

# Maximum Permissible Exposure Evaluation

## FCC ID: 2AKID-WF40A

### 1. Client Information

**Applicant** : Parts Express Int'l. Inc.  
**Address** : 705 Pleasant Valley Dr., Springboro, Ohio 45066-1158, USA  
**Manufacturer** : HIGH HIT ELECTRONICS (SHENZHEN) CO., LTD.  
**Address** : BUILDING 25, AREA C, BUYONG INDUSTRIAL RD., SHA JING TOWN, BAO AN ZONE, SHENZHEN CITY, GUANGDONG PROVINCE, CHINA

### 2. General Description of EUT

<b>EUT Name</b>	:	WF40A Multi-Room Wi-Fi 2x20W Amplifier with IR Remote
<b>Models No.</b>	:	WF40A, WFA28
<b>Model Difference</b>	:	All these models are identical in the same PCB layout and electrical circuit, the only difference is model name for commercial.
<b>Product Description</b>	:	Operation Frequency: 802.11b/g/n(HT20): 2412MHz~2462MHz 802.11n(HT40): 2422MHz~2452MHz
	:	Number of Channel: 802.11b/g/n(HT20):11 channels <i>see note(3)</i> 802.11n(HT40): 7 channels <i>see note(3)</i>
	:	RF Output Power: 802.11b: 18.42 dBm 802.11g: 17.58 dBm 802.11n (HT20): 18.71 dBm 802.11n (HT40): 18.61 dBm
	:	Antenna Gain: 0 dBi PIFA Antenna
	:	Modulation Type: 802.11b: DSSS(CCK, QPSK, BPSK) 802.11g: OFDM 802.11n: OFDM
	:	Bit Rate of Transmitter: 802.11b:11/5.5/2/1 Mbps 802.11g:54/48/36/24/18/12/9/6 Mbps 802.11n:up to 150Mbps

TB-RF-075-1.0



<b>Power Supply</b>	:	DC Voltage Supply from AC Adapter
<b>Power Rating</b>	:	Input: AC 100-240V/50/60Hz 1A Output: DC15.0 V-----2400mA
<b>Connecting I/O Port(S)</b>	:	Please refer to the User's Manual
Note: More information about the RF function, please refer the RF test reports.		

## MPE Calculations for WIFI

### 1. Antenna Gain:

PIFA Antenna: 0 dBi.

### 2. EUT Operation Condition:

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

### 3. Exposure Evaluation:

Equation from page 18 of OET Bulletin 65, Edition 97-01

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

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

### 4. Test Result:

Worst Maximum MPE Result											
Mode	N <sub>TX</sub>	Freq. (MHz)	Conducted Power(max) (dBm) [P]		ANT Gain (dBi) [G]	Distance (cm) [R]	Power Density (mW/ cm <sup>2</sup> ) [S]			Power Density Limit (mW/ cm <sup>2</sup> )	Result
			Ant 1	Ant 2			Ant 1	Ant 2	Sum		
802.11b	1	2412	18.36	18.31	0	20	0.0136	0.0135	---	1.000	PASS
		2437	18.23	18.23	0	20	0.0132	0.0132	---		
		2462	18.42	18.31	0	20	0.0138	0.0135	---		
802.11g	1	2412	17.38	17.29	0	20	0.0109	0.0107	---		
		2437	17.36	17.43	0	20	0.0108	0.0110	---		
		2462	17.28	17.58	0	20	0.0106	0.0114	---		
802.11n (HT20)	2	2412	15.86	15.53	0	20	0.0077	0.0071	0.0148		
		2437	15.86	15.46	0	20	0.0077	0.0070	0.0147		
		2462	15.41	15.24	0	20	0.0069	0.0066	0.0135		
802.11n (HT40)	2	2422	15.57	15.62	0	20	0.0072	0.0073	0.0145		
		2437	15.40	15.52	0	20	0.0069	0.0071	0.0140		
		2452	15.25	15.36	0	20	0.0067	0.0068	0.0135		
Note: (1) N <sub>TX</sub> = Number of Transmit Antennas (2) RF Output power specifies that Maximum Conducted Peak Output Power.											



**5. Conclusion:**

As specified in Table 1B of 47 CFR 1.1310- Limits for Maximum Permissible Exposure (MPE),

**Limits for General Population/ Uncontrolled Exposure**

Frequency Range (MHz)	Power density (mW/ cm <sup>2</sup> )
300-1,500	F/1500
1,500-100,000	1.0

For 802.11b/g/n (2412~2462 MHz)

MPE limit S: 1 mW/ cm<sup>2</sup>

The MPE is calculated as  $0.0148 \text{ mW} / \text{cm}^2 < \text{limit } 1 \text{ mW} / \text{cm}^2$ . So, RF exposure limit warning or SAR test are not required.

The EUT will only be used with a separation of 20cm or greater between the antenna and nearby persons and can therefore be considered a mobile transmitter per 47 CFR2.1091 (b).

The RF Exposure Information page from the manual is included here for reference.

**Note**

For a more detailed features description, please refer to the RF Test Report.

-----END OF REPORT-----