

RF EXPOSURE EVALUATION

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)

FCC ID: Z63-P101T03

EUT Specification

EUT	Automatic Feeder (WI-Fi Version)						
Model Number	P101T03						
Serial Model	P101TXX ("X" represent "0-9" or "A-Z")						
Model Difference	Note: All models are identical except model name and grain						
	bucket size.						
Input Rating	Input: USB-C (DC 5V/1A)/3pcs 1# batteries (D battery)						
Frequency band	⊠BT: 2.402GHz ~ 2.480GHz						
(Operating)	⊠WLAN: 2.412GHz ~ 2.462GHz						
	□WLAN: 5.18GHz ~ 5.32GHz / 5.50GHz ~ 5.70GHz						
	☐WLAN: 5.745GHz ~ 5825GHz						
Device category	☐Portable (<20cm separation)						
	⊠Mobile (>20cm separation)						
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						
	☐Tx/Rx diversity						
Max. output power (peak	BLE: 5.45 dBm(mW)						
power)	IEEE 802.11b: 17.66 dBm(mW)						
	IEEE 802.11g: 16.84 dBm(mW)						
	IEEE 802.11n-HT20: 16.49 dBm(mW)						
	IEEE 802.11n-HT40: 17.22 dBm(mW)						
Antenna gain (Max)	2.4GHz WIFI: 3.55 dBi						
	BT: 3.57 dBi						
Evaluation applied	⊠MPE Evaluation						
	☐SAR Evaluation						



Limits for	Maximum	Permissible	Exposure(MPE)

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

Friis transmission formula: Pd=(Pout*G)\(4*pi*R2)

Where

Pd= Power density in mW/cm², Pout=output power to antenna in Mw

G= gain of antenna in linear scale, Pi=3.1416

R= distance between observation point and center of the radiator in cm=20cm Pd 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.

For multiple RF sources: Multiple RF sources are exempt if:

in the case of fixed RF sources operating in the same time-averaging period, or of multiple mobile or portable RF sources within a device operating in the same time averaging period, if the sum of the fractional contributions to the applicable thresholds is less than or equal to 1 as indicated in the following equation

$$\sum_{k=1}^{c} \frac{Evaluated_k}{Exposure\ Limit_k} \le 1$$

Evaluated_k: the maximum reported SAR or MPE of fixed, mobile, or portable RF source k either in the device or at the transmitter site from an existing evaluation at the location of exposure.

Exposure Limit_k: either the general population/uncontrolled maximum permissible exposure (MPE) or specific Absorption rate (SAR) limit for each fixed, mobile, or portable RF source k.



Measurement Result

Operatio n Mode	Channe I Freque ncy (MHz)	Max Measu red Power (dBm)	Tune up tolera nce (dBm)	Max tune up conduc ted power (dBm)	Outp ut Peak pow er (mW	Ant . Gai n (dB i)	Ant. Gain (nume ric)	Power densit y at 20cm (mW/ cm2)	Pow er dens ity Limit s (mW/ cm2)
BLE (2Mbps)	2480	5.45	5±1	6	3.98 1	3.5 7	2.275	0.0018 02	1
2.4GHz WIFI (802.11b	2462	17.66	18±1	19	79.4 33	3.5 5	2.265	0.0357 87	1
2.4GHz WIFI (802.11g	2462	16.84	17±1	18	63.0 96	3.5 5	2.265	0.0284 26	1
2.4GHz WIFI (802.11n 20)	2462	16.49	16±1	17	50.1 19	3.5 5	2.265	0.0225	1
2.4GHz WIFI (802.11n 40)	2452	17.22	17±1	18	63.0 96	3.5 5	2.265	0.0284 26	1

Maximum Simultaneous transmission MPE Ratio for Bluetooth & 2.4G WIFI

Maximum MPE ratio (Bluetooth)	Maximum MPE ratio (2.4G WIFI)	∑ MPE ratios	Limit	Results
0.001802	0.035787	0.037589	1.000	Pass

The Product unsupported at the same time to Transmitting. According to KDB 447498, and no simultaneous SAR measurement is required.





