

Evaluating Compliance with FCC-Specified Guidelines for Human Exposure to Radio frequency Radiation

Radar Type: RA53

FCC ID: 05VRB717A

Manufacturer: Kodan Electronics Co., Ltd

Reference:

Sec. 1.1310 Radio frequency radiation exposure limits
Table 1--Limits for Maximum Permissible Exposure (MPE)
(B) Limits for General Population/Uncontrolled Exposures
1500-100,000MHz 1mW/cm²

Calculation:

(1) Average Output Power (Pav)

-1 Pulse duty factor

Peak Output Power	6kW (6000W)
Repetition Frequency	500Hz
Pulse Width	1.0 us (0.000001s)
Average Output Power	= 6000(W) x 500(Hz) x 0.000001(s)
Po	= 3.0 (W)

-2 Mechanical scanning duty factor

Horizontal Beam Width	1.8 deg. (Continuously Rotating with 360 deg.)
Pav	= Po x 1.8(deg.) / 360(deg.) = 3.0 x 1.8(deg.) / 360(deg.) = <u>0.015</u> (W)

(2) Antenna Gain (Ga) 28.0dB (631)

(3) Power Density Limit (Plim) 10 (W) ; 1mW/cm² = 10W/m²

(4) K (Factor of Ground Reflection) 4

Range of Limits (m) = $\text{SQR}((P_{av} \times G_a \times K) / (4 \times \text{PI} \times P_{lim}))$
= $\text{SQR}((0.015 \times 631 \times 4) / (4 \times \text{PI} \times 10))$
= 0.549 (m)

According to above calculation, this radar is comply with " Sec. 1.1310 Radio frequency radiation exposure limits ".