

RF Exposure Evaluation Report

Product Name : MOXA IEEE 802.11a/n/ac 4*4 module

Model No. : WAPC002

FCC ID : SLE-WAPC002

Applicant : MOXA Inc.

Address : FL.4, NO. 135. LANE 235, BAOQIAO RD. XINDIAN
DIST.,NEW TAIPEI CITY, TAIWAN

Date of Receipt : July 12, 2018

Date of Declaration : Sep. 26, 2019

Report No. : 1870151R-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.

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Issued Date: Sep. 26, 2019

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|---------------------|---|
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| Applicant | MOXA Inc. |
| Address | FL.4, NO. 135. LANE 235, BAOQIAO RD. XINDIAN DIST.,NEW TAIPEI CITY, TAIWAN |
| Manufacturer | MOXA Inc. |
| Model No. | WAPC002 |
| FCC ID. | SLE-WAPC002 |
| Trade Name | MOXA |
| Applicable Standard | FCC 47 CFR 1.1307 |
| Test Result | Complied |

Documented By

:



(Senior Adm. Specialist / Genie Chang)

Tested By

:



(Senior Engineer / Wen Lee)

Approved By

:



(Director / Vincent Lin)

1. GENERAL INFORMATION

1.1. EUT Description

| | |
|--------------------|--|
| Product Name | MOXA IEEE 802.11a/n/ac 4*4 module |
| Trade Name | MOXA |
| Model No. | WAPC002 |
| FCC ID. | SLE-WAPC002 |
| Frequency Range | 802.11a/n-20MHz: 5180-5320MHz, 5500-5700MHz, 5745-5825MHz 802.11n-40MHz: 5190-5310, 5510-5670MHz, 5755-5795MHz 802.11ac-20MHz: 5720, 802.11ac-40MHz: 5710 802.11ac-80MHz: 5210-5290MHz, 5530-5690MHz, 5775MHz |
| Number of Channels | 802.11a/n-20MHz: 24; 802.11n-40MHz: 11 802.11ac-20MHz: 1, 802.11ac-40MHz: 1, 802.11ac-80MHz: 6 |
| Data Speed | 802.11a: 6-54Mbps, 802.11n: up to 600Mbps, 802.11ac-80MHz: up to 1733.3MHz |
| Type of Modulation | 802.11a/n/ac: OFDM, BPSK, QPSK, 16QAM, 64QAM, 256QAM |
| Channel Control | Auto |
| Antenna Gain | Refer to the table "Antenna List" |
| Contain FCC ID | SLE-WAPN010 |

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

Friis Formula

Friis transmission formula: $P_d = (P_{out} * G) / (4 * \pi * r^2)$

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, 1 mW/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.

Simultaneous transmission MPE test exclusion applies when the sum of the MPE ratios for all simultaneously transmitting antennas incorporated in a host device is ≤ 1.0

2.2. Test Result of RF Exposure Evaluation

Product : MOXA IEEE 802.11a/n/ac 4*4 module
 Test Item : RF Exposure Evaluation

Worst case Configurations:

WLAN 2.4G Peak Gain: 18dBi

| Band | Frequency (MHz) | Conducted maximum Peak Power (dBm) | Output Power to Antenna (mW) | Power Density at R = 70 cm (mW/cm ²) | Limit (mW/cm ²) | Pass/Fail |
|------|-----------------|------------------------------------|------------------------------|--|-----------------------------|-----------|
| 2.4G | 2437 | 23.59 | 228.6 | 0.23 | 1 | Pass |

Note: The worst case configurations is refer to Original RF Exposure Report for FCC ID: SLE-WAPN010.

WLAN 5G Peak Gain: 23dBi

| Band | Frequency (MHz) | Conducted maximum Peak Power (dBm) | Output Power to Antenna (mW) | Power Density at R = 70 cm (mW/cm ²) | Limit (mW/cm ²) | Pass/Fail |
|------|-----------------|------------------------------------|------------------------------|--|-----------------------------|-----------|
| 5G | 5745 | 22.65 | 184.1 | 0.60 | 1 | Pass |

Note: The worst case configurations is refer to Original RF Exposure Report for FCC ID: SLE-WAPC002.

2.3. Calculations for Multi-Transmitter

| Mode | Exposure Calculations | result | Limit | Pass/Fail |
|-----------|-----------------------|--------|-------|-----------|
| WLAN 2.4G | 0.23 | 0.83 | 1 | Pass |
| WWAN 5G | 0.60 | | | |