

## RF Exposure Report

**Report No.:** SA190628E02

**FCC ID:** G95TCHU1AL0

**Test Model:** TCHU1AL0

**PN:** APZ0001COM

**Received Date:** June 28, 2019

**Test Date:** July 01 to 03, 2019

**Issued Date:** July 23, 2019

**Applicant:** Technicolor Connected Home USA LLC

**Address:** 5030 Sugarloaf Parkway, Building 6, Lawrenceville, GA 30044

**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 R.O.C.

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

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

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### Release Control Record

Issue No.	Description	Date Issued
SA190628E02	Original release.	July 23, 2019

## 1 Certificate of Conformity

**Product:** LTE Power Supply

**Brand:** Technicolor

**Test Model:** TCHU1AL0

**Sample Status:** LAB2b

**Applicant:** Technicolor Connected Home USA LLC

**Test Date:** July 01 to 03, 2019

**Standards:** FCC Part 2 (Section 2.1091)

KDB 447498 D01 General RF Exposure Guidance v06

IEEE C95.1-1992

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 :** Phoenix Huang , **Date:** July 23, 2019  
Phoenix Huang / Specialist

**Approved by :** May Chen , **Date:** July 23, 2019  
May Chen / 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 20 cm away from the body of the user. So, this device is classified as **Mobile Device**.

### 2.4 Antenna Gain

<b>Zigbee</b>				
Ant. No	Ant. Gain (dBi)	Frequency Range (GHz)	Antenna Type	Antenna Connector
1	3.9	2.4~2.4835	PCB	Morata
<b>WWAN</b>				
Ant. No	Ant. Gain (dBi)	Frequency Range (MHz)	Antenna Type	Antenna Connector
2	2.9	700~787	PCB	Morata
	3.1	1710~2200	PCB	Morata

## 2.5 Calculation Result of Maximum Conducted Power

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> )
Zigbee	2445	142.561	3.9	20	0.06962	1

### For WWAN (FCC ID: QIPEMS31-X)

Frequency Band (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
699.7-715.3	214.783	2.90	20	0.08332	0.466

#### Note:

- Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
- \*Limit of Power Density = F/1500

#### 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

$$\text{Zigbee} + \text{WWAN} = 0.06962 / 1 + 0.08332 / 0.466 = 0.24824$$

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

## Appendix

Mode	Equipment Category	Transmitter Range (MHz)		Maximum Output Power		Antenna Gain (dBi)	Power Density (mW/cm <sup>2</sup> )		Ratio
		Start	Stop	(dBm)	(mW)		Valeur	Limit	
LTE	Band 2	1850.7	1909.3	23.39	218.272	3.10	0.08866	1	0.089
	Band 4	1710.7	1754.3	23.63	230.675	3.10	0.09370	1	0.094
	<b>Band 12</b>	<b>699.7</b>	<b>715.3</b>	<b>23.32</b>	<b>214.783</b>	<b>2.90</b>	<b>0.08332</b>	<b>0.466*</b>	<b>0.179</b>
	Band 13	779.5	784.5	22.92	195.884	2.90	0.07599	0.52*	0.146

Note: \*Limit of Power Density = F/1500

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