


<b>Product Name: Set Top Box</b>	<b>Report No: FCC022022-05523RF14</b>
<b>Product Model: UIW4060MDC</b>	<b>Security Classification: Open</b>
<b>Version: V1.0</b>	<b>Total Page:8</b>

# TIRT Testing Report



<b>Prepared By:</b>	<b>Checked By:</b>	<b>Approved By:</b>	
Stone Tang	Randy Lv	Daniel Chen	
<i>Stone Tang</i>	<i>Randy Lv</i>	<i>Daniel Chen</i>	

# FCC RF EXPOSURE REPORT

## FCC ID: G95-UIW4060

**Equipment** : Set Top Box  
**Brand Name** : Technicolor  
**Test Model** : UIW4060MDC  
**Series Model** : UIW4060BRC, UIW4060ARM, UIW4060ABB, UIW4060xxxx (where x can be alphanumeric, -, or blank, for marketing strategy)  
**Applicant** : Technicolor Connected Home USA LLC  
**Address** : 4855 Peachtree Industrial Blvd, Suite 200, Norcross, GA 30092, USA  
**Manufacturer** : Technicolor Connected Home USA LLC  
**Address** : 4855 Peachtree Industrial Blvd, Suite 200, Norcross, GA 30092, USA  
**Date of Receipt** : 2022.10.12  
**Date of Test** : 2022.10.13 ~ 2022.10.24  
**Issued Date** : 2022.10.24  
**Report Version** : V1.0  
**Test Sample** : Engineering Sample No.: 20220421018668  
**Standard(s)** : FCC Guidelines for Human Exposure IEEE C95.1 & FCC Part 2.1091  
FCC Title 47 Part 2.1091

- The test result referred exclusively to the presented test model /sample.
- Without written approval of TIRT Inc. the test report shall not reproduced except in full.

Lab: Beijing TIRT Technology Service Co.,Ltd Shenzhen  
Add: 101, 3 # Factory Building, Gongjin Electronics, Shatin Community, Kengzi  
Street, Pingshan District, Shenzhen City, Guangdong province, China

TEL: +86-0755-27087573

**REPORT ISSUED HISTORY**

Report No.	Version	Description	Issued Date	Note
FCC022022-05523RF14	V1.0	Original Report.	2022.10.24	Valid

## 1. TEST FACILITY

Company:	Beijing TIRT Technology Service Co.,Ltd Shenzhen
Address:	101, 3 # Factory Building, Gongjin Electronics, Shatin Community, Kengzi Street, Pingshan District, Shenzhen City, Guangdong province, China
CNAS Registration Number:	CNAS L14158
A2LA Registration Number	6049.01
Telephone:	+86-0755-27087573

## 2. MPE CALCULATION METHOD

Calculation Method of RF Safety Distance:

$$S = \frac{PG}{4\pi R^2} = \frac{EIRP}{4\pi R^2}$$

where:

S = power density

P = power input to the antenna

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the center of radiation of the antenna

Table for Filed Antenna:

For BT / LE:

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	N/A	N/A	Internal	N/A	3.00

Note: The antenna gain is provided by the manufacturer.

For 2.4GHz:

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	N/A	N/A	Internal	N/A	3.00
2	N/A	N/A	Internal	N/A	4.06

Note:

1) For CDD: Directional Gain=2.46 dBi

$$DirectionalGain = 10 \cdot \log \left[ \frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$$

where

Each antenna is driven by no more than one spatial stream;

$N_{SS}$  = the number of independent spatial streams of data;

$N_{ANT}$  = the total number of antennas

$g_{j,k} = 10^{G_k/20}$  if the  $k$ th antenna is being fed by spatial stream  $j$ , or zero if it is not;

$G_k$  is the gain in dBi of the  $k$ th antenna.

2) For TXBF: Directional Gain= $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}] = 4.89 \text{dBi}$ .

3) The antenna gain is provided by the manufacturer.

