
RF Exposure Evaluation Report

Product Name : WiFi SOM Module

Model No. : MS-01

FCC ID : 2ABTU-MS01

Applicant : RuggON Corporation

Address : 4F, No. 298, Yang Guang St., Neihu Dist., Taipei City, Taiwan

Date of Receipt : Dec. 06, 2019

Date of Declaration : Jan. 22, 2020

Report No. : 19C0098R-SAUSP03V00

Report Version : V1.0

The test results relate only to the samples tested.

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

This report must not be used to claim product endorsement by TAF or any agency of the government.

The test report shall not be reproduced without the written approval of DEKRA Testing and Certification Co., Ltd.

Issued Date: Jan. 22, 2020

Report No.: 19C0098R-SAUSP03V00



Product Name	WiFi SOM Module	
Applicant	RuggON Corporation	
Address	4F, No. 298, Yang Guang St., Neihu Dist., Taipei City, Taiwan	
Manufacturer	RuggON Corporation	
Model No.	MS-01	
FCC ID.	2ABTU-MS01	
Trade Name	RuggON	
Applicable Standard	KDB 447498 D01 v06	<input checked="" type="checkbox"/> Minimum test separation distance \geq 20 cm <input type="checkbox"/> For low power devices
Test Result	Complied	

Documented By :



(Adm. Specialist / Vita Wang)

Tested By :



(Supervisor / Wen Lee)

Approved By :



(Director / Vincent Lin)

1. GENERAL INFORMATION

1.1. EUT Description

Product Name	WiFi SOM Module
Trade Name	RuggON
Model No.	MS-01
FCC ID.	2ABTU-MS01
Frequency Range	802.11b/g/n-20MHz:2412MHz~2462MHz, 802.11n-40MHz:2422MHz~2452MHz 802.11a/n/ac-20MHz: 5180-5320MHz, 5500-5720MHz, 5745-5825MHz 802.11n/ac-40MHz: 5190-5310, 5510-5710MHz, 5755-5795MHz 802.11ac-80MHz: 5210-5290MHz, 5530-5690MHz, 5775MHz BLE : 2402-2480MHz
Channel Number	802.11b/g/n-20MHz: 11, 802.11n-40MHz: 9 802.11a/n-20MHz: 25; 802.11n-40MHz: 12 802.11ac-80MHz: 5 BLE : 40
Type of Modulation	DSSS/OFDM/BPSK/QPSK/16QAM/64QAM/256QAM FHSS: GFSK(1Mbps) /(2Mbps)
Antenna Type	PIFA Antenna
Channel Control	Auto
Antenna Gain	Refer to the table “Antenna List”

Antenna List

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	AnJie	AJDP1J-B0006	PIFA	3.62dBi for 2.4 GHz 4.37dBi for 5150-5250MHz 4.64dBi for 5250-5350MHz 4.58dBi for 5470-5725MHz 4.90dBi for 5725-5850MHz

2. RF Exposure Evaluation

2.1. Standard Applicable

According to KDB 447498 D01 (7.1), A minimum test separation distance ≥ 20 cm is required between the antenna and radiating structures of the device and nearby persons to apply mobile device exposure limits.

2.2. 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

Friis Formula

Friis transmission 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

2.3. Test Result of RF Exposure Evaluation

Product : WiFi SOM Module
 Test Item : RF Exposure Evaluation

WLAN 2.4G Peak Gain: 3.62dBi

Band	Frequency (MHz)	Conducted maximum Peak Power (dBm)	Worst case Duty Cycle (%)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)	Limit (mW/cm ²)	Pass/Fail
2.4G	2417	20	83.74	119.417	0.0547	1	Pass

Note: The conducted output power is refer to report No.: 19C0098R-RFUSP27V00 from the DEKRA.

WLAN 5G Peak Gain: 4.9dBi

Band	Frequency (MHz)	Conducted maximum Average Power (dBm)	Worst case Duty Cycle (%)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)	Limit (mW/cm ²)	Pass/Fail
5G	5720	21.45	78.67	177.497	0.1091	1	Pass

Note: The conducted output power is refer to report No.: 19C0098R-RFUSP52V00 from the DEKRA.