



March 10, 2023

TUV SUD America CB
 10 Centennial Drive FL2
 Peabody, MA 01960

Attention: Director of Certification

RE: Analysis of RF Exposure for Portable and Mobile use per KDB 447498 D01 Mobile Portable RF Exposure v06 and RSS-102 Issue 5 March 2015, Amendment 1 February 2021.

FCC ID: 2AAFX-PH85246071

1. Limits:

Limits for General Population/Uncontrolled Exposure (Title 47 Subpart J §2.1091 and KDB 447498 D01 referring to limits under §1.1310)

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time (minutes)
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 - 1500	-	-	f/1500	30
1500 - 100,000	-	-	1.0	30

f = frequency in MHz

*Plane-wave equivalent power density

Limits for Devices Used by the General Public (Uncontrolled Environment (RSS-102 Issue 5 March 2015, Amendment 1 February 2021)

Frequency Range (MHz)	Electric Field Strength (V/m rms)	Magnetic Field (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}	0.02619 f ^{0.6834}	6
6000 - 15000	61.4	0.163	10	6
15000 - 150000	61.4	0.163	10	616000/f ^{1.2}
150000 - 300000	0.158f ^{0.5}	4.21 x 10 ⁻⁴ f ^{0.5}	6.67 x 10 ⁻⁵ 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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2. Mobile MPE Calculation Summary using a 20cm separation distance:

Mode (Worst Case)	Radiated Field Strength (dBµV/m)	Peak Power E.I.R.P (dBm)	Power Density (mW/cm ²)
24 GHz Band Radar Frequency	115.14	19.91	.01949

3. Mobile MPE Calculation using a 20cm separation distance:

Using Power Density formula:

$$S = \frac{PG}{4\pi R^2}$$

where: S = power density

P = power input to the antenna

G = power gain of the antenna in the direction of interest relative to isotropic

R = distance to the center of radiation of the antenna

Maximum peak output power at antenna input terminal:	19.91	(dBm)
Maximum peak output power at antenna input terminal:	97.95	(mW)
Antenna gain(typical):	0	(dBi)
Maximum antenna gain:	1.00	(numeric)
Prediction distance:	20	(cm)
Source Based Time Average Duty Cycle:	100	(%)
Prediction frequency:	24.136	(GHz)
FCC MPE limit for uncontrolled exposure at prediction frequency:	1.00	(mW/cm ²)
ISED MPE limit for uncontrolled exposure at prediction frequency:	1.0	(W/m ²)
Power density at prediction frequency:	0.01949	(mW/cm ²)
Power density at prediction frequency:	0.195	(W/m ²)
FCC Margin of Compliance:	-17.10	(dB)
ISED Margin of Compliance:	-17.10	(dB)

Sincerely,

Ferdie S. Custodio

Name

Authorized Signatory

Title: Senior EMC Test Engineer /Wireless Team Lead