For 5GHz:

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	Note
1	N/A	N/A	Internal	N/A	3.05	UNII-1
2	N/A	N/A	Internal	N/A	4.97	
1	N/A	N/A	Internal	N/A	3.05	UNII-2A
2	N/A	N/A	Internal	N/A	4.97	
1	N/A	N/A	Internal	N/A	3.87	UNII-2C
2	N/A	N/A	Internal	N/A	5.04	
1	N/A	N/A	Internal	N/A	4.14	UNII-3
2	N/A	N/A	Internal	N/A	4.94	

Note:

- 1) For CDD: UNII-1 Directional Gain=2.83 dBi, UNII-2A Directional Gain=2.83 dBi  
 UNII-2C Directional Gain=2.19 dBi, UNII-3 Directional Gain=2.05 dBi

$$DirectionalGain = 10 \cdot \log \left[ \frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$$

where

Each antenna is driven by no more than one spatial stream;

$N_{SS}$  = the number of independent spatial streams of data;

$N_{ANT}$  = the total number of antennas

$g_{j,k} = 10^{G_k/20}$  if the  $k$ th antenna is being fed by spatial stream  $j$ , or zero if it is not;  
 $G_k$  is the gain in dBi of the  $k$ th antenna.

- 2) For TXBF: Directional Gain= $10 \log[(10^{G_1/20} + 10^{G_2/20} + \dots + 10^{G_{N_{ANT}}/20})^2 / N_{ANT}]$  dBi.  
 Then, UNII-1 Directional Gain=5.26 dBi, UNII-2A Directional Gain=5.26 dBi  
 UNII-2C Directional Gain=4.63 dBi, UNII-3 Directional Gain=4.77 dBi
- 3) The antenna gain is provided by the manufacturer.

## Table for Antenna Configuration:

For 2.4GHz:

For Non Beamforming:

Operating Mode	TX Mode	2TX
IEEE 802.11b		V(Ant. 1 + Ant. 2)
IEEE 802.11g		V(Ant. 1 + Ant. 2)
IEEE 802.11n(HT20)		V(Ant. 1 + Ant. 2)
IEEE 802.11ax(HE20)		V(Ant. 1 + Ant. 2)

For Beamforming:

Operating Mode	TX Mode	2TX
IEEE 802.11n(HT20)		V(Ant. 1 + Ant. 2)
IEEE 802.11ax(HE20)		V(Ant. 1 + Ant. 2)

For 5GHz:

For Non Beamforming:

Operating Mode	TX Mode	2TX
IEEE 802.11a		V (Ant. 1 + Ant. 2)
IEEE 802.11n(HT20)		V (Ant. 1 + Ant. 2)
IEEE 802.11n(HT40)		V (Ant. 1 + Ant. 2)
IEEE 802.11ac(VHT20)		V (Ant. 1 + Ant. 2)
IEEE 802.11ac(VHT40)		V (Ant. 1 + Ant. 2)
IEEE 802.11ac(VHT80)		V (Ant. 1 + Ant. 2)
IEEE 802.11ax(HE20)		V (Ant. 1 + Ant. 2)
IEEE 802.11ax(HE40)		V (Ant. 1 + Ant. 2)
IEEE 802.11ax(HE80)		V (Ant. 1 + Ant. 2)

For Beamforming:

Operating Mode	TX Mode	2TX
IEEE 802.11n(HT20)		V (Ant. 1 + Ant. 2)
IEEE 802.11n(HT40)		V (Ant. 1 + Ant. 2)
IEEE 802.11ac(VHT20)		V (Ant. 1 + Ant. 2)
IEEE 802.11ac(VHT40)		V (Ant. 1 + Ant. 2)
IEEE 802.11ac(VHT80)		V (Ant. 1 + Ant. 2)
IEEE 802.11ax(HE20)		V (Ant. 1 + Ant. 2)
IEEE 802.11ax(HE40)		V (Ant. 1 + Ant. 2)
IEEE 802.11ax(HE80)		V (Ant. 1 + Ant. 2)

### 3. TEST RESULTS

For BT:

Antenna Gain (dBi)	Antenna Gain (numeric)	Max. Output Power (dBm)	Max. Output Power (mW)	Power Density (S) (mW/cm <sup>2</sup> )	Limit of Power Density (S) (mW/cm <sup>2</sup> )	Test Result
3	1.9953	6.62	4.5604	0.00056	1	Complies

For LE:

Antenna Gain (dBi)	Antenna Gain (numeric)	Max. Output Power (dBm)	Max. Output Power (mW)	Power Density (S) (mW/cm <sup>2</sup> )	Limit of Power Density (S) (mW/cm <sup>2</sup> )	Test Result
3	1.9953	5.49	3.5237	0.00043	1	Complies

