

Manufacturer: Trimble Inc.
Address: 5475 Kellenburger Rd, Dayton, OH 45371, USA
Model: 129681
Type: -
FCC ID: S9E129681

Test laboratory: SGS Fimko Oy
Address: Karakaarenkuja 4, FI-02610 Espoo, Finland
Accreditation body: FINAS
CAB identifier: T004
Designation number: FI0002

REFERENCE DOCUMENTS

KDB 447498 D04 Interim General RF Exposure Guidance v01
47 CFR §1.1310 Radiofrequency radiation exposure limits
47 CFR §2.1091 Radiofrequency radiation exposure evaluation: mobile devices
Test Report HELEM2303000095-1

EUT SPECIFICATION

The equipment under test is a radio data modem.

Operating frequency range:	406.1 – 470.0 MHz
Channel width:	12.5, 25 kHz
Channel separation:	12.5, 25 kHz
Modulation:	GMSK, 4FSK, 8FSK, 16FSK
Rated output power	1, 5, 10, 25, 35 W
Device category:	Mobile
Environment:	General Population/Uncontrolled

ASSESSMENT

Maximum permissible exposure (MPE) limits:

For operations within the frequency range of 300 MHz and 1500 MHz, the limits for MPE, derived from whole-body SAR limits and listed in table below, may be used instead of whole-body SAR limits to evaluate the environmental impact of human exposure to RF radiation, except for portable devices.

Frequency range [MHz]	Electric field strength [V/m]	Magnetic field strength [A/m]	Power density [mW/cm ²]	Averaging time [minutes]
Limits for Occupational/Controlled Exposure				
300-1500	-	-	$f / 300$	< 6
Limits for General Population/Uncontrolled Exposure				
300-1500	-	-	$f / 1500$	< 30

f = frequency in MHz.

At 406.1 MHz the power density limits for occupational and general population exposure are 1.35 mW/cm² and 0.27 mW/cm², respectively.

Assessment results:

The plane-wave equivalent power density is calculated with the following equation:

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

where P = transmit power, G = antenna gain (linear), R = distance.

Using the equation and power density limits the compliance distance from the EUT is calculated:

EUT		Antenna		General Population		Occupational	
Frequency	Power	Gain		Limit	Distance	Limit	Distance
MHz	mW	dBi	linear	mW/cm ²	cm	mW/cm ²	cm
406.1	35000	0	1.0	0.27	101	1.35	45
		4	2.5		161		72
		6	4.0		202		91
		8	6.3		255		114
		10	10.0		321		143
		12	15.9		404		181
		14	25.1		508		227

CONCLUSION

The assessment shows that the compliance distance for general population exposure is 5.1 m when 14 dBi antenna is used.

Date: November 9, 2023



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