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RF EXPOSURE REPORT

REPORT NO.: SA121120C08

MODEL NO.: C41W-100

FCC ID: G95C41W

RECEIVED: Nov. 20, 2012

TESTED: Dec. 14, 2012 ~ Jan. 03, 2013

Jan. 17 ~ Jan. 21, 2013

ISSUED: Jan. 23, 2013

APPLICANT: Technicolor U.S.A. Inc.

ADDRESS: 101 West 103rd Street, INH500 Indianapolis, IN 46290, U.S.A.

ISSUED BY: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch

LAB ADDRESS: No. 47, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan, R.O.C.

TEST LOCATION: No. 19, Hwa Ya 2nd Rd, Wen Hwa Tsuen, Kwei Shan Hsiang, Taoyuan Hsien 333, Taiwan, R.O.C.

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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.



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RELEASE CONTROL RECORD

| ISSUE NO. | REASON FOR CHANGE | DATE ISSUED |
|-------------|-------------------|---------------|
| SA121120C08 | Original release. | Jan. 23, 2013 |



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1. CERTIFICATION

PRODUCT: DirecTV Setop box

MODEL: C41W-100

BRAND: DirecTV

APPLICANT: Technicolor U.S.A. Inc.

TESTED: Dec. 14, 2012 ~ Jan. 03, 2013

Jan. 17 ~ Jan. 21, 2013

TEST SAMPLE: ENGINEERING SAMPLE

STANDARDS: FCC Part 2 (Section 2.1091)

FCC OET Bulletin 65, Supplement C (01-01)

IEEE C95.1

The above equipment (Model: C41W-100) 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


Pettie Chen / Senior Specialist

, DATE : Jan. 23, 2013

APPROVED BY


Ken Liu / Manager

, DATE : Jan. 23, 2013



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 ²) | 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/cm²

Pout = output power to antenna in mW

G = gain of antenna in linear scale

π = 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 CALCULATION RESULT OF MAXIMUM CONDUCTED POWER

| FREQUENCY BAND (GHz) | MAX POWER (dBm) | ANTENNA GAIN (dBi) | DISTANCE (cm) | POWER DENSITY (mW/cm ²) | LIMIT (mW/cm ²) |
|----------------------|-----------------|--------------------|---------------|-------------------------------------|-----------------------------|
| 5.180-5.240 | 16.89 | 1.7 | 20 | 0.014 | 1 |
| 5.260-5.320 | 23.60 | 1.7 | 20 | 0.067 | 1 |
| 5.500-5.700 | 23.85 | 1.7 | 20 | 0.071 | 1 |
| 5.745-5.805 | 29.88 | 1.7 | 20 | 0.286 | 1 |
| Zigbee (2.4GHz) | 3.00 | 5.5 | 20 | 0.0014 | 1 |

CONCULSION:

Both of the Zigbee & WLAN 5.0G can transmit simultaneously, the formula of calculated the MPE is:

$$CPD1 / LPD1 + CPD2 / LPD2 + \dots \text{etc.} < 1$$

CPD = Calculation power density

LPD = Limit of power density

$$1. \text{ Zigbee} + \text{WLAN 5.0G} = 0.0014 + 0.286 = 0.2874$$

Therefore, the maximum calculation of this situation is 0.2874, which is less than the "1" limit.