



MPE TEST REPORT

Applicant Smawave Technology Co. ,Ltd
FCC ID 2AU8HSRP620
Product 5G IP67 Ruggedized Router
Brand smawave
Model SRP620
Report No. R2201A0113-M1V1
Issue Date March 21, 2022

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC 47 CFR Part 1 1.1310**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

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Version	Revision description	Issue Date
Rev.0	Initial issue of report.	March 8, 2022
Rev.1	Update description.	March 21, 2022

Note: This revised report (Report No. R2201A0113-M1V1) supersedes and replaces the previously issued report (Report No. R2201A0113-M1). Please discard or destroy the previously issued report and dispose of it accordingly.

1 Test Laboratory

1.1 Notes of the Test Report

This report shall not be reproduced in full or partial, without the written approval of **TA technology (shanghai) co., Ltd.** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. Measurement Uncertainties were not taken into account and are published for informational purposes only. This report is written to support regulatory compliance of the applicable standards stated above.

1.2. Test facility

FCC (Designation number: CN1179, Test Firm Registration Number: 446626)

TA Technology (Shanghai) Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform measurements.

1.3 Testing Location

Company: TA Technology (Shanghai) Co., Ltd.
Address: No.145, Jintang Rd, Tangzhen Industry Park, Pudong Shanghai, China
City: Shanghai
Post code: 201201
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1.4 Laboratory Environment

Temperature	Min. = 18°C, Max. = 25 °C
Relative humidity	Min. = 30%, Max. = 70%
Ground system resistance	< 0.5 Ω
Ambient noise is checked and found very low and in compliance with requirement of standards. Reflection of surrounding objects is minimized and in compliance with requirement of standards.	

2 Description of Equipment under Test

Client Information

Applicant	Smawave Technology Co. ,Ltd
Applicant address	3/F, Building 8, 1001 North Qinzhou Road, Xuhui District, Shanghai, China
Manufacturer	Smawave Technology Co. ,Ltd
Manufacturer address	3/F, Building 8, 1001 North Qinzhou Road, Xuhui District, Shanghai, China

General Technologies

Model	SRP620
Lab internal SN	R2201A0113/S01
Hardware Version	V1.0
Software Version	SQXR60_V1.0
Date of Testing:	February 8, 2022 ~ March 8, 2022

Note: 1. The EUT is sent from the applicant to TA and the information of the EUT is declared by the applicant.

2. All indications of Pass/Fail in this report are opinions expressed by TA Technology (Shanghai) Co., Ltd. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only.

3 Maximum Tune up Power (measured) and antenna Gain

The numeric gain (G) of the antenna with a gain specified in dB is determined by

$$\text{Numeric gain (G)} = 10^{\text{(antenna gain/10)}}$$

	Band	Maximum Tune up Power		Antenna Gain (dBi)	Numeric gain
		(dBm)	(mW)		
2.4G	802.11b	27.000	501.187	4.400	2.754
	802.11g	26.000	398.107	4.400	2.754
	802.11n HT20	26.000	398.107	4.400	2.754
	802.11n HT40	26.000	398.107	4.400	2.754
5G U-NII-1	802.11a	24.000	251.189	4.400	2.754
	802.11n HT20	24.000	251.189	4.400	2.754
	802.11n HT40	24.000	251.189	4.400	2.754
	802.11ac VHT20	20.000	100.000	4.400	2.754
	802.11ac VHT40	20.000	100.000	4.400	2.754
	802.11ac VHT80	20.000	100.000	4.400	2.754
	802.11ax HE20	20.000	100.000	4.400	2.754
	802.11ax HE40	20.000	100.000	4.400	2.754
	802.11ax HE80	20.000	100.000	4.400	2.754
5G U-NII-3	802.11a	24.000	251.189	4.800	3.020
	802.11n HT20	24.000	251.189	4.800	3.020
	802.11n HT40	24.000	251.189	4.800	3.020
	802.11ac VHT20	20.000	100.000	4.800	3.020
	802.11ac VHT40	20.000	100.000	4.800	3.020
	802.11ac VHT80	20.000	100.000	4.800	3.020
	802.11ax HE20	20.000	100.000	4.800	3.020
	802.11ax HE40	20.000	100.000	4.800	3.020
	802.11ax HE80	20.000	100.000	4.800	3.020

