

RF Exposure Report

FCC-ID: 2AA7KTITAN-22000

RF Exposure Measurement

The limit for Maximum Permissible Exposure (MPE) specified in FCC 1.1310 is followed. The gain of the antennas used in the product is extracted from the Antenna data sheets provided and also the maximum total power input to the antenna is measured. Through the Friis transmission formula and the maximum gain of the antenna, we can calculate the distance, away from the product, where the limit of MPE is reached.

Although the Friis Transmission formula is far field assumption, the calculated result of that is an over-prediction for near field power density. It is taken as worst case to specify the safety range.

RF Exposure Limit

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environmental impact of the 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)
Limits for Occupational / controlled Exposures			
300 - 1500	--	--	F/300
1500 – 100000	--	--	5.0
Limits for General population / Uncontrolled Exposure			
300 - 1500	--	--	F/1500
1500 – 100000	--	--	1.0

F= Frequency in MHz

Friss Formula

Friss Transmission Formula: $P_d = (P_{out}) / (4 \cdot \pi \cdot r^2)$

Where

P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

π = 3.1416

R = Distance between observation point and the center of radiator in cm, $R=100\text{cm}$

EUT Operation condition

EUT was enabled to transmit and receive at lowest, middle and highest channels.

Classification

The antenna of this product, under normal use condition, is at least 100cm away from the body of the user. Warning statement to the user for keeping at least 100cm or more separation distance from the antenna should be included in the User manual. So, this device is classified as Mobile device.

FCC Part 15.247

Worst case modulation used by the device.

KDB 594280. Professional installation or authorized service personnel is required to configure radio parameters of the transmitter using the software for adjusting total EIRP (36dBm) power at local installation to ensure compliance with FCC Rules.

Turn up

Mode	920-928MHz
Detector	PEAK
FHSS	36dBm

Protocol	Max EIRP (dBm)	Max EIRP (mW)	Power Density (mW/cm ²)	Limit (mW/cm ²)
FHSS	36	3981	0.03200	0.6013

FCC Part 90.353

Note: Worst case modulation used by the device.

KDB 594280. Professional installation or authorized service personnel is required to configure radio parameters of the transmitter using the software for adjusting total EIRP (30W) power at local installation to ensure compliance with FCC Rules.

Turn up

Detector	Mode	PEAK
Dense reader mode ISO-18000-63	911.25-920.25 MHz	30W
Single reader mode ISO-18000-63	911.75-919.25 MHz	30W
Low data rate ISO-18000-62(40kbps)	911.75-919.75 MHz	30W
High data rate ISO-18000-62 (80kbps)	912.75-918.25 MHz	30W
Unmodulated ISO-10374	902.75 MHz,903.25 MHz 910.75-920.75 MHz	30W
TDM	913.75 MHz,916.25 MHz	30W
Title 21	913.75 MHz-917.75 MHz	30W

Protocol	Max EIRP (mW)	Power Density (mW/cm ²)	Limit (mW/cm ²)
Dense reader mode ISO-18000-63	30000	0.239	0.6013
Single reader mode ISO-18000-63	30000	0.239	0.6013
Low data rate ISO- 18000-62(40kbps)	30000	0.239	0.6013
High data rate ISO- 18000-62 (80kbps)	30000	0.239	0.6013
Unmodulated ISO-	30000	0.239	0.6013
TDM	30000	0.239	0.6013
Title 21	30000	0.239	0.6013