Prediction of MPE

1. Declaration of RF exposure compliance for exemption from routine evaluation limits

Applicant:	race result AG Joseph-von-Fraunhofer-Str. 11 76327 Pfinztal Germany
Nemko ident. no.:	399615
Number of pages:	3
Product	Track Box Passive
Model name:	RR10
FCC ID:	SZO-RR10
Manufacturer:	race result AG Joseph-von-Fraunhofer-Str. 11 76327 Pfinztal Germany
Exposure Conditions:	The EUT consists of UHF RFID Reader, a battery, and communication interfaces. It's purpose is to capture UHF transponders worn by participants of a sporting event and transmit its id, location and time stamp to a remote server. The system consists of two main parts, a reader and ID tags. The reader interrogates the tags that are attached to participants in the field created by the reader. The Track Box Passive is used in a distance of more than 30cm from the human body.
4.3.1. Standalone SAR test exclusion considerations:	**Calculation for the 915 MHz RFID Reader**

Nemko

Prediction of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

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

where: S = power density
P = power input to the antenna
G = power gain of the antenna in the direction of interest relative to isotropic radiator
R = distance to the center of radiation of the antenna

PWR in dBm	Maximum peak output power at antenna input terminal:	28,9	dBm
	Maximum peak output power at antenna input terminal:	767,4	mW
Ant. gain in dBi	Antenna gain(maximum):	6	dBi
	Maximum antenna gain:	4,0	numeric
Use the duty cycle from test report or 100%	Time Averaging:	100	%
Separation distance from antenna to user in cm.	Prediction distance:	30	cm
Freq. in MHz	Prediction frequency:	903	MHz
	FCC MPE limit for uncontrolled exposure at prediction frequency:	0,60	mW/cm^2
	IC MPE limit for uncontrolled exposure at prediction frequency:	2,74	W/m^2
	Power density at prediction frequency:	0,27	mW/cm^2
	This equates to:	2,70	W/m^2

4.3.2. Standalone SAR test exclusion considerations:

Calculation for the 2.4 GHz Data transfer technology

Prediction of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

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

where: S = power density
P = power input to the antenna
G = power gain of the antenna in the direction of interest relative to isotropic radiator
R = distance to the center of radiation of the antenna

PWR in dBm	Maximum peak output power at antenna input terminal:	4,0	dBm
	Maximum peak output power at antenna input terminal:	2,5	mW
Ant. gain in dBi	Antenna gain(maximum):	6,5	dBi
	Maximum antenna gain:	4,5	numeric
Use the duty cycle from test report or 100%	Time Averaging:	100	%
Separation distance from antenna to user in cm.	Prediction distance:	30	cm
Freq. in MHz	Prediction frequency:	2480	MHz
	FCC MPE limit for uncontrolled exposure at prediction frequency:	1,00	mW/cm^2
	IC MPE limit for uncontrolled exposure at prediction frequency:	5,47	W/m^2
	Power density at prediction frequency:	0,00	mW/cm^2
	This equates to:	0,01	W/m^2

4.3.3. Standalone SAR test exclusion considerations:

Calculation for the LTE/3G

Prediction of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

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

where: S = power density
P = power input to the antenna
G = power gain of the antenna in the direction of interest relative to isotropic radiator
R = distance to the center of radiation of the antenna

PWR in dBm	Maximum peak output power at antenna input terminal:	22,0	dBm
	Maximum peak output power at antenna input terminal:	158,5	mW
Ant. gain in dBi	Antenna gain(maximum):	3	dBi
	Maximum antenna gain:	2,0	numeric
Use the duty cycle from test report or 100%	Time Averaging:	100	%
Separation distance from antenna to user in cm.	Prediction distance:	30	cm
Freq. in MHz	Prediction frequency:	2499	MHz
	FCC MPE limit for uncontrolled exposure at prediction frequency:	1,00	mW/cm^2
	IC MPE limit for uncontrolled exposure at prediction frequency:	5,50	W/m^2
	Power density at prediction frequency:	0,03	mW/cm^2
	This equates to:	0,28	W/m^2

2. Attestation

ATTESTATION: I attest that the testing was performed by a FCC listed test laboratory, that the test measurements were made in accordance with the above-mentioned departmental standard(s), and that the radio equipment identified in this application has been subject to all applicable test conditions specified in the departmental standards and all of the requirements of the standards have been met.

Signature:	
Date:	October 14, 2020
Name:	Peter Lukas, Lab Manager