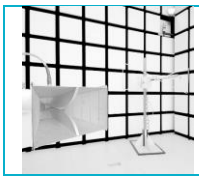
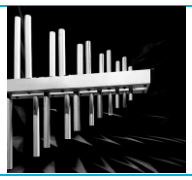
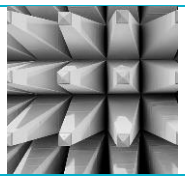

CTC advanced
member of RWTÜV group

Bundesnetzagentur

BNetzA-CAB-02/21-102

DAkkS Deutsche Akkreditierungsstelle D-PL-12076-01-03

Maximum Permissible Exposure (MPE) & Exposure evaluation

Report identification number: 1-2707/21-01-12 MPE (FCC_ISED)

Certification numbers and labeling requirements	
FCC ID	MFFR400
ISED number	5782A-R400
HVIN (Hardware Version Identification Number)	R-400
PMN (Product Marketing Name)	R-400
FVIN (Firmware Version Identification Number)	-/-
HMN (Host Marketing Name)	-/-

This test report is electronically signed and valid without handwritten signature. For verification of the electronic signatures, the public keys can be requested at the testing laboratory.

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EUT technologies:

Technologies:	Max. power [dBm]		Antenna gain max.: [dBi]	Declared by customer	#
	conducted	EIRP			
BT LE 2450 MHz	meas. -5.0 dBm	--	< 0.0	1 dBm	A
Proprietary 2450 MHz	meas. 4.8 dBm	--	< 0.0	6 dBm	B

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

#	Results from:		Additional information
A	1-2707/21-01-08	CTC advanced GmbH	Max measured conducted output power (page 18)
B	1-2707/21-01-09	CTC advanced GmbH	Max measured conducted output power (page 21)

Collocation overview:

Active scenario: / **Technology**	**1**	**2**	**3**	**4**
BT LE 2450 MHz	x		x	
Proprietary 2450 MHz	x	x		

Prediction of MPE limit at given distance - FCC

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

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

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

The table below is excerpted from Table 1B of 47 CFR 1.1310 titled “Limits for Maximum Permissible Exposure (MPE), Limits for General Population/Uncontrolled Exposure”

Frequency Range (MHz)	Power Density (mW/cm^2)	Averaging Time (minutes)
300 -1500	f/1500	30
1500 - 100000	1.0	30

where f = Frequency (MHz)

Prediction: worst case

	Technologies:	BT LE	Proprietary	
	Frequency (MHz)	2450	2450	
PG	Declared max power (EIRP)	1	6	dBm
R	Distance	20	20	cm
S	MPE limit for uncontrolled exposure	1	1	mW/cm^2
	Calculated Power density:	0.0003	0.0008	mW/cm^2
	Calculated percentage of Limit:	0.03%	0.08%	
	Collocation:			
	Scenario 1: BT LE + Proprietary 2.4 MHz Calculated percentage of Limit:	0.10%		

This prediction demonstrates the following:

The power density levels for FCC at a distance of 20 cm are below the maximum levels allowed by regulations.

Prediction of MPE limit at given distance - ISED

RSS-102, Issue 5, 2.5.2

RF exposure evaluation is required if the separation distance between the user and/or bystander and the device's radiating element is greater than 20 cm, except when the device operates as follows:

- below 20 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 1 W (adjusted for tune-up tolerance);
- at or above 20 MHz and below 48 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $4.49/f^{0.5}$W (adjusted for tune-up tolerance), where f is in MHz;
- at or above 48 MHz and below 300 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 0.6 W (adjusted for tune-up tolerance);
- at or above 300 MHz and below 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $1.31 \times 10^{-2}\ f^{0.6834}$ W (adjusted for tune-up tolerance), where f is in MHz;
- at or above 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 5 W (adjusted for tune-up tolerance).

Prediction: worst case

		BT LE	Proprietary	
	Frequency	2450	2450	MHz
R	Distance	20	20	cm
PG	Maximum EIRP	1	6	dBm
PG	**Maximum EIRP**	1.3	4.0	mW
	Exclusion Limit from above:	2.71	2.71	W
	Calculated percentage of Limit:	0.05%	0.15%	
	Collocation:			
	Scenario 1: BT LE + Proprietary 2.4 MHz Calculated percentage of Limit:	0.19%		

Conclusion: RF exposure evaluation is not required.