

Maximum Permissible Exposure (MPE) & Exposure evaluation

Report identification number: 1-0619-25-01-07_TR1-R01

Certification numbers and labeling requirements	
ISED number	6799A-DTP505
FCC ID	UN6-DTP505
HVIN (Hardware Version Identification Number)	DTP505; DTE505
PMN (Product Marketing Name)	RFID evaluation unit UHF

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EUT technologies:

Technologies:	Max. power [dBm]		Antenna gain.: [dBi]	#
	conducted	EIRP		
902-928 MHz RFID	29.73	35.00	5.35	A

Details and origins of the measurements shown in the table above:

#	Results from:	Additional information
A	1-0619-25-01-02_TR1-R01 cetecom advanced GmbH	Measurement results page 44

Note: The chosen EIRP is the maximum from all valid measurements; All other configurations measured in 1-0619-25-01-02_TR1-R01 are below this value, and therefore also fulfill the exclusion criteria.

Minimum safety distance declared by manufacturer: 23cm

Prediction of MPE limit at given distance - FCC

$$S = PG / 4 \pi R^2$$

where: S = Power density
P = Power input to the antenna
G = Antenna gain
R = Distance to the center of radiation of the antenna
PG = Output power including antenna gain (EIRP)

The table below is excerpted from Table 1 - Limits for Maximum Permissible Exposure (MPE) - "General Population/Uncontrolled Exposure" according according FCC 19-126A1

Frequency Range (MHz)	Power Density (mW/cm ²)	Averaging Time (minutes)
300-1500	f/1500	30

where f = Frequency (MHz)

Prediction: worst case

	Technology	RFID	
	Frequency	902	MHz
P·G	Meas. EIRP	35	dBm
R	Distance	23	cm
S	MPE limit for uncontrolled exposure	0.6	mW/cm ²
	Calculated Power density:	0.4759	mW/cm ²
	Calculated percentage of limit:	79.15%	

This prediction demonstrates the following:

The power density levels for FCC at a distance of 23 cm are below the maximum levels allowed by regulations.

Prediction of MPE limit at given distance – ISED**Minimum safety distance declared by manufacturer: 34cm**

RSS-102, Issue 6, chapter 6 Reference levels for general public (uncontrolled environment):

According to: RSS 102-ISSUE 06				
Frequency Range (MHz)	Electric Field (V/m rms)	Magnetic Field (A/m rms)	Power Density (W/m ²)	Reference Period (minutes)
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	$0.158 f^{0.5}$	$4.21 \times 10^{-4} f^{0.5}$	$6.67 \times 10^{-5} f$	$616000 / f^{1.2}$
Note: f is frequency in MHz.				

Prediction: worst case

	Technology	RFID	
	Frequency	902	MHz
P·G	Meas. EIRP	35	dBm
R	Distance	34	cm
S	MPE limit for uncontrolled exposure	2.74	W/m ²
	Calculated Power density:	2.178	W/m ²
	Calculated percentage of limit:	79.49%	

Conclusion: RF exposure evaluation is not required.