RF Exposure Evaluation Report

Product Name : NPort Device Server

Model No. : NPort W2250A, NPort W2150A, NPort W2250A-T, NPort W2150A-T

FCC ID : SLE-W2X50A

Applicant : MOXA Inc.

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

Date of Receipt : Jul. 20, 2018

Date of Declaration : Dec. 17, 2018

Report No. : 1870341R-SAUSP03V00

Issued Date: Dec. 17, 2018
Report No.: 1870341R-SAUSP03V00

Product Name	NPort Device Server
Applicant	MOXA Inc.
Address	FL.4, NO. 135. LANE 235, BAOQIAO RD. XINDIAN DIST., NEW TAIPEI CITY, TAIWAN
Manufacturer	MOXA Inc.
Model No.	NPort W2250A, NPort W2150A, NPort W2250A-T, NPort W2150A-T
FCC ID.	SLE-W2X50A
EUT Rated Voltage	DC 24V, AC 110~230V
EUT Test Voltage	AC 120V/60Hz
Trade Name	MOXA
Applicable Standard	FCC 47 CFR 1.1310
Test Result	Complied

Documented By : April Chen

(Senior Adm. Specialist / April Chen)

Tested By : wen Lee

(Senior Engineer / Wen Lee)

Approved By :

(Director / Vincent Lin)

1. GENERAL INFORMATION

1.1. EUT Description

Product Name	NPort Device Server
Trade Name	MOXA
Model No.	NPort W2250A, NPort W2150A, NPort W2250A-T, NPort W2150A-T
FCC ID.	SLE-W2X50A
Frequency Range	2412-2462MHz for 802.11b/g/n-20BW 802.11a/n-20MHz: 5180-5320MHz, 5500-5700MHz, 5745-5825MHz 802.11n-40MHz: 5190-5310, 5510-5670MHz, 5755-5795MHz
Number of Channels	802.11b/g/n-20MHz: 11 802.11a/n-20MHz: 24; 802.11n-40MHz: 11
Data Speed	802.11b: 1-11Mbps, 802.11g: 6-54Mbps, 802.11n: up to 72.2Mbps 802.11a: 6 - 54Mbps, 802.11n: up to 150Mbps
Channel separation	802.11b/g/n: 5 MHz 802.11a/n-20MHz: 24; 802.11n-40MHz: 11
Type of Modulation	802.11b:DSSS (DBPSK, DQPSK, CCK) 802.11a/g/n: OFDM (BPSK, QPSK, 16QAM, 64QAM)
Antenna Type	Dipole Antenna
Channel Control	Auto
Antenna Gain	Refer to the table “Antenna List”

Note: The EUT is including series models for different is listed as below:

Item	Model Type	Description
1	NPort W2150A	1 Port Wireless Device Server, 3-in-1, 802.11a/b/g/n, 12-48 VDC, 0 to 55℃
2	NPort W2150A-T	1 Port Wireless Device Server, 3-in-1, 802.11a/b/g/n, 12-48 VDC, -40 to 75℃
3	NPort W2250A	2 Port Wireless Device Server, 3-in-1, 802.11a/b/g/n, 12-48 VDC, 0 to 55℃
4	NPort W2250A-T	2 Port Wireless Device Server, 3-in-1, 802.11a/b/g/n, 12-48 VDC, -40 to 75℃

1.2. Antenna List :

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	KINSUN	ANT-WDB-ARM-02	Dipole	2.04dBi in 2.4GHz 0.81dBi for 5.150-5.250 GHz 0.38dBi for 5.250-5.350 GHz -1.39dBi for 5.470-5.725 GHz -0.39dBi for 5.725-5.850 GHz

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

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

2.2. Test Result of RF Exposure Evaluation

Product : NPort Device Server
Test Item : RF Exposure Evaluation

WLAN 2.4G Peak Gain: 2.04dBi

Band	Frequency	Conducted Peak Power (dBm)	Duty Cycle (%)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm^2)	Limit (mW/cm^2)	Pass/Fail
802.11b	2437	17.45	100.00	55.590	0.0177	1	Pass
802.11g	2437	21.35	98.10	139.101	0.0443	1	Pass
802.11n20	2437	21.87	97.91	157.099	0.0500	1	Pass

Note: The conducted output power is refer to report No.: 1870341R-RFUSP02V00 from the DEKRA.

WLAN 5G Peak Gain: 0.81dBi

Band	Frequency	Conducted Peak Power (dBm)	Duty Cycle (%)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm^2)	Limit (mW/cm^2)	Pass/Fail
802.11a	5785	15.51	98.10	36.252	0.0087	1	Pass
802.11n20	5240	14.98	97.95	32.136	0.0077	1	Pass
802.11n40	5755	13.42	93.37	23.539	0.0056	1	Pass

Note: The conducted output power is refer to report No.: 1870341R-RFUSP05V00 from the DEKRA.