

RF Exposure Evaluation Report

Report Reference No...... : **MTEB25010154-H**

FCC ID..... : **2A3IW-R2-DUAL-PRO**

Compiled by

(position+printed name+signature)..: File administrators Alisa Luo



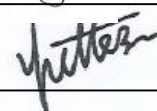
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Date of issue.....: Jan.17,2025

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.....: **Aarna Sales Corporation**

Address.....: 1940 N Municipal Way, UNIT 2020, Round Lake, IL 60073

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.....: Car Dash Camera

Trade Mark.....: ROVE

Model/Type reference.....: ROVE R2-4K DUAL PRO

Listed Models: N/A

Modulation Type.....: b: DSSS

g/n/802.11a/802.11n20/802.11n40/802.11ac20/802.11ac40/802.11ac80/:OFDM

802.11Ax20/802.11Ax40:OFDMA

Operation Frequency.....: From 2412MHz~2462MHz

From 5180MHz-5240MHz,5745MHz-5825MHz

Hardware Version.....: A2

Software Version.....: 0301

Rating.....: DC 5V by USB Port

DC 5V by Car Charger

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

TEST REPORT

Equipment under Test : Car Dash Camera

Model /Type : ROVE R2-4K DUAL PRO

Listed Models : N/A

Remark : N/A

Applicant : Aarna Sales Corporation

Address : 1940 N Municipal Way, UNIT 2020, Round Lake, IL 60073

Manufacturer(1) : Shenzhen Samoon Technology Co.,Ltd

Address : 7/F, 5/F, West of 6/F, 9/F Workshop 7, Zhong Yun Tai Industry Park, Songbai Road, Shiyan Street, Bao'an District, Shenzhen City, Guangdong Province, P.R. China

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	2025.01.17	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: $P_d = (P_{out} * G) / (4 * \pi * R^2)$ Where

P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 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

WIFI 2.4G

802.11b			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(2412MHz)	16.39	16.39±1	17.39
Middle(2437MHz)	15.89	15.89±1	16.89
Highest(2462MHz)	16.47	16.47±1	17.47

802.11g			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(2412MHz)	15.75	15.75±1	16.75
Middle(2437MHz)	15.47	15.47±1	16.47
Highest(2462MHz)	14.88	14.88±1	15.88

802.11n(H20)			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(2412MHz)	15.08	15.08±1	16.08
Middle(2437MHz)	14.61	14.61±1	15.61
Highest(2462MHz)	14.35	14.35±1	15.35

802.11n(H40)			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(2422MHz)	16.13	16.13±1	17.13
Middle(2437MHz)	16.11	16.11±1	17.11
Highest(2452MHz)	16.14	16.14±1	17.14

802.11Ax(H20)			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(2412MHz)	16.84	16.84±1	17.84
Middle(2437MHz)	16.01	16.01±1	17.01
Highest(2462MHz)	15.34	15.34±1	16.34

802.11Ax(H40)			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(2422MHz)	16.23	16.23±1	17.23
Middle(2437MHz)	16.77	16.77±1	17.77
Highest(2452MHz)	15.40	15.40±1	16.4

WIFI 2.4G

Worst case: 802.11Ax(H20)						
Channel	Maximum tune-up Power (dBm)	Maximum tune-up Power (MW)	Antenna Gain (dBi)	Power Density at R = 20 cm (mW/cm ²)	Limit	Result
Lowest(2412MHz)	17.84	60.81	1.9	0.0186	1.0	Pass

Note: 1) Refer to report MTEB25010154-R for EUT test Max Conducted average Output Power value.

Note: 2) $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot R^2) = (60.81 \cdot 1.54) / (4 \cdot 3.1416 \cdot 20^2) = 0.0186$

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

WIFI 5G

Mode	Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power (dBm)
IEEE 802.11a	36	11.017	11.017±1	12.017
	40	10.895	10.895±1	11.895
	48	11.805	11.805±1	12.805
IEEE 802.11n_20	36	10.464	10.464±1	11.464
	40	10.734	10.734±1	11.734
	48	11.912	11.912±1	12.912
IEEE 802.11n_40	38	15.162	15.162±1	16.162
	46	15.412	15.412±1	16.412
IEEE 802.11ac_20	36	10.440	10.440±1	11.44
	40	10.292	10.292±1	11.292
	48	11.479	11.479±1	12.479
IEEE 802.11ac_40	38	8.125	8.125±1	9.125
	46	8.989	8.989±1	9.989
IEEE 802.11ac_80	42	7.144	7.144±1	8.144
IEEE 802.11ax_20	36	9.617	9.617±1	10.617
	40	10.185	10.185±1	11.185
	48	10.639	10.639±1	11.639
IEEE 802.11ax_40	38	7.806	7.806±1	8.806
	46	8.959	8.959±1	9.959

Mode	Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power (dBm)
IEEE 802.11a	149	6.349	6.349±1	7.349
	157	9.374	9.374±1	10.374
	165	9.350	9.350±1	10.35
IEEE 802.11n_20	149	8.339	8.339±1	9.339
	157	9.373	9.373±1	10.373
	165	8.565	8.565±1	9.565
IEEE 802.11n_40	151	7.967	7.967±1	8.967
	159	8.073	8.073±1	9.073
IEEE 802.11ac_20	149	7.683	7.683±1	8.683
	157	8.914	8.914±1	9.914
	165	8.325	8.325±1	9.325
IEEE 802.11ac_40	151	6.966	6.966±1	7.966
	159	6.895	6.895±1	7.895
IEEE 802.11ac_80	155	5.637	5.637±1	6.637
IEEE 802.11ax_20	149	7.829	7.829±1	8.829
	157	8.236	8.236±1	9.236
	165	7.991	7.991±1	8.991
IEEE 802.11ax_40	151	7.209	7.209±1	8.209
	159	6.904	6.904±1	7.904

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Worst case: IEEE for 802.11n40						
Channel	Maximum Peak Conducted Output Power	Maximum Peak Conducted Output Power	Antenna Gain	Power Density at R = 20 cm	Limit	Result
	(dBm)	(MW)	(dBi)	(mW/cm ²)		
Highest(5230MHz)	16.412	43.77	0.6	0.010	1.0	Pass

Note: 1) Refer to report MTEB25010154-R1 for EUT test Max Conducted average Output Power value.

Note: 2) $P_d = (P_{out} * G) / (4 * \pi * R^2) = (43.77 * 1.15) / (4 * 3.1416 * 20^2) = 0.010$

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

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Worst case: IEEE for 802.11a						
Channel	Maximum Peak Conducted Output Power	Maximum Peak Conducted Output Power	Antenna Gain	Power Density at R = 20 cm	Limit	Result
	(dBm)	(MW)	(dBi)	(mW/cm ²)		
Highest(5785MHz)	10.374	10.90	-1.1	0.0017	1.0	Pass

Note: 1) Refer to report MTEB25010154-R1 for EUT test Max Conducted average Output Power value.

Note: 2) $P_d = (P_{out} * G) / (4 * \pi * R^2) = (10.90 * 0.78) / (4 * 3.1416 * 20^2) = 0.0017$

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

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