

RF EXPOSURE EVALUATION

KDB 447498 D01 Mobile and Portable Devices RF Exposure Procedures and Equipment Authorization Policies v06.

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency(RF) Radiation as specified in §1.1307(b)

EUT Specification

FCC ID	2ACZO-USR-EG628
EUT	Industrial Mini Computer
Frequency band (Operating)	☐ BT: 2.402GHz ~ 2.480GHz ☒ WLAN: 2.412GHz ~ 2.462GHz ☒ RLAN: 5.180GHz ~ 5.240GHz ☒ RLAN: 5.260GHz ~ 5.320GHz ☒ RLAN: 5.500GHz ~ 5.700GHz ☒ RLAN: 5.745GHz ~ 5.825GHz ☒ Others: GSM 800: 824~849MHz PCS 1900: 1850~1910MHz WCDMA Band II: 1850~1910MHz WCDMA Band III: 1710~1755MHz WCDMA Band V: 824~849MHz LTE Band 2: 1850~1910MHz LTE Band 4: 1710~1755MHz LTE Band 5: 824~849MHz LTE Band 7: 2500~2570MHz LTE Band 12: 699~716MHz LTE Band 13: 777~787MHz LTE Band 25: 1850~1915MHz LTE Band 26: 814~849MHz LTE Band 38: 2570~2620MHz LTE Band 41: 2496~2690MHz LTE Band 66: 1710~1780MHz
Device category	☐ Portable (<20cm separation) ☒ Mobile (>20cm separation) ☐ Others _____
Exposure classification	☐ Occupational/Controlled exposure ☒ General Population/Uncontrolled exposure
Antenna diversity	☐ Single antenna ☒ Multiple antennas ☐ Tx diversity

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	☐ Rx diversity ☐ Tx/Rx diversity
Antenna gain (Max)	WiFi 2.4G: 0.20dBi Wi-Fi 5.2G: -0.70dBi Wi-Fi 5.3G: -0.80dBi Wi-Fi 5.6G: -1.20dBi Wi-Fi 5.8G: -1.50dBi GSM 850: 2.13dBi PCS 1900: 1.38dBi FDD Band II: 1.38dBi FDD Band V: 2.00dBi FDD Band IV: 2.13dBi LTE FDD Band 2: 1.38dBi LTE FDD Band 4: 2.00dBi LTE FDD Band 5: 2.13dBi LTE FDD Band 7: 2.33dBi LTE FDD Band 12: 3.26dBi LTE FDD Band 13: 3.98dBi LTE FDD Band 25: 1.38dBi LTE FDD Band 26: 2.13dBi LTE TDD Band 38: 2.00dBi LTE TDD Band 41: 2.04dBi LTE FDD Band 66: 2.00dBi
Evaluation applied	☒ MPE Evaluation ☐ SAR Evaluation

Limits for Maximum Permissible Exposure(MPE)

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density(mW/cm ²)	Average Time
(A) Limits for Occupational/Control Exposures				
300-1500	--	--	F/300	6
1500-100000	--	--	5	6
(B) Limits for General Population/Uncontrol Exposures				
300-1500	--	--	F/1500	6
1500-100000	--	--	1	30

Friis transmission formula: $P_d = (P_{out} * G) / (4 * \pi * R^2)$

Where

P_d = Power density in mW/cm²

P_{out} =output power to antenna in Mw

G= gain of antenna in linear scale

π =3.1416

R= distance between observation point and center of the radiator in cm

P_d the limit of MPE, 1mW/cm². If we know the maximum gain of the antenna and total power input to the antenna, through the calculation, we will know the distance where the MPE limit is reached.



Max Measurement Result

Test Mode	Frequency Band (MHz)	Max Tune-up Power (dBm)	Max ERP (mW)	Threshold Power at 20cm (mW)	Max Antenna Gain per P _{th}
GSM 850	824 ~ 849	26.00	411.15	1681.0	6.3
PCS 1900	1850 ~ 1910	23.00	167.11	3060.0	11.9
WCDMA Band II	1850 ~ 1910	25.00	264.85	3060.0	9.9
WCDMA Band IV	1710 ~ 1755	25.00	305.49	3060.0	9.9
WCDMA Band V	824 ~ 849	25.00	314.77	1681.0	7.3
LTE Band 2	1850 ~ 1910	25.00	264.85	3060.0	9.9
LTE Band 4	1710 ~ 1755	25.00	305.49	3060.0	9.9
LTE Band 5	824 ~ 849	25.00	314.77	1681.0	7.3
LTE Band 7	2500 ~ 2570	25.00	329.61	3060.0	9.9
LTE Band 12	699 ~ 716	25.00	408.32	1426.0	6.5
LTE Band 13	777 ~ 787	25.00	481.95	1585.1	7.0
LTE Band 25	1850 ~ 1915	25.00	264.85	3060.0	9.9
LTE Band 26	814 ~ 849	25.00	314.77	1660.6	7.2
LTE Band 38	2570 ~ 2620	25.00	305.49	3060.0	9.9
LTE Band 41	2496 ~ 2690	25.00	308.32	3060.0	9.9
LTE Band 66	1710 ~ 1780	25.00	305.49	3060.0	9.9
Remark: 1. The Max Tune-up power is extracted from the Modular tune-up power. 2. The compliance distance is extracted from the user manual. 3. The Max ERP (dBm) = Max Conducted Total Power (dBm) + Antenna Gain (dBi) - 2.15.					

Band	Maximum Power (dBm)	Antenna Gain(dBi)	Maximum EIRP(dBm)	PG (mW)	Test Result (mW/cm ²)	Limit Value (mW/cm ²)
Bluetooth	8.00	0.20	8.20	6.607	0.001	1.000
Wi-Fi 2.4G	20.00	0.20	20.20	104.713	0.021	1.000
Wi-Fi 5G	19.00	-0.70	18.30	67.608	0.013	1.000

Note 1: According to the EUT characteristic, Bluetooth,Wi-Fi 2.4G and Wi-Fi 5G can't transmit simultaneously.

Note 2: For mobile or fixed location transmitters, minimum separation distance is 20cm, even if calculations indicate EMF distance is less.

Result: No Standalone SAR test is required.