

RF Exposure Evaluation Report

Report Reference No...... : **MTEB24050284-H**

FCC ID..... : **A4C-10017A**

Compiled by

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



Supervised by

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Approved by

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Date of issue..... : **May 29, 2024**

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..... : **RM ACQUISITIONS LLC**

Address..... : 1100 West Idaho Street SUITE 310, Boise, Idaho. 83702.

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..... : GPS navigator

Trade Mark..... : **RAND MØNALLY**

Model/Type reference..... : RandTab6

Listed Models : N/A

Modulation Type..... : GFSK
GFSK, $\pi/4$ DQPSK, 8DPSK
b: DSSS, CCK g/n: BPSK, QPSK, QAM
OFDM

Operation Frequency..... : BT: From 2402MHz to 2480MHz
WIFI 2.4G: From 2412MHz to 2462MHz
WIFI 5G: From 5180MHz-5240MHz
From 5260MHz-5320MHz
From 5500MHz-5720MHz
From 5745MHz-5825MHz

Hardware Version..... : RANDTAB6-MAIN-V01A-1

Software Version..... : RandTab6-userdebug 13 TP1A.20220624.014
RandTab6_mp_240429_66 release-keys

Rating..... : DC 3.7V (by Battery)
DC 5V (by USB Port)
DC 5V (by Car Charger)

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

TEST REPORT

Equipment under Test : GPS navigator

Model /Type : RandTab6

Listed Models : N/A

Remark : N/A

Applicant : RM ACQUISITIONS LLC

Address : 1100 West Idaho Street SUITE 310, Boise, Idaho. 83702.

Manufacturer : SHEN ZHEN APICAL TECHNOLOGY CO., LTD

Address : 9/F,B Building, Tinghua Unis Infoport, Langshan RD, North district, Hi-tech Industrial Park, Nanshan, Shenzhen

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	2024-05-29	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

Antenna Gain: 2.3dBi
BT classic

GFSK			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(2402MHz)	2.133	2.133 ± 1	3.133
Middle(2441MHz)	2.558	2.558 ± 1	3.558
Highest(2480MHz)	2.493	2.493 ± 1	3.493

$\pi/4$ DQPSK			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(2402MHz)	3.017	3.017 ± 1	4.017
Middle(2441MHz)	3.406	3.406 ± 1	4.406
Highest(2480MHz)	3.356	3.356 ± 1	4.356

8DPSK			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(2402MHz)	3.174	3.174 ± 1	4.174
Middle(2441MHz)	3.668	3.668 ± 1	4.668
Highest(2480MHz)	3.651	3.651 ± 1	4.651

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 ²)	Limit	Result
Middle(2441MHz)	4.668	2.93	2.3	0.0009	1.0	Pass

Note: 1) Refer to report **MTEB24050284-R3** for EUT test Max Conducted average Output Power value.

Note: 2) $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot R^2) = (2.93 \cdot 1.69) / (4 \cdot 3.1416 \cdot 20^2) = 0.0009$

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

Antenna gain: 2.73dBi
WIFI 2.4G

802.11b			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(2412MHz)	12.74	12.74 ± 1	13.74
Middle(2437MHz)	12.87	12.87 ± 1	13.87
Highest(2462MHz)	13.31	13.31 ± 1	13.31

802.11g			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(2412MHz)	14.80	14.80 ± 1	15.80
Middle(2437MHz)	14.87	14.87 ± 1	15.87
Highest(2462MHz)	15.35	15.35 ± 1	16.35

802.11n(H20)			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(2412MHz)	14.30	14.30 ± 1	15.30
Middle(2437MHz)	14.23	14.23 ± 1	15.23
Highest(2462MHz)	14.77	14.77 ± 1	15.77

802.11n(H40)			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(2422MHz)	14.08	14.08 ± 1	15.08
Middle(2437MHz)	14.38	14.38 ± 1	15.38
Highest(2452MHz)	14.47	14.47 ± 1	15.47

WIFI 2.4G

Worst case: 802.11g						
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)	16.35	43.15	2.73	0.016	1.0	Pass

Note: 1) Refer to report **MTEB24050284-R2** for EUT test Max Conducted average Output Power value.

Note: 2) $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot R^2) = (43.15 \cdot 1.87) / (4 \cdot 3.1416 \cdot 20^2) = 0.016$

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

Antenna gain: 3.47dBi

WIFI 5G U-NII 1

IEEE for 802.11a			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(5180MHz)	9.967	9.967±1	10.967
Middle(5200MHz)	10.200	10.200±1	10.200
Highest(5240MHz)	11.986	11.986±1	12.986

IEEE for 802.11n(HT20)			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(5180MHz)	9.660	9.660±1	10.660
Middle(5200MHz)	9.842	9.842±1	10.842
Highest(5240MHz)	11.350	11.350 ± 1	12.350

IEEE for 802.11n(HT40)			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(5190MHz)	3.487	3.487±1	4.487
Highest(5230MHz)	8.813	8.813 ± 1	9.813

IEEE for 802.11ac(HT20)			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(5180MHz)	9.681	9.681±1	10.681
Middle(5200MHz)	9.978	9.978±1	10.978
Highest(5240MHz)	11.563	11.563±1	11.563

IEEE for 802.11 ac(HT40)			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(5190MHz)	3.546	3.546±1	4.546
Highest(5230MHz)	9.047	9.047±1	10.047

IEEE for 802.11ac(HT80)			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
(5210MHz)	0.424	0.424±1	1.424

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 (5240MHz)	12.986	19.89	3.47	0.009	1.0	Pass

Note: 1) Refer to report **MTEB24050284-R1** for EUT test Max Conducted average Output Power value.

