

MPE CALCULATIONS FOR TRENCH COMPACTOR

Document ID SCDOC-74-6	TITLE Proof of Concept final report	VERSION V2.0	DATE 2018-11-20
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1 APPLICANT DETAILS

Table 1 Applicant Details	
Company Name	Construction Tools PC AB
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2 DETAILS OF DEVICE

Table 2 Details of device	
Description of device:	UWB distance sensor mounted in a trench compactor
Manufacturer:	Orbit One AB
Model Name:	UWB Distance sensor: MDS
#FCC ID (or other ID Type):	UWB Distance sensor: 2AK36MDS
#Other Type ID:#	UWB Distance sensor radio: DWM100
DUT Status	UWB Distance sensor: FCC pending

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3 EVALUATION

3.1 Summary

This device (details found in table 2) containing a radio system, at a distance of 200 more than 200 cm from the body of the user, is **compliant** with the General Population/Uncontrolled Exposure requirements found in FCC rule part 1.1310 Table 1(B). For more details please see chapter 4.

3.2 Applicable Standards

FCC 47 CFR §2.1093

FCC 47 CFR §1.1307

FCC 47 CFR §1.1310

FCC KDB 447498 D01 General RF Exposure Guidance v05r02

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4 DETAILED MPE CALCULATIONS

4.1 UWB Exposure method

According to FCC 47 § 1.1310 (d3) then all frequencies above 6 GHz should be evaluated using the MPE method.

4.2 Exposure limits

According to FCC 1.1310: the maximum limit for hand held radio equipment for general population in uncontrolled exposure within the radio frequency (1500-100 000MHz) of the device under evaluation is maximum $1\text{mW}/\text{cm}^2$, as specified in 1.1307(b)

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4.3 UWB radio inside remote control

- The maximum antenna gain measured in Fully Anechoic Chamber is 4.16dBi or 2.606(numeric).
- Distance to user from antenna is minimum distance.
- Output power is Absolut maximum power from UWB transceiver to antenna.

MPE Calculations for Mobile Equipment							
General population/ Uncontrolled use							
Frequency (MHz)	P (dBm)	P (mW)	G (dBi)	G (Numerical)	r (cm)	S (mW/cm ²)	Exposure Limit (mW/cm ²)
6240	-8	0.158	4.16	2.606	200	0.0000	1.0
6739.2	-8	0.158	4.16	2.606	200	0.0000	1.0

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4.4 Formulas used

According to Friis formula:

$$S = \frac{P * G}{4\pi * r^2}$$

Where **S** is power density in **mW/cm²**, **P** is power in **mW**, **G** is antenna gain numerically and **r** is minimum separation distance in **cm**.

5 ENDMENT HISTORY

Version	Date	Author(s)/ Function	Reviewed by	Approved by	Nature of Changes
Initial Draft					
1.0	19 Nov 2018	Created			First Release
2.0	20 Nov	H.Sihm			BT removed