

MPE TEST REPORT

Applicant Realsil Microelectronics (Suzhou) Co., Ltd.
FCC ID 2BASB-PKM8721DAF
Product 2.4GHz/5GHz wireless LAN/Bluetooth module
Brand Realsil
Model PKM8721DAF-C13-F10; PKM8721DAF-D23-F10
Report No. EFTA25040242-IE-09-M1
Issue Date September 24, 2025

Eurofins TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC 47 CFR Part 1 §1.1310, §2.1091**. The test results show that the equipment tested can demonstrate the compliance with the requirements as documented in this report.



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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 **Eurofins 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)

Eurofins 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: Eurofins TA Technology (Shanghai) Co., Ltd.
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1.4 Laboratory Environment

Temperature	Min. = 18°C, Max. = 25°C
Relative humidity	Min. = 20%, Max. = 80%
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	Realsil Microelectronics (Suzhou) Co., Ltd.
Applicant address	No.128, West Shenhu Road, Suzhou Industrial Park, Jiangsu Province
Manufacturer	Realsil Microelectronics (Suzhou) Co., Ltd.
Manufacturer address	No.128, West Shenhu Road, Suzhou Industrial Park, Jiangsu Province

General Technologies

EUT Description			
Model	PKM8721DAF-C13-F10; PKM8721DAF-D23-F10		
Lab Internal SN	EFTA25040242-IE-09-M1		
Hardware Version	HDK-PKM8721DAF-C13-F10-20241029; HDK-PKM8721DAF-D23-F10-20241029		
Software Version	20250312_PKM8721DAF_mp&normal image_V01.bin		
Frequency	Band	TX (MHz)	RX (MHz)
	Wi-Fi 2.4G	2400 ~ 2483.5	2400 ~ 2483.5
	Wi-Fi 5GHz (U-NII-1)	5150 ~ 5250	5150 ~ 5250
	Wi-Fi 5GHz (U-NII-2A)	5250 ~ 5350	5250 ~ 5350
	Wi-Fi 5GHz (U-NII-2C)	5470 ~ 5600	5470 ~ 5600
		5650 ~ 5725	5650 ~ 5725
	Wi-Fi 5GHz (U-NII-3)	5725~5850	5725~5850
	Bluetooth LE	2402~2480	2402~2480
Date of Testing	April 28, 2025~ May 7, 2025		
Date of Sample Received	April 22, 2025		
Note:			
1. The EUT is sent from the applicant to Eurofins 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 Eurofins 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.			

The detailed product change description please refers to following table:

Module	PKM8721DAF-C13-F10	PKM8721DAF-D23-F10
Antenna	PCB Antenna	FPC Antenna
Others	The same	
Note: 1. The following data are derived from the model with the higher antenna gain between PKM8721DAF-C13-F10 and PKM8721DAF-D23-F10. 2. The detailed product change description please refers to the Difference Declaration Letter.		

For model PKM8721DAF-C13-F10:

Band	Antenna Gain (dBi)
Wi-Fi 2.4GHz	4.30
Wi-Fi 5G(U-NII-1)	1.80
Wi-Fi 5G(U-NII-2A)	1.00
Wi-Fi 5G(U-NII-2C)	1.00
Wi-Fi 5G(U-NII-3)	1.00
Bluetooth LE	4.30

For model PKM8721DAF-D23-F10:

Band	Antenna Gain (dBi)
Wi-Fi 2.4GHz	3.60
Wi-Fi 5G(U-NII-1)	3.10
Wi-Fi 5G(U-NII-2A)	3.70
Wi-Fi 5G(U-NII-2C)	3.40
Wi-Fi 5G(U-NII-3)	3.90
Bluetooth LE	3.60

3 Maximum Tune Up Tolerance and Antenna Gain

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

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

Band	Maximum Tune Up Tolerance		Antenna Gain (dBi)	Numeric Gain
	(dBm)	(mW)		
Wi-Fi 2.4G	21.00	125.89	4.30	2.69
Wi-Fi 5GHz (U-NII-1)	19.00	79.43	3.10	2.04
Wi-Fi 5GHz (U-NII-2A)	19.00	79.43	3.70	2.34
Wi-Fi 5GHz (U-NII-2C)	19.00	79.43	3.40	2.19
Wi-Fi 5GHz (U-NII-3)	19.00	79.43	3.90	2.45
Bluetooth LE	9.00	7.94	4.30	2.69

4 MPE Limit

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

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(i) LIMITS FOR OCCUPATIONAL/CONTROLLED EXPOSURE				
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
300-1,500			f/300	<6
1,500-100,000			5	<6
(ii) 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
300-1,500			f/1500	<30
1,500-100,000			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 can not 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
Bluetooth LE	1.000

5 RF Exposure Evaluation Result

RF exposure evaluation method is based on KDB 447498 D01, this calculation is based on the conducted power, maximum power and antenna gain with provides the minimum separation distance. The formula shown below is from OET Bulletin 65 Edition 97-01 Per KDB 447498 D01:

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

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	Maximum Tune Up (dBm)	Antenna Gain (dBi)	Maximum EIRP (dBm)	PG (mW)	Result (mW/cm ²)	Limit Value (mW/cm ²)	The MPE Ratio
Wi-Fi 2.4GHz	21.000	4.300	25.300	338.844	0.067	1.00	0.067
Wi-Fi 5GHz (U-NII-1)	19.000	3.100	22.100	162.181	0.032	1.00	0.032
Wi-Fi 5GHz (U-NII-2A)	19.000	3.700	22.700	186.209	0.037	1.00	0.037
Wi-Fi 5GHz (U-NII-2C)	19.000	3.400	22.400	173.780	0.035	1.00	0.035
Wi-Fi 5GHz (U-NII-3)	19.000	3.900	22.900	194.984	0.039	1.00	0.039
Bluetooth	9.000	4.300	13.300	21.380	0.004	1.00	0.004
Note: R = 20cm $\pi = 3.1416$ The MPE Ratio = Mac Result÷Limit Value							

This device supports simultaneous transmission via Wi-Fi 2.4GHz and Wi-Fi 5G and Bluetooth; no simultaneous transmission is available for other combinations.

So, the simultaneous transmitting antenna pairs as below:

TER = Wi-Fi 2.4GHz Antenna MPE Ratio + Wi-Fi 5GHz Antenna MPE Ratio + Bluetooth Antenna MPE Ratio = 0.067 + 0.039 + 0.004 = 0.110 < 1

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

ANNEX A: The EUT Appearance

The EUT Appearance are submitted separately.

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