4 Test Result

According to section 1.1310 of FCC 47 CFR Part 1, limits for maximum permissible exposure (MPE) are as following

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
3-30	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

* = Plane-wave equivalent power density

Note1. Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational / controlled limits apply provided he or she is made aware of the potential for exposure.

Note2: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.



The maximum permissible exposure for 1500~100,000MHz is 1.0.So

Band	The maximum permissible exposure (mW/cm ²)
Wi-Fi 2.4GHz	1.000
Wi-Fi 5GHz	1.000

**RF Exposure Calculations:**

The following information provides the minimum separation distance for the highest gain antenna provided. This calculation is based on the conducted power, considering maximum power and antenna gain. The formula shown in KDB 447498 D01 is used in the calculation.

Equation from KDB 447498 D01 General RF Exposure Guidance v06 (10/23/2015) is:

$$S = PG / 4\pi R^2$$

Where: S = power density (in appropriate units, e.g. mW/cm²)

P = Time-average maximum tune up procedure (in appropriate units, e.g., mW)

G = the numeric gain of the antenna

R = distance to the center of radiation of the antenna (20 cm = limit for MPE)

Band		Antenna Gain (dBi)	Maximum tune up (dBm)	Maximum EIRP (dBm)	PG (mW)	Test Result (mW/cm ²)	Limit Value (mW/cm ²)
Wi-Fi 2.4G	802.11b	4.400	27.000	31.400	1380.384	0.275	1.000
	802.11g	4.400	26.000	30.400	1096.478	0.218	1.000
	802.11n HT20	4.400	26.000	30.400	1096.478	0.218	1.000
	802.11n HT40	4.400	26.000	30.400	1096.478	0.218	1.000
Wi-Fi 5G U-NII-1	802.11a	4.400	24.000	28.400	691.831	0.138	1.000
	802.11n HT20	4.400	24.000	28.400	691.831	0.138	1.000
	802.11n HT40	4.400	24.000	28.400	691.831	0.138	1.000
	802.11ac VHT20	4.400	20.000	24.400	275.423	0.055	1.000
	802.11ac VHT40	4.400	20.000	24.400	275.423	0.055	1.000
	802.11ac VHT80	4.400	20.000	24.400	275.423	0.055	1.000
	802.11ax HE20	4.400	20.000	24.400	275.423	0.055	1.000
	802.11ax HE40	4.400	20.000	24.400	275.423	0.055	1.000
Wi-Fi 5G U-NII-3	802.11a	4.800	24.000	28.800	758.578	0.151	1.000
	802.11n HT20	4.800	24.000	28.800	758.578	0.151	1.000
	802.11n HT40	4.800	24.000	28.800	758.578	0.151	1.000
	802.11ac VHT20	4.800	20.000	24.800	301.995	0.060	1.000
	802.11ac VHT40	4.800	20.000	24.800	301.995	0.060	1.000
	802.11ac VHT80	4.800	20.000	24.800	301.995	0.060	1.000



	802.11ax HE20	4.800	20.000	24.800	301.995	0.060	1.000
	802.11ax HE40	4.800	20.000	24.800	301.995	0.060	1.000
	802.11ax HE80	4.800	20.000	24.800	301.995	0.060	1.000
Note: $R = 20\text{cm}$ $\pi = 3.1416$							

Wi-Fi 2.4G antenna and Wi-Fi 5G antenna can't transmit simultaneously.

Note: For transmitters, minimum separation distance is 20cm, even if calculations indicate MPE distance is less.

*****END OF REPORT *****



ANNEX A: The EUT Appearance

The EUT Appearance are submitted separately.