

# TEST REPORT

**Product Name** : Rugged Wireless speaker  
**Model Number** : IMW449-RYB, IMW449-MTG, IMW449-BLK  
**FCC ID** : 2A8JA-IMW449

**Prepared for** : Dolphin Electronics (DongGuan) Co.,Ltd.  
**Address** : Room 301,Building 3,No.2 Baolong Road, Houjie Town,  
Dongguan City, Guangdong Province,China

**Prepared by** : EMTEK (DONGGUAN) CO., LTD.  
**Address** : -1&2/F.,Building 2, Zone A, Zhongda Marine Biotechnology  
Research and Development Base, No.9, Xincheng Avenue,  
Songshanhu High-technology Industrial Development Zone,  
Dongguan, Guangdong, China

TEL: +86-0769-22807078  
FAX: +86-0769-22807079

**Report Number** : EDG2305310116E00102R  
**Date(s) of Tests** : June 01, 2023 to June 09, 2023  
**Date of issue** : June 11, 2023

## Table of Contents

1. TEST RESULT CERTIFICATION .....	3
2. EUT SPECIFICATION .....	5
3. TEST REQUIREMENT .....	6
4. MEASUREMENT RESULT .....	7



## 1. TEST RESULT CERTIFICATION

Applicant : Dolphin Electronics (DongGuan) Co.,Ltd.  
Address : Room 301,Building 3,No.2 Baolong Road, Houjie Town, Dongguan City, Guangdong Province,China  
Manufacturer : Dolphin Electronics (DongGuan) Co.,Ltd.  
Address : Room 301,Building 3,No.2 Baolong Road, Houjie Town, Dongguan City, Guangdong Province,China  
Factory : Dolphin Electronics (DongGuan) Co.,Ltd.  
Address : Room 301,Building 3,No.2 Baolong Road, Houjie Town, Dongguan City, Guangdong Province,China  
EUT : Rugged Wireless speaker  
Model Name : IMW449-RYB, IMW449-MTG, IMW449-BLK  
Trademark : N/A

Measurement Procedure Used:

APPLICABLE STANDARDS	
STANDARD	TEST RESULT
§ 15.247(i), § 2.1093	PASS

The above equipment was tested by EMTEK(DONGGUAN) CO., LTD. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10 (2013) and the energy emitted by the sample EUT tested as described in this report is in compliance with the requirements of FCC Rules FCC § 15.247(i), § 2.1093.

The test results of this report relate only to the tested sample identified in this report

Date of Test : June 01, 2023 to June 09, 2023

Prepared by : 

Xia Yang /Editor

Reviewer : 

Tim Dong/ Supervisor

Approve & Authorized Signer :   
Sam Lv / Manager

## Modified History

Version	Report No.	Revision Date	Summary
	EDG2305310116E00102R	/	Original Report



## 2. EUT Specification

Characteristics	Description
<b>Product:</b>	Rugged Wireless speaker
<b>Model Number:</b>	IMW449-RYB, IMW449-MTG, IMW449-BLK All products are the same, only the model number and color of appearance are different Here we selected IMW449-BLK for all the test
<b>Sample:</b>	1#
<b>Device Type:</b>	Bluetooth V5.0
<b>Data Rate:</b>	1Mbps for GFSK modulation 2Mbps for $\pi/4$ -DQPSK modulation
<b>Modulation:</b>	GFSK, $\pi/4$ -DQPSK
<b>Operating Frequency Range(s) :</b>	2402-2480MHz
<b>Number of Channels:</b>	-5.33 dBm(0.000293 W)
<b>Transmit Power Max:</b>	PCB Antenna
<b>Antenna Gain:</b>	-0.58 dBi
<b>Power supply:</b>	DC 5V from USB, DC 3.7V from battery
<b>Evaluation applied:</b>	<input type="checkbox"/> MPE Evaluation <input checked="" type="checkbox"/> SAR Evaluation

### 3. Test Requirement

#### RF EXPOSURE EVALUATION

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*  $\leq 50$  mm are determined by:

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f_{(\text{GHz})}}] \leq 3.0$  for 1-g SAR and  $\leq 7.5$  for 10-g extremity SAR,<sup>24</sup> 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>25</sup>
- The result is rounded to one decimal place for comparison
- 3.0 and 7.5 are referred to as the numeric thresholds in the step 2 below

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 according to 5) in section 4.1 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. One antenna is available for the EUT. The minimum separation distance is 5mm.

## 4. Measurement Result

Antenna gain: -0.58 dBi

When a single module works, the measurement results are as follows:

BT1

Transmit Frequency (MHz)	Mode	Measured Power (dBm)	E.I.R.P (dBm)	Tune up Power (dBm)	Max tune up power (dBm)	Calculation Result	1-g SAR
2402	GFSK	-5.48	-6.06	-6±1	-5	0.0982242	3
2441	GFSK	-6.56	-7.14	-7±1	-6	0.0784256	3
2480	GFSK	-5.87	-6.45	-6±1	-5	0.0992371	3
2402	Π/4-DQPSK	-5.33	-5.91	-6±1	-5	0.0982242	3
2441	Π/4-DQPSK	-6.17	-6.75	-7±1	-6	0.0784256	3
2480	Π/4-DQPSK	-5.61	-6.19	-6±1	-5	0.0992371	3

According to KDB 447498, no stand-alone required for BT antenna, and no simultaneous SAR measurement is required.

\*\*\* End of Report \*\*\*