RF EXPOSURE EVALUATION

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)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	*100	6
3.0-30	1842/f	4.89/f	$*900/f^2$	6
30-300	61.4	0.163	1.0	6
300-1,500			f/300	6
1,500-100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*100	30
1.34-30	824/f	2.19/f	$*180/f^2$	30
30-300	27.5	0.073	0.2	30
300-1,500			f/1500	30
1,500-100,000			1.0	30

f = frequency in MHz * = Plane-wave equivalent power density

MPE Calculation Method

E (V/m) = $\frac{\sqrt{30 * P * G}}{d}$ Power Density: *Pd* (W/m²) = $\frac{E^2}{377}$

E = Electric field (V/m)

P = Average RF output power (W)

G = EUT Antenna numeric gain (numeric)

d = Separation distance between radiator and human body (m)

The formula can be changed to

$Pd = \frac{30 * P * G}{377 * D^2}$

From the EUT RF output power, the minimum mobile separation distance, d=0.2m, as well as the gain of the used antenna, the RF power density can be obtained.

Measurement Result

Operation Frequency:
U-NII-1: 5180-5240MHz for 802.11ac/ax(20MHz); 5190-5230MHz for 802.11ac/ax(40MHz); 5210MHz for 802.11ac/ax(80MHz); 5250MHz for 802.11ac/ax(160MHz)
U-NII-2A: 5260-5320MHz for 802.11ac/ax(20MHz); 5270-5310MHz for 802.11ac/ax(40MHz); 5290MHz for 802.11ac/ax(80MHz); 5250MHz for 802.11ac/ax(160MHz)
U-NII-2C: 5500-5700MHz for 802.11ac/ax(20MHz); 5510-5670MHz for 802.11ac/ax(40MHz); 5530-5610MHz for 802.11ac/ax(80MHz); 5570MHz for 802.11ac/ax(160MHz)
U-NII-3: 5745-5825 MHz for 802.11ac/ax(20MHz); 5755-5795 MHz for 802.11ac/ax(40MHz); 5775MHz for 802.11ac/ax(80MHz)
Integral Panel Antenna gain: 8dBi; External (Screw on) Cassegrain Antenna gain: 25dBi; R=20cm

When a number of sources at different frequencies, and/or broadband sources, contribute to the total exposure, it becomes necessary to weigh each contribution relative to the MPE. To comply with the MPE, the fraction of the MPE in terms of E^2, H^2 (or power density) incurred within each frequency interval should be determined and the sum of all such fractions should not exceed unity. In order to ensure compliance with the MPE for a controlled environment, the sum of the ratios of the power density to the corresponding MPE should not exceed unity. That is

$$\sum_{i=1}^{n} \frac{S_i}{MPE_i} \leq 1$$

Band	Ant	Max. Conducted Power	Max. Conducted Power	Antenna Gain	Max. EIRP Power	Separation Distance	Evaluation Result	Power density Limits	Verdict
		(dBm)	(dBm)	(dBi)	(dBm)	(cm)	(mW/cm2)	(mW/cm2)	
WLAN 5.2G	1	12.04	14.89	8	22.89	20	0.038731	1	PASS
	2	11.72							
WLAN 5.3G	1	13.89	16.93	8	24.93	20	0.06184	1	PASS
	2	13.94							
WLAN 5.6G	1	14.29	17.13	8	25.13	20	0.064806	1	PASS
	2	13.94							
WLAN 5.8G	1	20.55	23.39	8	31.39	20	0.273913	1	PASS
	2	20.2							
WLAN 5.2G	1	3.89	6.94	25	31.94	20	0.310652	1	PASS
	2	3.96							
WLAN 5.3G	1	0.27	2.95	25	27.95	20	0.124191	1	PASS
	2	-0.41							
WLAN 5.6G	1	-0.13	2.81	25	27.81	20	0.12004	1	PASS
	2	-0.28							
WLAN 5.8G	1	3.89	7.09	25	32.09	20	0.322237	1	PASS
	2	4.27							

Signature: **Date:** 2022-07-17

NAME AND TITLE (Please print or type): Alex/Manager

COMPANY (Please print or type): Shenzhen NTEK Testing Technology Co., Ltd./ 1/F, Building E, Fenda Science Park, Sanwei Community, Xixiang Street Bao'an District, Shenzhen P.R. China.