

RF Exposure Report

Report No.: SABFBE-WTW-P21010850

FCC ID: 2ABLK-GS4227

Test Model: u6x GS4227

Received Date: Jan. 28, 2021

Test Date: Feb. 18, 2021

Issued Date: Apr. 29, 2021

Applicant: Calix Inc.

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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
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**FCC Registration /
Designation Number:** 723255 / TW2022

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Release Control Record

Issue No.	Description	Date Issued
SABFBE-WTW-P21010850	Original release.	Apr. 29, 2021

1 Certificate of Conformity

Product: GigaSpire BLAST

Brand: Calix

Test Model: u6x GS4227

Sample Status: ENGINEERING SAMPLE

Applicant: Calix Inc.

Test Date: Feb. 18, 2021

Standards: FCC Part 2 (Section 2.1091)
IEEE C95.3 -2002

References Test Guidance: KDB 447498 D01 General RF Exposure Guidance v06

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

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Approved by : Clark Lin , **Date:** Apr. 29, 2021
Clark Lin / Technical Manager

2 RF Exposure

2.1 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)
Limits For General Population / Uncontrolled Exposure				
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f ²)*	30
30-300	27.5	0.073	0.2	30
300-1500	...	...	f/1500	30
1500-100,000	...	...	1.0	30

f = Frequency in MHz ; *Plane-wave equivalent power density

2.2 MPE Calculation Formula

$$P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot r^2)$$

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

2.3 Classification

The antenna of this product, under normal use condition, is at least 22 cm away from the body of the user. So, this device is classified as **Mobile Device**.

2.4 Antenna Gain

Antenna NO.	RF Chain NO.	Brand	Model	Antenna Net Gain(dBi)	Frequency range	Antenna Type	Connector Type	Cable Length (mm)
DB1	2.4G: Chain 1	HONGBO	290-11015	3.64	2.4~2.4835GHz	Dipole	i-pex(MHF)	110
	5G: Chain 3			4.55	5.15~5.85GHz			
DB2	2.4G: Chain 0	HONGBO	290-11016	3.91	2.4~2.4835GHz	Dipole	i-pex(MHF)	110
	5G: Chain 2			5.94	5.15~5.85GHz			
5G1	Chain 0	HONGBO	290-11013	4.57	5.15~5.85GHz	Dipole	i-pex(MHF)	90
5G2	Chain 1	HONGBO	290-11014	4.68	5.15~5.85GHz	Dipole	i-pex(MHF)	90

Note:

1. Antenna Ga Transmit Simultaneously refer to "P21010850 Multi-Antenna Systems Directional Gain measurement" files.
2. Maximum Correlated Directional Gain following KDB662911 D03 MIMO Antenna Gain Measurement.

Note: The above Antenna information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.

2.5 Calculation Result

Operation Mode	Evaluation Frequency (MHz)	Max. Average Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
WLAN (2.4GHz)	2412~2462	757.798	3.91	22	0.30655	1
WLAN (U-NII-1)	5180~5240	978.11	5.94	22	0.63144	1
WLAN (U-NII-3)	5745~5825	922.209	5.94	22	0.59535	1

Note:

1. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
2. 2.4GHz: Directional gain = 3.91 dBi
3. 5GHz (U-NII-1): Directional gain = 5.94 dBi
4. 5GHz (U-NII-3): Directional gain = 5.94 dBi

Conclusion:

The formula of calculated the MPE is:

$CPD1 / LPD1 + CPD2 / LPD2 + \dots \text{etc.} < 1$

CPD = Calculation power density

LPD = Limit of power density

$WLAN\ 2.4GHz + WLAN\ 5GHz = 0.30655 / 1 + 0.63144 / 1 = 0.93799$

Therefore the maximum calculations of above situations are less than the “1” limit.

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