



RF Exposure Evaluation Declaration

FCC ID: Z9G-EDF144

Applicant: Edifier International Limited

Application Type: Certification

Product: True Wireless Gaming Earbuds with Active Noise Cancellation

Model No.: EDF700012

Brand Name: EDIFIER, HECATE

FCC Classification: Digital Transmission System (DTS)
FCC Part 15 Spread Spectrum Transmitter (DSS)

FCC Rule Part(s): FCC Part 2 (Section 2.1091)

Reviewed By:

Vincent Yu

Vincent Yu

Approved By:

Robin Wu

Robin Wu



The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standards through the calibration of the equipment and evaluated measurement uncertainty herein.

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Revision History

Report No.	Version	Description	Issue Date	Note
2104RSU061-U3	Rev. 01	Initial Report	05-12-2021	Valid

CONTENTS

Description	Page
CONTENTS	3
1. PRODUCT INFORMATION	4
1.1. Equipment Description.....	4
1.2. Radio Specification	4
1.3. Applied Standards	4
2. RF Exposure Evaluation	5
2.1. Limits	5
2.2. Test Result of RF Exposure Evaluation	7
Appendix - EUT Photograph	8

1. PRODUCT INFORMATION

1.1. Equipment Description

Product Name	True Wireless Gaming Earbuds with Active Noise Cancellation
Model No.	EDF700012
Test Device No.	Conducted Sample: 2021EDF144Sample#1 Radiated Sample: 2021EDF144Sample#2
Bluetooth Version	v5.0 Dual mode
Rated Input	5VDC 200mA (Earbuds) 5VDC 1A (Charging Case)
Operating Temperature	0 ~ 45°C

1.2. Radio Specification

Frequency Range	2402 ~ 2480MHz
Number of Channels	For Bluetooth: 79 For BT-LE: 40
Channel Spacing	For Bluetooth: 1MHz For BT-LE: 2MHz
Modulation	For Bluetooth: 1Mbps (GFSK), 2Mbps (Pi/4 DQPSK), 3Mbps (8DPSK) For BT-LE: GFSK
Antenna Type	FPC Antenna
Antenna Gain	Left Earbud: -1.2dBi Right Earbud: -2.8dBi

Note: All information is provided by the manufacturer.

1.3. Applied Standards

KDB 447498 D01v06

2. RF Exposure Evaluation

2.1. Limits

SAR Test Exclusion Thresholds for 100 MHz – 6 GHz and ≤ 50 mm

Approximate SAR Test Exclusion Power Thresholds at Selected Frequencies and Test Separation Distances are illustrated in the following Table. The equation and threshold in Note 1 must be applied to determine SAR test exclusion.

MHz	5	10	15	20	25	mm
150	39	77	116	155	194	SAR Test Exclusion Threshold (mW)
300	27	55	82	110	137	
450	22	45	67	89	112	
835	16	33	49	66	82	
900	16	32	47	63	79	
1500	12	24	37	49	61	
1900	11	22	33	44	54	
2450	10	19	29	38	48	
3600	8	16	24	32	40	
5200	7	13	20	26	33	
5400	6	13	19	26	32	
5800	6	12	19	25	31	
MHz	30	35	40	45	50	mm
150	232	271	310	349	387	SAR Test Exclusion Threshold (mW)
300	164	192	219	246	274	
450	134	157	179	201	224	
835	98	115	131	148	164	
900	95	111	126	142	158	
1500	73	86	98	110	122	
1900	65	76	87	98	109	
2450	57	67	77	86	96	
3600	47	55	63	71	79	
5200	39	46	53	59	66	
5400	39	45	52	58	65	
5800	37	44	50	56	62	

Note: 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:

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

- $f(\text{GHz})$ is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- 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 ≤ 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.

2.2. Test Result of RF Exposure Evaluation

Product	True Wireless Gaming Earbuds with Active Noise Cancellation
Test Item	RF Exposure Evaluation

Test Mode	Frequency Band (MHz)	Maximum Conducted Power (dBm)	Maximum Conducted Power (mW)	SAR Test Exclusion Threshold (mW)
Bluetooth-EDR	2402 ~ 2480	6.60	4.57	10
Bluetooth-LE	2402 ~ 2480	6.81	4.80	10

Note 1: Per FCC KDB 447498 D01v06, the SAR exclusion threshold for distances<50mm is defined by the following equation:

$$\frac{\text{Max Power of Channel (mW)}}{\text{Test Separation Dist (mm)}} * \sqrt{\text{Frequency(GHz)}} \leq 3.0$$

Based on the maximum conducted power of Bluetooth and the antenna to use separation distance, Bluetooth SAR was not required;

For Bluetooth-EDR, $(\frac{4.57\text{mW}}{5}) * \sqrt{2.480} = 1.44 < 3.00$

For Bluetooth-LE, $(\frac{4.80\text{mW}}{5}) * \sqrt{2.402} = 1.49 < 3.00$

Note 2: When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.

The End

Appendix - EUT Photograph

Refer to “2104RSU061-UE” file.