

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	<p>Original Issue.</p> <p>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.</p> <p>After evaluated, the change does not affect the worst test results and the original test data are kept in this report.</p>	2020/8/3

MPE CALCULATION METHOD:

Calculation Method of RF Safety Distance:

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

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	 www.whayu.com	DBA-X2830P	PIFA	I-PEX	3.24
2	 www.whayu.com	DBA-X2830P	PIFA	I-PEX	3.52
3	 www.whayu.com	DBA-X2830P	PIFA	I-PEX	3.58
4	 www.whayu.com	DBA-X2830P	PIFA	I-PEX	3.50

NOTE:

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

For 5G RLAN:

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

NOTE:

- 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.
- For Power Spectral Density

$$\text{Directional Gain} = 10\log [(10^{G1/20} + 10^{G2/20} + \dots + 10^{Gn/20})^2 / N_{\text{ANT}}] = 10.40 \text{ dBi} > 6\text{dBi}.$$
- For Output Power
For $N_{\text{ANT}} = 2 < 5$,
Direction gain = $G_{\text{ANT}} + 0 = 4.41 + 0 = 4.41 \text{ dBi}$.
- For Beamforming mode

$$\text{Directional Gain} = 10\log [(10^{G1/20} + 10^{G2/20} + \dots + 10^{Gn/20})^2 / N_{\text{ANT}}] = 10.40 \text{ dBi} > 6\text{dBi}.$$
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 CALCULATIONS

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

End of Test Report