

# RF Exposure Evaluation of

E.U.T. : Cloud Media Receiver

FCC ID. : Z68CP210-102A

MODEL : CP210-102A

for

APPLICANT : NEW5 TV CO., LTD.

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Report Number : 11-08-RBF-229-MPE

**Product Information:**

Type of EUT: Cloud Media Receiver

FCC ID: Z68CP210-102A

Manufacturer: NEW5 TV CO., LTD.

Model: CP210-102A

Description: Cloud Media Receiver is an IEEE 802.11b/g/n wireless equipment.

Maximum conducted output power (measured): **13.30** dBm or **21.380**mW

Mode	Channel	Output Powe	
		dBm	mW
802.11b	Low	12.92	19.588
	Middle	13.05	20.184
	High	<b>13.30</b>	<b>21.380</b>
802.11g	Low	10.87	12.218
	Middle	11.12	12.942
	High	11.37	13.709
802.11n HT-20	Low	11.00	12.589
	Middle	11.34	13.614
	High	11.50	14.125
802.11n HT-40	Low	10.38	10.914
	Middle	10.42	11.015
	High	10.50	11.220

**According to KDB 447498, the average output power is lower than 60/f hence the SAR evaluation is not required. The power threshold is  $60/f = 60/2.412 = 24.875\text{mW}$ .**

The following table lists the provided authorized antennas:

Model	Antenna Type	Antenna Gain	
		(dBi)	Numeric
----	PIFA	2	1.58

Below is an example of the RF Exposure Statement:

**IMPORTANT NOTE:** To comply with the FCC RF exposure compliance requirements, the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. No change to the antenna or the device is permitted. Any change to the antenna or the device could result in the device exceeding the RF exposure requirements and void user's authority to operate the device.

## Relative Requirement for Compliance

According to section 1.1310 of FCC 47 CFR Part 1, limits for maximum permissible exposure (MPE) are as following:

**TABLE 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> )	Averaging Time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3-3.0 .....	614	1.63	*(100)	6
3-30 .....	1842/f	4.89/f	*(900/f <sup>2</sup> )	6
30-300 .....	61.4	0.163	1.0	6
300-1500 .....	.....	.....	f/300	6
1500-100,000 .....	.....	.....	5	6
(B) 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

NOTE 1 TO TABLE 1: Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational / controlled limits apply provided he or she is made aware of the potential for exposure.

NOTE 2 TO TABLE 1: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can not exercise control over their exposure.

## RF Exposure Calculations:

The following information provides the minimum separation distance for the highest gain antenna provided. This calculation is based on the highest EIRP possible from the system, considering maximum power and antenna gain, and considering a 1.0 mW/cm<sup>2</sup> uncontrolled exposure limit. The formula shown in OET Bulletin 65 is used in the calculation.

Equation from page 19 of OET Bulletin 65, Edition 97-01 is:

$$S = PG / 4 \pi R^2$$

where: S = power density (in appropriate units, e.g. mW/cm<sup>2</sup>)

P = power input to the antenna (in appropriate units, e.g., mW)

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 (appropriate units, e.g., cm)

hence

$$R = (PG / 4 \pi S)^{1/2}$$

For our device

P = 21.38mW

G = 1.58

R = 20 cm

$S = (21.38 * 1.58) / (4 * \pi * 20^2) = \underline{\underline{0.0067}} \text{ mW/cm}^2 < 1.0 \text{ mW/cm}^2$

For complying the FCC limits for general population/uncontrolled exposure, the power density limit is 1.0 mW/cm<sup>2</sup>. The calculation result of the power density at a distance of 20 cm of our device is less than the limit.

This means that according to OET Bulletin 65 (Edition 97-01), Supplement C (Edition 01-01), the equipment fulfills the requirements on power density for general population/uncontrolled exposure and therefore fulfills the requirements of 47 CFR Part 15.247 (b)(5).