

RF Exposure Evaluation Report

Report Reference No......: MTEB23090280-H

FCC ID......: 2BDEK-RP1216

Compiled by

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Date of issue.....: **September 28,2023**

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

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Applicant's name.....: **RecPro.**

Address: 806 S. Division St.Bristol, in 46507,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: RecPro.

Model/Type reference.....: RP-1216

Listed Models: RV611H

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

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

Hardware Version.....: 210619U1

Software Version: 1121-RV611L-MB01

Rating: 12V +/- 0.5

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

TEST REPORT

Equipment under Test : Digital Mobile receiver System

Model /Type : RP-1216

Listed Models RV611H

Remark Only the model name is different. Such as product color, appearance, internal layout, circuit layout, model and specification of control panel and module, and specifications and materials of antenna are all the same.

Applicant : **RecPro.**

Address : 806 S. Division St.Bristol, in 46507,USA

Manufacturer : **RecPro.**

Address : 806 S. Division St.Bristol, in 46507,USA

Test Result:	PASS
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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	2023-09-28	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 ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3–3.0	614	1.63	*(100)	6
3.0–30	1842/f	4.89/f	*(900/f ²)	6
30–300	61.4	0.163	1.0	6
300–1500 .....	.....	.....	f/300	6
1500–100,000 .....	.....	.....	5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f ²)	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: $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot R^2)$ Where

P_d = power density in mW/cm²

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/cm². 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 & RF Exposure Evaluation Distance:
BT classic

GFSK			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(2402MHz)	2.085	2.085±1	3.085
Middle(2441MHz)	1.615	1.615±1	2.615
Highest(2480MHz)	1.402	1.402±1	2.402

$\pi/4$ DQPSK			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(2402MHz)	1.714	1.714±1	2.714
Middle(2441MHz)	1.314	1.314±1	2.314
Highest(2480MHz)	1.144	1.144±1	2.144

8DPSK			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(2402MHz)	2.061	2.061±1	3.061
Middle(2441MHz)	1.561	1.561±1	2.561
Highest(2480MHz)	1.373	1.373±1	2.373

Worst case: $\pi/4$ DQPSK						
Channel	Maximum Peak Conducted Output Power (dBm)	Maximum Peak Conducted Output Power (MW)	Antenna Gain (dBi)	Power Density at R = 20 cm (mW/cm ²)	Limit	Result
Highest(2480 MHz)	3.085	2.03	0	0.0004	1.0	Pass

Note: 1) Refer to report **MTEB23090280-R** for EUT test Max Conducted average Output Power value.

Note: 2) $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot R^2) = (2.03 \cdot 1) / (4 \cdot 3.1416 \cdot 20^2) = 0.0004$

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

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