Maximum Permissible Exposure Evaluation

FCC ID: 2A8TU-Y168

1. Client Information

Applicant	:	Shenzhen Forever Young Technology Co.,Ltd
Address	:	2/F, No B2 Bldg, Fuyuan Industrial Park, Fu yong Town, Bao'an District, Shenzhen, China
Manufacturer	:	Shenzhen Forever Young Technology Co.,Ltd
Address	:	2/F, No B2 Bldg, Fuyuan Industrial Park, Fu yong Town, Bao'an District, Shenzhen, China

2. General Description of EUT

EUT Name	:	Wi-Fi IR+RF Remote Control	
Models No.	:	S11, S12, UR01, S11Pro, S19RF, S20RF, S25RF	
Model Different		All PCB boards and circuit diagrams are the same, the only difference is that appearance	
Product Description	:	Operation Frequency:	Bluetooth 4.2(BLE): 2402MHz~2480MHz 802.11b/g/n(HT20): 2412MHz~2462MHz n(HT40): 2422MHz~2452MHz 433.92MHz
		Antenna Gain:	FPC Antenna -7.25 dBi for 433.92MHz PCB Antenna 2.21dBi for 2.4GWiFi&BLE
Power Rating	:	Input: DC 5V/1A	
Software Version	:	V2.0.8	
Hardware Version	:	V2.4	
Connecting I/O Port(S)	:	Please refer to the User's Manual	
Remark	:	the evaluation report used the EUT(202205-0291-1-2#).	

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:

Mode	Channel	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	2412	16.368	16±1	17	2.21	20	0.01659
	2437	17.69	17±1	18	2.21	20	0.02088
	2462	17.345	17±1	18	2.21	20	0.02088
802.11g	2412	17.17	17±1	18	2.21	20	0.02088
	2437	17.235	17±1	18	2.21	20	0.02088
	2462	17.131	17±1	18	2.21	20	0.02088
802.11n20	2412	16.813	17±1	18	2.21	20	0.02088
	2437	16.899	17±1	18	2.21	20	0.02088
	2462	16.683	17±1	18	2.21	20	0.02088
802.11n40	2412	16.219	16±1	17	2.21	20	0.01659
	2437	16.444	16±1	17	2.21	20	0.01659
	2462	16.153	16±1	17	2.21	20	0.01659
Mode	**Channel**	**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]**
Bluetooth LE	2402	3.933	3±1	4	2.21	20	0.00083
	2440	4.132	4±1	5	2.21	20	0.00105
	2480	4.76	4±1	5	2.21	20	0.00105

433.92MHz Worst Data								
Mode	Max. Output Power (dBuV/m)	Max. Output Power (dBm)	Turn-up Power (dB)	Max tune up power (dBm) [P]	ANT Gain (dBi) [G]	Distance (cm) [R]	Power Density (mW/ cm^2) [S]	Limit
433.92MHz	66.48	-33.49	-33±1	-32	-7.25	20	0	0.28928

Note:

N_{TX}= Number of Transmit Antennas

For conducted measurements below 1000 MHz, the field strength shall be computed as specified in item d), and then an additional 4.7 dB shall be added as an upper bound on the field strength that would be observed on a test range with a ground plane for frequencies between 30 MHz and 1000 MHz, or an additional 6 dB shall be added for frequencies below 30 MHz.

$$E = \mathrm{EIRP} - 20\log d + 104.8$$

where

E is the electric field strength in dBμV/m
EIRP is the equivalent isotropically radiated power in dBm
d is the specified measurement distance in m

So: EIRP=E+20log3-104.8-(4.7 or 6)

5. Summary simultaneous transmission results

300-1500MHz:

The worst MPE is calculated as 0mW / cm2 < limit 433.92/1500=0.28928 mW/cm^2. So, RF exposure limit warning or SAR test are not required.

1500-100000MHz:

The worst MPE is calculated as 0.02088 mW / cm2 < limit 1 mW/cm^2. So, RF exposure limit warning or SAR test are not required.

support Synchronization transmit the

2.4G Wifi and 433.92MHz Maximum Simultaneous transmission MPE Ratios is 0.02088+0=0.02088⩽1.0.

6. 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

Note

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

7. 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-----