



RF EXPOSURE REPORT FOR FCC

RZBG(W) 20221128001-5

Applicant : Huzhou Hualai Technology Co.,Ltd.

Address : National University Science Park,No.669, Gaotie Rd Rm.316 Comprehensive Building.

Product Name : Ailofy Immersion TV Backlight

Type/Model : AICAMTVSL

FCC ID : 2A6LIHLCAMSL

TEST RESULT : PASS

SUMMARY

The equipment complies with the requirements according to the following standard(s):

FCC KDB 447498 D04: Interim General RF Exposure Guidance v01

Date of issue: Jan. 5, 23

Prepared by

Reviewed by:

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1. GENERAL INFORMATION OF EUT

1.1 Applicant information

Applicant	Huzhou Hualai Technology Co.,Ltd
Address	National University Science Park, No. 669, Gaotie Rd Rm. 316
	Comprehensive Building
Contact person	Chenhao Yan
Phone number	15657872505

1.2 Manufacture information

Manufacture	Huzhou Hualai Technology Co.,Ltd
Address	National University Science Park, No. 669, Gaotie Rd Rm. 316
	Comprehensive Building

1.3 General description for equipment under test(EUT)

EUT name	Ailofy Immersion TV Backlight
Trade name	Ailofy
Under test mode	ΔΙζΑΜΤΥ
name	
Series model name	N/A
Description of	
different model	N/A
name	
Hardware version	0.0.0.0
Software version	4.16.1.25
Network and	
Wireless	IEEE 802.11b/g/n(HT20/HT40),BLE 1M&2M
connectivity	



1.4 Technical information of equipment under test (EUT)

Operate Freq. range	Frequency	Modulation	Channel bandwidth	Date rate				
	range (MHz)		(MHz)	(Mbps)				
IEEE 802.11b	2412-2462	DSSS/CCK	20	Up to 11				
IEEE 802.11g	2412-2462 OFDM 20 Up to							
IEEE 802.11n(20MHz)	2412-2462	2412-2462 OFDM 20 Up to 72						
IEEE 802.11n(40MHz)	2422-2452	2422-2452 OFDM 40 Up to 15						
BLE	2402-2480	GFSK	2	1 to 2				
Test channel	Low(2412 for 20N	/Hz bandwidth,2	422 for 40MHz bandw	vidth)				
	20MHz bandwidt	h,2437 for 40MHz bai	ndwidth)					
	High(2462 for 20MHz bandwidth,2452 for 40MHz bandwidth							
	BLE (Low2402 Middle2440 High2480)							
Maximum RF Output	IEEE 802.11b:21.59							
Power(dBm)	IEEE 802.11g:25.38							
	IEEE 802.11n(20MHz):24.58							
	IEEE 802.11n(40MHz):24.04							
	BLE:6.3							
FCC ID	2A6LIHLCAMSL							
Equipment type	🛛 Mobile							
	Portable							
	Fix Location							
About the Product	This wifi is used fo	or data transmiss	sion					
Antenna Type	PCB Antenna							
Antenna Gain	2 dBi							
Note:The antenna gain was declared by the manufacture.								



2. DESCRIPTION OF TEST FACLITY

\boxtimes	Company Name	Hangzhou TDT Technologies Co., Ltd.
	Address	Room 101, Building 3, No. 12, Binwen Road, Xixing Street, Binjiang district, Hangzhou, Zhejiang, China
	Telephone	+86571-88317620
	Telefax	+86571-88316350
	Test Location	Hangzhou TDT Technologies Co., Ltd.
	Address	Room 101, Building 3, No. 12, Binwen Road, Xixing Street, Binjiang district, Hangzhou, Zhejiang, China
	Telephone	+86571-88317620
	Telefax	+86571-88316350
	A2LA Certification number	4037.01
	CNAS Certification number	CNAS L7728
	VCCI Site registration number	C-14683, G-10832, R-14200, T-12223
	FCC Site registration number	645845

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3. SUMMARY OF TEST RESULT

3.1 Test standard

No.	Identify	Document title			
1	47 CFR Part 15	Radio frequency radiation exposure evaluation: mobile			
	Sub-part 2.1091	devices			
2	FCC KDB 447498	Interim Coneral BE Expecture Cuidance v01			
	D04	Interim General RF Exposure Guidance VOI			



4. DEVICE CATEGORY AND LEVELS LIMITS

According to FCC §§1.1307 and KDB 447498 D04, the available maximum time-averaged power or effective radiated power (ERP), whichever is greater, is less than or equal to the threshold Pth (mW).

