



RF Exposure Evaluation Declaration

FCC ID: UIDM6
Applicant: ARRIS
Product: Wireless Router
Model No.: M6
FCC Classification: 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

Reviewed By:

Vincent Yu

Approved By:

Robin Wu



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
2207RSU062-U2	Rev. 01	Initial Report	2022-11-12	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

☐	Test Site – MRT Suzhou Laboratory				
	Laboratory Location (Suzhou - Wuzhong)				
	D8 Building, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China				
	Laboratory Location (Suzhou - SIP)				
	4b Building, Liando U Valley, No.200 Xingpu Rd., Shengpu Town, Suzhou Industrial Park, China				
	Laboratory Accreditations				
A2LA: 3628.01		CNAS: L10551			
FCC: CN1166		ISED: CN0001			
VCCI:	☐ R-20025	☐ G-20034	☐ C-20020	☐ T-20020	
	☐ R-20141	☐ G-20134	☐ C-20103	☐ T-20104	
☐	Test Site – MRT Shenzhen Laboratory				
	Laboratory Location (Shenzhen)				
	1G, Building A, Junxiangda Building, Zhongshanyuan Road West, Nanshan District, Shenzhen, China				
	Laboratory Accreditations				
	A2LA: 3628.02		CNAS: L10551		
	FCC: CN1284		ISED: CN0105		
☐	Test Site – MRT Taiwan Laboratory				
	Laboratory Location (Taiwan)				
	No. 38, Fuxing 2nd Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)				
	Laboratory Accreditations				
	TAF: L3261-190725		FCC: 291082, TW3261		
ISED: TW3261					

1.4. Product Information

Product Name	Wireless Router
Model No.	M6
Serial No.	26V431111190039 (CBP) 26V431111190006 (RF Conducted) 26V431111190029 (RF Radiated)
Wi-Fi Specification	802.11a/ax
Antenna Information	Refer to section 1.7
Power Supply	AC/DC Adapter
Operating Temperature	0 ~ 40 °C
Operating Environment	Indoor Use
Accessories	
AC/DC Adapter 1#	Model: F24L15-120200SPAU Input: 100-120V~60Hz, 0.7A Max Output: 12.0V, 2.0A
AC/DC Adapter 2#	Model: WB-24M12FU Input: 100-120V~60Hz, 0.7A Max Output: 12.0V, 2.0A
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 Type	Frequency Range (MHz)	N _{ANT}	Antenna Gain (dBi)				Max. G _{ANT} (dBi)	CDD DG (dBi)	
			Ant 0	Ant 1	Ant 2	Ant 3		Power	PSD
PCB Antenna	5955 ~ 7095	4	4.6	4.5	4.5	4.6	4.6	4.6	10.62
Remark: - The EUT supports Cyclic Delay Diversity (CDD) mode, and CDD signals are correlated. For CDD transmissions, directional gain is calculated as follows, $N_{ANT} = 4$, $N_{SS} = 1$. If all antennas have the same gain, G_{ANT}, Directional gain = $G_{ANT} + \text{Array Gain}$, where Array Gain is as follows. - For power spectral density (PSD) measurements on all devices, Array Gain = $10 \cdot \log(N_{ANT}/N_{SS})$ dB = 6.01; - For power measurements on IEEE 802.11 devices, Array Gain = 0 dB for $N_{ANT} \leq 4$; - The EUT also supports Beam Forming mode, and the Beam Forming support 802.11ax, not include 802.11a. For beamforming operation, manufacturer automatically backs power down based on a $10 \log(N_{ANT})$ 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 20cm 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 λ 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	$1.920 R^2$
1.34-30	$3.450 R^2/f^2$
30-300	$3.83 R^2$
300-1500	$0.0128 R^2 f$
1500-100,000	$19.2 R^2$

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.

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

2.2. Test Result

Product	Wireless Router
Test Item	RF Exposure Evaluation

Test Mode	Frequency Band (MHz)	Max. EIRP (dBm)	ERP (W)	Compliance Distance (R) (m)	Threshold ERP (W)
802.11ax	5955 ~ 7095	22.987	0.121	0.2	0.768

Note:

1. $ERP (W) = 10^{[ERP (dBm) - 30]/10} = 10^{[EIRP (dBm) - 2.15 (dB) - 30]/10}$
2. $Threshold ERP (W) = 19.2 * R^2 (W) = 19.2 * 0.2^2 (W) = 0.768 (W)$

Therefore, this device meets the RF Exposure requirements when it is installed and operated with a minimum distance of 20cm between the radiator and user.