RF Exposure Report

RF Exposure Measurement

The limit for Maximum Permissible Exposure (MPE) specified in clause 2.5.1 of RSS-102 Issue 4 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 clause 2.5.1 of RSS-102 Issue 4: 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 clause 4

Limits for Maximum Permissible Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (W/m^2)
Limits for Occupational / controlled Exposures			
300 - 1500	$3.54\ f^{0.5}$	$0.0094\ f^{0.5}$	F/30
1500 – 150000	137	0.364	50.0
Limits for General population / Uncontrolled Exposure			
300 - 1500	$1.585\ f^{0.5}$	$0.0042\ f^{0.5}$	F/150
1500 – 150000	61.4	0.163	10.0

F= Frequency in MHz

Friss Formula

Friss Transmission Formula: Pd = (Pout * G) / (4*pi*r²)

Where
Pd = power density in W/m²
Pout = output power to antenna in Watt
G = gain of antenna in linear scale
Pi = 3.1416
R = Distance between observation point and the center of radiator in meter
If we know the maximum gain of the antenna and the total output power to the antenna, through calculation, we will know MPE value at distance 20cm.

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 20cm away from the body of the user. Warning statement to the user for keeping at least 20cm or more separation distance from the antenna should be included in the User manual. So, this device is classified as Mobile device.

Test Results

Highest measured power at 2440MHz i.e. 4.34dBm
Gain (G) = 0dBi=1(Linear)

Frequency(MHz)	Output Power to Antenna (W)	Power Density (W/m²)	Limit (W/m²)
2440	0.002716	0.0054	10.000