Maximum Permissible Exposure Evaluation

FCC ID: 2ASLP-RTL8192EU

1. Client Information

Applicant	:	Hangzhou Yuncool Technology Co., Ltd.
Address	:	10TH Floor, Building 9, Yinhu Innovation Center, Yinhu Street, Fuyang District, Zhejiang, China
Manufacturer	:	Hangzhou Yuncool Technology Co., Ltd.
Address	:	10TH Floor, Building 9, Yinhu Innovation Center, Yinhu Street, Fuyang District, Zhejiang, China

2. General Description of EUT

EUT Name	:	WIFI MODULE	
Models No.	:	RTL8192EU	
Model Difference	:	N/A	
Product Description	:	Operation Frequency:	802.11b/g/n(HT20): 2412MHz~2462MHz 802.11n(HT40): 2422MHz~2452MHz
		Number of Channel:	802.11b/g/n(HT20):11 channels 802.11n(HT40): 7 channels
		RF Output Power:	802.11b: 17.67 dBm 802.11g: 15.33 dBm 802.11n (HT20): 15.56 dBm 802.11n (HT40): 14.73 dBm
		Antenna Gain:	5 dBi RP-SMA Antenna
		Modulation Type:	802.11b: DSSS(BPSK, QPSK, CCK) 802.11g/n:OFDM(BPSK,QPSK,16QAM, 64QAM)
		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(HT20):14.44/28.88/43.34/57.78/86.66/115.56 /130/144.44Mbps 802.11n(HT40):30/60/90/120/180/240/270/300Mbps

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Power Supply	:	DC 5V supplied by notebook.
Power Rating	:	Input: DC 5V
Connecting I/O Port(S)	:	Please refer to the User's Manual

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MPE Calculations for WIFI

1. Antenna Gain:

RP-SMA Antenna: 5 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_{TX}	Freq. (MHz)	Conducted Power(max) (dBm) [P]		ANT Gain (dBi) [G]	Distance (cm) [R]	Power Density (mW/ cm^2) [S]			Power Density Limit (mW/ cm^2)	Result
			Ant a	Ant b			Ant 1	Ant 2	Sum		
802.11b	1	2412	17.13	17.67	5	20	0.0325	0.0368	---	1.000	PASS
		2437	16.47	16.57	5	20	0.0279	0.0286	---		
		2462	16.52	16.54	5	20	0.0282	0.0284	---		
802.11g	1	2412	16.01	15.20	5	20	0.0251	0.0208	---		
		2437	15.84	15.33	5	20	0.0241	0.0215	---		
		2462	15.39	15.19	5	20	0.0218	0.0208	---		
802.11n (HT20)	2	2412	12.16	12.91	5	20	0.0104	0.0123	0.0227		
		2437	11.70	12.46	5	20	0.0093	0.0111	0.0204		
		2462	11.83	12.17	5	20	0.0096	0.0104	0.0200		
802.11n (HT40)	2	2422	11.12	12.21	5	20	0.0081	0.0105	0.0186		
		2437	11.32	12.10	5	20	0.0085	0.0102	0.0187		
		2452	11.09	11.69	5	20	0.0081	0.0093	0.0174		

Note:
(1) N_{TX}= 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^2)
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^2
The MPE is calculated as ***0.0368mW / cm² < limit 1 mW / 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.

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