Report No.: DDT-RE23032214-2E05

Issued Date: May 26, 2023

RF EXPOSURE REPORT

FOR

Applicant	**:**	Ruijie Networks Co., Ltd.
Address	**:**	Building 19, Juyuanzhou Industrial Park, No. 618 Jinshan Road, Cangshan District , Fuzhou, Fujian, China
Equipment under Test	**:**	Wireless Access Point
Model No.	**:**	RG-RAP73HD
Trade Mark	**:**	Ruijie, Reyee, Ruijie | Reyee, Reyee by Ruijie, Ruijie | Reyee
FCC ID	**:**	2AX5J-RAP73HD
Manufacturer	**:**	Ruijie Networks Co., Ltd.
Address	**:**	Building 19, Juyuanzhou Industrial Park, No. 618 Jinshan Road, Cangshan District , Fuzhou, Fujian, China

Issued By: Dongguan Dongdian Testing Service Co., Ltd.

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REPORT

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Test Report Declare

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Standard Used: KDB447498 D01 General RF Exposure Guidance v06

We Declare:

The equipment described above is assessed by Dongguan Dongdian Testing Service Co., Ltd and in the configuration assessed the equipment complied with the standards specified above. The assessed results are contained in this report and Dongguan Dongdian Testing Service Co., Ltd is assumed of full responsibility for the accuracy and completeness of these assess.

After evaluation, our opinion is that the equipment In Accordance with above standard.

Report No:	DDT-RE23032214-2E05		
Date of Receipt:	Nov. 30, 2022	**Date of Test:**	Nov. 30, 2022 ~ May 26, 2023

Prepared By: ***Approved By:***

Ella Gong

Ella Gong /Engineer ***Damon Hu/EMC Manager***

Note: This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of Dongguan Dongdian Testing Service Co., Ltd.

Revision History

Rev.	Revisions	Issue Date	Revised By
---	Initial issue	May 26, 2023	

1. General Information

1.1. Description of equipment

EUT* Name	:	Wireless Access Point
Model Number	:	RG-RAP73HD
EUT function description	:	Please reference user manual of this device
Power Supply	:	DC 48V from external adapter /POE
Radio Technology	:	IEEE802.11b/g/n/a/ac/ax/be
Operation frequency	:	2412 MHz to 2462 MHz, 5180 MHz to 5240 MHz, 5260 MHz to 5320 MHz, 5500 MHz to 5720 MHz, 5745 MHz to 5825 MHz, 6115 MHz to 6415 MHz, 6435 MHz to 6515 MHz, 6535 MHz to 6875 MHz, 6895 MHz to 7095 MHz
Modulation	:	IEEE 802.11b: DSSS (CCK, DQPSK, DBPSK) IEEE 802.11g/a: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11n: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11ac: OFDM (256QAM, 64QAM, 16QAM, QPSK, BPSK) IEEE 802.11ax: OFDMA (1024QAM, 64QAM, 16QAM, QPSK, BPSK) IEEE 802.11be: OFDMA (4096QAM,1024QAM, 64QAM, 16QAM, QPSK, BPSK)

2.4 GHz Antenna information						
Antenna Type :PIFA				Beamforming Directional Gain (dBi)	CDD Directional Gain (dBi)	
Antenna 1 Gain(dBi)	Antenna 2 Gain(dBi)	Antenna 3 Gain(dBi)	Antenna 4 Gain(dBi)		Power	PSD
6.71	6.72	6.52	5.85	12.74	6.72	12.74

Remark:
The EUT supports Cyclic Delay Diversity (CDD) mode, and CDD signals are correlated.
Directional gain = G_{ANT} + Array Gain, where Array Gain is as follows:
1) For power spectral density (PSD) measurements on all devices.
Array Gain = 10 log (N_{ANT}/ N_{ss}) dB;
2) For power measurements on IEEE 802.11 devices.
Array Gain = 0 dB for NANT < 4;
The EUT also supports beamforming mode, and the beamforming support 802.11n/ac/ax/be only, not include 802.11a/b/g. BF Directional Gain = Max. Gain + 10 log (N_{ANT} / N_{ss}).
For beamforming operation, manufacturer automatically backs power down based on a 10log (N_{ANT}) factor based on CDD power, Therefore, only the CDD mode was evaluated in this report.

Antenna information						
/	Antenna 1	Antenna 2	Antenna 3	Antenna 4	Beamforming Directional Gain	CDD Directional Gain (dBi)

Antenna Type	PIFA	PIFA	PIFA	PIFA	(dBi)	Power	PSD
U-NII-1 Maximum PK gain(dBi)	4.81	7.46	4.40	5.75	13.48	7.46	13.48
U-NII-2A Maximum PK gain(dBi)	4.54	7.35	4.40	6.58	13.37	7.35	13.37
U-NII-2C Maximum PK gain(dBi)	4.28	8.20	5.06	8.46	14.48	8.20	14.48
U-NII-3 Maximum PK gain(dBi)	3.71	8.45	4.55	7.30	14.47	8.45	14.47

Note:
The EUT supports Cyclic Delay Diversity (CDD) mode, and CDD signals are correlated.
Directional gain = G_{ANT} + Array Gain, where Array Gain is as follows:
3) For power spectral density (PSD) measurements on all devices.
Array Gain = 10 log (N_{ANT}/ N_{ss}) dB;
4) For power measurements on IEEE 802.11 devices.
Array Gain = 0 dB for NANT < 4;
The EUT also supports beamforming mode, and the beamforming support 802.11n/ac/ax/be only, not include 802.11a/b/g. BF Directional Gain = Max. Gain + 10 log (N_{ANT} / N_{ss}).
For beamforming operation, manufacturer automatically backs power down based on a 10log (N_{ANT}) factor based on CDD power, Therefore, only the CDD mode was evaluated in this report.

