Maximum Permissible Exposure Report

FCC ID: KA2BAX2830PA1

Report No.	:	BTL-FCCP-3-2003H027
Equipment	:	Nuclias Cloud-Managed AX3600 Access Point
Model Name	:	DBA-X2830P
Brand Name	:	D-Link Corporation
Applicant	:	D-Link Corporation
Address	:	17595 Mt. Herrmann, Fountain Valley, California United State 92708
FCC Rule Part(s)	:	FCC Guidelines for Human Exposure IEEE C95.1
Date of Receipt	:	2020/3/20
Date of Test	:	2020/3/20 ~ 2020/5/26
Issued Date	:	2020/8/3

The above equipment has been tested and found in compliance with the requirement of the above standards by BTL Inc.

Prepared by : Peter Chen, Engineer

Approved by : Scott Hsu, Manager

BTL Inc.
No.18, Ln. 171, Sec. 2, Jiuzong Rd., Neihu Dist., Taipei City 114, Taiwan
Tel: +886-2-2657-3299 Fax: +886-2-2657-3331 Web: www.newbtl.com

REPORT ISSUED HISTORY

Report Version	Description	Issued Date
R00	Original Issue. This is a supplementary report to the original test report (BTL-FCCP-3-1909H044). The difference compared with original report is identical to build-in antenna type except changed enclosure and added cloud function in software. After evaluated, the change does not affect the worst test results and the original test data are kept in this report.	2020/8/3

MPE CALCULATION METHOD:

Calculation Method of RF Safety Distance:

$$S = \frac{PG}{4\pi r^2} = \frac{EIRP}{4\pi r^2}$$

where:
S = power density
P = power input to the antenna
G = power gain of the antenna in the direction of interest relative to an isotropic radiator
R = distance to the center of radiation of the antenna

Table for Filed Antenna:
For 2.4G WLAN:

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	M.gear www.whayu.com	DBA-X2830P	PIFA	I-PEX	3.24
2	M.gear www.whayu.com	DBA-X2830P	PIFA	I-PEX	3.52
3	M.gear www.whayu.com	DBA-X2830P	PIFA	I-PEX	3.58
4	M.gear www.whayu.com	DBA-X2830P	PIFA	I-PEX	3.50

NOTE:
(a) The EUT incorporates a MIMO function. Physically, the EUT provides two completed transmitters and receivers (4T4R). 2.4 GHz and 5GHz can transmit simultaneously.
(b) For Power Spectral Density
Directional Gain = 10log $[(10^{G1/20} + 10^{G2/20} + \ldots + 10^{Gn/20})^2/N_{ANT}]$ = 9.48 dBi > 6dBi.
(c) For Output Power
For N_{ANT} = 2 < 5,
Direction gain = G_{ANT} + 0 = 3.58 + 0 = 3.58 dBi .
(d) For Beamforming mode
Directional Gain = 10log $[(10^{G1/20} + 10^{G2/20} + \ldots + 10^{Gn/20})^2/N_{ANT}]$ = 9.48 dBi > 6dBi.
Beamforming gain is 5.10 dBi.

For 5G RLAN:

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	M.gear www.whayu.com	DBA-X2830P	PIFA	I-PEX	4.41
2	M.gear www.whayu.com	DBA-X2830P	PIFA	I-PEX	4.41
3	M.gear www.whayu.com	DBA-X2830P	PIFA	I-PEX	4.34
4	M.gear www.whayu.com	DBA-X2830P	PIFA	I-PEX	4.34

NOTE:

(a) The EUT incorporates a MIMO function. Physically, the EUT provides two/four completed transmitters and receivers (2T2R/4T4R). 2.4 GHz and 5GHz can transmit simultaneously.

(b) For Power Spectral Density
Directional Gain = 10log $[(10^{G1/20} + 10^{G2/20} + \ldots + 10^{Gn/20})^2/N_{ANT}]$ = 10.40 dBi > 6dBi.

(c) For Output Power
For N_{ANT} = 2 < 5,
Direction gain = G_{ANT} + 0 = 4.41 + 0 = 4.41 dBi .

(d) For Beamforming mode
Directional Gain = 10log $[(10^{G1/20} + 10^{G2/20} + \ldots + 10^{Gn/20})^2/N_{ANT}]$ = 10.40 dBi > 6dBi.
Beamforming gain is 5.10 dBi.

TEST RESULTS

No-Beamforming mode:
For 2.4G WLAN:

Antenna Gain (dBi)	Antenna Gain (numeric)	Max. Peak Output Power (dBm)	Max. Peak Output Power (mW)	Power Density (S) (mW/cm^2)	Limit of Power Density (S) (mW/cm^2)	Test Result
3.58	2.28	29.91	979.4900	0.4444	1	Complies

For 5G RLAN:

Antenna Gain (dBi)	Antenna Gain (numeric)	Max. Peak Output Power (dBm)	Max. Peak Output Power (mW)	Power Density (S) (mW/cm^2)	Limit of Power Density (S) (mW/cm^2)	Test Result
4.41	2.76	28.57	719.4490	0.3951	1	Complies

Beamforming mode:
For 2.4G WLAN:

Antenna Gain (dBi)	Antenna Gain (numeric)	Max. Peak Output Power (dBm)	Max. Peak Output Power (mW)	Power Density (S) (mW/cm^2)	Limit of Power Density (S) (mW/cm^2)	Test Result
5.10	3.24	23.89	244.9063	0.1577	1	Complies

For 5G RLAN:

Antenna Gain (dBi)	Antenna Gain (numeric)	Max. Peak Output Power (dBm)	Max. Peak Output Power (mW)	Power Density (S) (mW/cm^2)	Limit of Power Density (S) (mW/cm^2)	Test Result
5.10	3.24	22.55	179.8871	0.1158	1	Complies

Note:
1. The calculated distance is 20 cm.

COLLOCATED POWER DENSITY CACULATIONS

So for simultaneous transmission: 0.4444/1+0.3951/1=0.8395 <1.

End of Test Report