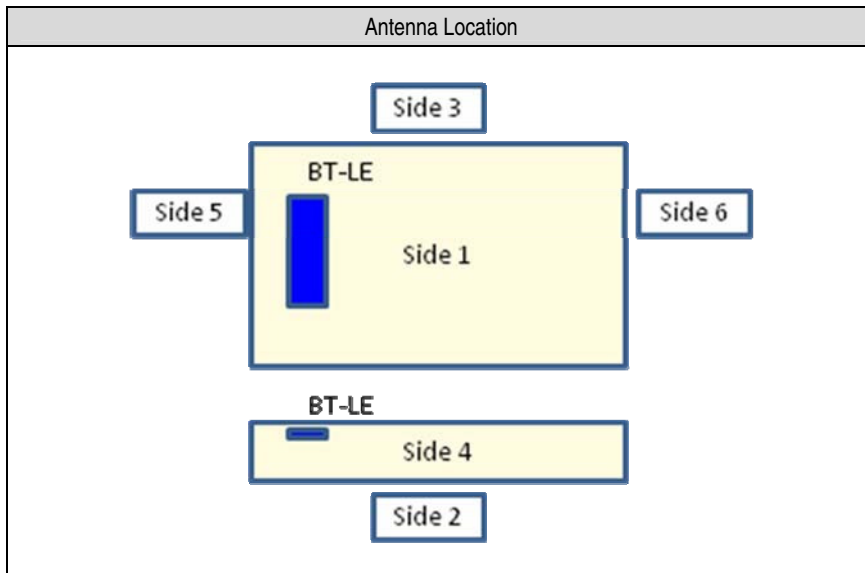
### 2.1 Conducted Power

Operate Band	Frequency (MHz)	Average Power (dBm)
Bluetooth LE	2402.0	-3.58
	2440.0	-3.98
	2480.0	-4.17

## 2.2 Antenna Location

Transmitter and antenna implementation	
Operate Band	Bluetooth Antenna
Bluetooth LE	V

Ant. Used	Antenna to user distance (mm)					
	Side 1	Side 2	Side 3	Side 4	Side 5	Side 6
Bluetooth LE	1	6	7	8	5	40





## 2.3 Evaluation Results

The evaluation of SAR test reduction according to KDB447498

SAR test is not required when the results showed "EXEMPT".

Body SAR test reduction												
Ant. Used	Operate Band	Channel	Frequency (GHz)	Power		Calculated threshold value						Event
				(dBm)	(mW)	Side 1	Side 2	Side 3	Side 4	Side 5	Side 6	
Bluetooth LE	Bluetooth LE	39	2.48	-3.5	0	0	0	0	0	0	0	< 3
						EXEMPT	EXEMPT	EXEMPT	EXEMPT	EXEMPT	EXEMPT	

### Exclusion Considerations: SAR is not required

- Note:
1. Calculated Threshold Value only include number format, that is mean through compare output power with threshold, if the threshold value more than 3 the SAR test should be perform.
  2. Otherwise, the SAR test could be exempt.
  3. When an antenna qualifies for the standalone SAR test exclusion of KDB447498 section 4.3.1 and also transmits simultaneously with other antennas, the standalone SAR value must be estimated according to KDB447498 section "4.3.2. Simultaneous transmission SAR test exclusion considerations b) ".
  4. The channel and frequency used highest frequency, that result should be evaluated the worst case.