

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-EG828
EUT	ARM based Computer
Frequency band (Operating)	☒ BT: 2.402GHz ~ 2.480GH ☒ 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 850: 824.2MHz~848.8 MHz PCS 1900: 1850.2MHz~1909.8 MHz WCDMA Band II: 1852.40MHz~1907.60MHz WCDMA Band V: 826.40MHz~846.60MHz WCDMA Band IV: 1712.40MHz~1752.60MHz FDD Band 2: 1850.7 MHz – 1909.3 MHz FDD Band 4: 1710.7 MHz – 1754.3 MHz FDD Band 5: 824.7 MHz – 848.3 MHz FDD Band 7: 2502.5 MHz – 2567.5 MHz FDD Band 12: 699.7 MHz – 715.3 MHz FDD Band 13: 779.5 MHz – 784.5 MHz FDD Band 25: 1850.7 MHz – 1914.3 MHz FDD Band 26: 814.7 MHz – 848.3 MHz TDD Band 38: 2572.5 MHz – 2617.5 MHz FDD Band 66: 1710.7 MHz-1779.3 MHz
Device category	☐ Portable (<20cm separation) ☒ Mobile (>20cm separation) ☐ Others ____
Exposure classification	☐ Occupational/Controlled exposure (S = 5mW/cm2) ☒ General Population/Uncontrolled exposure (S=1mW/cm2)
Antenna diversity	☐ Single antenna ☒ Multiple antennas ☐ Tx diversity ☐ Rx diversity

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	☐ Tx/Rx diversity
Antenna gain (Max)	BT/Wi-Fi 2.4G: 5.12dBi GSM 850: 5.5dBi PCS 1900: 5.5dBi FDD Band II: 5.5dBi FDD Band V: 5.5dBi FDD Band IV: 5.5dBi FDD Band 2: 5.5dBi FDD Band 4: 5.5dBi FDD Band 5: 5.5dBi FDD Band 7: 5.5dBi FDD Band 12: 5.5dBi FDD Band 13: 5.5dBi FDD Band 25: 5.5dBi FDD Band 26: 5.5dBi TDD Band 38: 5.5dBi FDD Band 66: 5.5dBi
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

Operating Mode	Max. Conducted Power	Tune up tolerance		Max. Tune up Power	Antenna Gain	Power density at 20cm	Power density Limits (mW/cm ²)
	(dBm)	(dBm)		(dBm)	(dBi)	(mW/ cm ²)	
BT	1.85	1.00	±1	2	5.12	0.0010	1
BLE	-0.43	-1.00	±1	0	5.12	0.0006	1
WiFi 2.4G	18.21	18.0	±1	19	5.12	0.0514	1
GSM 850	27.98	27.0	±1	28	5.5	0.4454	0.549
PCS 1900	30.7	30.0	±1	31	5.5	0.8886	1
WCDMA Band II	24.99	24.0	±1	25	5.5	0.2232	1
WCDMA Band V	25.19	25.0	±1	26	5.5	0.2810	0.5509
WCDMA Band IV	24.55	24.0	±1	25	5.5	0.2232	1
LTE Band 2	24.21	24.0	±1	25	5.5	0.2232	1
LTE Band 4	23.73	23.0	±1	24	5.5	0.1773	1
LTE Band 5	24.14	24.0	±1	25	5.5	0.2232	0.5498
LTE Band 7	23.71	23.0	±1	24	5.5	0.1773	1
LTE Band 12	24.81	24.0	±1	25	5.5	0.2232	0.4664
LTE Band 13	24.48	24.0	±1	25	5.5	0.2232	0.5196

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LTE Band 25	23.82	23.0 ± 1	24	5.5	0.1773	1
LTE Band 26	24.47	24.0 ± 1	25	5.5	0.2232	0.5431
LTE Band 38	23.45	23.0 ± 1	24	5.5	0.1773	1
LTE Band 66	24.00	24.0 ± 1	25	5.5	0.2232	1

The Maximum simultaneous transmission for PCS 1900+WiFi 2.4G:

$$\sum_i \frac{S_i}{S_{Limit,i}}$$

=S_{WLAN}/S_{limit-2.4}+ S_{PCS 1900}/S_{limit-PCS 1900}
 =0.0514 /1+0.8886/1
 =0.94
 < 1.0

Result: No Standalone SAR test is required.