

## RF Exposure Report

**Report No.:** SABFBE-WTW-P21010850-2

**FCC ID:** 2ABLK-GS4227

**Test Model:** u6x GS4227

**Received Date:** Jan. 28, 2021

**Test Date:** Jan. 28 to Mar. 29, 2021

**Issued Date:** July 02, 2021

**Applicant:** Calix Inc.

**Address:** 1035 N. McDowell Blvd Petaluma, CA94954 U.S.A

**Issued By:** Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch  
Hsin Chu Laboratory

**Lab Address:** E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300,  
Taiwan

**Test Location:** E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300,  
Taiwan

**FCC Registration /  
Designation Number:** 723255 / TW2022

This report is for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence, provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents. Unless specific mention, the uncertainty of measurement has been explicitly taken into account to declare the compliance or non-compliance to the specification.

## Table of Contents

<b>Release Control Record .....</b>	<b>3</b>
<b>1     Certificate of Conformity .....</b>	<b>4</b>
<b>2     RF Exposure .....</b>	<b>5</b>
2.1   Limits for Maximum Permissible Exposure (MPE) .....	5
2.2   MPE Calculation Formula .....	5
2.3   Classification .....	5
2.4   Antenna Gain .....	6
2.5   Calculation Result .....	7

### Release Control Record

Issue No.	Description	Date Issued
SABFBE-WTW-P21010850-2	Original release.	July 02, 2021

## 1 Certificate of Conformity

**Product:** GigaSpire BLAST

**Brand:** Calix

**Test Model:** u6x GS4227

**Sample Status:** ENGINEERING SAMPLE

**Applicant:** Calix Inc.

**Test Date:** Jan. 28 to Mar. 29, 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.

**Prepared by :** Vivian Huang , **Date:** July 02, 2021  
Vivian Huang / Specialist

**Approved by :** Clark Lin , **Date:** July 02, 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 <sup>2</sup> )	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 <sup>2</sup> )*	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/cm<sup>2</sup>

$P_{out}$  = 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

### 2.3 Classification

The antenna of this product, under normal use condition, is at least 22cm 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 Gain refer to "P21010850 Multi-Antenna Systems Directional Gain measurement" files.
2. Maximum Correlated Directional Gain following KDB662911 D03 MIMO Antenna Gain Measurement.

\*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

For 2.4GHz, 5GHz (U-NII-1 & UNII-3 band) data was copied from the original test report (Report No.: SABFBE-WTW-P21010850)

Operation Mode	Evaluation Frequency (MHz)	Max. Average Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
WLAN (2.4GHz)	2412~2462	757.798	3.91	22	0.30655	1
WLAN (U-NII-1)	5180~5250	978.11	5.94	22	0.63144	1
WLAN U-NII-2A	5250~5320	239.992	5.94	22	0.15493	1
WLAN U-NII-2C	5500~5720	244.127	5.94	22	0.1576	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: 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.**

--- END ---