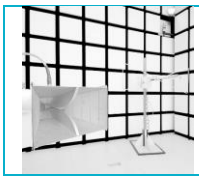
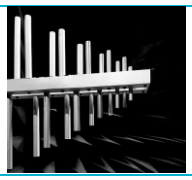
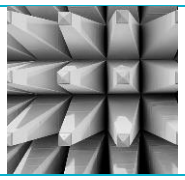

CTC advanced
member of RWTÜV group

Bundesnetzagentur

BNetzA-CAB-02/21-102

ilac-MRA DAkkS Deutsche Akkreditierungsstelle D-PL-12076-01-04

SAR Test exclusion documentation according to FCC KDB 447498, RSS-102

Report identification number: 1-2724/21-03-03 Exclusion (FCC_ISED)

contains the module with the following certification numbers	
FCC ID	ZP947754950999
ISED number	9752A-47754950999
HVIN (Hardware Version Identification Number)	47754950
PMN (Product Marketing Name)	K5 Premium Smart Control
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.

Document authorised:

cn=Alexander Hnatovskiy, o=CTC advaced GmbH, ou=HNA-211126, email=alexander.hnatovskiy@ctcadvaced.com, c=DE
2022.06.23 13:41:43 +02'00'

Alexander Hnatovskiy
Lab Manager
Radio Communications & EMC

cn=Marco Scigliano, o=CTC advanced GmbH, ou=SCI-211118, email=marco.scigliano@ctcadvanced.com, c=DE
2022.06.23 10:21:33 +02'00'

Marco Scigliano
Testing Manager
Radio Communications & EMC

EUT technologies:

Technologies:	Max. measured power [dBm]		**Max. declared EIRP [dBm]**	#
	conducted	EIRP		
Proprietary 915 MHz	--	-22.10 dBm (Peak)	**-20.0 dBm (=0.01mW)**	A

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

#	Results from:	Additional information
A	1-2724/21-01-02 CTC Advanced GmbH	Max. meas. field strength: 73.13 dbµV @3m (page 19) This equals an EIRP of -22.10 dBm. Duty cycle correction -26.71 dB (page 20)

SAR test exclusion according to KDB447498 (General RF Exposure Guidance v06)

Equation from Chapter 4.3.1: Standalone SAR test exclusion considerations page 11 and ff.

(1) Standalone SAR test exclusion for 100 MHz to 6 GHz at test separation distances ≤ 50mm

$$(\text{Threshold}_{1\text{-g};10\text{-g}}) \times d_{\text{seperation}} / f^{0.5}$$

where

$\text{Threshold}_{1\text{-g};10\text{-g}}$ is 3 for 1-g; 7.5 for 10-g
$d_{\text{seperation}}$ is the min. test separation distance; 5mm is used if the distance is less
f is the RF channel transmit frequency

The table below gives the calculated maximal power that could be used for source based time averaged conducted or radiated power, adjusted for tune up tolerance. If this is at or below the calculated value the DUT is exempted from SAR evaluation.

frequency [MHz]	$d_{\text{separation}}$ [mm]	$\text{Threshold}_{1\text{-g}}$	Powerlimit [mW]	$P_{\text{max-declared}}$		Exclusion
				[dBm]	[mW]	
915.00	**5**	3	15.68	-17.85	0.02	yes

SAR test exclusion according to RSS-102 Issue 5 Section 2.5.1/Table 1

The table below gives the calculated maximal power that could be used for source based time averaged conducted or radiated power, adjusted for tune up tolerance. If this is at or below the calculated value the DUT is exempted from SAR evaluation.

frequency [MHz]	$d_{separation}$ [mm]	tissue volume	Powerlimit [mW]	$P_{max\text{-}declared}$		Exclusion
				[dBm]	[mW]	
915.00	**5**	1 g	4.00	-17.85	0.02	yes

The limits above are defined for body worn application and therefore cover all use cases.

Derivation of Exemption Limits is described in Annex A

P_{avg}* - maximum possible output power declared by manufacturer. Output power level shall be the higher of the maximum conducted or equivalent isotropically radiated power (e.i.r.p.) source-based, time-averaged output power. For controlled use devices where the 8 W/kg for 1g of tissue applies, the exemption limits for routine evaluation in Table are multiplied by a factor of 5. For limb-worn devices where the 10g value applies, the exemption limits for routine evaluation in Table 1 are multiplied by a factor of 2.5. If the operating frequency of the device is between two frequencies located in Table, linear interpolation shall be applied for the applicable separation distance. For test separation distance less than 5 mm, the exemption limits for a separation distance of 5 mm can be applied to determine if a routine evaluation is required.

*) see annex A as description for applied distance

Annex A: Applicable Exemption Limits according RSS102-Issue5:

freq. (MHz)	Exemption Limits (mW)		
	at separation distance of ≤5 mm	at separation distance of 10 mm	at separation distance of 15 mm
300	71	101	132
350	65	91	117
450	52	70	88
710	29	45	60
780	22	36	49
835	17	30	42
1900	7	10	18
2450	4	7	15
3500	2	6	16
5800	1	6	15

Table 1: Exemption Limits according RSS102-Issue5:

The exemption limits in Table 1 are based on measurements and simulations of half-wave dipole antennas at separation distances of 5 mm to 25 mm from a flat phantom, providing a SAR value of approximately 0.4 W/kg for 1 g of tissue. For low frequencies (300 MHz to 835 MHz), the exemption limits are derived from a linear fit. For high frequencies (1900 MHz and above), the exemption limits are derived from a third order polynomial fit