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Report No.: 2205RSU031-U5 Report Version: V01 Issue Date: 2022-08-04

# **RF Exposure Evaluation Declaration**

FCC ID: UIDW61

**Applicant:** ARRIS

**Product:** Wireless Router

Model No.: W61

FCC Classification: Digital Transmission System (DTS)

Unlicensed National Information Infrastructure (NII)

15E 6 GHz Low Power Indoor Access Point (6ID)

15E 6 GHz Subordinate Indoor Device (6PP)

FCC Rule Part(s) FCC Part 2.1091

**Test Procedure** KDB 447498 D04 Interim General RF Exposure

Guidance v01

Approved By:

Reviewed By:

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Robin Wu

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Vincent Yu

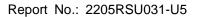
ACCREDITED

TESTING LABORATORY
CERTIFICATE #3628.01

The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standards through the calibration of the equipment and evaluated measurement uncertainty herein.

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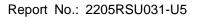
## 27Revision History

Report No.	Version	Description	Issue Date	Note	
2205RSU031-U5	Rev. 01	Initial Report	2022-08-04	Valid	



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## 1. General Information

## 1.1. Applicant

ARRIS

3871 LAKEFIELD DR, SUWANEE GA 30024, UNITED STATES

#### 1.2. Manufacturer

**ARRIS** 

3871 LAKEFIELD DR, SUWANEE GA 30024, UNITED STATES

## 1.3. Testing Facility

$\boxtimes$	Test Site – MRT Suzhou Laboratory									
	Laboratory Location (Suzhou - Wuzhong)									
	ızhou, China									
Laboratory Location (Suzhou - SIP)										
	4b Building, Liando U Valley, No.200 Xingpu Rd., Shengpu Town, Suzhou Industrial Park, 0									
	Laboratory Accr	editations								
	A2LA: 3628.01		CNAS	S: L10551						
	FCC: CN1166		ISED:	CN0001						
		□R-20025	□G-20034	□C-20020	□T-20020					
	VCCI:	□R-20141	□G-20134	□C-20103	□T-20104					
☐ Test Site – MRT Shenzhen Laboratory										
	Laboratory Loca	tion (Shenzhen)								
	1G, Building A, Ju	ınxiangda Building,	Zhongshanyuan Roa	nd West, Nanshan Di	strict, Shenzhen, China					
	Laboratory Accr	editations								
	A2LA: 3628.02		CNAS	: L10551						
	FCC: CN1284		ISED:	CN0105						
	Test Site - MRT	Taiwan Laboratory	1							
	Laboratory Loca	tion (Taiwan)								
	No. 38, Fuxing 2n	nd Rd., Guishan Dis	t., Taoyuan City 333,	Taiwan (R.O.C.)						
	Laboratory Accr	editations								
	TAF: L3261-1907	25								
	FCC: 291082, TW	TW3261								



#### 1.4. Product Information

Product Name	Wireless Router			
Model No.	W61			
Wi-Fi Specification	802.11a/b/g/n/ac/ax			
Antenna Information	Refer to Clause 1.5			
Power Supply	AC/DC Adapter			
Accessories				
Adapter 1#	Model: WA-30P12FU			
	Input:100-120V ~ 50/60Hz 0.9A Max			
	Output: 12V 2.5A			
Adapter 2#	Model: F30L10-120250SPAU			
	Input:100-120V ~ 50/60Hz 0.9A Max			
	Output: 12V 2.5A, 30.0W			
Remark: The information of EUT was provided by the manufacturer, and the accuracy of the information shall				

be the responsibility of the manufacturer.

#### 1.5. Antenna Details

Antenna	Frequency	Tx	Nss	Antenna Gain (dBi)				Max. Gain	BF DG	CDD DG (dBi)	
Туре	Band	Paths		Ant 0	Ant 1	Ant 2	Ant 3	(dBi)	(dBi)	Power	PSD
	2.4GHz	2	1	4.5	4.8		-	4.8	7.81	4.8	7.81
Dipole	5GHz	2	1	4.9	4.4			4.9	7.91	4.9	7.91
	6GHz	4	1	5.7	5.2	5.8	5.8	5.8	11.82	5.8	11.82

