



## RF Exposure Evaluation Report

**Report Reference No.**.....: **MTEB23110095-H**

**FCC ID**..... : **SZR-AW30**

Compiled by

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Supervised by

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Date of issue.....: **November 09,2023**

**Representative Laboratory Name** ..: **Shenzhen Most Technology Service Co., Ltd.**

Address .....: No.5, 2nd Langshan Road, North District, Hi-tech Industrial Park,  
Nanshan, Shenzhen, Guangdong, China.

**Applicant's name**.....: **Radio Engineering Industries, Inc.**

Address .....: 6534 L Street Omaha, Nebraska 68117 USA

**Test specification/ Standard** .....: **47 CFR Part 1.1307;47 CFR Part 1.1310**  
**KDB447498D01 General RF Exposure Guidance v06**

TRF Originator.....: Shenzhen Most Technology Service Co., Ltd.

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**Test item description** .....: Digital Mobile receiver System

Trade Mark .....: N/A

Manufacturer .....: Radio Engineering Industries, Inc.

Model/Type reference.....: AW-30

Listed Models .....: N/A

Modulation Type .....: GFSK,  $\pi/4$ DQPSK, 8DPSK

Operation Frequency.....: From 2402MHz to 2480MHz

Hardware Version..... 00-AT1903-MB03

Software Version ..... 231013U2

Rating .....: 12V +/- 0.5

Result.....: **PASS**

**TEST REPORT**

Equipment under Test : Digital Mobile receiver System

Model /Type : AW-30

Listed Models : N/A

Remark : N/A

Applicant : **Radio Engineering Industries, Inc.**

Address : 6534 L Street Omaha, Nebraska 68117 USA

Manufacturer : **Eastern Partner Limited**

Address : 1002,10/F , 189 Des Voeux Road , Central Hong Kong

<b>Test Result:</b>	<b>PASS</b>
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The test report merely corresponds to the test sample.  
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

## 1. Revision History

Revision	Issue Date	Revisions	Revised By
00	2023-11-09	Initial Issue	Alisa Luo

## 2. SAR Evaluation

### 2.1 RF Exposure Compliance Requirement

#### 2.1.1 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.

#### 2.1.2 Limits

According to FCC Part1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in part1.1307(b)

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm <sup>2</sup> )	Averaging time (minutes)
<b>(A) Limits for Occupational/Controlled Exposures</b>				
0.3–3.0 .....	614	1.63	*(100)	6
3.0–30 .....	1842/f	4.89/f	*(900/f <sup>2</sup> )	6
30–300 .....	61.4	0.163	1.0	6
300–1500 .....	.....	.....	f/300	6
1500–100,000 .....	.....	.....	5	6
<b>(B) Limits for General Population/Uncontrolled Exposure</b>				
0.3–1.34 .....	614	1.63	*(100)	30
1.34–30 .....	824/f	2.19/f	*(180/f <sup>2</sup> )	30
30–300 .....	27.5	0.073	0.2	30
300–1500 .....	.....	.....	f/1500	30
1500–100,000 .....	.....	.....	1.0	30

F= Frequency in MHz

Friis Formula

Friis transmission formula:  $P_d = (P_{out} * G) / (4 * \pi * R^2)$  Where

$P_d$  = power density in mW/cm<sup>2</sup>

$P_{out}$  = output power to antenna in mW

$G$  = gain of antenna in linear scale

$\pi$  = 3.1416

$R$  = distance between observation point and center of the radiator in cm

$P_d$  is the limit of MPE, 1 mW/cm<sup>2</sup>. If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance  $r$  where the MPE limit is reached.

**2.1.3 EUT RF Exposure**

Antenna Gain: 0dBi

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 2.4 in linear scale. Output Power Into Antenna &amp; RF Exposure Evaluation Distance:

BT classic

GFSK			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(2402MHz)	-2.122	$-2.122 \pm 1$	-1.122
Middle(2441MHz)	-1.527	$-1.527 \pm 1$	-0.527
Highest(2480MHz)	-2.275	$-2.275 \pm 1$	-1.275

$\pi/4$ DQPSK			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(2402MHz)	-1.214	$-1.214 \pm 1$	-0.214
Middle(2441MHz)	-0.642	$-0.642 \pm 1$	0.358
Highest(2480MHz)	-1.424	$-1.424 \pm 1$	-0.424

8DPSK			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(2402MHz)	-0.746	$-0.746 \pm 1$	0.254
Middle(2441MHz)	-0.141	$-0.141 \pm 1$	0.859
Highest(2480MHz)	-0.952	$-0.952 \pm 1$	0.048

Worst case: 8DPSK						
Channel	Maximum Peak Conducted Output Power (dBm)	Maximum Peak Conducted Output Power (MW)	Antenna Gain (dBi)	Power Density at R = 20 cm (mW/cm <sup>2</sup> )	Limit	Result
Middle(2441MHz )	0.859	1.219	0	0.0002	1.0	Pass

Note: 1) Refer to report **MTEB23110095-R** for EUT test Max Conducted average Output Power value.

Note: 2)  $P_d = (P_{out} * G) / (4 * \pi * R^2) = (1.219 * 1) / (4 * 3.1416 * 20^2) = 0.0002$

Note: 3) EUT's Bluetooth module is more than 20cm away from the human body.

.....THE END OF REPORT.....