IEE C95.3 and IC RSS 102 MPE Value Calculations

The purpose of this report is to document the Maximum Permissible Exposure (MPE) value for the IRU 600v4 product.

Manufacturer:	Aviat Networks
Equipment Category:	Microwave Fixed Link
Equipment Name:	IRU 600v4
FCC ID:	VK6-IRU600V4
IC ID:	4469A-IRU600V4
Report Date:	09-AUG-2018

1. Introduction

IEE C95.3 defines guidelines and limits for Maximum Permissible Exposure (MPE) in terms of electric and magnetic field strength and power density for transmitters operating at frequencies between 300 kHz and 100 GHz.

Industry Canada RSS 102 defines the RF exposure compliance requirements for radio communications apparatus in all frequency bands.

This report documents the MPE value (distance) for the IRU 600V4.

This product has a FCC ID: VK6-IRU600V4
This product has an IC ID: 4469A-IRU600V4

2. References

[1] IEE C95.3

[2] IC RSS 102 Issue 5

3. Formula and limit.

From IEE C95.3 [1] the formula for calculating the maximum permissible exposure is:

$S = PG/4\pi R^2$ (1)

MPE limit for uncontrolled exposure at prediction frequency = 1 mW/cm^2

Re-arranging the above formula to calculate R:

$R = \sqrt{(PG/4\pi S)}$ (2)

From RSS-102 [2],

MPE limit for uncontrolled exposure at prediction frequency = 9.7 W/m^2

4. Input values

P = power input to antenna	= 30dBm or 1000mW or 1W
G = Antenna gain	= 43.0dBi or 19952.62 numeric
S = MPE limit for uncontrolled exposure	= 1mW/cm^2 for IEE C95.3[1] or 9.7W/m^2 for IC RSS 102 [2]

R = Distance to the centre of the antenna

5. Calculating distance to antenna

Using formula (2) from above for IEE C95.3:

$R = \sqrt{((1000 \times 19952.62)/4\pi)}$

R = 1260.07 cm

Using formula (2) from above for IC RSS 102:

$R = \sqrt{((1 \times 19952.62)/((4\pi) \times 9.7))}$

R = 12.79 m

It should be noted that these distances contains zero margin so the distances cannot be any shorter than this.

In order to guarantee some margin a distance of 1800cm or 18m is proposed. Using formula (1) from above for IEE C95.3, this gives an exposure level of:

$S = 1000 \times 19952.62/4\pi 1800^2$

S = 0.49 mW/cm^2

i.e. a compliance margin of 0.51 mW/cm^2

Using formula (1) from above for IC RSS 102, this gives an exposure level of:

$S = 1x19952.62/4\pi 18^2$

$S = 4.9\ W/m^2$

i.e. a compliance margin of $5.1\ W/m^2$

6. Conclusion

The recommended minimum distance from the centre of the antenna to ensure exposure below the limit specified in both IEE C95.3 [1] and RSS 102 [2] is 1800cm or 18m.