#### Remark:

- The EUT supports Cyclic Delay Diversity (CDD) mode, and CDD signals are correlated.
   If all antennas have the same gain, G<sub>ANT</sub>, Directional gain = G<sub>ANT</sub> + Array Gain, where Array Gain is as follows.
  - For power spectral density (PSD) measurements on all devices,
     Array Gain = 10 log (N<sub>ANT</sub>/ N<sub>SS</sub>) dB;
  - For power measurements on IEEE 802.11 devices,
     Array Gain = 0 dB for N<sub>ANT</sub> ≤ 4;
- 2. The EUT also supports beamforming mode, and the beamforming support 802.11n/ac/ax only, not include 802.11a/b/g. BF Directional Gain = Max. Gain +  $10 log (N_{ANT} / N_{SS})$ .

For beamforming operation, manufacturer automatically backs power down based on a 10log ( $N_{\text{ANT}}$ ) factor based on CDD power. Therefore, only the CDD mode was evaluated in this report.



#### 1.6. Device Classification

According to the user manual, the antenna of this device is at least 30cm away from the body of the user, this device is classified as a **Mobile Device**. Therefore, the RF exposure evaluation requirements of FCC Part 2.1091 for mobile device exposure conditions subject to MPE limits.



### 2. RF Exposure Evaluation

#### 2.1. Test Limits

According to FCC Part 2.1091, A mobile device is defined as a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at least 20 cm is normally maintained between the RF source's radiating structure(s) and the body of the user or nearby persons.

According to FCC Part 1.1307(b)(3)(i)(C), for the exemption in Table 1 to apply, R must be at least  $\lambda/2\pi$ , where  $\lambda$  is the free-space operating wavelength in meters. If the ERP of a single RF source is not easily obtained, then the available maximum time-averaged power may be used in lieu of ERP if the physical dimensions of the radiating structure(s) do not exceed the electrical length of  $\lambda/4$  or if the antenna gain is less than that of a half-wave dipole.

Table 1 to § 1.1307(b)(3)(i)(C) - Single RF Sources Subject to Routine Environmental Evaluation

RF Source Frequency (MHz)	Threshold ERP (watts)				
0.3-1.34	1.920 R <sup>2</sup>				
1.34-30	3.450 R <sup>2</sup> /f <sup>2</sup>				
30-300	3.83 R <sup>2</sup>				
300-1500	0.0128 R <sup>2</sup> f				
1500-100,000	19.2 R <sup>2</sup>				
f = frequency in MHz, R = minimum separation distance in meters.					

According to FCC Part 1.1307(b)(3)(ii)(B), in the case of fixed RF sources operating in the same time-averaging period, or of multiple mobile or portable RF sources within a device operating in the same time averaging period, if the sum of the fractional contributions to the applicable thresholds is less than or equal to 1 as indicated in the following equation.

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



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#### 2.2. Test Result

Product	Wireless Router
Test Item	RF Exposure Evaluation

Test	Frequency	Max.	Max.	EIRP	ERP	Compliance	Threshold
Mode	Band	Conducted	Antenna	(dBm)	(W)	Distance (R)	ERP
	(MHz)	Power	Gain			(m)	(W)
		(dBm)	(dBi)				
802.11b/g/n/ax	2412 ~ 2462	25.94	4.8	30.74	0.723	0.30	1.728
802.11a/n/ac/ax	5180 ~ 5825	23.95	4.9	28.85	0.468	0.30	1.728
802.11ax	5955 ~ 7095		-	23.836	0.147	0.30	1.728

#### Note:

- 1. EIRP (dBm) = Max. Conducted Power (dBm) + Max. Antenna Gain (dBi)
- 2. ERP (W) =  $10^{[ERP (dBm) 30)]/10}$  =  $10^{[EIRP (dBm) 2.15 (dB) 30]/10}$
- 3. Threshold ERP (W) =  $19.2 * R^2$  (W) =  $19.2 * 0.30^2$  (W) = 1.728 (W)

The 2.4GHz WLAN, 5GHz WLAN and 6GHz RLAN can transmit simultaneously.

**Exposure Ratio** = 
$$(0.723 + 0.468 + 0.147) / 1.728 = 0.774 < 1$$
.

Therefore, this device meets the RF Exposure requirements when it is installed and operated with a minimum distance of 30cm between the radiator and user.