For 2.4GHz Non Beamforming:

Directional Gain (dBi)	Directional Gain (numeric)	Max. Output Power (dBm)	Max. Output Power (mW)	Power Density (S) (mW/cm <sup>2</sup> )	Limit of Power Density (S) (mW/cm <sup>2</sup> )	Test Result
2.46	1.7620	21.73	148.9361	0.01612	1	Complies

For 2.4GHz Beamforming:

Directional Gain (dBi)	Directional Gain (numeric)	Max. Output Power (dBm)	Max. Output Power (mW)	Power Density (S) (mW/cm <sup>2</sup> )	Limit of Power Density (S) (mW/cm <sup>2</sup> )	Test Result
4.89	3.0832	21.42	138.6756	0.02627	1	Complies

For 5GHz UNII-1 Non Beamforming:

Directional Gain (dBi)	Directional Gain (numeric)	Max. Output Power (dBm)	Max. Output Power (mW)	Power Density (S) (mW/cm <sup>2</sup> )	Limit of Power Density (S) (mW/cm <sup>2</sup> )	Test Result
2.83	1.9187	23.70	234.4229	0.02763	1	Complies

For 5GHz UNII-1 Beamforming:

Directional Gain (dBi)	Directional Gain (numeric)	Max. Output Power (dBm)	Max. Output Power (mW)	Power Density (S) (mW/cm <sup>2</sup> )	Limit of Power Density (S) (mW/cm <sup>2</sup> )	Test Result
5.26	3.3572	23.37	217.2701	0.04481	1	Complies

For 5GHz UNII-2A Non Beamforming:

Directional Gain (dBi)	Directional Gain (numeric)	Max. Output Power (dBm)	Max. Output Power (mW)	Power Density (S) (mW/cm <sup>2</sup> )	Limit of Power Density (S) (mW/cm <sup>2</sup> )	Test Result
2.83	1.9187	23.58	228.0342	0.02688	1	Complies

For 5GHz UNII-2A Beamforming:

Directional Gain (dBi)	Directional Gain (numeric)	Max. Output Power (dBm)	Max. Output Power (mW)	Power Density (S) (mW/cm <sup>2</sup> )	Limit of Power Density (S) (mW/cm <sup>2</sup> )	Test Result
5.26	3.3574	23.27	212.3244	0.04379	1	Complies

## For 5GHz UNII-2C Non Beamforming:

Directional Gain (dBi)	Directional Gain (numeric)	Max. Output Power (dBm)	Max. Output Power (mW)	Power Density (S) (mW/cm <sup>2</sup> )	Limit of Power Density (S) (mW/cm <sup>2</sup> )	Test Result
2.19	1.6558	23.73	236.0478	0.02401	1	Complies

## For 5GHz UNII-2C Beamforming:

Directional Gain (dBi)	Directional Gain (numeric)	Max. Output Power (dBm)	Max. Output Power (mW)	Power Density (S) (mW/cm <sup>2</sup> )	Limit of Power Density (S) (mW/cm <sup>2</sup> )	Test Result
4.63	2.9040	23.42	219.7860	0.03921	1	Complies

## For 5GHz UNII-3 Non Beamforming:

Directional Gain (dBi)	Directional Gain (numeric)	Max. Output Power (dBm)	Max. Output Power (mW)	Power Density (S) (mW/cm <sup>2</sup> )	Limit of Power Density (S) (mW/cm <sup>2</sup> )	Test Result
2.05	1.6032	24.38	274.1574	0.02700	1	Complies

## For 5GHz UNII-3 Beamforming:

Directional Gain (dBi)	Directional Gain (numeric)	Max. Output Power (dBm)	Max. Output Power (mW)	Power Density (S) (mW/cm <sup>2</sup> )	Limit of Power Density (S) (mW/cm <sup>2</sup> )	Test Result
4.77	2.9992	24.05	254.0973	0.04682	1	Complies

**For the max simultaneous transmission MPE:**

Ratio		Total	Limit of Ratio	Test Result
BT	5GHz			
0.00056	0.04682	0.04738	1	Complies

Note: The calculated distance is 36 cm.