RF Exposure Evaluation declaration

Product Name : RS-232/422/485 IEEE 802.11a/b/g/n wireless device server with I/O

Model No. : NPort IAW5x50Ayyyyyyyyyy; x or y can be 0-9, A-Z, dash, slash, blank or any Character.

FCC ID : SLE-IAW5X50A

Applicant : MOXA Inc.

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

Date of Receipt : Nov. 09, 2016

Date of Declaration : Jan. 17, 2017

Report No. : 16B0271R-RFUSP02V00

Issued Date: Jan. 17, 2017
Report No.: 16B0271R-RFUSP02V00

Product Name	RS-232/422/485 IEEE 802.11a/b/g/n wireless device server with I/O
Applicant	MOXA Inc.
Address	FL.4, NO. 135. LANE 235, BAOQIAO RD. XINDIAN DIST.,NEW TAIPEI CITY, TAIWAN
Manufacturer	MOXA Inc.
Model No.	NPort IAW5x50Ayyyyyyyyyy; x or y can be 0-9, A-Z, dash, slash, blank or any Character.
FCC ID.	SLE-IAW5X50A
EUT Rated Voltage	12-48VDC
EUT Test Voltage	DC 24V
Trade Name	MOXA
Applicable Standard	FCC 47 CFR 1.1310
Test Result	Complied

Documented By : Jinn Chen

(Senior Adm. Specialist / Jinn Chen)

Tested By : Kevin Liu

(Engineer / Kevin Liu)

Approved By :

(Director / Vincent Lin)

1. RF Exposure Evaluation

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

Where

Pd = power density in mW/cm^2

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 id the limit of MPE, 1 mW/cm^2. 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.

1.2. Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

The temperature and related humidity: 18℃and 78％ RH.

1.3. Test Result of RF Exposure Evaluation

Product : RS-232/422/485 IEEE 802.11a/b/g/n wireless device server with I/O
Test Item : RF Exposure Evaluation

For 2.4GHz:

Operation Frequency	2412 – 2462MHz 2422 – 2452MHz
Maximum Conducted output power	21.47 dBm
Antenna gain	2.04 dBi

Output Power Into Antenna & RF Exposure Evaluation Distance:

Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm2)
140.28137	0.044641

Power density is lower than the limit (1 mW/cm2).

For 5GHz:

Operation Frequency	5180-5320MHz, 5500-5700MHz, 5745-5825MHz 5190-5310MHz,5510-5670MHz, 5755-5795MHz
Maximum Conducted output power	15.30 dBm
Antenna gain	0.38 dBi

Output Power Into Antenna & RF Exposure Evaluation Distance:

Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm2)
33.88441	0.007358

Power density is lower than the limit (1 mW/cm2).