



RF Exposure Evaluation Declaration

Report No.: S20241118761701E08

Issue Date: 03-05-2025

Applicant: Wallys Communications Technologies Co.,Ltd
Address: Room 2723,Le Jia building,Jia Rui Xiang No.8, Suzhou
Industrial Park, Suzhou, P.R
FCC ID: 2AG7VDR5018S
Product: Wireless Router Module
Model No.: DR5018S, DR5018S-DB, DR5018S-5G
Trade Mark: /
FCC Rule Part(s): CFR 47, FCC Part 2.1091 Radio frequency radiation
exposure evaluation: mobile devices.
Item Receipt date: Nov 21, 2024
Test Date: Nov 26 2024 ~ Jan 07, 2025

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The test results relate only to the samples tested.

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in KDB 558074 D01. Test results reported herein relate only to the item(s) tested.

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Revision History

Report No.	Version	Description	Issue Date
S20241118761701E08	Rev. 01	/	03-05-2025

1. PRODUCT INFORMATION

1.1. Equipment Description

Product Name:	Wireless Router Module			
Model Name:	DR5018S			
Additional Model:	DR5018S-DB, DR5018S-5G			
Model Description:		P/N	Radio	Frequency
	1	DR5018S-5G	5Ghz	1G Ethernet & POE
	2	DR5018S	2.4Ghz 5Ghz	2.5G+1G Ethernet & POE
	3	DR5018S-DB	2.4Ghz 5Ghz	1G Ethernet & POE
	DR5018S-5G has 5G radio and 1x1G ethernet port and support PD feature DR5018S has 2.4G,5G radio and 1x2.5G+1x1G ethernet ports and all support PD feature DR5018S-DB has 2.4G,5G radio and 1x1G ethernet port and support PD feature			
Trade Mark:	/			
Input Voltage Range:	DC 48V			

Note:

- There are two types of antennas for the Wireless Router Module(2.4G-WiFi). The antennas are DRA25 and DRA2G5G5D-A-B.
- There are three types of antennas for the Wireless Router Module(5G-RLAN). The antennas are DR5G15, DR5G17 and DR5G19.

1.2. Product Specification Subjective to this Report

Frequency Range:	802.11b/g/n20/ax20: 2412 ~ 2462MHz 802.11n40/ax40:2422 ~ 2452MHz For 802.11a/n-HT20/ac-VHT20/ax-HE20: 5180~5240MHz, 5260~5320MHz, 5500~5700MHz For 802.11n-HT40/ac-VHT40/ax-HE40: 5190~5230MHz, 5270~5310MHz, 5510~5670MHz For 802.11ac-VHT80/ax-HE80: 5210MHz, 5290MHz, 5530MHz, 5610MHz For 802.11ac-VHT160/ax-HE160: 5250MHz, 5570MHz
Type of Modulation:	802.11b: DSSS 802.11g/n/ax: OFDM/ OFDMA 802.11a/n/ac/ax: OFDM/OFDMA/BPSK/QPSK/DBPSK/DQPSK/16QAM/64QAM/256QAM/1024QA

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Antenna Type:	2.4G-WiFi: Dipole Antenna 5G-WiFi: Array Antenna
Antenna Gain:	2.4G-WiFi: DRA25 Antenna: Ant1 4.9dBi, Ant2 4.9dBi DRA2G5G5D-A-B Antenna: Ant1 4.2dBi, Ant2 4.2dBi 5G-WiFi: DR5G15 Antenna: Ant1 16.25dBi, Ant2 16.25dBi DR5G17 Antenna: Ant1 17.95dBi, Ant2 17.95dBi DR5G19 Antenna: Ant1 19.80dBi, Ant2 19.80dBi

2. RF Exposure Evaluation

2.1. Limits

According to FCC 1.1310: 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 1.1307(b)

Limits for Maximum Permissible Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Average Time (Minutes)
(A) Limits for Occupational/ Control Exposures				
300-1500	--	--	f/300	6
1500-100,000	--	--	5	6
(B) Limits for General Population/ Uncontrolled Exposures				
300-1500	--	--	f/1500	6
1500-100,000	--	--	1	30

f= Frequency in MHz

Calculation Formula: $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot r^2)$

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, 1mW/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.

2.2. For Simultaneous Transmissions Sources Limits

$$\sum_{i=1}^a \frac{P_i}{P_{th,i}} + \sum_{j=1}^b \frac{ERP_j}{ERP_{th,j}} + \sum_{k=1}^c \frac{Evaluated_k}{Exposure Limit_k} \leq 1$$

Where:

a = number of fixed, mobile, or portable RF sources claiming exemption using paragraph (b)(3)(i)(B) of this section for P_{th} , including existing exempt transmitters and those being added.

b = number of fixed, mobile, or portable RF sources claiming exemption using paragraph (b)(3)(i)(C) of this section for Threshold ERP, including existing exempt transmitters and those being added.

c = number of existing fixed, mobile, or portable RF sources with known evaluation for the specified minimum distance including existing evaluated transmitters.

P_i = the available maximum time-averaged power or the ERP, whichever is greater, for fixed, mobile, or portable RF source i at a distance between 0.5 cm and 40 cm (inclusive).

$P_{th,i}$ = the exemption threshold power (P_{th}) according to paragraph (b)(3)(i)(B) of this section for fixed, mobile, or portable RF source i .

ERP_j = the ERP of fixed, mobile, or portable RF source j .

$ERP_{th,j}$ = exemption threshold ERP for fixed, mobile, or portable RF source j , at a distance of at least $\lambda/2\pi$ according to the applicable formula of paragraph (b)(3)(i)(C) of this section.

$Evaluated_k$ = the maximum reported SAR or MPE of fixed, mobile, or portable RF source k either in the device or at the transmitter site from an existing evaluation at the location of exposure.

$Exposure\ Limit_k$ = either the general population/uncontrolled maximum permissible exposure (MPE) or specific absorption rate (SAR) limit for each fixed, mobile, or portable RF source k , as applicable from § 1.1310 of this chapter.

2.3. Test Result of RF Exposure Evaluation

Product	Wireless Router Module
Test Item	RF Exposure Evaluation

Mode	Frequency (MHz)	Maximum Conducted Output Power (dBm)	Antenna Gain (dBi)	PG		MPE (mW/cm ²)	MPE Limits (mW/cm ²)
				(dBm)	(mW)		
WiFi	2412 - 2462	17.65	4.90	22.55	179.89	0.009	1.00
RLAN	5150 - 5250 5725 - 5850	16.18	19.80	35.98	3962.78	0.197	1.00
WiFi	2412 - 2462	18.38	Directional Gain: 7.91	26.29	425.60	0.021	1.00
RLAN	5150 - 5250 5725 - 5850	13.14	Directional Gain: 22.81	35.98	3935.50	0.196	1.00
Simultaneous Transmission	/	/	/	/	/	0.423	1.00

Remark: 1. MPE use distance is 40cm from manufacturer declaration of user manual.

Remark: 2. Use the maximum gain of all bands when evaluating.

Remark: 3. The simultaneous transmission is WiFi and RLAN emission.

CONCLUSION:

The Max Power Density at R (40 cm) = 0.423mW/cm² < 1mW/cm².

So the EUT complies with the requirement.

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