13. RF exposure evaluation
13.1. Environmental evaluation and exposure limit according to FCC CFR 47 part 1, 1.1307(b), 1.1310

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/cm²)	Average time
(A) Limits for Occupational / Control Exposures				
300 – 1 500	--	--	F/300	6
1 500 – 100 000	--	--	5	6
(B) Limits for General Population / Uncontrol Exposures				
300 – 1 500	--	--	F/1 500	6
1 500 – 100 000	--	--	1	30

13.2. Friis transmission formula

$Pd = (Pout \times G)/(4 \times pi \times R^2)$

Where Pd = power density in mW/cm^2

Pout = output power to antenna in mW

G = gain of antenna in linear scale

Pi = 3.141 6

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

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

13.3. Test result of RF exposure evaluation

Test Item : RF Exposure evaluation data

Test Mode : Normal operation

13.4. Output power into antenna & RF exposure evaluation distance

Operating mode	Frequency (㎒)	Output average power to antenna (dBm)	Antenna gain (dBi)	Power density at 20 ㎝ (㎽/㎠)	Limit (㎽/㎠)
GFSK	2 402	- 0.82	- 8.35	0.000 02	
	2 441	- 0.42	- 8.35	0.000 03	1
	2 480	- 0.72	- 8.35	0.000 02	

※ **Remark**

The power density Pd (5th column) at a distance of 20 ㎝ calculated from the friis transmission formula is far below the limit of 1 ㎽/㎠.