

RF EXPOSURE EVALUATION

FCC ID : 2AFWN-WA23FO012W0

ISED certification number : 22800-WA23FO012W0

Standard Requirement

The following FCC Rule Parts and procedures are applicable :

Part 1.1310 Radiofrequency radiation exposure limits

Part 2.1091 Radiofrequency radiation exposure evaluation : Mobile device

KDB447498 D01 v06 Mobile and Portable Devices RF Exposure Procedures and Equipment Authorization Policies

Table 1 below sets forth limits for Maximum Permissible Exposure (MPE) to radiofrequency electromagnetic fields.

Table 1—Limits for Maximum Permissible Exposure (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	*100	6
3.0-30	1842/f	4.89/f	*900/f ²	6
30-300	61.4	0.163	1.0	6
300-1,500			f/300	6
1,500-100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*100	30
1.34-30	824/f	2.19/f	*180/f ²	30
30-300	27.5	0.073	0.2	30
300-1,500			f/1500	30
1,500-100,000			<u>1.0</u>	30

*f = frequency in MHz * = Plane-wave equivalent power density*

RSS-102(Issue5) Exposure Limits

Table : RF Field Strength Limits for Devices Used by the General Public (Uncontrolled Environment)

Frequency range (MHz)	Electric field strength (V/m rms)	Magnetic field strength (A/m rms)	Power density (W/m ²)	Reference Period (minutes)
0.003-10 ²¹	83	90	-	Instantaneous*
0.1-10	-	0.73 / f	-	6**
1.1-10	87 / f ^{0.5}	-	-	6**
10-20	27.46	0.0728	2	6
20-48	58.07 / f ^{0.25}	0.1540 / f ^{0.25}	8.944 / f ^{0.5}	6
48-300	22.06	0.05852	1.291	6
300-6000	3.142 f ^{0.3417}	0.008335 f ^{0.3417}	<u>0.02619 f^{0.6834}</u>	6
6000-15000	61.4	0.163	10	6
15000-150000	61.4	0.163	10	616000 / f ^{1.2}
150000-300000	0.158 f ^{0.5}	4.21 x 10 ⁻⁴ f ^{0.5}	6.67 x 10 ⁻⁰⁵ f	616000 / f ^{1.2}

f is frequency in MHz,

**:Based on nerve stimulation(NS), **:Based on specific absorption rate(SAR)*



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RF Output Power

802.11b : 17.08 dBm (51.050 mW)
802.11g : 16.66 dBm (46.345 mW)
802.11n-HT20 : 16.57 dBm (45.394 mW)
802.11n-HT40 : 14.63 dBm (29.040 mW)

MPE calculation

$$S = \text{EIRP} / (4\pi R^2)$$

Where S : Power density
EIRP : $P \times G$
P : Maximum transmitter power
G : Antenna gain
R : distance to the centre of radiation of the antenna

FCC-MPE Limits

$$1 \text{ mW/cm}^2$$

EUT RF Exposure

P : 17.08 dBm (51.050 mW)
G : 3.62 dBi (x 2.301)
R : 20 cm

$$S = 0.023 \text{ mW/cm}^2$$

RSS-102 Limits

$$0.02619 f^{0.6834} \Rightarrow 5.44 \text{ W/m}^2$$

EUT RF Exposure

P : 17.08 dBm (0.051 W)
G : 3.62 dBi (x 2.301)
R : 0.20 m

$$S = 0.234 \text{ W/m}^2$$

Safety distance(R)

P : 17.08 dBm (51.050 mW)
G : 3.62 dBi (x 2.301)
S : 1 mW/cm²

$$R \geq 9.35 \text{ cm}$$

Conclusion

This confirms compliance to the required Radio frequency radiation exposure limit.