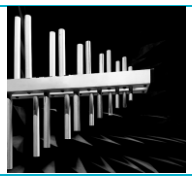
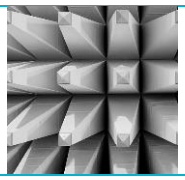




CTC advanced
member of RWTÜV group

Bundesnetzagentur

BNetzA-CAB-02/21-102

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

Maximum Permissible Exposure (MPE) & Exposure evaluation

Report identification number: 1-8662/19-02-01

Certification numbers and labeling requirements	
FCC ID	XKB-L5KCLWBTV3
ISED number	2586D-L5KCLWBTV3
HVIN (Hardware Version Identification Number)	Lane/5000 CL/Eth/WiFi/BTv3
PMN (Product Marketing Name)	Lane/5000
FVIN (Firmware Version Identification Number)	-/-
HMN (Host Marketing Name)	-/-

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

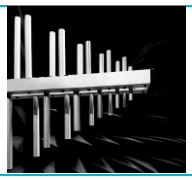
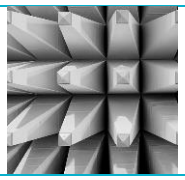
Document authorised:

cn=Alexander Hnatovskiy, o=CTC advanced GmbH, ou=HNA-161129, email=Alexander.Hnatovskiy@ctcadvanced.com, c=DE
2019.08.05 15:06:04 +02'00'

Alexander Hnatovskiy
Lab Manager
Radio Communications & EMC

cn=Marco Scigliano, o=CTC advanced GmbH, ou=SCI-161125, email=marco.scigliano@ctcadvanced.com, c=DE
2019.08.05 15:14:49 +02'00'

Marco Scigliano
Testing Manager
Radio Communications & EMC

EUT technologies:

Technologies:	Max. power conducted: (AVG)	Max. antenna gain:
WLAN 5 GHz	Declared 13 dBm	Measured : 6.0 dBi
WLAN 2.4 GHz	Declared 19 dBm	Measured : 2.8 dBi
Bluetooth 2.4 GHz	Declared 2 dBm	Measured : 2.8 dBi
RFID 13.56 MHz)*		

)* exempted from routine evaluation

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

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

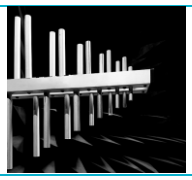
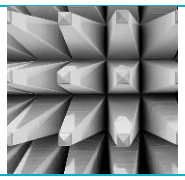
where f = Frequency (MHz)

Prediction: worst case

		> 1500 MHz	> 1500 MHz	> 1500 MHz
	Technology	BT @ 2450 MHz	WLAN @ 2450 MHz	WLAN @ 5 GHz
P	Max power input to the antenna	2 dBm	19 dBm	13 dBm
R	Distance	20 cm	20 cm	20 cm
G	Antenna gain	2.8 dBi	2.8 dBi	6 dBi
S	MPE limit for uncontrolled exposure	1 mW/cm^2	1 mW/cm^2	1 mW/cm^2
	Calculated Power density:	0.0006 mW/cm^2	0.0301 mW/cm^2	0.0158 mW/cm^2
	Collocation BT + WLAN 2.4 GHz	0.0124 mW/cm^2		
	Collocation BT + WLAN 5.8 GHz	0.0044 mW/cm^2		

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

		0.3 - 6 GHz	0.3 - 6 GHz	0.3 - 6 GHz
	Technology	BT 2.4 GHz	WLAN 2.4 Ghz	WLAN 5 GHz
	Frequency	2450 MHz	2450 MHz	5180 MHz
P	Max power input to the antenna	2 dBm	19 dBm	13 dBm
R	Distance	20 cm	20 cm	20 cm
G	Antenna gain	2.8 dBi	2.8 dBi	6 dBi
	Maximum EIRP	3.0 mW	151.4 mW	79.4 mW
	Collocation BT + WLAN 2.4 GHz	62.2 mW		
	Collocation BT + WLAN 5 GHz	21.9 mW		
	Exclusion Limit from above:	2.71 W	2.71 W	4.53 W

Conclusion: RF exposure evaluation is not required.
For applications where minimum distance to radiating element is 20cm Annex C of RSS-102 should be filled out.