

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	2BFNC-MP500
EUT	Robotic Lawn Mower
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: 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 41: 2498.5 MHz – 2687.5 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/cm ²) ☒ General Population/Uncontrolled exposure (S=1mW/cm ²)
Antenna diversity	☐ Single antenna ☒ Multiple antennas ☐ Tx diversity ☐ Rx diversity ☐ Tx/Rx diversity
Antenna gain (Max)	Wi-Fi 2.4G/BT: 3.07 dBi Wi-Fi 5.2G: 4.54 dBi Wi-Fi 5.8G: 4.32 dBi FDD Band 2: 3.80 dBi

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	FDD Band 4: 3.49 dBi FDD Band 5: 1.82 dBi FDD Band 7: 2.86 dBi FDD Band 12: 8.07 dBi FDD Band 13: 5.09 dBi FDD Band 25: 3.80 dBi FDD Band 26: 1.88 dBi TDD Band 41: 3.43 dBi FDD Band 66: 3.49 dBi
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	Measured Power	Tune up tolerance		Max. Tune up Power	Antenna Gain	Power density at 20cm	Power density Limits
	(dBm)	(dBm)		(dBm)	(dBi)	(mW/ cm ²)	(mW/cm ²)
BDR+EDR	6.07	6.07	±1	7.07	3.07	0.0021	1.00
BLE	5.55	5.55	±1	6.55	3.07	0.0018	1.00
WiFi 2.4G	16.87	16.87	±1	17.87	3.07	0.0247	1.00
WiFi 5.2G	14.30	14.30	±1	15.30	4.54	0.0192	1.00
WiFi 5.8G	12.76	12.76	±1	13.76	4.32	0.0128	1.00
FDD Band 2	24.53	24.53	±1	25.53	3.8	0.1706	1.00
FDD Band 4	23.77	23.77	±1	24.77	3.49	0.1333	1.00
FDD Band 5	24.62	24.62	±1	25.62	1.82	0.1104	0.55
FDD Band 7	24.21	24.21	±1	25.21	2.86	0.1276	1.00
FDD Band 12	24.50	24.50	±1	25.50	8.07	0.4528	0.47
FDD Band 13	24.45	24.45	±1	25.45	5.09	0.2254	0.52
FDD Band 25	21.58	21.58	±1	22.58	3.8	0.0865	1.00
FDD Band 26	21.42	21.42	±1	22.42	1.88	0.0536	0.54
TDD Band 41	21.33	21.33	±1	22.33	3.43	0.0750	1.00
FDD Band 66	20.75	20.75	±1	21.75	3.49	0.0665	1.00

The Maximum simultaneous transmission for WiFi 2.4G+FDD Band 12:

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

$$= S_{WiFi\ 2.4G} / S_{limit-2.4G} + S_{FDD\ Band\ 12} / S_{limit-FDD\ Band\ 12}$$

$$= 0.0247 / 1 + 0.4528 / 0.47$$

$$= 0.9881$$

$$< 1.0$$

Result: No Standalone SAR test is required.

