

## RF Exposure Report

**Report No.:** SA190821E02A

**FCC ID:** G95FGA2230

**Test Model:** FGA2230TCH2

**Received Date:** Aug. 21, 2019

**Test Date:** Aug. 22 to Sep. 02, 2019

**Issued Date:** Mar. 23, 2020

**Applicant:** Technicolor Connected Home USA LLC

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**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,  
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**Test Location:** E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300,  
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**FCC Registration /  
Designation Number:** 723255 / TW2022

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### Release Control Record

Issue No.	Description	Date Issued
SA190821E02A	Original release.	Mar. 23, 2020

## 1 Certificate of Conformity

**Product:** Technicolor Gateway

**Brand:** Technicolor

**Test Model:** FGA2230TCH2

**Sample Status:** ENGINEERING SAMPLE

**Applicant:** Technicolor Connected Home USA LLC

**Test Date:** Aug. 22 to Sep. 02, 2019

**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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Joyce Kuo / Specialist

**Approved by :** Clark Lin , **Date:** Mar. 23, 2020  
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

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

where

Pd = power density in mW/cm<sup>2</sup>

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

### 2.3 Classification

The antenna of this product, under normal use condition, is at least 26cm away from the body of the user. So, this device is classified as **Mobile Device**.

## 2.4 Antenna Gain

1 The antennas provided to the EUT, please refer to the following table:

Antenna NO.	RF Chain NO.	Frequency range	Antenna Type	Connector Type
2.4G1	Chain 2	2.4~2.4835GHz	Dipole	i-pex(MHF)
2.4G2	Chain 1	2.4~2.4835GHz	Dipole	NA
2.4G3	Chain 0	2.4~2.4835GHz	PIFA	NA
5G1	Chain 3	5.15~5.25GHz	Dipole	NA
		5.25~5.35GHz		
		5.47~5.725GHz		
		5.725~5.85GHz		
5G2	Chain 2	5.15~5.25GHz	PIFA	NA
		5.25~5.35GHz		
		5.47~5.725GHz		
		5.725~5.85GHz		
5G3	Chain 1	5.15~5.25GHz	PIFA	NA
		5.25~5.35GHz		
		5.47~5.725GHz		
		5.725~5.85GHz		
5G4	Chain 0	5.15~5.25GHz	Dipole	i-pex(MHF)
		5.25~5.35GHz		
		5.47~5.725GHz		
		5.725~5.85GHz		

2 The directional antenna gain, please refer to the following table:

Frequency Range (GHz)	Maximum Peak Gain (dBi)	Directional Antenna Gain (dBi)	Antenna Type	Antenna Connector
2.4 ~ 2.4835	3.48	4.82	Refer to Note 1	Refer to Note 1
5.15 ~ 5.25	4.92	7.58		
5.25 ~ 5.35	5.03	7.70		
5.47 ~ 5.725	3.78	7.15		
5.725 ~ 5.85	3.78	6.81		

## 2.1 Calculation Result of Maximum Conducted Power

For 2.4GHz and 5GHz (U-NII-1 & U-NII-3 band) data was copied from the original test report (Report No.: SA190821E02)

Operation Mode	Evaluation Frequency (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
WLAN 2.4GHz	2437	833.324	4.82	26	0.29762	1
WLAN 5GHz (U-NII-1)	5230	877.58	7.58	26	0.59174	1
WLAN 5GHz (U-NII-3)	5745	898.529	6.81	26	0.50743	1
WLAN 5GHz (U-NII-2A)	5270	245.107	7.71	26	0.28713	1
WLAN 5GHz (U-NII-2C)	5550	250.784	7.15	26	0.25884	1

Note:

### NOTE:

- Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
- 2.4GHz directional gain = 4.82dBi  
 5GHz (U-NII-1) directional gain = 7.58dBi  
 5GHz (U-NII-2A) directional gain = 7.71dBi  
 5GHz (U-NII-2C) directional gain = 7.15dBi  
 5GHz (U-NII-3) directional gain = 6.81dBi

### 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 =  $0.29762 / 1 + 0.59174 / 1 = 0.88936$

**Therefore the maximum calculations of above situations are less than the "1" limit.**

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