



American Certification Body, Inc.

6731 Whittier Avenue
Suite C110
McLean, VA 22101

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RF exposure analysis for the equipment MBS Unit –K (FCC ID: WT7PTRNKTMB5760; IC: 8624A-PTMB5760)

The device MBS Unit –K (FCC ID: WT7PTRNKTMB5760; IC: 8624A-PTMB5760) is a device designed to be used mobile/fixed exposure conditions. The analysis provided in this document only covers mobile exposure conditions and for that the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 400 cm from all the persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

The device can be operated standalone or co-located with another MBS Unit –K.

MPE exposure limits

The table below is excerpted from Table 1(A) of 47 CFR 1.1310 titled “Limits for Maximum Permissible Exposure (MPE), (A) Limits for Occupational/Controlled Exposure”:

Frequency Range (MHz)	Power density (mW/cm ²)	Averaging time (minutes)
300 – 1500	f (MHz) /300	6

The table below is excerpted from RSS-102, Issue 4, 4.4, titled “Field Strength Limits for Controlled Use Devices (Controlled Environment)”:

Frequency Range (MHz)	Power density (W/m ²)	Averaging time (minutes)
300 – 1500	f (MHz) /30	6

Using the equation $S = \frac{PG}{4\pi R^2}$ to calculate the exposure to electromagnetic fields

- where: S = power density (in appropriate units, e.g. mW/cm²)
- P = power input to the antenna (in appropriate units, e.g., mW)
- G = power gain of the antenna in the direction of interest relative to an isotropic radiator
- R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

Compliance with FCC and IC maximum permissive exposure limits is demonstrated based on the following calculations.



Regulatory domain	Technology	Frequency (MHz)	Avg burst Conducted power (dBm) (Maximum per tune up procedure)	Avg burst Conducted power (W)	Duty cycle (%)	Average Conducted power (W)	Maximum antenna gain (dBi)	Maximum antenna gain (numerical)	Average radiated power (W)	FCC/IC MPE limits (Controlled exposure) (mW/cm ²)	Safety distance to meet MPE limits 1 MBS Unit –K (cm)	Safety distance to meet MPE limits 2 MBS Unit –K co-located (cm)	Evaluation distance/Safety distance as stated in the users guide (cm)	Maximum exposure 1 MBS Unit –K (mW/cm ²)	Maximum exposure 2 MBS Unit –K co-located (mW/cm ²)
FCC	T1 DLMR – 20 kHz	769,0125	41,00	12,589	100,0%	12,589	20	100,00	1258,93	2,563	197,69	279,58	400	0,626	1,252
		774,9875	41,00	12,589	100,0%	12,589	20	100,00	1258,93	2,583	196,93	278,50	400	0,626	1,252
IC	T1 DLMR – 20 kHz	768,0125	41,00	12,589	100,0%	12,589	20	100,00	1258,93	2,560	197,82	279,76	400	0,626	1,252
		775,9875	41,00	12,589	100,0%	12,589	20	100,00	1258,93	2,587	196,80	278,32	400	0,626	1,252
	TETRA - 22 kHz	768,0125	41,00	12,589	100,0%	12,589	20	100,00	1258,93	2,560	197,82	279,76	400	0,626	1,252
		775,9875	41,00	12,589	100,0%	12,589	20	100,00	1258,93	2,587	196,80	278,32	400	0,626	1,252

By:

José Román Gimeno
 Head of R&D Certifications & Services Area
 T: +34 976 465656 - Ext. : 273
 F: +34 976 465722
 e-mail: j-roman@teltronic.es