

MAXIMUM PERMISSIBLE EXPOSURE

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	2ABC5-E0054
EUT	Android tablet
Frequency band (Operating)	<input checked="" type="checkbox"/> BT: 2.402GHz ~ 2.480GH <input checked="" type="checkbox"/> WLAN: 2.412GHz ~ 2.462GHz <input checked="" type="checkbox"/> RLAN: 5.180GHz ~ 5.240GHz <input type="checkbox"/> RLAN: 5.260GHz ~ 5.320GHz <input type="checkbox"/> RLAN: 5.500GHz ~ 5.700GHz <input checked="" type="checkbox"/> RLAN: 5.745GHz ~ 5.825GHz <input type="checkbox"/> Others:
Device category	<input type="checkbox"/> Portable (<20cm separation) <input checked="" type="checkbox"/> Mobile (>20cm separation) <input type="checkbox"/> Others _____
Exposure classification	<input type="checkbox"/> Occupational/Controlled exposure <input checked="" type="checkbox"/> General Population/Uncontrolled exposure
Antenna diversity	<input type="checkbox"/> Single antenna <input checked="" type="checkbox"/> Multiple antennas <input type="checkbox"/> Tx diversity <input type="checkbox"/> Rx diversity <input type="checkbox"/> Tx/Rx diversity
Antenna gain (Max)	BDR+EDR: 2.64 dBi BLE: 2.64 dBi WiFi 2.4G ANT1: 2.45 dBi WiFi 2.4G ANT2: 2.64 dBi WiFi 5.2G ANT1: 1.52dBi WiFi 5.2G ANT2: 2.46dBi WiFi 5.8G ANT1: 1.85dBi WiFi 5.8G ANT2: 1.90dBi
Directional gain	WiFi 2.4G: 5.56dBi WiFi 5.2G: 5.03dBi WiFi 5.8G: 4.89dBi
Evaluation applied	<input checked="" type="checkbox"/> MPE Evaluation <input type="checkbox"/> 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	30
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. 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.

Measurement Result

Operating Mode	Maximum output power (dBm)	Tune up tolerance (dBm)	Max. Tune up Power (dBm)	Antenna Gain (dBi)	Power density at 20cm (mW/cm ²)	Power density Limits (mW/cm ²)
BDR+EDR	11.71	11.71 ±1	12.71	2.64	0.0803	1
BLE	11.52	11.52 ±1	12.52	2.64	0.0736	1
WiFi 2.4G ANT1	15.02	15.02 ±1	16.02	2.45	0.3531	1
WiFi 2.4G ANT2	15.03	15.03 ±1	16.03	2.64	0.3706	1
WiFi 5.2G ANT1	15.03	15.03 ±1	16.03	1.52	0.2864	1
WiFi 5.2G ANT2	15.12	15.12 ±1	16.12	2.46	0.3706	1
WiFi 5.8G ANT1	15.47	15.47 ±1	16.47	1.85	0.3784	1
WiFi 5.8G ANT2	15.34	15.34 ±1	16.34	1.9	0.3605	1



No. Applicable Simultaneous Transmission

1. BT+WiFi 2.4G ANT1
2. BT+WiFi 5G ANT1
3. WiFi 2.4G ANT1+WiFi 2.4G ANT2
4. WiFi 2.4G ANT1+WiFi 5G ANT2
5. WiFi 5G ANT1+WiFi 5G ANT2
6. WiFi 5G ANT1+WiFi 2.4G ANT2

The Maximum simultaneous transmission for WiFi 5.8G ANT1+WiFi 5.2G ANT2:

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

$$= S_{WiFi\ 5.8G\ ANT1}/S_{limit-5.8G} + S_{WiFi\ 5.2G\ ANT1}/S_{limit-5.2G}$$

$$= 0.3784/1 + 0.3706/1$$

$$= 0.7490$$

$$< 1.0$$

Result: No Standalone SAR test is required.