Antenna information							
/	Antenna 1	Antenna 2	Antenna 3	Antenna 4	Beamforming Directional Gain (dBi)	CDD Directional Gain (dBi)	
Antenna Type	PIFA	PIFA	PIFA	PIFA		Power	PSD
U-NII-5 Maximum PK gain(dBi)	6.49	3.99	5.78	5.63	11.54	6.49	11.54
U-NII-6 Maximum PK gain(dBi)	5.91	4.05	5.97	4.84	11.25	5.97	11.25
U-NII-7 Maximum PK gain(dBi)	5.77	4.67	4.58	5.84	11.26	5.84	11.26
U-NII-8 Maximum PK gain(dBi)	5.21	6.08	5.31	5.67	11.59	6.08	11.59

Note:
The EUT supports Cyclic Delay Diversity (CDD) mode, and CDD signals are correlated.
Directional gain = G_{ANT} + Array Gain, where Array Gain is as follows:
5) For power spectral density (PSD) measurements on all devices.
Array Gain = 10 log (N_{ANT}/ N_{ss}) dB;
6) For power measurements on IEEE 802.11 devices.
Array Gain = 0 dB for NANT < 4;

The EUT also supports beamforming mode, and the beamforming support 802.11n/ac/ax/be only, not include 802.11a/b/g. BF Directional Gain = Max. Gain + 10 log (N_{ANT} / N_{ss}).
For beamforming operation, manufacturer automatically backs power down based on a 10log (N_{ANT}) factor based on CDD power, Therefore, only the CDD mode was evaluated in this report.

1.2. Assess laboratory

Dongguan Dongdian Testing Service Co., Ltd.
Add.: No. 17, Zongbu Road 2, Songshan Lake Sci&Tech, Industry Park, Dongguan City, Guangdong Province, China, 523808.
Tel.: +86-0769-38826678, http://www.dgddt.com, Email: ddt@dgddt.com.

CNAS Accreditation No. L6451; A2LA Accreditation Number: 3870.01
FCC Designation Number: CN1182, Test Firm Registration Number: 540522
Innovation, Science and Economic Development Canada Site Registration Number: 10288A
Conformity Assessment Body identifier: CN0048
VCCI facility registration number: C-20087, T-20088, R-20123, R-20155, G-20118

2. RF Exposure Evaluation

2.1. Requirement

Systems operating under the provisions of FCC 47 CFR section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as mobile device whereby a distance of 0.2 m normally can be maintained between the user and the device, and below RF Permissible Exposure limit shall comply with.

Limits for General Population/Uncontrolled Exposure

(B) Limits for General Population / Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $\|E\|^2$,$\|H\|^2$ or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500			F/1500	30
1500-100,000			1.0	30

Note: f = frequency in MHz ; *Plane-wave equivalent power density

2.2. Calculation method

$$E(V/m) = \frac{\sqrt{30 \times P \times G}}{d} \qquad \text{Power Density: } S(mW/cm^2) = \frac{E^2}{377}$$

E = Electric field (V/m)
P = Peak RF output power (mW)
G = EUT Antenna numeric gain (numeric)=
d = Separation distance between radiator and human body (m)
The formula can be changed to

We can change the formula to:

$$S = \frac{30 \times P \times G}{377 \times d^2} \quad \text{or, } d = \sqrt{\frac{30 \times P \times G}{377 \times S}}$$

From the peak EUT RF output power, the minimum mobile separation distance, d=0.2 m, as well as the gain of the used antenna, the RF power density can be obtained.

2.3. Estimation result

Mode	Antenna	Output power (dBm)	tune up power (dBm)	tune up power (mW)	Antenna Gain (dBi)	Antenna Gain (linear)	MPE Values (mW/cm^2)	MPE Limit (mW/cm^2)	Sum of the MPE
2.4G WIFI 802.11b	1	13.2	13.5	22.39	6.71	4.69	0.02089	1	N/A
	2	13.48	13.5	22.39	6.72	4.7	0.02093	1	
	3	11.93	13.5	22.39	6.52	4.49	0.02000	1	
	4	12.73	13.5	22.39	5.85	3.85	0.01715	1	
2.4G WIFI 802.11n/ax/be	1	9.11	10.5	11.22	6.71	4.69	0.01047	1	0.039575
	2	10.11	10.5	11.22	6.72	4.7	0.01049	1	
	3	8.55	10.5	11.22	6.52	4.49	0.01002	1	
	4	8.53	10.5	11.22	5.85	3.85	0.00859	1	
5G WIFI	1	16.78	17	50.12	7.46	5.57	0.05554	1	0.245382
	2	16.87	17	50.12	7.35	5.43	0.05414	1	
	3	16.51	17	50.12	8.2	6.61	0.06591	1	
	4	16.5	17	50.12	8.45	7	0.06980	1	
6G WIFI	1	13.08	13.5	22.39	6.49	4.46	0.01987	1	0.072649
	2	12.86	13.5	22.39	5.97	3.95	0.01759	1	
	3	12.9	13.5	22.39	5.84	3.84	0.01710	1	
	4	12.39	13.5	22.39	6.08	4.06	0.01808	1	

Note: The estimation distance is 20 cm

For multiband simultaneous transmissions: 0.039575+0.245382+0.072649=0.35761<1
Conclusion: MPE evaluation required since transmitter power is below FCC threshold

END OF REPORT