Note: 2) $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot R^2) = (19.89 \cdot 2.22) / (4 \cdot 3.1416 \cdot 20^2) = 0.009$

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

Antenna gain: 3.47dBi

WIFI 5G U-NII 2A

IEEE for 802.11a			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(5260MHz)	11.912	11.912±1	12.912
Middle(5280MHz)	11.914	11.914±1	12.914
Highest(5320MHz)	11.122	11.122±1	12.122

IEEE for 802.11n(HT20)			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(5260MHz)	11.631	11.631±1	12.631
Middle(5280MHz)	11.587	11.587±1	12.587
Highest(5320MHz)	10.681	10.681 ± 1	11.681

IEEE for 802.11n(HT40)			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(5270MHz)	9.751	9.751±1	10.751
Highest(5310MHz)	4.582	4.582 ± 1	5.582

IEEE for 802.11ac(HT20)			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(5260MHz)	11.792	11.792±1	11.792
Middle(5280MHz)	11.679	11.679±1	11.679
Highest(5320MHz)	10.758	10.758±1	11.758

IEEE for 802.11 ac(HT40)			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(5270MHz)	9.715	9.715±1	10.715
Highest(5310MHz)	4.742	4.742±1	5.742

IEEE for 802.11ac(HT80)			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
(5290MHz)	1.575	1.575±1	2.575

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)		
Middle (5300MHz)	12.914	19.56	3.47	0.009	1.0	Pass

Note: 1) Refer to report **MTEB24050284-R1** for EUT test Max Conducted average Output Power value.

Note: 2) $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot R^2) = (23.50 \cdot 2.22) / (4 \cdot 3.1416 \cdot 20^2) = 0.009$

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

Antenna gain: 3.47dBi

WIFI 5G U-NII 2C

IEEE for 802.11a			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(5500MHz)	11.308	11.308±1	12.308
Middle(5600MHz)	12.082	12.082±1	13.082
Highest(5700MHz)	11.824	11.824±1	12.824

IEEE for 802.11n(HT20)			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(5500MHz)	10.880	10.880±1	11.880
Middle(5600MHz)	11.736	11.736±1	12.736
Highest(5700MHz)	11.460	11.460±1	12.460

IEEE for 802.11n(HT40)			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(5510MHz)	4.559	4.559±1	5.559
Middle(5590MHz)	9.230	9.230±1	10.230
Highest(5670MHz)	9.167	9.167±1	10.167

IEEE for 802.11ac(HT20)			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(5500MHz)	11.199	11.199±1	12.199
Middle(5600MHz)	11.788	11.788±1	12.788
Highest(5700MHz)	11.525	11.525±1	12.525

IEEE for 802.11 ac(HT40)			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(5510MHz)	4.811	4.811±1	5.811
Middle(5590MHz)	9.455	9.455±1	10.455
Highest(5670MHz)	9.372	9.372±1	10.372

IEEE for 802.11ac(HT80)			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(5530MHz)	1.296	1.296±1	2.296
Highest(5610MHz)	8.197	8.197±1	9.197

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 (5700MHz)	13.082	20.33	3.47	0.009	1.0	Pass

Note: 1) Refer to report **MTEB24050284-R1** for EUT test Max Conducted average Output Power value.

Note: 2) $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot R^2) = (20.33 \cdot 2.22) / (4 \cdot 3.1416 \cdot 20^2) = 0.009$

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

Antenna gain: 3.47dBi

WIFI 5G U-NII 3

IEEE for 802.11a			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(5745MHz)	12.488	12.488±1	13.488
Middle(5785MHz)	12.325	12.325±1	13.325
Highest(5825MHz)	10.910	10.910±1	11.910

IEEE for 802.11n(HT20)			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(5745MHz)	12.051	12.051±1	13.051
Middle(5785MHz)	11.899	11.899±1	12.899
Highest(5825MHz)	10.475	10.475 ± 1	11.475

IEEE for 802.11n(HT40)			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(5755MHz)	10.008	10.008±1	10.008
Highest(5795MHz)	5.411	5.411 ± 1	6.411

IEEE for 802.11ac(HT20)			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(5745MHz)	12.145	12.145±1	13.145
Middle(5785MHz)	12.048	12.048±1	13.048
Highest(5825MHz)	10.536	10.536±1	11.536

IEEE for 802.11 ac(HT40)			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(5755MHz)	10.179	10.179±1	11.179
Highest(5795MHz)	5.559	5.559±1	6.559

IEEE for 802.11ac(HT80)			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
(5775MHz)	2.181	2.181±1	3.181

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)		
Lowest (5745MHz)	13.488	22.32	3.47	0.010	1.0	Pass

Note: 1) Refer to report **MTEB24050284-R1** for EUT test Max Conducted average Output Power value.

Note: 2) $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot R^2) = (22.32 \cdot 2.22) / (4 \cdot 3.1416 \cdot 20^2) = 0.010$

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

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