



## APPENDIX B. MAXIMUM PERMISSIBLE EXPOSURE

**REPORT NO.:** SA130111E10A

**MODEL NO.:** TC8706-C

**FCC ID:** G95-TC8706-C

**RECEIVED:** May 22, 2013

**TESTED:** May 23 to 27, 2013

**ISSUED:** July 24, 2013

**APPLICANT:** Technicolor USA, Inc.

**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

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R.O.C.

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## TABLE OF CONTENTS

RELEASE CONTROL RECORD .....	B-3
1. CERTIFICATION .....	B-4
2. RF EXPOSURE LIMIT .....	B-5
3. MPE CALCULATION FORMULA .....	B-5
4. CLASSIFICATION .....	B-5
5. CALCULATION RESULT OF MAXIMUM CONDUCTED POWER.....	B-6



## RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
SA130111E10A	Original release	July 24, 2013



## 1. CERTIFICATION

**PRODUCT:** Cable Modem  
**BRAND NAME:** technicolor  
**MODEL NO.:** TC8706-C  
**TEST SAMPLE:** ENGINEERING SAMPLE  
**APPLICANT:** Technicolor USA, Inc.  
**TESTED DATE:** May 23 to 27, 2013  
**STANDARDS:** FCC Part 2 (Section 2.1091)  
FCC OET Bulletin 65, Supplement C (01-01)  
IEEE C95.1

The above equipment (Model: TC8706-C) 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 24, 2013  
( Phoenix Huang, Specialist )

**APPROVED BY :** May Chen , **DATE:** July 24, 2013  
( May Chen, Manager )

## 2. RF EXPOSURE LIMIT

### 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)
<b>LIMITS FOR GENERAL POPULATION / UNCONTROLLED EXPOSURE</b>				
300-1500	...	...	F/1500	30
1500-100,000	...	...	1.0	30

F = Frequency in MHz

### 3. MPE CALCULATION FORMULA

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

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

### 4. 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**.

## 5. CALCULATION RESULT OF MAXIMUM CONDUCTED POWER

### For 15.247(2.4GHz):

FREQUENCY BAND (MHz)	MAX POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
2412 ~ 2462	371.23	4.24	20	0.19605	1

### For 15.247(5GHz):

FREQUENCY BAND (MHz)	MAX POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
5745 ~ 5825	347.573	5.52	20	0.24648	1

### For 15.407(5GHz):

FREQUENCY BAND (MHz)	MAX POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
5180 ~ 5240	48.529	4.52	20	0.02737	1

### For 15.323 UPCS:

FREQUENCY BAND (MHz)	MAX POWER (mW)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/ cm <sup>2</sup> )	LIMIT (mW/cm <sup>2</sup> )
1921.536 ~1928.448	83.946 (19.24dBm)	3	20	0.0333	1

**CONCLUSION:**

Both of the (2.4GHz+5GHz) WLAN and UPCS can transmit simultaneously, the formula of calculated the MPE is:

$$\text{CPD}_1 / \text{LPD}_1 + \text{CPD}_2 / \text{LPD}_2 + \dots \text{etc.} < 1$$

**CPD = Calculation power density**

**LPD = Limit of power density**

Therefore, the worst-case situation is  $0.19605 / 1 + 0.24648 / 1 + 0.0333/1 = 0.476$ , which is less than "1". This confirmed that the device comply with FCC 1.1310 MPE limit.

**--- END ---**