

## RF Exposure Report

**Report No.:** SA160314E01

**FCC ID:** G95TCA300

**Test Model:** TCA300COM

**Received Date:** Mar. 14, 2016

**Test Date:** Apr. 29, 2016

**Issued Date:** May 23, 2016

**Applicant:** Technicolor Connected Home USA LLC

**Address:** 101 West 103rd Street, Indianapolis, IN 46290 United States

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

**Test Location (2):** No. 49, Ln. 206, Wende Rd., Shangshan Tsuen, Chiung Lin Hsiang, Hsin  
Chu Hsien 307, Taiwan R.O.C.



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### 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
<b>3 Calculation Result Of Maximum Conducted Power</b> .....	<b>7</b>



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### Release Control Record

Issue No.	Description	Date Issued
SA160314E01	Original release.	May 23, 2016

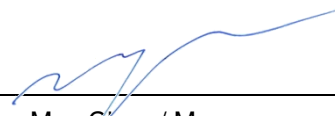


# 1 Certificate of Conformity

**Product:** Integrated Device  
**Brand:** Technicolor  
**Test Model:** TCA300COM  
**Sample Status:** ENGINEERING SAMPLE  
**Applicant:** Technicolor Connected Home USA LLC  
**Test Date:** Apr. 29, 2016  
**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 :**  , **Date:** May 23, 2016  
Claire Kuan / Specialist

**Approved by :**  , **Date:** May 23, 2016  
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				
300-1500	...	...	F/1500	30
1500-100,000	...	...	1.0	30

F = Frequency in MHz

### 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 20cm away from the body of the user.

So, this device is classified as **Mobile Device**.

## 2.4 Antenna Gain

Antenna NO.	Brand	Antenna Gain(dBi) (Including cable loss)	Frequency range (GHz)	Antenna Type	Connecter Type
Zigbee 1	INPAQ	2.84	2.4~2.4835GHz	PCB	i-pex(MHF)
Zigbee 2	INPAQ	3.1	2.4~2.4835GHz	PCB	i-pex(MHF)
WiFi 1 & BT	INPAQ	2.06	2.4~2.4835GHz	PCB	Pogo pin
		3.13	5.15~5.25GHz		
		3.79	5.25~5.35GHz		
		3.9	5.47~5.725GHz		
		2.39	5.725~5.85GHz		
WiFi 2	INPAQ	0.73	2.4~2.4835GHz	PCB	i-pex(MHF)
		2.86	5.15~5.25GHz		
		3.02	5.25~5.35GHz		
		3.33	5.47~5.725GHz		
		3.84	5.725~5.85GHz		
WWAN	INPAQ	2.56	824~849MHz	PCB	Pogo pin
		3.72	1850~1960MHz		

### 3 Calculation Result Of Maximum Conducted Power

#### WLAN

Frequency (MHz)	Conducted Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
2412-2462	126.409	4.43	20	0.06974	1
5180-5240	229.018	6.01	20	0.18180	1
5260-5320	227.54	6.42	20	0.19851	1
5500-5700	156.97	6.63	20	0.14373	1
5745-5825	150.418	5.71	20	0.11144	1

NOTE:

2.4GHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2] = 4.43\text{dBi}$

5150~5250MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2] = 6.01\text{dBi}$

5250~5350MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2] = 6.42\text{dBi}$

5470~5725MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2] = 6.63\text{dBi}$

5725~5825MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2] = 5.71\text{dBi}$

#### BT-EDR

Frequency (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
2402-2480	2.729	2.06	20	0.00087	1

#### BT-LE

Frequency (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
2402-2480	1.897	2.06	20	0.00061	1

#### Zigbee (Antenna 2)

Frequency (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
2405-2475	119.399	3.10	20	0.04850	1

#### WWAN

Frequency (MHz)	Max EIRP (dBm)	Max EIRP (mW)	Distance (cm)	Power Density (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
826.4-846.6	27.83*	606.736	20	0.12071	0.5644
1852.4-1907.6	25.78	378.443	20	0.07529	1

Note: \* Maximum ERT is 25.69dBm and EIRP = 25.69 + 2.14=27.83dBm

**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 + BT-EDR + Zigbee + WWAN =  $0.06974/1 + 0.00087/1 + 0.04850/1 + 0.12071/0.5644 = 0.33298$

WLAN 5GHz + BT-EDR + Zigbee + WWAN =  $0.19851/1 + 0.00087/1 + 0.04850/1 + 0.12071/0.5644 = 0.46175$

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

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