



RF Exposure Evaluation Declaration

FCC ID: Sercomm Corporation
Applicant: 8F, No. 3-1, YuanQu St., NanKang, Taipei 115, Taiwan,
R.O.C.
Application Type: Certification
Product: MÓDEM(Fibra óptica)
Model No.: R8
Brand Name: SERCOMM
FCC Classification: Digital Transmission System (DTS)
Unlicensed National Information Infrastructure (NII)
Test Procedure(s): KDB 447498 D01v06

Reviewed By: _____

Approved By: _____



The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standards through the calibration of the equipment and evaluated measurement uncertainty herein.

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Revision History

Report No.	Version	Description	Issue Date	Note
2108RSU080-U5	Rev. 01	Initial Report	01-13-2022	Valid

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1.4. Product Information

Product Name	MÓDEM(Fibra óptica)
Model No.	R8
Brand Name	SERCOMM
Serial No.	53434F4DA0B00026
Wi-Fi Specification	802.11a/b/g/n/ac
Antenna Information	Refer to section 1.5
Remark: The information of EUT was provided by the manufacturer, and the accuracy of the information shall be the responsibility of the manufacturer.	

1.5. Antenna Details

Antenna Type	Frequency Band (MHz)	Tx Paths	Max Antenna Gain (dBi)	Beamforming Directional Gain (dBi)	CDD Directional Gain (dBi)	
					For Power	For PSD
PIFA & Dipole Antenna	2412 ~ 2462	2	3.3	--	3.3	6.31
	5150 ~ 5250	4	4.1	10.12	4.1	10.12
	5250 ~ 5350	4	4.1	10.12	4.1	10.12
	5470 ~ 5725	4	4.1	10.12	4.1	10.12
	5725 ~ 5850	4	4.0	10.10	4.0	10.10

Remark:

- The EUT supports Cyclic Delay Diversity (CDD) mode except 802.11b mode, and CDD signals are correlated.

If all antennas have the same gain, G_{ANT} , Directional gain = $G_{ANT} + \text{Array Gain}$, where Array Gain is as follows.

- For power spectral density (PSD) measurements on all devices,
 $\text{Array Gain} = 10 \log (N_{ANT} / N_{SS}) \text{ dB}$;
- For power measurements on IEEE 802.11 devices,
 $\text{Array Gain} = 0 \text{ dB}$ for $N_{ANT} \leq 4$;

- The EUT also supports Beam Forming mode, and the Beam Forming support 802.11ac, not include 802.11a/b/g/n. BF Directional gain = $G_{ANT} + 10 \log (N_{ANT})$.

2. RF Exposure Evaluation

2.1. Test 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: $Pd = (Pout * G) / (4 * \pi * r^2)$

Where

Pd = power density in mW/cm²

Pout = output power to antenna in mW

G = gain of antenna in linear scale

Pi = 3.1416

r = distance between observation point and center of the radiator in cm

Pd 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. Test Result

Product	MÓDEM(Fibra óptica)
Test Item	RF Exposure Evaluation

Antenna Gain: Refer to clause 1.5.

Test Mode	Frequency Band (MHz)	Max Conducted Power (dBm)	Antenna Gain (dBi)	Max EIRP (dBm)
802.11b/g/n	2412 ~ 2462	21.80	3.30	25.10
802.11a/n/ac (CDD Mode)	5180 ~ 5320, 5500 ~ 5720, 5745 ~ 5825	27.55	4.00	31.55
802.11a/n/ac (BF Mode)	5180 ~ 5320, 5500 ~ 5720, 5745 ~ 5825	25.72	10.10	35.82

Test Mode	Frequency Band (MHz)	Maximum EIRP (dBm)	Power Density at R = 20 cm (mW/cm ²)	Limit (mW/cm ²)
802.11b/g/n	2412 ~ 2462	25.10	0.0644	1
802.11a/n/ac	5180 ~ 5320, 5500 ~ 5720, 5745 ~ 5825	35.82	0.7599	1

CONCLUSION:

WLAN 2.4GHz and WLAN 5GHz can transmit simultaneously.

The max Power Density at R (20 cm) = $0.0644\text{mW/cm}^2 + 0.7599\text{mW/cm}^2 = 0.8243\text{mW/cm}^2 < 1\text{mW/cm}^2$.

Therefore, the compliance distance is 20cm.

Appendix - EUT Photograph

Refer to "2111RSU080-UE" file.

_____ The End _____