

RF EXPOSURE EVALUATION

EUT Specification

EUT	3M Neon Rope Light, Monitor Back Light - Wi-Fi Version
Model	R03MW-3, S03MB
Series Model	EH-R03MW, EH-R03MW-S, EH-R03MW-P, S03MB-S, EH-S03MB, EH-S03MB-S, EH-S03MB-P
FCC ID	2ASF2-R03MW
Antenna Gain	3.42dBi
Operation Frequency	2412 MHz to 2462 MHz
Modulation	802.11b: DSSS(DBPSK/DQPSK/CCK) 802.11g/n: OFDM(BPSK/QPSK/16QAM/64QAM)
Input Rating	AC100-240V 50/60Hz
Max. output power	IEEE 802.11b: 16.78 dBm IEEE 802.11g: 15.68 dBm IEEE 802.11n-HT20: 14.35 dBm IEEE 802.11n-HT40: 13.55 dBm

Test Requirement:

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency(RF)

Radiation as specified in §1.1307(b)

Limits for Maximum Permissible Exposure (MPE)

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density(mW/cm ²)	Average Time
(A) Limits for Occupational/Control Exposures				
300-1500	--	--	F/300	6
1500-100000	--	--	5	6
(B) Limits for General Population/Uncontrol Exposures				
300-1500	--	--	F/1500	6
1500-100000	--	--	1	30

Friis transmission formula: $P_d = \frac{P_{out} \cdot G}{4 \cdot \pi \cdot R^2}$

Where

P_d = Power density in mW/cm^2

P_{out} = output power to antenna in mW

G = Numeric gain of the antenna relative to isotropic antenna

$\pi = 3.1416$

R = distance between observation point and center of the radiator in cm = 20cm

P_d the limit of MPE, $1\text{mW}/\text{cm}^2$. If we know the maximum gain of the antenna and total power input to the antenna, through the calculation, we will know the distance where the MPE limit is reached.

Measurement Result

Antenna gain: 3.42dBi

WIFI:

Mode	Channel Freq. (MHz)	Measured power (dBm)	Tune-up power (dBm)	Max tune-up power (dBm)	Antenna Gain (Numeric)	Evaluation result (mW/cm ²)	Power density Limits (mW/cm ²)
802.11b	2412	16.78	17±1	18	2.198	0.027603	1
	2437	16.56	17±1	18	2.198	0.027603	1
	2462	16.26	16±1	17	2.198	0.021926	1
802.11g	2412	15.68	16±1	17	2.198	0.021926	1
	2437	15.39	15±1	16	2.198	0.017416	1
	2462	15.1	15±1	16	2.198	0.017416	1
802.11n HT20	2412	14.35	14±1	15	2.198	0.013834	1
	2437	14.32	14±1	15	2.198	0.013834	1
	2462	14.1	14±1	15	2.198	0.013834	1
802.11n HT40	2412	13.49	13±1	14	2.198	0.010989	1
	2437	13.55	14±1	15	2.198	0.013834	1
	2462	13.05	13±1	14	2.198	0.010989	1

Signature:

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