The definition of the category as following:

1) Option A. 1-mW Test Exemption

Per § 1.1307(b)(3)(i)(A), a single RF source is exempt RF device (from the requirement to show data demonstrating compliance to RF exposure limits, as previously mentioned) if the available maximum time-averaged power is no more than 1 mW, regardless of separation distance.

This exemption applies to all operating configurations and exposure conditions, for the frequency range 100 kHz to 100 GHz, regardless of fixed, mobile, or portable device exposure conditions. This is a standalone exemption, and it cannot be applied in conjunction with any other test exemption.

2) Option B. SAR-Based Exemption

A more comprehensive exemption, considering a variable power threshold that depends on both the separation distance and power, is provided in § 1.1307(b)(3)(i)(B). This exemption is applicable to the frequency range between 300 MHz and 6 GHz, with test separation distances between 0.5 cm and 40 cm, and for all RF sources in fixed, mobile, and portable device exposure conditions.

Accordingly, a RF source is considered an RF exempt device if its available maximum time-averaged (matched conducted) power or its effective radiated power (ERP), whichever is greater, are below a specified threshold.

This method shall only be used at separation distances (cm) from 0.5 centimeters to 40 centimeters and at frequencies from 0.3 GHz to 6 GHz (inclusive). Pth is given by:

11/29/2021

$$P_{\rm th} \,({\rm mW}) = \begin{cases} ERP_{20\,\rm cm} (d/20\,{\rm cm})^x & d \le 20\,{\rm cm} \\ \\ ERP_{20\,\rm cm} & 20\,{\rm cm} < d \le 40\,{\rm cm} \end{cases}$$
(B.2)

where

$$x = -\log_{10}\left(\frac{60}{ERP_{20} \operatorname{cm}\sqrt{f}}\right)$$

and f is in GHz, d is the separation distance (cm), and ERP_{20cm} is per Formula (B.1). The example values shown in Table B.2 are for illustration only.

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2					Dis	stance	(mm)				
Frequency (MHz)		5	10	15	20	25	30	35	40	45	50
	300	39	65	88	110	129	148	166	184	201	217
	450	22	44	67	89	112	135	158	180	203	226
	835	9	25	44	66	90	116	145	175	207	240
	1900	3	12	26	44	66	92	122	157	195	236
	2450	3	10	22	38	59	83	111	143	179	219
	3600	2	8	18	32	49	71	96	125	158	195
	5800	1	6	14	25	40	58	80	106	136	169

Table B.2—Example Power Thre	esholds	(mW)
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(2040 f 0.3 GHz $\leq f < 1.5$ GHz

 $P_{\rm th} (\rm mW) = ERP_{20\,\rm cm} (\rm mW) =$

 $3060 \quad 1.5 \text{ GHz} \le f \le 6 \text{ GHz}$

(B.1)

3) Option C MPE-Based Exemption

An alternative to the SAR-based exemption is provided in § 1.1307(b)(3)(i)(C), for a much wider frequency range, from 300 kHz to 100 GHz, applicable for separation distances greater or equal to $\lambda/2\pi$, where λ is the free-space operating wavelength in meters. The MPE-based test exemption condition is in terms of ERP, defined as the product of the maximum antenna gain and the delivered maximum time-averaged power. For this case, a RF source is an RF exempt device if its ERP (watts) is no more than a frequency-dependent value, as detailed tabular form in Appendix B. These limits have been derived based on the basic specifications on Maximum Permissible Exposure (MPE) considered for the FCC rules in § 1.1310(e)(1).

