Maximum Permissible Exposure Evaluation
FCC ID: 2A4MW-MWE813

1. Client Information

Applicant	:	Marvel Technology(China) Co., Ltd
Address	:	Block 14, Longbi Industrial Park, No 27 Dafa Rd, Bantian LongGang District, Shenzhen, China
Manufacturer	:	Marvel Technology(China) Co., Ltd
Address	:	Block 14, Longbi Industrial Park, No 27 Dafa Rd, Bantian LongGang District, Shenzhen, China

2. General Description of EUT

EUT Name	:	Floor Standing Advertizing Digital Signage	
Models No.	:	MWE813, MWE831, MWE832, MWE956	
Model Different	:	All PCB boards and circuit diagrams are the same, the only difference is that model names.	
Product Description	:	Operation Frequency:	802.11b/g/n(HT20): 2412MHz~2462MHz 802.11n(HT40): 2422MHz-2452MHz
		Antenna Gain:	5.98dBi PCB antenna
Power Rating	:	Input: AC 110V~220V	
Software Version	:	----	
Hardware Version	:	----	
Connecting I/O Port(S)	:	Please refer to the User's Manual	
Remark	:	the evaluation report used the EUT(202311-0214-1-2#).	

1 A/F., Building.6, Rundongsheng Industrial Zone, Longzhu, Xixiang, Bao'an, Shenzhen, Guangdong, China
Tel: +86 75526509301 Fax: +86 75526509195

MPE Calculations for WIFI

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

2. **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

3. **Simultaneous transmission MPE Considerations**
   According to KDB447498: All transmitters and antennas in the host must be either evaluated for MPE compliance, by measurement or computational modeling, or qualify for the standalone MPE test exclusion in section 7.1. Simultaneous transmission MPE test exclusion applies when the sum of the MPE ratios for all simultaneous transmitting antennas incorporated in a host device, based on the calculated/estimated, numerically modeled or measured field strengths or power density, is ≤ 1.0.
   This means that:
   ∑ of MPE ratios ≤ 1.0
4. **Test Result:**

2.4G WIFI worst reported.

2.4G WiFi MPE Result								
Mode	N_{TX}	Freq. (MHz)	Conducted Power(max) (dBm)	Turn-up Power (dB)	Max tune up power (dBm) [P]	ANT Gain (dBi) [G]	Distance (cm) [R]	Power Density (mW/cm^2) [S]
802.11b	1	2412	15.49	15±1	16	5.98	20	0.0314
		2437	15.1	15±1	16	5.98	20	0.0314
		2462	15.44	15±1	16	5.98	20	0.0314
802.11g	1	2412	12.94	13±1	14	5.98	20	0.0198
		2437	14	14±1	15	5.98	20	0.0249
		2462	10.27	10±1	11	5.98	20	0.0099
802.11n20	1	2412	12.47	12±1	13	5.98	20	0.0157
		2437	15.81	16±1	17	5.98	20	0.0395
		2462	10.42	10±1	11	5.98	20	0.0099
802.11n40	1	2422	10.57	11±1	12	5.98	20	0.0125
		2437	15.01	15±1	16	5.98	20	0.0314

		2452	10.23	10±1	11	5.98	20	0.0099

Note:
N_{TX}= Number of Transmit Antennas
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^2)
300-1,500	F/1500
1,500-100,000	1.0

For 2.4G WiFi

MPE limit S: $1mW/cm^2$

The MPE is calculated as $0.0395 mW/cm^2$ ***< limit 1mW / cm²***. 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.

6. Conclusion:

The measurement results comply with the FCC Limit per 47 CFR 2.1091 for the uncontrolled RF Exposure of mobile device.

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