RF EXPOSURE EVALUATION

FCC ID : 2BEK7ATM610
IC : 32019-ATM610
HVIN : ATM610

[FCC]

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			**1.0**	30

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

[ISED]

- ISED Rules
  RSS 102(Issue 6) 6.6 Exemption Limits for Routine Evaluation – RF Exposure Evaluation Field reference level exposure exemption limits

Field reference level (FRL) exposure evaluation is required if the separation distance between the user and/or bystander and the device's radiating element is greater than 20 cm (i.e. mobile devices), except when the device operates as follows:

- below 20 MHz and the source-based, time-averaged maximum EIRP of the device is equal to or less than 1 W (adjusted for tune-up tolerance)
- at or above 20 MHz and below 48 MHz and the source-based, time-averaged maximum EIRP of the device is equal to or less than 4.49/f0.5 W (adjusted for tune-up tolerance), where f is in MHz
- at or above 48 MHz and below 300 MHz and the source-based, time-averaged maximum EIRP of the device is equal to or less than 0.6 W (adjusted for tune-up tolerance)
- at or above 300 MHz and below 6 GHz and the source-based, time-averaged maximum EIRP of the device is equal to or less than $1.31 \times 10^{-2} f^{0.6834}$ W (adjusted for tune-up tolerance), where f is in MHz
- at or above 6 GHz and the source-based, time-averaged maximum EIRP of the device is equal to or less than 5 W (adjusted for tune-up tolerance)

In these cases, the information contained in the RF exposure technical brief may be limited to information that demonstrates how the EIRP was derived.

Limit : $1.31 \times 10^{-2} \times f^{0.6834}$W ($f$: 2 404.35 MHz)(2.678 W)
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[FCC]

MPE calculation

$S = EIRP / (4\pi R^2)$
Where S : Power density (mW/cm^2)
EIRP : P + T + G (dBm)
P : Maximum transmitter power (dBm)
G : Antenna gain (dBi)
R : distance to the centre of radiation of the antenna (cm)
T : Power tolerance (dB)

Safety distance(R) : 20 cm

EUT RF Exposure

Mode	Frequency [MHz]	Calculation power [dBm]	Antenna Gain [dBi]	Power tolerance [dB]	EIRP [dBm]	Power density [mW/cm^2]	Limit [mW/cm^2]
ANT 0	2 404.35	13.80	2.7	+ 2.0	18.50	0.014	1
ANT 1	2 404.35	13.90	2.7	+ 2.0	18.60	0.014	1

Conclusion

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

[ISED]

$S = EIRP / (4\pi R^2)$
Where S : Power density (W/m^2)
EIRP : P + T + G (dBm)
P : Maximum transmitter power (dBm)
G : Antenna gain (dBi)
R : distance to the centre of radiation of the antenna (m)
T : Power tolerance (dB)

Safety distance(R) : 0.2 m

Mode	Frequency [MHz]	Calculation power [dBm]	Antenna Gain [dBi]	Power tolerance [dB]	EIRP [dBm]	Power density [W/m^2]	Limit [W/m^2]
ANT 0	2 404.35	13.80	2.7	+ 2.0	18.50	0.141	2.678
ANT 1	2 404.35	13.90	2.7	+ 2.0	18.60	0.144	2.678

Conclusion

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