<i>f</i> _H MHz 1.34 30	λ _L / 2π 159 m		$\lambda_{\rm H}/2\pi$	W
1.34	159 m		256	
30			55.0 m	1,920 R ²
~~	35.6 m	-	1.6 m	3,450 R ² /f ²
300	1.6 m		159 mm	3.83 R ²
1,500	159 mm	-	31.8 mm	0.0128 R ² f
100,00 0	31.8 mm	72	0.5 mm	19.2R ²
	300 1,500 100,00 0 . and H are 07(b)(3)(i)	300 1.6 m 1,500 159 mm 100,00 31.8 mm 0 0	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{c c c c c c c c c c c c c c c c c c c $

TABLE B.1—THRESHOLDS FOR SINGLE RF SOURCES SUBJECT TO ROUTINE ENVIRONMENTAL EVALUATION



Either SAR-based or MPE-based exemption may be considered for test exemption for fixed, mobile, or portable device exposure conditions; therefore, the contributions from each exemption in conjunction with the measured SAR (*Evaluated*_k term) shall be used to determine exemption for simultaneous transmission according to Formula (C.1) [repeated from § 1.1307(b)(3)(ii)(B)].

$$\sum_{i=1}^{a} \frac{P_i}{P_{\text{th},i}} + \sum_{j=1}^{b} \frac{ERP_j}{ERP_{\text{th},j}} + \sum_{k=1}^{c} \frac{Evaluated_k}{Exposure\ Limit_k} \le 1$$
(C.1)

- a number of fixed, mobile, or portable RF sources claiming exemption using the § 1.1307(b)(3)(i)(B) formula for P_{th}, including existing exempt transmitters and those being added.
- b number of fixed, mobile, or portable RF sources claiming exemption using the applicable § 1.1307(b)(3)(i)(C) Table 1 formula for Threshold ERP, including existing exempt transmitters and those being added.
- *c* number of existing fixed, mobile, or portable RF sources with known evaluation for the specified minimum distance.
- P_i the available maximum time-averaged power or the ERP, whichever is greater, for fixed, mobile, or portable RF source *i* at a distance between 0.5 cm and 40 cm (inclusive).
- $P_{\text{th},i}$ the exemption threshold power (*P*th) according to the § 1.1307(b)(3)(i)(B) formula for fixed, mobile, or portable RF source *i*.
- *ERP_j* the available maximum time-averaged power or the ERP, whichever is greater, of fixed, mobile, or portable RF source *j*.
- *ERP*_{th,j} exemption threshold ERP for fixed, mobile, or portable RF source *j*, at a distance of at least $\lambda/2\pi$, according to the applicable § 1.1307(b)(3)(i)(C) Table 1 formula at the location in question.
- Evaluated_kthe maximum reported SAR or MPE of fixed, mobile, or portable RF source k
either in the device or at the transmitter site from an existing evaluation.Exposure
Limit_keither the general population/uncontrolled maximum permissible exposure
(MPE) or specific absorption rate (SAR) limit for each fixed, mobile, or
portable sources, as applicable



5. MPE ASSESSMENT

Output power test data

2.4G WIFI								
	802.11 b	802.11 g						
Mode	Out put power	Out put power						
output power (dBm)	21.59	25.38						
	802.11 n HT20	802.11 n HT40						
Mode	Out put power	Out put power						
output power (dBm)	24.58	24.04						
Mode	BLE							
	Out put power							
output power (dBm)	6.3							
Note: This report	Note: This report listed the worst case peak output power value, please refer to RF test report for							

more details.

Assessment result

Evolution mode	Freq (MHz)	Maximum output power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Maximum ERP (dBm)	Distance (mm)	Maximum ERP (mw)	Threshold ERP Limit (mw)
2.4G WIFI	2437	25.5	2	27.5	25.35	200	342.77	768
BLE	2440	6.5	2	8.5	6.35	200	4.32	768

Conclusion:

RF exposure evaluation results: Compliance

Note:

1. Output power including tune up tolerance.

2.More power list please refer to RF test report.



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Annex A Revision History

Version	Issue Date	Revisions Content
Rev.01	Dec.30.2022	Initial Issue

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